SOMERVILLE, MASSACHUSETTS

45 Mystic Avenue

Transportation Impact Study

Prepared for
City of Somerville

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Table of Contents

List of Figures

List of Tables

Appendices

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 45 Mystic 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 October 17, 2022.

45 Mystic Avenue (the Project and/or Site) is located within the Assembly Square Mixed-Use (ASMD) zoning district. The Site is bounded by Mystic Avenue to the southwest and commercial buildings/properties on all other sides. The Project is located approximately one-half mile from the Massachusetts Bay Transportation Authority's (MBTA's) Assembly Square and Sullivan Square Stations, a location that supports transit-oriented development as it connects a new commercial building to the greater metropolitan region.

The Project will consist of the redevelopment of the existing one-story auto repair shop into an approximately 50,550-square-feet (sf) lab/office building which includes approximately 1,241 sf for a ground-floor gallery, studio, and café, and approximately 2,400 sf of Civic Space. The Project does not propose to construct any new parking spaces and will utilize the parking supply in the existing parking garages throughout the ASMD. The Project will provide 18 indoor bicycle parking spaces for employees and 14 outdoor bicycle parking spaces for visitors and short-term use.

Study Area

Based on coordination with the City of Somerville, the study area (shown in **Figure 1**) consists of three signalized intersections:

- Mystic Avenue/Grand Union Boulevard/Lombardi Street;
- Mystic Avenue/Revolution Drive; and
- Grand Union Boulevard/Revolution Drive.

Figure 1. ***Study Area***

Methodology

The TIS contains the following components:

- The Existing (2022) 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 (2022) 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 (2027) Condition evaluates the long-term impacts for the year 2027, based on a five-year horizon from the year of the filing of this traffic study. The Future (2027) 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

Mystic Avenue is classified by the Massachusetts Department of Transportation (MassDOT) as an urban minor arterial under MassDOT jurisdiction. It generally runs northwest-southeast between Mystic Valley Parkway to the west in Medford and Maffa Way/Main Street to the east in Somerville. Within the study area, Mystic Avenue serves as one-way access roads parallel to I-93. In the area between Grand Union Boulevard and Revolution Drive, Mystic Avenue is one-way northbound with

three travel lanes. The posted speed limit is 30 miles per hour (mph). In the study area, no parking is allowed along Mystic Avenue and no bicycle facilities are provided. Sidewalks are provided along Mystic Avenue northbound; no sidewalks are provided adjacent to Mystic Avenue southbound. Bus stops are located along Mystic Avenue northbound to the north of Grand Union Boulevard, at the Home Depot (75 Mystic Avenue), and to the north of Revolution Drive (MBTA #95 service from Sullivan Square to Arlington Center).

Grand Union Boulevard is classified as an urban collector under City of Somerville jurisdiction. It runs northwest-southeast from Fellsway in the north to Mystic Avenue in the south; it is two-way with one lane in each direction. A safety speed zone of 20 mph is posted between Fellsway and Great River Road, otherwise 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. In the study area, between Revolution Drive and Mystic Avenue, separated bicycle lanes and sidewalks are provided on both sides of the road. No on-street parking is allowed.

Lombardi Street is classified as an urban collector under MassDOT jurisdiction. It generally runs east-west between Broadway in the west and Mystic Avenue in the east. In the study area, it is a two-way road with two lanes in each direction and four-foot shoulders. No speed limit is posted; therefore, local prima facie speed of 25 mph is assumed. No on-street parking is allowed. Bicycle detectors are provided at the signals. No bicycle facilities are provided. Sidewalks are generally provided on both sides of the road, except no sidewalk is provided on the north side of the road between Mystic Avenue southbound and Broadway.

Revolution Drive is classified as a local road under private jurisdiction. It generally runs northeast-southwest between Mystic Avenue and Great River Road. It is two-way with one-lane in each direction and four-foot shoulders. Bicycle detectors are provided at the signals. Share the road arrows (sharrows) are provided at the westbound approach at Grand Union Boulevard. No speed limit is posted; therefore, local prima facie speed of 25 mph is assumed. Metered on-street parking is provided intermittently on both sides of the street between Great River Road and Grand Union Boulevard. Sidewalks are provided on both sides of the road.

Intersection Descriptions

Mystic Avenue/Grand Union Boulevard/Lombardi Street is a four-legged signalized intersection with three approaches. The Lombardi Street eastbound approach consists of an 11-foot left-turn lane, two through lanes, and a four-foot bicycle lane. The Grand Union Boulevard westbound approach consists of a 12-foot shared through/right-turn lane and a six-foot bicycle lane. The Mystic Avenue northbound approach consists of an 11-foot left-turn lane, two 11-foot through lanes, and an 11-foot

shared through/right-turn lane. A bus stop is located 200 feet to the north side of the intersection. Crosswalks that are 10-feet with ADA-compliant ramps and detectable warning panels are provided across the south and east legs of the intersection. There is pedestrian signal equipment provided at the crosswalks.

Mystic Avenue/Revolution Drive is a three-legged signalized intersection with two approaches. The Revolution Drive westbound approach consists of two 11-foot left-turn lanes and a four-foot shoulder. The Mystic Avenue northbound approach consists of three through lanes and a 12-foot right-turn lane. 10-foot-wide crosswalks with ADA-compliant ramps are provided across the east leg of the intersection. Pedestrian signal equipment is provided at crosswalks.

Grand Union Boulevard/Revolution Drive is a four-legged signalized intersection with four approaches. The Revolution Drive eastbound approach consists of an 11-foot left-turn lane, and an 11-foot shared through/right-turn lane. The Revolution Drive westbound approach consists of an 11-foot left-turn lane, a 12-foot through lane, and a free right-turn lane. The Grand Union Boulevard northbound approach consists of an 11-foot left-turn lane, an 11-foot shared through/right-turn lane, and a six-foot bicycle lane that continues through the intersection. The Grand Union Boulevard southbound approach consists of an 11-foot left-turn lane, an 11-foot through lane, and a 15-foot right-turn lane is a nine-foot-wide shared left-turn/right turn lane. 10-foot crosswalks with ADA-compliant ramps and signal equipment are provided across all approaches.

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 Mystic Avenue northwest of Grand Union Boulevard from Tuesday, October 25, through Wednesday, October 26, 2022. ATR tubes were cut, and no speed data was available. Complete ATR data will be re-collected at the following locations during the months of April or May per the TIS Guidelines and discussions with the City of Somerville:

- Mystic Avenue between the Boston City line and Grand Union Boulevard;
- Mystic Avenue west of 45 Mystic Avenue;
- Grand Union Boulevard north of Mystic Avenue;
- I-93 southbound slip lane south of Mystic Avenue;
- Revolution Drive north of Mystic Avenue;

- Lombardi Street between the I-93 southbound ramp and Mystic Avenue;
- Broadway between Lombardi Street and Mt Pleasant Street; and
- Broadway between Lincoln Street and George Street.

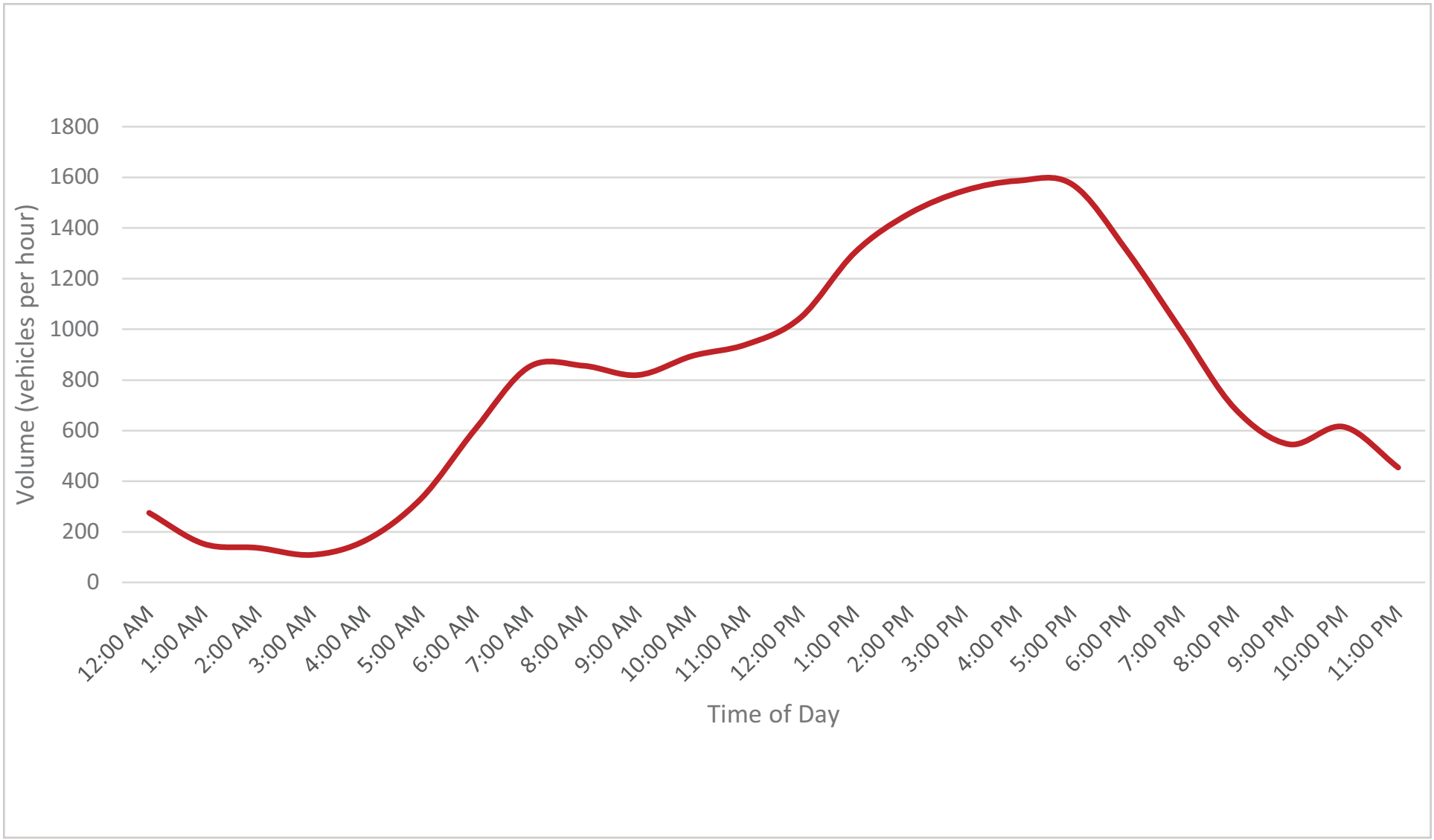
Northwest-bound volumes along Mystic Avenue west of Grand Union Boulevard are approximately 19,300 vehicles per day (vpd). Hourly volumes are highest, approximately 1,550 – 1,600 vehicles per hour (vph), during the weekday evening commuter peak period (3:00-6:00 p.m.), and, 850 vph, during the weekday morning commuter period (7:00-9:00 a.m.).

Table 1 summarizes the ATR traffic data, including Average Daily Traffic (ADT), peak-hour percentage (K factor), and percent heavy vehicles (three or more axles) on Mystic Avenue adjacent to the site. Average daily traffic volumes for the roadways are illustrated in **Figure 2**. The count and classification data are provided in **Appendix A**.

Table 1. Average Daily Traffic Summary: Mystic Avenue Northwest-bound, West of Grand Union Boulevard

Location	Mystic Avenue
Weekday Daily Traffic Volume	19,260 vpd
a.m. Peak Hour (8 – 9 a.m.)	
Volume	855 vph
% Heavy Vehicle	9%
K Factor	0.04
p.m. Peak Hour (4 – 5 p.m.)	
Volume	1,590 vph
% Heavy Vehicle	3%
K Factor	0.08

Figure 2. ***Average Daily Traffic: Mystic Avenue, West of Grand Union Boulevard***



TURNING MOVEMENT COUNT DATA

Traffic volume data were collected at the study area intersections on Tuesday, October 25, 2022. Turning Movement Counts (TMCs) were conducted continuously from 6:00 a.m.-8:00 p.m. 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 7:30-8:30 a.m. and 4:30-5:30 p.m. New Saturday counts were not collected as part of this data collection effort; instead, recent data from November 16, 2019, was sourced from a nearby project to establish the existing Saturday condition. The Saturday midday peak hour was identified as 12:15-1:15 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, the MassDOT weekday seasonal correction factors were checked for the months of October and November. For facilities like those in the study area, all seasonal adjustment factors were less than one which means that traffic counts during these periods are typically higher than the average for the year. For a conservative estimate, all traffic counts were not adjusted. Existing (2022) Condition vehicle volumes during the a.m., p.m., and Saturday midday peak hours are shown in **Figure 3** to **Figure 5,** respectively.

Figure 3. ***Existing (2022) Condition Vehicle Volumes, Weekday a.m. Peak Hour***

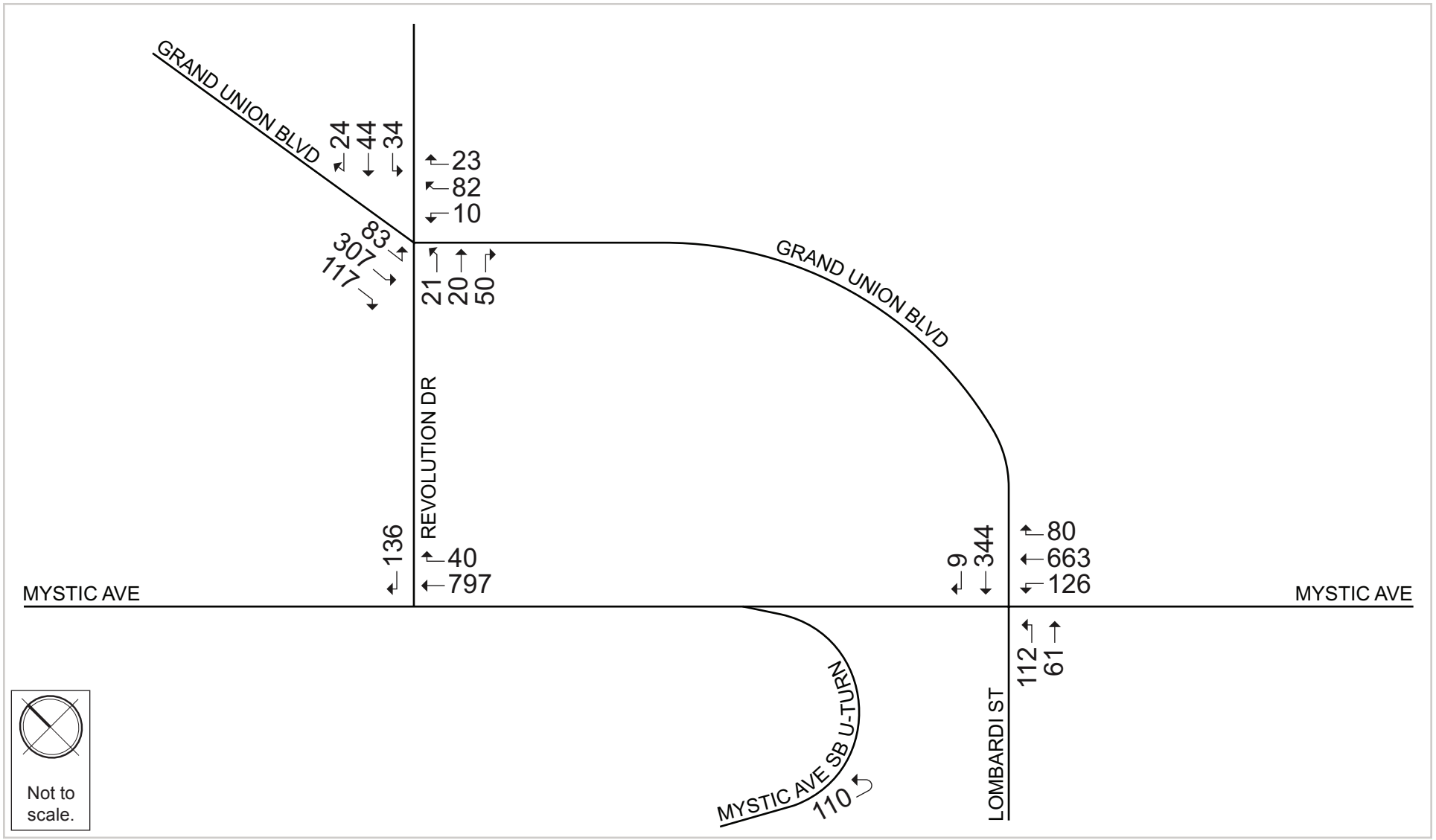


Figure 4. ***Existing (2022) Condition Vehicle Volumes, Weekday p.m. Peak Hour***

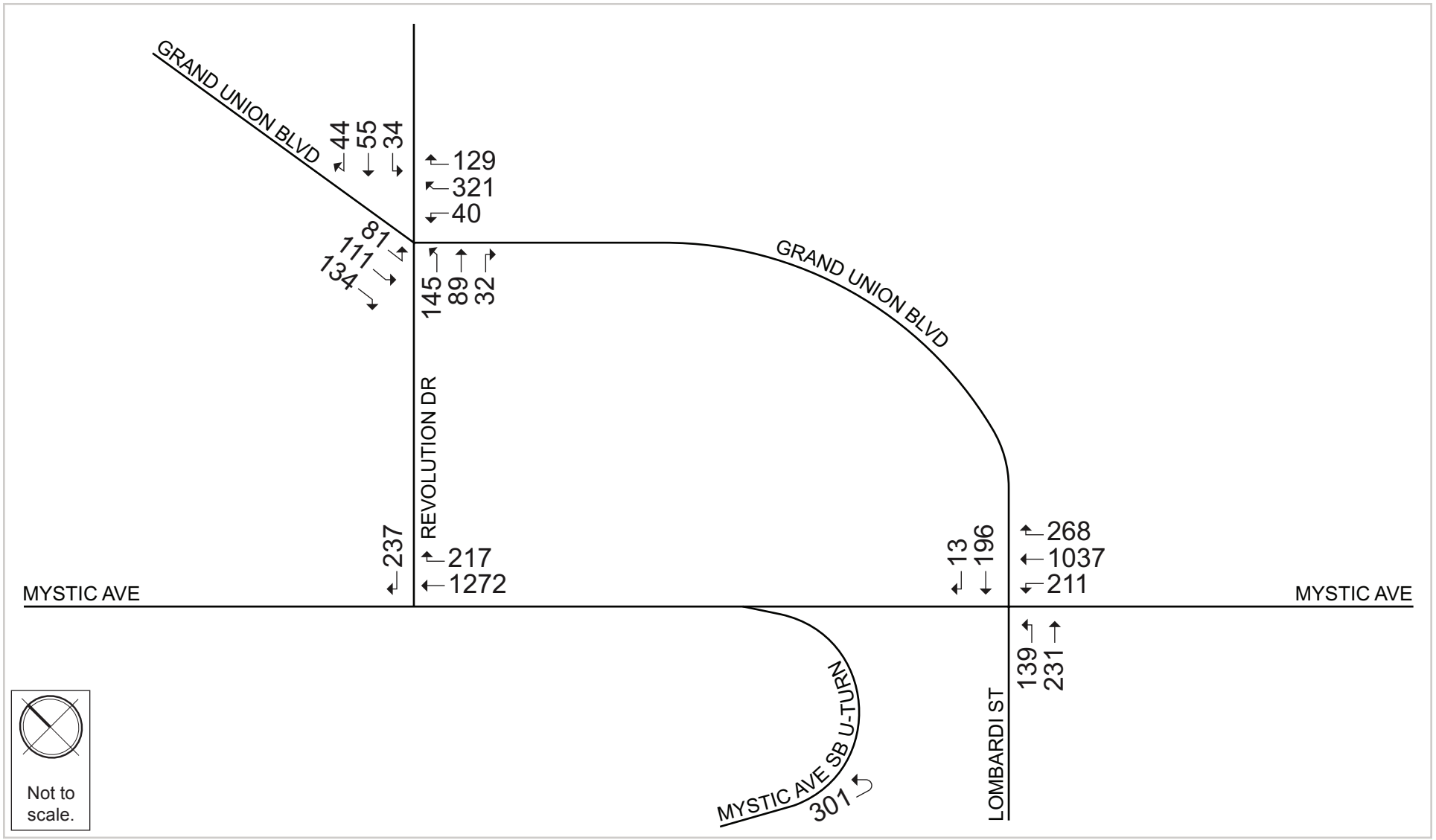
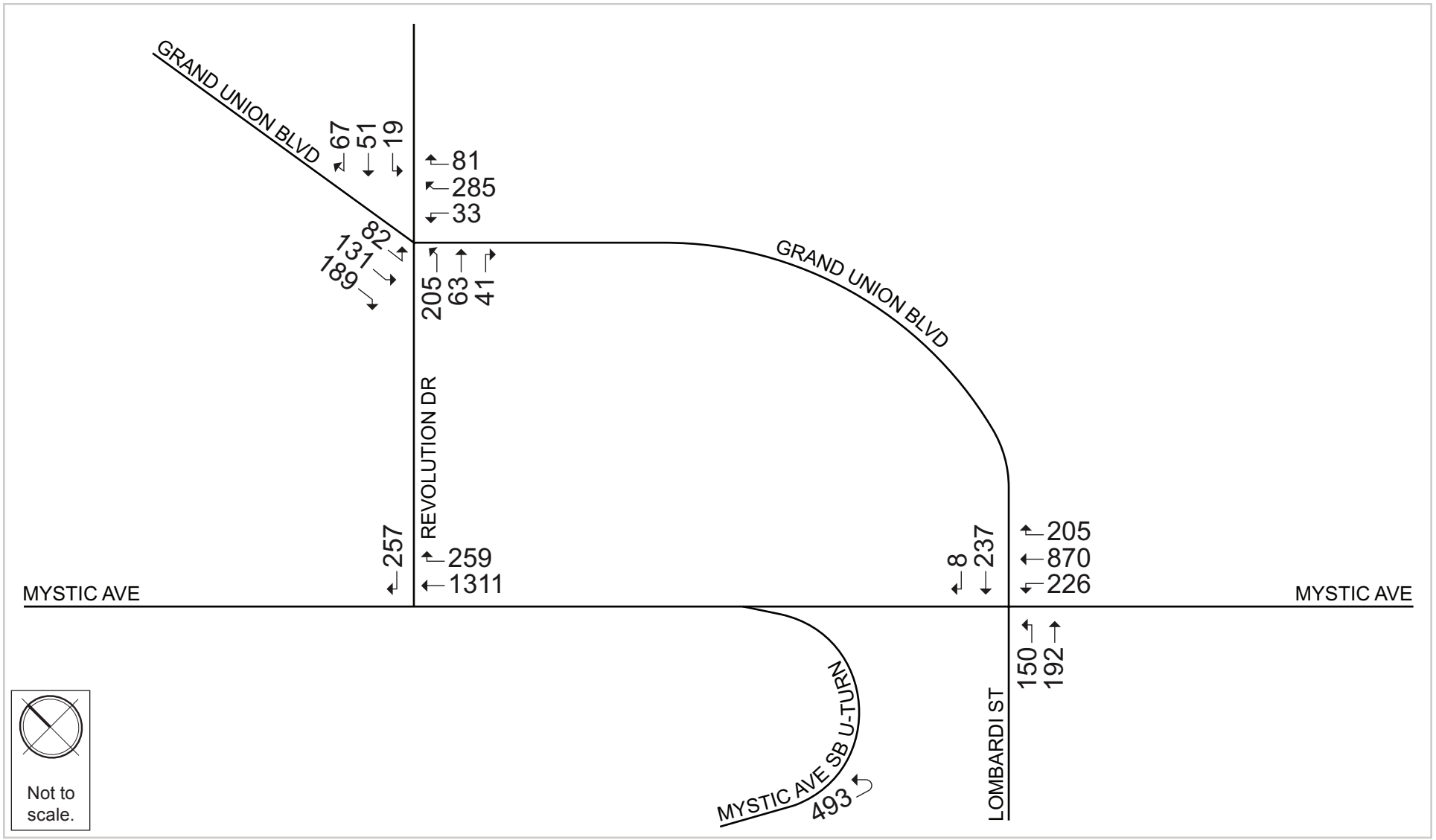


Figure 5. ***Existing (2022) Condition Vehicle Volumes, Saturday Midday Peak Hour***



Existing Public Transportation

The Project Site is adjacent to the MBTA #95 bus route on Mystic Avenue and is one-half mile (a 10-minute walk) from the MBTA Orange Line Station at Assembly Square and at Sullivan Square. The MBTA operates an additional nine 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 2**.

Figure 6 ***Public Transportation***

Table 2. Transit Service Summary

Service	Route Description	Weekday Span of Service	Peak Hour Headway (min.) **		Weekday Ridership*
			a.m.	p.m.	
Heavy Rail					
Orange Line	Oak Grove – Forest Hills	5:16 a.m.-12:30 a.m.	6-11	6-11	579,368
Bus					
Route 86	Sullivan Square – Reservoir Station	5:00 a.m.-1:11 a.m.	10	10-15	6,227
Route 89	Clarendon Hill or Davis Station – Sullivan Square	4:30 a.m.-1:47 a.m.	5-15	10-20	3,479
Route 90	Davis Square – Assembly Row	6:30 a.m.-10:26 p.m.	35	35	1,073
Route 91	Sullivan Square – Central Square, Cambridge	5:15 a.m.-1:25 p.m.	20-25	25	1,439
Route 92	Sullivan Square – Downtown (via Main Street)	5:00 a.m.-10:17 p.m.	20-25	25	1,056
Route 93	Sullivan Square – Downtown (via Bunker Hill Street)	4:30 a.m.-1:55 a.m.	5-25	5-25	4,324
Route 95	West Medford or Arlington Center – Sullivan Square	4:40 a.m.-1:43 a.m.	20-30	20-25	1,426
Route 101	Malden Center – Sullivan Square (via Winter Hill)	4:55 a.m.-12:52 a.m.	15	10-20	4,236
Route 104	Malden Center – Sullivan Square (via Ferry Street)	4:45 a.m.-1:12 a.m.	15-20	23	4,329
Route 105	Malden Center – Sullivan Square (via Newland Street Housing)	5:00 a.m.-7:52 p.m.	30-45	40-45	929
Route 109	Linden Square – Sullivan Square	4:35 a.m.-1:40 a.m.	17-20	22	3,129
CT2	Sullivan Square – Ruggles Station	5:55 a.m.-7:56 p.m.	20-25	40	1,951

** Ridership is from MBTA Open Data Portal (rail data is from Spring 2018 and bus data is from Fall 2019)*
*** Service frequency is based on MBTA August 28, 2022 schedules.*

TRANSIT STOPS

The closest bus stops for routes within one-half-mile (10-minute walk) from the Project are summarized in **Table 3**. Bus stop amenities (shelters, benches, etc.) are summarized in **Appendix B.**

Table 3. Transit Stop Summary

Stop Location/Route	Distance from Site		Routes	
	Feet	Walk-time (minutes)	ID	Direction
Assembly Station	2,420	9	Orange Line	NB, SB
Mystic Ave at Union St	180	1	95	OB
Broadway at Mt Vernon St	970	4	89, 90, 95, 101	IB
Broadway at Austin St	1,490	6	89, 90, 101	OB
Sullivan Square	2,150	9	86, 91, 92, 93, 104, 105, 109, CT2	IB
Sullivan Square	2,150	9	86, 91, 92, 93, 104, 105, 109, CT2	OB

NB – Northbound, SB – Southbound, OB – Outbound, IB – Inbound

Existing Pedestrian Conditions

The roadways within the study area include Mystic Avenue northbound, Grand Union Boulevard, Lombardi Street, and Revolution Drive. 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.

Mystic Avenue. Generally, four- to nine-foot sidewalks are provided on the east side of Mystic Avenue in the study area. The effective width (consistent usable width of the sidewalk, free of obstructions) is less in places with trees, sign poles, or hydrants. The sidewalks are in fair to good condition.

Grand Union Boulevard. The sidewalks on either side of the road are five- to eight-feet wide. The sidewalks are recently constructed and are in good condition.

Lombardi Street. The sidewalk on the south side of the road is six- to seven-feet wide. The sidewalk on the north side of the road is five- to seven-feet wide between Mystic Avenue northbound and

Mystic Avenue southbound. No sidewalk is provided between Mystic Avenue southbound and Broadway. The existing sidewalks are in fair condition.

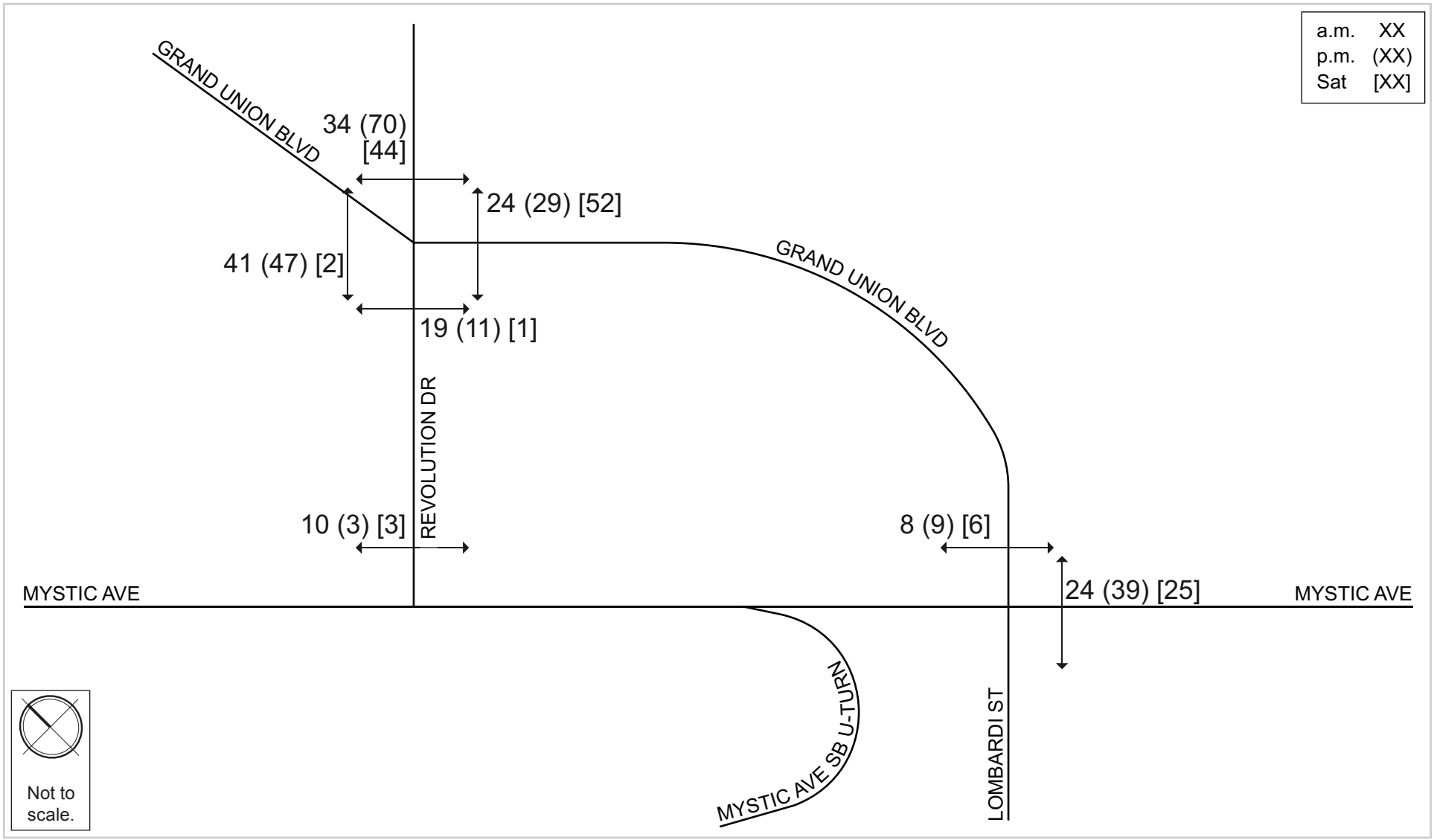
Revolution Drive. The sidewalks are generally six-feet wide on both sides of the street between Grand Union Boulevard and Mystic Avenue. Wider sidewalks (up to 12-feet) are provided on Revolution Drive between Grand Union Boulevard and Great River Road. The sidewalks are newly constructed and are in good condition.

Intersections. Crosswalks and ADA-compliant ramps are generally provided across all study area intersection approaches. Crosswalks are consistently 10-feet-wide. Crossing distances at the crosswalks vary from 25 feet to mid-block medians on Mystic Avenue crossing Revolution Drive and Grand Union Boulevard to 80-feet across Grand Union Boulevard at Revolution Road. Pedestrian crossing phases at Mystic Avenue/Grand Union Boulevard and Mystic Avenue/Revolution Drive are concurrent. The pedestrian crossing phase at Grand Union Boulevard/Revolution Drive is exclusive.

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 weekday a.m., p.m., and Saturday midday peak hour pedestrian volumes are shown in **Figure 7**.

Figure 7. ***Existing (2022) Condition Pedestrian Volumes, Weekday a.m., p.m., and Saturday Midday 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.

Mystic Avenue. No bicycle facilities are provided in the study area along Mystic Avenue.

Grand Union Boulevard. Four- to six-foot bicycle lanes are provided on both sides of Grand Union Boulevard within the study area. Bicycle lanes are separated from vehicles Revolution Drive and Mystic Avenue.

Lombardi Street. No bicycle facilities are provided on Lombardi Street.

Revolution Drive. Four- to six-foot bicycle lanes are provided in both directions in the study area between Great River Road and Grand Union Boulevard. The westbound bicycle lanes transition to sharrows at the intersection with Grand Union Boulevard. Four-foot shoulders are provided between Grand Union Boulevard and Mystic Avenue.

BICYCLE COUNT DATA

To determine the amount of bicycle activity within the study area, bicycle TMCs were also conducted as part of the TMC data at the study area intersections. The weekday a.m., p.m., and Saturday peak hour bicycle volumes are shown in **Figure 8**.

BICYCLE SHARE

Bluebikes is the area's largest bicycle sharing service, operating in Somerville, and 10 other Boston-region communities. The entire system consists of more than 4,000 shared bicycles at more than 400 stations. Somerville has 32 stations per the December 2022 Bluebikes station data inventory. Two stations are within a quarter mile (five-minute walk) of the Project Site and two more just outside of the quarter mile within the Assembly Square neighborhood (see **Figure 9**). Two additional future Bluebikes stations are proposed as part of ongoing development for 74 and 120 Middlesex Avenue which falls within the half mile radius (10-minute walk).

Figure 8. ***Existing (2022) Condition Bicycle Volumes, Weekday a.m., p.m., and Saturday Midday Peak Hours***

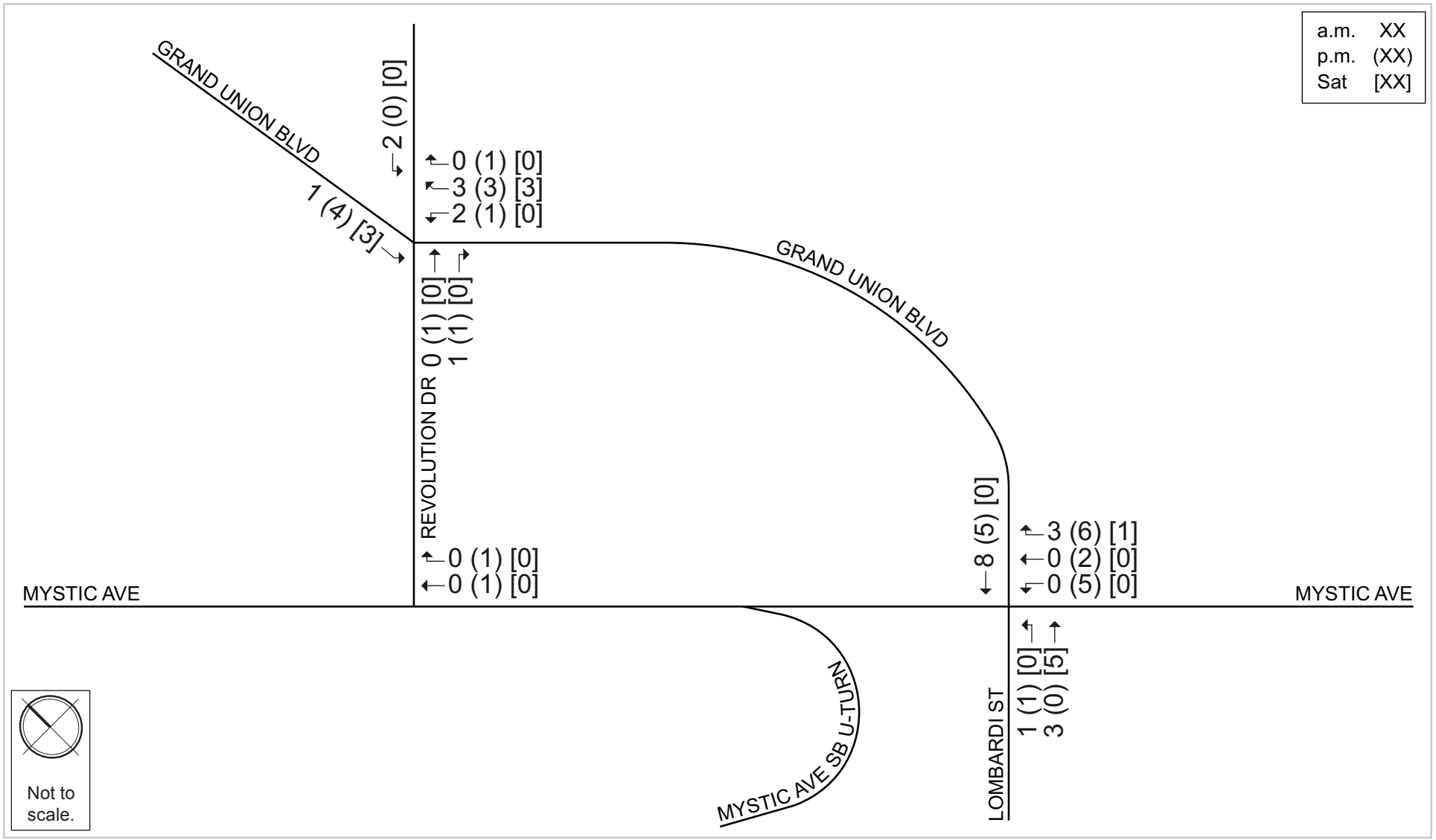


Figure 9. ***Existing Bicycle Facilities***

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 (2018-2020). Crash rates are determined based on the number of crashes per million vehicles entering an intersection. **Table 4** summarizes the crash data at the study area intersections. The detailed crash data and crash rate worksheets are provided in **Appendix C**.

Table 4. Motor Vehicle Crash Data Summary

Scenario		Mystic/ Grand Union	Mystic/ Revolution	Grand Union/ Revolution
TOTAL		**14**	**2**	**4**
Year	2018	5	1	0
	2019	2	1	2
	2020	7	0	2
Severity	Property Damage Only	12	2	4
	Non-fatal Injury	1	0	0
	Not Reported	1	0	0
Type	Angle	8	0	1
	Rear-End	2	1	2
	Sideswipe, same direction	3	0	1
	Head-on	1	1	0
Road Surface	Dry	12	2	4
	Wet	2	0	0
Light	Daylight	7	1	2
	Dusk	1	0	0
	Dark – Lighted Roadway	5	1	1
	Dark – Roadway not lighted	1	0	1
Weather	Clear	12	2	3
	Cloudy/Rain	2	0	1
Bicycle/Ped Crashes (2018-2020)		0	0	0
Crash Rate (2018 – 2020)[1,2]		**0.43**	**0.17**	**0.12**
District 4 Average Crash Rates[1]		**0.73**	**0.73**	**0.73**

Source: MassDOT, IMPACT crash data portal.
[1] Crashes per million entering vehicles (MEV) at the intersection.
[2] Crash rate for most recent, complete three-year period (2018-2020).

As shown in **Table 4**, the Mystic Avenue/Grand Union Boulevard intersection had the highest number of crashes in the study area (14). None of the crashes were fatal with only one reported to have caused an injury. 12 of the 14 crashes occurred on clear days with dry road conditions, with angle crashes as the leading collision type (8). The crash rate at this intersection during the 2018-2020 time period was 0.43 million entering vehicles (MEV), lower than the District 4 average crash rate of 0.73, but higher than the crash rates of the other two intersections.

Grand Union Boulevard/Revolution Drive and Mystic Avenue/Revolution Drive both had crash rates under 0.20 MEV. Combined, these intersections had six reported crashes with no fatalities or injuries, all of which occurred on dry road conditions. For all intersections, a roughly equal number of crashes occurred between daytime and nighttime.

Build and Future Conditions

The Build (2022) and Future (2027) analysis conditions consist of the following:

- **Build (2022) 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 (2027) Condition** represents the Build (2022) 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 (2022) Condition

The Project will consist of the redevelopment of the existing one-story auto repair shop into an approximately 50,550-sf lab/office building which includes approximately 1,241 sf for a ground-floor gallery, studio, and café. The Project includes a 2,400 civic space/courtyard. The Project does not propose to construct any new parking spaces and will utilize parking supply in the existing parking garages throughout the ASMD. The Project will provide 18 indoor bicycle parking spaces for employees and 26 outdoor bicycle parking spaces for visitors and short-term use.

PARKING

VEHICLE PARKING

No vehicle parking minimums and/or maximums are required for lab/office land uses in the ASMD zone within a transit area. However, the Project does not propose any parking on-site and any parking demands are expected to be accommodated through commercial parking facilities in the

area. Assembly Square currently has approximately 2,650 spaces in surface lots and 3,540 spaces in garages; an additional 1,800 parking spaces are planned in the area.[1]

BICYCLE PARKING

Although 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, there are no specific bicycle parking requirements for lab/office land uses in the ASMD zone. The Project will provide bicycle parking at the rates under Research and Development (R&D) and Retail land uses of the Somerville Zoning Ordinance at one per 20,000 sf short-term and one per 5,000 sf long-term.

The Project will provide 26 outdoor bicycle spaces (14 next to the loading zone and 12 along the sidewalk) [architect to confirm] to accommodate short-term parking. Those racks will be on-site adjacent to the loading zone. Short-term bicycle parking will be provided with standard hoop bicycle racks in proximity to the building's primary entrance.

The City of Somerville's *Bicycle Parking Guide* and the Association of Pedestrian and Bicycle Professionals' (APBP's) *Bicycle Parking Guidelines* will be referenced for guidance on bicycle parking design and layout. 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.

SITE ACCESS AND CIRCULATION

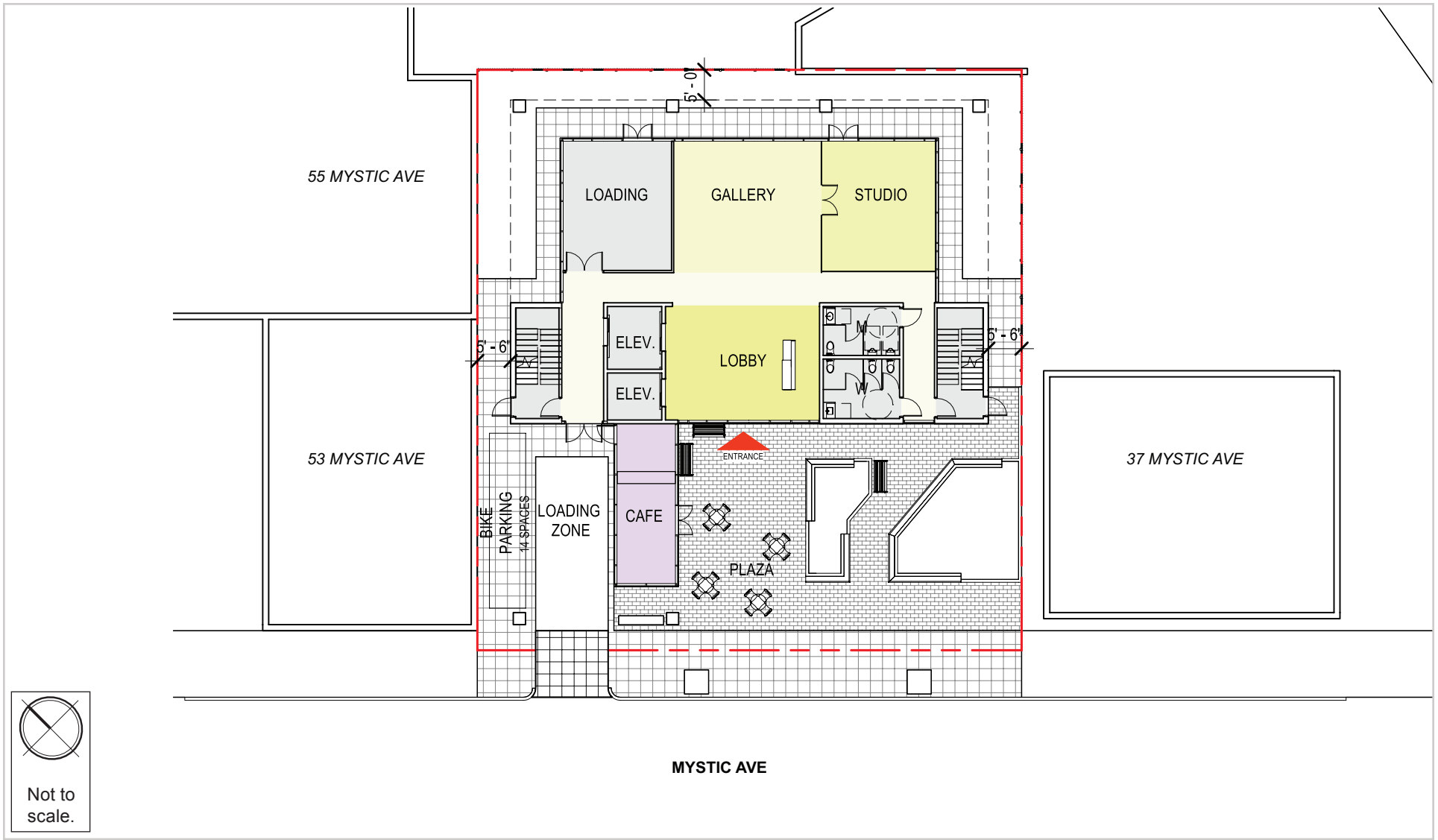
The Project Site currently has two curb cuts. The proposed building seeks to maintain one curb cut for vehicle service loading. The proposed building will have a plaza area facing Mystic Avenue with a single pedestrian access point into the building lobby. Opening out to the plaza will also be a cafe with outdoor dining in the plaza. The Conceptual Site Plan is shown in **Figure 10**.

LOADING/SERVICE

Loading and service activity will occur on-site within a designated loading zone measuring approximately 12-feet-wide and 30-feet-deep. Two building entrances will be provided at the back of the loading zone to allow access to the ground-floor retail and commercial building spaces. The loading zone will serve trash, recycling, and deliveries services. Mystic Avenue in front of the Site is one-way northwest-bound; therefore, access to the loading zone will always be entering from the southeast and backing into the space, while exiting will involve pulling forward and egressing northwest. The full truck trip generation calculation sheets are included in **Appendix D**.

[1] Assembly Square Neighborhood Plan Update, June 2022.

Figure 10. ***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* (11th Edition) [2] 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 to forecast the café/gallery space trips 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 5**.

[2] Trip Generation Manual, 11th Edition; Institute of Transportation Engineers; Washington, D.C.; 2021.

Table 5. ITE Trip Generation Rates

LUC	Time Period	ITE Average Rate	Directional Distribution	
			Entering	Exiting
Existing				
Research & Development (LUC 760)	Daily	11.08 per 1,000 sf	50%	50%
	Weekday, Peak Hour of Adjacent Street Traffic One Hour Between 7-9 a.m.	1.03 per 1,000 sf	82%	18%
	Weekday, Peak Hour of Adjacent Street Traffic One Hour Between 4-6 p.m.	0.98 per 1,000 sf	16%	84%
Retail (LUC 820)	Daily	37.01 per 1,000 sf	50%	50%
	Weekday, Peak Hour of Adjacent Street Traffic One Hour Between 7-9 a.m.	0.84 per 1,000 sf	62%	38%
	Weekday, Peak Hour of Adjacent Street Traffic One Hour Between 4-6 p.m.	3.40 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 adjusted to person trips using a vehicle occupancy rate (VOR). Based on Census data, the average occupancy rate for the Project census tract was determined to be 1.13 people per vehicle for home to work trips and the national average vehicle occupancy rate published by the Federal Highway Administration (FHWA)[3] of 1.82 people per vehicle was used for retail trips.

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 3501.06, published by the U.S. Census Bureau. The existing mode shares shown in **Table 6** 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.

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

Table 6. Existing Mode Shares

Mode Type	Mode Split[1]
Non-Vehicle Modes	
Public Transportation	45%
Walking	1%
Bicycling	0%
Work from Home	10%
Vehicle Modes[2]	
Personal Vehicle	39%
Taxi/TNC	5%

1. Based on U.S. Census 2020: ACS 5-Year Estimate for Means of Transportation to Work for Census Tract 3501.06 (Table B08006).
2. Census data has an auto rate of 44% with no taxi. A typical 5% rate for taxi/TNC was assumed to reflect potential growing use to/from the Assembly Square area.

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 7** summarizes the trips by transit, walk, bicycle, and automobile trips for the overall development. The vehicle person trips were then adjusted back using VOR as shown in **Table 8**. The full trip generation calculation sheets are included in **Appendix D**.

Table 7. Project-generated Person Trips by Mode

Time Period	Direction	Person Trips		
		Transit	Walk	Auto
Daily	In	160	3	157
	Out	160	3	157
	Total	**320**	**6**	**314**
a.m. Peak Hour	In	22	0	22
	Out	5	0	4
	Total	**27**	**0**	**26**
p.m. Peak Hour	In	6	0	6
	Out	23	0	22
	Total	**29**	**0**	**28**

Table 8. Project-generated Vehicle Trips

Time Period	Direction	Personal Vehicle	Taxi/TNC	Total
Daily	In	125	7	132
	Out	125	7	132
	Total	**250**	**14**	**264**
a.m. Peak Hour	In	19	1	20
	Out	4	0	4
	Total	**23**	**1**	**24**
p.m. Peak Hour	In	5	0	5
	Out	18	1	19
	Total	**23**	**1**	**24**

The existing Site is occupied by a vacant, one-story auto repair shop. 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.

VEHICLE TRIP DISTRIBUTION

The vehicle trip distribution identifies the various travel routes for vehicles entering and exiting the Project Site. The load point for any vehicle trips generated by the Project was assumed to be one of the nearby public garages within the Assembly neighborhood. Trip distribution patterns for the Project were based on Census journey to work (JTW) zip code data. This data specifies the percentage of trips between the census tract where the Project is located and other communities within the region. The vehicle trip distribution is shown in **Figure 11**.

Figure 11. ***Vehicle Trip Distribution***

TRANSIT TRIP DISTRIBUTION

Like vehicle trip distribution, transit trip distribution patterns for the Project were based on US Census data, JTW for different zip codes. While there were 12 bus routes that could be reached within a half mile radius of the Site, given the small generation of transit trips from this Project due to the size, only eight routes were selected to be used for the analysis as several of them serviced similar regions. The zip codes where people live were narrowed down to those that could be accessible by transit. A number were from areas that could be reached by the Orange Line, primarily in Boston to the south and Malden to the north. Given the small magnitude of Project trips, for a conservative estimate, the study decided to assign all Project transit trips to bus routes despite some that may use the Orange Line. The Orange Line has available capacity leaving and entering the Assembly Square Station during every hour of the day that exceeds the entire transit daily trip generation of the Project. Given the Orange Line's larger capacity for additional trips than bus routes, there is not expected to be a noticeable impact on rail service from the new Project transit trips. The distribution at the adjacent bus stops is shown in **Table 9**.

PROJECT-GENERATED TRANSIT TRIPS

The Project's expected daily transit trips, detailed in **Table 7**, were distributed based on the ITE Trip Generation Manual's Hourly Distribution charts for the closest LUCs, LUC 710 (Office) and LUC 820 (Shopping Center). The transit trips were then conservatively distributed to the eight MBTA bus routes adjacent to the Project using the distribution in **Table 9**. Project-generated transit trips are summarized in **Appendix E** with the transit capacity analysis summarized in the Transportation Impact Analysis section.

BUILD (2022) 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 (2022) Condition vehicular traffic volumes to develop the Build (2022) Condition vehicular traffic volumes. The Build (2022) weekday a.m., p.m., and Saturday midday peak hour traffic volumes are shown in **Figure 13** to **Figure 15**, respectively.

Table 9. Transit Trip Distribution

MBTA Route	MBTA Stop	Direction	Distribution	
			Alighting	Boarding
#86	Sullivan Square	Southbound/Inbound	-	20%
	Sullivan Square	Northbound/Outbound	20%	-
#89	Broadway at Mt Vernon St	Eastbound/Inbound	13%	0%
	Broadway at Austin St	Westbound/Outbound	0%	13%
#90	Broadway at Mt Vernon St	Eastbound/Inbound	7%	0
	Broadway at Austin St	Westbound/Outbound	0%	7%
#91	Sullivan Square	Southbound/Inbound	-	12%
	Sullivan Square	Northbound/Outbound	12%	-
#93	Sullivan Square	Eastbound/Inbound	-	8%
	Sullivan Square	Westbound/Outbound	8%	-
#95	Mystic Ave at Kensington St*	Eastbound/Inbound	10%	0%
	Mystic Ave at Union St	Westbound/Outbound	0%	10%
#101	Broadway at Mt Vernon St	Eastbound/Inbound	14%	0%
	Broadway at Austin St	Westbound/Outbound	0%	14%
#109	Sullivan Square	Southbound/Inbound	16%	-
	Sullivan Square	Northbound/Outbound	-	16%

**MBTA transit data used was fall 2019. This data didn't have the inbound stop at Broadway @ Mt Vernon Street for Route 95, which was added more recently; therefore, the stop prior at Kensington Street was used instead.*

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

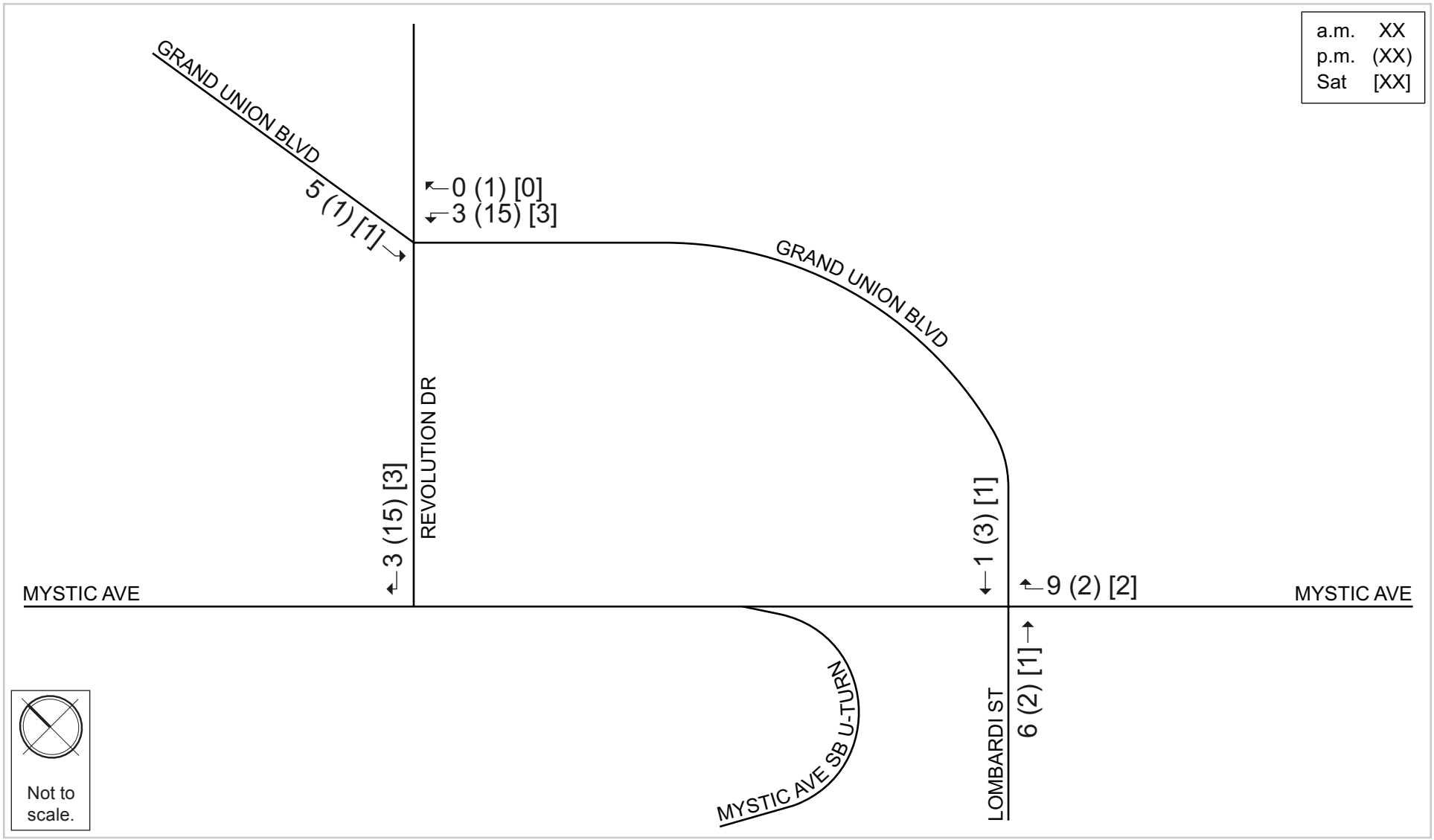


Figure 13. ***Build (2022) Condition Vehicle Volumes, Weekday a.m. Peak Hour***

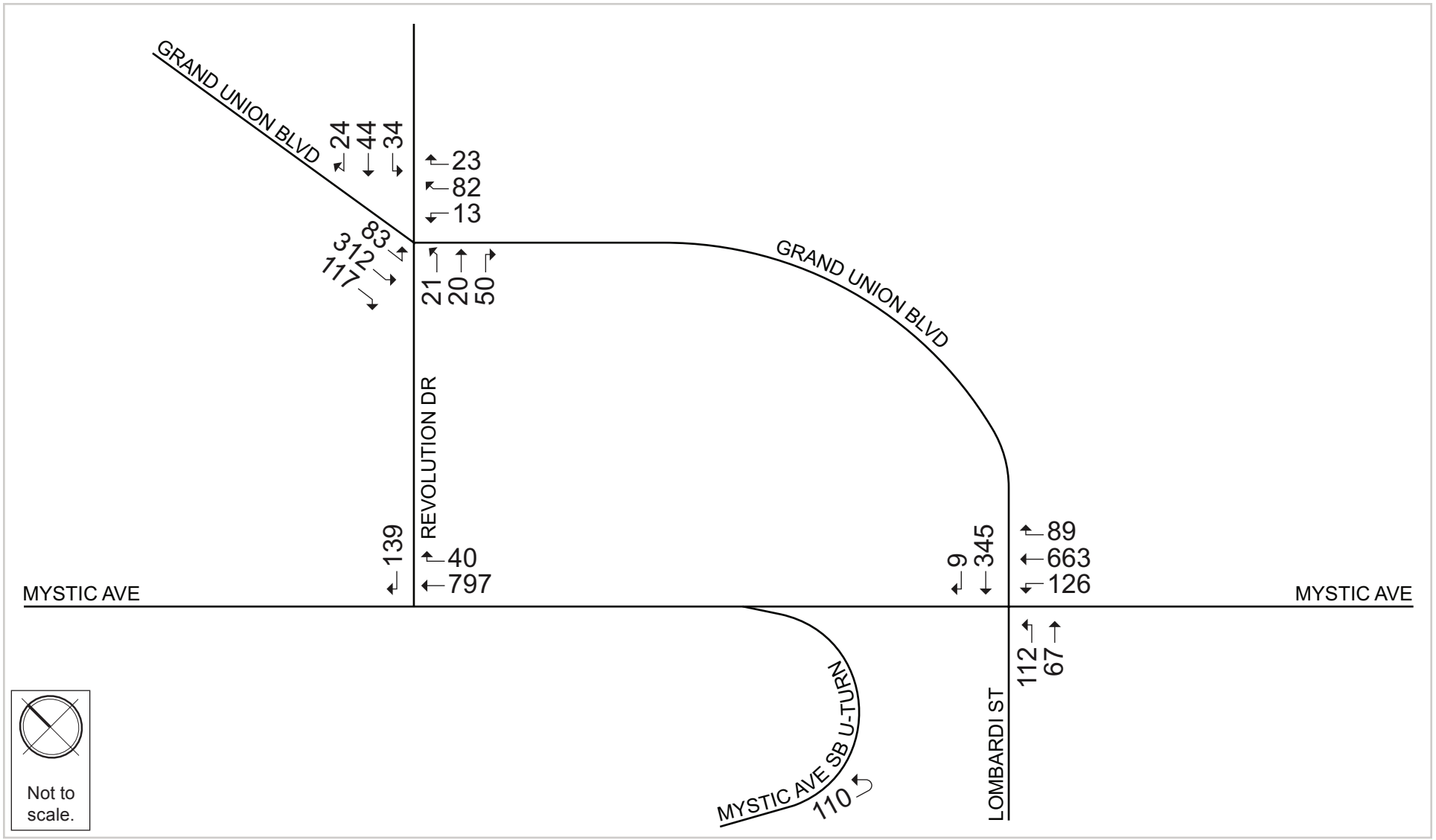


Figure 14. ***Build (2022) Condition Vehicle Volumes, Weekday p.m. Peak Hour***

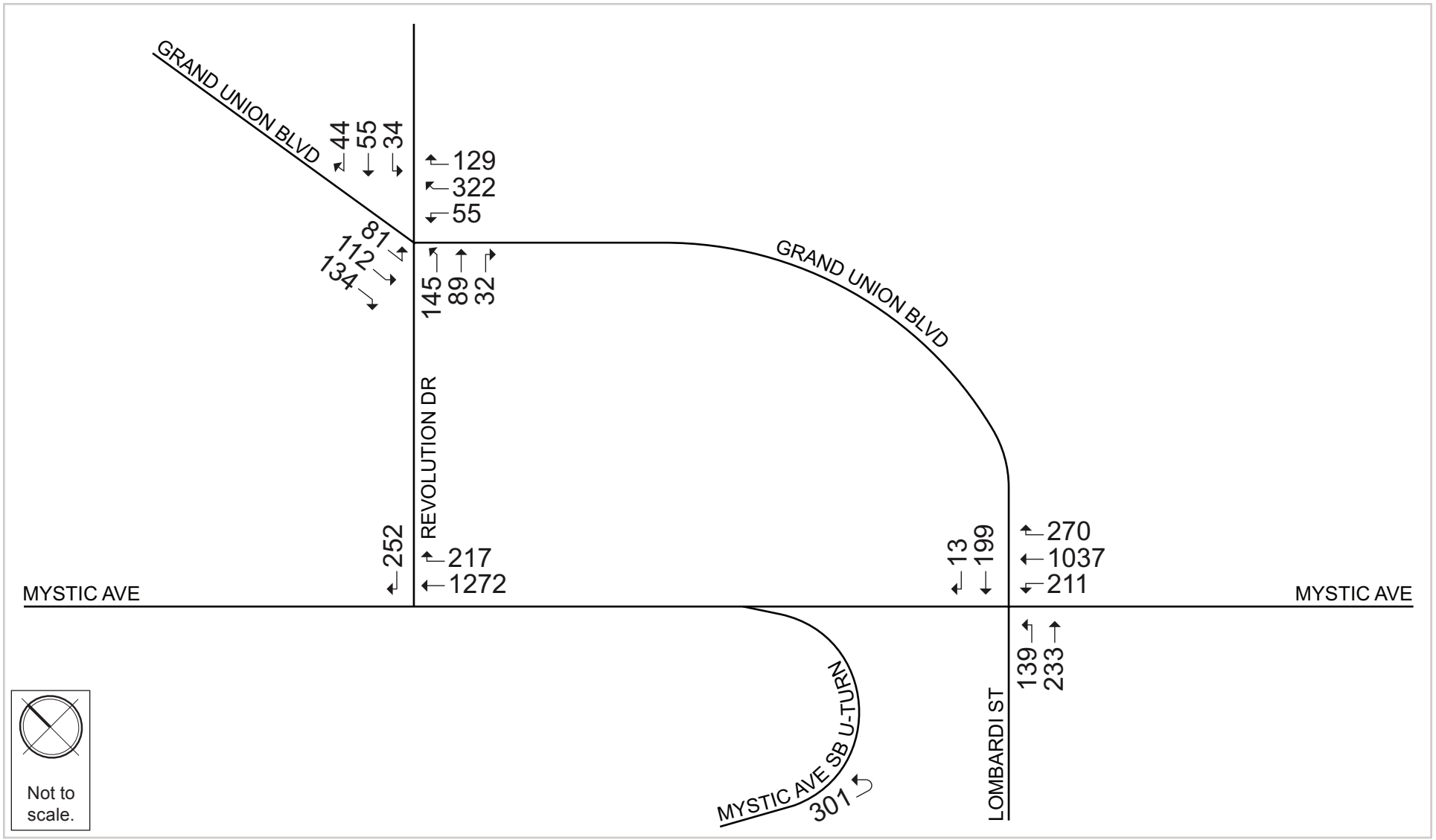
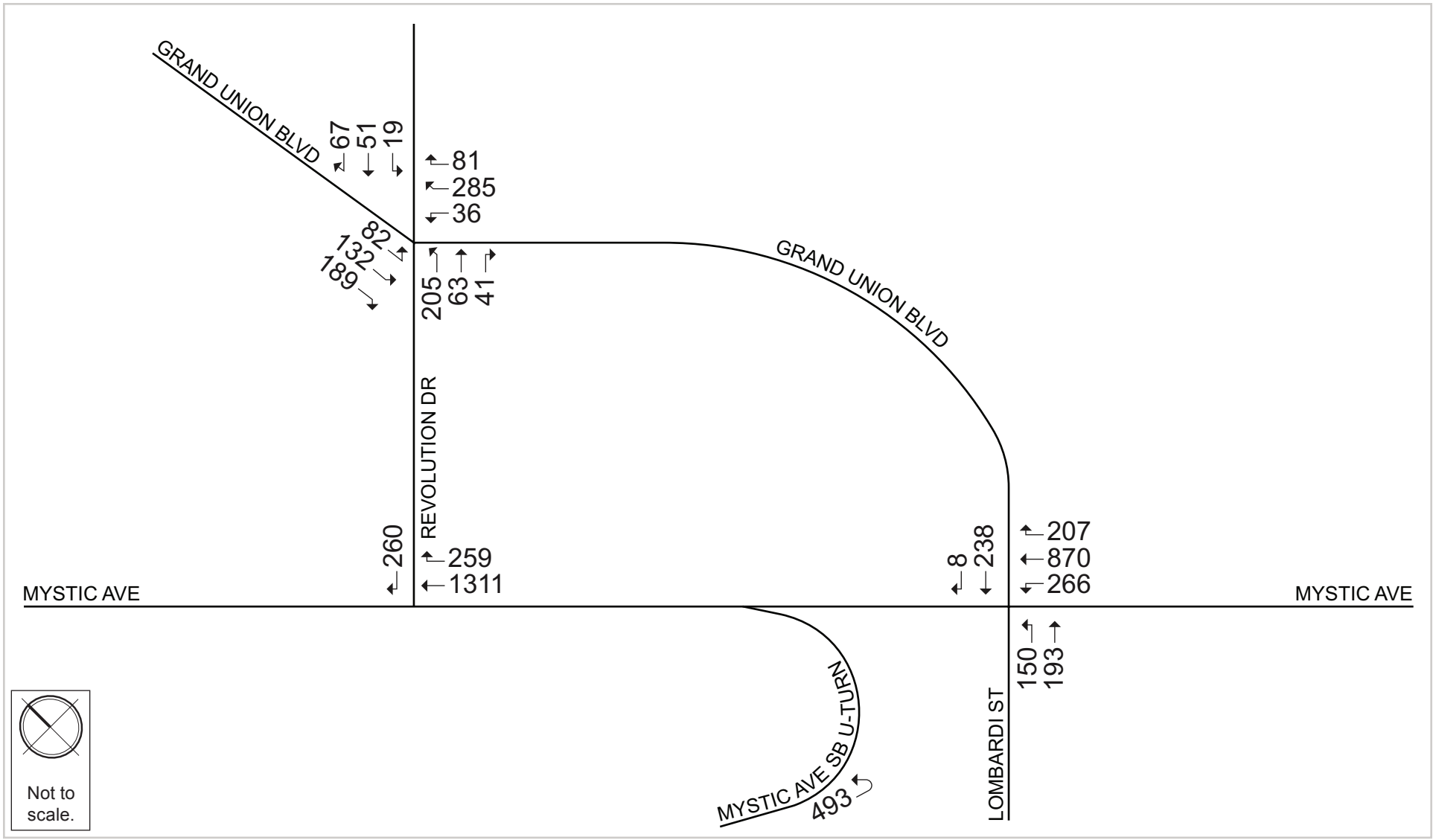


Figure 15. ***Build (2022) Condition Vehicle Volumes, Saturday Midday Peak Hour***



Future (2027) Condition

A future analysis was also completed for a build condition in the design year (2027). The Future (2027) Condition reflects a future scenario that incorporates anticipated trips associated with other planned specific developments and planned infrastructure improvements that will affect travel patterns throughout the study area. The Future (2027) Condition adds these additional trips to the Build (2022) 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 projects were identified:

- **350 Assembly Row.** Fully built out, Assembly Row will consist of approximately 1,843 residential units, 170 hotel rooms, 2,801,333 sf of office, 527,024 sf of retail, a 12-screen cinema, and a 50,000-sf health club. Full buildout of the project site is nearing completion with most phases already complete and occupied. The entirety of Assembly Row is expected to be opened and operational by 2024. The traffic expected to be generated by the phases that were not yet completed and operational at the time of October 2022 traffic counts are comprised within 350 Assembly Row which consists of approximately 365,000 sf of office/lab/R&D space and about 17,000 sf of ground floor retail.
- **120 Middlesex Avenue (Brickyard at Assembly).** This development proposes to demolish the two existing buildings on the site to construct a single 19-story building. The Project is proposing approximately 324,500 sf of lab/R&D space, 268,000 sf of office space, and 3,500 sf of ground floor retail. The Project will also have 629 below-grade parking spaces and 6,700 sf of open space.
- **5 Middlesex Avenue (XMBLY).** The project involves the redevelopment of approximately 9.38 acres of land within the Assembly Square District of Somerville. In total, approximately 1.45-million sf of mixed development (including the existing office building on the property) will be provided on the Project Site.
- **74 Middlesex Avenue (EDGE Assembly Square).** This development proposes to redevelop approximately 37,075 sf of land in the Assembly Square area with an approximately 525,000 sf mixed-use development spaces. The project consists of one building containing up to approximately 498,000 sf of office, R&D, and lab enabled uses (office/R&D/lab), approximately 27,000 sf of ground-floor retail and/or restaurant space, and below-grade structured parking spaces.

- **One Mystic Avenue.** This proposed project consists of the construction of 478,880 sf of mixed-use development with up to 639 residential units and 11,000 sf of retail/commercial space. The project also proposes to construct approximately 171 off-street vehicle parking spaces. This project is currently under Boston Planning and Development Agency (BPDA) review.
- **66 Cambridge Street.** This proposed project consists of the construction of 812,000 sf of mixed-use development across two buildings. The project will consist of primarily life sciences/office/R&D uses with a portion for ground floor retail. The project is proposing to construct an on-site below-grade parking garage. This project is currently under BPDA review.
- **40 Roland Street.** This project proposes to redevelop 6.15 acres of land around the Sullivan Square area. The project is proposing three mixed use buildings and an approximately 6,700 sf park. The project is proposing 122 residential units, approximately 31,600 sf of retail, 605,300 sf of lab/office space, and approximately 327 parking spaces. The buildings will range in height from six to nine stories. This project is currently under BPDA review.

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.

- **Maffa Way and Mystic Avenue over MBTA Orange Line and Commuter Rail**. This MassDOT bridge maintenance project proposes to reconstruct the structures along Maffa Way and Mystic Avenue that cross the MBTA rail tracks and introduce several bicycle and pedestrian improvements to build safer connections in the area. The proposed bicycle and pedestrian facilities are expected to consist of a 12' shared use sidewalk/bicycle lane on the northerly side of Mystic Avenue between Dorrance Street and Grand Union Boulevard. Facilities in this direction are not expected to modify the capacity of Mystic Avenue as it approaches Grand Union Boulevard. The approach will still consist of a left-turn lane two through lanes and one shared through/right turn lane. Improvements also propose a two-way 10-foot bicycle facility and an 11-foot sidewalk on the southern side of Maffa Way from Lombardi Street at the intersection with Broadway up to Beachman Street. Construction is anticipated to start in winter 2023 and complete by 2027.
- **Mystic Avenue Adaptive Signal Coordination.** This work is proposed as mitigation for the XMBLY development project. This project is proposing to install an adaptive traffic signal system at ten intersections in the area including the three of the intersections in the study area.

- **Rutherford Avenue/Sullivan Square Design**. This work is proposing several improvements around the Sullivan Square area and along Rutherford Avenue to improve circulation for transit, reduce vehicle congestion, and provide better bicycle connections. Construction is anticipated to start in 2023 and complete by 2027.

BUS NETWORK REDESIGN

One major improvement that is ongoing in the area is the MBTA bus network redesign. This work is a network-wide improvement; however, the following section summarizes some of the changes that are proposed that effect service near the Project. The overall goals of this redesign are to adapt to the changes that have occurred in the Boston metro area as places of employment, residences, and travel patterns shift. Improvements include re-routed bus lines, new lines, removed lines, and modified frequencies on select routes. Within the study area, some of the key bus improvements include the following:

- Bus #85 which originally went through Union Square to the northwest into Somerville and to the southeast into Cambridge will now serve Assembly Square at the northern limits and reach further south into Boston up to the Ruggles Street Busway.
- A new bus #113 will run between Bellingham Square in Chelsea and directly to Assembly Square passing through Sullivan Square.
- Several routes that crossed over the Alford Street bridge into Everett, Malden, and Revere will be served by a single route, T109, with a proposed frequency of 15 minutes. This route will also not terminate at Sullivan Square but continue through to Harvard Square. This route is not only a consolidation of routes to the northeast (104, 105, 109), but also of several southwest of the Project (86, 91, CT2).

While these changes were not factored into the transit analysis for this study, they show a positive direction for the Assembly neighborhood and access to transit for the Project as more bus routes will directly serve the area.

FUTURE (2027) CONDITION VEHICLE VOLUMES

The traffic volumes associated with the specific development projects listed previously were added to the Build (2022) Condition to develop the Future (2027) Condition vehicle volumes. The Future (2027) Condition weekday a.m., p.m., and Saturday midday peak hour traffic volumes are shown in **Figure 16** to **Figure 18**, respectively.

Figure 16. ***Future (2027) Condition Vehicle Volumes, Weekday a.m. Peak Hour***

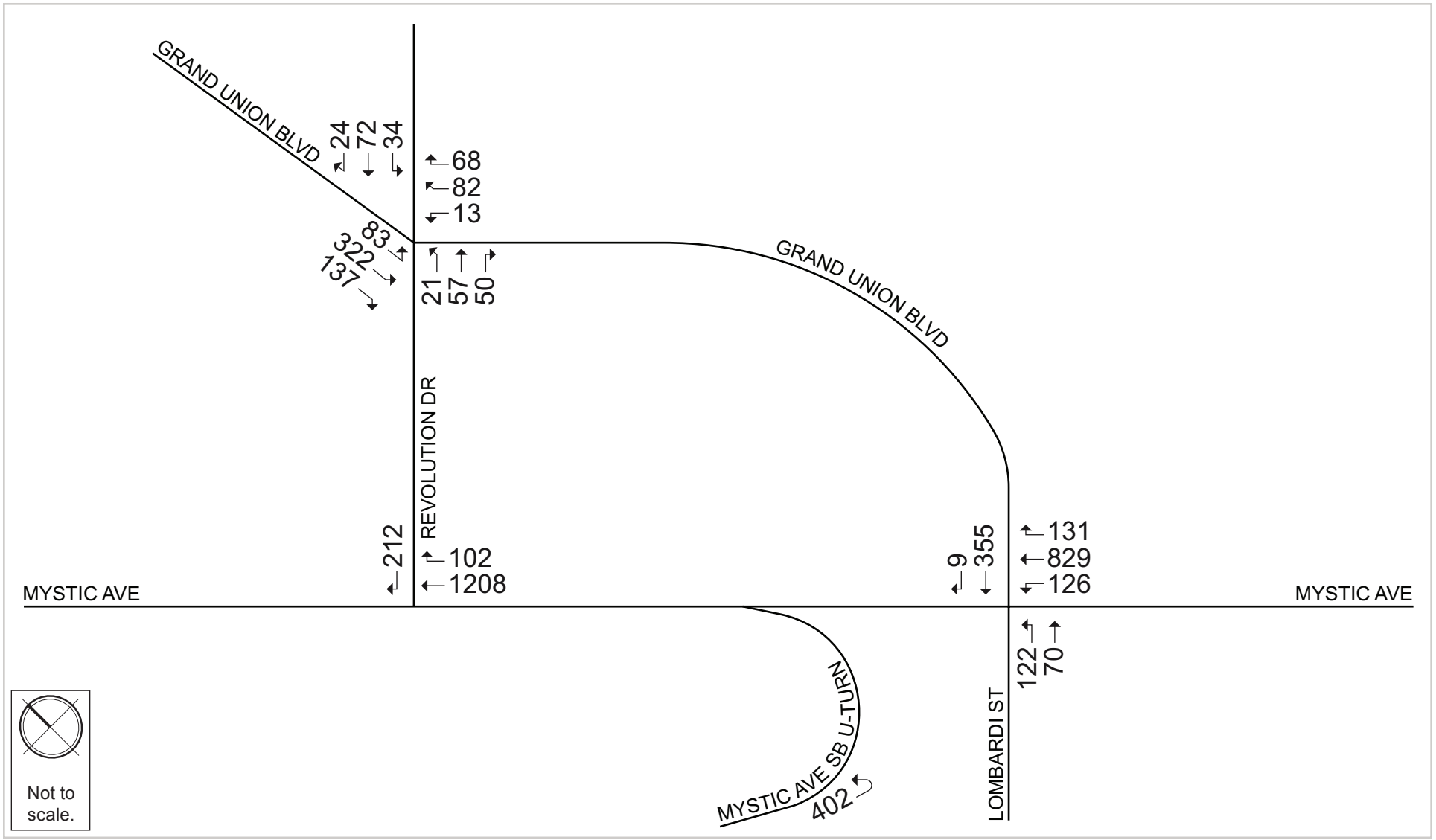


Figure 17. ***Future (2027) Condition Vehicle Volumes, Weekday p.m. Peak Hour***

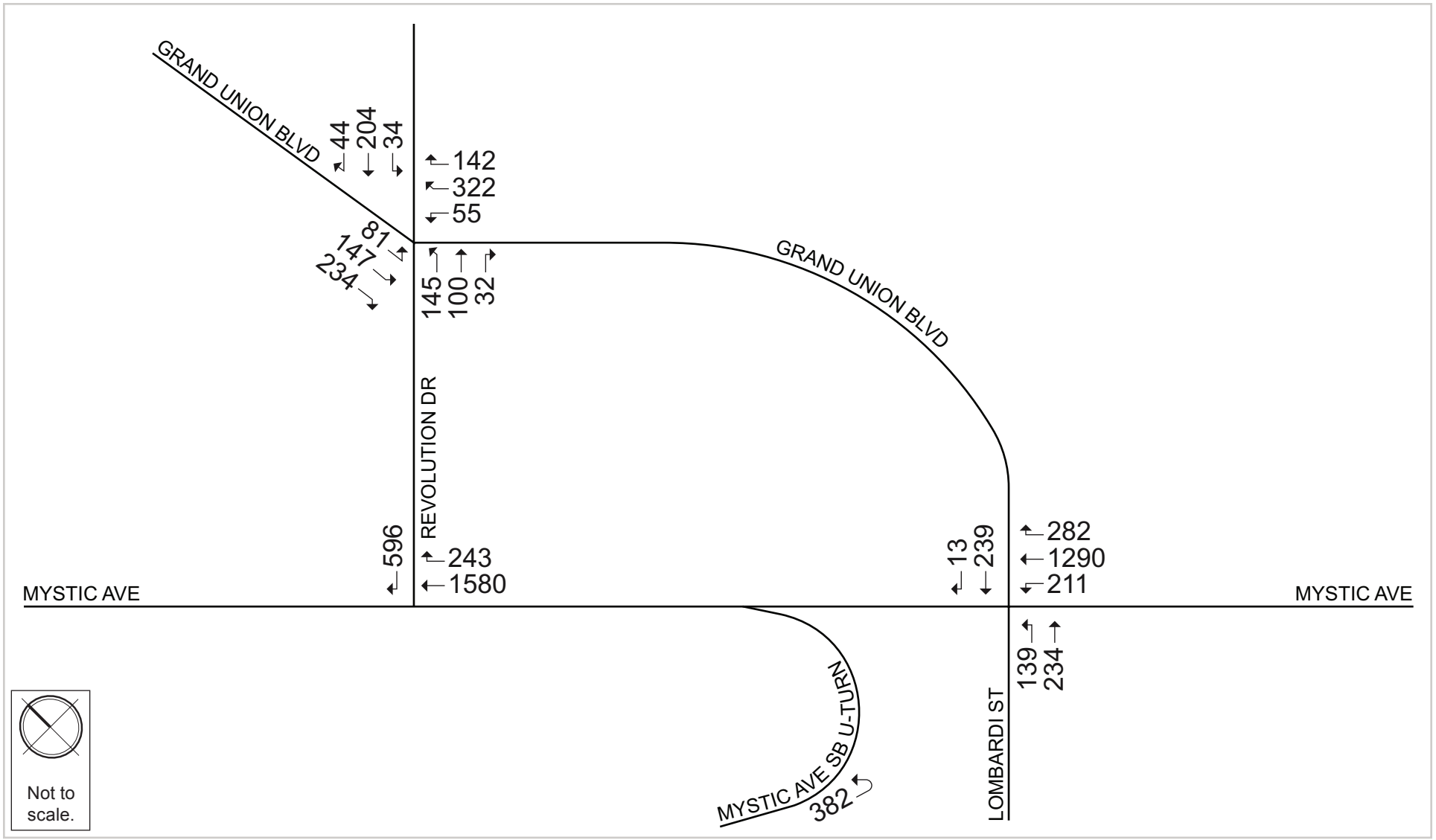
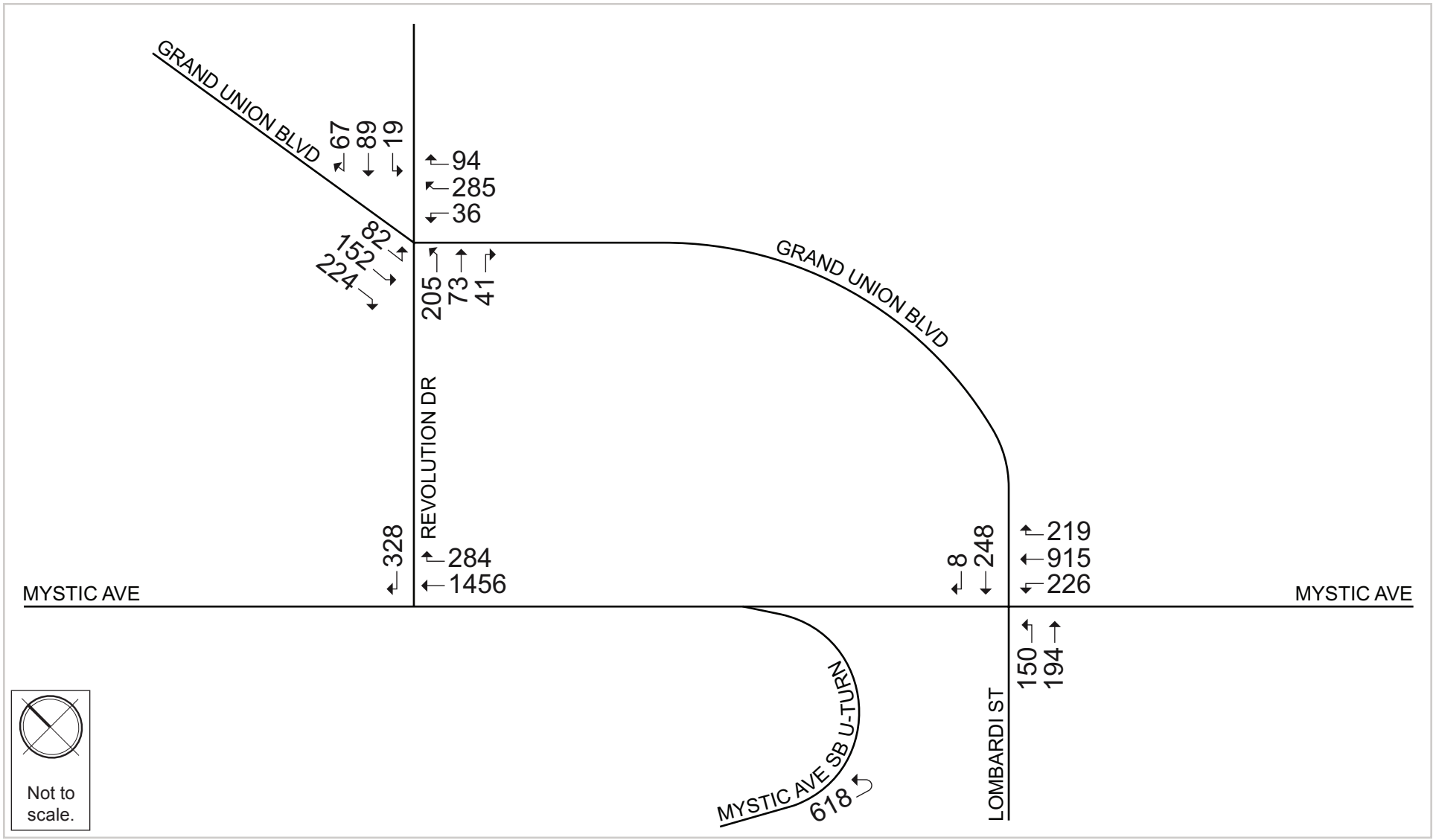


Figure 18. ***Future (2027) Condition Vehicle Volumes, Saturday Midday Peak hour***



Transportation Impact Analysis

This section discusses the analysis results for the 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.

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 eight bus routes adjacent to the Project, MBTA bus #86, #89, #90, #91, #93, #95, #101, and #109, 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. For example, a standard 40-foot MBTA bus that has 39 seats would have an off-peak planning capacity of 48 passengers per bus, and a peak planning capacity of 55 passengers per bus.

- **Existing Condition.** To determine the existing ridership, rail and bus data was collected from the MBTA Open Data Portal. Automated Passenger Counter (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.

- **Future Condition.** The Future (2027) Condition considers a ridership growth rate of 1% per year for a period of seven 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, all bus routes resulted in a V/C ratio of less than 1.00 for every half hour increment. While there may be select inbound morning buses on route 101 and 109 that show they have exceeded capacity, the half-hour V/C ratios during these times are not over 1.00 as there are other buses in the same period that do have additional capacity. Existing Condition passenger loads are included in **Appendix E**.

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 a significant impact on the existing transit services. Build Condition passenger loads are included in **Appendix E**.

FUTURE (2027) CONDITION CAPACITY ANALYSIS

In the Future (2027) Condition, with a background growth rate of 1% per year applied, only one half-hour period on Route 89 in the outbound direction exceeds a V/C ratio of 1.00 between 3:00-3:30 p.m. During this time the V/C ratio goes from 0.98 in the Build Condition to 1.03 in the Future Condition. There is just one bus during this half-hour interval; however, when looking at the hourly capacity, the V/C ratio for this route is not over 1.00 as there are two more buses between 3:00-4:00 p.m. that have plenty of passenger capacity. Passenger loads for the eight bus routes are illustrated graphicly in **Appendix E** along with half-hour passenger load comparison tables with V/C ratios for the Existing, Build, and Future Conditions.

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 10**.

Table 10. 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."

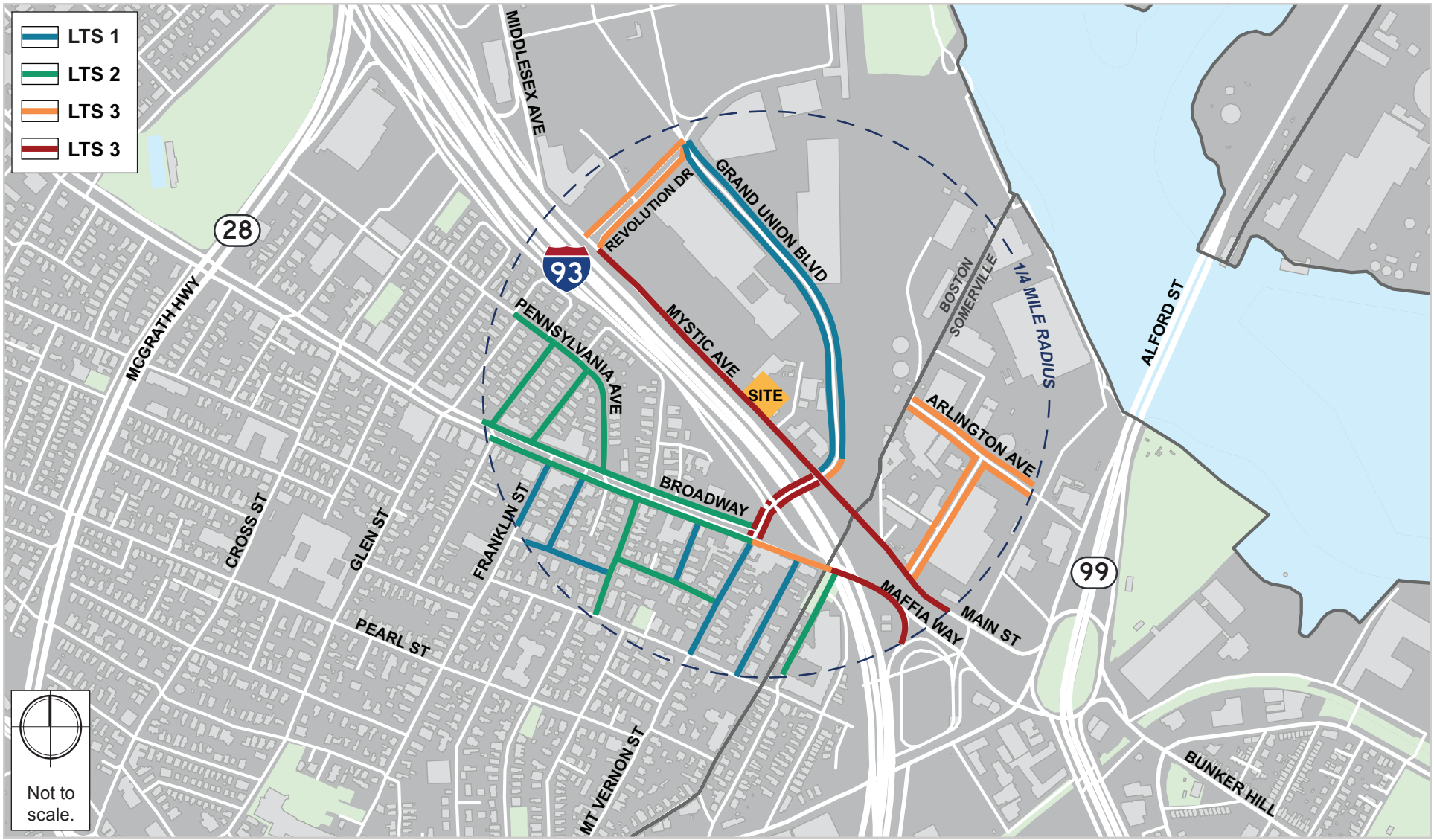
BLTS for a segment or unsignalized intersection is calculated by evaluating the characteristics in the tables found in **Appendix F** and selecting the lowest score (highest numerical value) to identify each segment or intersection with the classifications in **Table 10**.

EXISTING CONDITION

SEGMENT ANALYSIS

The study area was evaluated and is shown visually in **Figure 19**. Roadways in the immediate vicinity of the Project have a large range from the lowest stress facility (LTS 1) on Grand Union Boulevard to the highest stress facility (LTS 4) on Mystic Avenue. Grand Union Boulevard facility consists of a buffered bicycle lane which provides separation from vehicle traffic and is located on a facility with a default speed limit of 25 mph. As a complete contrast to that, Mystic Avenue is a high stress facility due to the 30-mph speed with vehicles likely traveling faster given that there are three to four travel lanes in certain sections. The lack of any bicycle facilities on this roadway means that cyclists must ride in the road unprotected from the high level of vehicle traffic. Further away from the Project are the residential streets south of Broadway where speed limits are either the default 25 mph or select streets are posted at 20 mph to establish slow zones. While most of these one-way streets have mixed bicycle/vehicle conditions, the speeds and low volume residential conditions rank them as lower stress roads with LTS 1 and LTS 2.

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



INTERSECTION ANALYSIS

The three signalized study area intersections would all be classified as higher stress locations as nearly all the locations don't have bicycle accommodations on any or all the approaches or through the intersections. Some even require cyclists to mix with right-turn lanes. The bicycle analysis at the three signalized study area intersections is summarized as follows:

- ***Mystic Avenue/Grand Union Boulevard/Lombardi Street.*** The only approach with dedicated bicycle accommodations is the Grand Union Boulevard approach; however, the facilities don't continue anywhere through the intersection to guide cyclists. The size of this intersection is likely overwhelming as cyclists could easily be pushed off to the sides and go unseen in a driver's blind spots when vehicles are turning right or left since cyclists don't have any dedicated waiting areas. The overall level of stress at this intersection is expected to be LTS 4.
- ***Mystic Avenue/Revolution Drive.*** This intersection has one right-turn only lane on the Mystic Avenue approach and two right-turn lanes on the Revolution Drive approach. These lanes are longer than 150 feet so, without any visual cues or dedicated areas for cyclists to be in, potential vehicle/cyclist conflicts are high ultimately making the stress of riding through this intersection high. The level of traffic stress is expected to be LTS 4.
- ***Grand Union Boulevard/Revolution Drive.*** At this intersection there are painted shared use markings on the Revolution Drive southbound approach which establishes some expectation that cyclists will be in the lane. However, the right-turn lane is about 150 feet so there is still a high chance that vehicles changing lanes to turn right might not see cyclists in their blind spot without further separation. There is one lane of green painted guidelines through the intersection for the Grand Union Boulevard northbound approach and further guidelines markings as this lane continue in front of the Revolution Drive right-turn lane. This adds some visibility; however, the rest of the intersection is still missing accommodations. The level of traffic stress is expected to be LTS 3.

BUILD (2022) CONDITION

The Build (2022) Condition includes any added bicycle trips due to the Project and on-site improvements to bicycle facilities. The Project is not proposing any on-site improvements; therefore, the BLTS is forecasted to remain as in the Existing (2022) Condition.

FUTURE (2027) CONDITION

The Future (2027) Condition includes the improvements proposed in the Build (2022) Condition as well as changes to bicycle facilities proposed by other developments. Several improvements that are proposed along Mystic Avenue east of Gran Union Boulevard by the MassDOT bridge project are

expected to increase the BLTS to 1 or 2 along that facility. No additional improvements have been identified at this time by other projects.

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 G** and selecting the lowest score (highest numerical value).

EXISTING (2022) CONDITION

SEGMENT ANALYSIS

The study area segments were evaluated using the tables in **Appendix G** and are shown visually in **Figure 20**. The sidewalks in the study area along the east side of Grand Union Boulevard and both sides of Broadway are ranked at the lower level of stress, PLTS 1, as they have the largest buffers from vehicle traffic with landscaped areas, street trees, bicycle lanes, and even parking lanes. The wide widths combined with the separation helps make these facilities comfortable to walk on. The facilities on the rest of the network are mostly at PLTS 2 and 3 as the actual widths are mostly less than six feet. These narrow sidewalks also have additional obstructions which makes the effective continuous walking width even smaller.

INTERSECTION ANALYSIS

The pedestrian delay for signalized crossings is based on the Transportation Research Board's (TRB's) 2000 *Highway Capacity Manual* (HCM) methodology and is presented in **Table 11**.

Figure 20. ***Pedestrian Level of Traffic Stress - Existing***

Table 11. 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. Ped. Delay (sec)	p.m. Ped. Delay (sec)	Sat Ped Delay (sec)
Mystic Ave/ Grand Union Blvd/ Lombardi St	Northeast	70	20	18	Concurrent	31.3	30.4	34.7
	Southeast	52	15	14	Concurrent	29.6	39.6	20.0
Mystic Avenue/ Revolution	Northeast	76	22	18	Concurrent	11.3	9.2	11.8
Grand Union Boulevard/ Revolution Drive	Northeast	54	16	18	Exclusive	41.4	36.5	51.8
	Southwest	64	19	18	Exclusive	41.4	36.5	51.8
	Northwest	62	18	18	Exclusive	41.4	36.5	51.8
	Southeast	77	22	18	Exclusive	41.4	36.5	51.8

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 11**, the "flashing don't walk" (FDW) time at the Grand Union Boulevard/Revolution Drive intersection meets the *Manual on Uniform Traffic Control Devices* (MUTCD) requirement for two of the crosswalks, but not for all of them which go during an exclusive phase. This exclusive pedestrian phase does have an additional four seconds of clearance time for the all-red which would put one more crosswalk into compliance. Similarly, the other two intersections have FDW times that are only slightly below the requirement (one to two seconds); however, when counting some of the yellow/red clearance time towards the minimum, these crossings become compliant.

Consistent with HCM methodologies, calculations for the delay 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. In general, pedestrian delay is lower at the concurrent pedestrian crossings than at the exclusive one. The intersection of Mystic Avenue/Revolution Drive shows the lowest delay since the phase when the pedestrian crossing goes is concurrent with the major roadway and therefore gets more walk time within the cycle.

BUILD (2022) CONDITION

The Build (2022) 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

Mystic Avenue are proposed at a width of 12.5 feet. The PLTS on the sidewalk in front of the Site along Mystic Avenue is expected to change from PLTS 3 to PLTS 1 as there will be at least eight (8) feet of effective unobstructed width and there will be a buffer of 4.5 feet from the travel lanes.

FUTURE (2027) CONDITION

The Future (2027) Condition includes the improvements proposed in the Build (2022) 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 adaptive signal retiming proposed for several intersections along Mystic Avenue. This may include increased clearance times for pedestrian crossings to make sure all crossing points meet MUTCD guidelines. This may improve safety but based on the methodology for PLTS would not be expected to change anything for traffic stress. No further proposed mitigation is known of along Mystic Avenue at this time.

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 12** 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 12. 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 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 5% 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 13 to **Table 15** present, respectively, the a.m., p.m., and Saturday midday peak hour capacity analysis for the study area intersections under each analysis condition: Existing (2022) Condition, Build (2022) Condition, and Future (2027) Condition. The detailed analysis reports are provided in **Appendix H**.

Table 13. Capacity Analysis Summary, Weekday a.m. Peak Hour

Intersection/Movement	Existing (2022) Condition					Build (2022) Condition					Future (2027) Condition				
	LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)	
				50th %	95th %				50th %	95th %				50th %	95th %
Signalized Intersections															
Mystic Avenue/Grand Union Boulevard/Lombardi Street	**C**	**24.9**				**C**	**24.9**				**C**	**25.9**			
Lombardi St EB left	D	41.0	0.63	81	110	D	41.0	0.63	81	110	D	41.5	0.66	89	117
Lombardi St EB thru I thru	B	14.5	0.05	13	15	B	14.6	0.06	14	17	B	13.6	0.06	14	18
Grand Union Blvd WB thru/right	D	38.7	0.76	171	234	D	38.9	0.77	172	237	D	37.0	0.75	171	261
Mystic Ave NB left	B	15.3	0.18	42	99	B	15.3	0.18	42	99	B	16.5	0.19	46	95
Mystic Ave NB thru I thru I thru/right	B	16.8	0.36	96	162	B	16.8	0.37	97	163	B	19.4	0.49	142	206
Mystic Ave SB U-turn left I left	C	26.3	0.16	30	43	C	26.3	0.16	30	43	C	29.0	0.54	117	146
Mystic Avenue/Revolution Drive	**A**	**7.2**				**A**	**7.4**				**A**	**8.0**			
Revolution Dr WB right I right	D	39.4	0.06	0	0	D	39.4	0.06	0	0	D	39.0	0.51	40	65
Mystic Ave NB thru I thru I thru	A	1.3	0.22	17	17	A	1.3	0.22	17	18	A	2.4	0.35	19	93
Mystic Ave NB right	A	0.3	0.03	1	m0	A	0.3	0.03	1	m0	A	0.7	0.07	0	0
Grand Union Blvd/Revolution Dr	**C**	**23.2**				**C**	**23.6**				**C**	**26.4**			
Revolution Dr EB left	D	45.0	0.30	16	37	D	45.0	0.30	16	37	D	41.1	0.20	15	37
Revolution Dr EB thru/right	D	44.7	0.26	15	50	D	44.7	0.26	15	50	D	44.2	0.55	59	104
Revolution Dr WB left	D	46.3	0.48	27	53	D	46.3	0.48	27	53	D	41.9	0.32	26	53
Revolution Dr WB thru	D	45.6	0.44	34	62	D	45.6	0.44	34	62	D	42.6	0.46	54	91
Revolution Dr WB right	A	0	0.02	0	0	A	0	0.02	0	0	A	0	0.02	0	0
Grand Union Blvd NB left	B	16.9	0.03	4	12	B	16.3	0.04	5	14	B	18.5	0.05	6	14
Grand Union Blvd NB thru/right	B	19.5	0.19	52	83	B	19.5	0.19	52	83	C	23.0	0.28	70	99
Grand Union Blvd SB left	B	12.2	0.15	29	58	B	12.8	0.15	29	58	B	15.1	0.18	32	59
Grand Union Blvd SB thru	B	19.5	0.42	126	250	B	20.6	0.43	129	255	C	24.0	0.49	147	267
Grand Union Blvd SB right	B	15.4	0.09	0	26	B	16.1	0.09	0	26	B	18.5	0.10	0	37

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 14. Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection/Movement	Existing (2022) Condition					Build (2022) Condition					Future (2027) Condition				
	LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)	
				50th %	95th %				50th %	95th %				50th %	95th %
Signalized Intersections															
Mystic Avenue/Grand Union Boulevard/Lombardi Street	**C**	**23.4**				**C**	**23.5**				**C**	**25.5**			
Lombardi St EB left	D	46.5	0.67	103	146	D	46.5	0.67	103	146	D	46.5	0.67	103	146
Lombardi St EB thru I thru	C	21.4	0.21	59	71	C	21.4	0.21	60	72	C	20.6	0.20	60	72
Grand Union Blvd WB thru/right	D	37.6	0.48	80	154	D	37.8	0.49	82	156	D	39.0	0.59	110	195
Mystic Ave NB left	B	13.6	0.26	80	147	B	13.6	0.26	80	147	B	14.3	0.26	80	147
Mystic Ave NB thru I thru I thru/right	B	16.3	0.53	206	286	B	16.3	0.53	206	287	B	19.1	0.66	276	377
Mystic Ave SB U-turn left I left	D	38.9	0.60	110	136	D	38.9	0.60	110	136	D	41.1	0.71	144	173
Mystic Avenue/Revolution Drive	**A**	**9.6**				**A**	**10.1**				**C**	**20.2**			
Revolution Dr WB right I right	D	45.5	0.65	70	73	D	45.6	0.67	78	79	C	27.5	0.73	242	255
Mystic Ave NB thru I thru I thru	A	2.2	0.35	46	87	A	2.4	0.35	47	97	B	19.5	0.67	363	100
Mystic Ave NB right	A	0.5	0.15	0	0	A	0.4	0.15	0	0	A	0.7	0.17	0	0
Grand Union Blvd/Revolution Dr	**D**	**43.4**				**D**	**43.6**				**F**	**111.7**			
Revolution Dr EB left	E	72.1	0.90	104	#176	E	72.1	0.90	104	#176	F	645.1	2.27	~173	#256
Revolution Dr EB thru/right	C	35.0	0.49	72	111	C	35.0	0.49	72	111	C	34.8	0.52	81	122
Revolution Dr WB left	C	33.5	0.27	27	43	C	33.5	0.27	27	43	C	33.0	0.27	27	43
Revolution Dr WB thru	C	33.5	0.29	43	59	C	33.5	0.29	43	59	F	90.5	1.01	~186	#191
Revolution Dr WB right	A	0	0.04	0	0	A	0	0.04	0	0	A	0	0.04	0	0
Grand Union Blvd NB left	C	21.3	0.10	15	36	C	20.4	0.13	21	46	C	20.9	0.14	21	46
Grand Union Blvd NB thru/right	E	60.5	0.94	~275	#478	E	60.8	0.95	~277	#479	E	74.7	1.00	~302	#497
Grand Union Blvd SB left	C	23.7	0.51	33	63	C	24.4	0.51	33	63	C	25.2	0.51	33	63
Grand Union Blvd SB thru	C	25.7	0.24	57	105	C	27.2	0.26	58	108	C	29.1	0.35	77	137
Grand Union Blvd SB right	C	24.1	0.10	0	36	C	25.2	0.10	0	36	C	26.7	0.17	0	58

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 15. Capacity Analysis Summary, Saturday Midday Peak Hour

Intersection/Movement	Existing (2022) Condition					Build (2022) Condition					Future (2027) Condition				
	LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)	
				50th %	95th %				50th %	95th %				50th %	95th %
Signalized Intersections															
Mystic Avenue/Grand Union Boulevard/Lombardi Street	**C**	**23.7**				**C**	**23.7**				**C**	**25.0**			
Lombardi St EB left	D	39.0	0.61	87	144	D	39.0	0.61	87	144	D	43.0	0.68	87	#184
Lombardi St EB thru I thru	B	13.6	0.12	33	37	B	13.6	0.12	33	37	B	11.7	0.12	30	37
Grand Union Blvd WB thru/right	C	27.7	0.40	79	128	C	27.7	0.40	79	128	C	24.1	0.36	79	118
Mystic Ave NB left	B	18.9	0.34	93	194	B	18.9	0.34	93	194	C	21.6	0.38	102	194
Mystic Ave NB thru I thru I thru/right	C	20.9	0.56	172	276	C	20.9	0.56	173	277	C	24.6	0.65	202	#321
Mystic Ave SB U-turn left I left	C	29.7	0.58	138	161	C	29.7	0.58	138	161	C	27.1	0.61	169	182
Mystic Avenue/Revolution Drive	**A**	**8.3**				**A**	**8.4**				**A**	**9.7**			
Revolution Dr WB right I right	D	39.3	0.55	47	87	D	39.3	0.56	48	89	D	40.0	0.68	81	125
Mystic Ave NB thru I thru I thru	A	3.4	0.34	31	185	A	3.4	0.34	31	185	A	4.3	0.39	31	158
Mystic Ave NB right	A	0.9	0.17	0	0	A	0.9	0.17	0	0	A	0.9	0.18	0	0
Grand Union Blvd/Revolution Dr	**C**	**29.2**				**C**	**29.3**				**C**	**29.8**			
Revolution Dr EB left	D	40.7	0.73	140	#321	D	41.1	0.73	140	#321	D	44.6	0.76	143	#332
Revolution Dr EB thru/right	C	29.8	0.24	50	116	C	29.9	0.24	50	116	C	30.6	0.27	59	130
Revolution Dr WB left	C	28.6	0.07	10	35	C	28.6	0.07	10	35	C	29.1	0.07	10	36
Revolution Dr WB thru	C	29.0	0.13	29	72	C	29.0	0.13	29	72	C	30.3	0.23	52	114
Revolution Dr WB right	A	0.1	0.05	0	0	A	0.1	0.05	0	0	A	0.1	0.05	0	0
Grand Union Blvd NB left	C	22.1	0.08	14	32	C	22.1	0.09	15	34	C	21.8	0.09	15	34
Grand Union Blvd NB thru/right	D	35.5	0.74	231	351	D	35.5	0.74	231	351	D	35.8	0.75	241	364
Grand Union Blvd SB left	C	21.0	0.36	37	66	C	21.1	0.35	37	66	C	21.0	0.36	37	65
Grand Union Blvd SB thru	C	24.2	0.24	75	122	C	24.3	0.25	76	123	C	24.3	0.29	88	140
Grand Union Blvd SB right	C	23.2	0.14	0	45	C	23.3	0.14	0	45	C	23.3	0.16	0	47

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

As a reminder, the following conditions were analyzed:

- **Existing (2022) Condition** represents the existing traffic volumes collected in October 2022, without the project.
- **Build (2022) 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 (2027) Condition** represents the Build (2022) 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 (2022) Condition with Mitigation is not provided. The Project is not expected to cause impacts to vehicle traffic that require roadway improvements for vehicle operations.

EXISTING (2022) CONDITION CAPACITY ANALYSIS

As shown under the Existing (2022) Condition, study area intersections and approaches operate at acceptable LOS (LOS D or better) during the weekday a.m. and p.m. peak hours except the following.

GRAND UNION BOULEVARD/REVOLUTION DRIVE

- The Revolution Drive eastbound left turn lane operates at LOS E during the p.m. peak hour.
- The Grand Union Boulevard northbound shared through/right-turn lane operates at LOS E during the p.m. peak hour.

Queue diagrams for the Existing (2022) Condition are provided in **Appendix I**.

BUILD (2022) CONDITION CAPACITY ANALYSIS

As shown under the Build (2022) Condition, no significant changes in LOS occur at any of the study area intersections or approaches during any of the peak hours. This shows that the Project is expected to have minimal impact on the surrounding roadway network.

FUTURE (2027) CONDITION CAPACITY ANALYSIS

As shown under the Future (2027) Condition, all the study area intersections and approaches continue to operate at the same levels of service as in the Build (2022) Condition except the following:

GRAND UNION BOULEVARD/REVOLUTION DRIVE

- The overall intersection changes from LOS D to LOS F during the p.m. peak hour.
- The Revolution Drive eastbound left turn lane changes from LOS E to LOS F during the p.m. peak hour.

- The Revolution Drive westbound through lane changes from LOS C to LOS F during the p.m. peak hour.

The changes in delay and LOS at this intersection, most notably on the eastbound left-turn, are due to the increase in background project trips from 350 Assembly Row. These trips are expected to come from exiting vehicles from the future final building of the Assembly Row development. The Assembly Row Project proposes signal phasing updates and retiming which are anticipated to mitigate this impact.

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 37.5% by 2030 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 along Mystic Avenue. Improvements will include improved street lighting where necessary, planting of street trees, and addition of street furniture such as bike racks and 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 excellent 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:

- ***Bicycle parking.*** The Project will provide 14 outdoor bicycle racks for eight bicycles and 18 covered, secure bicycle parking spaces in a bicycle room located within the building.
- ***Bluebikes station.*** The Project will sponsor an off-street location for a City-owned 19-dock, 11-bike Bluebikes bike share station.
- ***Transit Screens.*** On-site real time transit information displays will be located within the lobby and facing the exterior of the building so that it is visible to pedestrians on the north side Mystic Avenue sidewalk.

Transportation Demand Management

The Proponent will provide the following TDM program:

- Join the Assembly Square Transportation Management Association (Assembly Connect);
- 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 approved by the City and provides detailed TDM and mobility commitments 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

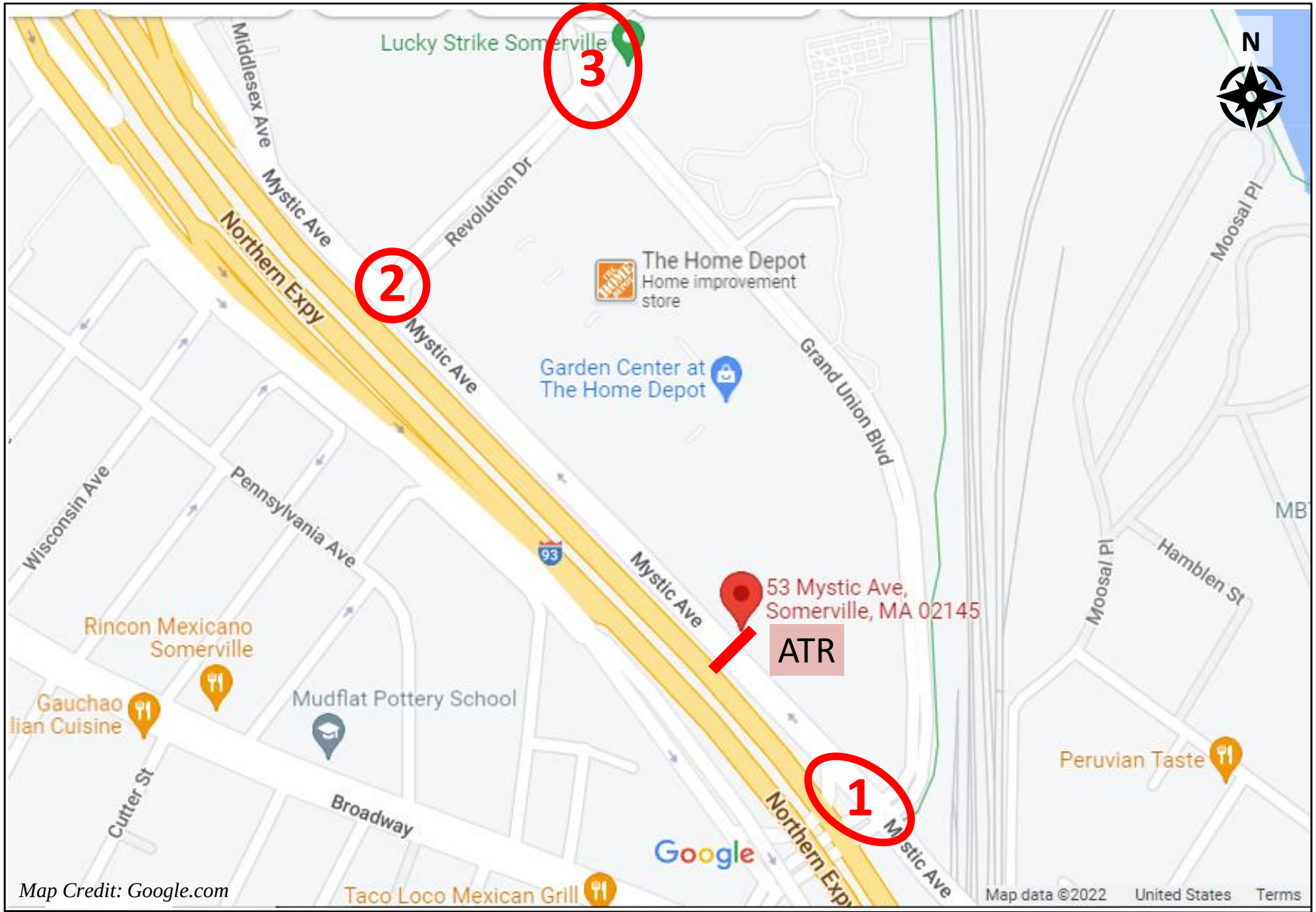
The proposed 45 Mystic Avenue redevelopment is expected to have negligible impacts to the transportation network; the Project will rely on the vibrant transit-oriented design of the Assembly Row neighborhood and will not construct any on-site parking. Pedestrian accommodations will be improved in the area by the removal of a curb cut on Mystic Avenue, addition of ground floor retail, and construction of a new civic space on the site, as well as provision of wider sidewalks and added street trees. The Project has committed to implementing robust TDM elements to promote non-vehicular travel. The Project is committed to supporting sustainable transportation choices of transit, walking, and cycling in this vibrant Assembly Row neighborhood.

HOWARD STEIN HUDSON

Engineers + Planners

Appendix A

Traffic Count Data



Map Credit: Google.com

BOSTON TRAFFIC DATA	BTD ID: 1076_2_HSH	Somerville, MA	# of TMC's: 03	Client: Howard Stein Hudson
		Collected on October 25 to 26, 2022	# of ATR's: 01	Contact: Vannesa Methoxha, EIT-Transportation

Client:	Vannesa Methoxha, EIT
Project #:	1076_2_HSH
BTD #:	Location 1
Location:	Somerville, MA
Street 1:	Mystic Avenue
Street 2:	Grand Union Blvd/Lombardi Street
Count Date:	10/25/2022
Day of Week:	Tuesday
Weather:	Cloudy & Rain, 50°F

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

PASSENGER CARS & HEAVY VEHICLES COMBINED

	Lombardi Street Northbound				Grand Union Boulevard Southbound				Mystic Avenue EB U-Turn Lane Eastbound				Mystic Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
6:00 AM	0	16	10	0	0	0	24	0	26	0	0	0	0	14	76	11
6:15 AM	0	16	5	0	0	0	19	2	29	0	0	0	0	28	100	9
6:30 AM	0	16	9	0	0	0	28	1	27	0	0	0	0	20	102	7
6:45 AM	0	17	11	0	0	0	35	3	40	0	0	0	0	33	133	18
7:00 AM	0	28	9	0	0	0	54	3	31	0	0	0	0	44	130	20
7:15 AM	0	29	12	0	0	0	62	1	21	0	0	0	0	36	148	23
7:30 AM	0	22	7	0	0	0	75	0	30	0	0	0	0	39	165	13
7:45 AM	0	26	14	0	0	0	80	1	21	0	0	0	0	34	158	22
8:00 AM	0	29	17	0	0	0	98	3	33	0	0	0	0	19	176	24
8:15 AM	0	35	23	0	0	0	91	5	26	0	0	0	0	34	164	21
8:30 AM	0	28	14	0	0	0	104	8	24	0	0	0	0	45	127	28
8:45 AM	0	27	21	0	0	0	73	5	25	0	0	0	0	34	139	30
9:00 AM	0	21	5	0	0	0	70	3	26	0	0	0	0	36	113	24
9:15 AM	0	24	25	0	0	0	65	5	37	0	0	0	0	40	140	20
9:30 AM	0	23	15	0	0	0	60	12	36	0	0	0	0	32	130	24
9:45 AM	0	18	10	0	0	0	59	12	39	0	0	0	0	27	139	33
10:00 AM	0	15	18	0	0	0	45	12	42	0	0	0	0	32	133	25
10:15 AM	0	19	13	0	0	0	38	3	42	0	0	0	0	26	145	29
10:30 AM	0	26	22	0	0	0	45	11	64	0	0	0	0	35	141	21
10:45 AM	1	22	16	0	0	0	48	5	59	0	0	0	0	38	152	37
11:00 AM	0	27	18	0	0	0	36	17	61	0	0	0	0	25	186	26
11:15 AM	0	19	23	0	0	0	53	7	71	0	0	0	0	32	182	41
11:30 AM	0	24	22	0	0	0	58	12	62	0	0	0	0	34	170	31
11:45 AM	0	17	23	0	0	0	54	9	64	0	0	0	0	20	203	48
12:00 PM	0	34	27	0	0	0	56	11	58	0	0	0	0	44	180	50
12:15 PM	0	21	25	0	0	0	60	11	65	0	0	0	0	32	205	45
12:30 PM	0	23	20	0	0	0	53	11	56	0	0	0	0	37	191	26
12:45 PM	0	22	20	0	0	0	58	9	53	0	0	0	0	27	178	42
1:00 PM	0	34	25	0	0	0	59	9	57	0	0	0	0	28	209	39
1:15 PM	0	30	20	0	0	0	56	16	62	0	0	0	0	31	221	38
1:30 PM	0	34	18	0	0	0	54	6	57	0	0	0	0	30	231	42
1:45 PM	0	47	18	0	0	0	58	16	65	0	0	0	0	26	262	27
2:00 PM	0	38	29	0	0	0	46	10	56	0	0	0	0	36	258	37
2:15 PM	0	40	27	0	0	0	59	5	53	0	0	0	0	32	283	31
2:30 PM	0	48	37	0	0	0	46	4	63	0	0	0	0	34	236	29
2:45 PM	0	47	39	0	0	0	51	1	54	0	0	0	0	43	262	35
3:00 PM	0	38	36	0	0	0	47	1	42	0	0	0	0	31	279	50
3:15 PM	1	37	41	0	0	0	40	0	55	0	0	0	0	52	312	55
3:30 PM	0	45	44	0	0	0	46	1	54	0	0	0	0	46	236	44
3:45 PM	0	40	56	0	0	0	40	2	54	0	0	0	0	35	262	58
4:00 PM	0	37	26	0	0	0	42	1	39	0	0	0	0	40	263	46
4:15 PM	0	25	48	0	0	0	42	1	56	0	0	0	0	41	321	48
4:30 PM	0	32	38	0	0	0	49	1	57	0	0	0	0	50	249	71
4:45 PM	0	28	63	0	0	0	50	4	67	0	0	0	0	52	256	66
5:00 PM	0	44	68	0	0	0	52	3	83	0	0	0	0	62	244	57
5:15 PM	0	35	62	0	0	0	45	5	94	0	0	0	0	47	288	74
5:30 PM	0	48	69	0	0	0	37	1	74	0	0	0	0	31	218	43
5:45 PM	0	32	64	0	0	0	48	4	74	0	0	0	0	43	259	45
6:00 PM	1	42	52	0	0	0	30	1	75	0	0	0	0	41	166	33
6:15 PM	0	27	47	0	0	0	47	3	85	0	0	0	0	35	164	48
6:30 PM	0	36	51	0	0	0	46	2	69	0	0	0	0	33	176	55
6:45 PM	2	33	47	0	0	0	38	4	93	0	0	0	0	31	166	57
7:00 PM	0	26	32	0	0	0	41	3	84	0	0	0	0	33	147	30
7:15 PM	0	25	21	0	0	0	38	1	54	0	0	0	0	30	120	24
7:30 PM	0	29	22	0	0	0	37	2	39	0	0	0	0	27	124	37
7:45 PM	0	24	15	0	0	0	42	1	37	0	0	0	0	30	150	32

AM PEAK HOUR 7:45 AM to 8:45 AM	Lombardi Street Northbound				Grand Union Boulevard Southbound				Mystic Avenue EB U-Turn Lane Eastbound				Mystic Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**118**	**68**	**0**	**0**	**0**	**373**	**17**	**104**	**0**	**0**	**0**	**0**	**132**	**625**	**95**
PHF		**0.80**				**0.87**				**0.79**				**0.97**		
HV %	**0.0%**	**0.0%**	**2.9%**	**0.0%**	**0.0%**	**0.0%**	**2.9%**	**11.8%**	**3.8%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**12.9%**	**13.1%**	**3.2%**

MID PEAK HOUR 1:00 PM to 2:00 PM	Lombardi Street Northbound				Grand Union Boulevard Southbound				Mystic Avenue EB U-Turn Lane Eastbound				Mystic Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**145**	**81**	**0**	**0**	**0**	**227**	**47**	**241**	**0**	**0**	**0**	**0**	**115**	**923**	**146**
PHF		**0.87**				**0.93**				**0.93**				**0.94**		
HV %	**0.0%**	**0.0%**	**2.5%**	**0.0%**	**0.0%**	**0.0%**	**4.0%**	**6.4%**	**2.5%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**9.6%**	**7.7%**	**8.2%**

PM PEAK HOUR 4:30 PM to 5:30 PM	Lombardi Street Northbound				Grand Union Boulevard Southbound				Mystic Avenue EB U-Turn Lane Eastbound				Mystic Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**139**	**231**	**0**	**0**	**0**	**196**	**13**	**301**	**0**	**0**	**0**	**0**	**211**	**1037**	**268**
PHF		**0.83**				**0.95**				**0.80**				**0.93**		
HV %	**0.0%**	**1.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.5%**	**0.0%**	**1.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**6.6%**	**2.5%**	**3.4%**

Client:	Vannesa Methoxha, EIT
Project #:	1076_2_HSH
BTD #:	Location 1
Location:	Somerville, MA
Street 1:	Mystic Avenue
Street 2:	Grand Union Blvd/Lombardi Street
Count Date:	10/25/2022
Day of Week:	Tuesday
Weather:	Cloudy & Rain, 50°F

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HEAVY VEHICLES

	Lombardi Street Northbound				Grand Union Boulevard Southbound				Mystic Avenue EB U-Turn Lane Eastbound				Mystic Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
6:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	3	17	2
6:15 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	6	20	1
6:30 AM	0	0	0	0	0	0	3	0	0	0	0	0	0	3	28	0
6:45 AM	0	0	1	0	0	0	3	0	1	0	0	0	0	11	31	3
7:00 AM	0	0	0	0	0	0	1	1	1	0	0	0	0	5	18	3
7:15 AM	0	0	2	0	0	0	2	0	0	0	0	0	0	3	15	1
7:30 AM	0	0	0	0	0	0	2	0	1	0	0	0	0	4	23	1
7:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	7	24	1
8:00 AM	0	0	0	0	0	0	3	0	1	0	0	0	0	3	21	1
8:15 AM	0	0	2	0	0	0	4	0	2	0	0	0	0	2	23	1
8:30 AM	0	0	0	0	0	0	3	2	1	0	0	0	0	5	14	0
8:45 AM	0	1	1	0	0	0	2	2	0	0	0	0	0	2	27	2
9:00 AM	0	0	0	0	0	0	4	1	1	0	0	0	0	4	11	2
9:15 AM	0	0	0	0	0	0	2	0	1	0	0	0	0	5	18	2
9:30 AM	0	1	0	0	0	0	7	0	1	0	0	0	0	4	12	3
9:45 AM	0	2	1	0	0	0	2	3	1	0	0	0	0	1	17	4
10:00 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	3	23	1
10:15 AM	0	1	0	0	0	0	3	0	3	0	0	0	0	3	21	3
10:30 AM	0	0	3	0	0	0	4	0	4	0	0	0	0	5	15	0
10:45 AM	0	1	0	0	0	0	2	0	8	0	0	0	0	4	20	1
11:00 AM	0	0	0	0	0	0	1	3	3	0	0	0	0	4	22	0
11:15 AM	0	0	2	0	0	0	1	0	3	0	0	0	0	7	31	2
11:30 AM	0	1	0	0	0	0	3	2	2	0	0	0	0	4	25	1
11:45 AM	0	0	0	0	0	0	0	0	6	0	0	0	0	6	28	3
12:00 PM	0	2	1	0	0	0	3	1	3	0	0	0	0	4	23	2
12:15 PM	0	2	1	0	0	0	4	1	3	0	0	0	0	2	18	4
12:30 PM	0	1	1	0	0	0	1	0	2	0	0	0	0	2	26	2
12:45 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	7	29	1
1:00 PM	0	0	1	0	0	0	6	1	2	0	0	0	0	0	26	4
1:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	4	11	3
1:30 PM	0	0	0	0	0	0	1	1	3	0	0	0	0	2	16	5
1:45 PM	0	0	1	0	0	0	2	1	0	0	0	0	0	5	18	0
2:00 PM	0	3	1	0	0	0	5	0	2	0	0	0	0	2	26	0
2:15 PM	0	0	2	0	0	0	4	1	2	0	0	0	0	4	17	2
2:30 PM	0	1	1	0	0	0	1	1	1	0	0	0	0	5	17	1
2:45 PM	0	2	1	0	0	0	2	0	1	0	0	0	0	4	24	0
3:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	2	12	0
3:15 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	3	18	1
3:30 PM	0	0	0	0	0	0	2	0	1	0	0	0	0	4	9	0
3:45 PM	0	0	1	0	0	0	0	0	3	0	0	0	0	2	8	2
4:00 PM	0	2	0	0	0	0	3	0	3	0	0	0	0	6	7	1
4:15 PM	0	0	0	0	0	0	1	0	1	0	0	0	0	2	11	3
4:30 PM	0	0	0	0	0	0	1	0	1	0	0	0	0	4	9	0
4:45 PM	0	2	0	0	0	0	0	0	2	0	0	0	0	3	8	7
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	7	2
5:15 PM	0	0	0	0	0	0	2	0	2	0	0	0	0	4	2	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	6	1
5:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	3	3	0
6:00 PM	0	1	1	0	0	0	0	0	1	0	0	0	0	3	2	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	11	1
6:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	4	11	1
6:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	4	4	1
7:00 PM	0	0	0	0	0	0	1	0	1	0	0	0	0	5	4	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
7:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	2	2	0
7:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	2	1

AM PEAK HOUR 7:30 AM to 8:30 AM	Lombardi Street Northbound				Grand Union Boulevard Southbound				Mystic Avenue EB U-Turn Lane Eastbound				Mystic Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**2**	**0**	**0**	**0**	**10**	**0**	**4**	**0**	**0**	**0**	**0**	**16**	**91**	**4**
PHF	**0.25**				**0.63**				**0.50**				**0.87**			

MID PEAK HOUR 11:15 AM to 12:15 PM	Lombardi Street Northbound				Grand Union Boulevard Southbound				Mystic Avenue EB U-Turn Lane Eastbound				Mystic Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**3**	**3**	**0**	**0**	**0**	**7**	**3**	**14**	**0**	**0**	**0**	**0**	**21**	**107**	**8**
PHF	**0.50**				**0.50**				**0.58**				**0.85**			

PM PEAK HOUR 2:00 PM to 3:00 PM	Lombardi Street Northbound				Grand Union Boulevard Southbound				Mystic Avenue EB U-Turn Lane Eastbound				Mystic Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**6**	**5**	**0**	**0**	**0**	**12**	**2**	**6**	**0**	**0**	**0**	**0**	**15**	**84**	**3**
PHF	**0.69**				**0.70**				**0.75**				**0.91**			

Client:	Vannesa Methoxha, EIT
Project #:	1076_2_HSH
BTD #:	Location 1
Location:	Somerville, MA
Street 1:	Mystic Avenue
Street 2:	Grand Union Blvd/Lombardi Street
Count Date:	10/25/2022
Day of Week:	Tuesday
Weather:	Cloudy & Rain, 50°F

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PEDESTRIANS & BICYCLES

	Lombardi Street Northbound				Grand Union Boulevard Southbound				Mystic Avenue EB U-Turn Lane Eastbound				Mystic Avenue Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	U-Turn	Thru	Right	PED	Left	Thru	Right	PED
6:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
6:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1
6:30 AM	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	3
6:45 AM	0	1	0	0	0	0	0	3	0	0	0	0	0	0	1	6
7:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	4
7:15 AM	0	0	0	0	0	1	0	3	0	0	0	0	1	0	0	3
7:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	5
7:45 AM	0	1	0	0	0	0	0	5	0	0	0	0	0	0	1	7
8:00 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	4
8:15 AM	0	2	0	0	0	4	0	3	0	0	0	0	0	0	1	5
8:30 AM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	8
8:45 AM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	6
9:00 AM	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	3
9:15 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	0	2	2
9:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:00 AM	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	1
10:15 AM	0	1	0	0	0	2	0	2	0	0	0	2	0	0	0	3
10:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3
10:45 AM	0	2	0	0	0	1	0	1	0	0	0	0	0	0	1	6
11:00 AM	0	2	0	0	0	0	0	3	0	0	0	0	0	0	0	3
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
11:30 AM	0	3	0	0	0	0	0	3	0	0	0	1	0	0	1	6
11:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
12:00 PM	1	0	0	0	0	1	0	3	0	0	0	0	0	1	0	10
12:15 PM	0	0	0	0	0	1	0	2	0	0	0	0	1	0	0	12
12:30 PM	0	1	0	0	0	2	0	1	0	0	0	0	0	0	2	6
12:45 PM	0	4	0	0	0	1	0	3	0	0	0	0	0	0	1	6
1:00 PM	0	1	0	0	0	1	0	5	0	0	0	0	0	0	0	12
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
1:30 PM	0	0	0	0	0	1	0	2	0	0	0	0	0	0	1	3
1:45 PM	0	2	0	0	0	1	0	4	0	0	0	0	0	0	1	3
2:00 PM	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	5
2:15 PM	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	5
2:30 PM	0	0	0	0	0	1	0	5	0	0	0	0	0	0	0	3
2:45 PM	0	2	0	0	0	1	0	3	0	0	0	0	2	0	1	7
3:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3
3:15 PM	1	1	0	0	0	1	0	2	0	0	0	0	0	0	0	6
3:30 PM	0	1	0	0	0	1	0	2	0	0	0	0	0	0	0	14
3:45 PM	0	0	0	0	0	3	0	1	0	0	0	0	0	1	0	5
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	6	0	1	6
4:15 PM	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	6
4:30 PM	1	0	0	0	0	1	0	2	0	0	0	0	1	1	1	10
4:45 PM	0	0	0	0	0	0	0	3	0	0	0	0	1	0	2	9
5:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	1	1	0	7
5:15 PM	0	0	0	0	0	2	0	2	0	0	0	1	2	0	3	13
5:30 PM	0	1	0	0	0	2	0	5	0	0	0	0	2	0	1	8
5:45 PM	0	4	0	0	0	0	0	4	0	0	0	1	2	0	2	6
6:00 PM	0	0	0	0	0	1	0	4	1	0	0	0	0	0	1	6
6:15 PM	0	2	0	0	0	1	0	2	0	0	0	1	0	1	1	11
6:30 PM	0	1	0	0	0	2	0	2	0	0	0	0	0	1	0	4
6:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	5
7:00 PM	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	3
7:15 PM	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	4
7:30 PM	0	0	0	0	0	1	0	2	0	0	0	0	1	0	0	3
7:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3

AM PEAK HOUR 7:45 AM to 8:45 AM	Lombardi Street Northbound				Grand Union Boulevard Southbound				Mystic Avenue EB U-Turn Lane Eastbound				Mystic Avenue Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	U-Turn	Thru	Right	PED	Left	Thru	Right	PED
	1	3	0	0	0	8	0	8	0	0	0	0	0	0	3	24

MID PEAK HOUR 1:00 PM to 2:00 PM	Lombardi Street Northbound				Grand Union Boulevard Southbound				Mystic Avenue EB U-Turn Lane Eastbound				Mystic Avenue Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	U-Turn	Thru	Right	PED	Left	Thru	Right	PED
	0	3	0	0	0	3	0	11	0	0	0	0	0	0	2	27

PM PEAK HOUR 4:30 PM to 5:30 PM	Lombardi Street Northbound				Grand Union Boulevard Southbound				Mystic Avenue EB U-Turn Lane Eastbound				Mystic Avenue Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	U-Turn	Thru	Right	PED	Left	Thru	Right	PED
	1	0	0	0	0	5	0	9	0	0	0	1	5	2	6	39

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

Client:	Vannesa Methoxha, EIT
Project #:	1076_2_HSH
BTD #:	Location 2
Location:	Somerville, MA
Street 1:	Mystic Avenue
Street 2:	Revolution Drive
Count Date:	10/25/2022
Day of Week:	Tuesday
Weather:	Cloudy & Rain, 50°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Northbound				Revolution Drive Southbound				Mystic Avenue Eastbound				Mystic Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
6:00 AM	0	0	0	0	0	0	0	11	0	0	0	0	0	0	101	13
6:15 AM	0	0	0	0	0	0	0	14	0	0	0	0	0	0	136	10
6:30 AM	0	0	0	0	0	0	0	30	0	0	0	0	0	0	128	10
6:45 AM	0	0	0	0	0	0	0	28	0	0	0	0	0	0	168	12
7:00 AM	0	0	0	0	0	0	0	41	0	0	0	0	0	0	168	10
7:15 AM	0	0	0	0	0	0	0	37	0	0	0	0	0	0	178	7
7:30 AM	0	0	0	0	0	0	0	40	0	0	0	0	0	0	192	13
7:45 AM	0	0	0	0	0	0	0	39	0	0	0	0	0	0	180	11
8:00 AM	0	0	0	0	0	0	0	42	0	0	0	0	0	0	212	13
8:15 AM	0	0	0	0	0	0	0	15	0	0	0	0	0	0	213	3
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	201	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	186	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	152	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	179	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	198	0
9:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	189	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	175	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	178	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	218	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	214	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	269	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	249	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	263	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	259	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	274	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	288	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	267	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	274	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	286	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	288	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	302	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	353	0
2:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	254	6
2:15 PM	0	0	0	0	0	0	0	34	0	0	0	0	0	0	268	15
2:30 PM	0	0	0	0	0	0	0	57	0	0	0	0	0	0	303	27
2:45 PM	0	0	0	0	0	0	0	51	0	0	0	0	0	0	325	20
3:00 PM	0	0	0	0	0	0	0	63	0	0	0	0	0	0	349	14
3:15 PM	0	0	0	0	0	0	0	53	0	0	0	0	0	0	344	34
3:30 PM	0	0	0	0	0	0	0	42	0	0	0	0	0	0	306	34
3:45 PM	0	0	0	0	0	0	0	46	0	0	0	0	0	0	309	36
4:00 PM	0	0	0	0	0	0	0	60	0	0	0	0	0	0	302	23
4:15 PM	0	0	0	0	0	0	0	55	0	0	0	0	0	0	325	25
4:30 PM	0	0	0	0	0	0	0	53	0	0	0	0	0	0	307	47
4:45 PM	0	0	0	0	0	0	0	50	0	0	0	0	0	0	298	37
5:00 PM	0	0	0	0	0	0	0	86	0	0	0	0	0	0	331	63
5:15 PM	0	0	0	0	0	0	0	48	0	0	0	0	0	0	336	70
5:30 PM	0	0	0	0	0	0	0	42	0	0	0	0	0	0	273	60
5:45 PM	0	0	0	0	0	0	0	67	0	0	0	0	0	0	290	54
6:00 PM	0	0	0	0	0	0	0	64	0	0	0	0	0	0	264	49
6:15 PM	0	0	0	0	0	0	0	65	0	0	0	0	0	0	244	67
6:30 PM	0	0	0	0	0	0	0	64	0	0	0	0	0	0	293	54
6:45 PM	0	0	0	0	0	0	0	57	0	0	0	0	0	0	242	48
7:00 PM	0	0	0	0	0	0	0	60	0	0	0	0	0	0	226	35
7:15 PM	0	0	0	0	0	0	0	43	0	0	0	0	0	0	175	39
7:30 PM	0	0	0	0	0	0	0	56	0	0	0	0	0	0	179	26
7:45 PM	0	0	0	0	0	0	0	53	0	0	0	0	0	0	197	25

AM PEAK HOUR	Northbound				Revolution Drive Southbound				Mystic Avenue Eastbound				Mystic Avenue Westbound			
7:30 AM to 8:30 AM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**136**	**0**	**0**	**0**	**0**	**0**	**0**	**797**	**40**
PHF	**0.00**				**0.81**				**0.00**				**0.93**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**4.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**11.4%**	**2.5%**

MID PEAK HOUR	Northbound				Revolution Drive Southbound				Mystic Avenue Eastbound				Mystic Avenue Westbound			
1:00 PM to 2:00 PM	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**	**0**	**0**	**0**	**0**	**1229**	**0**
PHF	**0.00**				**0.00**				**0.00**				**0.87**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**7.1%**	**0.0%**

PM PEAK HOUR	Northbound				Revolution Drive Southbound				Mystic Avenue Eastbound				Mystic Avenue Westbound			
4:30 PM to 5:30 PM	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**	**237**	**0**	**0**	**0**	**0**	**0**	**0**	**1272**	**217**
PHF	**0.00**				**0.69**				**0.00**				**0.92**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.4%**	**0.5%**

Note
There was a road block due to construction on Revolution Drive from approx. 8:20 AM to 2:20 PM.

Client:	Vannesa Methoxha, EIT
Project #:	1076_2_HSH
BTD #:	Location 2
Location:	Somerville, MA
Street 1:	Mystic Avenue
Street 2:	Revolution Drive
Count Date:	10/25/2022
Day of Week:	Tuesday
Weather:	Cloudy & Rain, 50°F

BOSTON TRAFFIC DATA
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HEAVY VEHICLES

	Northbound				Revolution Drive Southbound				Mystic Avenue Eastbound				Mystic Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
6:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	15	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0
6:30 AM	0	0	0	0	0	0	0	3	0	0	0	0	0	0	22	1
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0
7:00 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	17	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	1
7:45 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	26	0
8:00 AM	0	0	0	0	0	0	0	4	0	0	0	0	0	0	24	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0
9:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	20	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	0
2:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	27	0
2:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	19	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0
2:45 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	27	0
3:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	13	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0
3:30 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	10	1
3:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	10	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	8	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0

AM PEAK HOUR 7:30 AM to 8:30 AM	Northbound				Revolution Drive Southbound				Mystic Avenue Eastbound				Mystic 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**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**91**	**1**
PHF	**0.00**				**0.38**				**0.00**				**0.88**			

MID PEAK HOUR 11:15 AM to 12:15 PM	Northbound				Revolution Drive Southbound				Mystic Avenue Eastbound				Mystic 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**	**0**	**0**	**0**	**0**	**134**	**0**
PHF	**0.00**				**0.00**				**0.00**				**0.86**			

PM PEAK HOUR 2:00 PM to 3:00 PM	Northbound				Revolution Drive Southbound				Mystic Avenue Eastbound				Mystic 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**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**90**	**0**
PHF	**0.00**				**0.50**				**0.00**				**0.83**			

Client:	Vannesa Methoxha, EIT
Project #:	1076_2_HSH
BTD #:	Location 2
Location:	Somerville, MA
Street 1:	Mystic Avenue
Street 2:	Revolution Drive
Count Date:	10/25/2022
Day of Week:	Tuesday
Weather:	Cloudy & Rain, 50°F

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PEDESTRIANS & BICYCLES

	Northbound				Revolution Drive Southbound				Mystic Avenue Eastbound				Mystic Avenue Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
6:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
3:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
4:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
6:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
6:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR	Northbound				Revolution Drive Southbound				Mystic Avenue Eastbound				Mystic Avenue Westbound			
7:30 AM																
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
8:30 AM	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0

MID PEAK HOUR	Northbound				Revolution Drive Southbound				Mystic Avenue Eastbound				Mystic Avenue Westbound			
1:00 PM																
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
2:00 PM	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	0

PM PEAK HOUR	Northbound				Revolution Drive Southbound				Mystic Avenue Eastbound				Mystic Avenue Westbound			
4:30 PM																
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
5:30 PM	0	0	0	0	0	0	0	3	0	0	0	0	0	1	1	0

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

Client:	Vannesa Methoxha, EIT
Project #:	1076_2_HSH
BTD #:	Location 3
Location:	Somerville, MA
Street 1:	Grand Union Boulevard
Street 2:	Revolution Drive
Count Date:	10/25/2022
Day of Week:	Tuesday
Weather:	Cloudy & Rain, 50°F

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

PASSENGER CARS & HEAVY VEHICLES COMBINED

	Revolution Drive Northbound				Revolution Drive Southbound				Grand Union Boulevard Eastbound				Grand Union Boulevard Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
6:00 AM	0	6	2	6	0	6	1	7	0	13	9	18	1	2	6	9
6:15 AM	0	8	0	4	0	2	6	2	0	8	11	12	0	1	9	3
6:30 AM	0	7	2	6	0	3	6	0	0	11	24	16	0	1	5	2
6:45 AM	0	6	4	5	0	2	9	0	0	15	37	28	0	1	10	6
7:00 AM	0	9	4	6	0	3	9	8	0	19	43	30	0	4	19	5
7:15 AM	0	6	5	11	0	7	9	4	0	16	53	43	0	5	16	10
7:30 AM	0	4	5	7	0	7	8	5	0	12	79	20	0	0	15	2
7:45 AM	0	2	3	15	0	13	13	6	0	21	67	28	0	3	23	5
8:00 AM	1	4	10	12	0	6	12	7	0	22	87	37	0	4	19	5
8:15 AM	0	10	2	16	0	8	11	6	0	28	74	32	0	3	25	11
8:30 AM	0	18	4	17	0	10	5	8	0	12	68	21	0	1	24	11
8:45 AM	0	13	6	10	0	6	2	8	0	23	65	31	0	7	22	10
9:00 AM	0	15	3	10	0	4	6	2	1	23	71	45	0	5	17	8
9:15 AM	0	19	3	20	0	6	3	3	0	20	47	35	0	3	26	6
9:30 AM	0	19	2	20	1	8	4	7	0	28	43	46	0	1	27	9
9:45 AM	0	13	4	27	0	6	6	7	1	22	31	25	0	3	30	5
10:00 AM	0	26	3	20	0	3	10	6	2	15	24	29	0	3	27	3
10:15 AM	0	28	4	14	0	4	8	5	0	14	24	33	0	2	29	10
10:30 AM	0	20	4	12	0	4	5	8	0	17	35	34	0	1	31	13
10:45 AM	0	26	4	16	0	5	8	3	0	8	21	32	0	7	34	7
11:00 AM	0	31	2	19	0	1	3	11	0	19	24	41	0	2	33	9
11:15 AM	0	22	5	14	0	9	5	13	0	20	30	36	0	3	46	19
11:30 AM	0	34	5	22	0	4	5	9	0	19	31	31	0	5	33	10
11:45 AM	0	30	11	25	1	0	4	8	0	24	32	34	0	8	40	19
12:00 PM	0	30	7	15	0	6	11	8	0	22	29	35	0	6	47	24
12:15 PM	0	38	10	22	0	11	8	8	0	22	27	39	0	4	48	17
12:30 PM	0	28	3	20	0	7	6	13	0	18	36	35	0	3	32	16
12:45 PM	0	29	8	24	1	11	7	19	0	21	23	30	0	7	43	15
1:00 PM	0	38	3	21	1	6	10	19	1	16	39	31	0	9	49	19
1:15 PM	0	35	4	12	0	6	3	11	0	14	37	32	1	5	40	9
1:30 PM	0	28	9	21	0	5	13	12	0	15	31	34	0	6	43	17
1:45 PM	0	50	8	17	0	3	7	13	0	8	36	39	0	7	36	7
2:00 PM	0	50	10	18	1	12	8	5	1	14	22	32	0	8	43	8
2:15 PM	0	24	6	10	0	3	6	7	1	13	31	29	0	5	51	14
2:30 PM	0	18	13	8	0	8	13	12	0	15	27	35	0	5	36	14
2:45 PM	0	18	13	10	1	3	8	11	0	7	28	42	0	8	64	14
3:00 PM	0	28	6	8	0	5	16	9	0	8	28	39	0	8	62	20
3:15 PM	0	29	12	6	0	7	12	6	0	13	19	26	0	5	73	23
3:30 PM	0	27	9	15	0	5	5	12	0	12	25	27	0	7	63	23
3:45 PM	0	26	12	5	0	9	13	12	0	15	21	24	0	6	67	30
4:00 PM	0	26	7	4	1	6	16	4	2	14	21	40	1	8	67	18
4:15 PM	0	28	13	5	0	7	7	9	0	12	26	23	0	11	58	26
4:30 PM	0	40	14	6	0	11	7	6	0	12	25	29	0	8	82	16
4:45 PM	1	21	18	7	0	5	16	10	0	27	29	36	0	11	90	30
5:00 PM	1	38	25	10	4	8	25	15	0	22	28	37	0	14	64	43
5:15 PM	0	44	32	9	0	6	7	13	0	20	29	32	0	7	85	40
5:30 PM	0	25	31	6	2	13	12	8	0	25	24	35	0	10	81	38
5:45 PM	0	37	20	2	0	1	10	13	1	30	35	37	0	13	58	39
6:00 PM	0	35	18	2	0	5	12	4	0	21	24	33	0	17	58	27
6:15 PM	0	25	27	9	0	9	19	21	1	34	24	29	0	18	59	30
6:30 PM	0	30	24	13	0	7	17	11	0	19	27	31	0	11	74	27
6:45 PM	0	30	20	10	1	10	17	20	0	22	17	28	0	11	52	26
7:00 PM	0	24	13	9	0	4	24	13	0	19	23	31	0	7	43	13
7:15 PM	0	19	19	6	0	3	12	6	0	20	25	19	0	6	24	14
7:30 PM	0	12	18	3	0	6	16	18	0	13	22	27	0	10	27	20
7:45 PM	1	14	11	7	0	10	10	18	0	16	24	31	0	6	21	19

AM PEAK HOUR 8:00 AM to 9:00 AM	Revolution Drive Northbound				Revolution Drive Southbound				Grand Union Boulevard Eastbound				Grand Union Boulevard Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	1	**45**	**22**	**55**	**0**	**30**	**30**	**29**	**0**	**85**	**294**	**121**	**0**	**15**	**90**	**37**
PHF	**0.79**				**0.89**				**0.86**				**0.91**			
HV %	**0.0%**	**4.4%**	**0.0%**	**5.5%**	**0.0%**	**0.0%**	**3.3%**	**0.0%**	**0.0%**	**1.2%**	**2.7%**	**0.8%**	**0.0%**	**0.0%**	**4.4%**	**10.8%**

MID PEAK HOUR 12:15 PM to 1:15 PM	Revolution Drive Northbound				Revolution Drive Southbound				Grand Union Boulevard Eastbound				Grand Union Boulevard Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**133**	**24**	**87**	**2**	**35**	**31**	**59**	**1**	**77**	**125**	**135**	**0**	**23**	**172**	**67**
PHF	**0.87**				**0.84**				**0.95**				**0.85**			
HV %	**0.0%**	**0.8%**	**0.0%**	**6.9%**	**0.0%**	**0.0%**	**0.0%**	**1.7%**	**0.0%**	**1.3%**	**5.6%**	**2.2%**	**0.0%**	**4.3%**	**5.2%**	**1.5%**

PM PEAK HOUR 4:45 PM to 5:45 PM	Revolution Drive Northbound				Revolution Drive Southbound				Grand Union Boulevard Eastbound				Grand Union Boulevard Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	2	**128**	**106**	**32**	**6**	**32**	**60**	**46**	**0**	**94**	**110**	**140**	**0**	**42**	**320**	**151**
PHF	**0.79**				**0.69**				**0.93**				**0.97**			
HV %	**0.0%**	**2.3%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.8%**	**1.4%**	**0.0%**	**0.0%**	**0.9%**	**0.0%**

Client:	Vannesa Methoxha, EIT
Project #:	1076_2_HSH
BTD #:	Location 3
Location:	Somerville, MA
Street 1:	Grand Union Boulevard
Street 2:	Revolution Drive
Count Date:	10/25/2022
Day of Week:	Tuesday
Weather:	Cloudy & Rain, 50°F

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HEAVY VEHICLES

	Revolution Drive Northbound				Revolution Drive Southbound				Grand Union Boulevard Eastbound				Grand Union Boulevard Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
6:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
6:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
6:30 AM	0	1	0	0	0	0	0	0	0	1	2	1	0	1	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	1
7:00 AM	0	1	0	0	0	0	0	1	0	1	1	2	0	0	3	1
7:15 AM	0	0	0	2	0	0	0	0	0	0	1	7	0	1	3	0
7:30 AM	0	1	0	0	0	0	0	0	0	0	2	0	0	0	2	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	2	0
8:00 AM	0	0	0	0	0	0	1	0	0	0	2	1	0	0	1	0
8:15 AM	0	0	0	1	0	0	0	0	0	1	2	0	0	0	2	1
8:30 AM	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1
8:45 AM	0	2	0	0	0	0	0	0	0	0	3	0	0	0	1	2
9:00 AM	0	0	0	0	0	1	0	0	0	0	2	1	0	0	1	0
9:15 AM	0	1	0	0	0	0	0	0	0	0	1	2	0	0	2	1
9:30 AM	0	0	0	0	0	1	0	0	0	0	5	2	0	0	2	0
9:45 AM	0	0	0	2	0	0	0	0	0	0	3	1	0	0	5	1
10:00 AM	0	1	0	1	0	0	0	0	0	2	0	1	0	0	0	0
10:15 AM	0	1	0	1	0	0	1	0	0	0	2	0	0	0	2	3
10:30 AM	0	0	0	0	0	0	0	1	0	1	3	2	0	1	1	1
10:45 AM	0	2	0	1	0	1	0	0	0	0	0	0	0	1	2	0
11:00 AM	0	3	0	1	0	0	0	0	0	1	2	1	0	0	0	0
11:15 AM	0	0	2	0	0	0	0	0	0	1	2	0	0	0	1	0
11:30 AM	0	1	1	0	0	0	0	0	0	0	3	1	0	0	1	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	1	2	0	1	1	1
12:00 PM	0	0	0	1	0	0	1	1	0	0	4	5	0	0	2	0
12:15 PM	0	0	0	2	0	0	0	0	0	0	1	1	0	1	2	1
12:30 PM	0	1	0	0	0	0	0	1	0	1	2	0	0	0	4	0
12:45 PM	0	0	0	3	0	0	0	0	0	0	0	2	0	0	2	0
1:00 PM	0	0	0	1	0	0	0	0	0	0	4	0	0	0	1	0
1:15 PM	0	1	0	0	0	0	0	0	0	0	3	0	0	0	3	0
1:30 PM	0	0	0	1	0	0	0	0	0	0	2	1	0	1	6	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	5	3	0	1	0	0
2:00 PM	0	1	0	0	0	0	0	0	0	1	3	3	0	1	0	0
2:15 PM	0	0	0	1	0	0	0	0	0	1	1	0	0	1	4	1
2:30 PM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0
3:00 PM	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
3:15 PM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	0
3:30 PM	0	0	0	0	0	2	0	0	0	0	1	0	0	0	1	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	1
4:00 PM	0	0	0	1	0	0	0	0	0	0	2	0	0	0	1	0
4:15 PM	0	0	0	1	0	0	0	1	0	0	0	0	0	1	3	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
4:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0
5:15 PM	0	1	0	0	0	0	0	0	0	0	2	1	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
7:00 PM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
7:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1

AM PEAK HOUR 7:00 AM to 8:00 AM	Revolution Drive Northbound				Revolution Drive Southbound				Grand Union Boulevard Eastbound				Grand Union Boulevard Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**2**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**1**	**6**	**10**	**0**	**1**	**10**	**1**
PHF	**0.50**				**0.25**				**0.53**				**0.75**			

MID PEAK HOUR 12:00 PM to 1:00 PM	Revolution Drive Northbound				Revolution Drive Southbound				Grand Union Boulevard Eastbound				Grand Union Boulevard Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**1**	**0**	**6**	**0**	**0**	**1**	**2**	**0**	**1**	**7**	**8**	**0**	**1**	**10**	**1**
PHF	**0.58**				**0.38**				**0.44**				**0.75**			

PM PEAK HOUR 2:00 PM to 3:00 PM	Revolution Drive Northbound				Revolution Drive Southbound				Grand Union Boulevard Eastbound				Grand Union Boulevard Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**7**	**4**	**0**	**2**	**6**	**1**
PHF	**0.75**				**0.00**				**0.46**				**0.38**			

Client:	Vannesa Methoxha, EIT
Project #:	1076_2_HSH
BTD #:	Location 3
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Count Date:	10/25/2022
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PEDESTRIANS & BICYCLES

	Revolution Drive Northbound				Revolution Drive Southbound				Grand Union Boulevard Eastbound				Grand Union Boulevard Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
6:00 AM	0	0	0	0	1	0	0	0	0	0	0	3	0	0	0	2
6:15 AM	0	0	0	1	0	0	0	0	0	0	0	4	0	0	0	2
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:45 AM	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1
7:00 AM	0	0	0	2	0	0	0	0	0	0	0	3	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	8	0	0	0	11	0	1	0	2
7:30 AM	0	0	0	6	0	0	0	3	0	0	0	9	0	0	0	9
7:45 AM	0	0	0	4	0	0	0	2	0	0	0	12	0	1	0	9
8:00 AM	0	0	0	9	1	0	0	13	0	0	0	17	0	0	0	7
8:15 AM	0	0	0	6	1	0	0	8	0	1	0	12	1	1	0	5
8:30 AM	0	0	0	2	0	0	0	7	0	0	0	10	1	0	0	2
8:45 AM	0	0	1	2	0	0	0	6	0	0	0	2	0	2	0	0
9:00 AM	0	0	0	6	0	0	0	2	0	0	0	4	0	1	0	3
9:15 AM	0	0	1	1	0	0	0	8	0	0	0	13	1	0	0	2
9:30 AM	1	0	0	1	0	0	0	8	0	1	0	8	1	0	0	0
9:45 AM	0	0	0	0	0	0	0	3	0	0	0	4	0	0	0	2
10:00 AM	0	0	0	3	1	0	0	3	0	1	0	3	1	1	0	0
10:15 AM	0	0	0	0	0	0	0	4	0	1	0	2	0	0	0	3
10:30 AM	0	0	0	1	0	0	0	4	0	0	0	7	0	0	0	8
10:45 AM	0	0	0	1	0	0	0	3	0	0	0	1	0	1	0	3
11:00 AM	0	0	0	1	0	0	0	8	0	1	0	7	0	0	2	5
11:15 AM	0	1	0	2	0	0	0	13	0	0	0	8	0	0	0	5
11:30 AM	0	0	0	6	0	0	0	5	0	0	0	7	0	1	0	4
11:45 AM	0	0	0	2	0	0	0	15	0	0	0	8	0	1	0	2
12:00 PM	0	0	0	2	1	0	0	11	0	1	0	17	0	0	0	8
12:15 PM	0	1	0	4	0	0	0	14	0	0	0	12	0	0	0	7
12:30 PM	0	0	0	2	0	0	0	14	0	1	0	11	0	3	0	6
12:45 PM	0	1	0	8	0	0	0	32	0	0	0	30	0	3	1	14
1:00 PM	0	0	0	5	0	0	0	23	0	0	0	16	0	1	1	5
1:15 PM	0	0	0	4	0	0	0	5	0	1	0	2	0	0	0	4
1:30 PM	0	0	0	3	0	0	0	12	0	0	0	10	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	15	0	1	0	11	0	3	0	3
2:00 PM	0	0	0	3	0	0	0	7	0	0	1	5	0	1	0	2
2:15 PM	0	0	0	3	0	0	0	12	0	0	0	6	0	0	0	2
2:30 PM	0	0	0	1	0	0	0	16	0	0	0	10	0	0	0	3
2:45 PM	0	0	0	1	0	0	0	9	0	0	0	7	1	1	1	3
3:00 PM	0	0	0	1	0	0	0	8	0	0	1	6	0	1	0	11
3:15 PM	0	1	0	0	0	0	0	10	0	1	0	3	0	0	0	7
3:30 PM	0	0	0	1	0	0	0	16	0	1	0	6	0	0	0	10
3:45 PM	0	0	1	1	0	0	0	8	0	2	0	5	0	0	0	5
4:00 PM	0	0	0	2	0	0	0	12	0	0	0	9	0	1	0	3
4:15 PM	0	0	0	1	0	0	0	7	0	0	0	5	0	0	0	2
4:30 PM	0	0	0	2	0	1	0	10	0	0	0	5	0	1	0	1
4:45 PM	0	0	0	2	0	0	0	10	0	0	0	8	0	0	1	8
5:00 PM	0	1	0	4	0	0	0	11	0	3	0	8	0	0	0	7
5:15 PM	0	0	1	4	0	0	0	29	0	0	0	18	1	1	0	9
5:30 PM	0	0	0	1	0	0	0	20	0	1	0	13	0	2	0	5
5:45 PM	0	0	0	3	0	0	0	19	0	0	0	18	0	0	3	4
6:00 PM	1	0	1	3	0	0	0	18	0	0	0	17	0	0	0	6
6:15 PM	0	0	0	5	0	0	0	13	0	1	0	13	1	4	0	8
6:30 PM	0	0	0	2	0	0	0	8	0	2	0	9	0	1	0	5
6:45 PM	0	0	0	3	0	0	0	5	0	1	0	13	0	0	0	8
7:00 PM	1	1	0	0	0	0	0	6	0	0	0	5	0	0	0	5
7:15 PM	0	0	0	2	0	0	0	9	0	0	0	3	0	0	0	5
7:30 PM	0	0	0	4	1	0	0	4	0	0	0	4	0	0	0	8
7:45 PM	0	0	1	2	0	0	0	4	0	0	0	9	0	0	0	4

AM PEAK HOUR 8:00 AM to 9:00 AM	Revolution Drive Northbound				Revolution Drive Southbound				Grand Union Boulevard Eastbound				Grand Union Boulevard Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	1	19	2	0	0	34	0	1	0	41	2	3	0	14

MID PEAK HOUR 12:15 PM to 1:15 PM	Revolution Drive Northbound				Revolution Drive Southbound				Grand Union Boulevard Eastbound				Grand Union Boulevard Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	2	0	19	0	0	0	83	0	1	0	69	0	7	2	32

PM PEAK HOUR 4:45 PM to 5:45 PM	Revolution Drive Northbound				Revolution Drive Southbound				Grand Union Boulevard Eastbound				Grand Union Boulevard Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	1	1	11	0	0	0	70	0	4	0	47	1	3	1	29

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

Volume Report

Job 1076_2_HSH_ATR
Area Somerville, MA
Location Mystic Avenue, west of Grand Union Boulevard

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
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Tuesday, October 25, 2022

Time	WB Bike	WB Motorcycle	WB Automobile	WB Bus	WB Single-Unit Truck	WB Multi-Unit Truck	WB Total Volume
1630	2	0	330	2	6	2	342
1645	0	1	347	1	8	3	360
1700	1	0	373	1	4	3	382
1715	0	1	419	2	0	2	424
1730	0	1	338	1	1	5	346
1745	0	0	368	2	1	1	372
1800	1	0	305	1	1	0	308
1815	0	0	331	2	3	5	341
1830	1	0	323	0	4	3	331
1845	0	0	308	1	0	0	309
1900	1	1	265	0	1	3	271
1915	0	0	200	4	2	2	208
1930	1	0	212	0	0	2	215
1945	0	0	228	2	1	0	231
2000	0	1	192	2	3	1	199
2015	0	0	164	4	1	0	169
2030	0	0	153	2	1	6	162
2045	0	0	114	1	1	4	120
2100	0	0	122	2	3	1	128
2115	0	1	120	0	1	3	125
2130	1	0	115	2	0	1	119
2145	0	0	185	1	5	0	191
2200	0	0	255	2	1	2	260
2215	0	1	242	1	1	1	246
2230	0	0	121	1	2	4	128
2245	0	0	105	0	2	3	110
2300	0	0	86	0	1	3	90
2315	0	0	74	0	1	3	78
2330	0	0	68	1	3	3	75
2345	0	0	77	0	1	0	78
Total	**8**	**7**	**6540**	**38**	**59**	**66**	**6718**

Volume Report

Job 1076_2_HSH_ATR
Area Somerville, MA
Location Mystic Avenue, west of Grand Union Boulevard

BOSTON TRAFFIC DATA
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Wednesday, October 26, 2022

Time	WB Bike	WB Motorcycle	WB Automobile	WB Bus	WB Single-Unit Truck	WB Multi-Unit Truck	WB Total Volume
0000	0	0	74	0	0	5	79
0015	0	0	79	0	0	1	80
0030	0	0	54	1	2	4	61
0045	0	0	52	0	1	2	55
0100	0	0	38	1	0	3	42
0115	0	0	38	1	2	5	46
0130	0	0	21	0	0	3	24
0145	0	0	36	0	0	5	41
0200	0	0	31	1	2	2	36
0215	0	0	35	0	2	1	38
0230	0	0	25	0	1	3	29
0245	0	0	30	0	3	1	34
0300	0	0	30	0	0	1	31
0315	0	0	19	0	0	4	23
0330	0	0	19	0	3	2	24
0345	0	0	26	0	2	3	31
0400	0	0	38	1	0	2	41
0415	0	0	25	1	0	7	33
0430	0	0	25	3	4	4	36
0445	0	0	42	5	3	8	58
0500	0	0	56	4	4	7	71
0515	0	0	50	5	5	10	70
0530	0	0	61	4	5	7	77
0545	0	0	95	3	8	6	112
0600	0	0	102	4	0	9	115
0615	0	0	132	3	7	11	153
0630	0	0	140	2	14	12	168
0645	0	0	141	2	12	13	168
0700	0	1	171	3	6	4	185
0715	0	0	224	3	9	6	242
0730	0	0	198	1	8	14	221
0745	0	0	189	2	10	3	204
0800	1	0	195	1	9	6	212
0815	0	0	234	4	10	10	258
0830	0	0	176	2	8	8	194
0845	0	0	175	0	9	8	192
0900	0	1	169	3	9	7	189
0915	0	0	210	1	21	3	235
0930	0	1	183	1	7	9	201
0945	0	0	166	3	19	6	194
1000	0	0	193	0	16	8	217
1015	0	0	193	2	15	12	222
1030	0	0	198	1	14	6	219
1045	0	0	212	3	11	11	237
1100	0	0	188	3	15	14	220
1115	0	0	208	2	9	13	232
1130	0	0	213	1	18	4	236
1145	0	0	237	1	9	5	252
1200	0	0	238	1	6	11	256
1215	0	0	243	3	20	9	275
1230	0	0	229	2	8	6	245
1245	0	0	248	1	18	4	271
1300	1	0	274	4	9	11	299
1315	0	0	275	0	14	10	299
1330	0	0	329	0	14	6	349
1345	0	0	346	2	9	1	358
1400	0	0	345	1	5	8	359
1415	0	0	358	2	8	8	376
1430	0	0	337	6	10	6	359
1445	0	0	343	1	12	7	363
1500	0	0	359	2	13	1	375
1515	0	1	392	1	8	3	405
1530	0	1	373	1	9	6	390
1545	0	0	365	2	7	3	377
1600	0	0	349	3	9	3	364
1615	0	0	414	3	6	2	425
1630	0	0	341	0	7	3	351
1645	0	1	437	2	4	3	447
1700	0	1	424	1	5	1	432
1715	0	1	365	2	2	2	372
1730	1	0	421	1	3	5	431
1745	0	0	379	1	5	1	386
1800	1	0	352	1	2	5	361
1815	0	0	362	3	4	4	373
1830	0	0	296	2	5	2	305
1845	0	0	290	2	1	2	295
1900	0	0	261	1	5	0	267
1915	0	0	285	2	4	3	294
1930	0	0	254	1	5	2	262
1945	0	0	242	1	1	1	245
2000	1	0	203	4	1	1	210
2015	0	0	204	0	1	2	207
2030	0	0	151	2	2	2	157
2045	0	0	139	1	2	5	147
2100	0	0	162	0	2	1	165
2115	0	0	117	1	1	4	123
2130	0	0	132	1	1	1	135
2145	0	0	102	1	1	2	106
2200	0	1	112	0	4	0	117
2215	0	0	111	2	0	0	113
2230	0	0	94	1	3	0	98
2245	0	1	153	1	2	1	158
2300	1	0	154	1	1	2	159
2315	0	0	126	1	7	3	137
2330	0	0	141	1	0	1	143
2345	1	0	144	0	3	1	149
Total	**7**	**10**	**18217**	**150**	**581**	**463**	**19428**

Client:	Adriana Santiago
Project #:	504_083_VHB
BTD #:	Location 4
Location:	Somerville, MA
Street 1:	Grand Union Boulevard
Street 2:	Revolution Drive
Count Date:	11/16/2019
Day of Week:	Saturday
Weather:	Mostly Sunny, 30°F

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

	Grand Union Boulevard Northbound				Grand Union Boulevard Southbound				Revolution Drive Eastbound				Revolution Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	10	54	11	0	10	28	43	0	38	9	10	0	5	10	15
11:15 AM	0	6	63	9	0	12	29	44	0	46	10	9	0	1	7	6
11:30 AM	0	5	50	12	0	11	41	40	0	36	15	9	1	4	7	8
11:45 AM	0	4	63	12	0	14	37	45	0	56	9	8	0	4	11	11
12:00 PM	0	7	64	23	0	14	36	43	0	47	16	8	1	7	15	12
12:15 PM	0	5	65	20	0	11	25	48	0	48	11	9	0	7	11	19
12:30 PM	0	12	71	18	0	21	40	38	0	56	19	12	1	4	16	16
12:45 PM	0	5	74	20	0	28	36	52	0	54	15	11	0	5	13	11
1:00 PM	0	11	75	23	0	22	30	51	1	46	18	9	0	2	11	21
1:15 PM	0	10	59	27	0	16	34	45	0	52	24	12	0	4	19	15
1:30 PM	0	4	69	14	0	11	26	44	0	48	22	5	1	3	8	12
1:45 PM	0	9	68	9	0	17	28	40	0	50	12	10	1	4	15	17

MID PEAK HOUR 12:30 PM to 1:30 PM	Grand Union Boulevard Northbound				Grand Union Boulevard Southbound				Revolution Drive Eastbound				Revolution Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**38**	**279**	**88**	**0**	**87**	**140**	**186**	**1**	**208**	**76**	**44**	**1**	**15**	**59**	**63**
PHF	**0.93**				**0.89**				**0.93**				**0.91**			
HV %	**0.0%**	**0.0%**	**0.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.1%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.7%**	**1.6%**

Client:	Adriana Santiago
Project #:	504_083_VHB
BTD #:	Location 4
Location:	Somerville, MA
Street 1:	Grand Union Boulevard
Street 2:	Revolution Drive
Count Date:	11/16/2019
Day of Week:	Saturday
Weather:	Mostly Sunny, 30°F

BOSTON TRAFFIC DATA
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HEAVY VEHICLES

	Grand Union Boulevard Northbound				Grand Union Boulevard Southbound				Revolution Drive Eastbound				Revolution Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
11:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
1:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
1:15 PM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
1:30 PM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0

MID PEAK HOUR 12:45 PM to 1:45 PM	Grand Union Boulevard Northbound				Grand Union Boulevard Southbound				Revolution Drive Eastbound				Revolution Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**3**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**
PHF	**0.75**				**0.75**				**0.00**				**0.50**			

Client:	Adriana Santiago
Project #:	504_083_VHB
BTD #:	Location 4
Location:	Somerville, MA
Street 1:	Grand Union Boulevard
Street 2:	Revolution Drive
Count Date:	11/16/2019
Day of Week:	Saturday
Weather:	Mostly Sunny, 30°F

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PEDESTRIANS & BICYCLES

	Grand Union Boulevard Northbound				Grand Union Boulevard Southbound				Revolution Drive Eastbound				Revolution Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	1	0	4	0	0	0	1	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	8	0	0	0	0	0	0	0	4	0	0	0	5
11:30 AM	0	0	0	5	0	0	0	2	0	0	0	0	0	0	0	11
11:45 AM	0	0	0	7	0	0	0	0	0	0	0	1	0	0	0	4
12:00 PM	0	1	0	2	0	0	0	2	0	0	0	1	0	0	0	7
12:15 PM	0	0	0	9	0	0	0	2	0	0	0	0	0	0	0	6
12:30 PM	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	11
12:45 PM	0	1	0	15	0	0	0	1	0	0	0	1	0	0	0	14
1:00 PM	0	2	0	7	0	2	0	0	0	0	0	0	0	0	0	8
1:15 PM	0	0	0	14	0	1	0	1	0	0	0	0	0	0	0	11
1:30 PM	0	0	2	6	0	0	0	4	0	0	0	4	0	0	0	7
1:45 PM	0	1	0	11	0	0	0	4	0	0	0	4	0	0	0	12

MID PEAK HOUR 12:30 PM to 1:30 PM	Grand Union Boulevard Northbound				Grand Union Boulevard Southbound				Revolution Drive Eastbound				Revolution Drive Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	3	0	52	0	3	0	2	0	0	0	1	0	0	0	44

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

Client:	Adriana Santiago
Project #:	504_083_VHB
BTD #:	Location 8
Location:	Somerville, MA
Street 1:	Mystic Avenue
Street 2:	Grand Union Blvd & Lombardi Street
Count Date:	11/16/2019
Day of Week:	Saturday
Weather:	Mostly Sunny, 30°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Mystic Avenue Northbound				Mystic Avenue Southbound				Lombardi Street Northeastbound				Grand Union Boulevard Southwestbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	67	231	38	0	0	0	0	0	24	31	0	0	0	47	1
11:15 AM	0	59	192	43	0	0	0	0	0	33	36	0	0	0	51	0
11:30 AM	0	54	207	33	0	0	0	0	0	40	34	0	0	0	61	0
11:45 AM	0	54	170	47	0	0	0	0	0	38	39	0	0	0	60	1
12:00 PM	0	60	209	39	0	0	0	0	0	39	37	0	0	0	62	1
12:15 PM	0	56	231	55	0	0	0	0	0	41	36	0	0	0	57	1
12:30 PM	0	59	239	61	0	0	0	0	4	40	40	0	1	0	62	1
12:45 PM	0	56	223	43	0	0	0	0	0	32	57	0	0	0	58	3
1:00 PM	0	55	177	46	0	0	0	0	0	33	59	0	0	0	60	3
1:15 PM	0	51	176	47	0	0	0	0	1	36	32	0	0	0	56	4
1:30 PM	0	47	178	52	0	0	0	0	1	38	38	0	0	0	50	3
1:45 PM	0	44	174	44	0	0	0	0	0	37	45	0	0	0	64	1

MID PEAK HOUR 12:00 PM to 1:00 PM	Mystic Avenue Northbound				Mystic Avenue Southbound				Lombardi Street Northeastbound				Grand Union Boulevard Southwestbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**231**	**902**	**198**	**0**	**0**	**0**	**0**	**4**	**152**	**170**	**0**	**1**	**0**	**239**	**6**
PHF	**0.93**				**0.00**				**0.92**				**0.96**			
HV %	**0.0%**	**5.6%**	**3.1%**	**1.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**1.3%**	**0.0%**

Client:	Adriana Santiago
Project #:	504_083_VHB
BTD #:	Location 8
Location:	Somerville, MA
Street 1:	Mystic Avenue
Street 2:	Grand Union Blvd & Lombardi Street
Count Date:	11/16/2019
Day of Week:	Saturday
Weather:	Mostly Sunny, 30°F

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HEAVY VEHICLES

	Mystic Avenue Northbound				Mystic Avenue Southbound				Lombardi Street Northeastbound				Grand Union Boulevard Southwestbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	1	8	0	0	0	0	0	0	1	0	0	0	0	2	0
11:15 AM	0	3	7	0	0	0	0	0	0	0	1	0	0	0	0	0
11:30 AM	0	3	11	1	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	5	7	1	0	0	0	0	0	0	0	0	0	0	1	0
12:15 PM	0	2	6	1	0	0	0	0	0	0	1	0	0	0	2	0
12:30 PM	0	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	3	10	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	3	11	1	0	0	0	0	0	1	1	0	0	0	1	0
1:15 PM	0	1	7	0	0	0	0	0	0	0	1	0	0	0	1	0
1:30 PM	0	4	6	0	0	0	0	0	0	0	1	0	0	0	2	0
1:45 PM	0	3	7	0	0	0	0	0	0	0	1	0	0	0	2	0

MID PEAK HOUR	Mystic Avenue Northbound				Mystic Avenue Southbound				Lombardi Street Northeastbound				Grand Union Boulevard Southwestbound			
11:30 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
12:30 PM	**0**	**14**	**34**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**
PHF	**0.85**				**0.00**				**0.25**				**0.38**			

Client:	Adriana Santiago
Project #:	504_083_VHB
BTD #:	Location 8
Location:	Somerville, MA
Street 1:	Mystic Avenue
Street 2:	Grand Union Blvd & Lombardi Street
Count Date:	11/16/2019
Day of Week:	Saturday
Weather:	Mostly Sunny, 30°F

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PEDESTRIANS & BICYCLES

	Mystic Avenue Northbound				Mystic Avenue Southbound				Lombardi Street Northeastbound				Grand Union Boulevard Southwestbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	1	10	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	7	0	0	0	0	1	0	0	0	0	0	0	2
11:30 AM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	4
11:45 AM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	3	0	0	0	0	0	1	0	0	0	0	0	4
12:15 PM	0	0	0	6	0	0	0	0	0	1	0	0	0	0	0	1
12:30 PM	0	0	1	6	0	0	0	0	0	2	0	0	0	0	0	1
12:45 PM	0	0	0	10	0	0	0	1	0	1	0	0	0	0	0	0
1:00 PM	0	0	1	6	0	0	0	0	0	2	0	0	0	1	0	4
1:15 PM	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	2
1:30 PM	0	0	0	6	0	0	0	0	0	1	0	0	0	0	0	0
1:45 PM	0	1	1	5	0	0	0	0	0	3	0	2	0	0	0	3

MID PEAK HOUR 12:00 PM to 1:00 PM	Mystic Avenue Northbound				Mystic Avenue Southbound				Lombardi Street Northeastbound				Grand Union Boulevard Southwestbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	1	25	0	0	0	1	0	5	0	0	0	0	0	6

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

Client:	Adriana Santiago
Project #:	504_083_VHB
BTD #:	Location 11
Location:	Somerville, MA
Street 1:	I-93 Southbound Off-Ramp U-Turn
Street 2:	Mystic Avenue
Count Date:	11/16/2019
Day of Week:	Saturday
Weather:	Mostly Sunny, 30°F

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

	Mystic Avenue Northbound				Mystic Avenue Southbound				I-93 Southbound Off-Ramp U-Turn Northwestbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Soft Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	256	0	0	0	0	0	0	116	0	0	0	0	0	0
11:15 AM	0	0	225	0	0	0	0	0	0	93	0	0	0	0	0	0
11:30 AM	0	0	247	0	0	0	0	0	0	103	0	0	0	0	0	0
11:45 AM	0	0	209	0	0	0	0	0	0	122	0	0	0	0	0	0
12:00 PM	0	0	249	0	0	0	0	0	0	151	0	0	0	0	0	0
12:15 PM	0	0	273	0	0	0	0	0	0	103	0	0	0	0	0	0
12:30 PM	0	0	280	0	0	0	0	0	0	123	0	0	0	0	0	0
12:45 PM	0	0	258	0	0	0	0	0	0	135	0	0	0	0	0	0
1:00 PM	0	0	213	0	0	0	0	0	0	132	0	0	0	0	0	0
1:15 PM	0	0	216	0	0	0	0	0	0	123	0	0	0	0	0	0
1:30 PM	0	0	219	0	0	0	0	0	0	114	0	0	0	0	0	0
1:45 PM	0	0	212	0	0	0	0	0	0	132	0	0	0	0	0	0

MID PEAK HOUR	Mystic Avenue Northbound				Mystic Avenue Southbound				I-93 Southbound Off-Ramp U-Turn Northwestbound				Westbound			
12:00 PM to 1:00 PM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Soft Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**1060**	**0**	**0**	**0**	**0**	**0**	**0**	**512**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.95**				**0.00**				**0.85**				**0.00**			
HV %	**0.0%**	**0.0%**	**2.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Adriana Santiago
Project #:	504_083_VHB
BTD #:	Location 11
Location:	Somerville, MA
Street 1:	I-93 Southbound Off-Ramp U-Turn
Street 2:	Mystic Avenue
Count Date:	11/16/2019
Day of Week:	Saturday
Weather:	Mostly Sunny, 30°F

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HEAVY VEHICLES

	Mystic Avenue Northbound				Mystic Avenue Southbound				I-93 Southbound Off-Ramp U-Turn Northwestbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Soft Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	9	0	0	0	0	0	0	1	0	0	0	0	0	0
11:15 AM	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	10	0	0	0	0	0	0	2	0	0	0	0	0	0
12:00 PM	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	10	0	0	0	0	0	0	1	0	0	0	0	0	0
1:00 PM	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	7	0	0	0	0	0	0	1	0	0	0	0	0	0

MID PEAK HOUR	Mystic Avenue Northbound				Mystic Avenue Southbound				I-93 Southbound Off-Ramp U-Turn Northwestbound				Westbound			
11:00 AM to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Soft Left	Thru	Right	U-Turn	Left	Thru	Right
12:00 PM	**0**	**0**	**37**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.84**				**0.00**				**0.38**				**0.00**			

Client:	Adriana Santiago
Project #:	504_083_VHB
BTD #:	Location 11
Location:	Somerville, MA
Street 1:	I-93 Southbound Off-Ramp U-Turn
Street 2:	Mystic Avenue
Count Date:	11/16/2019
Day of Week:	Saturday
Weather:	Mostly Sunny, 30°F

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PEDESTRIANS & BICYCLES

	Mystic Avenue Northbound				Mystic Avenue Southbound				I-93 Southbound Off-Ramp U-Turn Northwestbound				Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Soft Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR 12:00 PM to 1:00 PM	Mystic Avenue Northbound				Mystic Avenue Southbound				I-93 Southbound Off-Ramp U-Turn Northwestbound				Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Soft Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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

Client:	Adriana Santiago
Project #:	504_083_VHB
BTD #:	Location 5
Location:	Somerville, MA
Street 1:	Mystic Avenue
Street 2:	Revolution Drive
Count Date:	11/16/2019
Day of Week:	Saturday
Weather:	Mostly Sunny, 30°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Mystic Avenue Northbound				Mystic Avenue Southbound				Eastbound				Revolution Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	306	48	0	0	0	0	0	0	0	0	0	0	0	45
11:15 AM	0	0	296	49	0	0	0	0	0	0	0	0	0	0	0	50
11:30 AM	0	0	328	51	0	0	0	0	0	0	0	0	0	0	0	52
11:45 AM	0	0	302	55	0	0	0	0	0	0	0	0	0	0	0	59
12:00 PM	0	0	321	64	0	0	0	0	0	0	0	0	0	0	0	50
12:15 PM	0	0	327	65	0	0	0	0	0	0	0	0	0	0	0	68
12:30 PM	0	0	336	62	0	0	0	0	0	0	0	0	0	0	0	63
12:45 PM	0	0	331	70	0	0	0	0	0	0	0	0	0	0	0	61
1:00 PM	0	0	317	62	0	0	0	0	0	0	0	0	0	0	0	65
1:15 PM	0	0	292	81	0	0	0	0	0	0	0	0	0	0	0	67
1:30 PM	0	0	300	63	0	0	0	0	0	0	0	0	0	0	0	53
1:45 PM	0	0	336	62	0	0	0	0	0	0	0	0	0	0	0	63

MID PEAK HOUR	Mystic Avenue Northbound				Mystic Avenue Southbound				Eastbound				Revolution Drive Westbound			
12:15 PM to 1:15 PM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**1311**	**259**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**257**
PHF	**0.98**				**0.00**				**0.00**				**0.94**			
HV %	**0.0%**	**0.0%**	**2.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.2%**

Client:	Adriana Santiago
Project #:	504_083_VHB
BTD #:	Location 5
Location:	Somerville, MA
Street 1:	Mystic Avenue
Street 2:	Revolution Drive
Count Date:	11/16/2019
Day of Week:	Saturday
Weather:	Mostly Sunny, 30°F

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HEAVY VEHICLES

	Mystic Avenue Northbound				Mystic Avenue Southbound				Eastbound				Revolution Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
11:00 AM	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	7	1	0	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	2
1:00 PM	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	1
1:15 PM	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	2
1:30 PM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	1
1:45 PM	0	0	9	1	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR	Mystic Avenue Northbound				Mystic Avenue Southbound				Eastbound				Revolution Drive Westbound			
11:00 AM to 12:00 PM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**37**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
PHF	**0.79**				**0.00**				**0.00**				**0.25**			

Client:	Adriana Santiago
Project #:	504_083_VHB
BTD #:	Location 5
Location:	Somerville, MA
Street 1:	Mystic Avenue
Street 2:	Revolution Drive
Count Date:	11/16/2019
Day of Week:	Saturday
Weather:	Mostly Sunny, 30°F

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PEDESTRIANS & BICYCLES

	Mystic Avenue Northbound				Mystic Avenue Southbound				Eastbound				Revolution Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MID PEAK HOUR 12:15 PM to 1:15 PM	Mystic Avenue Northbound				Mystic Avenue Southbound				Eastbound				Revolution Drive Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3

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 Amenities

Bus Stop Amenities

Stop Location/Route	Distance from Site		Route		Amenities				Pull-in Space Sufficient
	Feet	Walk-time (minutes)	Direction	ID	Sign	Bench	Shelter	Other	
Mystic Ave at Union St	180	1	OB	95	Yes (1)	No	No		In-lane
Broadway at Mt Vernon St	970	4	IB	89, 90, 95, 101	Yes (2)	No	No	Trash can	Yes
Broadway at Austin St	1,490	6	OB	89, 90, 101	Yes (2)	Yes	Yes	Trash can	Yes
Sullivan Square	2,150	9	IB	86, 91, 92, 93, 104, 105, 109, CT2	Yes	Yes	Yes	Trash can	Yes
Sullivan Square	2,150	9	OB	86, 91, 92, 93, 104, 105, 109, CT2	Yes	Yes	Yes	Trash can	Yes

HOWARD STEIN HUDSON

Engineers + Planners

Appendix C

MassDOT Crash Data and Crash Rate Worksheets

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville COUNT DATE : 10/25/2022

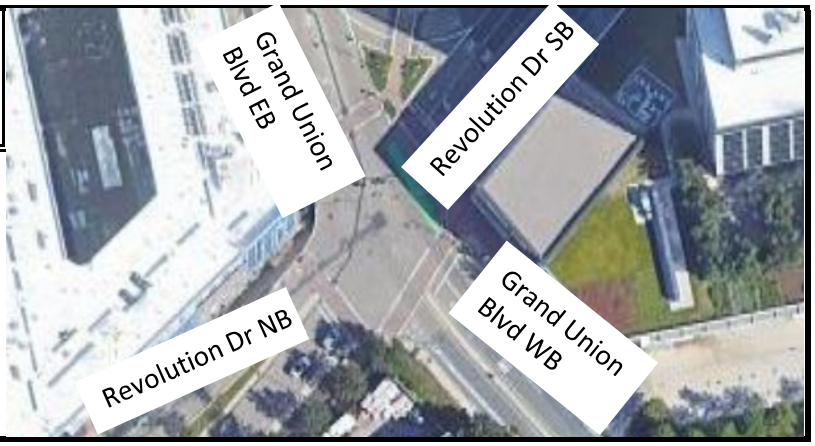
DISTRICT : 4 UNSIGNALIZED : SIGNALIZED : x

~ INTERSECTION DATA ~

MAJOR STREET : Grand Union Blvd

MINOR STREET(S) : Revolution Dr

INTERSECTION DIAGRAM (Label Approaches)



Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/**PM**) :	344	513	268	144		**1,269**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **15,863**

TOTAL # OF CRASHES : 2

OF YEARS : 3

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

CRASH RATE CALCULATION : 0.12

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

Comments :

Project Title & Date: 45 Mystic Avenue

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville COUNT DATE : 10/25/2022

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED : x

~ INTERSECTION DATA ~

MAJOR STREET : Mystic Avenue

MINOR STREET(S) : Grand Union Blvd

Alford A Lombardi St

Mystic Ave U-turn ramp

INTERSECTION DIAGRAM (Label Approaches)

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/**PM**) :	301	1,516	370	209		**2,396**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **29,950**

TOTAL # OF CRASHES : 14

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **4.67**

CRASH RATE CALCULATION : **0.43**

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

Comments :

Project Title & Date: 45 Mystic Avenue

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville COUNT DATE : 10/25/2022

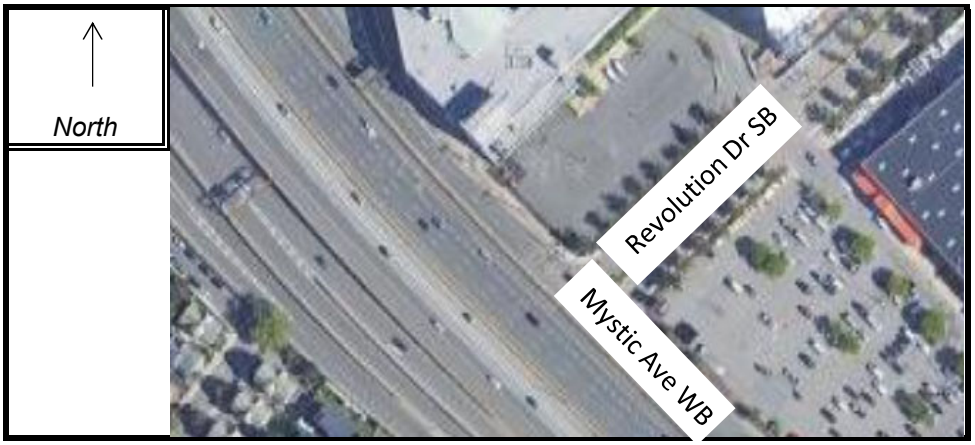
DISTRICT : 4 UNSIGNALIZED : SIGNALIZED : x

~ INTERSECTION DATA ~

MAJOR STREET : Mystic Avenue

MINOR STREET(S) : Revolution Dr

INTERSECTION DIAGRAM (Label Approaches)



Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	WB	SB				
PEAK HOURLY VOLUMES (AM/**PM**) :	1,489	237				**1,726**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **21,575**

TOTAL # OF CRASHES : 4

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **1.33**

CRASH RATE CALCULATION : **0.17**

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

Comments :

Project Title & Date: 45 Mystic Avenue

Crash Number	Crash Date	Crash Severity	Crash Status	Crash Time	Crash Year	Max Injury Severity Reported	Number of Vehicles	Police Agency Type	Driver Contributing Circumstances (All Drivers)	Driver Distracted By (All Vehicles)	Light Cond	Manner of Road Surfa	Roadway Junction Type	Total Fatal	Total Non-	Traffic Control Device Typ	Trafficway Description	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Travel Directions (Al	Weather Conditions	Street Num	Roadway	Near Intersection Roadway
4661839	02/01/2019	Property damage only (none injured)	Closed	8:36 PM	2019	No injury	2	State police	D1: (No improper driving) / D2: (Failed to yield right of way)	D1: Not Distracted	Dark - light	Angle	Dry	T-intersection	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Turning right	V1: S / V2: W	Clear		MYSTIC AVENUE Rte	NEW ROAD
4674459	02/07/2019	Property damage only (none injured)	Closed	9:25 PM	2019	No injury	2	State police	D1: (Other improper action) / D2: (No improper driving)	D2: Not Distracted	Dark - road	Sideswipe,	Dry	Not at junction	0	0	No controls	Two-way, divided, positiv	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: W / V2: W	Clear		MYSTIC AVENUE / RE	
4874480	09/02/2020	Property damage only (none injured)	Closed	3:45 PM	2020	No Apparent Injury (O)	2	State police	D1: (No improper driving) / D2: (Followed too closely)	D1: Not Distracted	Daylight	Rear-end	Dry	Not at junction	0	0	No controls	One-way, not divided	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1: N / V2: N	Cloudy		MYSTIC AVENUE Rte	REVOLUTION DRIVE
4883752	09/24/2020	Property damage only (none injured)	Closed	2:00 PM	2020	No Apparent Injury (O)	2	State police	D1: (Followed too closely) / D2: (No improper driving)	D2: Not Distracted	Daylight	Rear-end	Dry	T-intersection	0	0	Traffic control signal	One-way, not divided	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: N / V2: N	Clear		MYSTIC AVENUE / RE	
4582049	06/22/2018	Property damage only (none injured)	Closed	1:52 PM	2018	No injury	2	Local police			Daylight	Head-on	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V1: Turning left / V2: Travelling straight ahead	V1: N / V2: S	Clear		GRAND UNION BLVD	
4693841	03/23/2019	Property damage only (none injured)	Closed	7:37 PM	2019	No injury	2	Local police			Dark - light	Rear-end	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: S / V2: S	Clear		GRAND UNION BLVD	
4492513	01/18/2018	Property damage only (none injured)	Closed	6:17 AM	2018	No injury	2	State police	D1: (No improper driving) / D2: (Failed to yield right of way)	D1: Not Distracted	Daylight	Angle	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Turning left	V1: W / V2: E	Clear	19	MYSTIC AVENUE Rte	A ALFRED A LOMBARDI STREET
4588394	09/01/2018	Property damage only (none injured)	Closed	5:10 PM	2018	No injury	2	State police	D1: (Distracted) / D2: (No improper driving)	D1: Passenger / D2: Not Distracted	Daylight	Rear-end	Dry	On-ramp	0	0	No controls	One-way, not divided	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1: N / V2: N	Clear		MYSTIC AVENUE Rte	ASSEMBLY SQUARE DRIVE
4623485	10/05/2018	Property damage only (none injured)	Closed	2:56 PM	2018	No injury	2	State police	D1: (Inattention) / D2: (No improper driving)		Daylight	Rear-end	Dry	T-intersection	0	0	Traffic control signal	Two-way, divided, positiv	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1: N / V2: N	Clear		MYSTIC AVENUE Rte	A ALFRED A LOMBARDI STREET
4642823	12/26/2018	Property damage only (none injured)	Closed	5:15 PM	2018	No injury	2	State police	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	D1: Not Distracted / D2: Not Distracted	Dark - light	Angle	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, divided, unprot	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: E / V2: S	Clear		MYSTIC AVENUE / AL	
4646086	09/15/2018	Not Reported	Closed	7:35 PM	2018	No injury	2	Local police			Dark - road	Sideswipe,	Dry	Y-intersection	0	0	Traffic control signal	One-way, not divided	V1: Entering traffic lane / V2: Entering traffic lane	V1: W / V2: W	Clear		MYSTIC AVENUE / RA	
4656782	01/15/2019	Property damage only (none injured)	Closed	8:30 AM	2019	No injury	2	State police	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	D2: Not Distracted	Daylight	Head-on	Dry	T-intersection	0	0	Traffic control signal	Two-way, divided, positiv	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: N / V2: E	Clear		MYSTIC AVENUE Rte	A ALFRED A LOMBARDI STREET
4791500	12/16/2019	Property damage only (none injured)	Closed	8:10 PM	2019	No Apparent Injury (O)	2	State police	D1: (No improper driving) / D2: (Failed to yield right of way)	D1: Not Distracted	Dark - light	Angle	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: E / V2: N	Clear		MYSTIC AVENUE Rte	
4802198	01/10/2020	Property damage only (none injured)	Closed	6:49 PM	2020	No Apparent Injury (O)	2	State police	D2: (No improper driving)	D2: Not Distracted	Dark - light	Angle	Dry	T-intersection	0	0	Traffic control signal	Two-way, divided, unprot	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: W / V2: S	Clear		MYSTIC AVENUE / AL	
4817935	02/12/2020	Property damage only (none injured)	Closed	12:05 PM	2020	No Apparent Injury (O)	2	State police	D1: (No improper driving)		Daylight	Sideswipe,	Dry	Four-way intersection	0	0	Traffic control signal	One-way, not divided	V1: Slowing or stopped in traffic / V2: Leaving traffic lane	V1: N / V2: N	Clear		MYSTIC AVENUE / AL	
4848543	05/16/2020	Property damage only (none injured)	Closed	9:10 AM	2020	No Apparent Injury (O)	2	State police		D1: Not Distracted / D2: Not Distracted	Daylight	Angle	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V1: Travelling straight ahead / V2: Travelling straight ahead	V1: E / V2: N	Clear		MYSTIC AVENUE Rte	ALFORD A LOMBARDI WAY
4872517	08/23/2020	Property damage only (none injured)	Closed	7:20 PM	2020	No Apparent Injury (O)	2	State police			Dusk	Sideswipe,	Wet	Four-way intersection	0	0	Traffic control signal	Two-way, not divided	V1: Turning left / V2: Travelling straight ahead	V1: N / V2: N	Cloudy/Rain		MYSTIC AVENUE / LO	
4884724	09/30/2020	Property damage only (none injured)	Closed	11:01 AM	2020	No Apparent Injury (O)	2	State police	D1: (Failed to yield right of way) / D2: (No improper driving)	D1: Not Distracted / D2: Not Distracted	Daylight	Angle	Dry	Four-way intersection	0	0	Traffic control signal	Two-way, divided, unprot	V1: Turning right / V2: Travelling straight ahead	V1: N / V2: E	Clear		MYSTIC AVENUE / GR	
4920454	12/12/2020	Non-fatal injury	Closed	7:42 PM	2020	Possible Injury (C)	1	Local police			Dark - light	Angle	Wet	T-intersection	0	0	Traffic control signal	Two-way, divided, unprot	V1: Turning left	V1: E	Cloudy/Rain		MYSTIC AVE / LOMBA	
4922346	12/26/2020	Property damage only (none injured)	Closed	7:48 PM	2020	No Apparent Injury (O)	2	State police		D1: Not Distracted / D2: Not Distracted	Dark - light	Angle	Dry	T-intersection	0	0	Traffic control signal	Two-way, not divided	V1: Turning left / V2: Travelling straight ahead	V1: E / V2: N	Clear		A ALFRED LOMBARDI	MYSTIC AVENUE

Query Type:
Criteria:

HOWARD STEIN HUDSON

Engineers + Planners

Appendix D

Project Trip Generation

45 Mystic Avenue
Trip Generation Assessment-11th Edition

HOWARD STEIN HUDSON
17-Oct-2022

Land Use	Size	Category	Directional Split	Average Trip Rate	Unadjusted Vehicle Trips	Assumed Local Vehicle Occupancy Rate[1]	Unadjusted Person-Trips	Transit Share[3]	Transit Person-Trips	Walk Share[3]	Walk Person-Trips	Bike Share[3]	Bike Person Trips	Work from Home Share	Work From Home Trips	Auto Share[3]	Auto Person-Trips	% Taxi[4]	Private Auto Person-Trips	Taxi Person-Trips	Assumed Local Vehicle Occupancy Rate[1]	Assumed Local Auto Occupancy Rate for Taxis[6]	Total Adjusted Private Auto Trips	Total Adjusted Taxi Trips	Total Adjusted Auto (Private + Taxi) Trips
Daily Peak Hour																									
Research & Development Center[12]	49.31	Total		11.080	546	1.13	**616**	45%	**278**	1%	**6**	0%	**0**	10%	**60**	44%	**272**	5%	258	14	1.13	1.20	**228**	**12**	**240**
	KSF	In	50%	5.540	273	1.13	**308**	45%	**139**	1%	**3**	0%	**0**	10%	**30**	44%	**136**	5%	129	7	1.13	1.20	**114**	**6**	**120**
		Out	50%	5.540	273	1.13	**308**	45%	**139**	1%	**3**	0%	**0**	10%	**30**	44%	**136**	5%	129	7	1.13	1.20	**114**	**6**	**120**
Shopping Center[13]	1.24	Total		37.010	46	1.82	**84**	50%	**42**	1%	**0**	0%	**0**	0%	**0**	49%	**42**	5%	40	2	1.82	1.20	**22**	**2**	**24**
	KSF	In	50%	18.505	23	1.82	**42**	50%	**21**	1%	**0**	0%	**0**	0%	**0**	49%	**21**	5%	20	1	1.82	1.20	**11**	**1**	**12**
		Out	50%	18.505	23	1.82	**42**	50%	**21**	1%	**0**	0%	**0**	0%	**0**	49%	**21**	5%	20	1	1.82	1.20	**11**	**1**	**12**
Total		Total			**592**		**700**		**320**		**6**		**0**		**60**		**314**		**298**	**16**			**250**	**14**	**264**
		In			**296**		**350**		**160**		**3**		**0**		**30**		**157**		**149**	**8**			**125**	**7**	**132**
		Out			**296**		**350**		**160**		**3**		**0**		**30**		**157**		**149**	**8**			**125**	**7**	**132**
AM Peak Hour																									
Research & Development Center[12]	49.309	Total		1.030	51	1.13	**57**		**26**		**0**		**0**		**6**		**25**	5%	24	1	1.13	1.20	**22**	**1**	**23**
	KSF	In	82%	0.845	42	1.13	**47**	45%	**21**	1%	**0**	0%	**0**	10%	**5**	44%	**21**	5%	20	1	1.13	1.20	**18**	**1**	**19**
		Out	18%	0.185	9	1.13	**10**	45%	**5**	1%	**0**	0%	**0**	10%	**1**	44%	**4**	5%	4	0	1.13	1.20	**4**	**0**	**4**
Shopping Center[13]	1.241	Total		0.84	1	1.82	**2**		**1**		**0**		**0**		**0**		**1**	5%	1	0	1.82	1.20	**1**	**0**	**1**
	KSF	In	62%	0.521	1	1.82	**2**	50%	**1**	1%	**0**	0%	**0**	0%	**0**	49%	**1**	5%	1	0	1.82	1.20	**1**	**0**	**1**
		Out	38%	0.319	0	1.82	**0**	50%	**0**	1%	**0**	0%	**0**	0%	**0**	49%	**0**	5%	0	0	1.82	1.20	**0**	**0**	**0**
Total		Total			**52**		**59**		**27**		**0**		**0**		**6**		**26**		**25**	**1**			**23**	**1**	**24**
		In			**43**		**49**		**22**		**0**		**0**		**5**		**22**		**21**	**1**			**19**	**1**	**20**
		Out			**9**		**10**		**5**		**0**		**0**		**1**		**4**		**4**	**0**			**4**	**0**	**4**
PM Peak Hour																									
Research & Development Center[12]	49.309	Total		0.980	49	1.13	**55**		**25**		**0**		**0**		**6**		**24**	5%	23	1	1.13	1.20	**21**	**1**	**22**
	KSF	In	16%	0.157	8	1.13	**9**	45%	**4**	1%	**0**	0%	**0**	10%	**1**	44%	**4**	5%	4	0	1.13	1.20	**4**	**0**	**4**
		Out	84%	0.823	41	1.13	**46**	45%	**21**	1%	**0**	0%	**0**	10%	**5**	44%	**20**	5%	19	1	1.13	1.20	**17**	**1**	**18**
Shopping Center[13]	1.241	Total		3.40	4	1.82	**8**		**4**		**0**		**0**		**0**		**4**	5%	4	0	1.82	1.20	**2**	**0**	**2**
	KSF	In	48%	1.632	2	1.82	**4**	50%	**2**	1%	**0**	0%	**0**	0%	**0**	49%	**2**	5%	2	0	1.82	1.20	**1**	**0**	**1**
		Out	52%	1.768	2	1.82	**4**	50%	**2**	1%	**0**	0%	**0**	0%	**0**	49%	**2**	5%	2	0	1.82	1.20	**1**	**0**	**1**
Total		Total			**53**		**63**		**29**		**0**		**0**		**6**		**28**		**27**	**1**			**23**	**1**	**24**
		In			**10**		**13**		**6**		**0**		**0**		**1**		**6**		**6**	**0**			**5**	**0**	**5**
		Out			**43**		**50**		**23**		**0**		**0**		**5**		**22**		**21**	**1**			**18**	**1**	**19**
Saturday Peak Hour																									
Research & Development Center[12]	49.309	Total		0.240	12	1.13	**14**		**6**		**0**		**0**		**2**		**6**	5%	6	0	1.13	1.20	**6**	**0**	**6**
	KSF	In	50%	0.120	6	1.13	**7**	45%	**3**	1%	**0**	0%	**0**	10%	**1**	44%	**3**	5%	3	0	1.13	1.20	**3**	**0**	**3**
		Out	50%	0.120	6	1.13	**7**	45%	**3**	1%	**0**	0%	**0**	10%	**1**	44%	**3**	5%	3	0	1.13	1.20	**3**	**0**	**3**
Shopping Center[13]	1.241	Total		4.40	6	1.82	**10**		**6**		**0**		**0**		**0**		**4**	5%	4	0	1.82	1.20	**2**	**0**	**2**
	KSF	In	52%	2.288	3	1.82	**5**	50%	**3**	1%	**0**	0%	**0**	0%	**0**	49%	**2**	5%	2	0	1.82	1.20	**1**	**0**	**1**
		Out	48%	2.112	3	1.82	**5**	50%	**3**	1%	**0**	0%	**0**	0%	**0**	49%	**2**	5%	2	0	1.82	1.20	**1**	**0**	**1**
Total		Total			**18**		**24**		**12**		**0**		**0**		**2**		**10**		**10**	**0**			**8**	**0**	**8**
		In			**9**		**12**		**6**		**0**		**0**		**1**		**5**		**5**	**0**			**4**	**0**	**4**
		Out			**9**		**12**		**6**		**0**		**0**		**1**		**5**		**5**	**0**			**4**	**0**	**4**

1. Based on occupancy rates for census tract
2. Based on ITE Trip Generation Handbook, 3rd Edition method
3. Mode shares based on means of transportation to work from Census data for census tract project falls within
4. Vehicle Trips = 70% Private Auto and 30% Taxi. Taxi trip rate based on CTPS Taxi activity rates for Hotel lane use, as adopted by Central Artery/Tunnel Project
5. Local vehicle occupancy rates based on 2009 National vehicle occupancy rates
6. For taxi cabs, 1.2 passengers per cab. (2.2 minus 1 driver equals 1.2)

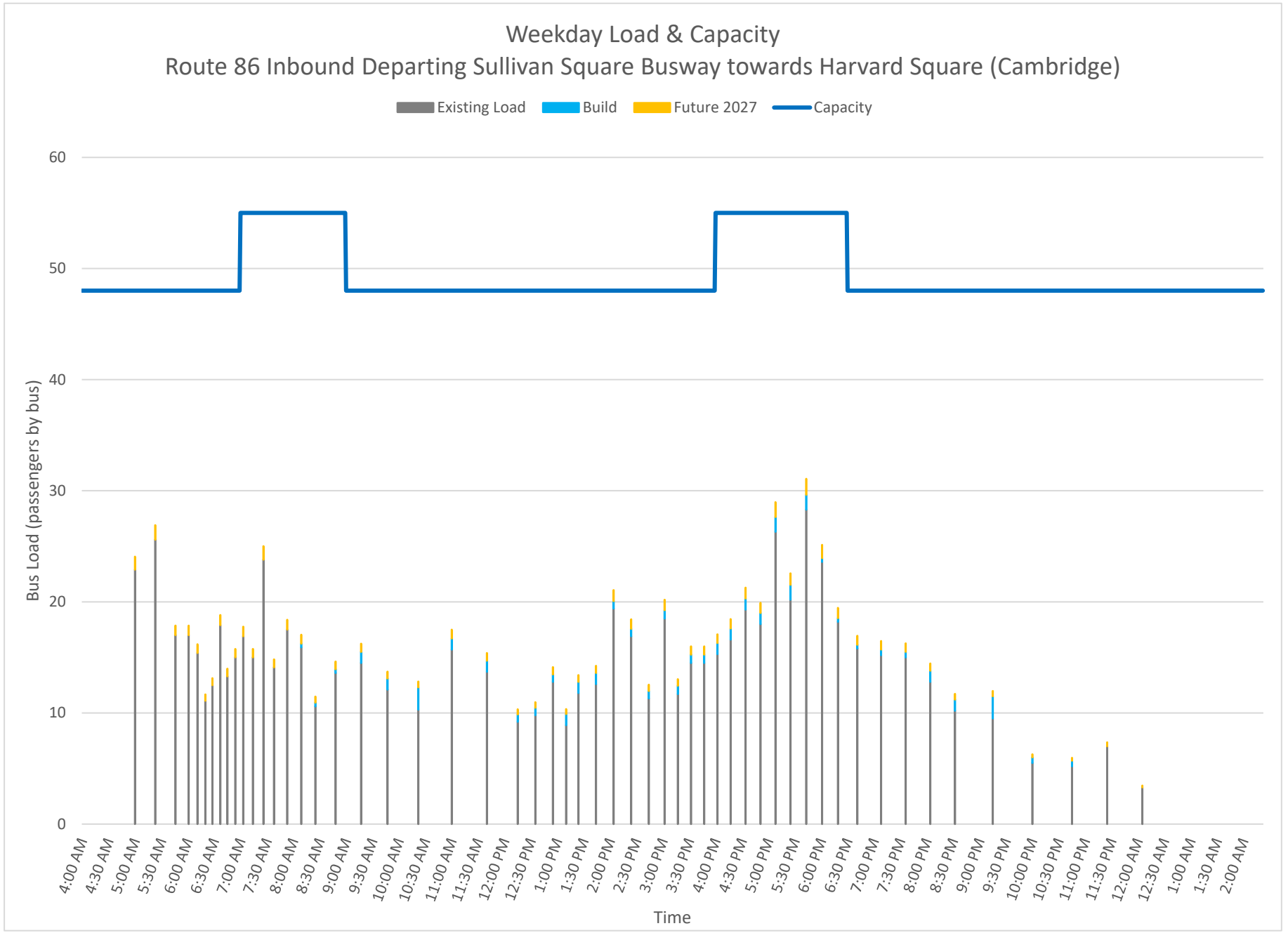
12. ITE Trip Generation Manual, 11th Edition, LUC 760 (Research & Development Center), average rate
13. ITE Trip Generation Manual, 11th Edition, LUC 820 (Shopping Center), average rate

HOWARD STEIN HUDSON

Engineers + Planners

Appendix E

Transit Analysis


Weekday Load & Capacity
Route 86 Inbound Departing Sullivan Square Busway towards Harvard Square (Cambridge)
Existing Load
Build
Future 2027
Capacity
60
50
40
30
20
10
0
Bus Load (passengers by bus)
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
7:30 AM
8:00 AM
8:30 AM
9:00 AM
9:30 AM
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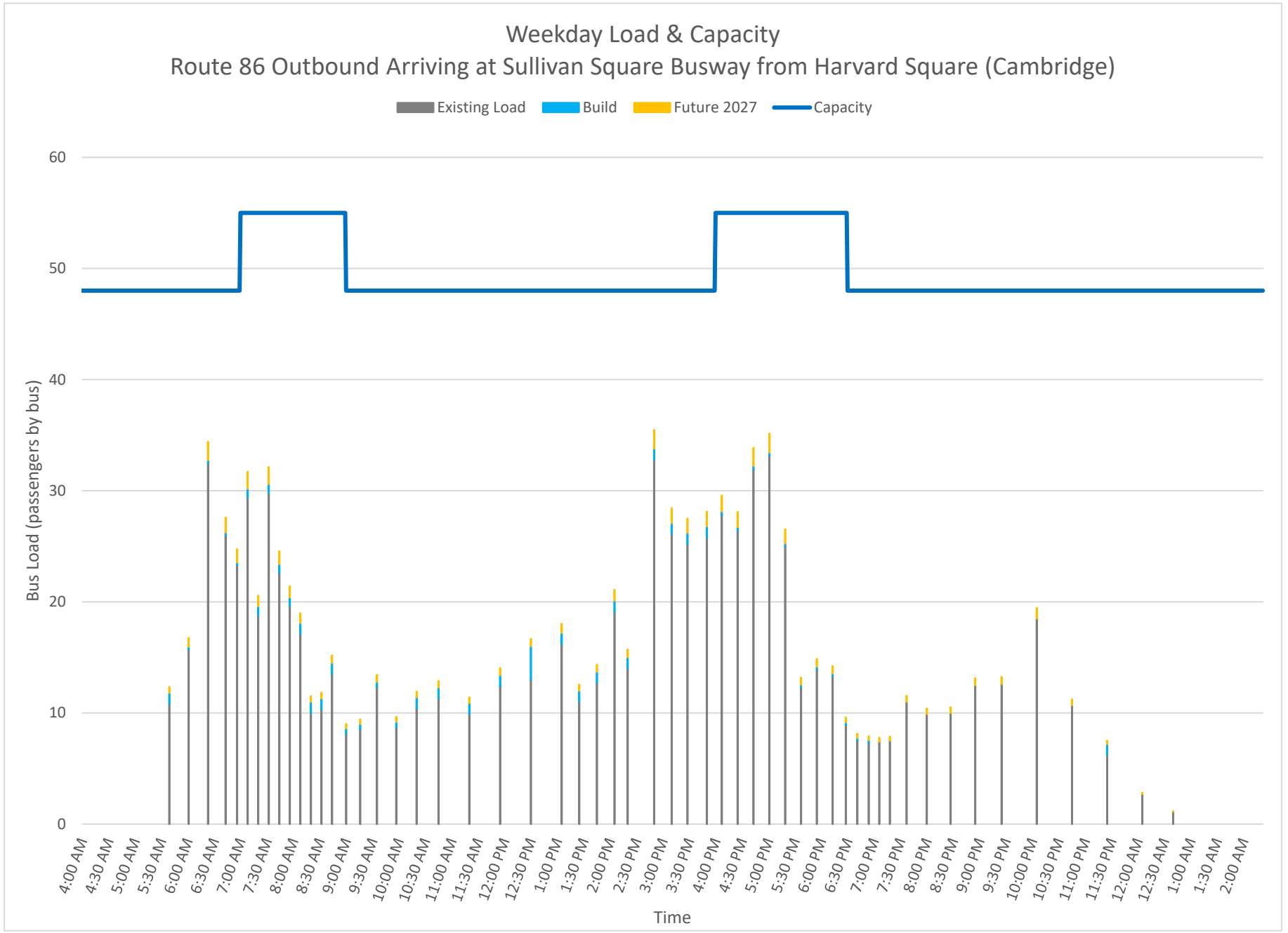
Time


Weekday Load & Capacity
Route 86 Outbound Arriving at Sullivan Square Busway from Harvard Square (Cambridge)
Existing Load
Build
Future 2027
Capacity
60
50
40
30
20
10
0
Bus Load (passengers by bus)
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
7:30 AM
8:00 AM
8:30 AM
9:00 AM
9:30 AM
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8:00 PM
8:30 PM
9:00 PM
9:30 PM
10:00 PM
10:30 PM
11:00 PM
11:30 PM
12:00 AM
12:30 AM
1:00 AM
1:30 AM
2:00 AM
Time

Bus Route 86 - Inbound Analysis After Sullivan Square Busway (Volume/VC Tables by 30 min)

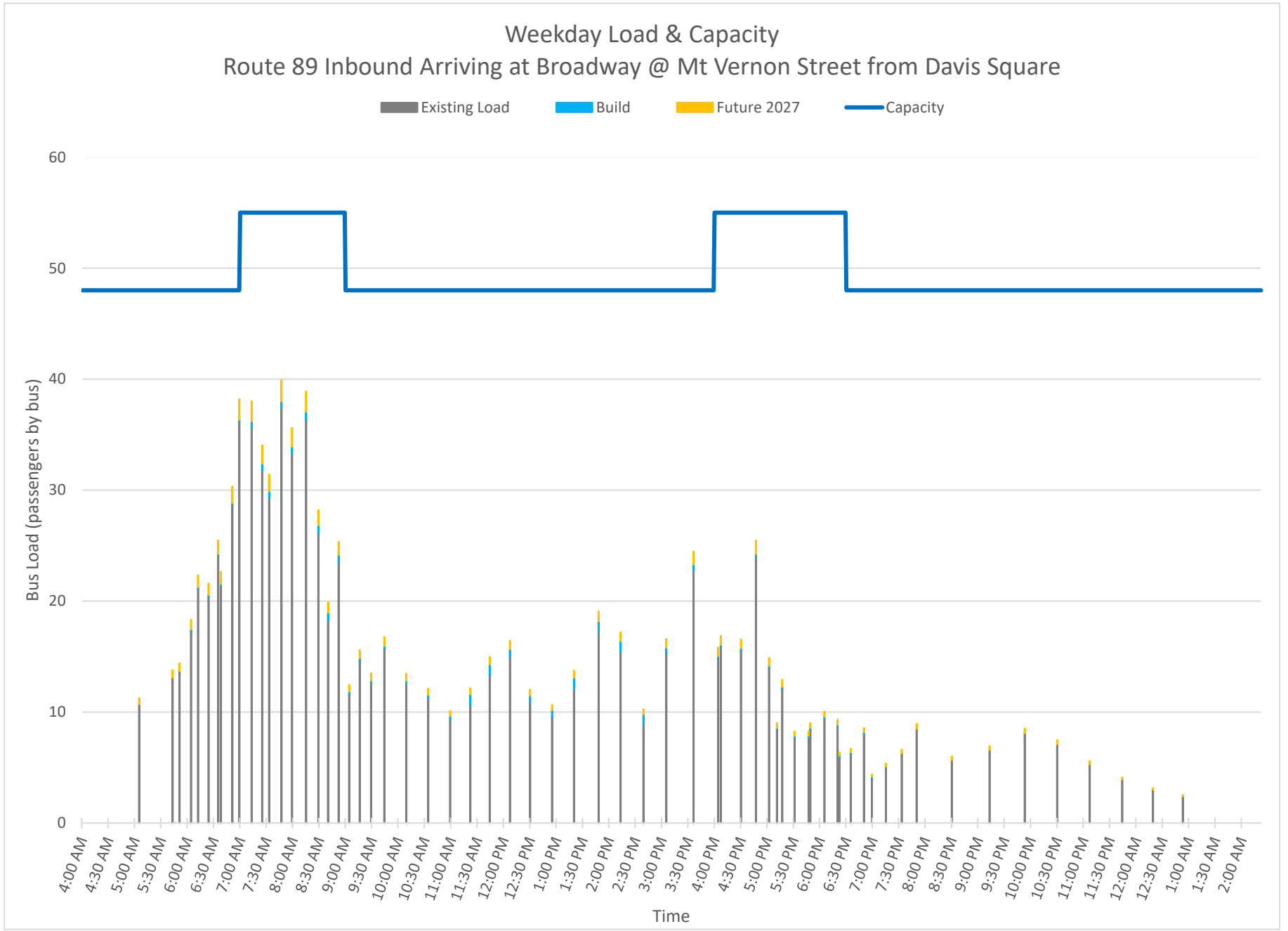
		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	2	49	0.51	49	0.51	51	0.53
5:30 AM	1	17	0.35	17	0.35	18	0.37
6:00 AM	4	56	0.29	56	0.29	59	0.31
6:30 AM	3	46	0.28	46	0.28	49	0.29
7:00 AM	3	56	0.34	56	0.34	59	0.35
7:30 AM	2	32	0.29	32	0.29	33	0.30
8:00 AM	2	27	0.24	27	0.25	29	0.26
8:30 AM	1	14	0.25	14	0.25	15	0.27
9:00 AM	1	15	0.30	16	0.32	16	0.34
9:30 AM	1	12	0.25	13	0.27	14	0.29
10:00 AM	1	10	0.21	12	0.26	13	0.27
10:30 AM	-	-	-	-	-	-	-
11:00 AM	1	16	0.33	17	0.35	18	0.36
11:30 AM	1	14	0.29	15	0.31	15	0.32
12:00 PM	1	9	0.19	10	0.21	10	0.22
12:30 PM	2	23	0.24	24	0.25	25	0.26
1:00 PM	2	21	0.22	23	0.24	24	0.25
1:30 PM	1	13	0.26	14	0.28	14	0.30
2:00 PM	2	36	0.38	38	0.39	39	0.41
2:30 PM	1	11	0.24	12	0.25	13	0.26
3:00 PM	2	30	0.31	32	0.33	33	0.35
3:30 PM	2	29	0.26	31	0.28	32	0.29
4:00 PM	2	32	0.29	34	0.31	36	0.32
4:30 PM	2	37	0.34	39	0.36	41	0.37
5:00 PM	2	47	0.42	49	0.45	52	0.47
5:30 PM	1	28	0.51	30	0.54	31	0.57
6:00 PM	2	42	0.38	42	0.39	45	0.41
6:30 PM	1	16	0.33	16	0.34	17	0.35
7:00 PM	1	15	0.32	16	0.33	16	0.34
7:30 PM	1	15	0.31	16	0.32	16	0.34
8:00 PM	1	13	0.27	14	0.29	14	0.30
8:30 PM	1	10	0.21	11	0.23	12	0.24
9:00 PM	1	10	0.20	12	0.24	12	0.25
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	6	0.11	6	0.13	6	0.13
10:30 PM	1	5	0.11	6	0.12	6	0.12
11:00 PM	1	7	0.15	7	0.15	7	0.15
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	3	0.07	3	0.07	3	0.07
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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

Bus Route 86 - Outbound Analysis Before Sullivan Square Busway (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	1	11	0.23	12	0.25	12	0.26
6:00 AM	2	48	0.50	49	0.51	51	0.53
6:30 AM	2	49	0.45	50	0.45	52	0.48
7:00 AM	2	48	0.44	50	0.45	52	0.48
7:30 AM	3	72	0.44	74	0.45	78	0.47
8:00 AM	2	27	0.25	29	0.26	30	0.28
8:30 AM	2	24	0.22	26	0.23	27	0.25
9:00 AM	2	17	0.17	18	0.18	18	0.19
9:30 AM	2	21	0.22	22	0.23	23	0.24
10:00 AM	1	10	0.22	11	0.24	12	0.25
10:30 AM	1	11	0.24	12	0.26	13	0.27
11:00 AM	1	10	0.21	11	0.23	11	0.24
11:30 AM	1	12	0.26	13	0.28	14	0.29
12:00 PM	-	-	-	-	-	-	-
12:30 PM	1	13	0.27	16	0.33	17	0.35
1:00 PM	2	27	0.28	29	0.30	31	0.32
1:30 PM	1	13	0.26	14	0.29	14	0.30
2:00 PM	2	33	0.34	35	0.37	37	0.38
2:30 PM	1	33	0.68	34	0.70	35	0.74
3:00 PM	2	51	0.53	53	0.56	56	0.58
3:30 PM	1	26	0.47	27	0.49	28	0.51
4:00 PM	2	54	0.49	55	0.50	58	0.52
4:30 PM	1	32	0.58	32	0.59	34	0.62
5:00 PM	2	58	0.53	59	0.53	62	0.56
5:30 PM	2	26	0.24	27	0.24	28	0.25
6:00 PM	2	22	0.20	23	0.21	24	0.22
6:30 PM	2	15	0.15	15	0.16	16	0.17
7:00 PM	2	15	0.16	15	0.16	16	0.16
7:30 PM	1	11	0.23	11	0.23	12	0.24
8:00 PM	2	20	0.21	20	0.21	21	0.22
8:30 PM	1	13	0.26	13	0.26	13	0.27
9:00 PM	1	13	0.26	13	0.26	13	0.28
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	19	0.39	19	0.39	19	0.41
10:30 PM	1	11	0.22	11	0.22	11	0.23
11:00 PM	1	6	0.13	7	0.15	8	0.16
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	3	0.06	3	0.06	3	0.06
12:30 AM	1	1	0.02	1	0.02	1	0.02
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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


Weekday Load & Capacity
Route 89 Inbound Arriving at Broadway @ Mt Vernon Street from Davis Square
Existing Load
Build
Future 2027
Capacity
60
50
40
30
20
10
0
Bus Load (passengers by bus)
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
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8:00 AM
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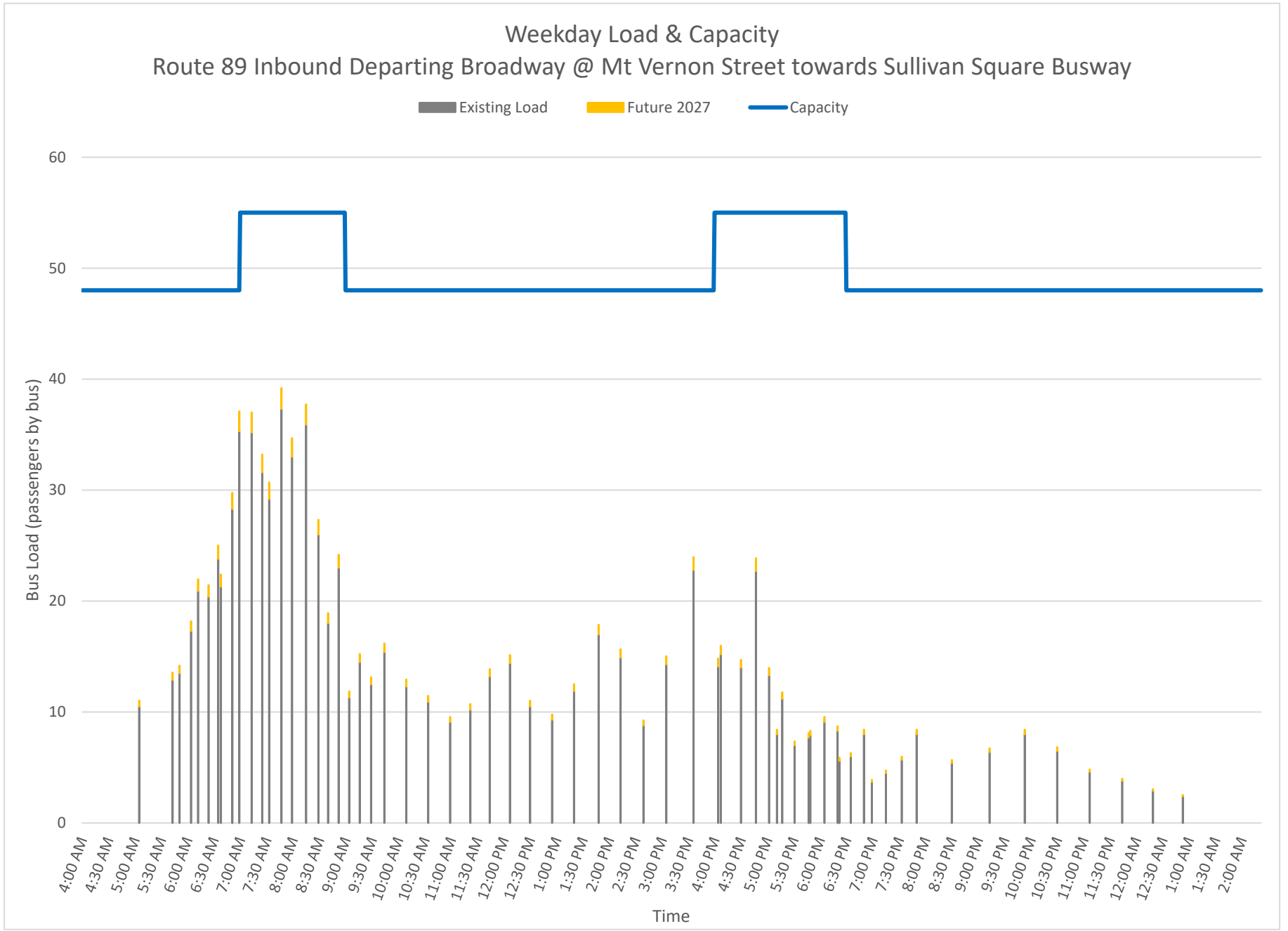
Weekday Load & Capacity
Route 89 Inbound Departing Broadway @ Mt Vernon Street towards Sullivan Square Busway
Existing Load
Future 2027
Capacity
60
50
40
30
20
10
0
Bus Load (passengers by bus)
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
7:30 AM
8:00 AM
8:30 AM
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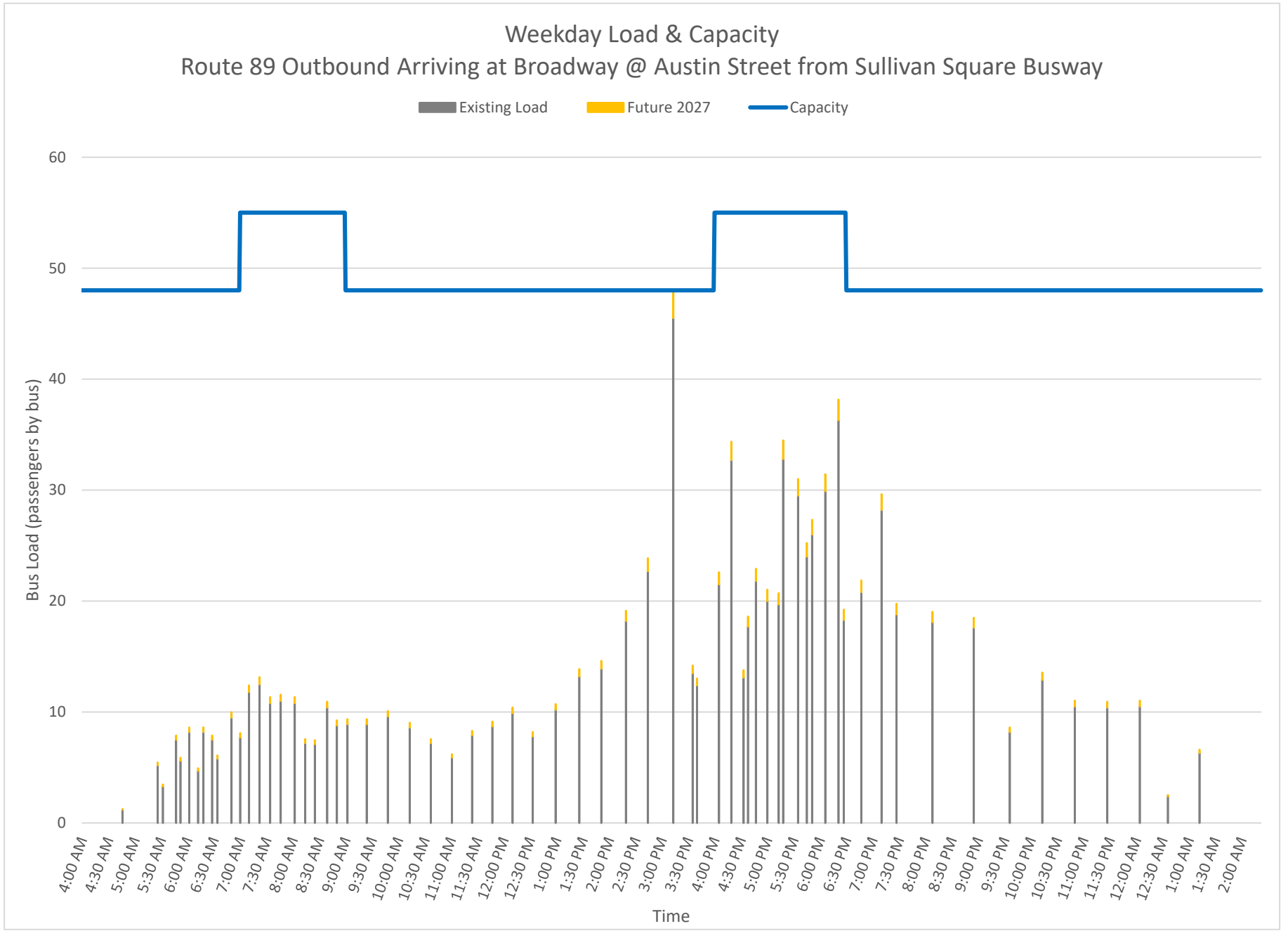
Weekday Load & Capacity
Route 89 Outbound Arriving at Broadway @ Austin Street from Sullivan Square Busway
Existing Load
Future 2027
Capacity
Bus Load (passengers by bus)
0
10
20
30
40
50
60
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
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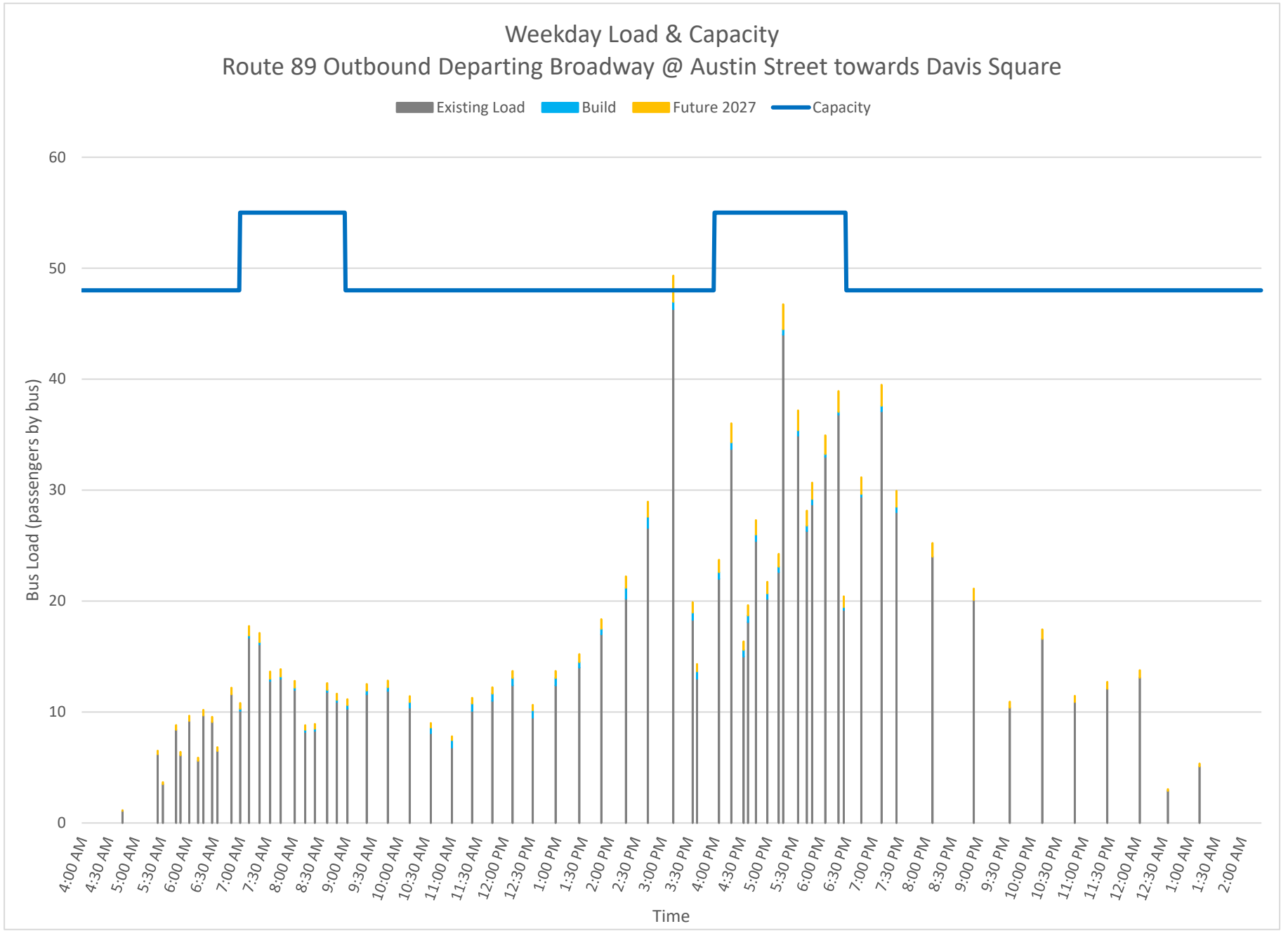
Time


Weekday Load & Capacity
Route 89 Outbound Departing Broadway @ Austin Street towards Davis Square
Existing Load
Build
Future 2027
Capacity
Bus Load (passengers by bus)
0
10
20
30
40
50
60
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
7:30 AM
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12:30 AM
1:00 AM
1:30 AM
2:00 AM
Time

Bus Route 89 - Inbound Analysis Before Broadway @ Mt Vernon St (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	11	0.22	11	0.22	11	0.23
5:30 AM	2	27	0.28	27	0.28	28	0.29
6:00 AM	3	59	0.41	59	0.41	62	0.43
6:30 AM	4	110	0.50	111	0.50	117	0.53
7:00 AM	2	67	0.61	69	0.62	72	0.65
7:30 AM	3	100	0.61	102	0.62	107	0.65
8:00 AM	2	62	0.57	64	0.58	67	0.61
8:30 AM	2	42	0.38	43	0.39	45	0.41
9:00 AM	3	39	0.27	40	0.27	42	0.29
9:30 AM	1	16	0.33	16	0.33	17	0.35
10:00 AM	1	13	0.26	13	0.27	13	0.28
10:30 AM	2	21	0.21	21	0.22	22	0.23
11:00 AM	1	11	0.22	12	0.24	12	0.25
11:30 AM	1	13	0.28	14	0.30	15	0.31
12:00 PM	1	15	0.31	16	0.33	16	0.34
12:30 PM	2	20	0.21	22	0.23	23	0.24
1:00 PM	1	12	0.25	13	0.27	14	0.29
1:30 PM	1	17	0.36	18	0.38	19	0.40
2:00 PM	1	15	0.32	16	0.34	17	0.36
2:30 PM	1	9	0.18	10	0.20	10	0.21
3:00 PM	1	15	0.32	16	0.33	17	0.35
3:30 PM	1	23	0.41	23	0.42	24	0.44
4:00 PM	2	31	0.28	31	0.28	33	0.30
4:30 PM	2	40	0.36	40	0.36	42	0.38
5:00 PM	3	35	0.21	35	0.21	37	0.22
5:30 PM	3	24	0.14	24	0.15	26	0.15
6:00 PM	3	24	0.15	25	0.15	26	0.16
6:30 PM	3	18	0.13	19	0.13	20	0.14
7:00 PM	1	5	0.11	5	0.11	5	0.11
7:30 PM	2	15	0.15	15	0.15	16	0.16
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	6	0.12	6	0.12	6	0.12
9:00 PM	1	7	0.14	7	0.14	7	0.14
9:30 PM	1	8	0.17	8	0.17	9	0.18
10:00 PM	-	-	-	-	-	-	-
10:30 PM	1	7	0.15	7	0.15	7	0.16
11:00 PM	1	5	0.11	5	0.11	6	0.12
11:30 PM	1	4	0.08	4	0.08	4	0.09
12:00 AM	1	3	0.06	3	0.06	3	0.07
12:30 AM	1	2	0.05	2	0.05	3	0.05
1:00 AM	-	-	-	-	-	-	-
1:30 AM	1	0	0.00	0	0.00	0	0.00

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

Bus Route 89 - Inbound Analysis After Broadway @ Mt Vernon St (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	11	0.22	11	0.22	11	0.23
5:30 AM	2	26	0.28	26	0.28	28	0.29
6:00 AM	3	59	0.41	59	0.41	62	0.43
6:30 AM	4	109	0.49	109	0.49	114	0.52
7:00 AM	2	67	0.61	67	0.61	70	0.64
7:30 AM	3	100	0.60	100	0.60	105	0.63
8:00 AM	2	62	0.56	62	0.56	65	0.59
8:30 AM	2	41	0.37	41	0.37	43	0.39
9:00 AM	3	38	0.27	38	0.27	40	0.28
9:30 AM	1	15	0.32	15	0.32	16	0.34
10:00 AM	1	12	0.26	12	0.26	13	0.27
10:30 AM	2	20	0.21	20	0.21	21	0.22
11:00 AM	1	10	0.21	10	0.21	11	0.22
11:30 AM	1	13	0.28	13	0.28	14	0.29
12:00 PM	1	14	0.30	14	0.30	15	0.32
12:30 PM	2	20	0.21	20	0.21	21	0.22
1:00 PM	1	12	0.25	12	0.25	13	0.26
1:30 PM	1	17	0.35	17	0.35	18	0.37
2:00 PM	1	15	0.31	15	0.31	16	0.33
2:30 PM	1	9	0.18	9	0.18	9	0.19
3:00 PM	1	14	0.30	14	0.30	15	0.31
3:30 PM	1	23	0.41	23	0.41	24	0.44
4:00 PM	2	29	0.27	29	0.27	31	0.28
4:30 PM	2	37	0.33	37	0.33	39	0.35
5:00 PM	3	33	0.20	33	0.20	34	0.21
5:30 PM	3	23	0.14	23	0.14	24	0.14
6:00 PM	3	23	0.14	23	0.14	24	0.15
6:30 PM	3	18	0.12	18	0.12	19	0.13
7:00 PM	1	5	0.09	5	0.09	5	0.10
7:30 PM	2	14	0.14	14	0.14	14	0.15
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	5	0.11	5	0.11	6	0.12
9:00 PM	1	6	0.13	6	0.13	7	0.14
9:30 PM	1	8	0.17	8	0.17	8	0.18
10:00 PM	-	-	-	-	-	-	-
10:30 PM	1	7	0.14	7	0.14	7	0.14
11:00 PM	1	5	0.10	5	0.10	5	0.10
11:30 PM	1	4	0.08	4	0.08	4	0.08
12:00 AM	1	3	0.06	3	0.06	3	0.06
12:30 AM	1	2	0.05	2	0.05	3	0.05
1:00 AM	-	-	-	-	-	-	-
1:30 AM	1	0	0.00	0	0.00	0	0.00

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

Bus Route 89 - Outbound Analysis Before Broadway @ Austin St (Volume/VC Tables by 30 min)

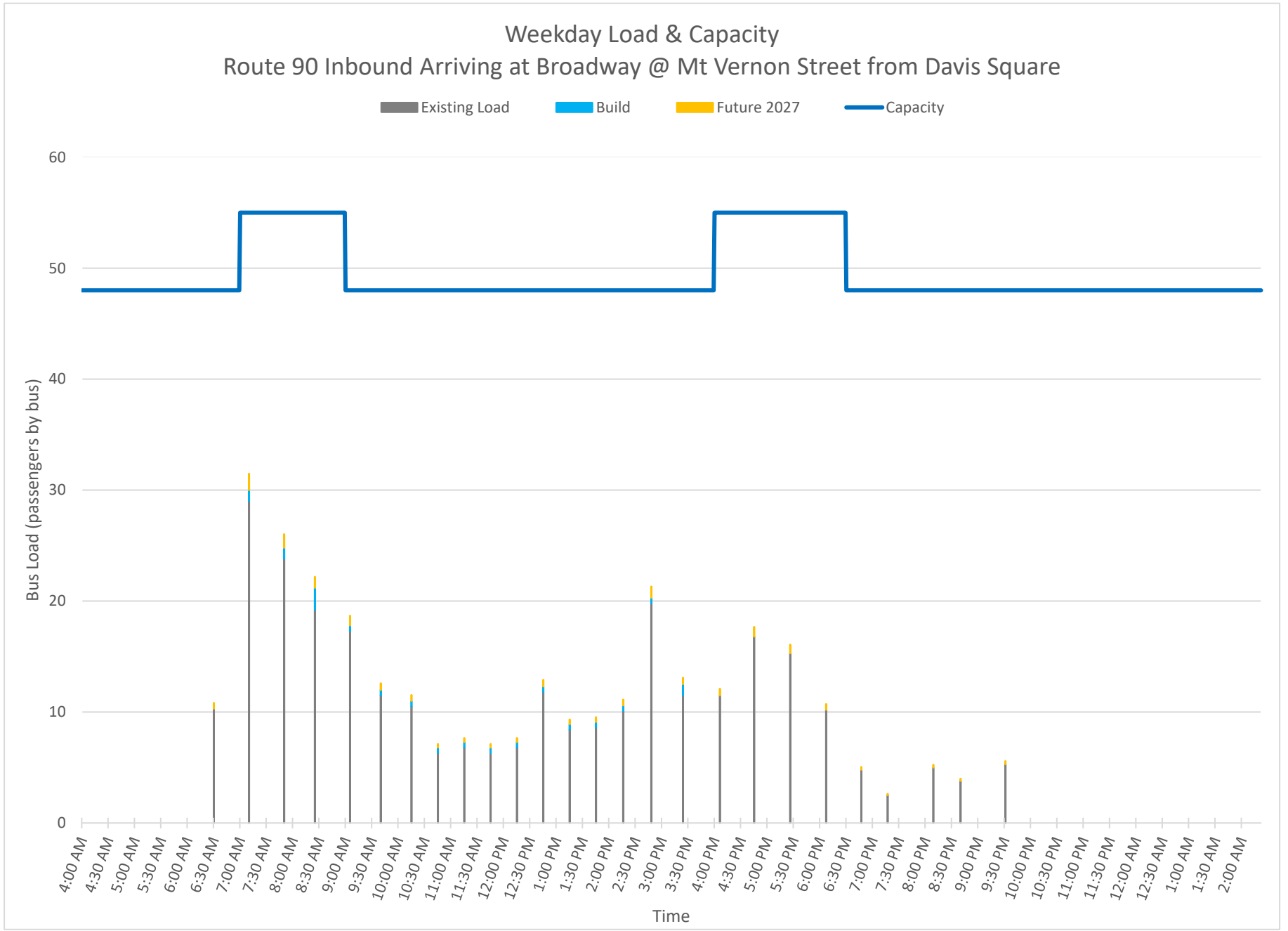
		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	5	0.11	5	0.11	5	0.11
5:30 AM	3	16	0.11	16	0.11	17	0.12
6:00 AM	4	29	0.15	29	0.15	30	0.16
6:30 AM	2	15	0.14	15	0.14	16	0.15
7:00 AM	3	32	0.19	32	0.19	34	0.20
7:30 AM	2	22	0.20	22	0.20	23	0.21
8:00 AM	3	25	0.15	25	0.15	26	0.16
8:30 AM	2	19	0.17	19	0.17	20	0.18
9:00 AM	2	18	0.19	18	0.19	19	0.19
9:30 AM	1	10	0.20	10	0.20	10	0.21
10:00 AM	1	9	0.18	9	0.18	9	0.19
10:30 AM	1	7	0.15	7	0.15	8	0.16
11:00 AM	2	14	0.14	14	0.14	15	0.15
11:30 AM	1	9	0.18	9	0.18	9	0.19
12:00 PM	1	10	0.21	10	0.21	10	0.22
12:30 PM	2	18	0.19	18	0.19	19	0.20
1:00 PM	1	13	0.28	13	0.28	14	0.29
1:30 PM	1	14	0.29	14	0.29	15	0.30
2:00 PM	1	18	0.38	18	0.38	19	0.40
2:30 PM	1	23	0.47	23	0.47	24	0.50
3:00 PM	1	46	0.95	46	0.95	48	1.00
3:30 PM	2	26	0.24	26	0.24	27	0.25
4:00 PM	2	54	0.49	54	0.49	57	0.52
4:30 PM	3	53	0.32	53	0.32	55	0.34
5:00 PM	3	73	0.44	73	0.44	76	0.46
5:30 PM	3	80	0.48	80	0.48	84	0.51
6:00 PM	3	85	0.51	85	0.51	89	0.54
6:30 PM	1	21	0.43	21	0.43	22	0.46
7:00 PM	2	47	0.49	47	0.49	49	0.51
7:30 PM	-	-	-	-	-	-	-
8:00 PM	1	18	0.38	18	0.38	19	0.40
8:30 PM	1	18	0.37	18	0.37	18	0.39
9:00 PM	-	-	-	-	-	-	-
9:30 PM	1	8	0.17	8	0.17	9	0.18
10:00 PM	1	13	0.27	13	0.27	14	0.28
10:30 PM	1	11	0.22	11	0.22	11	0.23
11:00 PM	1	10	0.22	10	0.22	11	0.23
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	11	0.22	11	0.22	11	0.23
12:30 AM	1	2	0.05	2	0.05	3	0.05
1:00 AM	1	6	0.13	6	0.13	7	0.14
1:30 AM	-	-	-	-	-	-	-

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

Bus Route 89 - Outbound Analysis After Broadway @ Austin St (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	6	0.13	6	0.13	7	0.14
5:30 AM	3	18	0.13	18	0.13	19	0.13
6:00 AM	4	34	0.18	34	0.18	35	0.18
6:30 AM	2	18	0.16	18	0.16	19	0.17
7:00 AM	3	43	0.26	44	0.26	46	0.28
7:30 AM	2	26	0.23	26	0.24	28	0.25
8:00 AM	3	29	0.17	29	0.18	31	0.19
8:30 AM	2	23	0.21	23	0.21	24	0.22
9:00 AM	2	22	0.23	23	0.24	24	0.25
9:30 AM	1	12	0.25	12	0.25	13	0.27
10:00 AM	1	10	0.22	11	0.23	11	0.24
10:30 AM	1	8	0.17	9	0.18	9	0.19
11:00 AM	2	17	0.18	18	0.19	19	0.20
11:30 AM	1	11	0.23	12	0.24	12	0.25
12:00 PM	1	12	0.26	13	0.27	14	0.29
12:30 PM	2	22	0.23	23	0.24	24	0.25
1:00 PM	1	14	0.29	15	0.30	15	0.32
1:30 PM	1	17	0.35	18	0.36	18	0.38
2:00 PM	1	20	0.42	21	0.44	22	0.46
2:30 PM	1	27	0.55	28	0.58	29	0.60
3:00 PM	1	46	0.96	47	0.98	49	1.03
3:30 PM	2	31	0.28	33	0.30	34	0.31
4:00 PM	2	56	0.51	57	0.52	60	0.54
4:30 PM	3	59	0.35	60	0.37	63	0.38
5:00 PM	3	87	0.53	88	0.54	93	0.56
5:30 PM	3	90	0.54	91	0.55	96	0.58
6:00 PM	3	89	0.54	90	0.54	94	0.57
6:30 PM	1	29	0.61	30	0.62	31	0.65
7:00 PM	2	65	0.68	66	0.69	69	0.72
7:30 PM	-	-	-	-	-	-	-
8:00 PM	1	24	0.50	24	0.50	25	0.53
8:30 PM	1	20	0.42	20	0.42	21	0.44
9:00 PM	-	-	-	-	-	-	-
9:30 PM	1	10	0.22	10	0.22	11	0.23
10:00 PM	1	17	0.35	17	0.35	17	0.36
10:30 PM	1	11	0.23	11	0.23	11	0.24
11:00 PM	1	12	0.25	12	0.25	13	0.26
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	13	0.27	13	0.27	14	0.29
12:30 AM	1	3	0.06	3	0.06	3	0.06
1:00 AM	1	5	0.11	5	0.11	5	0.11
1:30 AM	-	-	-	-	-	-	-

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


Weekday Load & Capacity
Route 90 Inbound Arriving at Broadway @ Mt Vernon Street from Davis Square
Existing Load
Build
Future 2027
Capacity
Bus Load (passengers by bus)
60
50
40
30
20
10
0
4:00 AM
4:30 AM
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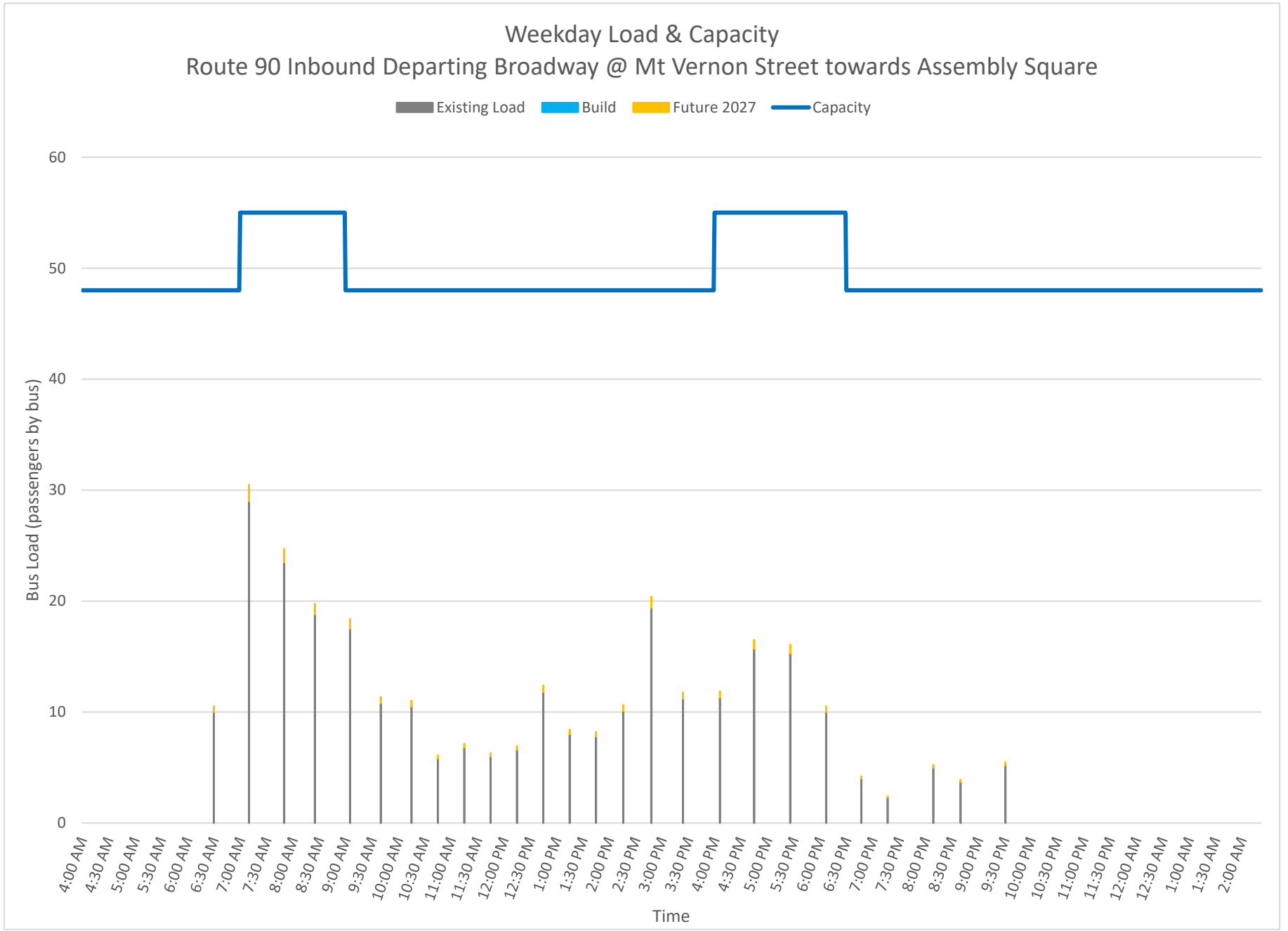
Time


Weekday Load & Capacity
Route 90 Inbound Departing Broadway @ Mt Vernon Street towards Assembly Square
Existing Load
Build
Future 2027
Capacity
60
50
40
30
20
10
0
Bus Load (passengers by bus)
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
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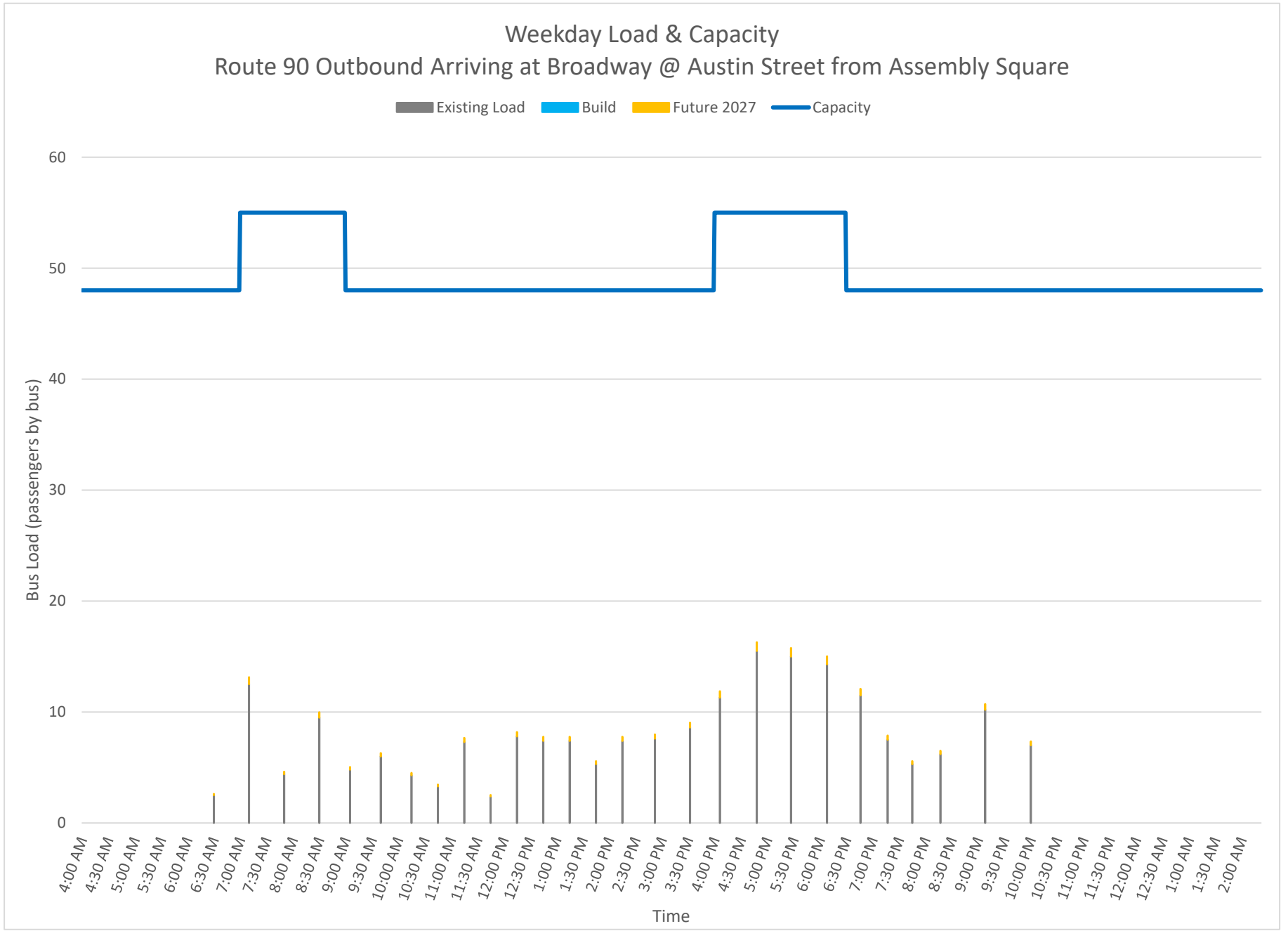
Time


Weekday Load & Capacity
Route 90 Outbound Arriving at Broadway @ Austin Street from Assembly Square
Existing Load
Build
Future 2027
Capacity
Bus Load (passengers by bus)
60
50
40
30
20
10
0
4:00 AM
4:30 AM
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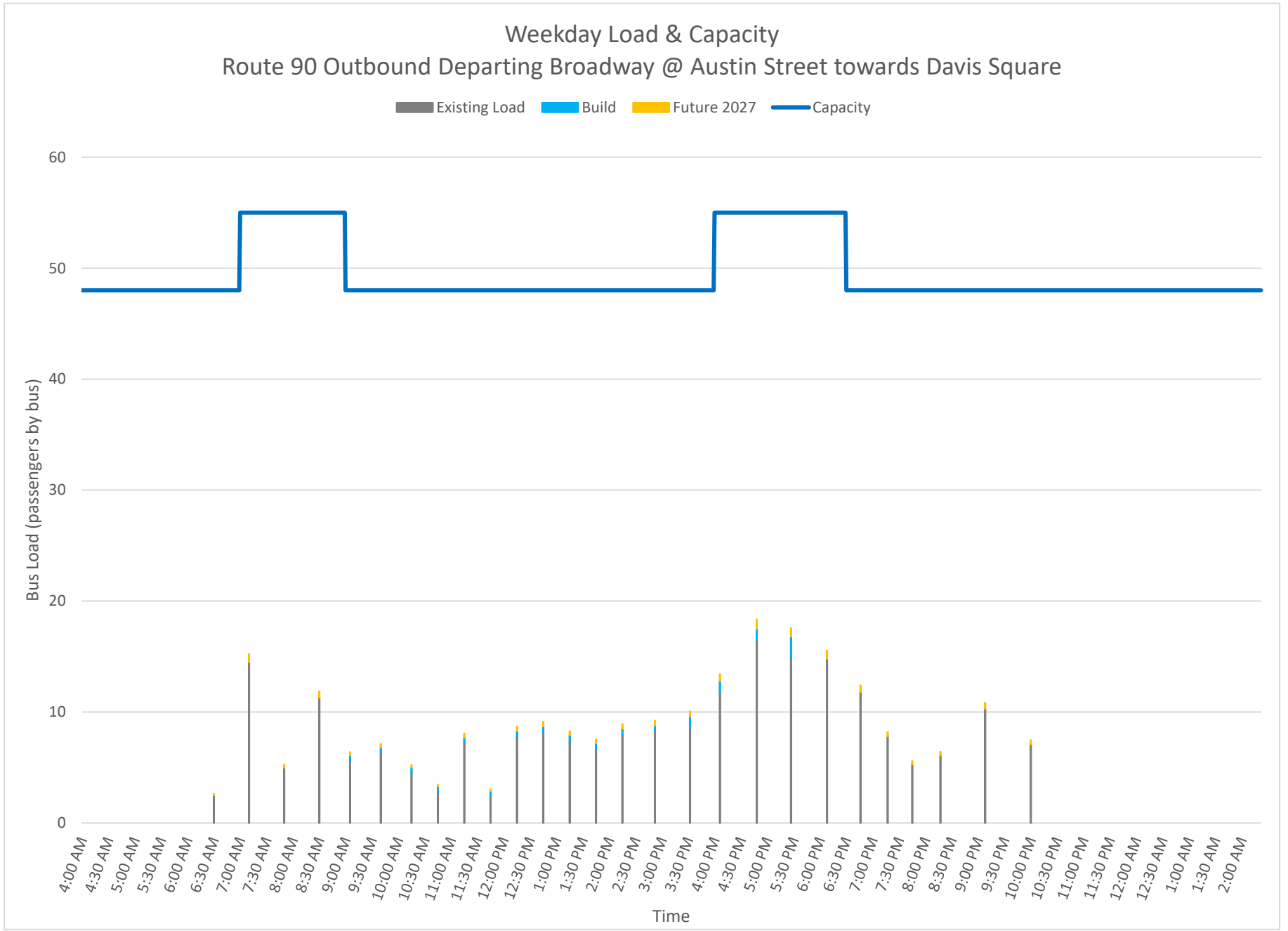
Weekday Load & Capacity
Route 90 Outbound Departing Broadway @ Austin Street towards Davis Square
Existing Load
Build
Future 2027
Capacity
Bus Load (passengers by bus)
60
50
40
30
20
10
0
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
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12:00 AM
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1:00 AM
1:30 AM
2:00 AM
Time

Bus Route 90 - Inbound Analysis Before Broadway @ Mt Vernon St (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	-	-	-	-	-	-	-
6:00 AM	-	-	-	-	-	-	-
6:30 AM	1	10	0.19	10	0.19	11	0.20
7:00 AM	1	29	0.53	30	0.55	31	0.57
7:30 AM	1	24	0.43	25	0.45	26	0.47
8:00 AM	1	19	0.35	21	0.39	22	0.40
8:30 AM	-	-	-	-	-	-	-
9:00 AM	1	17	0.36	18	0.37	19	0.39
9:30 AM	1	12	0.24	12	0.25	13	0.26
10:00 AM	1	11	0.22	11	0.23	12	0.24
10:30 AM	1	6	0.13	7	0.14	7	0.15
11:00 AM	1	7	0.14	7	0.15	8	0.16
11:30 AM	1	6	0.13	7	0.14	7	0.15
12:00 PM	1	7	0.14	7	0.15	8	0.16
12:30 PM	1	12	0.25	12	0.26	13	0.27
1:00 PM	1	8	0.18	9	0.19	9	0.19
1:30 PM	1	9	0.18	9	0.19	10	0.20
2:00 PM	1	10	0.21	11	0.22	11	0.23
2:30 PM	1	20	0.41	20	0.42	21	0.44
3:00 PM	1	12	0.24	13	0.26	13	0.27
3:30 PM	-	-	-	-	-	-	-
4:00 PM	1	12	0.21	12	0.21	12	0.22
4:30 PM	1	17	0.31	17	0.31	18	0.32
5:00 PM	1	15	0.28	15	0.28	16	0.29
5:30 PM	-	-	-	-	-	-	-
6:00 PM	1	10	0.19	10	0.19	11	0.19
6:30 PM	1	5	0.10	5	0.10	5	0.11
7:00 PM	1	3	0.05	3	0.05	3	0.05
7:30 PM	-	-	-	-	-	-	-
8:00 PM	1	5	0.10	5	0.10	5	0.11
8:30 PM	1	4	0.08	4	0.08	4	0.08
9:00 PM	-	-	-	-	-	-	-
9:30 PM	1	5	0.11	5	0.11	6	0.12
10:00 PM	-	-	-	-	-	-	-
10:30 PM	-	-	-	-	-	-	-
11:00 PM	-	-	-	-	-	-	-
11:30 PM	-	-	-	-	-	-	-
12:00 AM	-	-	-	-	-	-	-
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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

Bus Route 90 - Inbound Analysis After Broadway @ Mt Vernon St (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	-	-	-	-	-	-	-
6:00 AM	-	-	-	-	-	-	-
6:30 AM	1	10	0.18	10	0.18	11	0.19
7:00 AM	1	29	0.53	29	0.53	30	0.55
7:30 AM	1	24	0.43	24	0.43	25	0.45
8:00 AM	1	19	0.34	19	0.34	20	0.36
8:30 AM	-	-	-	-	-	-	-
9:00 AM	1	18	0.36	18	0.36	18	0.38
9:30 AM	1	11	0.23	11	0.23	11	0.24
10:00 AM	1	11	0.22	11	0.22	11	0.23
10:30 AM	1	6	0.12	6	0.12	6	0.13
11:00 AM	1	7	0.14	7	0.14	7	0.15
11:30 AM	1	6	0.13	6	0.13	6	0.13
12:00 PM	1	7	0.14	7	0.14	7	0.14
12:30 PM	1	12	0.25	12	0.25	12	0.26
1:00 PM	1	8	0.17	8	0.17	8	0.18
1:30 PM	1	8	0.16	8	0.16	8	0.17
2:00 PM	1	10	0.21	10	0.21	11	0.22
2:30 PM	1	19	0.40	19	0.40	20	0.42
3:00 PM	1	11	0.23	11	0.23	12	0.25
3:30 PM	-	-	-	-	-	-	-
4:00 PM	1	11	0.21	11	0.21	12	0.22
4:30 PM	1	16	0.29	16	0.29	17	0.30
5:00 PM	1	15	0.28	15	0.28	16	0.29
5:30 PM	-	-	-	-	-	-	-
6:00 PM	1	10	0.18	10	0.18	11	0.19
6:30 PM	1	4	0.08	4	0.08	4	0.09
7:00 PM	1	2	0.05	2	0.05	2	0.05
7:30 PM	-	-	-	-	-	-	-
8:00 PM	1	5	0.10	5	0.10	5	0.11
8:30 PM	1	4	0.08	4	0.08	4	0.08
9:00 PM	-	-	-	-	-	-	-
9:30 PM	1	5	0.11	5	0.11	5	0.11
10:00 PM	-	-	-	-	-	-	-
10:30 PM	-	-	-	-	-	-	-
11:00 PM	-	-	-	-	-	-	-
11:30 PM	-	-	-	-	-	-	-
12:00 AM	-	-	-	-	-	-	-
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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

Bus Route 90 - Outbound Analysis Before Broadway @ Austin St (Volume/VC Tables by 30 min)

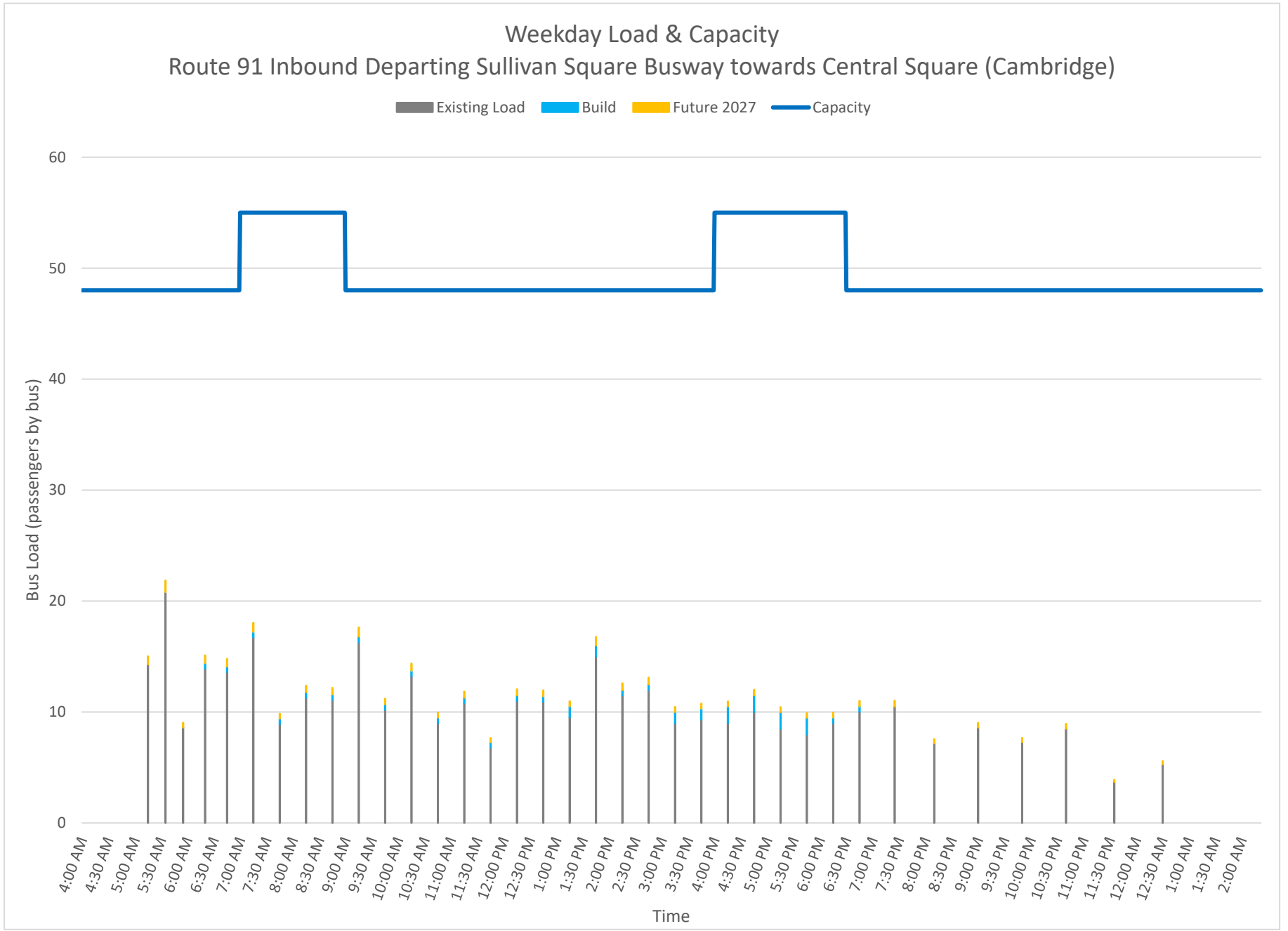
		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	-	-	-	-	-	-	-
6:00 AM	-	-	-	-	-	-	-
6:30 AM	1	3	0.05	3	0.05	3	0.05
7:00 AM	1	13	0.23	13	0.23	13	0.24
7:30 AM	1	4	0.08	4	0.08	5	0.08
8:00 AM	-	-	-	-	-	-	-
8:30 AM	1	10	0.17	10	0.17	10	0.18
9:00 AM	1	5	0.10	5	0.10	5	0.11
9:30 AM	1	6	0.13	6	0.13	6	0.13
10:00 AM	1	4	0.09	4	0.09	5	0.09
10:30 AM	1	3	0.07	3	0.07	3	0.07
11:00 AM	1	7	0.15	7	0.15	8	0.16
11:30 AM	1	2	0.05	2	0.05	3	0.05
12:00 PM	1	8	0.16	8	0.16	8	0.17
12:30 PM	1	7	0.15	7	0.15	8	0.16
1:00 PM	1	7	0.15	7	0.15	8	0.16
1:30 PM	1	5	0.11	5	0.11	6	0.12
2:00 PM	1	7	0.15	7	0.15	8	0.16
2:30 PM	1	8	0.16	8	0.16	8	0.17
3:00 PM	-	-	-	-	-	-	-
3:30 PM	1	9	0.16	9	0.16	9	0.16
4:00 PM	1	11	0.21	11	0.21	12	0.22
4:30 PM	1	16	0.28	16	0.28	16	0.30
5:00 PM	1	15	0.27	15	0.27	16	0.29
5:30 PM	-	-	-	-	-	-	-
6:00 PM	1	14	0.26	14	0.26	15	0.27
6:30 PM	1	12	0.24	12	0.24	12	0.25
7:00 PM	1	8	0.16	8	0.16	8	0.16
7:30 PM	1	5	0.11	5	0.11	6	0.12
8:00 PM	1	6	0.13	6	0.13	7	0.14
8:30 PM	-	-	-	-	-	-	-
9:00 PM	1	10	0.21	10	0.21	11	0.22
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	7	0.15	7	0.15	7	0.15
10:30 PM	-	-	-	-	-	-	-
11:00 PM	-	-	-	-	-	-	-
11:30 PM	-	-	-	-	-	-	-
12:00 AM	-	-	-	-	-	-	-
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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

Bus Route 90 - Outbound Analysis After Broadway @ Austin St (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	-	-	-	-	-	-	-
6:00 AM	-	-	-	-	-	-	-
6:30 AM	1	3	0.05	3	0.05	3	0.05
7:00 AM	1	15	0.26	15	0.26	15	0.28
7:30 AM	1	5	0.09	5	0.09	5	0.10
8:00 AM	-	-	-	-	-	-	-
8:30 AM	1	11	0.21	11	0.21	12	0.22
9:00 AM	1	6	0.12	6	0.13	6	0.13
9:30 AM	1	6	0.13	7	0.14	7	0.15
10:00 AM	1	5	0.09	5	0.10	5	0.11
10:30 AM	1	3	0.06	3	0.07	3	0.07
11:00 AM	1	7	0.15	8	0.16	8	0.17
11:30 AM	1	2	0.05	3	0.06	3	0.06
12:00 PM	1	8	0.16	8	0.17	9	0.18
12:30 PM	1	8	0.17	9	0.18	9	0.19
1:00 PM	1	7	0.15	8	0.16	8	0.17
1:30 PM	1	7	0.14	7	0.15	8	0.16
2:00 PM	1	8	0.17	9	0.18	9	0.19
2:30 PM	1	8	0.17	9	0.18	9	0.19
3:00 PM	-	-	-	-	-	-	-
3:30 PM	1	9	0.16	10	0.17	10	0.18
4:00 PM	1	12	0.21	13	0.23	13	0.24
4:30 PM	1	17	0.30	18	0.32	18	0.33
5:00 PM	1	15	0.27	17	0.31	18	0.32
5:30 PM	-	-	-	-	-	-	-
6:00 PM	1	15	0.27	15	0.27	16	0.28
6:30 PM	1	12	0.25	12	0.25	12	0.26
7:00 PM	1	8	0.16	8	0.16	8	0.17
7:30 PM	1	5	0.11	5	0.11	6	0.12
8:00 PM	1	6	0.13	6	0.13	6	0.13
8:30 PM	-	-	-	-	-	-	-
9:00 PM	1	10	0.21	10	0.21	11	0.23
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	7	0.15	7	0.15	7	0.16
10:30 PM	-	-	-	-	-	-	-
11:00 PM	-	-	-	-	-	-	-
11:30 PM	-	-	-	-	-	-	-
12:00 AM	-	-	-	-	-	-	-
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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


Weekday Load & Capacity
Route 91 Inbound Departing Sullivan Square Busway towards Central Square (Cambridge)
Existing Load
Build
Future 2027
Capacity
Bus Load (passengers by bus)
60
50
40
30
20
10
0
4:00 AM
4:30 AM
5:00 AM
5:30 AM
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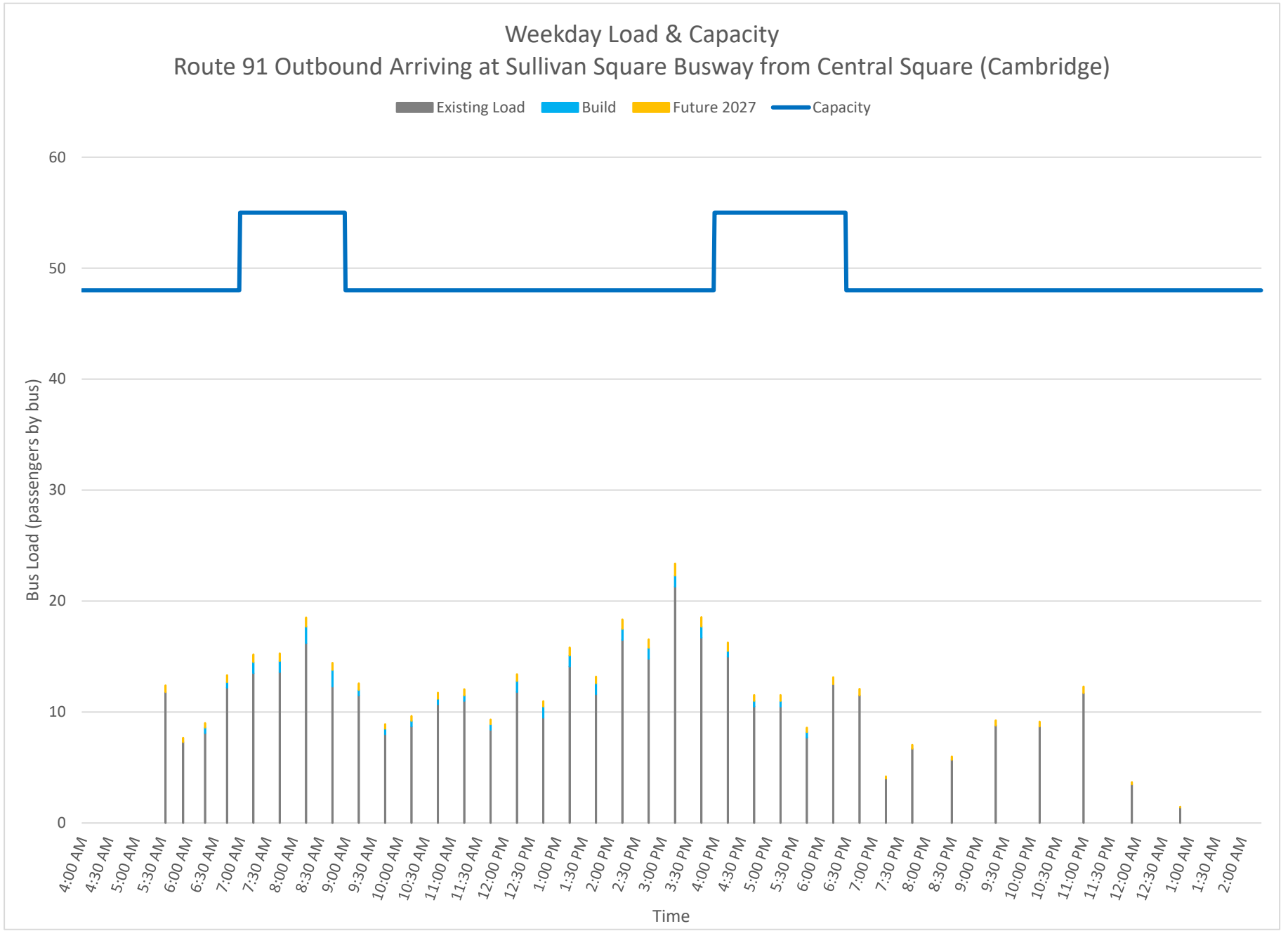
Weekday Load & Capacity
Route 91 Outbound Arriving at Sullivan Square Busway from Central Square (Cambridge)
Existing Load
Build
Future 2027
Capacity
Bus Load (passengers by bus)
60
50
40
30
20
10
0
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
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1:00 AM
1:30 AM
2:00 AM
Time

Bus Route 91 - Inbound Analysis After Sullivan Square Busway (Volume/VC Tables by 30 min)

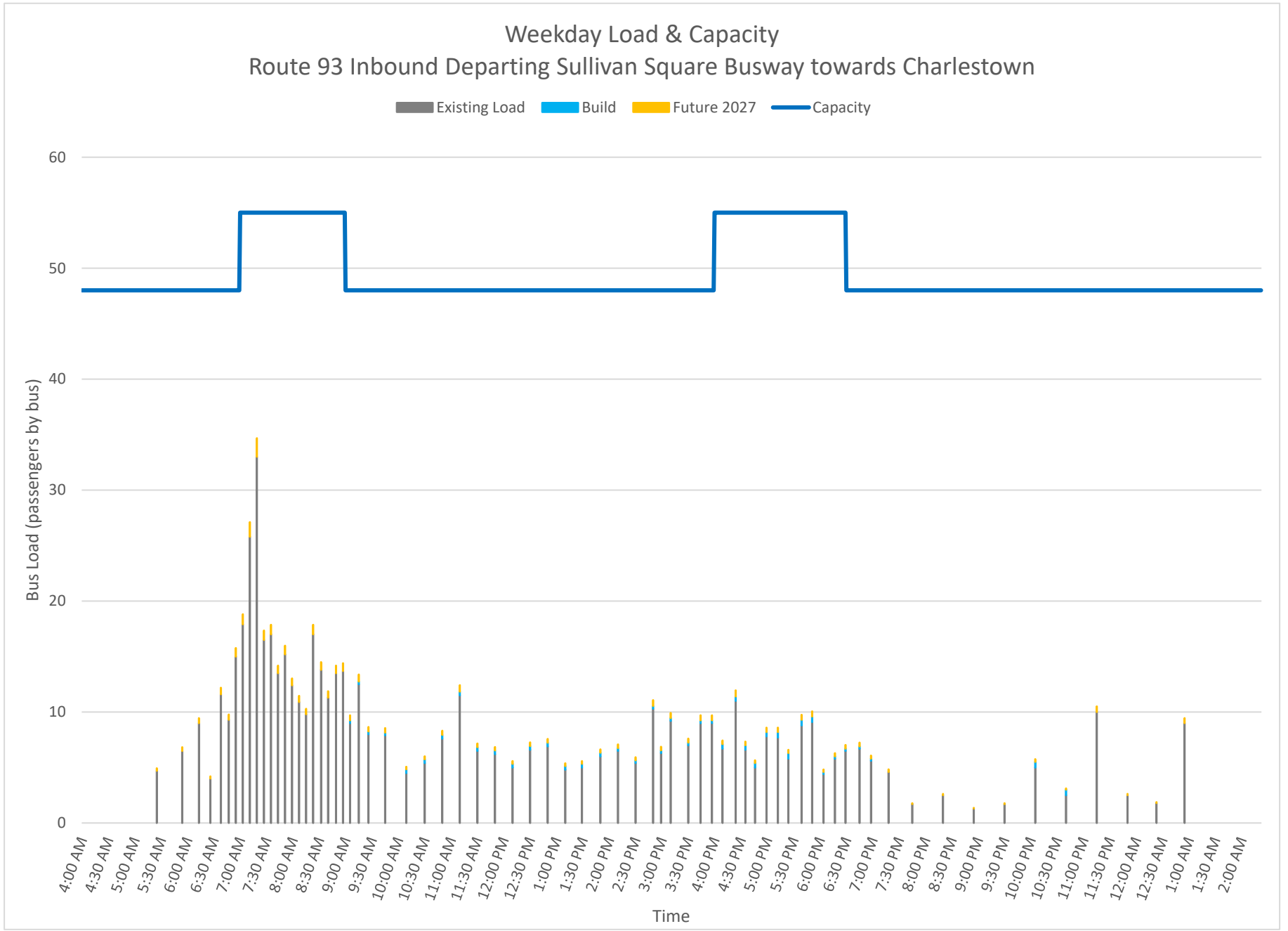
		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	14	0.30	14	0.30	15	0.31
5:30 AM	2	29	0.31	29	0.31	31	0.32
6:00 AM	1	14	0.29	14	0.30	15	0.31
6:30 AM	1	14	0.25	14	0.26	15	0.27
7:00 AM	1	17	0.30	17	0.31	18	0.33
7:30 AM	1	9	0.16	9	0.17	10	0.18
8:00 AM	1	11	0.21	12	0.21	12	0.23
8:30 AM	1	11	0.20	12	0.21	12	0.22
9:00 AM	1	16	0.34	17	0.35	18	0.37
9:30 AM	1	10	0.21	11	0.22	11	0.23
10:00 AM	1	13	0.28	14	0.29	14	0.30
10:30 AM	1	9	0.19	10	0.20	10	0.21
11:00 AM	1	11	0.23	11	0.24	12	0.25
11:30 AM	1	7	0.14	7	0.15	8	0.16
12:00 PM	1	11	0.23	12	0.24	12	0.25
12:30 PM	1	11	0.23	11	0.24	12	0.25
1:00 PM	1	10	0.20	11	0.22	11	0.23
1:30 PM	1	15	0.31	16	0.33	17	0.35
2:00 PM	1	12	0.24	12	0.25	13	0.26
2:30 PM	1	12	0.25	13	0.26	13	0.27
3:00 PM	1	9	0.19	10	0.21	10	0.22
3:30 PM	1	9	0.17	10	0.19	11	0.20
4:00 PM	1	9	0.16	11	0.19	11	0.20
4:30 PM	1	10	0.18	12	0.21	12	0.22
5:00 PM	1	9	0.15	10	0.18	10	0.19
5:30 PM	1	8	0.15	10	0.17	10	0.18
6:00 PM	1	9	0.16	10	0.17	10	0.18
6:30 PM	1	10	0.21	11	0.22	11	0.23
7:00 PM	1	11	0.22	11	0.22	11	0.23
7:30 PM	-	-	-	-	-	-	-
8:00 PM	1	7	0.15	7	0.15	8	0.16
8:30 PM	-	-	-	-	-	-	-
9:00 PM	1	9	0.18	9	0.18	9	0.19
9:30 PM	1	7	0.15	7	0.15	8	0.16
10:00 PM	-	-	-	-	-	-	-
10:30 PM	1	9	0.18	9	0.18	9	0.19
11:00 PM	-	-	-	-	-	-	-
11:30 PM	1	4	0.08	4	0.08	4	0.08
12:00 AM	-	-	-	-	-	-	-
12:30 AM	1	5	0.11	5	0.11	6	0.12
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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

Bus Route 91 - Outbound Analysis Before Sullivan Square Busway (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	2	19	0.20	19	0.20	20	0.21
6:00 AM	1	8	0.17	9	0.18	9	0.19
6:30 AM	1	12	0.22	13	0.23	13	0.24
7:00 AM	1	14	0.25	15	0.26	15	0.28
7:30 AM	1	14	0.25	15	0.27	15	0.28
8:00 AM	1	16	0.29	18	0.32	19	0.34
8:30 AM	1	12	0.22	14	0.25	14	0.26
9:00 AM	1	12	0.24	12	0.25	13	0.26
9:30 AM	1	8	0.17	9	0.18	9	0.19
10:00 AM	1	9	0.18	9	0.19	10	0.20
10:30 AM	1	11	0.22	11	0.23	12	0.24
11:00 AM	1	11	0.23	12	0.24	12	0.25
11:30 AM	1	8	0.18	9	0.19	9	0.19
12:00 PM	1	12	0.25	13	0.27	13	0.28
12:30 PM	1	10	0.20	11	0.22	11	0.23
1:00 PM	1	14	0.29	15	0.31	16	0.33
1:30 PM	1	12	0.24	13	0.26	13	0.27
2:00 PM	1	17	0.34	18	0.36	18	0.38
2:30 PM	1	15	0.31	16	0.33	17	0.34
3:00 PM	1	21	0.44	22	0.46	23	0.49
3:30 PM	1	17	0.30	18	0.32	19	0.34
4:00 PM	1	15	0.27	16	0.28	16	0.30
4:30 PM	1	11	0.19	11	0.20	12	0.21
5:00 PM	1	11	0.19	11	0.20	12	0.21
5:30 PM	1	8	0.14	8	0.15	9	0.16
6:00 PM	1	13	0.23	13	0.23	13	0.24
6:30 PM	1	12	0.24	12	0.24	12	0.25
7:00 PM	1	4	0.08	4	0.08	4	0.09
7:30 PM	1	7	0.14	7	0.14	7	0.15
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	6	0.12	6	0.12	6	0.12
9:00 PM	1	9	0.18	9	0.18	9	0.19
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	9	0.18	9	0.18	9	0.19
10:30 PM	-	-	-	-	-	-	-
11:00 PM	1	12	0.24	12	0.24	12	0.26
11:30 PM	1	4	0.07	4	0.07	4	0.08
12:00 AM	-	-	-	-	-	-	-
12:30 AM	1	1	0.03	1	0.03	1	0.03
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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


Weekday Load & Capacity
Route 93 Inbound Departing Sullivan Square Busway towards Charlestown
Existing Load
Build
Future 2027
Capacity
60
50
40
30
20
10
0
Bus Load (passengers by bus)
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
7:30 AM
8:00 AM
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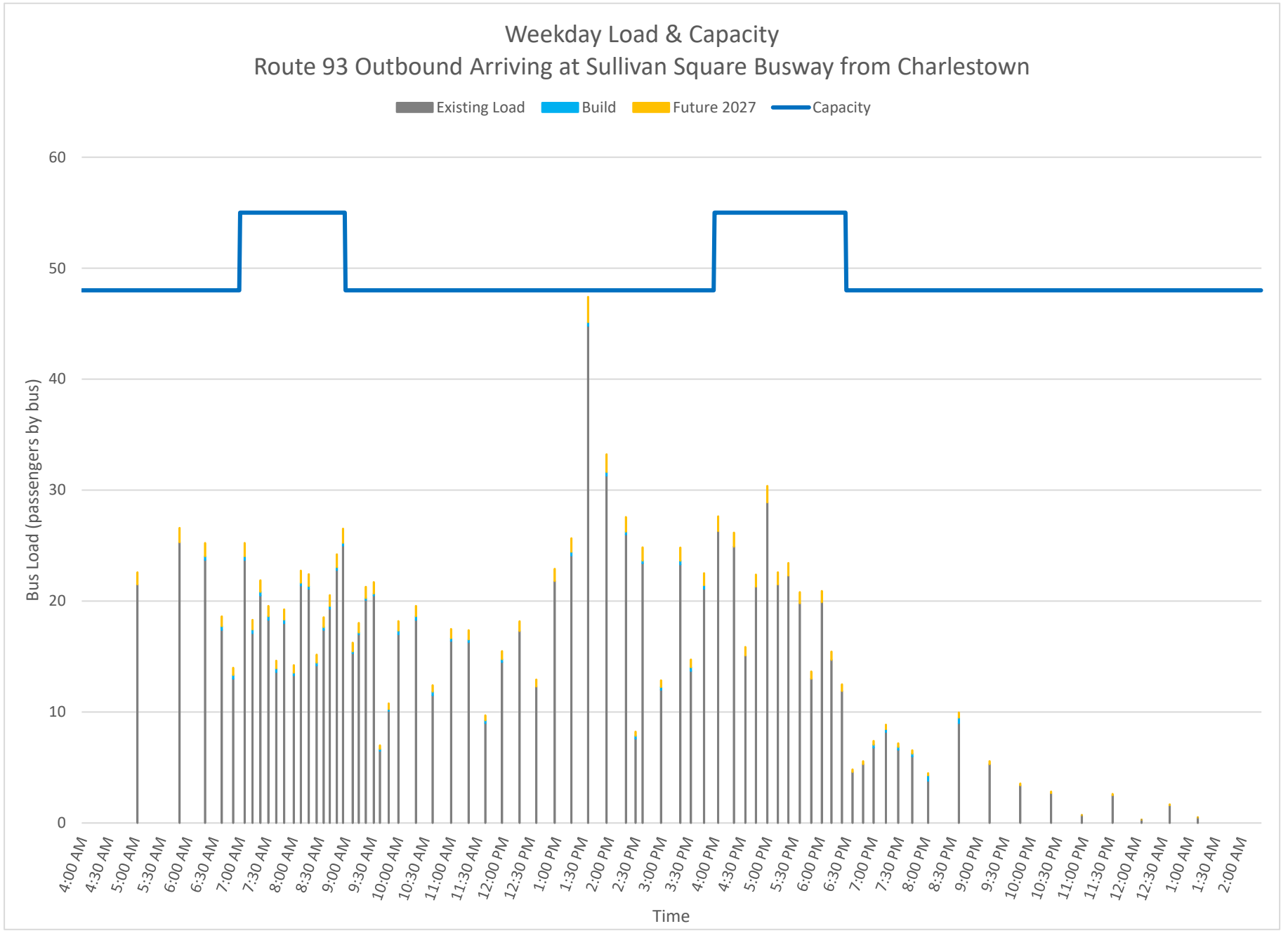
Time


Weekday Load & Capacity
Route 93 Outbound Arriving at Sullivan Square Busway from Charlestown
Existing Load
Build
Future 2027
Capacity
Bus Load (passengers by bus)
60
50
40
30
20
10
0
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
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11:00 PM
11:30 PM
12:00 AM
12:30 AM
1:00 AM
1:30 AM
2:00 AM
Time

Bus Route 93 - Inbound Analysis After Sullivan Square Busway (Volume/VC Tables by 30 min)

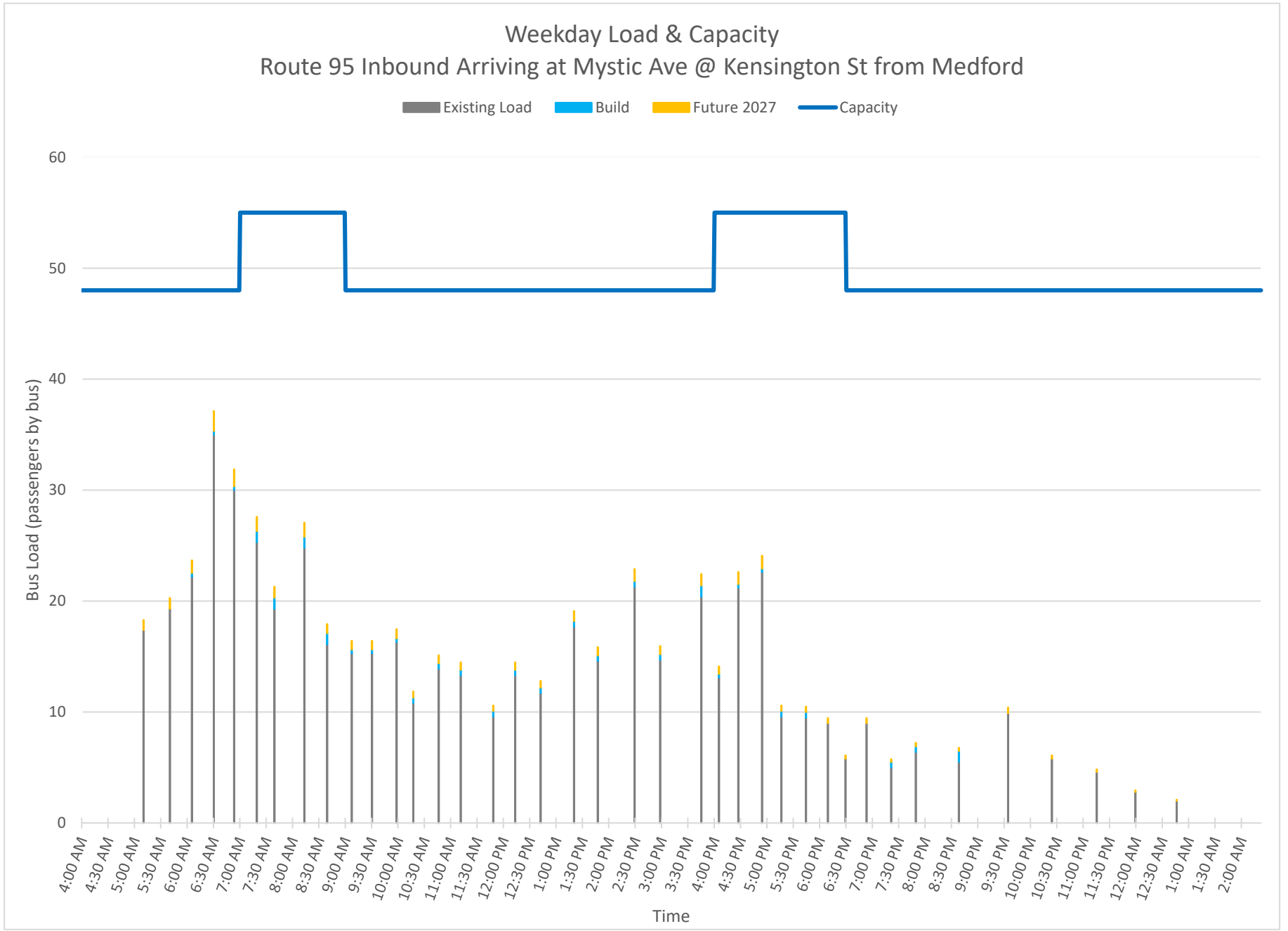
		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	5	0.10	5	0.10	5	0.10
5:30 AM	1	7	0.14	7	0.14	7	0.14
6:00 AM	2	13	0.14	13	0.14	14	0.14
6:30 AM	3	36	0.22	36	0.22	38	0.23
7:00 AM	4	93	0.42	93	0.42	98	0.45
7:30 AM	4	58	0.26	58	0.26	61	0.28
8:00 AM	3	38	0.23	38	0.23	40	0.24
8:30 AM	4	52	0.24	52	0.24	55	0.25
9:00 AM	3	30	0.20	30	0.21	32	0.22
9:30 AM	1	8	0.16	8	0.17	9	0.18
10:00 AM	1	5	0.09	5	0.10	5	0.11
10:30 AM	2	13	0.14	14	0.14	14	0.15
11:00 AM	1	12	0.24	12	0.25	12	0.26
11:30 AM	2	13	0.13	13	0.14	14	0.15
12:00 PM	1	5	0.10	5	0.11	6	0.12
12:30 PM	2	14	0.14	14	0.15	15	0.15
1:00 PM	2	10	0.10	10	0.11	11	0.11
1:30 PM	1	6	0.13	6	0.13	7	0.14
2:00 PM	1	7	0.14	7	0.14	7	0.15
2:30 PM	3	22	0.15	23	0.16	24	0.17
3:00 PM	1	9	0.19	9	0.20	10	0.21
3:30 PM	3	25	0.15	26	0.16	27	0.16
4:00 PM	2	18	0.16	19	0.17	19	0.18
4:30 PM	3	19	0.12	21	0.12	22	0.13
5:00 PM	2	14	0.12	15	0.13	15	0.14
5:30 PM	2	18	0.16	19	0.17	20	0.18
6:00 PM	3	17	0.10	17	0.10	18	0.11
6:30 PM	2	12	0.13	13	0.13	13	0.14
7:00 PM	1	5	0.10	5	0.10	5	0.10
7:30 PM	1	2	0.04	2	0.04	2	0.04
8:00 PM	1	3	0.05	3	0.05	3	0.05
8:30 PM	1	1	0.03	1	0.03	1	0.03
9:00 PM	-	-	-	-	-	-	-
9:30 PM	1	2	0.04	2	0.04	2	0.04
10:00 PM	1	5	0.10	6	0.11	6	0.12
10:30 PM	1	3	0.05	3	0.06	3	0.07
11:00 PM	1	10	0.21	10	0.21	11	0.22
11:30 PM	1	3	0.05	3	0.05	3	0.05
12:00 AM	1	2	0.04	2	0.04	2	0.04
12:30 AM	1	9	0.19	9	0.19	9	0.20
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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

Bus Route 93 - Outbound Analysis Before Sullivan Square Busway (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	22	0.45	22	0.45	23	0.47
5:30 AM	1	25	0.53	25	0.53	27	0.55
6:00 AM	1	24	0.49	24	0.50	25	0.53
6:30 AM	2	30	0.28	31	0.28	33	0.30
7:00 AM	3	61	0.37	62	0.38	65	0.40
7:30 AM	3	50	0.30	51	0.31	53	0.32
8:00 AM	4	70	0.32	71	0.32	75	0.34
8:30 AM	4	85	0.38	86	0.39	90	0.41
9:00 AM	3	52	0.36	53	0.37	56	0.39
9:30 AM	3	37	0.26	38	0.26	39	0.27
10:00 AM	2	35	0.37	36	0.37	38	0.39
10:30 AM	1	12	0.24	12	0.25	12	0.26
11:00 AM	2	33	0.34	33	0.35	35	0.36
11:30 AM	2	24	0.24	24	0.25	25	0.26
12:00 PM	1	17	0.36	17	0.36	18	0.38
12:30 PM	2	34	0.36	34	0.36	36	0.37
1:00 PM	1	24	0.50	24	0.51	26	0.53
1:30 PM	2	76	0.79	77	0.80	81	0.84
2:00 PM	1	26	0.54	26	0.55	28	0.57
2:30 PM	3	43	0.30	44	0.30	46	0.32
3:00 PM	1	23	0.49	24	0.49	25	0.52
3:30 PM	2	35	0.32	35	0.32	37	0.34
4:00 PM	2	51	0.47	51	0.47	54	0.49
4:30 PM	2	36	0.33	36	0.33	38	0.35
5:00 PM	3	73	0.44	73	0.44	76	0.46
5:30 PM	2	33	0.30	33	0.30	34	0.31
6:00 PM	3	47	0.28	47	0.28	49	0.30
6:30 PM	2	10	0.10	10	0.10	10	0.11
7:00 PM	3	22	0.15	22	0.16	23	0.16
7:30 PM	1	6	0.13	6	0.13	7	0.14
8:00 PM	1	4	0.08	4	0.09	4	0.09
8:30 PM	1	9	0.19	10	0.20	10	0.21
9:00 PM	1	5	0.11	5	0.11	6	0.12
9:30 PM	1	3	0.07	3	0.07	4	0.07
10:00 PM	1	3	0.06	3	0.06	3	0.06
10:30 PM	1	1	0.01	1	0.01	1	0.02
11:00 PM	-	-	-	-	-	-	-
11:30 PM	1	3	0.05	3	0.05	3	0.05
12:00 AM	1	0	0.01	0	0.01	0	0.01
12:30 AM	1	2	0.03	2	0.03	2	0.04
1:00 AM	1	1	0.01	1	0.01	1	0.01
1:30 AM	-	-	-	-	-	-	-

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


Weekday Load & Capacity
Route 95 Inbound Arriving at Mystic Ave @ Kensington St from Medford
Existing Load
Build
Future 2027
Capacity
60
50
40
30
20
10
0
Bus Load (passengers by bus)
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
7:30 AM
8:00 AM
8:30 AM
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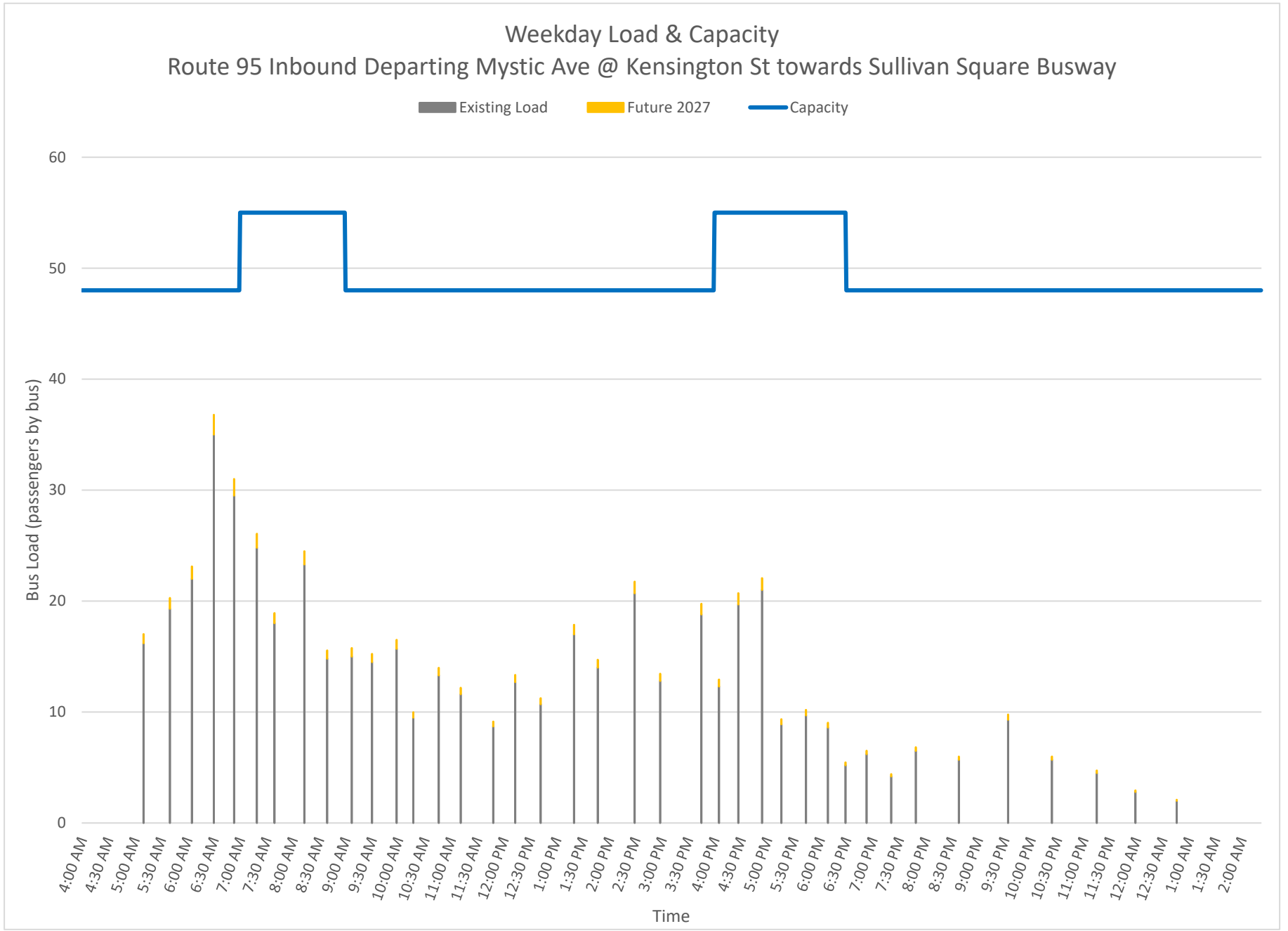
Time


Weekday Load & Capacity
Route 95 Inbound Departing Mystic Ave @ Kensington St towards Sullivan Square Busway
Existing Load
Future 2027
Capacity
60
50
40
30
20
10
0
Bus Load (passengers by bus)
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
7:30 AM
8:00 AM
8:30 AM
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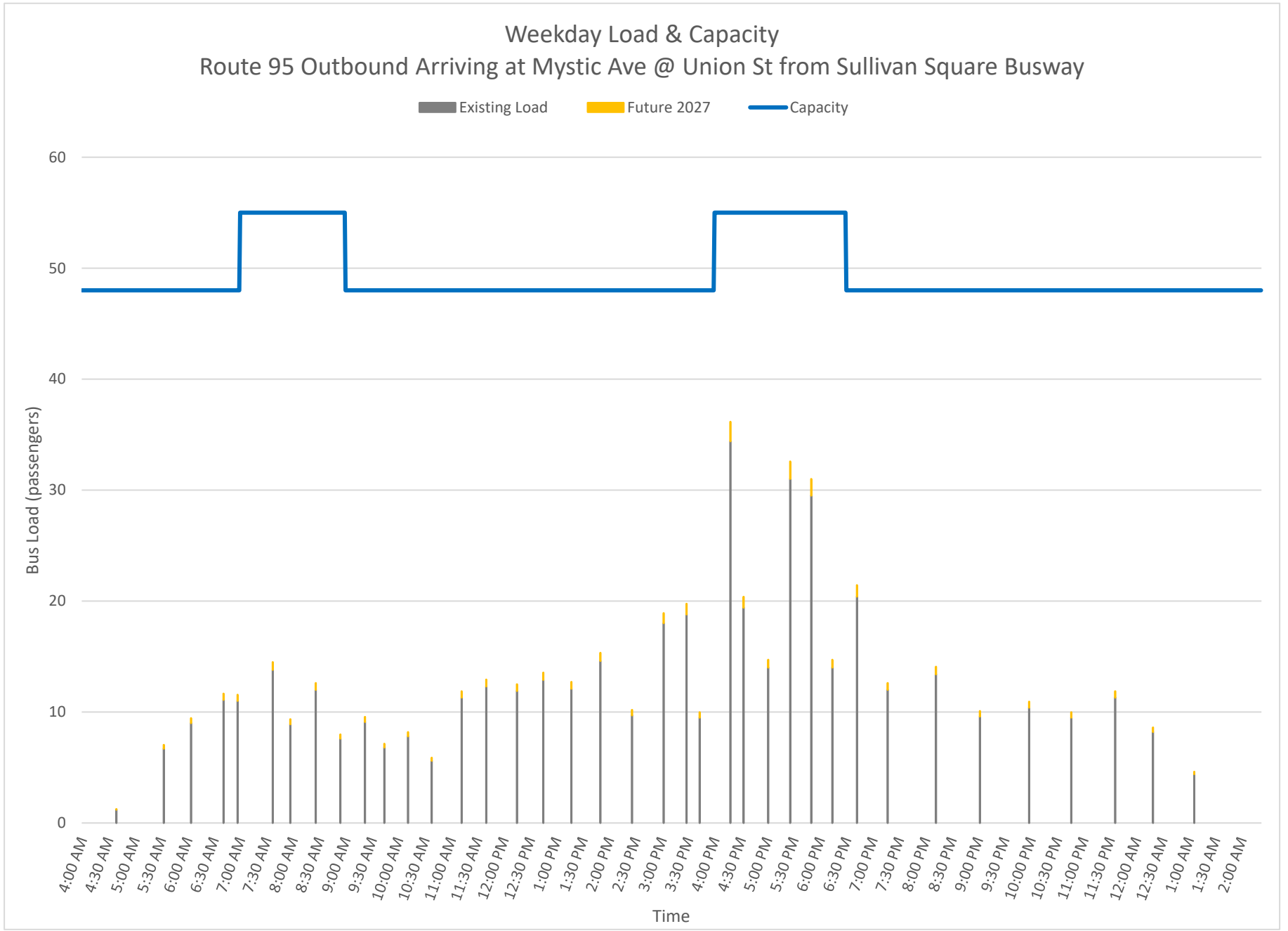
Time


Weekday Load & Capacity
Route 95 Outbound Arriving at Mystic Ave @ Union St from Sullivan Square Busway
Existing Load
Future 2027
Capacity
60
50
40
30
20
10
0
Bus Load (passengers)
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
7:30 AM
8:00 AM
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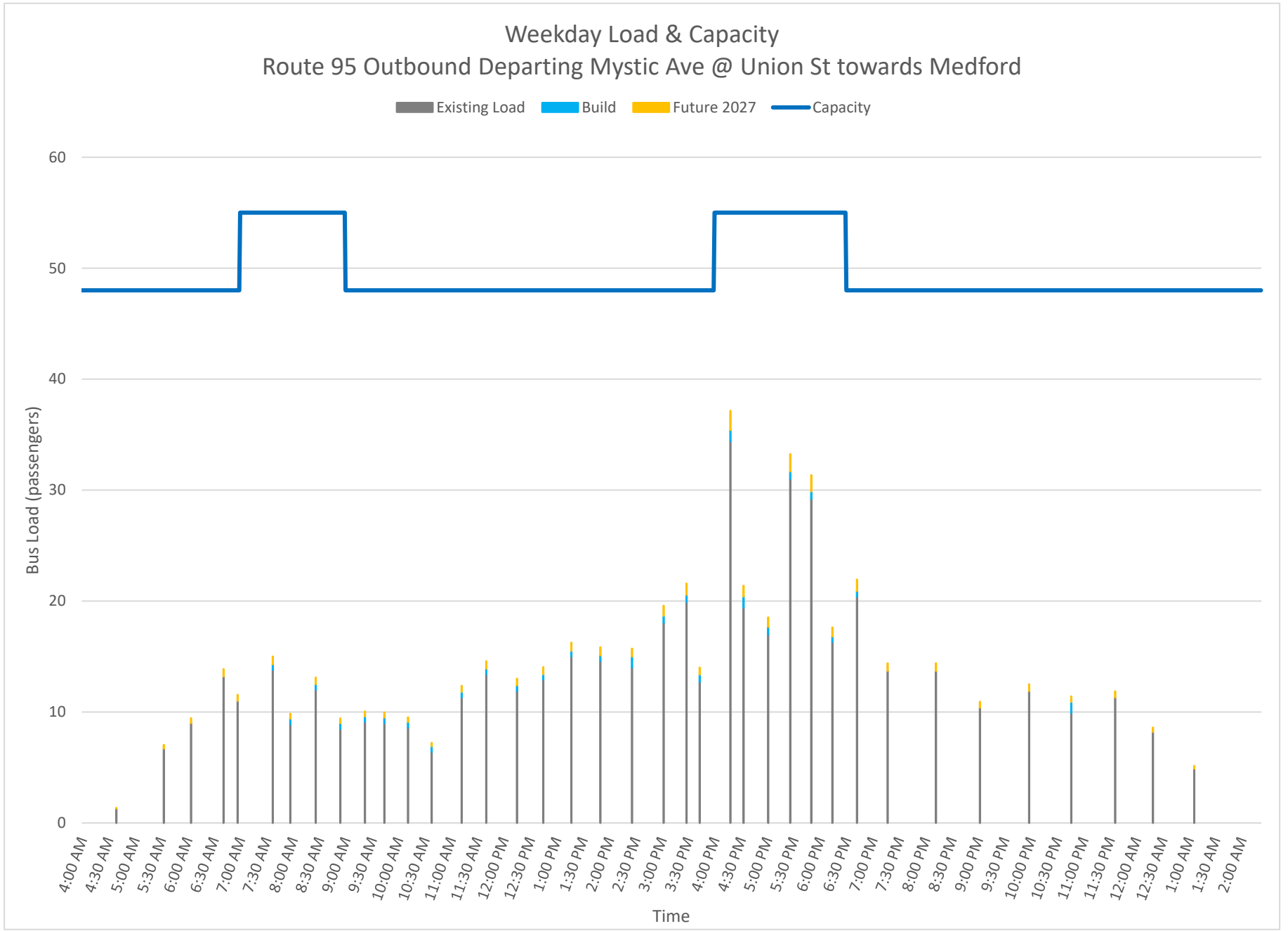
Time


Weekday Load & Capacity
Route 95 Outbound Departing Mystic Ave @ Union St towards Medford
Existing Load
Build
Future 2027
Capacity
60
50
40
30
20
10
0
Bus Load (passengers)
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
7:30 AM
8:00 AM
8:30 AM
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2:00 AM
Time

Bus Route 95 - Inbound Analysis Before Mystic Ave @ Kensington St (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	17	0.36	17	0.36	18	0.38
5:30 AM	1	19	0.40	19	0.40	20	0.42
6:00 AM	1	22	0.46	23	0.47	24	0.49
6:30 AM	2	65	0.59	66	0.60	69	0.63
7:00 AM	1	25	0.46	26	0.48	28	0.50
7:30 AM	1	19	0.35	20	0.37	21	0.39
8:00 AM	1	25	0.45	26	0.47	27	0.49
8:30 AM	1	16	0.29	17	0.31	18	0.33
9:00 AM	1	15	0.32	16	0.33	16	0.34
9:30 AM	2	32	0.33	32	0.34	34	0.35
10:00 AM	1	11	0.23	11	0.24	12	0.25
10:30 AM	1	14	0.29	14	0.30	15	0.31
11:00 AM	1	13	0.28	14	0.29	14	0.30
11:30 AM	1	10	0.20	10	0.21	11	0.22
12:00 PM	1	13	0.28	14	0.29	14	0.30
12:30 PM	1	12	0.24	12	0.25	13	0.27
1:00 PM	1	18	0.37	18	0.38	19	0.40
1:30 PM	1	15	0.30	15	0.31	16	0.33
2:00 PM	1	21	0.44	22	0.45	23	0.48
2:30 PM	3	15	0.10	15	0.11	16	0.11
3:00 PM	-	-	-	-	-	-	-
3:30 PM	1	20	0.37	21	0.39	22	0.41
4:00 PM	2	34	0.31	35	0.32	37	0.33
4:30 PM	1	23	0.41	23	0.42	24	0.44
5:00 PM	1	10	0.17	10	0.18	11	0.19
5:30 PM	1	10	0.17	10	0.18	10	0.19
6:00 PM	2	15	0.13	15	0.13	16	0.14
6:30 PM	1	9	0.19	9	0.19	9	0.20
7:00 PM	1	5	0.10	6	0.11	6	0.12
7:30 PM	1	6	0.13	7	0.14	7	0.15
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	6	0.11	7	0.14	7	0.14
9:00 PM	-	-	-	-	-	-	-
9:30 PM	1	10	0.21	10	0.21	10	0.22
10:00 PM	1	6	0.12	6	0.12	6	0.13
10:30 PM	-	-	-	-	-	-	-
11:00 PM	1	5	0.10	5	0.10	5	0.10
11:30 PM	1	3	0.06	3	0.06	3	0.06
12:00 AM	-	-	-	-	-	-	-
12:30 AM	1	2	0.04	2	0.04	2	0.04
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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

Bus Route 95 - Inbound Analysis After Mystic Ave @ Kensington St (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	16	0.34	16	0.34	17	0.35
5:30 AM	1	19	0.40	19	0.40	20	0.42
6:00 AM	1	22	0.46	22	0.46	23	0.48
6:30 AM	2	65	0.59	65	0.59	68	0.62
7:00 AM	1	25	0.45	25	0.45	26	0.47
7:30 AM	1	18	0.33	18	0.33	19	0.34
8:00 AM	1	23	0.42	23	0.42	24	0.45
8:30 AM	1	15	0.27	15	0.27	16	0.28
9:00 AM	1	15	0.31	15	0.31	16	0.33
9:30 AM	2	30	0.31	30	0.31	32	0.33
10:00 AM	1	10	0.20	10	0.20	10	0.21
10:30 AM	1	13	0.28	13	0.28	14	0.29
11:00 AM	1	12	0.24	12	0.24	12	0.25
11:30 AM	1	9	0.18	9	0.18	9	0.19
12:00 PM	1	13	0.26	13	0.26	13	0.28
12:30 PM	1	11	0.22	11	0.22	11	0.23
1:00 PM	1	17	0.35	17	0.35	18	0.37
1:30 PM	1	14	0.29	14	0.29	15	0.31
2:00 PM	1	21	0.43	21	0.43	22	0.45
2:30 PM	3	13	0.09	13	0.09	13	0.09
3:00 PM	-	-	-	-	-	-	-
3:30 PM	1	19	0.34	19	0.34	20	0.36
4:00 PM	2	32	0.29	32	0.29	34	0.31
4:30 PM	1	21	0.38	21	0.38	22	0.40
5:00 PM	1	9	0.16	9	0.16	9	0.17
5:30 PM	1	10	0.18	10	0.18	10	0.19
6:00 PM	2	14	0.13	14	0.13	15	0.13
6:30 PM	1	6	0.13	6	0.13	7	0.14
7:00 PM	1	4	0.09	4	0.09	4	0.09
7:30 PM	1	7	0.14	7	0.14	7	0.14
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	6	0.12	6	0.12	6	0.12
9:00 PM	-	-	-	-	-	-	-
9:30 PM	1	9	0.19	9	0.19	10	0.20
10:00 PM	1	6	0.12	6	0.12	6	0.12
10:30 PM	-	-	-	-	-	-	-
11:00 PM	1	5	0.09	5	0.09	5	0.10
11:30 PM	1	3	0.06	3	0.06	3	0.06
12:00 AM	-	-	-	-	-	-	-
12:30 AM	1	2	0.04	2	0.04	2	0.04
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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

Bus Route 95 - Outbound Analysis Before Mystic Ave @ Union St (Volume/VC Tables by 30 min)

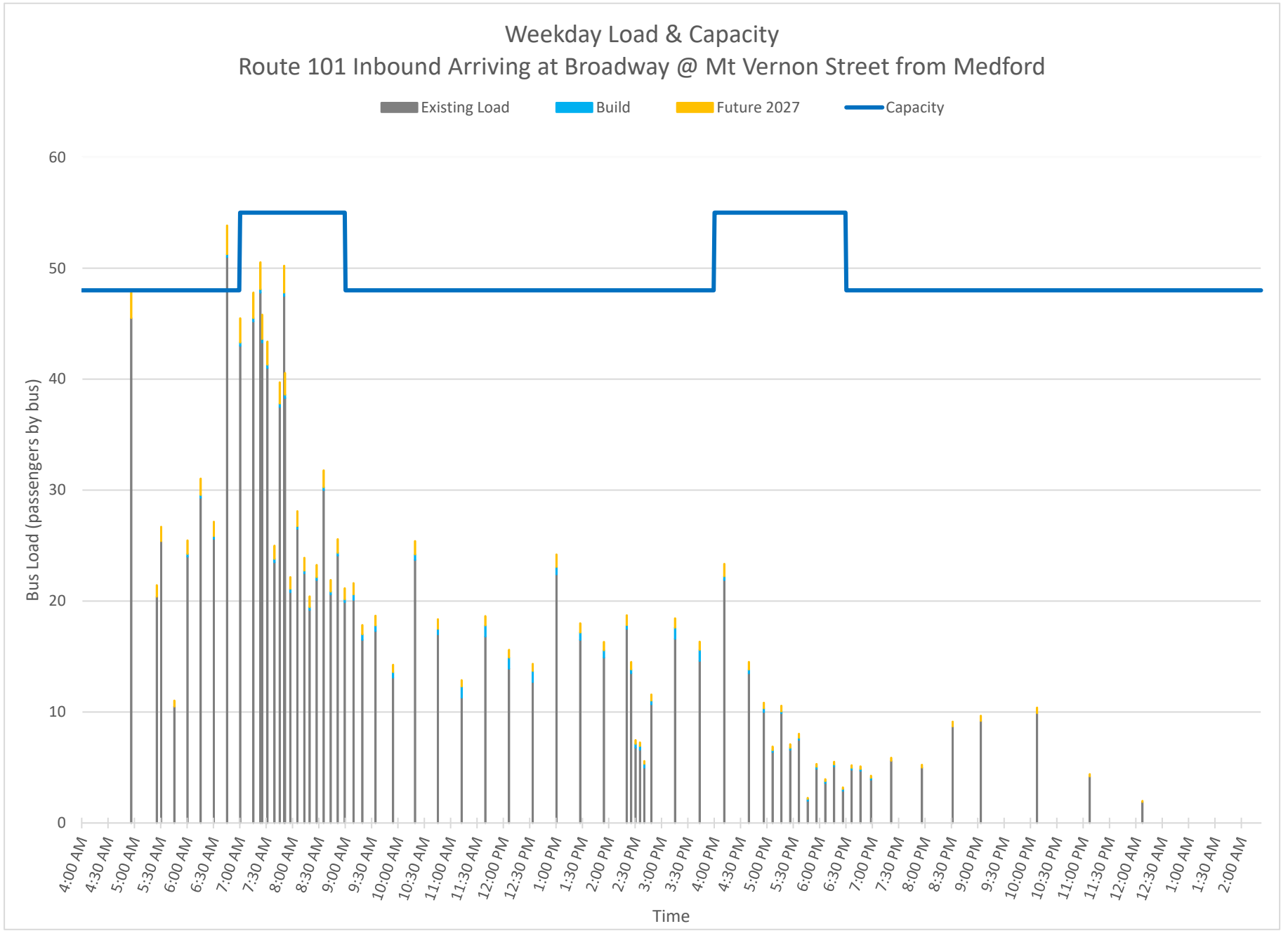
		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	0	0.00	0	0.00	0	0.00
5:30 AM	1	7	0.14	7	0.14	7	0.15
6:00 AM	1	9	0.19	9	0.19	9	0.20
6:30 AM	3	22	0.13	22	0.13	23	0.14
7:00 AM	2	0	0.00	0	0.00	0	0.00
7:30 AM	2	23	0.21	23	0.21	24	0.22
8:00 AM	1	12	0.22	12	0.22	13	0.23
8:30 AM	1	8	0.14	8	0.14	8	0.15
9:00 AM	1	9	0.19	9	0.19	10	0.20
9:30 AM	1	7	0.14	7	0.14	7	0.15
10:00 AM	1	8	0.16	8	0.16	8	0.17
10:30 AM	1	6	0.12	6	0.12	6	0.12
11:00 AM	1	11	0.24	11	0.24	12	0.25
11:30 AM	1	12	0.26	12	0.26	13	0.27
12:00 PM	1	12	0.25	12	0.25	13	0.26
12:30 PM	1	13	0.27	13	0.27	14	0.28
1:00 PM	1	12	0.25	12	0.25	13	0.26
1:30 PM	1	15	0.30	15	0.30	15	0.32
2:00 PM	1	10	0.20	10	0.20	10	0.21
2:30 PM	-	-	-	-	-	-	-
3:00 PM	2	37	0.38	37	0.38	39	0.40
3:30 PM	1	10	0.17	10	0.17	10	0.18
4:00 PM	1	34	0.63	34	0.63	36	0.66
4:30 PM	1	19	0.35	19	0.35	20	0.37
5:00 PM	2	45	0.41	45	0.41	47	0.43
5:30 PM	1	30	0.54	30	0.54	31	0.56
6:00 PM	1	14	0.25	14	0.25	15	0.27
6:30 PM	1	20	0.43	20	0.43	21	0.45
7:00 PM	1	12	0.25	12	0.25	13	0.26
7:30 PM	-	-	-	-	-	-	-
8:00 PM	1	13	0.28	13	0.28	14	0.29
8:30 PM	-	-	-	-	-	-	-
9:00 PM	1	10	0.20	10	0.20	10	0.21
9:30 PM	1	10	0.22	10	0.22	11	0.23
10:00 PM	-	-	-	-	-	-	-
10:30 PM	1	10	0.20	10	0.20	10	0.21
11:00 PM	-	-	-	-	-	-	-
11:30 PM	1	11	0.24	11	0.24	12	0.25
12:00 AM	1	8	0.17	8	0.17	9	0.18
12:30 AM	-	-	-	-	-	-	-
1:00 AM	1	4	0.09	4	0.09	5	0.10
1:30 AM	-	-	-	-	-	-	-

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

Bus Route 69 - Outbound Analysis After Mystic Ave @ Union St (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	0	0.00	0	0.00	0	0.00
5:30 AM	1	7	0.14	7	0.14	7	0.15
6:00 AM	1	9	0.19	9	0.19	9	0.20
6:30 AM	3	24	0.15	24	0.15	25	0.15
7:00 AM	2	0	0.00	0	0.00	0	0.00
7:30 AM	2	23	0.21	24	0.22	25	0.23
8:00 AM	1	12	0.22	13	0.23	13	0.24
8:30 AM	1	9	0.15	9	0.16	9	0.17
9:00 AM	1	9	0.19	10	0.20	10	0.21
9:30 AM	1	9	0.19	10	0.20	10	0.21
10:00 AM	1	9	0.18	9	0.19	10	0.20
10:30 AM	1	6	0.13	7	0.14	7	0.15
11:00 AM	1	11	0.24	12	0.25	12	0.26
11:30 AM	1	13	0.28	14	0.29	15	0.30
12:00 PM	1	12	0.25	12	0.26	13	0.27
12:30 PM	1	13	0.27	13	0.28	14	0.29
1:00 PM	1	15	0.31	16	0.32	16	0.34
1:30 PM	1	15	0.30	15	0.31	16	0.33
2:00 PM	1	14	0.29	15	0.31	16	0.33
2:30 PM	-	-	-	-	-	-	-
3:00 PM	2	38	0.39	39	0.41	41	0.43
3:30 PM	1	13	0.23	13	0.24	14	0.25
4:00 PM	1	34	0.63	35	0.64	37	0.68
4:30 PM	1	19	0.35	20	0.37	21	0.39
5:00 PM	2	48	0.44	49	0.45	52	0.47
5:30 PM	1	29	0.53	30	0.54	31	0.57
6:00 PM	1	16	0.30	17	0.31	18	0.32
6:30 PM	1	20	0.43	21	0.44	22	0.46
7:00 PM	1	14	0.29	14	0.29	14	0.30
7:30 PM	-	-	-	-	-	-	-
8:00 PM	1	14	0.29	14	0.29	14	0.30
8:30 PM	-	-	-	-	-	-	-
9:00 PM	1	10	0.22	10	0.22	11	0.23
9:30 PM	1	12	0.25	12	0.25	13	0.26
10:00 PM	-	-	-	-	-	-	-
10:30 PM	1	10	0.21	11	0.23	11	0.24
11:00 PM	-	-	-	-	-	-	-
11:30 PM	1	11	0.24	11	0.24	12	0.25
12:00 AM	1	8	0.17	8	0.17	9	0.18
12:30 AM	-	-	-	-	-	-	-
1:00 AM	1	5	0.10	5	0.10	5	0.11
1:30 AM	-	-	-	-	-	-	-

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


Weekday Load & Capacity
Route 101 Inbound Arriving at Broadway @ Mt Vernon Street from Medford
Existing Load
Build
Future 2027
Capacity
Bus Load (passengers by bus)
60
50
40
30
20
10
0
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
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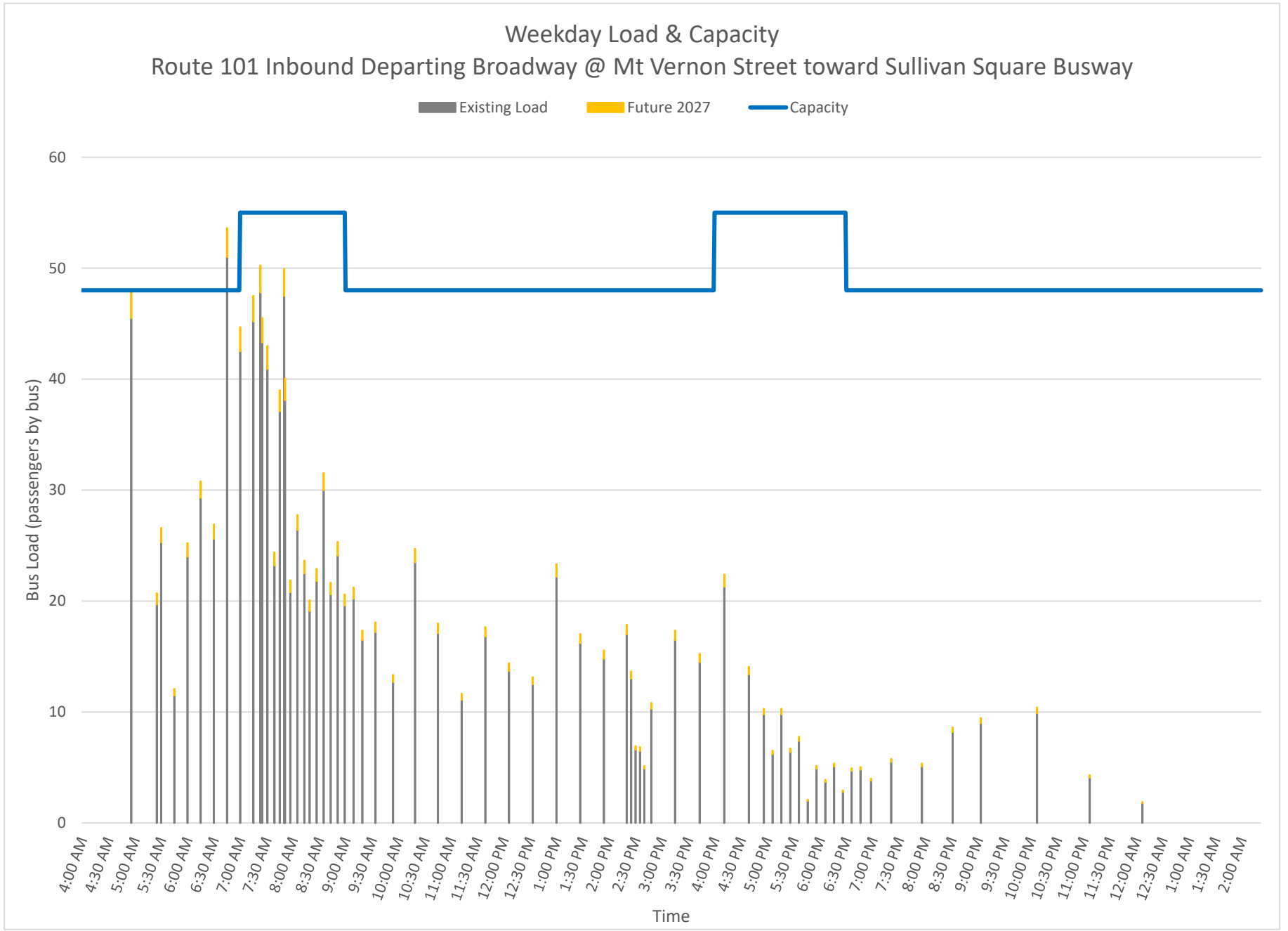
Weekday Load & Capacity
Route 101 Inbound Departing Broadway @ Mt Vernon Street toward Sullivan Square Busway
Existing Load
Future 2027
Capacity
Bus Load (passengers by bus)
60
50
40
30
20
10
0
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
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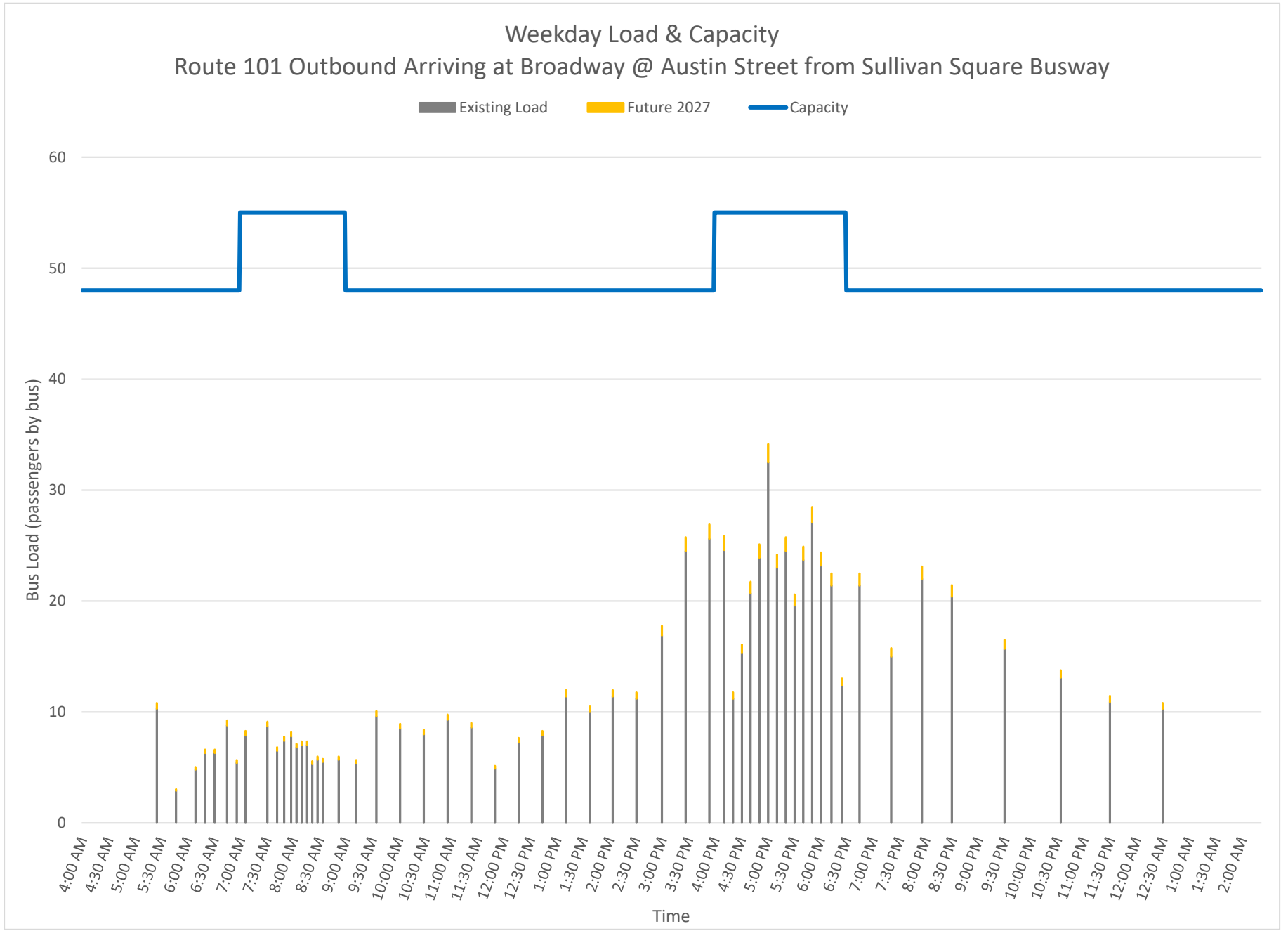
Weekday Load & Capacity
Route 101 Outbound Arriving at Broadway @ Austin Street from Sullivan Square Busway
Existing Load
Future 2027
Capacity
60
50
40
30
20
10
0
Bus Load (passengers by bus)
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
7:30 AM
8:00 AM
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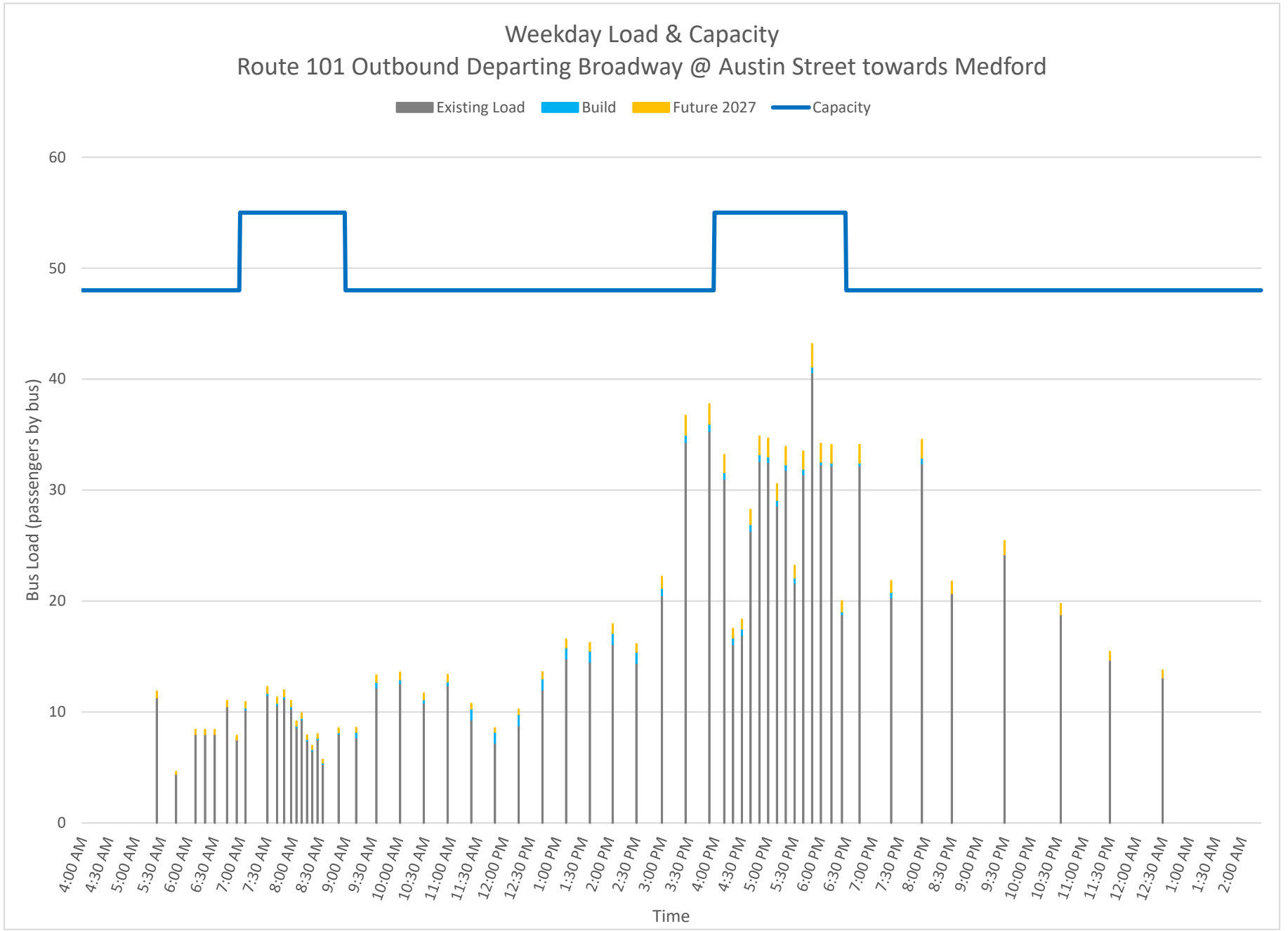
Weekday Load & Capacity
Route 101 Outbound Departing Broadway @ Austin Street towards Medford
Existing Load
Build
Future 2027
Capacity
60
50
40
30
20
10
0
Bus Load (passengers by bus)
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
7:30 AM
8:00 AM
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11:00 PM
11:30 PM
12:00 AM
12:30 AM
1:00 AM
1:30 AM
2:00 AM
Time

Bus Route 101 - Inbound Analysis Before Broadway @ Mt Vernon St (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	20	0.43	20	0.43	21	0.45
5:30 AM	2	36	0.37	36	0.37	38	0.39
6:00 AM	2	53	0.56	54	0.56	57	0.59
6:30 AM	2	77	0.70	77	0.70	81	0.74
7:00 AM	4	179	0.82	181	0.82	190	0.86
7:30 AM	6	209	0.63	210	0.64	221	0.67
8:00 AM	4	90	0.41	91	0.41	96	0.43
8:30 AM	4	95	0.43	96	0.43	100	0.46
9:00 AM	2	37	0.38	38	0.39	39	0.41
9:30 AM	2	30	0.32	31	0.33	33	0.34
10:00 AM	1	24	0.49	24	0.50	25	0.53
10:30 AM	1	17	0.35	18	0.36	18	0.38
11:00 AM	1	11	0.24	12	0.26	13	0.27
11:30 AM	1	17	0.35	18	0.37	19	0.39
12:00 PM	1	14	0.29	15	0.31	16	0.33
12:30 PM	1	13	0.26	14	0.29	14	0.30
1:00 PM	2	39	0.41	40	0.42	42	0.44
1:30 PM	1	15	0.31	16	0.32	16	0.34
2:00 PM	2	31	0.32	32	0.33	33	0.35
2:30 PM	4	29	0.15	30	0.16	32	0.17
3:00 PM	1	17	0.35	18	0.37	18	0.38
3:30 PM	1	15	0.27	16	0.28	16	0.30
4:00 PM	1	22	0.40	22	0.40	23	0.42
4:30 PM	2	24	0.21	24	0.22	25	0.23
5:00 PM	3	23	0.14	23	0.14	25	0.15
5:30 PM	3	14	0.09	15	0.09	16	0.09
6:00 PM	3	12	0.07	12	0.07	13	0.08
6:30 PM	3	13	0.09	14	0.10	15	0.10
7:00 PM	1	6	0.12	6	0.12	6	0.12
7:30 PM	1	5	0.10	5	0.10	5	0.11
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	9	0.18	9	0.18	9	0.19
9:00 PM	1	9	0.19	9	0.19	10	0.20
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	10	0.21	10	0.21	10	0.22
10:30 PM	-	-	-	-	-	-	-
11:00 PM	1	4	0.09	4	0.09	4	0.09
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	2	0.04	2	0.04	2	0.04
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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

Bus Route 101 - Inbound Analysis After Broadway @ Mt Vernon St (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	20	0.41	20	0.41	21	0.43
5:30 AM	2	37	0.38	37	0.38	39	0.40
6:00 AM	2	53	0.56	53	0.56	56	0.58
6:30 AM	2	77	0.70	77	0.70	81	0.73
7:00 AM	4	179	0.81	179	0.81	188	0.85
7:30 AM	6	208	0.63	208	0.63	218	0.66
8:00 AM	4	90	0.41	90	0.41	94	0.43
8:30 AM	4	94	0.43	94	0.43	99	0.45
9:00 AM	2	37	0.38	37	0.38	39	0.40
9:30 AM	2	30	0.31	30	0.31	31	0.33
10:00 AM	1	24	0.49	24	0.49	25	0.51
10:30 AM	1	17	0.36	17	0.36	18	0.37
11:00 AM	1	11	0.23	11	0.23	12	0.24
11:30 AM	1	17	0.35	17	0.35	18	0.37
12:00 PM	1	14	0.29	14	0.29	14	0.30
12:30 PM	1	13	0.26	13	0.26	13	0.27
1:00 PM	2	38	0.40	38	0.40	40	0.42
1:30 PM	1	15	0.31	15	0.31	16	0.32
2:00 PM	2	30	0.31	30	0.31	32	0.33
2:30 PM	4	28	0.15	28	0.15	30	0.15
3:00 PM	1	17	0.34	17	0.34	17	0.36
3:30 PM	1	15	0.26	15	0.26	15	0.28
4:00 PM	1	21	0.39	21	0.39	22	0.41
4:30 PM	2	23	0.21	23	0.21	24	0.22
5:00 PM	3	22	0.14	22	0.14	24	0.14
5:30 PM	3	14	0.09	14	0.09	15	0.09
6:00 PM	3	12	0.07	12	0.07	12	0.07
6:30 PM	3	13	0.09	13	0.09	14	0.10
7:00 PM	1	6	0.11	6	0.11	6	0.12
7:30 PM	1	5	0.11	5	0.11	5	0.11
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	8	0.17	8	0.17	9	0.18
9:00 PM	1	9	0.19	9	0.19	9	0.20
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	10	0.21	10	0.21	10	0.22
10:30 PM	-	-	-	-	-	-	-
11:00 PM	1	4	0.09	4	0.09	4	0.09
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	2	0.04	2	0.04	2	0.04
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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

Bus Route 101 - Outbound Analysis Before Broadway @ Austin St (Volume/VC Tables by 30 min)

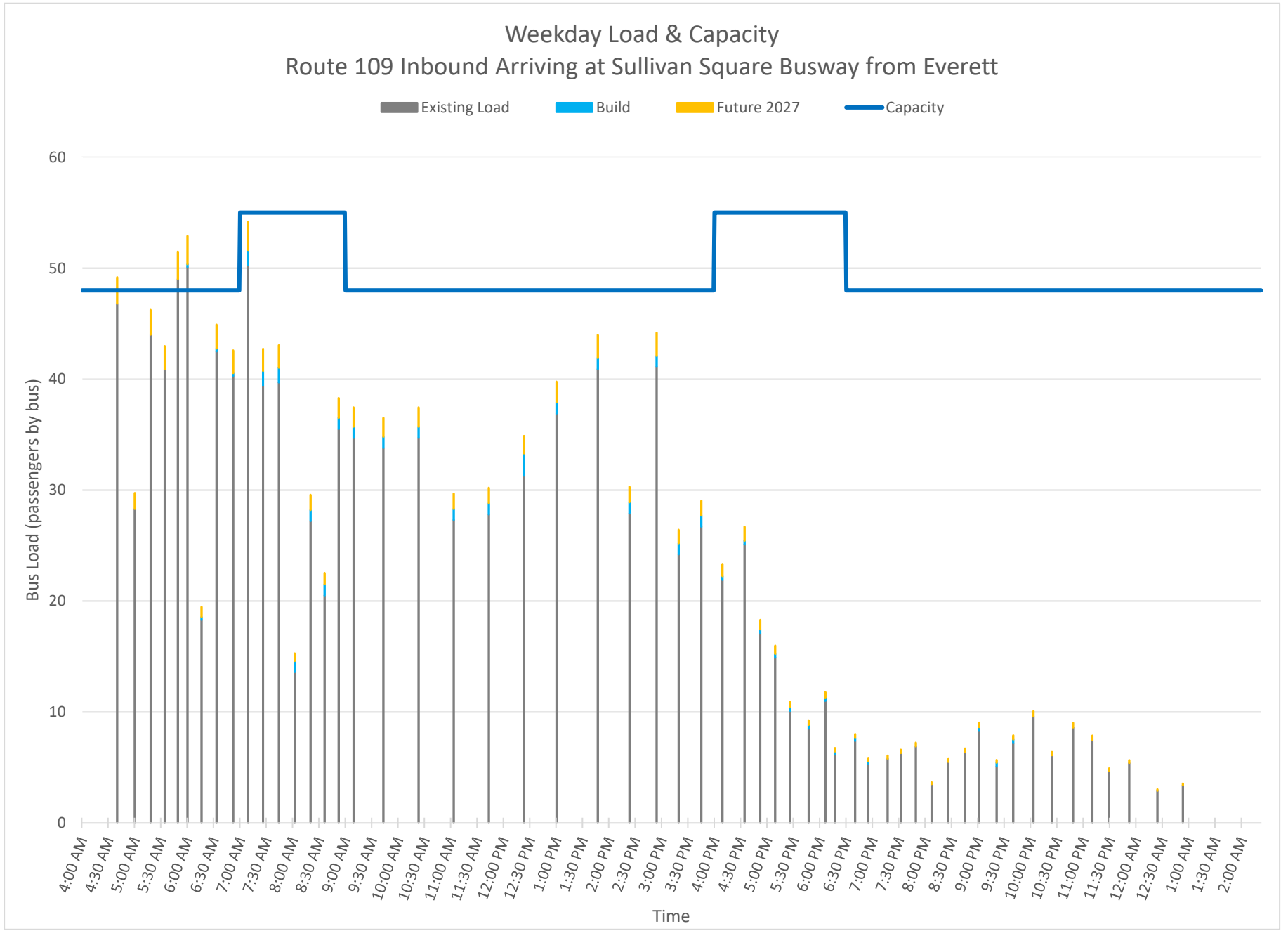
		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	10	0.21	10	0.21	11	0.23
5:30 AM	1	3	0.06	3	0.06	3	0.06
6:00 AM	2	11	0.12	11	0.12	12	0.12
6:30 AM	4	21	0.09	21	0.09	22	0.10
7:00 AM	4	8	0.04	8	0.04	8	0.04
7:30 AM	4	30	0.14	30	0.14	32	0.15
8:00 AM	5	32	0.12	32	0.12	33	0.12
8:30 AM	2	11	0.10	11	0.10	12	0.11
9:00 AM	1	5	0.11	5	0.11	6	0.12
9:30 AM	1	10	0.20	10	0.20	10	0.21
10:00 AM	2	17	0.17	17	0.17	17	0.18
10:30 AM	1	9	0.19	9	0.19	10	0.20
11:00 AM	1	9	0.18	9	0.18	9	0.19
11:30 AM	1	5	0.10	5	0.10	5	0.11
12:00 PM	1	7	0.15	7	0.15	8	0.16
12:30 PM	1	8	0.16	8	0.16	8	0.17
1:00 PM	1	11	0.24	11	0.24	12	0.25
1:30 PM	1	10	0.21	10	0.21	11	0.22
2:00 PM	1	11	0.24	11	0.24	12	0.25
2:30 PM	1	11	0.23	11	0.23	12	0.25
3:00 PM	2	41	0.43	41	0.43	44	0.45
3:30 PM	1	26	0.47	26	0.47	27	0.49
4:00 PM	2	36	0.33	36	0.33	38	0.34
4:30 PM	3	60	0.36	60	0.36	63	0.38
5:00 PM	3	80	0.48	80	0.48	84	0.51
5:30 PM	3	70	0.43	70	0.43	74	0.45
6:00 PM	3	57	0.35	57	0.35	60	0.36
6:30 PM	1	21	0.45	21	0.45	22	0.47
7:00 PM	1	15	0.31	15	0.31	16	0.33
7:30 PM	1	22	0.46	22	0.46	23	0.48
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	20	0.43	20	0.43	21	0.45
9:00 PM	-	-	-	-	-	-	-
9:30 PM	1	16	0.33	16	0.33	17	0.34
10:00 PM	-	-	-	-	-	-	-
10:30 PM	1	13	0.27	13	0.27	14	0.29
11:00 PM	-	-	-	-	-	-	-
11:30 PM	1	11	0.23	11	0.23	11	0.24
12:00 AM	-	-	-	-	-	-	-
12:30 AM	1	10	0.21	10	0.21	11	0.23
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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

Bus Route 101 - Outbound Analysis After Broadway @ Austin St (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	11	0.24	11	0.24	12	0.25
5:30 AM	1	4	0.09	4	0.09	5	0.10
6:00 AM	2	16	0.17	16	0.17	17	0.18
6:30 AM	4	26	0.12	26	0.12	27	0.12
7:00 AM	4	10	0.05	10	0.05	11	0.05
7:30 AM	4	44	0.20	44	0.20	47	0.21
8:00 AM	5	39	0.14	40	0.15	42	0.15
8:30 AM	2	13	0.12	14	0.12	14	0.13
9:00 AM	1	8	0.16	8	0.17	9	0.18
9:30 AM	1	12	0.25	13	0.26	13	0.28
10:00 AM	2	23	0.24	24	0.25	25	0.26
10:30 AM	1	12	0.26	13	0.27	13	0.28
11:00 AM	1	9	0.19	10	0.21	11	0.22
11:30 AM	1	7	0.15	8	0.17	9	0.18
12:00 PM	1	9	0.18	10	0.20	10	0.21
12:30 PM	1	12	0.25	13	0.27	14	0.28
1:00 PM	1	15	0.31	16	0.33	17	0.34
1:30 PM	1	15	0.30	16	0.32	16	0.34
2:00 PM	1	16	0.34	17	0.36	18	0.37
2:30 PM	1	14	0.30	15	0.32	16	0.34
3:00 PM	2	55	0.57	56	0.58	59	0.61
3:30 PM	1	35	0.64	36	0.65	38	0.69
4:00 PM	2	47	0.43	48	0.44	51	0.46
4:30 PM	3	76	0.46	78	0.47	81	0.49
5:00 PM	3	93	0.56	94	0.57	99	0.60
5:30 PM	3	94	0.57	95	0.58	100	0.61
6:00 PM	3	83	0.50	84	0.51	88	0.54
6:30 PM	1	32	0.67	32	0.68	34	0.71
7:00 PM	1	20	0.42	21	0.43	22	0.45
7:30 PM	1	32	0.68	33	0.69	35	0.72
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	21	0.43	21	0.43	22	0.45
9:00 PM	-	-	-	-	-	-	-
9:30 PM	1	24	0.50	24	0.50	25	0.53
10:00 PM	-	-	-	-	-	-	-
10:30 PM	1	19	0.39	19	0.39	20	0.41
11:00 PM	-	-	-	-	-	-	-
11:30 PM	1	15	0.31	15	0.31	15	0.32
12:00 AM	-	-	-	-	-	-	-
12:30 AM	1	13	0.27	13	0.27	14	0.29
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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


Weekday Load & Capacity
Route 109 Inbound Arriving at Sullivan Square Busway from Everett
Existing Load
Build
Future 2027
Capacity
Bus Load (passengers by bus)
60
50
40
30
20
10
0
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
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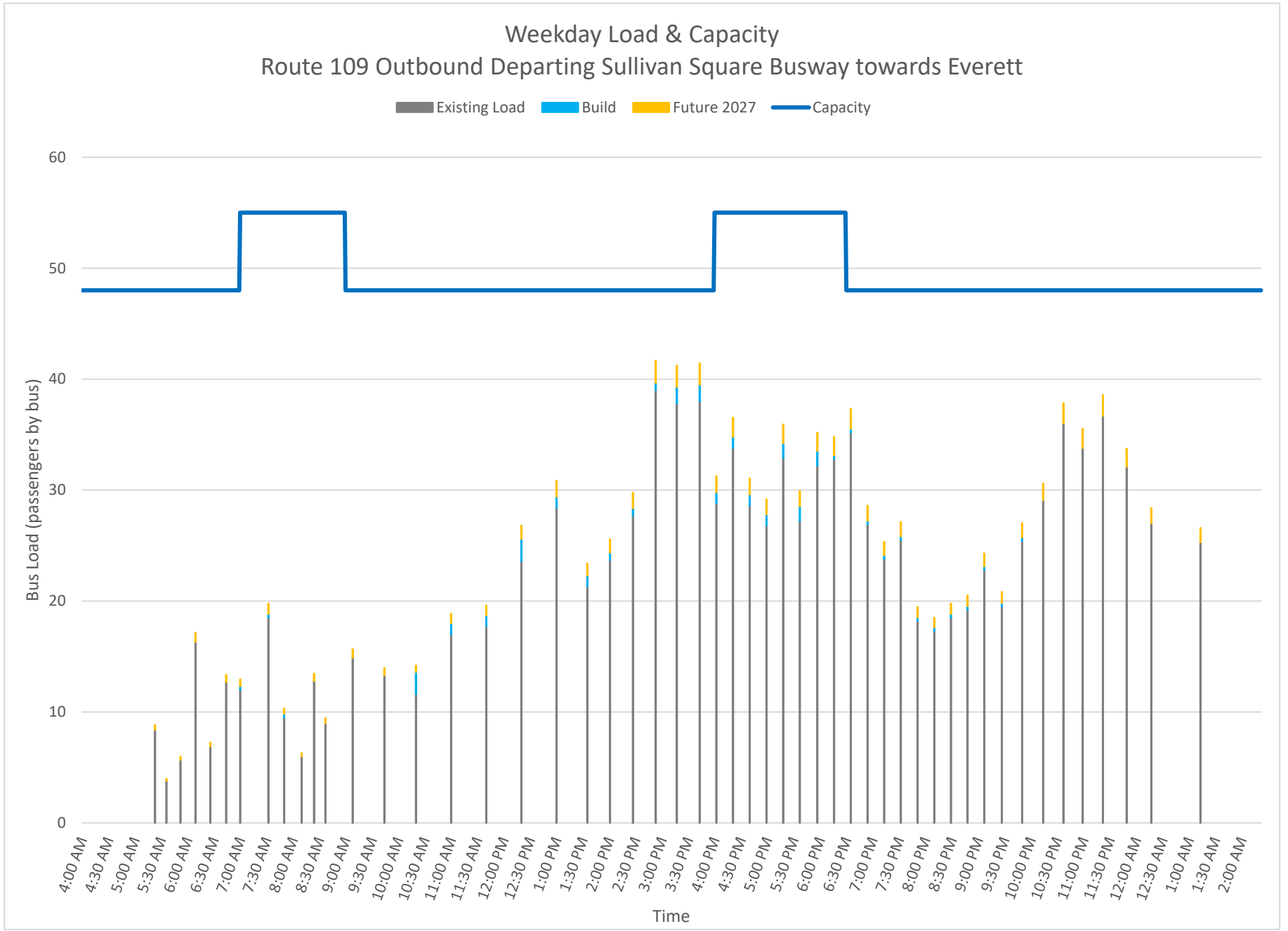
Time


Weekday Load & Capacity
Route 109 Outbound Departing Sullivan Square Busway towards Everett
Existing Load
Build
Future 2027
Capacity
60
50
40
30
20
10
0
Bus Load (passengers by bus)
4:00 AM
4:30 AM
5:00 AM
5:30 AM
6:00 AM
6:30 AM
7:00 AM
7:30 AM
8:00 AM
8:30 AM
9:00 AM
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9:30 PM
10:00 PM
10:30 PM
11:00 PM
11:30 PM
12:00 AM
12:30 AM
1:00 AM
1:30 AM
2:00 AM
Time

Bus Route 109 - Inbound Analysis Before Sullivan Square Busway (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	2	72	0.75	72	0.75	76	0.79
5:30 AM	2	90	0.94	90	0.94	94	0.98
6:00 AM	2	68	0.71	69	0.72	72	0.75
6:30 AM	2	83	0.75	83	0.76	88	0.80
7:00 AM	2	90	0.82	92	0.84	97	0.88
7:30 AM	1	40	0.72	41	0.75	43	0.78
8:00 AM	2	41	0.37	43	0.39	45	0.41
8:30 AM	2	56	0.51	58	0.53	61	0.55
9:00 AM	1	35	0.72	36	0.74	37	0.78
9:30 AM	1	34	0.70	35	0.73	37	0.76
10:00 AM	1	35	0.72	36	0.74	37	0.78
10:30 AM	-	-	-	-	-	-	-
11:00 AM	1	27	0.57	28	0.59	30	0.62
11:30 AM	1	28	0.58	29	0.60	30	0.63
12:00 PM	1	31	0.65	33	0.69	35	0.73
12:30 PM	-	-	-	-	-	-	-
1:00 PM	1	37	0.77	38	0.79	40	0.83
1:30 PM	1	41	0.85	42	0.87	44	0.92
2:00 PM	1	28	0.58	29	0.60	30	0.63
2:30 PM	1	41	0.86	42	0.88	44	0.92
3:00 PM	1	24	0.50	25	0.53	26	0.55
3:30 PM	1	27	0.49	28	0.50	29	0.53
4:00 PM	1	22	0.40	22	0.40	23	0.42
4:30 PM	2	42	0.38	43	0.39	45	0.41
5:00 PM	2	25	0.23	26	0.23	27	0.24
5:30 PM	1	9	0.15	9	0.16	9	0.17
6:00 PM	2	17	0.16	18	0.16	19	0.17
6:30 PM	2	13	0.13	13	0.14	14	0.14
7:00 PM	1	6	0.12	6	0.12	6	0.13
7:30 PM	2	13	0.14	13	0.14	14	0.14
8:00 PM	2	9	0.09	9	0.09	9	0.10
8:30 PM	1	6	0.13	6	0.13	7	0.14
9:00 PM	2	13	0.14	14	0.15	15	0.15
9:30 PM	1	7	0.15	8	0.16	8	0.16
10:00 PM	2	16	0.16	16	0.16	17	0.17
10:30 PM	1	9	0.18	9	0.18	9	0.19
11:00 PM	2	12	0.13	12	0.13	13	0.13
11:30 PM	1	5	0.11	5	0.11	6	0.12
12:00 AM	1	3	0.06	3	0.06	3	0.06
12:30 AM	1	3	0.07	3	0.07	4	0.07
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

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

Bus Route 109 - Outbound Analysis After Sullivan Square Busway (Volume/VC Tables by 30 min)

		Existing		Build		Future 2027	
	# of Buses	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	8	0.18	8	0.18	9	0.18
5:30 AM	2	10	0.10	10	0.10	10	0.10
6:00 AM	2	23	0.24	23	0.24	24	0.25
6:30 AM	1	13	0.23	13	0.23	13	0.24
7:00 AM	1	12	0.22	12	0.22	13	0.24
7:30 AM	2	28	0.25	29	0.26	30	0.27
8:00 AM	2	19	0.17	19	0.17	20	0.18
8:30 AM	1	9	0.16	9	0.16	9	0.17
9:00 AM	1	15	0.31	15	0.31	16	0.33
9:30 AM	1	13	0.28	13	0.28	14	0.29
10:00 AM	1	12	0.24	14	0.28	14	0.30
10:30 AM	-	-	-	-	-	-	-
11:00 AM	1	17	0.35	18	0.38	19	0.39
11:30 AM	1	18	0.37	19	0.39	20	0.41
12:00 PM	1	24	0.49	26	0.53	27	0.56
12:30 PM	-	-	-	-	-	-	-
1:00 PM	1	28	0.59	29	0.61	31	0.64
1:30 PM	1	21	0.44	22	0.46	23	0.49
2:00 PM	2	51	0.54	53	0.55	55	0.58
2:30 PM	1	39	0.81	40	0.83	42	0.87
3:00 PM	1	38	0.79	39	0.82	41	0.86
3:30 PM	1	38	0.69	40	0.72	41	0.75
4:00 PM	2	63	0.57	65	0.59	68	0.62
4:30 PM	2	55	0.50	57	0.52	60	0.55
5:00 PM	1	33	0.60	34	0.62	36	0.65
5:30 PM	2	59	0.54	62	0.56	65	0.59
6:00 PM	1	33	0.60	33	0.60	35	0.63
6:30 PM	2	62	0.65	63	0.65	66	0.69
7:00 PM	1	24	0.50	24	0.50	25	0.53
7:30 PM	2	44	0.46	44	0.46	47	0.49
8:00 PM	2	36	0.37	36	0.38	38	0.40
8:30 PM	1	19	0.40	20	0.41	21	0.43
9:00 PM	2	42	0.44	43	0.45	45	0.47
9:30 PM	1	25	0.53	26	0.54	27	0.56
10:00 PM	1	29	0.61	29	0.61	31	0.64
10:30 PM	2	70	0.73	70	0.73	73	0.76
11:00 PM	1	37	0.76	37	0.76	39	0.80
11:30 PM	1	32	0.67	32	0.67	34	0.70
12:00 AM	1	27	0.56	27	0.56	28	0.59
12:30 AM	-	-	-	-	-	-	-
1:00 AM	1	25	0.53	25	0.53	27	0.55
1:30 AM	-	-	-	-	-	-	-

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

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Appendix F

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 G

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

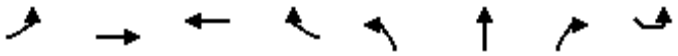
5. For street being crossed.
6. Minimum PLTS 4 when crossing lacks ADA ramps, or PLTS 3 when ramps are non-compliant
7. Refuge should be at least 10 feet for PLTS 1, otherwise use PLTS 2 for refuges 6-10 feet. Narrower refuge islands shall not be considered a refuge island for the purposes of this analysis.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

HOWARD STEIN HUDSON

Engineers + Planners

Appendix H

Synchro Analysis Reports



Movement	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	112	61	344	9	126	663	80	110
Future Volume (vph)	112	61	344	9	126	663	80	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	12	12
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0		5.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.91		0.97
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Frt	1.00	1.00	1.00		1.00	0.98		1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (prot)	1805	3505	1778		1597	4505		3367
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (perm)	1805	3505	1778		1597	4505		3367
Peak-hour factor, PHF	0.75	0.75	0.87	0.87	0.99	0.99	0.99	0.83
Adj. Flow (vph)	149	81	395	10	127	670	81	133
RTOR Reduction (vph)	0	0	64	0	0	14	0	0
Lane Group Flow (vph)	149	81	341	0	127	737	0	133
Confl. Peds. (#/hr)							8	
Confl. Bikes (#/hr)				8				
Heavy Vehicles (%)	0%	3%	3%	0%	13%	14%	5%	4%
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Actuated Green, G (s)	11.8	39.5	22.7		40.5	40.5		22.7
Effective Green, g (s)	11.8	39.5	22.7		40.5	40.5		22.7
Actuated g/C Ratio	0.13	0.44	0.25		0.45	0.45		0.25
Clearance Time (s)	5.0		5.0		5.0	5.0		5.0
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Lane Grp Cap (vph)	236	1538	448		718	2027		849
v/s Ratio Prot	c0.08	0.02	c0.19		0.08	c0.16		0.04
v/s Ratio Perm								
v/c Ratio	0.63	0.05	0.76		0.18	0.36		0.16
Uniform Delay, d1	37.0	14.5	31.2		14.8	16.3		26.2
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.0	0.0	7.5		0.5	0.5		0.1
Delay (s)	41.0	14.5	38.7		15.3	16.8		26.3
Level of Service	D	B	D		B	B		C
Approach Delay (s)		31.7	38.7			16.6		
Approach LOS		C	D			B		

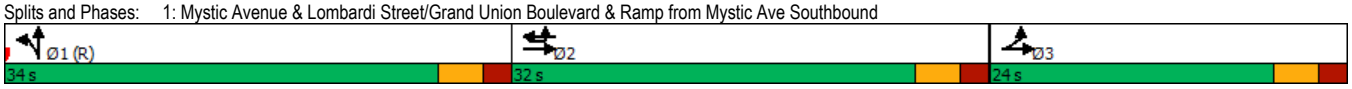
Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

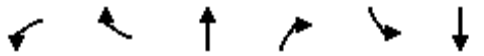
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	112	61	344	9	126	663	80	110
Future Volume (vph)	112	61	344	9	126	663	80	110
Satd. Flow (prot)	1805	3505	1778	0	1597	4506	0	3367
Flt Permitted	0.950				0.950			0.950
Satd. Flow (perm)	1805	3505	1778	0	1597	4506	0	3367
Satd. Flow (RTOR)			85			25		
Lane Group Flow (vph)	149	81	405	0	127	751	0	133
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Detector Phase	3	2 3	2		1	1		2
Switch Phase								
Minimum Initial (s)	6.0		6.0		10.0	10.0		6.0
Minimum Split (s)	11.0		26.0		30.0	30.0		26.0
Total Split (s)	24.0		32.0		34.0	34.0		32.0
Total Split (%)	26.7%		35.6%		37.8%	37.8%		35.6%
Maximum Green (s)	19.0		27.0		29.0	29.0		27.0
Yellow Time (s)	3.0		3.0		3.0	3.0		3.0
All-Red Time (s)	2.0		2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0		5.0
Lead/Lag			Lag		Lead	Lead		Lag
Lead-Lag Optimize?			Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Minimum Gap (s)	2.0		3.0		2.0	2.0		3.0
Time Before Reduce (s)	0.0		0.0		0.0	0.0		0.0
Time To Reduce (s)	0.0		0.0		0.0	0.0		0.0
Recall Mode	None		None		C-Min	C-Min		None
Walk Time (s)			7.0		7.0	7.0		7.0
Flash Dont Walk (s)			14.0		18.0	18.0		14.0
Pedestrian Calls (#/hr)			24		8	8		24
Act Effct Green (s)	11.8	39.5	22.7		40.5	40.5		22.7
Actuated g/C Ratio	0.13	0.44	0.25		0.45	0.45		0.25
v/c Ratio	0.63	0.05	0.79		0.18	0.37		0.16
Control Delay	48.5	11.9	35.7		19.0	18.3		24.8
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	48.5	11.9	35.7		19.0	18.3		24.8
LOS	D	B	D		B	B		C
Approach Delay		35.6	35.7			18.4		
Approach LOS		D	D			B		
Queue Length 50th (ft)	81	13	171		42	96		30
Queue Length 95th (ft)	110	15	234		99	162		43
Internal Link Dist (ft)		277	84			488		
Turn Bay Length (ft)	140				250			
Base Capacity (vph)	381	1772	604		722	2052		1035
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	0.39	0.05	0.67		0.18	0.37		0.13

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 71 (79%), Referenced to phase 1:NBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 25.6	Intersection LOS: C
Intersection Capacity Utilization 64.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Mystic Avenue & Lombardi Street/Grand Union Boulevard & Ramp from Mystic Ave Southbound





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	136	797	40	0	0
Future Volume (vph)	0	136	797	40	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0		
Lane Util. Factor		0.88	0.91	1.00		
Frpb, ped/bikes		1.00	1.00	0.96		
Flpb, ped/bikes		1.00	1.00	1.00		
Frt		0.85	1.00	0.85		
Flt Protected		1.00	1.00	1.00		
Satd. Flow (prot)		2733	4673	1525		
Flt Permitted		1.00	1.00	1.00		
Satd. Flow (perm)		2733	4673	1525		
Peak-hour factor, PHF	0.81	0.81	0.93	0.93	0.92	0.92
Adj. Flow (vph)	0	168	857	43	0	0
RTOR Reduction (vph)	0	157	0	0	0	0
Lane Group Flow (vph)	0	11	857	43	0	0
Confl. Peds. (#/hr)				10		
Heavy Vehicles (%)	0%	4%	11%	2%	2%	2%
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Actuated Green, G (s)		6.0	74.0	80.0		
Effective Green, g (s)		6.0	74.0	80.0		
Actuated g/C Ratio		0.07	0.82	0.89		
Clearance Time (s)		5.0	5.0	5.0		
Vehicle Extension (s)		2.0	2.0	2.0		
Lane Grp Cap (vph)		182	3842	1525		
v/s Ratio Prot		c0.00	c0.18	0.00		
v/s Ratio Perm				0.03		
v/c Ratio		0.06	0.22	0.03		
Uniform Delay, d1		39.4	1.7	0.6		
Progression Factor		1.00	0.65	0.53		
Incremental Delay, d2		0.1	0.1	0.0		
Delay (s)		39.4	1.3	0.3		
Level of Service		D	A	A		
Approach Delay (s)	39.4		1.2			0.0
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		

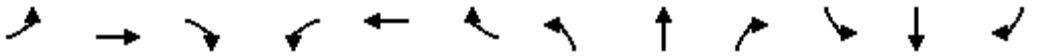
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	136	797	40	0	0
Future Volume (vph)	0	136	797	40	0	0
Satd. Flow (prot)	0	2733	4673	1583	0	0
Flt Permitted						
Satd. Flow (perm)	0	2733	4673	1520	0	0
Satd. Flow (RTOR)		333				
Lane Group Flow (vph)	0	168	857	43	0	0
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Detector Phase		4	2	4		
Switch Phase						
Minimum Initial (s)		6.0	10.0	6.0		
Minimum Split (s)		11.0	27.0	11.0		
Total Split (s)		26.0	64.0	26.0		
Total Split (%)		28.9%	71.1%	28.9%		
Maximum Green (s)		21.0	59.0	21.0		
Yellow Time (s)		3.0	3.0	3.0		
All-Red Time (s)		2.0	2.0	2.0		
Lost Time Adjust (s)		0.0	0.0	0.0		
Total Lost Time (s)		5.0	5.0	5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		2.0	2.0	2.0		
Minimum Gap (s)		2.0	2.0	2.0		
Time Before Reduce (s)		0.0	0.0	0.0		
Time To Reduce (s)		0.0	0.0	0.0		
Recall Mode		None	C-Min	None		
Walk Time (s)			4.0			
Flash Dont Walk (s)			18.0			
Pedestrian Calls (#/hr)			10			
Act Effct Green (s)		6.0	74.0	80.0		
Actuated g/C Ratio		0.07	0.82	0.89		
v/c Ratio		0.34	0.22	0.03		
Control Delay		1.9	1.3	0.2		
Queue Delay		0.0	0.0	0.0		
Total Delay		1.9	1.3	0.2		
LOS		A	A	A		
Approach Delay	1.9		1.2			
Approach LOS	A		A			
Queue Length 50th (ft)		0	17	1		
Queue Length 95th (ft)		0	17	m0		
Internal Link Dist (ft)	550		905			225
Turn Bay Length (ft)						
Base Capacity (vph)		893	3842	1450		
Starvation Cap Reductn		0	0	0		
Spillback Cap Reductn		0	0	0		
Storage Cap Reductn		0	0	0		
Reduced v/c Ratio		0.19	0.22	0.03		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 10 (11%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.34	
Intersection Signal Delay: 1.3	Intersection LOS: A
Intersection Capacity Utilization 31.7%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 2: Mystic Avenue & Revolution Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	20	50	34	44	24	10	82	23	83	307	117
Future Volume (vph)	21	20	50	34	44	24	10	82	23	83	307	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	4.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1719	1673		1805	1863	1615	1805	1707		1787	1845	1550
Flt Permitted	0.72	1.00		0.70	1.00	1.00	0.52	1.00		0.59	1.00	1.00
Satd. Flow (perm)	1305	1673		1331	1863	1615	991	1707		1115	1845	1550
Peak-hour factor, PHF	0.81	0.81	0.81	0.80	0.80	0.80	0.74	0.74	0.74	0.87	0.87	0.87
Adj. Flow (vph)	26	25	62	42	55	30	14	111	31	95	353	134
RTOR Reduction (vph)	0	58	0	0	0	0	0	9	0	0	0	72
Lane Group Flow (vph)	26	29	0	43	55	30	14	133	0	95	353	62
Confl. Bikes (#/hr)									3			1
Heavy Vehicles (%)	5%	0%	2%	0%	2%	0%	0%	8%	4%	1%	3%	2%
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	6.8	6.8		6.8	6.8	100.0	42.1	40.9		52.3	46.0	46.0
Effective Green, g (s)	6.8	6.8		6.8	6.8	100.0	42.1	40.9		52.3	46.0	46.0
Actuated g/C Ratio	0.07	0.07		0.07	0.07	1.00	0.42	0.41		0.52	0.46	0.46
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	88	113		90	126	1615	426	698		625	848	713
v/s Ratio Prot		0.02			0.03		0.00	0.08		c0.01	c0.19	
v/s Ratio Perm	0.02			c0.03		c0.02	0.01			0.07		0.04
v/c Ratio	0.30	0.26		0.48	0.44	0.02	0.03	0.19		0.15	0.42	0.09
Uniform Delay, d1	44.3	44.2		44.9	44.8	0.0	16.9	18.9		12.2	18.0	15.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.4		1.5	0.9	0.0	0.0	0.6		0.0	1.5	0.2
Delay (s)	45.0	44.7		46.3	45.6	0.0	16.9	19.5		12.2	19.5	15.4
Level of Service	D	D		D	D	A	B	B		B	B	B
Approach Delay (s)		44.7			35.2			19.3			17.4	
Approach LOS		D			D			B			B	

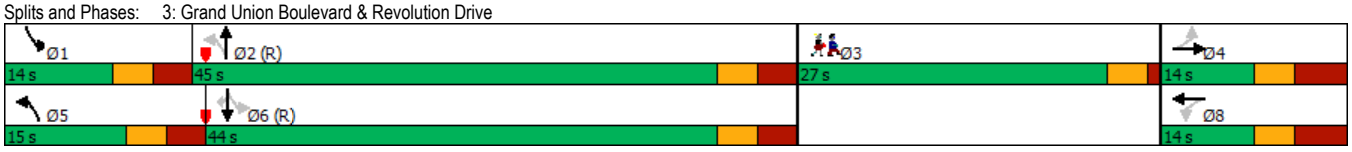
Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		

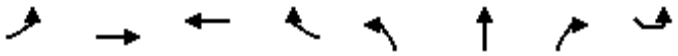
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3
Lane Configurations													
Traffic Volume (vph)	21	20	50	34	44	24	10	82	23	83	307	117	
Future Volume (vph)	21	20	50	34	44	24	10	82	23	83	307	117	
Satd. Flow (prot)	1719	1673	0	1805	1863	1615	1805	1707	0	1787	1845	1583	
Flt Permitted	0.721			0.701			0.522			0.593			
Satd. Flow (perm)	1305	1673	0	1332	1863	1615	992	1707	0	1116	1845	1550	
Satd. Flow (RTOR)		62				218		16				153	
Lane Group Flow (vph)	26	87	0	43	55	30	14	142	0	95	353	134	
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm	
Protected Phases		4			8		5	2		1	6		3
Permitted Phases	4			8		Free	2			6		6	
Detector Phase	4	4		8	8		5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	10.0	1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		12.0	16.0		12.0	16.0	16.0	27.0
Total Split (s)	14.0	14.0		14.0	14.0		15.0	45.0		14.0	44.0	44.0	27.0
Total Split (%)	14.0%	14.0%		14.0%	14.0%		15.0%	45.0%		14.0%	44.0%	44.0%	27%
Maximum Green (s)	7.0	7.0		7.0	7.0		9.0	39.0		8.0	38.0	38.0	23.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	C-Min	None
Walk Time (s)													5.0
Flash Dont Walk (s)													18.0
Pedestrian Calls (#/hr)													118
Act Effct Green (s)	8.0	8.0		8.0	8.0	100.0	48.3	43.5		54.1	52.2	52.2	
Actuated g/C Ratio	0.08	0.08		0.08	0.08	1.00	0.48	0.44		0.54	0.52	0.52	
v/c Ratio	0.25	0.46		0.40	0.37	0.02	0.03	0.19		0.15	0.37	0.15	
Control Delay	48.0	24.7		54.1	49.8	0.0	13.2	19.6		13.2	18.1	2.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	48.0	24.7		54.1	49.8	0.0	13.2	19.6		13.2	18.1	2.9	
LOS	D	C		D	D	A	B	B		B	B	A	
Approach Delay		30.1			39.6			19.1			13.8		
Approach LOS		C			D			B			B		
Queue Length 50th (ft)	16	15		27	34	0	4	52		29	126	0	
Queue Length 95th (ft)	37	50		53	62	0	12	83		58	250	26	
Internal Link Dist (ft)		550			253			1577			492		
Turn Bay Length (ft)	250			150			120			250		150	
Base Capacity (vph)	110	197		112	156	1615	576	780		660	967	885	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Reduced v/c Ratio	0.24	0.44		0.38	0.35	0.02	0.02	0.18		0.14	0.37	0.15	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.46	
Intersection Signal Delay: 19.9	Intersection LOS: B
Intersection Capacity Utilization 35.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Grand Union Boulevard & Revolution Drive





Movement	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	139	231	196	13	211	1037	268	301
Future Volume (vph)	139	231	196	13	211	1037	268	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	12	12
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0		5.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.91		0.97
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Frt	1.00	1.00	0.99		1.00	0.97		1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (prot)	1787	3610	1785		1687	4895		3433
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (perm)	1787	3610	1785		1687	4895		3433
Peak-hour factor, PHF	0.83	0.83	0.95	0.95	0.93	0.93	0.93	0.80
Adj. Flow (vph)	167	278	206	14	227	1115	288	376
RTOR Reduction (vph)	0	0	62	0	0	34	0	0
Lane Group Flow (vph)	167	278	158	0	227	1369	0	376
Confl. Peds. (#/hr)							9	
Confl. Bikes (#/hr)				5			2	
Heavy Vehicles (%)	1%	0%	2%	0%	7%	2%	3%	2%
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Actuated Green, G (s)	13.9	37.3	18.4		52.7	52.7		18.4
Effective Green, g (s)	13.9	37.3	18.4		52.7	52.7		18.4
Actuated g/C Ratio	0.14	0.37	0.18		0.53	0.53		0.18
Clearance Time (s)	5.0		5.0		5.0	5.0		5.0
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Lane Grp Cap (vph)	248	1346	328		889	2579		631
v/s Ratio Prot	c0.09	0.08	0.09		0.13	c0.28		c0.11
v/s Ratio Perm								
v/c Ratio	0.67	0.21	0.48		0.26	0.53		0.60
Uniform Delay, d1	40.9	21.3	36.5		12.9	15.5		37.4
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	5.6	0.1	1.1		0.7	0.8		1.5
Delay (s)	46.5	21.4	37.6		13.6	16.3		38.9
Level of Service	D	C	D		B	B		D
Approach Delay (s)		30.8	37.6			15.9		
Approach LOS		C	D			B		

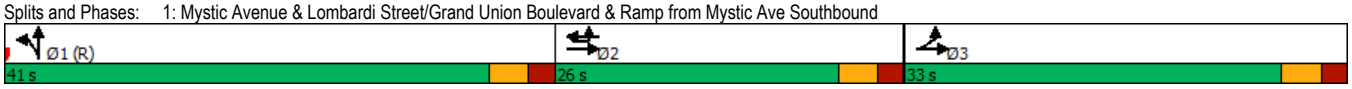
Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	139	231	196	13	211	1037	268	301
Future Volume (vph)	139	231	196	13	211	1037	268	301
Satd. Flow (prot)	1787	3610	1785	0	1687	4894	0	3433
Flt Permitted	0.950				0.950			0.950
Satd. Flow (perm)	1787	3610	1785	0	1687	4894	0	3433
Satd. Flow (RTOR)			76			72		
Lane Group Flow (vph)	167	278	220	0	227	1403	0	376
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Detector Phase	3	2 3	2		1	1		2
Switch Phase								
Minimum Initial (s)	6.0		6.0		10.0	10.0		6.0
Minimum Split (s)	11.0		26.0		30.0	30.0		26.0
Total Split (s)	33.0		26.0		41.0	41.0		26.0
Total Split (%)	33.0%		26.0%		41.0%	41.0%		26.0%
Maximum Green (s)	28.0		21.0		36.0	36.0		21.0
Yellow Time (s)	3.0		3.0		3.0	3.0		3.0
All-Red Time (s)	2.0		2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0		5.0
Lead/Lag			Lag		Lead	Lead		Lag
Lead-Lag Optimize?			Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Minimum Gap (s)	2.0		3.0		2.0	2.0		3.0
Time Before Reduce (s)	0.0		0.0		0.0	0.0		0.0
Time To Reduce (s)	0.0		0.0		0.0	0.0		0.0
Recall Mode	None		None		C-Min	C-Min		None
Walk Time (s)			7.0		7.0	7.0		7.0
Flash Dont Walk (s)			14.0		18.0	18.0		14.0
Pedestrian Calls (#/hr)			39		9	9		39
Act Effct Green (s)	13.9	37.3	18.4		52.7	52.7		18.4
Actuated g/C Ratio	0.14	0.37	0.18		0.53	0.53		0.18
v/c Ratio	0.67	0.21	0.56		0.26	0.54		0.60
Control Delay	53.5	20.4	29.3		15.7	16.8		41.1
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	53.5	20.4	29.3		15.7	16.8		41.1
LOS	D	C	C		B	B		D
Approach Delay		32.9	29.3			16.7		
Approach LOS		C	C			B		
Queue Length 50th (ft)	103	59	80		80	206		110
Queue Length 95th (ft)	146	71	154		147	286		136
Internal Link Dist (ft)		277	84			488		
Turn Bay Length (ft)	140				250			
Base Capacity (vph)	500	1854	434		888	2611		720
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	0.33	0.15	0.51		0.26	0.54		0.52

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 3 (3%), Referenced to phase 1:NBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 23.9		Intersection LOS: C	
Intersection Capacity Utilization 69.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Mystic Avenue & Lombardi Street/Grand Union Boulevard & Ramp from Mystic Ave Southbound



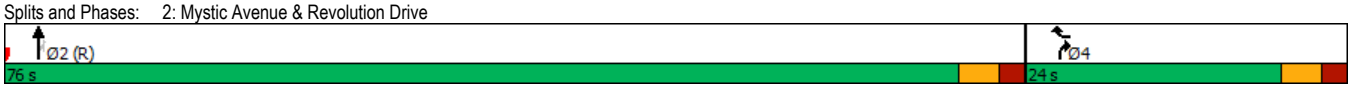
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	237	1272	217	0	0
Future Volume (vph)	0	237	1272	217	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0		
Lane Util. Factor		0.88	0.91	1.00		
Frpb, ped/bikes		1.00	1.00	0.98		
Flpb, ped/bikes		1.00	1.00	1.00		
Frt		0.85	1.00	0.85		
Flt Protected		1.00	1.00	1.00		
Satd. Flow (prot)		2842	5085	1577		
Flt Permitted		1.00	1.00	1.00		
Satd. Flow (perm)		2842	5085	1577		
Peak-hour factor, PHF	0.69	0.69	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	343	1383	236	0	0
RTOR Reduction (vph)	0	125	0	0	0	0
Lane Group Flow (vph)	0	218	1383	236	0	0
Confl. Peds. (#/hr)				3		
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	0%	0%	2%	0%	2%	2%
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Actuated Green, G (s)		11.8	78.2	90.0		
Effective Green, g (s)		11.8	78.2	90.0		
Actuated g/C Ratio		0.12	0.78	0.90		
Clearance Time (s)		5.0	5.0	5.0		
Vehicle Extension (s)		2.0	2.0	2.0		
Lane Grp Cap (vph)		335	3976	1577		
v/s Ratio Prot		c0.08	c0.27	0.02		
v/s Ratio Perm				0.13		
v/c Ratio		0.65	0.35	0.15		
Uniform Delay, d1		42.1	3.3	0.6		
Progression Factor		1.00	0.62	0.80		
Incremental Delay, d2		3.4	0.2	0.0		
Delay (s)		45.5	2.2	0.5		
Level of Service		D	A	A		
Approach Delay (s)	45.5		2.0			0.0
Approach LOS	D		A			A

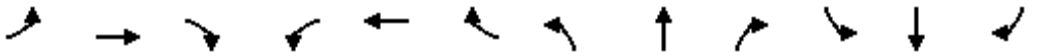
Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	237	1272	217	0	0
Future Volume (vph)	0	237	1272	217	0	0
Satd. Flow (prot)	0	2842	5085	1615	0	0
Flt Permitted						
Satd. Flow (perm)	0	2842	5085	1571	0	0
Satd. Flow (RTOR)		142				
Lane Group Flow (vph)	0	343	1383	236	0	0
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Detector Phase		4	2	4		
Switch Phase						
Minimum Initial (s)		6.0	10.0	6.0		
Minimum Split (s)		11.0	27.0	11.0		
Total Split (s)		24.0	76.0	24.0		
Total Split (%)		24.0%	76.0%	24.0%		
Maximum Green (s)		19.0	71.0	19.0		
Yellow Time (s)		3.0	3.0	3.0		
All-Red Time (s)		2.0	2.0	2.0		
Lost Time Adjust (s)		0.0	0.0	0.0		
Total Lost Time (s)		5.0	5.0	5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		2.0	2.0	2.0		
Minimum Gap (s)		2.0	2.0	2.0		
Time Before Reduce (s)		0.0	0.0	0.0		
Time To Reduce (s)		0.0	0.0	0.0		
Recall Mode		None	C-Min	None		
Walk Time (s)			4.0			
Flash Dont Walk (s)			18.0			
Pedestrian Calls (#/hr)			3			
Act Effct Green (s)		11.8	78.2	90.0		
Actuated g/C Ratio		0.12	0.78	0.90		
v/c Ratio		0.75	0.35	0.17		
Control Delay		34.6	2.4	0.5		
Queue Delay		0.0	0.0	0.0		
Total Delay		34.6	2.4	0.5		
LOS		C	A	A		
Approach Delay	34.6		2.1			
Approach LOS	C		A			
Queue Length 50th (ft)		70	46	0		
Queue Length 95th (ft)		73	87	0		
Internal Link Dist (ft)	550		905			225
Turn Bay Length (ft)						
Base Capacity (vph)		655	3976	1491		
Starvation Cap Reductn		0	0	0		
Spillback Cap Reductn		0	0	0		
Storage Cap Reductn		0	0	0		
Reduced v/c Ratio		0.52	0.35	0.16		

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 30 (30%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 7.8	Intersection LOS: A
Intersection Capacity Utilization 41.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Mystic Avenue & Revolution Drive





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	89	32	34	55	44	40	321	129	81	111	134
Future Volume (vph)	145	89	32	34	55	44	40	321	129	81	111	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	4.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1814		1805	1900	1615	1805	1793		1805	1827	1559
Flt Permitted	0.70	1.00		0.65	1.00	1.00	0.68	1.00		0.16	1.00	1.00
Satd. Flow (perm)	1306	1814		1240	1900	1615	1286	1793		296	1827	1559
Peak-hour factor, PHF	0.78	0.78	0.78	0.64	0.64	0.64	0.93	0.93	0.93	0.89	0.89	0.89
Adj. Flow (vph)	186	114	41	53	86	69	43	345	139	91	125	151
RTOR Reduction (vph)	0	14	0	0	0	0	0	16	0	0	0	108
Lane Group Flow (vph)	186	141	0	53	86	69	43	468	0	91	125	43
Confl. Bikes (#/hr)			1						3			4
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	1%	0%	0%	4%	1%
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	14.3	14.3		14.3	14.3	90.0	28.9	24.9		30.5	25.7	25.7
Effective Green, g (s)	14.3	14.3		14.3	14.3	90.0	28.9	24.9		30.5	25.7	25.7
Actuated g/C Ratio	0.16	0.16		0.16	0.16	1.00	0.32	0.28		0.34	0.29	0.29
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	207	288		197	301	1615	436	496		180	521	445
v/s Ratio Prot		0.08			0.05		0.00	c0.26		c0.03	0.07	
v/s Ratio Perm	c0.14			0.04		c0.04	0.03			0.14		0.03
v/c Ratio	0.90	0.49		0.27	0.29	0.04	0.10	0.94		0.51	0.24	0.10
Uniform Delay, d1	37.1	34.5		33.3	33.4	0.0	21.2	31.9		22.8	24.7	23.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	35.0	0.5		0.3	0.2	0.0	0.0	28.6		0.8	1.1	0.4
Delay (s)	72.1	35.0		33.5	33.5	0.0	21.3	60.5		23.7	25.7	24.1
Level of Service	E	C		C	C	A	C	E		C	C	C
Approach Delay (s)		55.2			22.4			57.3			24.5	
Approach LOS		E			C			E			C	

Intersection Summary					
HCM 2000 Control Delay	43.4	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.60				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	23.0		
Intersection Capacity Utilization	64.4%	ICU Level of Service	C		
Analysis Period (min)	15				

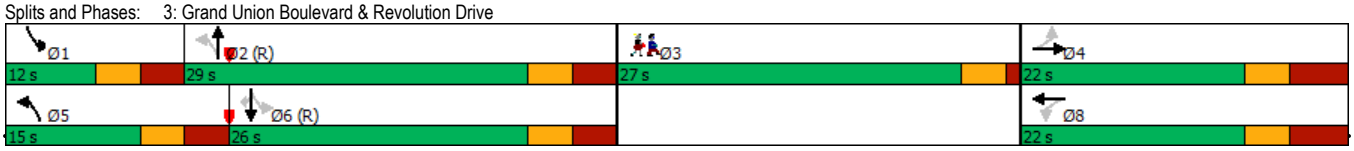
c Critical Lane Group

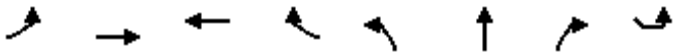
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3
Lane Configurations													
Traffic Volume (vph)	145	89	32	34	55	44	40	321	129	81	111	134	
Future Volume (vph)	145	89	32	34	55	44	40	321	129	81	111	134	
Satd. Flow (prot)	1770	1813	0	1805	1900	1615	1805	1793	0	1805	1827	1599	
Flt Permitted	0.701			0.652			0.677			0.156			
Satd. Flow (perm)	1306	1813	0	1239	1900	1615	1286	1793	0	296	1827	1556	
Satd. Flow (RTOR)		17				242		22				170	
Lane Group Flow (vph)	186	155	0	53	86	69	43	484	0	91	125	151	
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm	
Protected Phases		4			8		5	2		1	6		3
Permitted Phases	4			8		Free	2			6		6	
Detector Phase	4	4		8	8		5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	10.0	1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		12.0	16.0		12.0	16.0	16.0	27.0
Total Split (s)	22.0	22.0		22.0	22.0		15.0	29.0		12.0	26.0	26.0	27.0
Total Split (%)	24.4%	24.4%		24.4%	24.4%		16.7%	32.2%		13.3%	28.9%	28.9%	30%
Maximum Green (s)	15.0	15.0		15.0	15.0		9.0	23.0		6.0	20.0	20.0	23.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	C-Min	None
Walk Time (s)													5.0
Flash Dont Walk (s)													18.0
Pedestrian Calls (#/hr)													157
Act Effct Green (s)	14.3	14.3		14.3	14.3	90.0	31.3	26.1		31.7	28.1	28.1	
Actuated g/C Ratio	0.16	0.16		0.16	0.16	1.00	0.35	0.29		0.35	0.31	0.31	
v/c Ratio	0.90	0.51		0.27	0.28	0.04	0.09	0.91		0.45	0.22	0.25	
Control Delay	79.4	37.0		36.8	35.7	0.0	18.0	54.5		25.3	26.9	4.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	79.4	37.0		36.8	35.7	0.0	18.0	54.5		25.3	26.9	4.7	
LOS	E	D		D	D	A	B	D		C	C	A	
Approach Delay		60.1			24.2			51.5			17.4		
Approach LOS		E			C			D			B		
Queue Length 50th (ft)	104	72		27	43	0	15	~275		33	57	0	
Queue Length 95th (ft)	#176	111		43	59	0	36	#478		63	105	36	
Internal Link Dist (ft)		550			253			1577			492		
Turn Bay Length (ft)	250			150			120			250		150	
Base Capacity (vph)	217	316		206	316	1615	527	534		204	569	602	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Reduced v/c Ratio	0.86	0.49		0.26	0.27	0.04	0.08	0.91		0.45	0.22	0.25	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 40.9	Intersection LOS: D
Intersection Capacity Utilization 64.4%	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: 3: Grand Union Boulevard & Revolution Drive





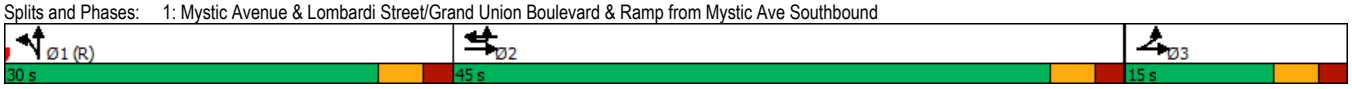
Movement	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	150	192	237	8	226	870	205	493
Future Volume (vph)	150	192	237	8	226	870	205	493
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	12	12
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0		5.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.91		0.97
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Frt	1.00	1.00	1.00		1.00	0.97		1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (prot)	1787	3574	1811		1719	4855		3502
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (perm)	1787	3574	1811		1719	4855		3502
Peak-hour factor, PHF	0.93	0.93	0.96	0.96	0.91	0.91	0.91	0.91
Adj. Flow (vph)	161	206	247	8	248	956	225	542
RTOR Reduction (vph)	0	0	62	0	0	35	0	0
Lane Group Flow (vph)	161	206	193	0	248	1146	0	542
Confl. Peds. (#/hr)							6	
Heavy Vehicles (%)	1%	1%	1%	0%	5%	4%	1%	0%
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Actuated Green, G (s)	13.2	42.1	23.9		37.9	37.9		23.9
Effective Green, g (s)	13.2	42.1	23.9		37.9	37.9		23.9
Actuated g/C Ratio	0.15	0.47	0.27		0.42	0.42		0.27
Clearance Time (s)	5.0		5.0		5.0	5.0		5.0
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Lane Grp Cap (vph)	262	1671	480		723	2044		929
v/s Ratio Prot	c0.09	0.06	0.11		0.14	c0.24		c0.15
v/s Ratio Perm								
v/c Ratio	0.61	0.12	0.40		0.34	0.56		0.58
Uniform Delay, d1	36.0	13.5	27.2		17.6	19.7		28.7
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	3.0	0.0	0.6		1.3	1.1		0.9
Delay (s)	39.0	13.6	27.7		18.9	20.9		29.7
Level of Service	D	B	C		B	C		C
Approach Delay (s)		24.7	27.7			20.5		
Approach LOS		C	C			C		

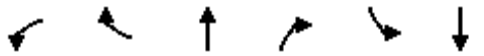
Intersection Summary			
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	150	192	237	8	226	870	205	493
Future Volume (vph)	150	192	237	8	226	870	205	493
Satd. Flow (prot)	1787	3574	1812	0	1719	4853	0	3502
Flt Permitted	0.950				0.950			0.950
Satd. Flow (perm)	1787	3574	1812	0	1719	4853	0	3502
Satd. Flow (RTOR)			85			60		
Lane Group Flow (vph)	161	206	255	0	248	1181	0	542
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Detector Phase	3	2 3	2		1	1		2
Switch Phase								
Minimum Initial (s)	6.0		6.0		10.0	10.0		6.0
Minimum Split (s)	11.0		26.0		30.0	30.0		26.0
Total Split (s)	15.0		45.0		30.0	30.0		45.0
Total Split (%)	16.7%		50.0%		33.3%	33.3%		50.0%
Maximum Green (s)	10.0		40.0		25.0	25.0		40.0
Yellow Time (s)	3.0		3.0		3.0	3.0		3.0
All-Red Time (s)	2.0		2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0		5.0
Lead/Lag			Lag		Lead	Lead		Lag
Lead-Lag Optimize?			Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Minimum Gap (s)	2.0		3.0		2.0	2.0		3.0
Time Before Reduce (s)	0.0		0.0		0.0	0.0		0.0
Time To Reduce (s)	0.0		0.0		0.0	0.0		0.0
Recall Mode	None		None		C-Min	C-Min		None
Walk Time (s)			7.0		7.0	7.0		7.0
Flash Dont Walk (s)			14.0		18.0	18.0		14.0
Pedestrian Calls (#/hr)			25		6	6		25
Act Effct Green (s)	13.2	42.0	23.9		38.0	38.0		23.9
Actuated g/C Ratio	0.15	0.47	0.27		0.42	0.42		0.27
v/c Ratio	0.62	0.12	0.47		0.34	0.57		0.58
Control Delay	46.0	12.2	19.7		22.3	22.1		30.5
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	46.0	12.2	19.7		22.3	22.1		30.5
LOS	D	B	B		C	C		C
Approach Delay		27.1	19.7			22.1		
Approach LOS		C	B			C		
Queue Length 50th (ft)	87	33	79		93	172		138
Queue Length 95th (ft)	144	37	128		194	276		161
Internal Link Dist (ft)		277	84			488		
Turn Bay Length (ft)	140				250			
Base Capacity (vph)	267	1783	852		725	2082		1556
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	0.60	0.12	0.30		0.34	0.57		0.35

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 74 (82%), Referenced to phase 1:NBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 24.4		Intersection LOS: C	
Intersection Capacity Utilization 72.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Mystic Avenue & Lombardi Street/Grand Union Boulevard & Ramp from Mystic Ave Southbound





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	257	1311	259	0	0
Future Volume (vph)	0	257	1311	259	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0		
Lane Util. Factor		0.88	0.91	1.00		
Frpb, ped/bikes		1.00	1.00	0.98		
Flpb, ped/bikes		1.00	1.00	1.00		
Frt		0.85	1.00	0.85		
Flt Protected		1.00	1.00	1.00		
Satd. Flow (prot)		2814	5085	1578		
Flt Permitted		1.00	1.00	1.00		
Satd. Flow (perm)		2814	5085	1578		
Peak-hour factor, PHF	0.94	0.94	0.98	0.98	0.92	0.92
Adj. Flow (vph)	0	273	1338	264	0	0
RTOR Reduction (vph)	0	106	0	0	0	0
Lane Group Flow (vph)	0	167	1338	264	0	0
Confl. Peds. (#/hr)				3		
Heavy Vehicles (%)	0%	1%	2%	0%	2%	2%
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Actuated Green, G (s)		9.7	70.3	80.0		
Effective Green, g (s)		9.7	70.3	80.0		
Actuated g/C Ratio		0.11	0.78	0.89		
Clearance Time (s)		5.0	5.0	5.0		
Vehicle Extension (s)		2.0	2.0	2.0		
Lane Grp Cap (vph)		303	3971	1578		
v/s Ratio Prot		c0.06	c0.26	0.02		
v/s Ratio Perm				0.15		
v/c Ratio		0.55	0.34	0.17		
Uniform Delay, d1		38.1	2.9	0.7		
Progression Factor		1.00	1.10	1.30		
Incremental Delay, d2		1.2	0.2	0.0		
Delay (s)		39.3	3.4	0.9		
Level of Service		D	A	A		
Approach Delay (s)	39.3		3.0			0.0
Approach LOS	D		A			A

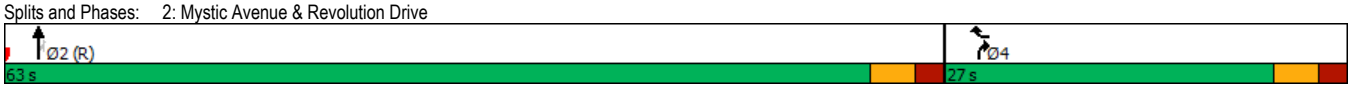
Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

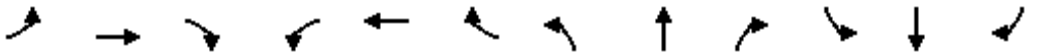
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	257	1311	259	0	0
Future Volume (vph)	0	257	1311	259	0	0
Satd. Flow (prot)	0	2814	5085	1615	0	0
Flt Permitted						
Satd. Flow (perm)	0	2814	5085	1573	0	0
Satd. Flow (RTOR)		119				
Lane Group Flow (vph)	0	273	1338	264	0	0
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Detector Phase		4	2	4		
Switch Phase						
Minimum Initial (s)		6.0	10.0	6.0		
Minimum Split (s)		11.0	27.0	11.0		
Total Split (s)		27.0	63.0	27.0		
Total Split (%)		30.0%	70.0%	30.0%		
Maximum Green (s)		22.0	58.0	22.0		
Yellow Time (s)		3.0	3.0	3.0		
All-Red Time (s)		2.0	2.0	2.0		
Lost Time Adjust (s)		0.0	0.0	0.0		
Total Lost Time (s)		5.0	5.0	5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		2.0	2.0	2.0		
Minimum Gap (s)		2.0	2.0	2.0		
Time Before Reduce (s)		0.0	0.0	0.0		
Time To Reduce (s)		0.0	0.0	0.0		
Recall Mode		None	C-Min	None		
Walk Time (s)			4.0			
Flash Dont Walk (s)			18.0			
Pedestrian Calls (#/hr)			3			
Act Effct Green (s)		9.7	70.3	80.0		
Actuated g/C Ratio		0.11	0.78	0.89		
v/c Ratio		0.67	0.34	0.19		
Control Delay		29.3	3.7	0.7		
Queue Delay		0.0	0.0	0.0		
Total Delay		29.3	3.7	0.7		
LOS		C	A	A		
Approach Delay	29.3		3.2			
Approach LOS	C		A			
Queue Length 50th (ft)		47	31	0		
Queue Length 95th (ft)		87	185	0		
Internal Link Dist (ft)	550		905			225
Turn Bay Length (ft)						
Base Capacity (vph)		777	3970	1495		
Starvation Cap Reductn		0	0	0		
Spillback Cap Reductn		0	0	0		
Storage Cap Reductn		0	0	0		
Reduced v/c Ratio		0.35	0.34	0.18		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 8 (9%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 7.0	Intersection LOS: A
Intersection Capacity Utilization 42.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Mystic Avenue & Revolution Drive





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	63	41	19	51	67	33	285	81	82	131	189
Future Volume (vph)	205	63	41	19	51	67	33	285	81	82	131	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	4.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1788		1805	1863	1583	1805	1813		1805	1900	1577
Flt Permitted	0.72	1.00		0.68	1.00	1.00	0.66	1.00		0.25	1.00	1.00
Satd. Flow (perm)	1370	1788		1295	1863	1583	1256	1813		476	1900	1577
Peak-hour factor, PHF	0.89	0.89	0.89	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	230	71	46	20	55	72	36	310	88	94	151	217
RTOR Reduction (vph)	0	18	0	0	0	0	0	9	0	0	0	148
Lane Group Flow (vph)	230	99	0	20	55	72	36	389	0	94	151	69
Confl. Bikes (#/hr)									3			3
Heavy Vehicles (%)	0%	0%	0%	0%	2%	2%	0%	1%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	21.9	21.9		21.9	21.9	94.9	30.8	27.4		36.0	30.0	30.0
Effective Green, g (s)	21.9	21.9		21.9	21.9	94.9	30.8	27.4		36.0	30.0	30.0
Actuated g/C Ratio	0.23	0.23		0.23	0.23	1.00	0.32	0.29		0.38	0.32	0.32
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	316	412		298	429	1583	427	523		264	600	498
v/s Ratio Prot		0.06			0.03		0.00	c0.21		c0.02	0.08	
v/s Ratio Perm	c0.17			0.02		c0.05	0.02			0.11		0.04
v/c Ratio	0.73	0.24		0.07	0.13	0.05	0.08	0.74		0.36	0.25	0.14
Uniform Delay, d1	33.7	29.7		28.5	28.9	0.0	22.1	30.6		20.7	24.1	23.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.9	0.1		0.0	0.0	0.1	0.0	5.0		0.3	0.1	0.0
Delay (s)	40.7	29.8		28.6	29.0	0.1	22.1	35.5		21.0	24.2	23.2
Level of Service	D	C		C	C	A	C	D		C	C	C
Approach Delay (s)		37.0			14.8			34.4			23.1	
Approach LOS		D			B			C			C	

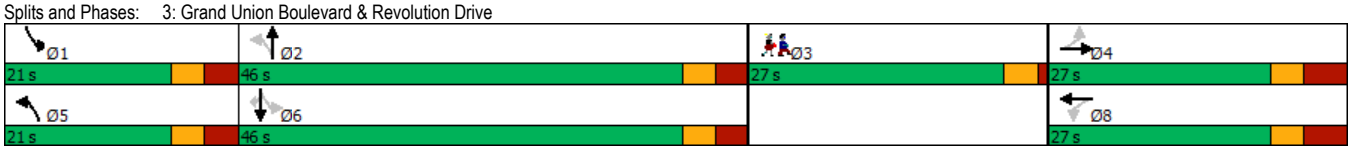
Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	23.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

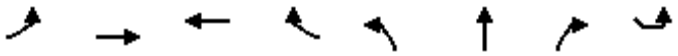
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3
Lane Configurations													
Traffic Volume (vph)	205	63	41	19	51	67	33	285	81	82	131	189	
Future Volume (vph)	205	63	41	19	51	67	33	285	81	82	131	189	
Satd. Flow (prot)	1805	1788	0	1805	1863	1583	1805	1814	0	1805	1900	1615	
Flt Permitted	0.721			0.682			0.661			0.250			
Satd. Flow (perm)	1370	1788	0	1296	1863	1583	1256	1814	0	475	1900	1577	
Satd. Flow (RTOR)		23				180		13				217	
Lane Group Flow (vph)	230	117	0	20	55	72	36	398	0	94	151	217	
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm	
Protected Phases		4			8		5	2		1	6		3
Permitted Phases	4			8		Free	2			6		6	
Detector Phase	4	4		8	8		5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	10.0	1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		12.0	16.0		12.0	16.0	16.0	27.0
Total Split (s)	27.0	27.0		27.0	27.0		21.0	46.0		21.0	46.0	46.0	27.0
Total Split (%)	22.3%	22.3%		22.3%	22.3%		17.4%	38.0%		17.4%	38.0%	38.0%	22%
Maximum Green (s)	20.0	20.0		20.0	20.0		15.0	40.0		15.0	40.0	40.0	23.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None		None	Min		None	Min	Min	None
Walk Time (s)													5.0
Flash Dont Walk (s)													18.0
Pedestrian Calls (#/hr)													99
Act Effct Green (s)	21.9	21.9		21.9	21.9	92.1	30.8	26.2		34.7	30.0	30.0	
Actuated g/C Ratio	0.24	0.24		0.24	0.24	1.00	0.33	0.28		0.38	0.33	0.33	
v/c Ratio	0.71	0.26		0.06	0.12	0.05	0.08	0.76		0.32	0.24	0.33	
Control Delay	53.1	32.7		37.2	37.1	0.1	18.2	41.9		21.2	27.0	5.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	53.1	32.7		37.2	37.1	0.1	18.2	41.9		21.2	27.0	5.1	
LOS	D	C		D	D	A	B	D		C	C	A	
Approach Delay		46.2			19.0			40.0			15.5		
Approach LOS		D			B			D			B		
Queue Length 50th (ft)	140	50		10	29	0	14	231		37	75	0	
Queue Length 95th (ft)	#321	116		35	72	0	32	351		66	122	45	
Internal Link Dist (ft)		550			253			1577			492		
Turn Bay Length (ft)	250			150			120			250		150	
Base Capacity (vph)	325	442		308	442	1583	593	869		425	906	866	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Reduced v/c Ratio	0.71	0.26		0.06	0.12	0.05	0.06	0.46		0.22	0.17	0.25	

Intersection Summary		
Cycle Length: 121		
Actuated Cycle Length: 92.1		
Natural Cycle: 90		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.76		
Intersection Signal Delay: 31.2	Intersection LOS: C	
Intersection Capacity Utilization 58.8%	ICU Level of Service B	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 3: Grand Union Boulevard & Revolution Drive





Movement	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	112	67	345	9	126	663	89	110
Future Volume (vph)	112	67	345	9	126	663	89	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	12	12
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0		5.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.91		0.97
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Frt	1.00	1.00	1.00		1.00	0.98		1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (prot)	1805	3505	1778		1597	4500		3367
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (perm)	1805	3505	1778		1597	4500		3367
Peak-hour factor, PHF	0.75	0.75	0.87	0.87	0.99	0.99	0.99	0.83
Adj. Flow (vph)	149	89	397	10	127	670	90	133
RTOR Reduction (vph)	0	0	64	0	0	15	0	0
Lane Group Flow (vph)	149	89	343	0	127	745	0	133
Confl. Peds. (#/hr)							8	
Confl. Bikes (#/hr)				8				
Heavy Vehicles (%)	0%	3%	3%	0%	13%	14%	5%	4%
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Actuated Green, G (s)	11.8	39.5	22.7		40.5	40.5		22.7
Effective Green, g (s)	11.8	39.5	22.7		40.5	40.5		22.7
Actuated g/C Ratio	0.13	0.44	0.25		0.45	0.45		0.25
Clearance Time (s)	5.0		5.0		5.0	5.0		5.0
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Lane Grp Cap (vph)	236	1538	448		718	2025		849
v/s Ratio Prot	c0.08	0.03	c0.19		0.08	c0.17		0.04
v/s Ratio Perm								
v/c Ratio	0.63	0.06	0.77		0.18	0.37		0.16
Uniform Delay, d1	37.0	14.5	31.2		14.8	16.3		26.2
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.0	0.0	7.7		0.5	0.5		0.1
Delay (s)	41.0	14.6	38.9		15.3	16.8		26.3
Level of Service	D	B	D		B	B		C
Approach Delay (s)		31.1	38.9			16.6		
Approach LOS		C	D			B		

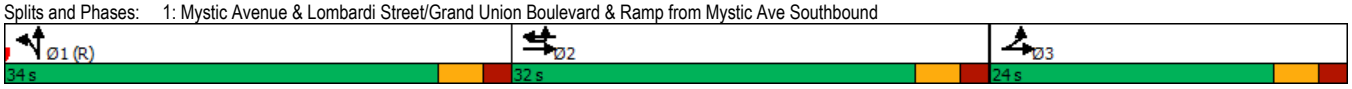
Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

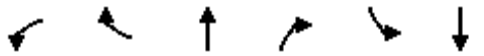
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	112	67	345	9	126	663	89	110
Future Volume (vph)	112	67	345	9	126	663	89	110
Satd. Flow (prot)	1805	3505	1778	0	1597	4499	0	3367
Flt Permitted	0.950				0.950			0.950
Satd. Flow (perm)	1805	3505	1778	0	1597	4499	0	3367
Satd. Flow (RTOR)			85			28		
Lane Group Flow (vph)	149	89	407	0	127	760	0	133
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Detector Phase	3	2 3	2		1	1		2
Switch Phase								
Minimum Initial (s)	6.0		6.0		10.0	10.0		6.0
Minimum Split (s)	11.0		26.0		30.0	30.0		26.0
Total Split (s)	24.0		32.0		34.0	34.0		32.0
Total Split (%)	26.7%		35.6%		37.8%	37.8%		35.6%
Maximum Green (s)	19.0		27.0		29.0	29.0		27.0
Yellow Time (s)	3.0		3.0		3.0	3.0		3.0
All-Red Time (s)	2.0		2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0		5.0
Lead/Lag			Lag		Lead	Lead		Lag
Lead-Lag Optimize?			Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Minimum Gap (s)	2.0		3.0		2.0	2.0		3.0
Time Before Reduce (s)	0.0		0.0		0.0	0.0		0.0
Time To Reduce (s)	0.0		0.0		0.0	0.0		0.0
Recall Mode	None		None		C-Min	C-Min		None
Walk Time (s)			7.0		7.0	7.0		7.0
Flash Dont Walk (s)			14.0		18.0	18.0		14.0
Pedestrian Calls (#/hr)			24		8	8		24
Act Effct Green (s)	11.8	39.5	22.7		40.5	40.5		22.7
Actuated g/C Ratio	0.13	0.44	0.25		0.45	0.45		0.25
v/c Ratio	0.63	0.06	0.80		0.18	0.37		0.16
Control Delay	48.5	12.1	35.9		19.0	18.3		24.8
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	48.5	12.1	35.9		19.0	18.3		24.8
LOS	D	B	D		B	B		C
Approach Delay		34.9	35.9			18.4		
Approach LOS		C	D			B		
Queue Length 50th (ft)	81	14	172		42	97		30
Queue Length 95th (ft)	110	17	237		99	163		43
Internal Link Dist (ft)		277	84			488		
Turn Bay Length (ft)	140				250			
Base Capacity (vph)	381	1810	604		721	2047		1033
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	0.39	0.05	0.67		0.18	0.37		0.13

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 71 (79%), Referenced to phase 1:NBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 25.5	Intersection LOS: C
Intersection Capacity Utilization 64.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Mystic Avenue & Lombardi Street/Grand Union Boulevard & Ramp from Mystic Ave Southbound





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	139	797	40	0	0
Future Volume (vph)	0	139	797	40	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0		
Lane Util. Factor		0.88	0.91	1.00		
Frpb, ped/bikes		1.00	1.00	0.96		
Flpb, ped/bikes		1.00	1.00	1.00		
Frt		0.85	1.00	0.85		
Flt Protected		1.00	1.00	1.00		
Satd. Flow (prot)		2733	4673	1525		
Flt Permitted		1.00	1.00	1.00		
Satd. Flow (perm)		2733	4673	1525		
Peak-hour factor, PHF	0.81	0.81	0.93	0.93	0.92	0.92
Adj. Flow (vph)	0	172	857	43	0	0
RTOR Reduction (vph)	0	161	0	0	0	0
Lane Group Flow (vph)	0	11	857	43	0	0
Confl. Peds. (#/hr)				10		
Heavy Vehicles (%)	0%	4%	11%	2%	2%	2%
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Actuated Green, G (s)		6.0	74.0	80.0		
Effective Green, g (s)		6.0	74.0	80.0		
Actuated g/C Ratio		0.07	0.82	0.89		
Clearance Time (s)		5.0	5.0	5.0		
Vehicle Extension (s)		2.0	2.0	2.0		
Lane Grp Cap (vph)		182	3842	1525		
v/s Ratio Prot		c0.00	c0.18	0.00		
v/s Ratio Perm				0.03		
v/c Ratio		0.06	0.22	0.03		
Uniform Delay, d1		39.4	1.7	0.6		
Progression Factor		1.00	0.66	0.55		
Incremental Delay, d2		0.1	0.1	0.0		
Delay (s)		39.4	1.3	0.3		
Level of Service		D	A	A		
Approach Delay (s)	39.4		1.2			0.0
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		

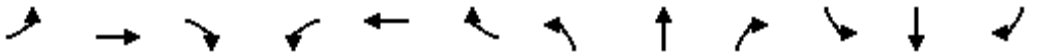
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	139	797	40	0	0
Future Volume (vph)	0	139	797	40	0	0
Satd. Flow (prot)	0	2733	4673	1583	0	0
Flt Permitted						
Satd. Flow (perm)	0	2733	4673	1520	0	0
Satd. Flow (RTOR)		333				
Lane Group Flow (vph)	0	172	857	43	0	0
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Detector Phase		4	2	4		
Switch Phase						
Minimum Initial (s)		6.0	10.0	6.0		
Minimum Split (s)		11.0	27.0	11.0		
Total Split (s)		26.0	64.0	26.0		
Total Split (%)		28.9%	71.1%	28.9%		
Maximum Green (s)		21.0	59.0	21.0		
Yellow Time (s)		3.0	3.0	3.0		
All-Red Time (s)		2.0	2.0	2.0		
Lost Time Adjust (s)		0.0	0.0	0.0		
Total Lost Time (s)		5.0	5.0	5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		2.0	2.0	2.0		
Minimum Gap (s)		2.0	2.0	2.0		
Time Before Reduce (s)		0.0	0.0	0.0		
Time To Reduce (s)		0.0	0.0	0.0		
Recall Mode		None	C-Min	None		
Walk Time (s)			4.0			
Flash Dont Walk (s)			18.0			
Pedestrian Calls (#/hr)			10			
Act Effct Green (s)		6.0	74.0	80.0		
Actuated g/C Ratio		0.07	0.82	0.89		
v/c Ratio		0.35	0.22	0.03		
Control Delay		1.9	1.3	0.2		
Queue Delay		0.0	0.0	0.0		
Total Delay		1.9	1.3	0.2		
LOS		A	A	A		
Approach Delay	1.9		1.2			
Approach LOS	A		A			
Queue Length 50th (ft)		0	17	1		
Queue Length 95th (ft)		0	18	m0		
Internal Link Dist (ft)	550		905			225
Turn Bay Length (ft)						
Base Capacity (vph)		893	3842	1450		
Starvation Cap Reductn		0	0	0		
Spillback Cap Reductn		0	0	0		
Storage Cap Reductn		0	0	0		
Reduced v/c Ratio		0.19	0.22	0.03		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 10 (11%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.35	
Intersection Signal Delay: 1.3	Intersection LOS: A
Intersection Capacity Utilization 31.7%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 2: Mystic Avenue & Revolution Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	20	50	34	44	24	13	82	23	83	312	117
Future Volume (vph)	21	20	50	34	44	24	13	82	23	83	312	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	4.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1719	1673		1805	1863	1615	1805	1707		1787	1845	1550
Flt Permitted	0.72	1.00		0.70	1.00	1.00	0.50	1.00		0.61	1.00	1.00
Satd. Flow (perm)	1305	1673		1331	1863	1615	941	1707		1145	1845	1550
Peak-hour factor, PHF	0.81	0.81	0.81	0.80	0.80	0.80	0.74	0.74	0.74	0.87	0.87	0.87
Adj. Flow (vph)	26	25	62	42	55	30	18	111	31	95	359	134
RTOR Reduction (vph)	0	58	0	0	0	0	0	9	0	0	0	74
Lane Group Flow (vph)	26	29	0	43	55	30	18	133	0	95	359	60
Confl. Bikes (#/hr)									3			1
Heavy Vehicles (%)	5%	0%	2%	0%	2%	0%	0%	8%	4%	1%	3%	2%
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	6.8	6.8		6.8	6.8	100.0	43.3	40.9		51.1	44.8	44.8
Effective Green, g (s)	6.8	6.8		6.8	6.8	100.0	43.3	40.9		51.1	44.8	44.8
Actuated g/C Ratio	0.07	0.07		0.07	0.07	1.00	0.43	0.41		0.51	0.45	0.45
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	88	113		90	126	1615	428	698		625	826	694
v/s Ratio Prot		0.02			0.03		0.00	0.08		c0.01	c0.19	
v/s Ratio Perm	0.02			c0.03		c0.02	0.02			0.07		0.04
v/c Ratio	0.30	0.26		0.48	0.44	0.02	0.04	0.19		0.15	0.43	0.09
Uniform Delay, d1	44.3	44.2		44.9	44.8	0.0	16.3	18.9		12.7	18.9	15.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.4		1.5	0.9	0.0	0.0	0.6		0.0	1.7	0.2
Delay (s)	45.0	44.7		46.3	45.6	0.0	16.3	19.5		12.8	20.6	16.1
Level of Service	D	D		D	D	A	B	B		B	C	B
Approach Delay (s)		44.7			35.2			19.2			18.3	
Approach LOS		D			D			B			B	

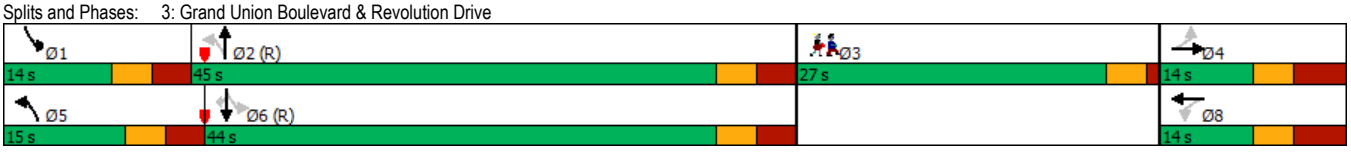
Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

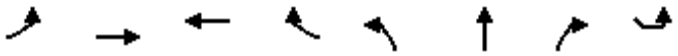
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3
Lane Configurations													
Traffic Volume (vph)	21	20	50	34	44	24	13	82	23	83	312	117	
Future Volume (vph)	21	20	50	34	44	24	13	82	23	83	312	117	
Satd. Flow (prot)	1719	1673	0	1805	1863	1615	1805	1707	0	1787	1845	1583	
Flt Permitted	0.721			0.701			0.495			0.608			
Satd. Flow (perm)	1305	1673	0	1332	1863	1615	940	1707	0	1144	1845	1550	
Satd. Flow (RTOR)		62				218		16				153	
Lane Group Flow (vph)	26	87	0	43	55	30	18	142	0	95	359	134	
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm	
Protected Phases		4			8		5	2		1	6		3
Permitted Phases	4			8		Free	2			6		6	
Detector Phase	4	4		8	8		5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	10.0	1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		12.0	16.0		12.0	16.0	16.0	27.0
Total Split (s)	14.0	14.0		14.0	14.0		15.0	45.0		14.0	44.0	44.0	27.0
Total Split (%)	14.0%	14.0%		14.0%	14.0%		15.0%	45.0%		14.0%	44.0%	44.0%	27%
Maximum Green (s)	7.0	7.0		7.0	7.0		9.0	39.0		8.0	38.0	38.0	23.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	C-Min	None
Walk Time (s)													5.0
Flash Dont Walk (s)													18.0
Pedestrian Calls (#/hr)													118
Act Effct Green (s)	8.0	8.0		8.0	8.0	100.0	48.3	43.5		53.4	49.8	49.8	
Actuated g/C Ratio	0.08	0.08		0.08	0.08	1.00	0.48	0.44		0.53	0.50	0.50	
v/c Ratio	0.25	0.46		0.40	0.37	0.02	0.04	0.19		0.14	0.39	0.16	
Control Delay	48.0	24.7		54.1	49.8	0.0	13.2	19.6		13.2	20.3	3.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	48.0	24.7		54.1	49.8	0.0	13.2	19.6		13.2	20.3	3.1	
LOS	D	C		D	D	A	B	B		B	C	A	
Approach Delay		30.1			39.6			18.9			15.2		
Approach LOS		C			D			B			B		
Queue Length 50th (ft)	16	15		27	34	0	5	52		29	129	0	
Queue Length 95th (ft)	37	50		53	62	0	14	83		58	255	26	
Internal Link Dist (ft)		550			253			1577			492		
Turn Bay Length (ft)	250			150			120			250		150	
Base Capacity (vph)	110	197		112	156	1615	554	780		664	922	851	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Reduced v/c Ratio	0.24	0.44		0.38	0.35	0.02	0.03	0.18		0.14	0.39	0.16	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.46	
Intersection Signal Delay: 20.7	Intersection LOS: C
Intersection Capacity Utilization 35.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Grand Union Boulevard & Revolution Drive





Movement	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	139	233	199	13	211	1037	270	301
Future Volume (vph)	139	233	199	13	211	1037	270	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	12	12
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0		5.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.91		0.97
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Frt	1.00	1.00	0.99		1.00	0.97		1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (prot)	1787	3610	1786		1687	4894		3433
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (perm)	1787	3610	1786		1687	4894		3433
Peak-hour factor, PHF	0.83	0.83	0.95	0.95	0.93	0.93	0.93	0.80
Adj. Flow (vph)	167	281	209	14	227	1115	290	376
RTOR Reduction (vph)	0	0	62	0	0	34	0	0
Lane Group Flow (vph)	167	281	161	0	227	1371	0	376
Confl. Peds. (#/hr)							9	
Confl. Bikes (#/hr)				5			2	
Heavy Vehicles (%)	1%	0%	2%	0%	7%	2%	3%	2%
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Actuated Green, G (s)	13.9	37.3	18.4		52.7	52.7		18.4
Effective Green, g (s)	13.9	37.3	18.4		52.7	52.7		18.4
Actuated g/C Ratio	0.14	0.37	0.18		0.53	0.53		0.18
Clearance Time (s)	5.0		5.0		5.0	5.0		5.0
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Lane Grp Cap (vph)	248	1346	328		889	2579		631
v/s Ratio Prot	c0.09	0.08	0.09		0.13	c0.28		c0.11
v/s Ratio Perm								
v/c Ratio	0.67	0.21	0.49		0.26	0.53		0.60
Uniform Delay, d1	40.9	21.3	36.6		12.9	15.5		37.4
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	5.6	0.1	1.2		0.7	0.8		1.5
Delay (s)	46.5	21.4	37.8		13.6	16.3		38.9
Level of Service	D	C	D		B	B		D
Approach Delay (s)		30.7	37.8			16.0		
Approach LOS		C	D			B		

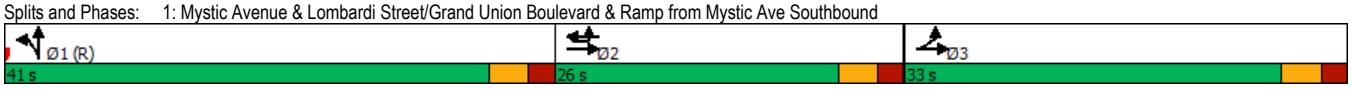
Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	139	233	199	13	211	1037	270	301
Future Volume (vph)	139	233	199	13	211	1037	270	301
Satd. Flow (prot)	1787	3610	1787	0	1687	4894	0	3433
Flt Permitted	0.950				0.950			0.950
Satd. Flow (perm)	1787	3610	1787	0	1687	4894	0	3433
Satd. Flow (RTOR)			76			72		
Lane Group Flow (vph)	167	281	223	0	227	1405	0	376
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Detector Phase	3	2 3	2		1	1		2
Switch Phase								
Minimum Initial (s)	6.0		6.0		10.0	10.0		6.0
Minimum Split (s)	11.0		26.0		30.0	30.0		26.0
Total Split (s)	33.0		26.0		41.0	41.0		26.0
Total Split (%)	33.0%		26.0%		41.0%	41.0%		26.0%
Maximum Green (s)	28.0		21.0		36.0	36.0		21.0
Yellow Time (s)	3.0		3.0		3.0	3.0		3.0
All-Red Time (s)	2.0		2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0		5.0
Lead/Lag			Lag		Lead	Lead		Lag
Lead-Lag Optimize?			Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Minimum Gap (s)	2.0		3.0		2.0	2.0		3.0
Time Before Reduce (s)	0.0		0.0		0.0	0.0		0.0
Time To Reduce (s)	0.0		0.0		0.0	0.0		0.0
Recall Mode	None		None		C-Min	C-Min		None
Walk Time (s)			7.0		7.0	7.0		7.0
Flash Dont Walk (s)			14.0		18.0	18.0		14.0
Pedestrian Calls (#/hr)			39		9	9		39
Act Effct Green (s)	13.9	37.3	18.4		52.7	52.7		18.4
Actuated g/C Ratio	0.14	0.37	0.18		0.53	0.53		0.18
v/c Ratio	0.67	0.21	0.57		0.26	0.54		0.60
Control Delay	53.5	20.5	29.7		15.7	16.9		41.1
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	53.5	20.5	29.7		15.7	16.9		41.1
LOS	D	C	C		B	B		D
Approach Delay		32.8	29.7			16.7		
Approach LOS		C	C			B		
Queue Length 50th (ft)	103	60	82		80	206		110
Queue Length 95th (ft)	146	72	156		147	287		136
Internal Link Dist (ft)		277	84			488		
Turn Bay Length (ft)	140				250			
Base Capacity (vph)	500	1854	435		888	2611		720
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	0.33	0.15	0.51		0.26	0.54		0.52

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 3 (3%), Referenced to phase 1:NBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 23.9		Intersection LOS: C	
Intersection Capacity Utilization 69.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Mystic Avenue & Lombardi Street/Grand Union Boulevard & Ramp from Mystic Ave Southbound



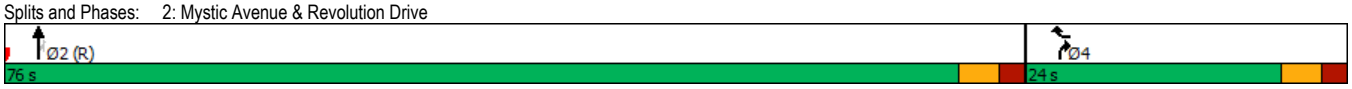
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	252	1272	217	0	0
Future Volume (vph)	0	252	1272	217	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0		
Lane Util. Factor		0.88	0.91	1.00		
Frpb, ped/bikes		1.00	1.00	0.98		
Flpb, ped/bikes		1.00	1.00	1.00		
Frt		0.85	1.00	0.85		
Flt Protected		1.00	1.00	1.00		
Satd. Flow (prot)		2842	5085	1577		
Flt Permitted		1.00	1.00	1.00		
Satd. Flow (perm)		2842	5085	1577		
Peak-hour factor, PHF	0.69	0.69	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	365	1383	236	0	0
RTOR Reduction (vph)	0	124	0	0	0	0
Lane Group Flow (vph)	0	241	1383	236	0	0
Confl. Peds. (#/hr)				3		
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	0%	0%	2%	0%	2%	2%
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Actuated Green, G (s)		12.6	77.4	90.0		
Effective Green, g (s)		12.6	77.4	90.0		
Actuated g/C Ratio		0.13	0.77	0.90		
Clearance Time (s)		5.0	5.0	5.0		
Vehicle Extension (s)		2.0	2.0	2.0		
Lane Grp Cap (vph)		358	3935	1577		
v/s Ratio Prot		c0.08	c0.27	0.02		
v/s Ratio Perm				0.13		
v/c Ratio		0.67	0.35	0.15		
Uniform Delay, d1		41.7	3.5	0.6		
Progression Factor		1.00	0.62	0.73		
Incremental Delay, d2		3.9	0.2	0.0		
Delay (s)		45.6	2.4	0.4		
Level of Service		D	A	A		
Approach Delay (s)	45.6		2.1			0.0
Approach LOS	D		A			A

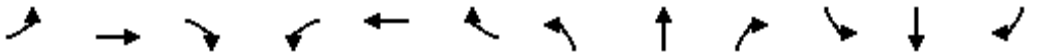
Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	252	1272	217	0	0
Future Volume (vph)	0	252	1272	217	0	0
Satd. Flow (prot)	0	2842	5085	1615	0	0
Flt Permitted						
Satd. Flow (perm)	0	2842	5085	1571	0	0
Satd. Flow (RTOR)		142				
Lane Group Flow (vph)	0	365	1383	236	0	0
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Detector Phase		4	2	4		
Switch Phase						
Minimum Initial (s)		6.0	10.0	6.0		
Minimum Split (s)		11.0	27.0	11.0		
Total Split (s)		24.0	76.0	24.0		
Total Split (%)		24.0%	76.0%	24.0%		
Maximum Green (s)		19.0	71.0	19.0		
Yellow Time (s)		3.0	3.0	3.0		
All-Red Time (s)		2.0	2.0	2.0		
Lost Time Adjust (s)		0.0	0.0	0.0		
Total Lost Time (s)		5.0	5.0	5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		2.0	2.0	2.0		
Minimum Gap (s)		2.0	2.0	2.0		
Time Before Reduce (s)		0.0	0.0	0.0		
Time To Reduce (s)		0.0	0.0	0.0		
Recall Mode		None	C-Min	None		
Walk Time (s)			4.0			
Flash Dont Walk (s)			18.0			
Pedestrian Calls (#/hr)			3			
Act Effct Green (s)		12.6	77.4	90.0		
Actuated g/C Ratio		0.13	0.77	0.90		
v/c Ratio		0.76	0.35	0.17		
Control Delay		35.6	2.6	0.4		
Queue Delay		0.0	0.0	0.0		
Total Delay		35.6	2.6	0.4		
LOS		D	A	A		
Approach Delay	35.6		2.3			
Approach LOS	D		A			
Queue Length 50th (ft)		78	47	0		
Queue Length 95th (ft)		79	97	0		
Internal Link Dist (ft)	550		905			225
Turn Bay Length (ft)						
Base Capacity (vph)		655	3936	1485		
Starvation Cap Reductn		0	0	0		
Spillback Cap Reductn		0	0	0		
Storage Cap Reductn		0	0	0		
Reduced v/c Ratio		0.56	0.35	0.16		

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 30 (30%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 8.4	Intersection LOS: A
Intersection Capacity Utilization 41.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Mystic Avenue & Revolution Drive





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	89	32	34	55	44	55	322	129	81	112	134
Future Volume (vph)	145	89	32	34	55	44	55	322	129	81	112	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	4.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1814		1805	1900	1615	1805	1793		1805	1827	1558
Flt Permitted	0.70	1.00		0.65	1.00	1.00	0.65	1.00		0.17	1.00	1.00
Satd. Flow (perm)	1306	1814		1240	1900	1615	1243	1793		315	1827	1558
Peak-hour factor, PHF	0.78	0.78	0.78	0.64	0.64	0.64	0.93	0.93	0.93	0.89	0.89	0.89
Adj. Flow (vph)	186	114	41	53	86	69	59	346	139	91	126	151
RTOR Reduction (vph)	0	14	0	0	0	0	0	16	0	0	0	111
Lane Group Flow (vph)	186	141	0	53	86	69	59	469	0	91	126	40
Confl. Bikes (#/hr)			1						3			4
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	1%	0%	0%	4%	1%
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	14.3	14.3		14.3	14.3	90.0	30.5	24.9		28.9	24.1	24.1
Effective Green, g (s)	14.3	14.3		14.3	14.3	90.0	30.5	24.9		28.9	24.1	24.1
Actuated g/C Ratio	0.16	0.16		0.16	0.16	1.00	0.34	0.28		0.32	0.27	0.27
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	207	288		197	301	1615	456	496		180	489	417
v/s Ratio Prot		0.08			0.05		0.01	c0.26		c0.03	0.07	
v/s Ratio Perm	c0.14			0.04		c0.04	0.04			0.13		0.03
v/c Ratio	0.90	0.49		0.27	0.29	0.04	0.13	0.95		0.51	0.26	0.10
Uniform Delay, d1	37.1	34.5		33.3	33.4	0.0	20.3	31.9		23.6	25.9	24.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	35.0	0.5		0.3	0.2	0.0	0.0	28.9		0.8	1.3	0.5
Delay (s)	72.1	35.0		33.5	33.5	0.0	20.4	60.8		24.4	27.2	25.2
Level of Service	E	C		C	C	A	C	E		C	C	C
Approach Delay (s)		55.2			22.4			56.4			25.7	
Approach LOS		E			C			E			C	

Intersection Summary					
HCM 2000 Control Delay	43.6	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.60				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	23.0		
Intersection Capacity Utilization	64.5%	ICU Level of Service	C		
Analysis Period (min)	15				

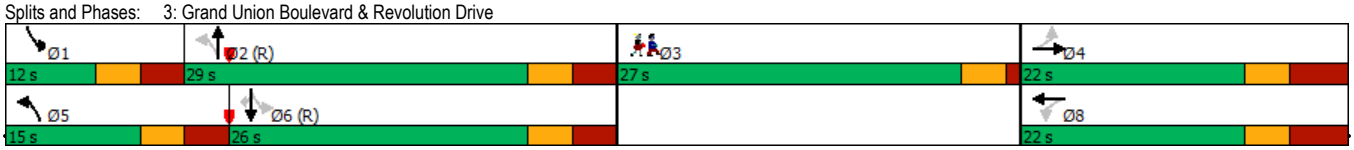
c Critical Lane Group

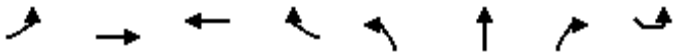
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3
Lane Configurations													
Traffic Volume (vph)	145	89	32	34	55	44	55	322	129	81	112	134	
Future Volume (vph)	145	89	32	34	55	44	55	322	129	81	112	134	
Satd. Flow (prot)	1770	1813	0	1805	1900	1615	1805	1793	0	1805	1827	1599	
Flt Permitted	0.701			0.652			0.654			0.166			
Satd. Flow (perm)	1306	1813	0	1239	1900	1615	1243	1793	0	315	1827	1556	
Satd. Flow (RTOR)		17				242		22				170	
Lane Group Flow (vph)	186	155	0	53	86	69	59	485	0	91	126	151	
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm	
Protected Phases		4			8		5	2		1	6		3
Permitted Phases	4			8		Free	2			6		6	
Detector Phase	4	4		8	8		5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	10.0	1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		12.0	16.0		12.0	16.0	16.0	27.0
Total Split (s)	22.0	22.0		22.0	22.0		15.0	29.0		12.0	26.0	26.0	27.0
Total Split (%)	24.4%	24.4%		24.4%	24.4%		16.7%	32.2%		13.3%	28.9%	28.9%	30%
Maximum Green (s)	15.0	15.0		15.0	15.0		9.0	23.0		6.0	20.0	20.0	23.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	C-Min	None
Walk Time (s)													5.0
Flash Dont Walk (s)													18.0
Pedestrian Calls (#/hr)													157
Act Effct Green (s)	14.3	14.3		14.3	14.3	90.0	31.6	26.1		30.1	25.3	25.3	
Actuated g/C Ratio	0.16	0.16		0.16	0.16	1.00	0.35	0.29		0.33	0.28	0.28	
v/c Ratio	0.90	0.51		0.27	0.28	0.04	0.12	0.91		0.45	0.25	0.27	
Control Delay	79.4	37.0		36.8	35.7	0.0	18.3	54.7		25.4	28.9	5.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	79.4	37.0		36.8	35.7	0.0	18.3	54.7		25.4	28.9	5.0	
LOS	E	D		D	D	A	B	D		C	C	A	
Approach Delay		60.1			24.2			50.8			18.2		
Approach LOS		E			C			D			B		
Queue Length 50th (ft)	104	72		27	43	0	21	~277		33	58	0	
Queue Length 95th (ft)	#176	111		43	59	0	46	#479		63	108	36	
Internal Link Dist (ft)		550			253			1577			492		
Turn Bay Length (ft)	250			150			120			250		150	
Base Capacity (vph)	217	316		206	316	1615	515	534		204	513	559	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Reduced v/c Ratio	0.86	0.49		0.26	0.27	0.04	0.11	0.91		0.45	0.25	0.27	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 41.0	Intersection LOS: D
Intersection Capacity Utilization 64.5%	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: 3: Grand Union Boulevard & Revolution Drive





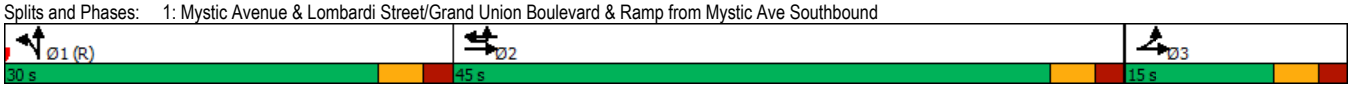
Movement	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	150	193	238	8	226	870	207	493
Future Volume (vph)	150	193	238	8	226	870	207	493
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	12	12
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0		5.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.91		0.97
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Frt	1.00	1.00	1.00		1.00	0.97		1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (prot)	1787	3574	1811		1719	4854		3502
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (perm)	1787	3574	1811		1719	4854		3502
Peak-hour factor, PHF	0.93	0.93	0.96	0.96	0.91	0.91	0.91	0.91
Adj. Flow (vph)	161	208	248	8	248	956	227	542
RTOR Reduction (vph)	0	0	62	0	0	35	0	0
Lane Group Flow (vph)	161	208	194	0	248	1148	0	542
Confl. Peds. (#/hr)							6	
Heavy Vehicles (%)	1%	1%	1%	0%	5%	4%	1%	0%
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Actuated Green, G (s)	13.2	42.1	23.9		37.9	37.9		23.9
Effective Green, g (s)	13.2	42.1	23.9		37.9	37.9		23.9
Actuated g/C Ratio	0.15	0.47	0.27		0.42	0.42		0.27
Clearance Time (s)	5.0		5.0		5.0	5.0		5.0
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Lane Grp Cap (vph)	262	1671	480		723	2044		929
v/s Ratio Prot	c0.09	0.06	0.11		0.14	c0.24		c0.15
v/s Ratio Perm								
v/c Ratio	0.61	0.12	0.40		0.34	0.56		0.58
Uniform Delay, d1	36.0	13.5	27.2		17.6	19.7		28.7
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	3.0	0.0	0.6		1.3	1.1		0.9
Delay (s)	39.0	13.6	27.7		18.9	20.9		29.7
Level of Service	D	B	C		B	C		C
Approach Delay (s)		24.7	27.7			20.5		
Approach LOS		C	C			C		

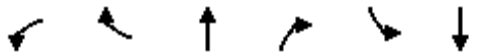
Intersection Summary			
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	150	193	238	8	226	870	207	493
Future Volume (vph)	150	193	238	8	226	870	207	493
Satd. Flow (prot)	1787	3574	1812	0	1719	4853	0	3502
Flt Permitted	0.950				0.950			0.950
Satd. Flow (perm)	1787	3574	1812	0	1719	4853	0	3502
Satd. Flow (RTOR)			85			61		
Lane Group Flow (vph)	161	208	256	0	248	1183	0	542
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Detector Phase	3	2 3	2		1	1		2
Switch Phase								
Minimum Initial (s)	6.0		6.0		10.0	10.0		6.0
Minimum Split (s)	11.0		26.0		30.0	30.0		26.0
Total Split (s)	15.0		45.0		30.0	30.0		45.0
Total Split (%)	16.7%		50.0%		33.3%	33.3%		50.0%
Maximum Green (s)	10.0		40.0		25.0	25.0		40.0
Yellow Time (s)	3.0		3.0		3.0	3.0		3.0
All-Red Time (s)	2.0		2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0		5.0
Lead/Lag			Lag		Lead	Lead		Lag
Lead-Lag Optimize?			Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Minimum Gap (s)	2.0		3.0		2.0	2.0		3.0
Time Before Reduce (s)	0.0		0.0		0.0	0.0		0.0
Time To Reduce (s)	0.0		0.0		0.0	0.0		0.0
Recall Mode	None		None		C-Min	C-Min		None
Walk Time (s)			7.0		7.0	7.0		7.0
Flash Dont Walk (s)			14.0		18.0	18.0		14.0
Pedestrian Calls (#/hr)			25		6	6		25
Act Effct Green (s)	13.2	42.0	23.9		38.0	38.0		23.9
Actuated g/C Ratio	0.15	0.47	0.27		0.42	0.42		0.27
v/c Ratio	0.62	0.12	0.47		0.34	0.57		0.58
Control Delay	46.0	12.3	19.8		22.3	22.1		30.5
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	46.0	12.3	19.8		22.3	22.1		30.5
LOS	D	B	B		C	C		C
Approach Delay		27.0	19.8			22.1		
Approach LOS		C	B			C		
Queue Length 50th (ft)	87	33	79		93	173		138
Queue Length 95th (ft)	144	37	128		194	277		161
Internal Link Dist (ft)		277	84			488		
Turn Bay Length (ft)	140				250			
Base Capacity (vph)	267	1783	852		725	2083		1556
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	0.60	0.12	0.30		0.34	0.57		0.35

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 74 (82%), Referenced to phase 1:NBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 24.3		Intersection LOS: C	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Mystic Avenue & Lombardi Street/Grand Union Boulevard & Ramp from Mystic Ave Southbound





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	260	1311	259	0	0
Future Volume (vph)	0	260	1311	259	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0		
Lane Util. Factor		0.88	0.91	1.00		
Frpb, ped/bikes		1.00	1.00	0.98		
Flpb, ped/bikes		1.00	1.00	1.00		
Frt		0.85	1.00	0.85		
Flt Protected		1.00	1.00	1.00		
Satd. Flow (prot)		2814	5085	1578		
Flt Permitted		1.00	1.00	1.00		
Satd. Flow (perm)		2814	5085	1578		
Peak-hour factor, PHF	0.94	0.94	0.98	0.98	0.92	0.92
Adj. Flow (vph)	0	277	1338	264	0	0
RTOR Reduction (vph)	0	106	0	0	0	0
Lane Group Flow (vph)	0	171	1338	264	0	0
Confl. Peds. (#/hr)				3		
Heavy Vehicles (%)	0%	1%	2%	0%	2%	2%
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Actuated Green, G (s)		9.8	70.2	80.0		
Effective Green, g (s)		9.8	70.2	80.0		
Actuated g/C Ratio		0.11	0.78	0.89		
Clearance Time (s)		5.0	5.0	5.0		
Vehicle Extension (s)		2.0	2.0	2.0		
Lane Grp Cap (vph)		306	3966	1578		
v/s Ratio Prot		c0.06	c0.26	0.02		
v/s Ratio Perm				0.15		
v/c Ratio		0.56	0.34	0.17		
Uniform Delay, d1		38.0	3.0	0.7		
Progression Factor		1.00	1.09	1.30		
Incremental Delay, d2		1.3	0.2	0.0		
Delay (s)		39.3	3.4	0.9		
Level of Service		D	A	A		
Approach Delay (s)	39.3		3.0			0.0
Approach LOS	D		A			A

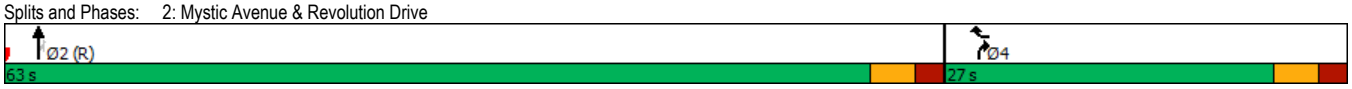
Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)	15		

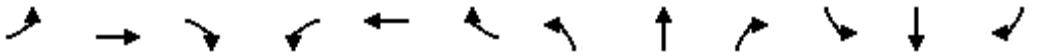
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	260	1311	259	0	0
Future Volume (vph)	0	260	1311	259	0	0
Satd. Flow (prot)	0	2814	5085	1615	0	0
Flt Permitted						
Satd. Flow (perm)	0	2814	5085	1573	0	0
Satd. Flow (RTOR)		119				
Lane Group Flow (vph)	0	277	1338	264	0	0
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Detector Phase		4	2	4		
Switch Phase						
Minimum Initial (s)		6.0	10.0	6.0		
Minimum Split (s)		11.0	27.0	11.0		
Total Split (s)		27.0	63.0	27.0		
Total Split (%)		30.0%	70.0%	30.0%		
Maximum Green (s)		22.0	58.0	22.0		
Yellow Time (s)		3.0	3.0	3.0		
All-Red Time (s)		2.0	2.0	2.0		
Lost Time Adjust (s)		0.0	0.0	0.0		
Total Lost Time (s)		5.0	5.0	5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		2.0	2.0	2.0		
Minimum Gap (s)		2.0	2.0	2.0		
Time Before Reduce (s)		0.0	0.0	0.0		
Time To Reduce (s)		0.0	0.0	0.0		
Recall Mode		None	C-Min	None		
Walk Time (s)			4.0			
Flash Dont Walk (s)			18.0			
Pedestrian Calls (#/hr)			3			
Act Effct Green (s)		9.8	70.2	80.0		
Actuated g/C Ratio		0.11	0.78	0.89		
v/c Ratio		0.67	0.34	0.19		
Control Delay		29.6	3.7	0.7		
Queue Delay		0.0	0.0	0.0		
Total Delay		29.6	3.7	0.7		
LOS		C	A	A		
Approach Delay	29.6		3.2			
Approach LOS	C		A			
Queue Length 50th (ft)		48	31	0		
Queue Length 95th (ft)		89	185	0		
Internal Link Dist (ft)	550		905			225
Turn Bay Length (ft)						
Base Capacity (vph)		777	3965	1495		
Starvation Cap Reductn		0	0	0		
Spillback Cap Reductn		0	0	0		
Storage Cap Reductn		0	0	0		
Reduced v/c Ratio		0.36	0.34	0.18		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 8 (9%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 7.1	Intersection LOS: A
Intersection Capacity Utilization 42.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Mystic Avenue & Revolution Drive





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	63	41	19	51	67	36	285	81	82	132	189
Future Volume (vph)	205	63	41	19	51	67	36	285	81	82	132	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	4.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1788		1805	1863	1583	1805	1813		1805	1900	1577
Flt Permitted	0.72	1.00		0.68	1.00	1.00	0.66	1.00		0.25	1.00	1.00
Satd. Flow (perm)	1370	1788		1295	1863	1583	1255	1813		479	1900	1577
Peak-hour factor, PHF	0.89	0.89	0.89	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	230	71	46	20	55	72	39	310	88	94	152	217
RTOR Reduction (vph)	0	18	0	0	0	0	0	9	0	0	0	148
Lane Group Flow (vph)	230	99	0	20	55	72	39	389	0	94	152	69
Confl. Bikes (#/hr)									3			3
Heavy Vehicles (%)	0%	0%	0%	0%	2%	2%	0%	1%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	21.9	21.9		21.9	21.9	95.0	31.0	27.5		36.0	30.0	30.0
Effective Green, g (s)	21.9	21.9		21.9	21.9	95.0	31.0	27.5		36.0	30.0	30.0
Actuated g/C Ratio	0.23	0.23		0.23	0.23	1.00	0.33	0.29		0.38	0.32	0.32
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	315	412		298	429	1583	429	524		265	600	498
v/s Ratio Prot		0.06			0.03		0.00	c0.21		c0.02	0.08	
v/s Ratio Perm	c0.17			0.02		c0.05	0.03			0.11		0.04
v/c Ratio	0.73	0.24		0.07	0.13	0.05	0.09	0.74		0.35	0.25	0.14
Uniform Delay, d1	33.8	29.8		28.6	29.0	0.0	22.0	30.5		20.8	24.2	23.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.3	0.1		0.0	0.0	0.1	0.0	4.9		0.3	0.1	0.0
Delay (s)	41.1	29.9		28.6	29.0	0.1	22.1	35.5		21.1	24.3	23.3
Level of Service	D	C		C	C	A	C	D		C	C	C
Approach Delay (s)		37.3			14.8			34.3			23.2	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

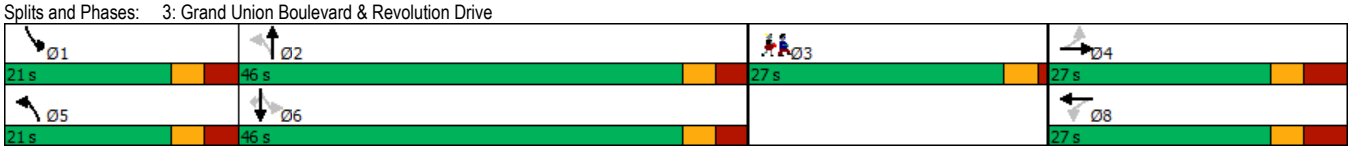
c Critical Lane Group

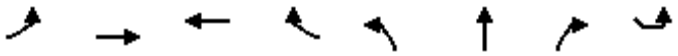
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3
Lane Configurations													
Traffic Volume (vph)	205	63	41	19	51	67	36	285	81	82	132	189	
Future Volume (vph)	205	63	41	19	51	67	36	285	81	82	132	189	
Satd. Flow (prot)	1805	1788	0	1805	1863	1583	1805	1814	0	1805	1900	1615	
Flt Permitted	0.721			0.682			0.660			0.252			
Satd. Flow (perm)	1370	1788	0	1296	1863	1583	1254	1814	0	479	1900	1577	
Satd. Flow (RTOR)		23				180		13				217	
Lane Group Flow (vph)	230	117	0	20	55	72	39	398	0	94	152	217	
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm	
Protected Phases		4			8		5	2		1	6		3
Permitted Phases	4			8		Free	2			6		6	
Detector Phase	4	4		8	8		5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	10.0	1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		12.0	16.0		12.0	16.0	16.0	27.0
Total Split (s)	27.0	27.0		27.0	27.0		21.0	46.0		21.0	46.0	46.0	27.0
Total Split (%)	22.3%	22.3%		22.3%	22.3%		17.4%	38.0%		17.4%	38.0%	38.0%	22%
Maximum Green (s)	20.0	20.0		20.0	20.0		15.0	40.0		15.0	40.0	40.0	23.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None		None	Min		None	Min	Min	None
Walk Time (s)													5.0
Flash Dont Walk (s)													18.0
Pedestrian Calls (#/hr)													99
Act Effct Green (s)	21.9	21.9		21.9	21.9	92.1	30.9	26.2		34.6	29.9	29.9	
Actuated g/C Ratio	0.24	0.24		0.24	0.24	1.00	0.34	0.28		0.38	0.32	0.32	
v/c Ratio	0.71	0.26		0.06	0.12	0.05	0.08	0.76		0.32	0.25	0.33	
Control Delay	53.1	32.7		37.2	37.1	0.1	18.2	41.9		21.2	27.1	5.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	53.1	32.7		37.2	37.1	0.1	18.2	41.9		21.2	27.1	5.1	
LOS	D	C		D	D	A	B	D		C	C	A	
Approach Delay		46.2			19.0			39.8			15.6		
Approach LOS		D			B			D			B		
Queue Length 50th (ft)	140	50		10	29	0	15	231		37	76	0	
Queue Length 95th (ft)	#321	116		35	72	0	34	351		66	123	45	
Internal Link Dist (ft)		550			253			1577			492		
Turn Bay Length (ft)	250			150			120			250		150	
Base Capacity (vph)	325	442		308	442	1583	592	869		426	905	865	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Reduced v/c Ratio	0.71	0.26		0.06	0.12	0.05	0.07	0.46		0.22	0.17	0.25	

Intersection Summary		
Cycle Length: 121		
Actuated Cycle Length: 92.1		
Natural Cycle: 90		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.76		
Intersection Signal Delay: 31.2	Intersection LOS: C	
Intersection Capacity Utilization 58.8%	ICU Level of Service B	
Analysis Period (min) 15		

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

Splits and Phases: 3: Grand Union Boulevard & Revolution Drive





Movement	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	122	70	355	9	126	829	131	402
Future Volume (vph)	122	70	355	9	126	829	131	402
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	12	12
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0		5.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.91		0.97
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Frt	1.00	1.00	1.00		1.00	0.98		1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (prot)	1805	3505	1778		1597	4493		3367
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (perm)	1805	3505	1778		1597	4493		3367
Peak-hour factor, PHF	0.75	0.75	0.87	0.87	0.99	0.99	0.99	0.83
Adj. Flow (vph)	163	93	408	10	127	837	132	484
RTOR Reduction (vph)	0	0	62	0	0	20	0	0
Lane Group Flow (vph)	163	93	356	0	127	949	0	484
Confl. Peds. (#/hr)							8	
Confl. Bikes (#/hr)				8				
Heavy Vehicles (%)	0%	3%	3%	0%	13%	14%	5%	4%
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Actuated Green, G (s)	12.4	41.3	23.9		38.7	38.7		23.9
Effective Green, g (s)	12.4	41.3	23.9		38.7	38.7		23.9
Actuated g/C Ratio	0.14	0.46	0.27		0.43	0.43		0.27
Clearance Time (s)	5.0		5.0		5.0	5.0		5.0
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Lane Grp Cap (vph)	248	1608	472		686	1931		894
v/s Ratio Prot	c0.09	0.03	c0.20		0.08	c0.21		0.14
v/s Ratio Perm								
v/c Ratio	0.66	0.06	0.75		0.19	0.49		0.54
Uniform Delay, d1	36.8	13.5	30.3		15.9	18.5		28.3
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.7	0.0	6.7		0.6	0.9		0.7
Delay (s)	41.5	13.6	37.0		16.5	19.4		29.0
Level of Service	D	B	D		B	B		C
Approach Delay (s)		31.4	37.0			19.1		
Approach LOS		C	D			B		

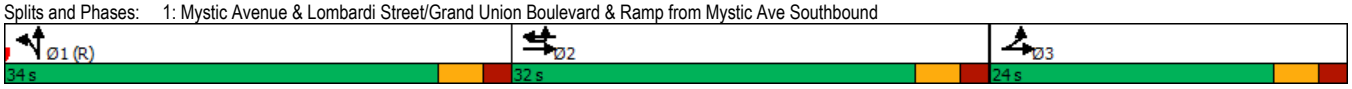
Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

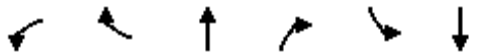
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	122	70	355	9	126	829	131	402
Future Volume (vph)	122	70	355	9	126	829	131	402
Satd. Flow (prot)	1805	3505	1778	0	1597	4495	0	3367
Flt Permitted	0.950				0.950			0.950
Satd. Flow (perm)	1805	3505	1778	0	1597	4495	0	3367
Satd. Flow (RTOR)			85			35		
Lane Group Flow (vph)	163	93	418	0	127	969	0	484
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Detector Phase	3	2 3	2		1	1		2
Switch Phase								
Minimum Initial (s)	6.0		6.0		10.0	10.0		6.0
Minimum Split (s)	11.0		26.0		30.0	30.0		26.0
Total Split (s)	24.0		32.0		34.0	34.0		32.0
Total Split (%)	26.7%		35.6%		37.8%	37.8%		35.6%
Maximum Green (s)	19.0		27.0		29.0	29.0		27.0
Yellow Time (s)	3.0		3.0		3.0	3.0		3.0
All-Red Time (s)	2.0		2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0		5.0
Lead/Lag			Lag		Lead	Lead		Lag
Lead-Lag Optimize?			Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Minimum Gap (s)	2.0		3.0		2.0	2.0		3.0
Time Before Reduce (s)	0.0		0.0		0.0	0.0		0.0
Time To Reduce (s)	0.0		0.0		0.0	0.0		0.0
Recall Mode	None		None		C-Min	C-Min		None
Walk Time (s)			7.0		7.0	7.0		7.0
Flash Dont Walk (s)			14.0		18.0	18.0		14.0
Pedestrian Calls (#/hr)			24		8	8		24
Act Effct Green (s)	12.4	41.3	23.9		38.7	38.7		23.9
Actuated g/C Ratio	0.14	0.46	0.27		0.43	0.43		0.27
v/c Ratio	0.65	0.06	0.78		0.19	0.50		0.54
Control Delay	48.7	11.4	34.7		19.7	20.6		30.1
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	48.7	11.4	34.7		19.7	20.6		30.1
LOS	D	B	C		B	C		C
Approach Delay		35.1	34.7			20.5		
Approach LOS		D	C			C		
Queue Length 50th (ft)	89	14	171		46	142		117
Queue Length 95th (ft)	117	18	261		95	206		146
Internal Link Dist (ft)		277	84			488		
Turn Bay Length (ft)	140				250			
Base Capacity (vph)	381	1833	601		686	1952		1029
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	0.43	0.05	0.70		0.19	0.50		0.47

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 71 (79%), Referenced to phase 1:NBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 26.9		Intersection LOS: C	
Intersection Capacity Utilization 74.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Mystic Avenue & Lombardi Street/Grand Union Boulevard & Ramp from Mystic Ave Southbound





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	212	1208	102	0	0
Future Volume (vph)	0	212	1208	102	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0		
Lane Util. Factor		0.88	0.91	1.00		
Frpb, ped/bikes		1.00	1.00	0.96		
Flpb, ped/bikes		1.00	1.00	1.00		
Frt		0.85	1.00	0.85		
Flt Protected		1.00	1.00	1.00		
Satd. Flow (prot)		2733	4673	1527		
Flt Permitted		1.00	1.00	1.00		
Satd. Flow (perm)		2733	4673	1527		
Peak-hour factor, PHF	0.81	0.81	0.93	0.93	0.92	0.92
Adj. Flow (vph)	0	262	1299	110	0	0
RTOR Reduction (vph)	0	119	0	0	0	0
Lane Group Flow (vph)	0	143	1299	110	0	0
Confl. Peds. (#/hr)				10		
Heavy Vehicles (%)	0%	4%	11%	2%	2%	2%
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Actuated Green, G (s)		9.2	70.8	80.0		
Effective Green, g (s)		9.2	70.8	80.0		
Actuated g/C Ratio		0.10	0.79	0.89		
Clearance Time (s)		5.0	5.0	5.0		
Vehicle Extension (s)		2.0	2.0	2.0		
Lane Grp Cap (vph)		279	3676	1527		
v/s Ratio Prot		c0.05	c0.28	0.01		
v/s Ratio Perm				0.06		
v/c Ratio		0.51	0.35	0.07		
Uniform Delay, d1		38.3	2.8	0.6		
Progression Factor		1.00	0.76	1.12		
Incremental Delay, d2		0.7	0.2	0.0		
Delay (s)		39.0	2.4	0.7		
Level of Service		D	A	A		
Approach Delay (s)	39.0		2.3			0.0
Approach LOS	D		A			A

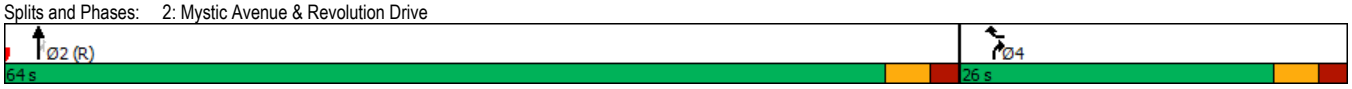
Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

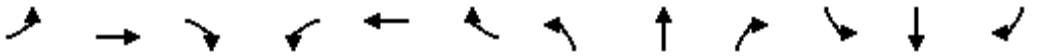
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	212	1208	102	0	0
Future Volume (vph)	0	212	1208	102	0	0
Satd. Flow (prot)	0	2733	4673	1583	0	0
Flt Permitted						
Satd. Flow (perm)	0	2733	4673	1520	0	0
Satd. Flow (RTOR)		132				
Lane Group Flow (vph)	0	262	1299	110	0	0
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Detector Phase		4	2	4		
Switch Phase						
Minimum Initial (s)		6.0	10.0	6.0		
Minimum Split (s)		11.0	27.0	11.0		
Total Split (s)		26.0	64.0	26.0		
Total Split (%)		28.9%	71.1%	28.9%		
Maximum Green (s)		21.0	59.0	21.0		
Yellow Time (s)		3.0	3.0	3.0		
All-Red Time (s)		2.0	2.0	2.0		
Lost Time Adjust (s)		0.0	0.0	0.0		
Total Lost Time (s)		5.0	5.0	5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		2.0	2.0	2.0		
Minimum Gap (s)		2.0	2.0	2.0		
Time Before Reduce (s)		0.0	0.0	0.0		
Time To Reduce (s)		0.0	0.0	0.0		
Recall Mode		None	C-Min	None		
Walk Time (s)			4.0			
Flash Dont Walk (s)			18.0			
Pedestrian Calls (#/hr)			10			
Act Effct Green (s)		9.2	70.8	80.0		
Actuated g/C Ratio		0.10	0.79	0.89		
v/c Ratio		0.66	0.35	0.08		
Control Delay		26.9	2.6	0.4		
Queue Delay		0.0	0.0	0.0		
Total Delay		26.9	2.6	0.4		
LOS		C	A	A		
Approach Delay	26.9		2.4			
Approach LOS	C		A			
Queue Length 50th (ft)		40	19	0		
Queue Length 95th (ft)		65	93	0		
Internal Link Dist (ft)	550		905			225
Turn Bay Length (ft)						
Base Capacity (vph)		738	3676	1450		
Starvation Cap Reductn		0	0	0		
Spillback Cap Reductn		0	0	0		
Storage Cap Reductn		0	0	0		
Reduced v/c Ratio		0.36	0.35	0.08		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 10 (11%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 6.3	Intersection LOS: A
Intersection Capacity Utilization 39.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Mystic Avenue & Revolution Drive





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	57	50	34	72	24	13	82	68	83	322	137
Future Volume (vph)	21	57	50	34	72	24	13	82	68	83	322	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	4.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1719	1750		1805	1863	1615	1805	1650		1787	1845	1550
Flt Permitted	0.70	1.00		0.67	1.00	1.00	0.46	1.00		0.55	1.00	1.00
Satd. Flow (perm)	1264	1750		1269	1863	1615	872	1650		1025	1845	1550
Peak-hour factor, PHF	0.81	0.81	0.81	0.80	0.80	0.80	0.74	0.74	0.74	0.87	0.87	0.87
Adj. Flow (vph)	26	70	62	42	90	30	18	111	92	95	370	157
RTOR Reduction (vph)	0	30	0	0	0	0	0	31	0	0	0	93
Lane Group Flow (vph)	26	102	0	43	90	30	18	172	0	95	370	64
Confl. Bikes (#/hr)									3			1
Heavy Vehicles (%)	5%	0%	2%	0%	2%	0%	0%	8%	4%	1%	3%	2%
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	10.6	10.6		10.6	10.6	100.0	39.8	37.4		47.0	41.0	41.0
Effective Green, g (s)	10.6	10.6		10.6	10.6	100.0	39.8	37.4		47.0	41.0	41.0
Actuated g/C Ratio	0.11	0.11		0.11	0.11	1.00	0.40	0.37		0.47	0.41	0.41
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	133	185		134	197	1615	369	617		527	756	635
v/s Ratio Prot		c0.06			0.05		0.00	0.10		c0.01	c0.20	
v/s Ratio Perm	0.02			0.03		c0.02	0.02			0.07		0.04
v/c Ratio	0.20	0.55		0.32	0.46	0.02	0.05	0.28		0.18	0.49	0.10
Uniform Delay, d1	40.8	42.4		41.4	42.0	0.0	18.5	21.9		15.0	21.8	18.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	1.8		0.5	0.6	0.0	0.0	1.1		0.1	2.3	0.3
Delay (s)	41.1	44.2		41.9	42.6	0.0	18.5	23.0		15.1	24.0	18.5
Level of Service	D	D		D	D	A	B	C		B	C	B
Approach Delay (s)		43.7			34.6			22.6			21.3	
Approach LOS		D			C			C			C	

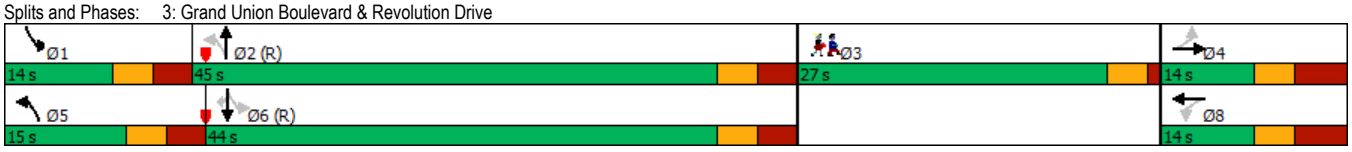
Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

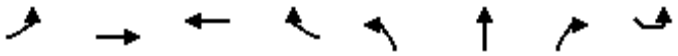
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3
Lane Configurations													
Traffic Volume (vph)	21	57	50	34	72	24	13	82	68	83	322	137	
Future Volume (vph)	21	57	50	34	72	24	13	82	68	83	322	137	
Satd. Flow (prot)	1719	1751	0	1805	1863	1615	1805	1650	0	1787	1845	1583	
Flt Permitted	0.699			0.668			0.459			0.545			
Satd. Flow (perm)	1265	1751	0	1269	1863	1615	872	1650	0	1025	1845	1550	
Satd. Flow (RTOR)		34				218		49				157	
Lane Group Flow (vph)	26	132	0	43	90	30	18	203	0	95	370	157	
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm	
Protected Phases		4			8		5	2		1	6		3
Permitted Phases	4			8		Free	2			6		6	
Detector Phase	4	4		8	8		5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	10.0	1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		12.0	16.0		12.0	16.0	16.0	27.0
Total Split (s)	14.0	14.0		14.0	14.0		15.0	45.0		14.0	44.0	44.0	27.0
Total Split (%)	14.0%	14.0%		14.0%	14.0%		15.0%	45.0%		14.0%	44.0%	44.0%	27%
Maximum Green (s)	7.0	7.0		7.0	7.0		9.0	39.0		8.0	38.0	38.0	23.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	C-Min	None
Walk Time (s)													5.0
Flash Dont Walk (s)													18.0
Pedestrian Calls (#/hr)													118
Act Effct Green (s)	10.6	10.6		10.6	10.6	100.0	43.4	38.6		47.9	44.6	44.6	
Actuated g/C Ratio	0.11	0.11		0.11	0.11	1.00	0.43	0.39		0.48	0.45	0.45	
v/c Ratio	0.20	0.61		0.32	0.46	0.02	0.04	0.30		0.17	0.45	0.20	
Control Delay	43.4	43.6		47.1	49.1	0.0	14.4	19.3		15.1	23.5	4.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	43.4	43.6		47.1	49.1	0.0	14.4	19.3		15.1	23.5	4.4	
LOS	D	D		D	D	A	B	B		B	C	A	
Approach Delay		43.6			39.5			18.9			17.4		
Approach LOS		D			D			B			B		
Queue Length 50th (ft)	15	59		26	54	0	6	70		32	147	0	
Queue Length 95th (ft)	37	104		53	91	0	14	99		59	267	37	
Internal Link Dist (ft)		550			253			1577			492		
Turn Bay Length (ft)	250			150			120			250		150	
Base Capacity (vph)	134	217		135	198	1615	482	719		552	841	792	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Reduced v/c Ratio	0.19	0.61		0.32	0.45	0.02	0.04	0.28		0.17	0.44	0.20	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 24.3	Intersection LOS: C
Intersection Capacity Utilization 46.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Grand Union Boulevard & Revolution Drive





Movement	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	139	234	239	13	211	1290	282	382
Future Volume (vph)	139	234	239	13	211	1290	282	382
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	12	12
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0		5.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.91		0.97
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Frt	1.00	1.00	0.99		1.00	0.97		1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (prot)	1787	3610	1788		1687	4919		3433
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (perm)	1787	3610	1788		1687	4919		3433
Peak-hour factor, PHF	0.83	0.83	0.95	0.95	0.93	0.93	0.93	0.80
Adj. Flow (vph)	167	282	252	14	227	1387	303	478
RTOR Reduction (vph)	0	0	61	0	0	26	0	0
Lane Group Flow (vph)	167	282	205	0	227	1664	0	478
Confl. Peds. (#/hr)							9	
Confl. Bikes (#/hr)				5			2	
Heavy Vehicles (%)	1%	0%	2%	0%	7%	2%	3%	2%
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Actuated Green, G (s)	13.9	38.5	19.6		51.5	51.5		19.6
Effective Green, g (s)	13.9	38.5	19.6		51.5	51.5		19.6
Actuated g/C Ratio	0.14	0.38	0.20		0.52	0.52		0.20
Clearance Time (s)	5.0		5.0		5.0	5.0		5.0
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Lane Grp Cap (vph)	248	1389	350		868	2533		672
v/s Ratio Prot	c0.09	0.08	0.11		0.13	c0.34		c0.14
v/s Ratio Perm								
v/c Ratio	0.67	0.20	0.59		0.26	0.66		0.71
Uniform Delay, d1	40.9	20.5	36.5		13.6	17.8		37.6
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	5.6	0.1	2.5		0.7	1.3		3.6
Delay (s)	46.5	20.6	39.0		14.3	19.1		41.1
Level of Service	D	C	D		B	B		D
Approach Delay (s)		30.2	39.0			18.6		
Approach LOS		C	D			B		

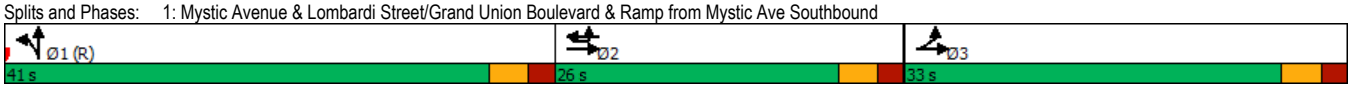
Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	139	234	239	13	211	1290	282	382
Future Volume (vph)	139	234	239	13	211	1290	282	382
Satd. Flow (prot)	1787	3610	1788	0	1687	4918	0	3433
Flt Permitted	0.950				0.950			0.950
Satd. Flow (perm)	1787	3610	1788	0	1687	4918	0	3433
Satd. Flow (RTOR)			76			54		
Lane Group Flow (vph)	167	282	266	0	227	1690	0	478
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Detector Phase	3	2 3	2		1	1		2
Switch Phase								
Minimum Initial (s)	6.0		6.0		10.0	10.0		6.0
Minimum Split (s)	11.0		26.0		30.0	30.0		26.0
Total Split (s)	33.0		26.0		41.0	41.0		26.0
Total Split (%)	33.0%		26.0%		41.0%	41.0%		26.0%
Maximum Green (s)	28.0		21.0		36.0	36.0		21.0
Yellow Time (s)	3.0		3.0		3.0	3.0		3.0
All-Red Time (s)	2.0		2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0		5.0
Lead/Lag			Lag		Lead	Lead		Lag
Lead-Lag Optimize?			Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Minimum Gap (s)	2.0		3.0		2.0	2.0		3.0
Time Before Reduce (s)	0.0		0.0		0.0	0.0		0.0
Time To Reduce (s)	0.0		0.0		0.0	0.0		0.0
Recall Mode	None		None		C-Min	C-Min		None
Walk Time (s)			7.0		7.0	7.0		7.0
Flash Dont Walk (s)			14.0		18.0	18.0		14.0
Pedestrian Calls (#/hr)			39		9	9		39
Act Effct Green (s)	13.9	38.5	19.6		51.5	51.5		19.6
Actuated g/C Ratio	0.14	0.38	0.20		0.52	0.52		0.20
v/c Ratio	0.67	0.20	0.65		0.26	0.66		0.71
Control Delay	53.5	19.9	33.8		16.1	19.8		43.8
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	53.5	19.9	33.8		16.1	19.8		43.8
LOS	D	B	C		B	B		D
Approach Delay		32.4	33.8			19.4		
Approach LOS		C	C			B		
Queue Length 50th (ft)	103	60	110		80	276		144
Queue Length 95th (ft)	146	72	195		147	377		173
Internal Link Dist (ft)		277	84			488		
Turn Bay Length (ft)	140				250			
Base Capacity (vph)	500	1871	435		868	2557		720
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	0.33	0.15	0.61		0.26	0.66		0.66

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 3 (3%), Referenced to phase 1:NBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 26.3	Intersection LOS: C
Intersection Capacity Utilization 79.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Mystic Avenue & Lombardi Street/Grand Union Boulevard & Ramp from Mystic Ave Southbound



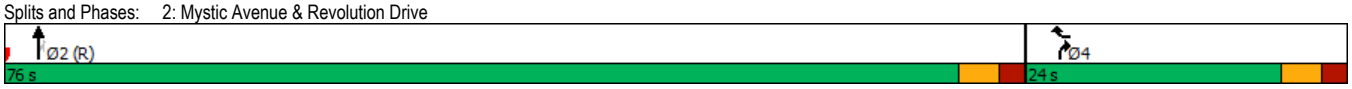
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	596	1580	243	0	0
Future Volume (vph)	0	596	1580	243	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0		
Lane Util. Factor		0.88	0.91	1.00		
Frpb, ped/bikes		1.00	1.00	0.98		
Flpb, ped/bikes		1.00	1.00	1.00		
Frt		0.85	1.00	0.85		
Flt Protected		1.00	1.00	1.00		
Satd. Flow (prot)		2842	5085	1591		
Flt Permitted		1.00	1.00	1.00		
Satd. Flow (perm)		2842	5085	1591		
Peak-hour factor, PHF	0.69	0.69	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	864	1717	264	0	0
RTOR Reduction (vph)	0	44	0	0	0	0
Lane Group Flow (vph)	0	820	1717	264	0	0
Confl. Peds. (#/hr)				3		
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	0%	0%	2%	0%	2%	2%
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Actuated Green, G (s)		39.8	50.2	90.0		
Effective Green, g (s)		39.8	50.2	90.0		
Actuated g/C Ratio		0.40	0.50	0.90		
Clearance Time (s)		5.0	5.0	5.0		
Vehicle Extension (s)		2.0	2.0	2.0		
Lane Grp Cap (vph)		1131	2552	1591		
v/s Ratio Prot		c0.29	c0.34	0.07		
v/s Ratio Perm				0.10		
v/c Ratio		0.73	0.67	0.17		
Uniform Delay, d1		25.5	18.7	0.6		
Progression Factor		1.00	0.98	1.11		
Incremental Delay, d2		2.0	1.1	0.0		
Delay (s)		27.5	19.5	0.7		
Level of Service		C	B	A		
Approach Delay (s)	27.5		17.0			0.0
Approach LOS	C		B			A

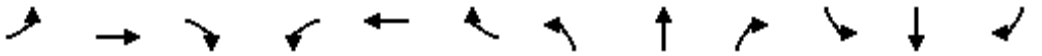
Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	596	1580	243	0	0
Future Volume (vph)	0	596	1580	243	0	0
Satd. Flow (prot)	0	2842	5085	1615	0	0
Flt Permitted						
Satd. Flow (perm)	0	2842	5085	1571	0	0
Satd. Flow (RTOR)		73				
Lane Group Flow (vph)	0	864	1717	264	0	0
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Detector Phase		4	2	4		
Switch Phase						
Minimum Initial (s)		6.0	10.0	6.0		
Minimum Split (s)		11.0	27.0	11.0		
Total Split (s)		24.0	76.0	24.0		
Total Split (%)		24.0%	76.0%	24.0%		
Maximum Green (s)		19.0	71.0	19.0		
Yellow Time (s)		3.0	3.0	3.0		
All-Red Time (s)		2.0	2.0	2.0		
Lost Time Adjust (s)		0.0	0.0	0.0		
Total Lost Time (s)		5.0	5.0	5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		2.0	2.0	2.0		
Minimum Gap (s)		2.0	2.0	2.0		
Time Before Reduce (s)		0.0	0.0	0.0		
Time To Reduce (s)		0.0	0.0	0.0		
Recall Mode		None	C-Min	None		
Walk Time (s)			4.0			
Flash Dont Walk (s)			18.0			
Pedestrian Calls (#/hr)			3			
Act Effct Green (s)		39.8	50.2	90.0		
Actuated g/C Ratio		0.40	0.50	0.90		
v/c Ratio		0.74	0.67	0.18		
Control Delay		29.9	19.1	0.6		
Queue Delay		0.0	0.0	0.0		
Total Delay		29.9	19.1	0.6		
LOS		C	B	A		
Approach Delay	29.9		16.6			
Approach LOS	C		B			
Queue Length 50th (ft)		242	363	0		
Queue Length 95th (ft)		255	100	0		
Internal Link Dist (ft)	550		905			225
Turn Bay Length (ft)						
Base Capacity (vph)		1173	3610	1431		
Starvation Cap Reductn		0	0	0		
Spillback Cap Reductn		0	0	0		
Storage Cap Reductn		0	0	0		
Reduced v/c Ratio		0.74	0.48	0.18		

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 30 (30%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 20.6	Intersection LOS: C
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Mystic Avenue & Revolution Drive





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	100	32	34	204	44	55	322	142	81	147	234
Future Volume (vph)	145	100	32	34	204	44	55	322	142	81	147	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	4.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1821		1805	1900	1615	1805	1787		1805	1827	1558
Flt Permitted	0.27	1.00		0.62	1.00	1.00	0.61	1.00		0.17	1.00	1.00
Satd. Flow (perm)	497	1821		1172	1900	1615	1162	1787		325	1827	1558
Peak-hour factor, PHF	0.78	0.78	0.78	0.64	0.64	0.64	0.93	0.93	0.93	0.89	0.89	0.89
Adj. Flow (vph)	186	128	41	53	319	69	59	346	153	91	165	263
RTOR Reduction (vph)	0	13	0	0	0	0	0	18	0	0	0	195
Lane Group Flow (vph)	186	157	0	53	319	69	59	481	0	91	165	68
Confl. Bikes (#/hr)			1						3			4
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	1%	0%	0%	4%	1%
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	15.0	15.0		15.0	15.0	90.0	29.8	24.2		28.2	23.4	23.4
Effective Green, g (s)	15.0	15.0		15.0	15.0	90.0	29.8	24.2		28.2	23.4	23.4
Actuated g/C Ratio	0.17	0.17		0.17	0.17	1.00	0.33	0.27		0.31	0.26	0.26
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	82	303		195	316	1615	424	480		180	475	405
v/s Ratio Prot		0.09			0.17		0.01	c0.27		c0.03	0.09	
v/s Ratio Perm	c0.37			0.05		c0.04	0.04			0.13		0.04
v/c Ratio	2.27	0.52		0.27	1.01	0.04	0.14	1.00		0.51	0.35	0.17
Uniform Delay, d1	37.5	34.2		32.7	37.5	0.0	20.8	32.9		24.4	27.1	25.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	607.6	0.6		0.3	53.0	0.0	0.1	41.8		0.8	2.0	0.9
Delay (s)	645.1	34.8		33.0	90.5	0.0	20.9	74.7		25.2	29.1	26.7
Level of Service	F	C		C	F	A	C	E		C	C	C
Approach Delay (s)		354.6			69.5			69.0			27.2	
Approach LOS		F			E			E			C	

Intersection Summary			
HCM 2000 Control Delay	111.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

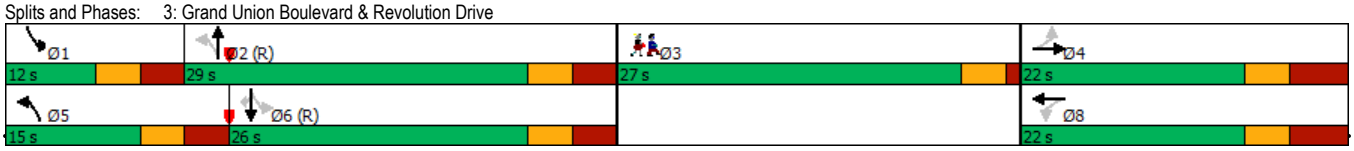
c Critical Lane Group

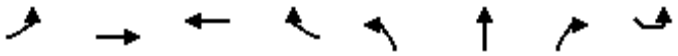
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3
Lane Configurations													
Traffic Volume (vph)	145	100	32	34	204	44	55	322	142	81	147	234	
Future Volume (vph)	145	100	32	34	204	44	55	322	142	81	147	234	
Satd. Flow (prot)	1770	1822	0	1805	1900	1615	1805	1787	0	1805	1827	1599	
Flt Permitted	0.267			0.617			0.612			0.171			
Satd. Flow (perm)	497	1822	0	1172	1900	1615	1163	1787	0	325	1827	1556	
Satd. Flow (RTOR)		15				242		24				263	
Lane Group Flow (vph)	186	169	0	53	319	69	59	499	0	91	165	263	
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm	
Protected Phases		4			8		5	2		1	6		3
Permitted Phases	4			8		Free	2			6		6	
Detector Phase	4	4		8	8		5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	10.0	1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		12.0	16.0		12.0	16.0	16.0	27.0
Total Split (s)	22.0	22.0		22.0	22.0		15.0	29.0		12.0	26.0	26.0	27.0
Total Split (%)	24.4%	24.4%		24.4%	24.4%		16.7%	32.2%		13.3%	28.9%	28.9%	30%
Maximum Green (s)	15.0	15.0		15.0	15.0		9.0	23.0		6.0	20.0	20.0	23.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	C-Min	None
Walk Time (s)													5.0
Flash Dont Walk (s)													18.0
Pedestrian Calls (#/hr)													157
Act Effct Green (s)	15.0	15.0		15.0	15.0	90.0	31.0	25.4		29.4	24.6	24.6	
Actuated g/C Ratio	0.17	0.17		0.17	0.17	1.00	0.34	0.28		0.33	0.27	0.27	
v/c Ratio	2.27	0.53		0.27	1.01	0.04	0.13	0.96		0.44	0.33	0.43	
Control Delay	629.7	38.2		37.0	92.6	0.0	18.4	63.8		25.4	30.1	6.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	629.7	38.2		37.0	92.6	0.0	18.4	63.8		25.4	30.1	6.2	
LOS	F	D		D	F	A	B	E		C	C	A	
Approach Delay		348.1			71.4			59.0			17.2		
Approach LOS		F			E			E			B		
Queue Length 50th (ft)	~173	81		27	~186	0	21	~302		33	77	0	
Queue Length 95th (ft)	#256	122		43	#191	0	46	#497		63	137	58	
Internal Link Dist (ft)		550			253			1577			492		
Turn Bay Length (ft)	250			150			120			250		150	
Base Capacity (vph)	82	316		195	316	1615	485	521		205	499	616	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Reduced v/c Ratio	2.27	0.53		0.27	1.01	0.04	0.12	0.96		0.44	0.33	0.43	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.27
Intersection Signal Delay: 105.1 Intersection LOS: F
Intersection Capacity Utilization 71.0% 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: 3: Grand Union Boulevard & Revolution Drive





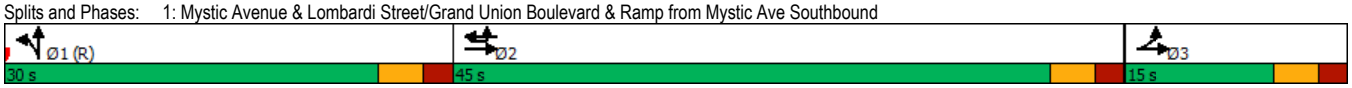
Movement	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	150	194	248	8	226	915	219	618
Future Volume (vph)	150	194	248	8	226	915	219	618
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	12	12
Total Lost time (s)	5.0	5.0	5.0		5.0	5.0		5.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.91		0.97
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00
Frt	1.00	1.00	1.00		1.00	0.97		1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (prot)	1787	3574	1812		1719	4853		3502
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (perm)	1787	3574	1812		1719	4853		3502
Peak-hour factor, PHF	0.93	0.93	0.96	0.96	0.91	0.91	0.91	0.91
Adj. Flow (vph)	161	209	258	8	248	1005	241	679
RTOR Reduction (vph)	0	0	58	0	0	38	0	0
Lane Group Flow (vph)	161	209	208	0	248	1208	0	679
Confl. Peds. (#/hr)							6	
Heavy Vehicles (%)	1%	1%	1%	0%	5%	4%	1%	0%
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Actuated Green, G (s)	12.0	45.5	28.5		34.5	34.5		28.5
Effective Green, g (s)	12.0	45.5	28.5		34.5	34.5		28.5
Actuated g/C Ratio	0.13	0.51	0.32		0.38	0.38		0.32
Clearance Time (s)	5.0		5.0		5.0	5.0		5.0
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Lane Grp Cap (vph)	238	1806	573		658	1860		1108
v/s Ratio Prot	c0.09	0.06	0.11		0.14	c0.25		c0.19
v/s Ratio Perm								
v/c Ratio	0.68	0.12	0.36		0.38	0.65		0.61
Uniform Delay, d1	37.2	11.7	23.7		20.0	22.8		26.1
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	5.9	0.0	0.4		1.6	1.8		1.0
Delay (s)	43.0	11.7	24.1		21.6	24.6		27.1
Level of Service	D	B	C		C	C		C
Approach Delay (s)		25.3	24.1			24.1		
Approach LOS		C	C			C		

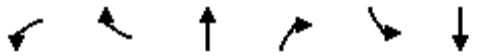
Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SEL2
Lane Configurations								
Traffic Volume (vph)	150	194	248	8	226	915	219	618
Future Volume (vph)	150	194	248	8	226	915	219	618
Satd. Flow (prot)	1787	3574	1812	0	1719	4853	0	3502
Flt Permitted	0.950				0.950			0.950
Satd. Flow (perm)	1787	3574	1812	0	1719	4853	0	3502
Satd. Flow (RTOR)			85			62		
Lane Group Flow (vph)	161	209	266	0	248	1246	0	679
Turn Type	Prot	NA	NA		Split	NA		Prot
Protected Phases	3	2 3	2		1	1		2
Permitted Phases								
Detector Phase	3	2 3	2		1	1		2
Switch Phase								
Minimum Initial (s)	6.0		6.0		10.0	10.0		6.0
Minimum Split (s)	11.0		26.0		30.0	30.0		26.0
Total Split (s)	15.0		45.0		30.0	30.0		45.0
Total Split (%)	16.7%		50.0%		33.3%	33.3%		50.0%
Maximum Green (s)	10.0		40.0		25.0	25.0		40.0
Yellow Time (s)	3.0		3.0		3.0	3.0		3.0
All-Red Time (s)	2.0		2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0		5.0
Lead/Lag			Lag		Lead	Lead		Lag
Lead-Lag Optimize?			Yes		Yes	Yes		Yes
Vehicle Extension (s)	2.0		3.0		2.0	2.0		3.0
Minimum Gap (s)	2.0		3.0		2.0	2.0		3.0
Time Before Reduce (s)	0.0		0.0		0.0	0.0		0.0
Time To Reduce (s)	0.0		0.0		0.0	0.0		0.0
Recall Mode	None		None		C-Min	C-Min		None
Walk Time (s)			7.0		7.0	7.0		7.0
Flash Dont Walk (s)			14.0		18.0	18.0		14.0
Pedestrian Calls (#/hr)			25		6	6		25
Act Effct Green (s)	12.0	45.5	28.5		34.5	34.5		28.5
Actuated g/C Ratio	0.13	0.51	0.32		0.38	0.38		0.32
v/c Ratio	0.68	0.12	0.42		0.38	0.66		0.61
Control Delay	52.8	10.6	16.8		24.8	25.7		27.8
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	52.8	10.6	16.8		24.8	25.7		27.8
LOS	D	B	B		C	C		C
Approach Delay		29.0	16.8			25.5		
Approach LOS		C	B			C		
Queue Length 50th (ft)	87	30	79		102	202		169
Queue Length 95th (ft)	#184	37	118		194	#321		182
Internal Link Dist (ft)		277	84			488		
Turn Bay Length (ft)	140				250			
Base Capacity (vph)	243	1831	852		659	1900		1556
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	0.66	0.11	0.31		0.38	0.66		0.44

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 74 (82%), Referenced to phase 1:NBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 25.7	Intersection LOS: C
Intersection Capacity Utilization 78.0%	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: Mystic Avenue & Lombardi Street/Grand Union Boulevard & Ramp from Mystic Ave Southbound





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	328	1456	284	0	0
Future Volume (vph)	0	328	1456	284	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0		
Lane Util. Factor		0.88	0.91	1.00		
Frpb, ped/bikes		1.00	1.00	0.98		
Flpb, ped/bikes		1.00	1.00	1.00		
Frt		0.85	1.00	0.85		
Flt Protected		1.00	1.00	1.00		
Satd. Flow (prot)		2814	5085	1580		
Flt Permitted		1.00	1.00	1.00		
Satd. Flow (perm)		2814	5085	1580		
Peak-hour factor, PHF	0.94	0.94	0.98	0.98	0.92	0.92
Adj. Flow (vph)	0	349	1486	290	0	0
RTOR Reduction (vph)	0	74	0	0	0	0
Lane Group Flow (vph)	0	275	1486	290	0	0
Confl. Peds. (#/hr)				3		
Heavy Vehicles (%)	0%	1%	2%	0%	2%	2%
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Actuated Green, G (s)		13.0	67.0	80.0		
Effective Green, g (s)		13.0	67.0	80.0		
Actuated g/C Ratio		0.14	0.74	0.89		
Clearance Time (s)		5.0	5.0	5.0		
Vehicle Extension (s)		2.0	2.0	2.0		
Lane Grp Cap (vph)		406	3785	1580		
v/s Ratio Prot		c0.10	c0.29	0.03		
v/s Ratio Perm				0.16		
v/c Ratio		0.68	0.39	0.18		
Uniform Delay, d1		36.5	4.2	0.7		
Progression Factor		1.00	0.97	1.36		
Incremental Delay, d2		3.5	0.3	0.0		
Delay (s)		40.0	4.3	0.9		
Level of Service		D	A	A		
Approach Delay (s)	40.0		3.7			0.0
Approach LOS	D		A			A

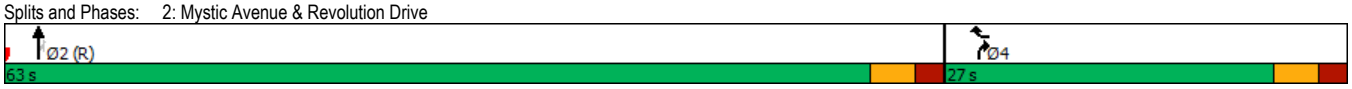
Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

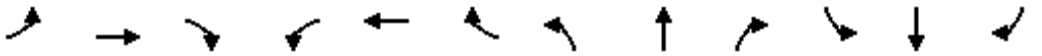
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	328	1456	284	0	0
Future Volume (vph)	0	328	1456	284	0	0
Satd. Flow (prot)	0	2814	5085	1615	0	0
Flt Permitted						
Satd. Flow (perm)	0	2814	5085	1573	0	0
Satd. Flow (RTOR)		86				
Lane Group Flow (vph)	0	349	1486	290	0	0
Turn Type		Prot	NA	custom		
Protected Phases		4	2	4		
Permitted Phases				2		
Detector Phase		4	2	4		
Switch Phase						
Minimum Initial (s)		6.0	10.0	6.0		
Minimum Split (s)		11.0	27.0	11.0		
Total Split (s)		27.0	63.0	27.0		
Total Split (%)		30.0%	70.0%	30.0%		
Maximum Green (s)		22.0	58.0	22.0		
Yellow Time (s)		3.0	3.0	3.0		
All-Red Time (s)		2.0	2.0	2.0		
Lost Time Adjust (s)		0.0	0.0	0.0		
Total Lost Time (s)		5.0	5.0	5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		2.0	2.0	2.0		
Minimum Gap (s)		2.0	2.0	2.0		
Time Before Reduce (s)		0.0	0.0	0.0		
Time To Reduce (s)		0.0	0.0	0.0		
Recall Mode		None	C-Min	None		
Walk Time (s)			4.0			
Flash Dont Walk (s)			18.0			
Pedestrian Calls (#/hr)			3			
Act Effct Green (s)		13.0	67.0	80.0		
Actuated g/C Ratio		0.14	0.74	0.89		
v/c Ratio		0.73	0.39	0.21		
Control Delay		36.2	4.6	0.7		
Queue Delay		0.0	0.0	0.0		
Total Delay		36.2	4.6	0.7		
LOS		D	A	A		
Approach Delay	36.2		4.0			
Approach LOS	D		A			
Queue Length 50th (ft)		81	31	0		
Queue Length 95th (ft)		125	158	0		
Internal Link Dist (ft)	550		905			225
Turn Bay Length (ft)						
Base Capacity (vph)		752	3784	1492		
Starvation Cap Reductn		0	0	0		
Spillback Cap Reductn		0	0	0		
Storage Cap Reductn		0	0	0		
Reduced v/c Ratio		0.46	0.39	0.19		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 8 (9%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 9.3	Intersection LOS: A
Intersection Capacity Utilization 47.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Mystic Avenue & Revolution Drive





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	73	41	19	89	67	36	285	94	82	152	224
Future Volume (vph)	205	73	41	19	89	67	36	285	94	82	152	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0		7.0	7.0	4.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1798		1805	1863	1583	1805	1805		1805	1900	1577
Flt Permitted	0.69	1.00		0.67	1.00	1.00	0.65	1.00		0.24	1.00	1.00
Satd. Flow (perm)	1320	1798		1282	1863	1583	1229	1805		462	1900	1577
Peak-hour factor, PHF	0.89	0.89	0.89	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	230	82	46	20	96	72	39	310	102	94	175	257
RTOR Reduction (vph)	0	15	0	0	0	0	0	11	0	0	0	174
Lane Group Flow (vph)	230	113	0	20	96	72	39	401	0	94	175	83
Confl. Bikes (#/hr)									3			3
Heavy Vehicles (%)	0%	0%	0%	0%	2%	2%	0%	1%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		Free	2			6		6
Actuated Green, G (s)	21.9	21.9		21.9	21.9	96.0	32.0	28.5		37.0	31.0	31.0
Effective Green, g (s)	21.9	21.9		21.9	21.9	96.0	32.0	28.5		37.0	31.0	31.0
Actuated g/C Ratio	0.23	0.23		0.23	0.23	1.00	0.33	0.30		0.39	0.32	0.32
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	301	410		292	424	1583	430	535		262	613	509
v/s Ratio Prot		0.06			0.05		0.00	c0.22		c0.02	0.09	
v/s Ratio Perm	c0.17			0.02		c0.05	0.03			0.12		0.05
v/c Ratio	0.76	0.27		0.07	0.23	0.05	0.09	0.75		0.36	0.29	0.16
Uniform Delay, d1	34.6	30.5		29.1	30.2	0.0	21.8	30.5		20.7	24.2	23.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.9	0.1		0.0	0.1	0.1	0.0	5.2		0.3	0.1	0.1
Delay (s)	44.6	30.6		29.1	30.3	0.1	21.8	35.8		21.0	24.3	23.3
Level of Service	D	C		C	C	A	C	D		C	C	C
Approach Delay (s)		39.6			18.6			34.5			23.2	
Approach LOS		D			B			C			C	

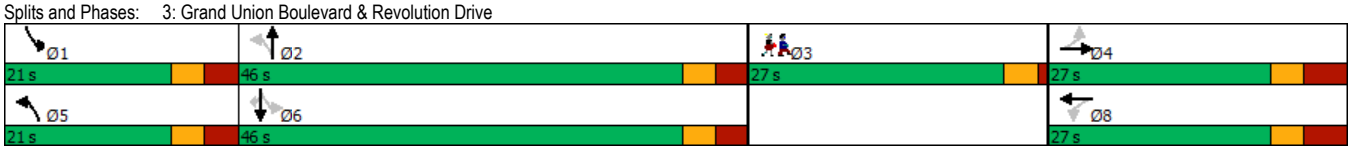
Intersection Summary			
HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø3
Lane Configurations													
Traffic Volume (vph)	205	73	41	19	89	67	36	285	94	82	152	224	
Future Volume (vph)	205	73	41	19	89	67	36	285	94	82	152	224	
Satd. Flow (prot)	1805	1797	0	1805	1863	1583	1805	1806	0	1805	1900	1615	
Flt Permitted	0.695			0.675			0.647			0.243			
Satd. Flow (perm)	1320	1797	0	1282	1863	1583	1229	1806	0	462	1900	1577	
Satd. Flow (RTOR)		20				180		15				257	
Lane Group Flow (vph)	230	128	0	20	96	72	39	412	0	94	175	257	
Turn Type	Perm	NA		Perm	NA	Free	pm+pt	NA		pm+pt	NA	Perm	
Protected Phases		4			8		5	2		1	6		3
Permitted Phases	4			8		Free	2			6		6	
Detector Phase	4	4		8	8		5	2		1	6	6	
Switch Phase													
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	10.0	1.0
Minimum Split (s)	13.0	13.0		13.0	13.0		12.0	16.0		12.0	16.0	16.0	27.0
Total Split (s)	27.0	27.0		27.0	27.0		21.0	46.0		21.0	46.0	46.0	27.0
Total Split (%)	22.3%	22.3%		22.3%	22.3%		17.4%	38.0%		17.4%	38.0%	38.0%	22%
Maximum Green (s)	20.0	20.0		20.0	20.0		15.0	40.0		15.0	40.0	40.0	23.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	None		None	None		None	Min		None	Min	Min	None
Walk Time (s)													5.0
Flash Dont Walk (s)													18.0
Pedestrian Calls (#/hr)													99
Act Effct Green (s)	21.9	21.9		21.9	21.9	93.2	31.9	27.3		35.7	31.0	31.0	
Actuated g/C Ratio	0.23	0.23		0.23	0.23	1.00	0.34	0.29		0.38	0.33	0.33	
v/c Ratio	0.74	0.29		0.07	0.22	0.05	0.08	0.76		0.32	0.28	0.37	
Control Delay	56.5	34.6		37.8	39.0	0.1	18.1	41.8		21.1	27.1	4.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay	56.5	34.6		37.8	39.0	0.1	18.1	41.8		21.1	27.1	4.9	
LOS	E	C		D	D	A	B	D		C	C	A	
Approach Delay		48.7			23.9			39.8			15.2		
Approach LOS		D			C			D			B		
Queue Length 50th (ft)	143	59		10	52	0	15	241		37	88	0	
Queue Length 95th (ft)	#332	130		36	114	0	34	364		65	140	47	
Internal Link Dist (ft)		550			253			1577			492		
Turn Bay Length (ft)	250			150			120			250		150	
Base Capacity (vph)	310	437		301	437	1583	594	856		423	900	883	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0	
Reduced v/c Ratio	0.74	0.29		0.07	0.22	0.05	0.07	0.48		0.22	0.19	0.29	

Intersection Summary		
Cycle Length: 121		
Actuated Cycle Length: 93.2		
Natural Cycle: 90		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.76		
Intersection Signal Delay: 31.4	Intersection LOS: C	
Intersection Capacity Utilization 59.6%	ICU Level of Service B	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 3: Grand Union Boulevard & Revolution Drive



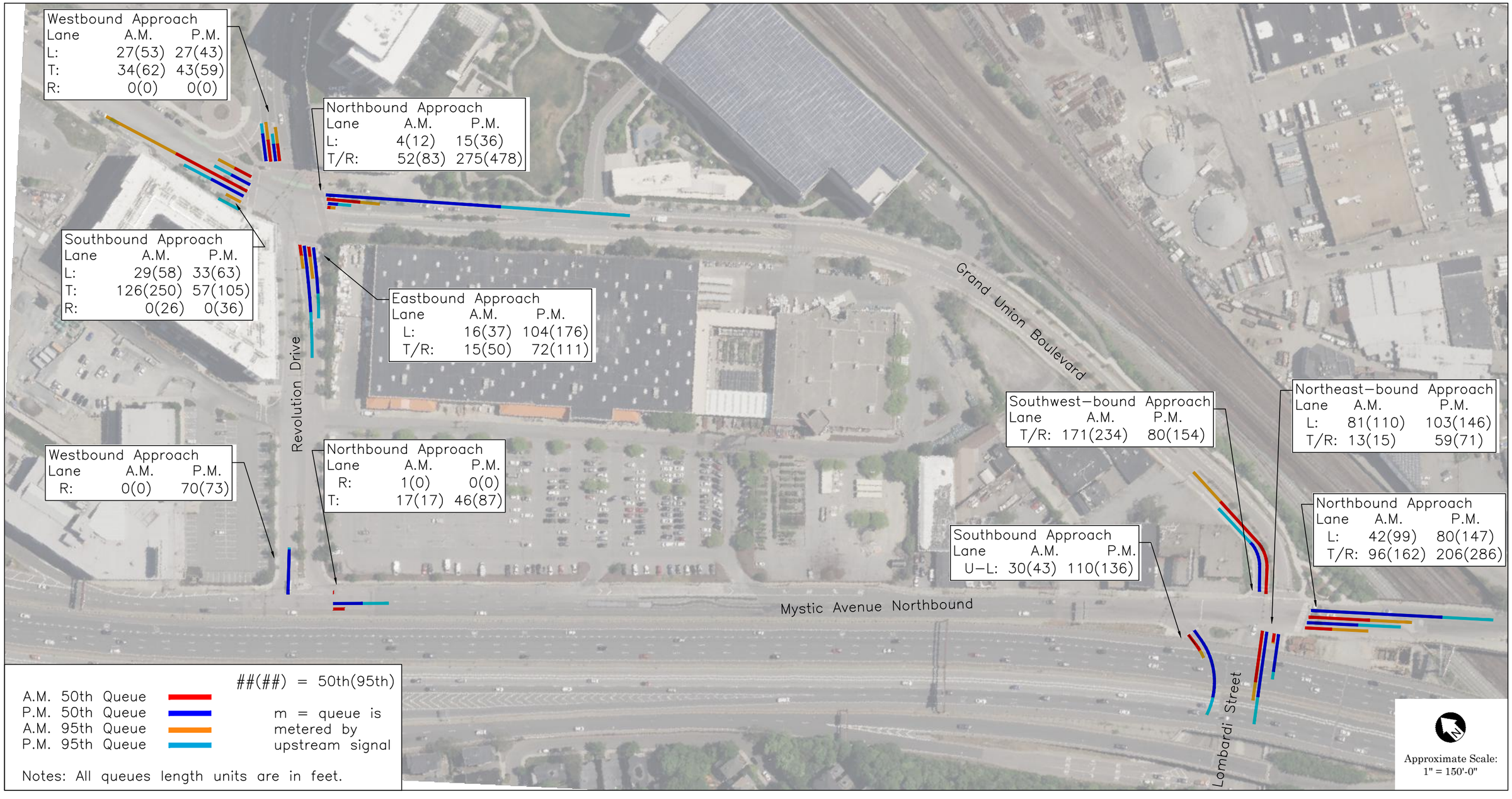
HOWARD STEIN HUDSON

Engineers + Planners

Appendix I

Existing and Future Queue Diagrams

Figure 1. ***Existing 2022 Queues***



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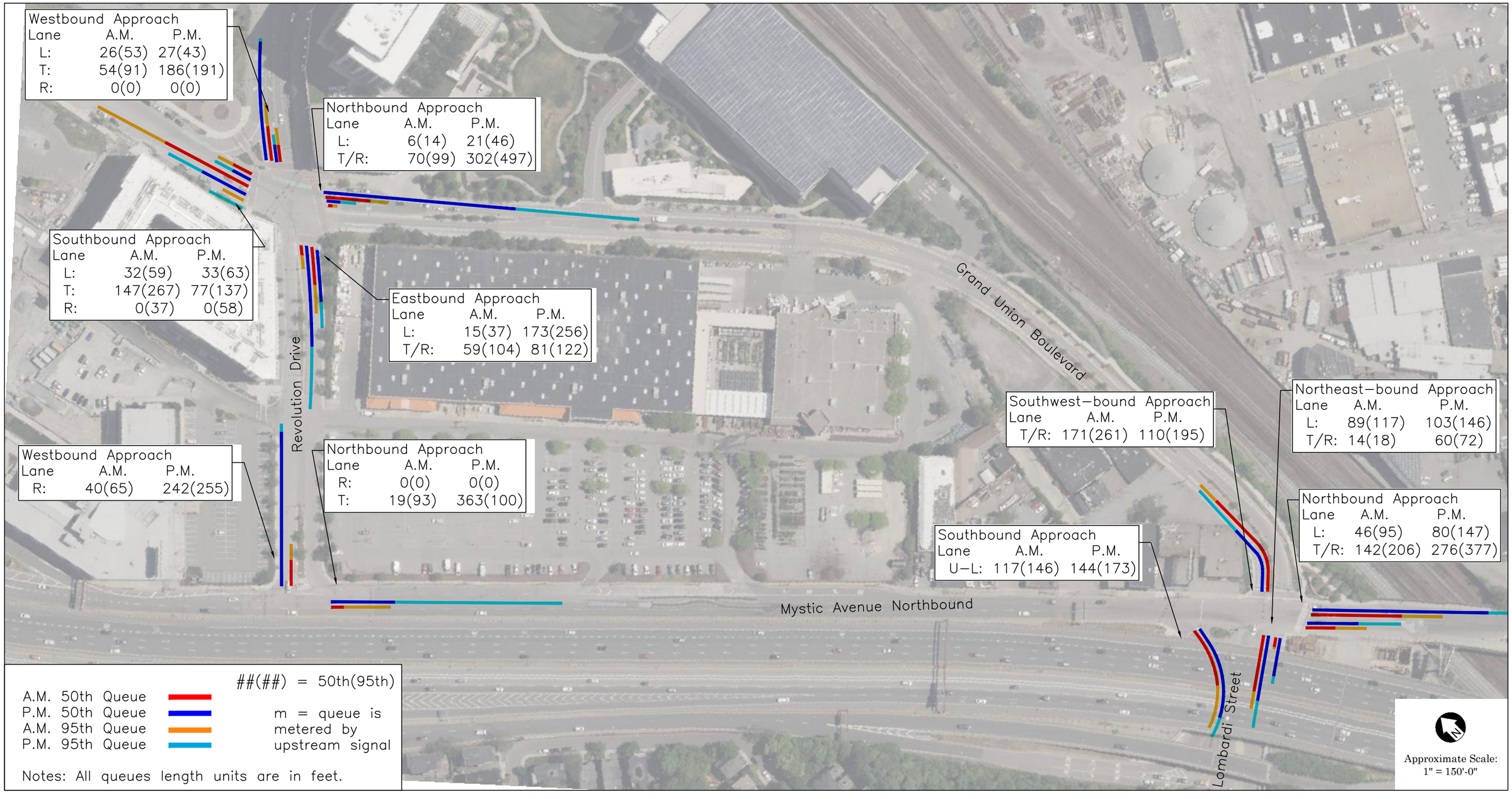
Printed by: Vannesa Methoxha

Figure 2. ***Future 2027 Queues***



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