

7.4 Appendix D. Transportation Study

Table of Contents

D.0 TRANSPORTATION	1
D.1 Introduction	1
D.1.1 Project Description	1
D.1.2 Study Methodology	1
D.1.3 Study Area	2
D.2 Existing Condition	4
D.2.1 Existing Roadway Conditions	4
D.2.2 Existing Intersection Conditions	5
D.2.3 Existing Parking and Curb Use	6
D.2.4 Existing Traffic Data	6
D.2.5 Existing Traffic Volumes	6
D.2.6 Existing Bicycle Volumes and Accommodations	9
D.2.7 Existing Pedestrian Volumes and Accommodations	9
D.2.8 Existing Public Transportation	9
D.2.9 Existing School Operations	13
D.3 No-Build (2023) Condition	17
D.3.1 Background Traffic Growth	17
D.3.2 Specific Development Traffic Growth	17
D.3.3 Proposed Infrastructure Improvements	19
D.3.4 No-Build (2023) Condition Traffic Volumes	19
D.4 Build (2023) Condition	21
D.4.1 Site Access and Vehicle Circulation	21
D.4.2 Parking	23
D.4.3 Loading and Service Accommodations	23
D.4.4 Bicycle Accommodations	23
D.4.5 Trip Generation Methodology	23
D.4.6 Mode Share	23
D.4.7 Project Vehicular Trip Generation	24
D.4.8 Vehicle Trip Distribution	24
D.4.9 Build (2023) Traffic Volumes	26
D.4.10 Project Non-Vehicular Trip Generation	26
D.4.11 Public Transportation Services and Capacity	29
D.5 Traffic Operations Analysis	30
D.6 Transportation Demand Management	35
D.7 Transportation Mitigation Measures	36
D.8 Evaluation of Short-Term Construction Impacts	37

List of Tables

Table D-1 Existing MBTA Needham Line Ridership 12
Table D-2 Existing MBTA Bus Ridership 13
Table D-3 Travel Mode Shares 24
Table D-4 Vehicle Trip Generation Summary 24
Table D-5 Non-Vehicle Trip Generation Summary 26
Table D-6 Estimated MBTA Ridership 29
Table D-7 Vehicle Level of Service Criteria 31
Table D-8 Capacity Analysis Summary, Weekday a.m. Peak Hour 32
Table D-9 Capacity Analysis Summary, Weekday p.m. Peak Hour 33

List of Figures

Figure D-1 Study Area Intersections 3
Figure D-2 On-Street Parking Regulations 7
Figure D-3 Existing Condition Traffic Volumes, Weekday a.m. and p.m. Peak Hours 8
Figure D-4 Existing Condition Bicycle and Pedestrian Volumes, Weekday a.m. and p.m. Peak Hours 10
Figure D-5 Existing Public Transportation Services 11
Figure D-6 Students and Staff Mode Share 15
Figure D-7 Existing Student Enrollment by Zip Code 16
Figure D-8 Specific Development Projects 18
Figure D-9 No-Build (2023) Condition Vehicular Traffic Volumes, Weekday a.m. and p.m. Peak Hours .. 20
Figure D-10 Site Access Plan 22
Figure D-11 Vehicle Trip Distribution 25
Figure D-12 Project-Generated Vehicle Trip Assignment, Weekday a.m. and p.m. Peak Hours 27
Figure D-13 Build (2023) Condition Vehicular Traffic Volumes, Weekday a.m. and p.m. Peak Hours 28

D.0 TRANSPORTATION

D.1 Introduction

Howard Stein Hudson (HSH) has conducted an evaluation of the transportation impacts of a proposed charter high school to be located at 361 Belgrade Avenue (the “Project” and/or “Site”) in Boston’s Roslindale neighborhood. This transportation study adheres to the Boston Transportation Department (BTD) Transportation Access Plan Guidelines and the Boston Planning and Development Agency’s (BPDA) Article 80 development review process. The study includes an evaluation of existing conditions, future conditions with and without the Project, projected parking demand, transit services, and pedestrian and bicycle activity.

D.1.1 Project Description

The Project site is located along the north side of Belgrade Avenue between the West Roxbury Parkway and Anawan Avenue in Roslindale. The Needham Line of the commuter rail system and the Bellevue Station are located adjacent to the north side of the Project site. The site currently contains a used automobile dealership and an automobile service business.

The Project will include the construction of a new charter school expected to have a maximum enrollment of approximately 562 students and 67 staff at full capacity. The new school facility will relocate existing Roxbury Prep High School from other existing facilities. The Project will construct a new circular, short-term, pick-up/drop-off area at the end of Anawan Avenue that will serve both the school and Bellevue Station.

Staff parking for 46 vehicles will be provided in an underground parking garage. The Project will also construct a courtyard to the west of the school building that will be able to accommodate an additional 20-30 parking spaces during school events, with the assistance of a valet operator.

D.1.2 Study Methodology

The Existing Condition analysis includes an inventory of the existing transportation conditions such as traffic characteristics, parking, curb usage, transit, pedestrian circulation, bicycle facilities, crash history, loading, and site conditions. Existing counts for vehicles, bicycles, and pedestrians were collected at the study area intersections. A traffic data collection effort forms the basis for the transportation analysis conducted as part of this evaluation.

The future transportation conditions analysis evaluates potential transportation impacts associated with the Project. Long-term impacts are evaluated for the year 2023, based on a five-year horizon from the year of the filing of this traffic study.

The No-Build (2023) Condition includes both general background traffic growth, traffic growth associated with specific developments (not including this Project) and transportation improvements that are planned in the vicinity of the Project site.

The Build (2023) Condition includes a net increase in traffic volume due to the addition of project generated trip estimates to the traffic volumes developed as part of the No-Build (2023) Condition. Expected roadway, parking, transit, pedestrian, and bicycle accommodations, as well as loading capabilities and deficiencies are identified.

The final part of the transportation study identifies measures to mitigate Project-related impacts and to address any traffic, pedestrian, bicycle, transit, safety, or construction related issues that are necessary to accommodate the Project.

An evaluation of short-term traffic impacts associated with construction activities is also provided.

D.1.3 Study Area

The transportation study area is generally bounded by Belgrade Avenue to the north, Beech Street to the southwest, and Anawan Avenue to the southeast. The study area is shown in **Figure D-1** and includes the following four intersections:

- West Roxbury Parkway/Belgrade Avenue (signalized);
- West Roxbury Parkway/Beech Street/Anawan Avenue (signalized);
- Belgrade Avenue/Beech Street (unsignalized); and
- Belgrade Avenue/Anawan Avenue (unsignalized).

D.2 Existing Condition

This section includes descriptions of existing study area roadway geometries, intersection traffic control, peak-hour vehicular and pedestrian volumes, average daily traffic volumes, transit availability, parking, curb usage, and loading conditions.

D.2.1 Existing Roadway Conditions

The study area includes the following roadways, which are categorized according to the Massachusetts Department of Transportation (MassDOT) Office of Transportation Planning functional classifications:

West Roxbury Parkway is a two-way, two- to four-lane roadway located west of the Project site. West Roxbury Parkway is classified as an urban principal arterial roadway under DCR jurisdiction and runs in a predominately north-south direction between Newton Street in Brookline to the north and Washington Street in Roslindale to the south. In the vicinity of the site, sidewalks are provided along both side of the roadway and on-street parking is restricted along both sides of the roadway.

Belgrade Avenue is a two-way, two-lane roadway located adjacent to the south side of the Project site. Belgrade Avenue is classified as an urban principal arterial roadway under BTM jurisdiction and runs in a predominately east-west direction between Centre Street in West Roxbury to the west and Roslindale Village to the east. In the vicinity of the site, sidewalks, bicycle lanes, and on-street parking are provided along both sides of the roadway.

Beech Street is located to the south of the Project site. Between Belgrade Avenue and West Roxbury Parkway Beech Street is a two-way, two-lane roadway and classified as an urban principal arterial. Between West Roxbury Parkway and Westbourne Street, Beech Street becomes a one-way northwest-bound, one lane roadway classified as an urban collector. Between Westbourne Street and Washington Street, Beech Street becomes a one-way southeast-bound, one lane roadway classified as an urban collector. Beech Street is under BTM jurisdiction and runs in a predominately southeast-northwest direction between Belgrade Avenue in West Roxbury to the northwest and Washington Street in Roslindale to the southeast. In the vicinity of the site, sidewalks and on-street parking are provided along both sides of the roadway.

Anawan Avenue is a two-way, two-lane roadway located to the south of the Project site. Anawan Avenue is classified as an urban collector between Belgrade Avenue and West Roxbury Parkway, and is classified as a local roadway north of Belgrade Avenue and south of West Roxbury Parkway. Anawan Avenue is under BTM jurisdiction and runs in a predominately southwest-northeast direction between the MBTA Commuter Rail tracks to the northeast and Park Street to the southwest. In the vicinity of the site, sidewalks and on-street parking are provided along both sides of the roadway.

D.2.2 Existing Intersection Conditions

The existing study area intersections are described below. Intersection characteristics such as traffic control, lane usage, pedestrian facilities, pavement markings, and adjacent land use are described.

West Roxbury Parkway/Belgrade Avenue is a four-legged, signalized intersection located southwest of the Project site. The Belgrade Avenue eastbound and westbound approaches consist of a shared left-turn/through/right-turn travel lane. The bus stop also functions as a default right-turn lane. The West Roxbury Parkway northbound and southbound approaches consist of two unmarked lanes, a shared left-turn/through lane, and a shared through/right-turn lane. Crosswalks, wheelchair ramps, and pedestrian signal equipment are provided across all approaches to the intersection. MBTA bus stops are located along both sides of Belgrade Avenue, west of West Roxbury Parkway.

West Roxbury Parkway/Beech Street/Anawan Avenue is a six-legged, signalized intersection located south of the Project site. The West Roxbury Parkway northbound and southbound approaches consist of a shared left-turn/through lane, and a shared through/right-turn lane. The Beech Street and Anawan Avenue approaches consist of single lanes. The Beech Street southeast-bound approach also consists of a parking lane. An MBTA bus stop is located along the Anawan Avenue north-eastbound approach. Crosswalks, wheelchair ramps, and pedestrian signal equipment are provided across all approaches to the intersection.

Belgrade Avenue/Beech Street is a three-legged, unsignalized intersection located to the west of the Project site. The Belgrade Avenue eastbound approach operates under free control and consists of a shared through/right-turn lane, a bike lane, and a parking lane. The Belgrade Avenue westbound approach operates under free control and consists of one shared left-turn/through lane, a bike lane, and a parking lane. The Beech Street northbound approach operates under stop control and consists of a shared left-turn/right-turn lane, and a parking lane. Wheelchair ramps are not provided at the intersection.

Belgrade Avenue/Anawan Avenue is a four-legged, unsignalized intersection, located adjacent to the southeast of the Project site. The Belgrade Avenue eastbound and westbound approaches operate under free control and consist of a travel lane and a bike lane. The Anawan Avenue northbound and southbound approaches operate under stop control and consist of a travel lane. Wheelchair ramps are provided across the south side and the north sides of the intersection, with no painted crosswalks. Parking is allowed along both sides of all approaches.

D.2.3 Existing Parking and Curb Use

An inventory of the on-street parking in the vicinity of the Project was collected. On-street parking is generally unrestricted and time restricted residential parking. Additional curb side space is dedicated towards MBTA bus stops, handicapped parking, and driveways. The on-street parking regulations within the study area are shown in **Figure D-2**.

D.2.4 Existing Traffic Data

Turning Movement Counts (TMCs) were conducted during the weekday a.m. and p.m. peak periods (6:30 – 9:00 a.m. and 2:30 – 6:00 p.m., respectively), consistent with typical school arrival and dismissal times at the study area intersections on Wednesday, October 26, 2016. The TMCs consist of vehicle classification including car, heavy vehicle, pedestrian, and bicycle movements. Based on the TMC data, the vehicular traffic peak hours for the study area intersection are 7:00 a.m. – 8:00 a.m. and 4:00 p.m. – 5:00 p.m. The detailed traffic counts are provided in the **Appendix**.

D.2.5 Existing Traffic Volumes

Existing traffic volumes were collected to develop the Existing Condition vehicular traffic volumes. The Existing Condition weekday a.m. and p.m. peak hour traffic volumes are shown in **Figure D-3**.

Seasonal Adjustment

In order to account for seasonal variation in traffic volumes throughout the year, the most recent (2011) MassDOT Weekday Seasonal Factors were used to determine the need for seasonal adjustments to the October 2016 TMCs. The seasonal adjustment factor for roadways similar to the study area (Group 6) during the month of October are 0.92. This indicates that average month traffic volumes are approximately eight percent less than the traffic volumes that were collected.

The traffic counts were not adjusted downward to reflect average month conditions in order to provide a conservatively high analysis consistent with the peak season traffic volumes. The MassDOT 2011 Weekday Seasonal Factors table is provided in the **Appendix** to this study.

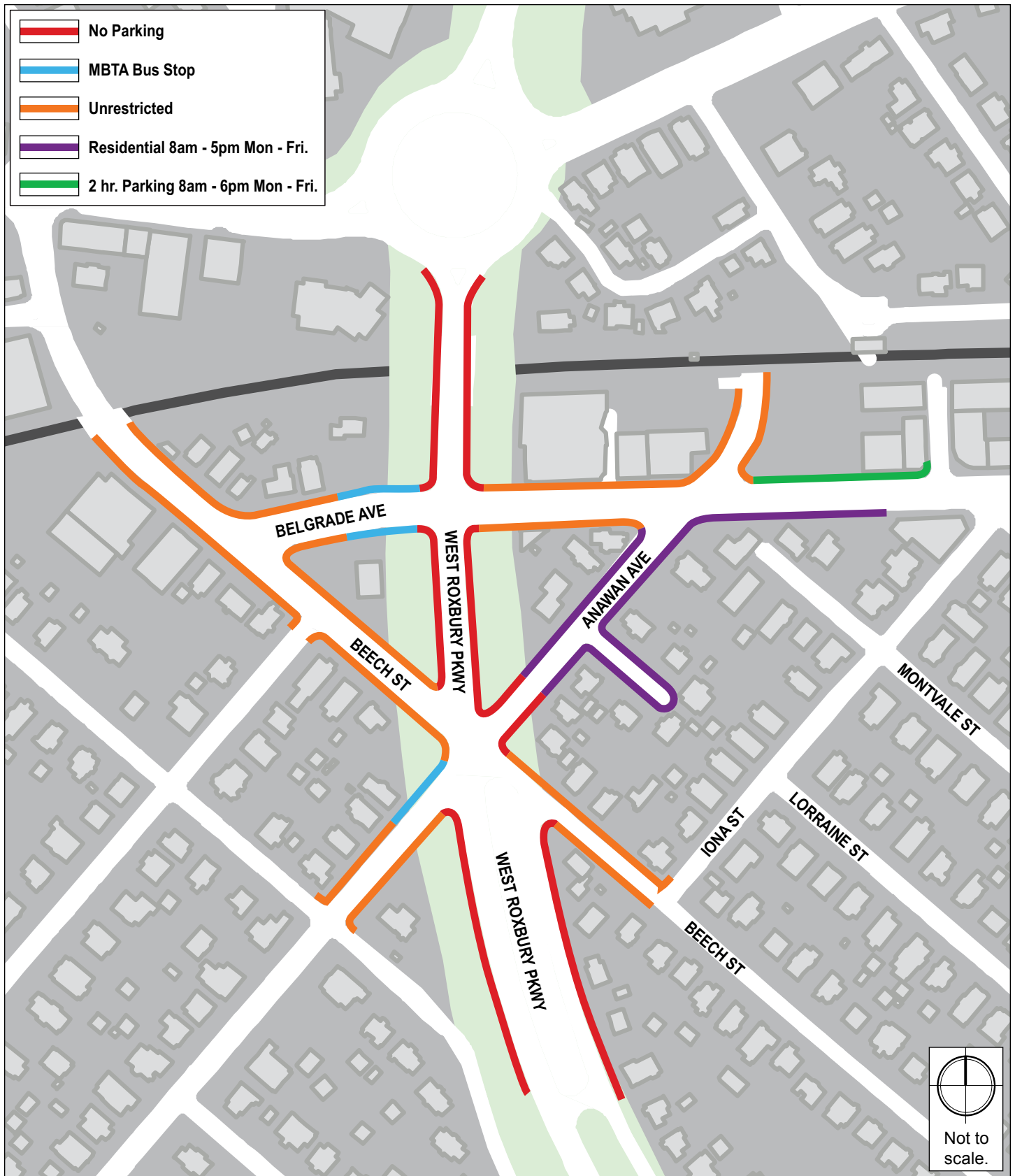


Figure D-2.
On-Street Parking Regulations

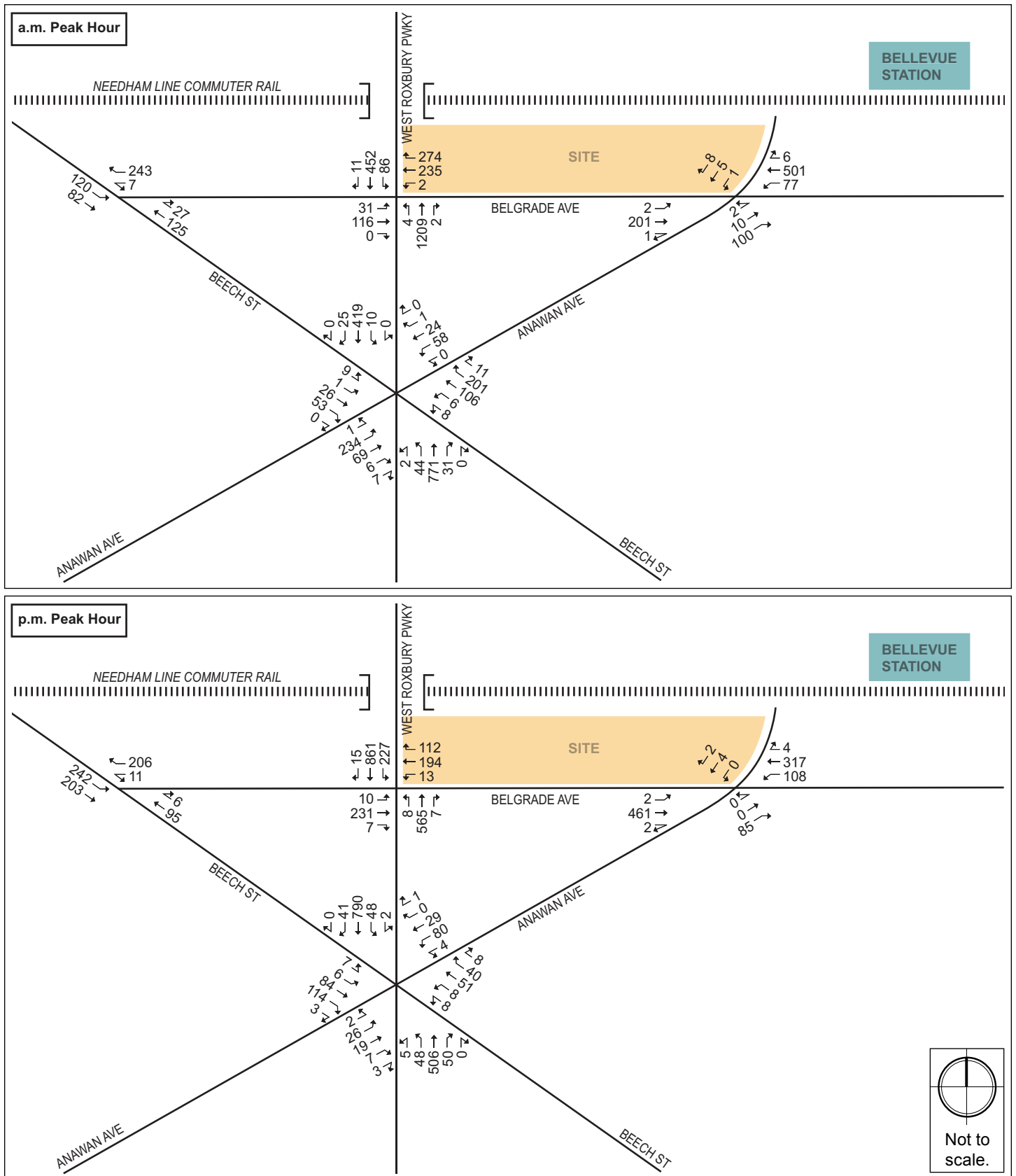


Figure D-3.
Existing Condition Traffic Volumes, Weekday a.m. and p.m. Peak Hours

D.2.6 Existing Bicycle Volumes and Accommodations

In recent years, bicycle use has increased dramatically throughout the City of Boston. The Project site is conveniently located in close proximity to several bicycle facilities Belgrade Avenue and Centre Street have painted bike lanes. The VFW parkway, just over one-half mile to the north, is designated as a part of the greenway network and also has painted bike lanes.

To determine the amount of bicycle activity within the study area, bicycle counts were collected concurrent with the TMCs. The weekday a.m. and p.m. peak hour bicycles volumes are presented in **Figure D-4**.

D.2.7 Existing Pedestrian Volumes and Accommodations

In general, sidewalks are provided on both sides of all roadways and are in good condition. Crosswalks and wheelchair ramps are provided at most study area intersections. Pedestrian signal equipment is provided at both of the signalized study area intersections.

To determine the amount of pedestrian activity within the study area, pedestrian counts were conducted concurrent with the TMCs at the study area intersection. The weekday a.m. and p.m. peak hour pedestrian volumes are also presented in **Figure D-4**.

D.2.8 Existing Public Transportation

The Project is located adjacent to the MBTA Commuter Rail Needham Line and along several MBTA bus routes. The nearby public transit services are shown in **Figure D-5**.

MBTA Commuter Rail

The Needham Line of the MBTA commuter rail system is located along the northern edge of the Project site, with the Bellevue Station located adjacent to the Project site. The Needham Line runs between South Station in downtown Boston to the east and Needham Heights in Needham to the west. There are 16 daily inbound and outbound trips.

The MBTA ridership data was obtained for the Needham Line and is shown in **Table D-1**. There are three outbound trains in the morning and three inbound trains in the afternoon.

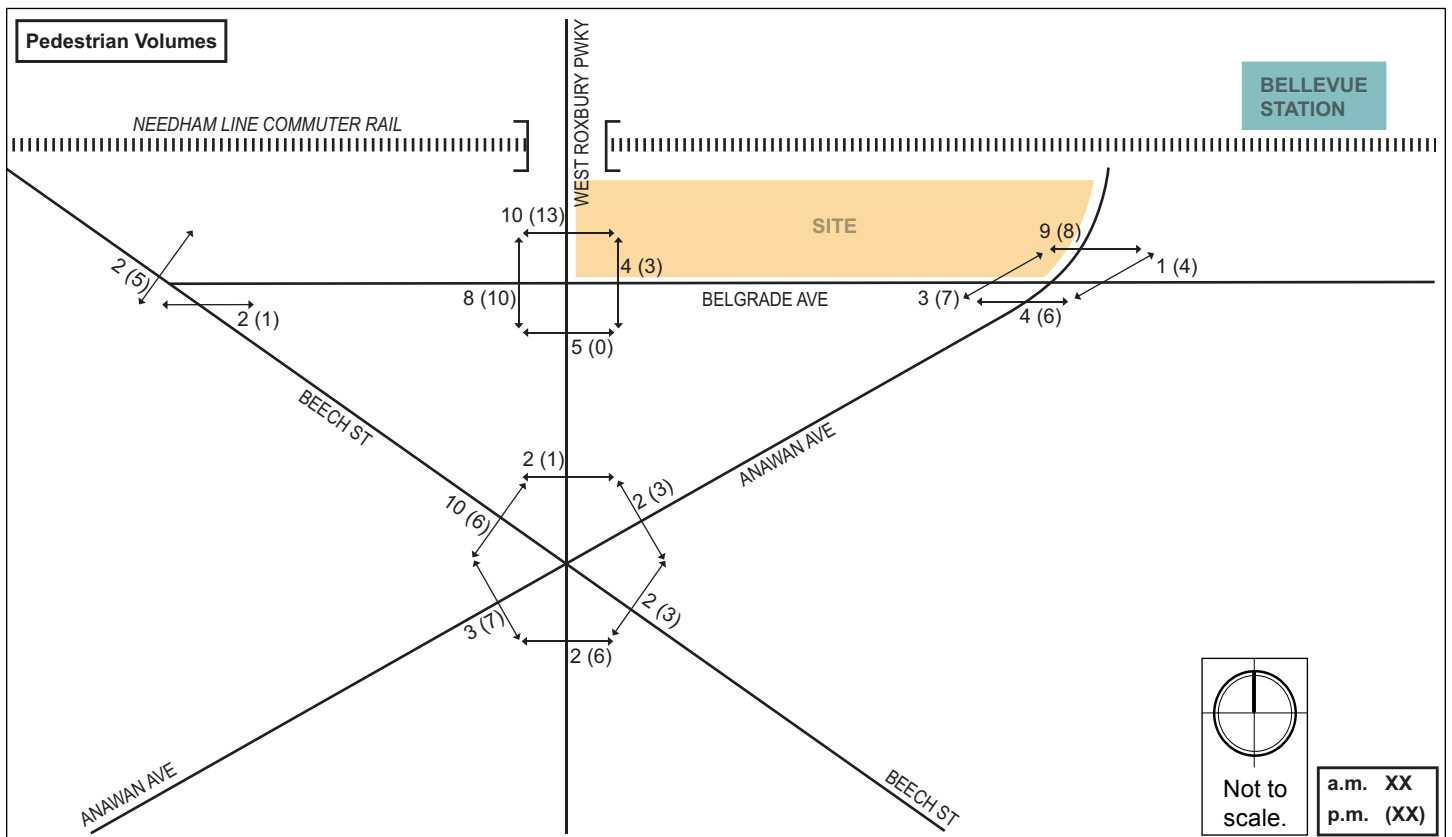
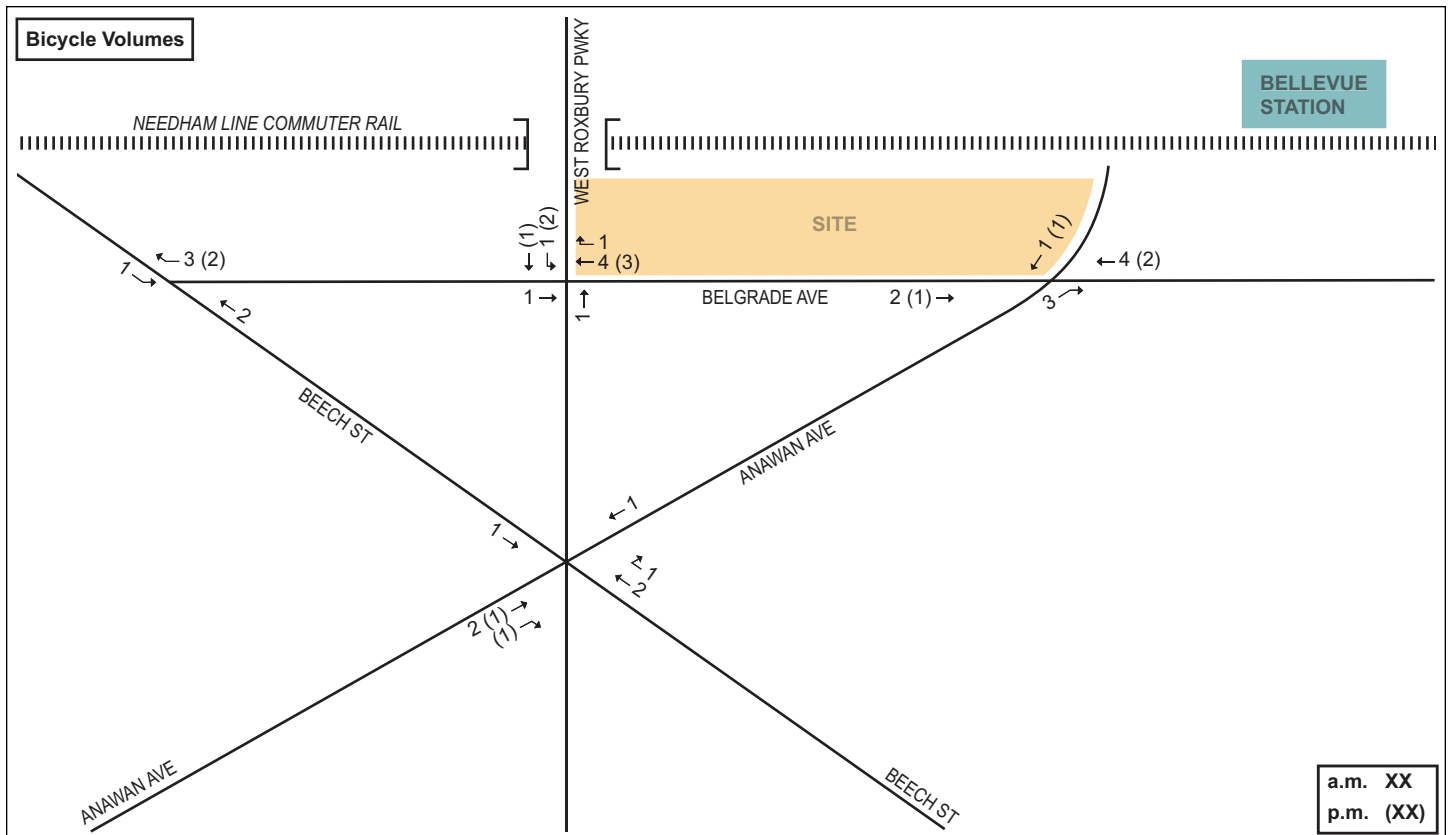


Figure D-4.
Existing Condition Bicycle and Pedestrian Volumes, Weekday a.m. and p.m. Peak Hours

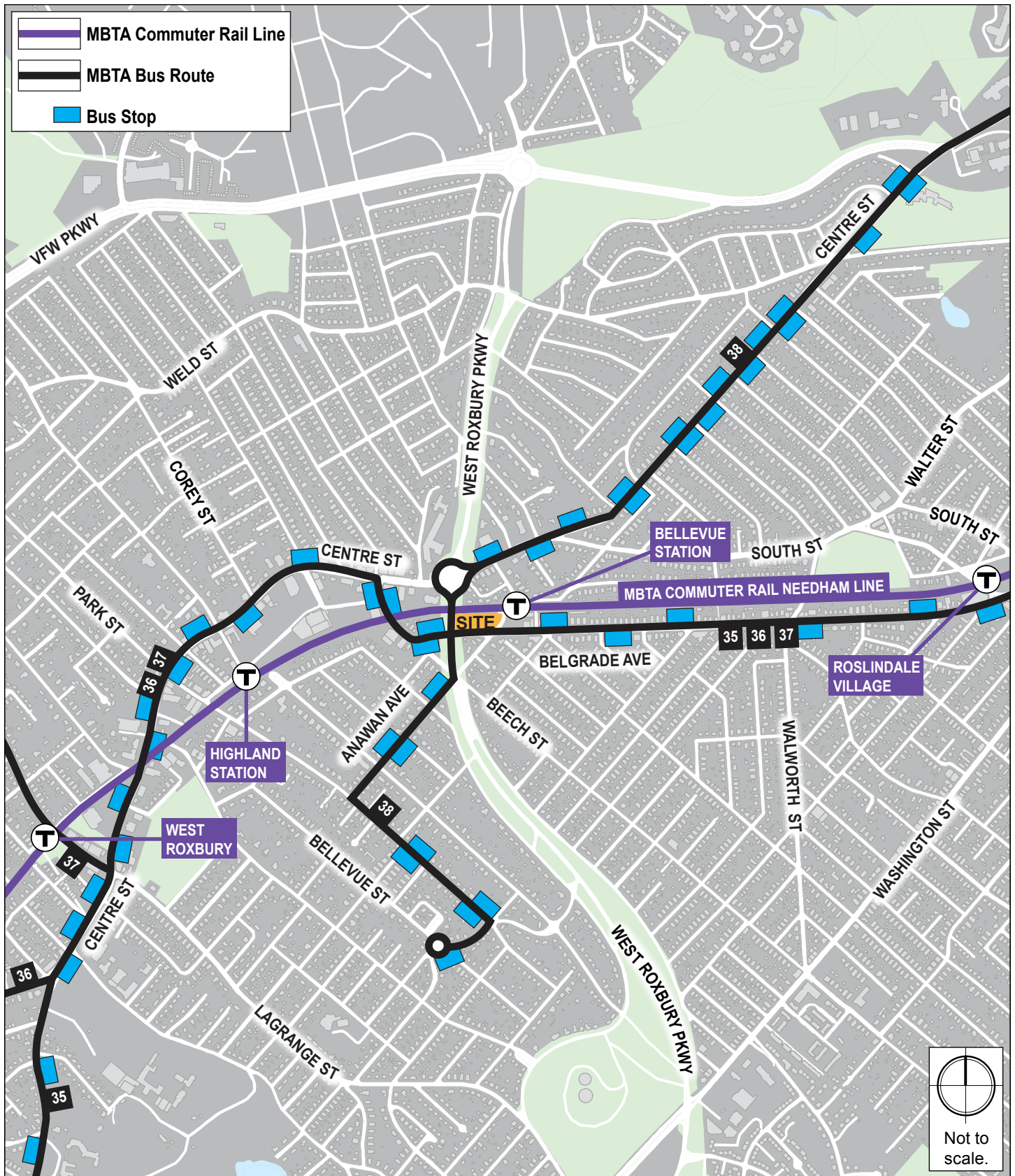


Figure D-5.
Existing Public Transportation Services

Table D-1 Existing MBTA Needham Line Ridership

Train Number¹	Time at South Station¹	Time at Forest Hills	Time at Bellevue¹	Approximate Passenger Load²	Approximate Passenger Capacity³
<i>Morning Outbound (6:30 – 9:00 a.m.)</i>					
601	7:05 a.m.	7:17 a.m.	7:23 a.m.	43	600-780
603	7:52 a.m.	N/A	8:06 a.m.*	17	
605	9:05 a.m.	9:18	9:24 a.m.	28	
<i>Afternoon Inbound (2:30 – 6:00 p.m.)</i>					
616	3:29 p.m.	3:16 p.m.	3:10 p.m.	29	600-780
618	4:30 p.m.	N/A	4:13 p.m.*	19	
620	5:47 p.m.	5:28 p.m.	5:22 p.m.	31	

1. Based on schedule from MBTA.com, effective October 29, 2018.
 2. Needham Line Commuter Rail Passenger Counts conducted Winter/Spring 2012.
 3. Capacity varied depending on MBTA vehicles.
- * Indicates that the train does not currently stop. The time shown is the time the train passes the station.

MBTA Bus Routes

There are four MBTA bus routes that provide service to the Project site. The 35, 36, and 37 MBTA bus routes provide service between the Project and Forest Hills Station via Belgrade Avenue and Washington Street, including the recently installed a.m. bus-only lane between Roslindale and Forest Hills Station. Additionally, the 38 MBTA Bus route also provides service between the Project site and Forest Hills Station via Centre Street and West Roxbury Parkway. **Table D-2** shows the available capacity for each of the four bus routes and the travel time between Forest Hills Station and the Project site.

Table D-2 Existing MBTA Bus Ridership

MBTA Bus Route	Peak Service Headways (minutes)	Current Bus Ridership ²		Available Capacity Per Bus ³	
		Average	Max	Average	Min
Morning Outbound (6:30 – 9:00 a.m.)					
35	23-25	10	16	45	39
36	11-12	25	38	30	17
37	20-23	7	13	48	42
38	23	8	10	33	45
Afternoon Inbound (2:30 – 6:00 p.m.)					
35	11-12	12	21	43	34
36	12-13	18	39	37	16
37	10-15	10	15	45	40
38	16	8	11	47	44

1. Based on schedule from MBTA.com, effective September 2, 2018.
2. Based on Automated Passenger Count data received from MBTA, updated Fall 2017.
3. Based on planning capacity of 55 passengers per bus (140% of seats available). MBTA Service Delivery Policy, Approved January 23, 2017.

D.2.9 Existing School Operations

In addition to the typical traffic data collection effort, HSH performed site observations at the then existing Roxbury Prep Charter High School locations at 86 Wachusett Street in Jamaica Plain and 5 Maywood Street in Roxbury on November 2, 2016, February 8, 2017, and February 14, 2017. The observations were conducted during the morning (7:00 – 8:00 a.m.) and afternoon (3:30 – 4:30 p.m.) peak periods, consistent with the school’s arrival and dismissal times.

The Wachusett Street school was located within a 12-minute walk from the Forest Hills MBTA station and several bus routes that run along Hyde Park Avenue. The Maywood Street school is located adjacent to several bus routes (the 10, 14, 19, 23, 28) that run along Warren Street and is within a 5-minute walk of the MBTA #45 bus route that runs along Blue Hill Avenue.

Based on the observations, most of the students travel to and from both schools via walking, or biking. This includes students that arrived at the Wachusett Street school as pedestrians from the nearby bus stop along Hyde Park Avenue or from Forest Hills Station. There was also one school bus that arrived at the school during the morning to drop off a few students. However, some students were observed arriving or departing in a private vehicle.

The two schools had a total of 18 students being dropped-off and 19 staff members arriving by vehicle during the morning arrival period. Activity during the afternoon pick-up period was even less intense than the morning drop-off. Two students were picked-up by vehicle and five staff

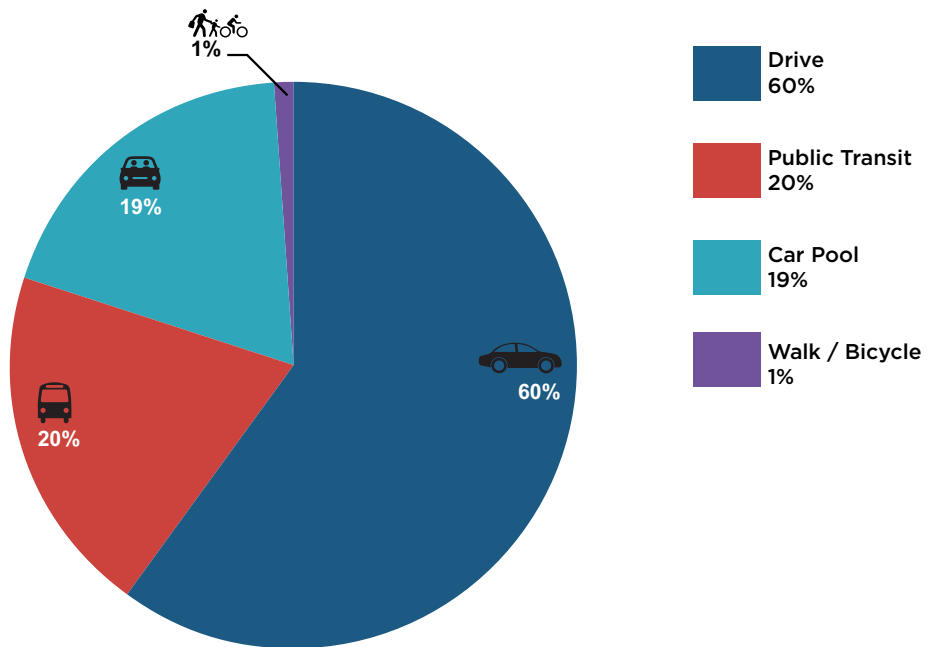
members left during the observation period. This is most likely due to a staggered release and after school programs for the students and staff.

The observations indicate that most students currently use alternate modes of transportation such as public transit, walking, or biking, to travel to school and few students rely on a private vehicle, such as parent pick-up/drop-off activity.

In addition to the observations, the Project proponent also provided specific information related to travel mode share for students and staff and residence of enrolled students by zip code. This data was used to estimate future projections at the proposed site. **Figure D-6** shows the estimated mode share of current students at the schools. Most of the students (93 percent) either take public transportation or walk/bike to school, with only 7 percent of the students being dropped off or picked up. Approximately 60 percent of the staff members drive alone with an additional 19 percent of staff driving in a carpool. The remaining 21 percent of the staff use public transportation, walk, or bike to school.

Figure D-7 shows the zip code and neighborhoods of current students at the schools. Most of the students (75 percent) live in Hyde Park, Mattapan, Dorchester (including Uphams Corner and Neponset), and Roxbury (including Franklin Park and Dudley). The remainder of the students are dispersed throughout the City of Boston.

Staff Mode Share



Student Mode Share

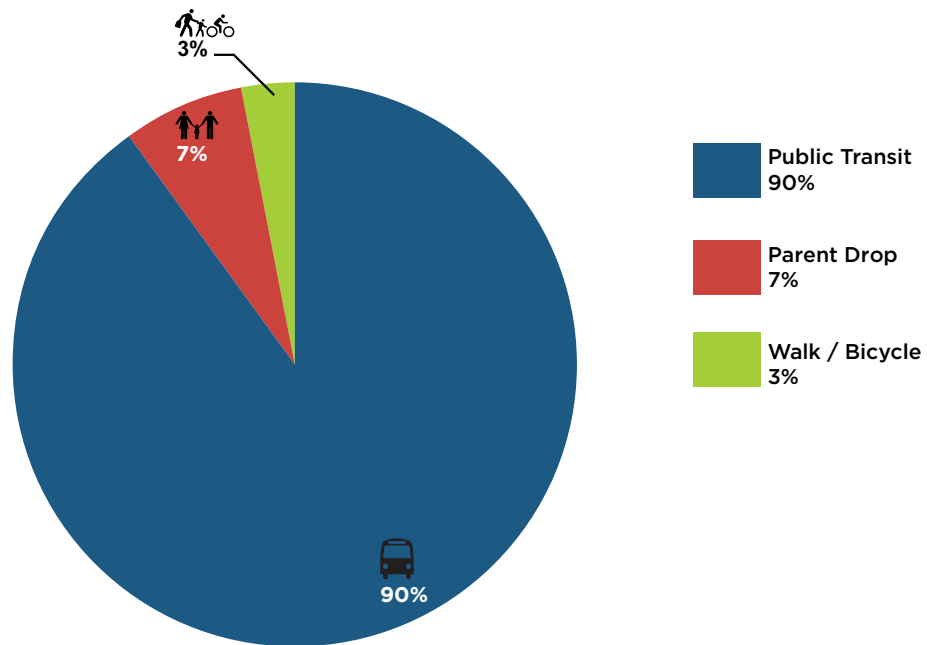


Figure D-6.
Students and Staff Mode Share

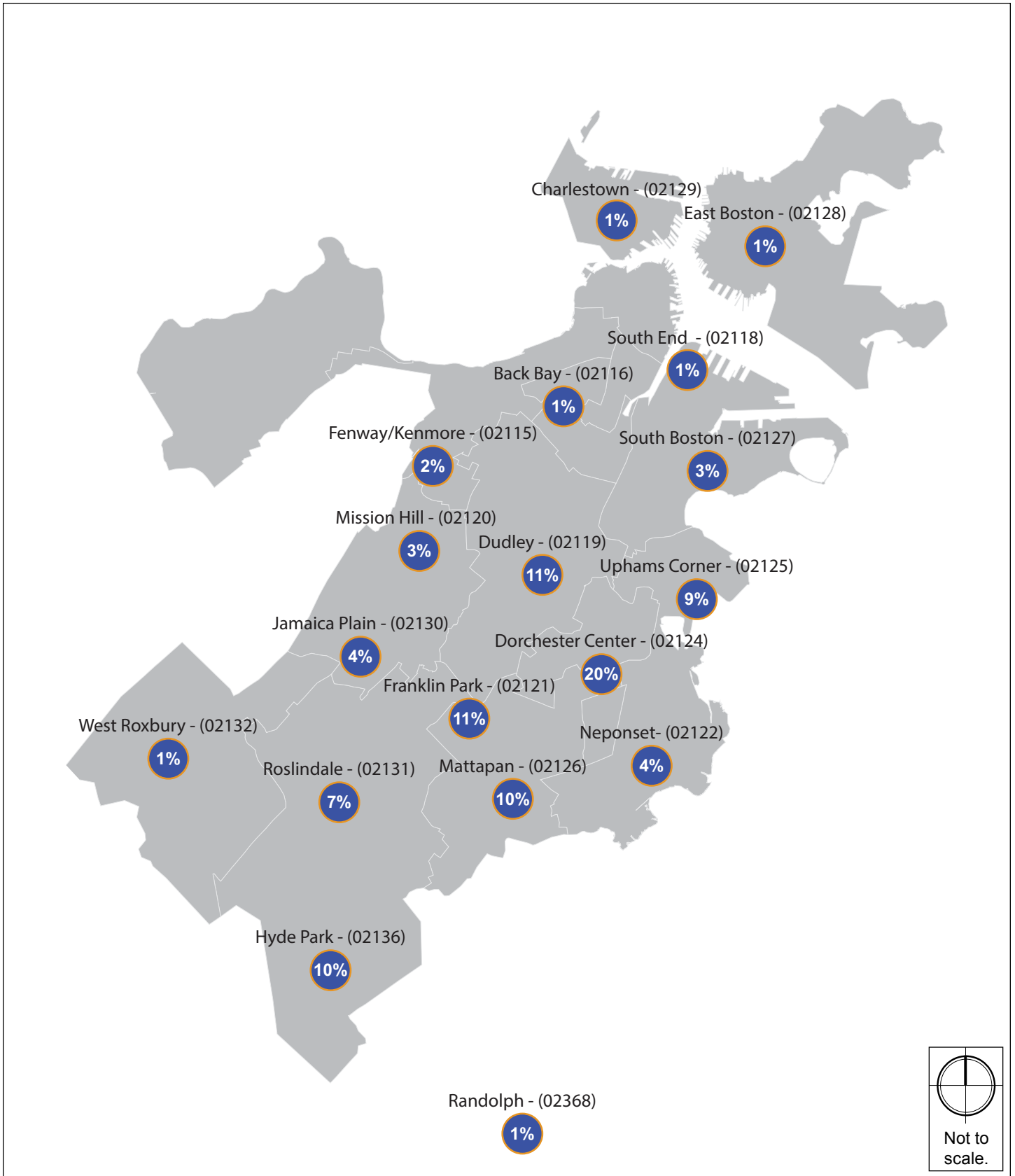


Figure D-7.
Existing Student Enrollment by Zip Code

D.3 No-Build (2023) Condition

The No-Build (2023) Condition reflects a future scenario that incorporates anticipated traffic volume changes associated with background traffic growth independent of any specific project, traffic associated with other planned specific developments, and planned infrastructure improvements that will affect travel patterns throughout the study area. These infrastructure improvements include roadway, public transportation, pedestrian and bicycle improvements. The No-Build (2023) Condition does not include the impact of the Project.

D.3.1 Background Traffic Growth

The methodology to account for generic future background traffic growth, independent of large development projects, may be affected by changes in demographics, smaller scale development projects, or projects unforeseen at this time. Based on a review of recent and historic traffic data collected recently and to account for any additional unforeseen traffic growth, a one-half percent per year annual traffic growth rate was used.

D.3.2 Specific Development Traffic Growth

Traffic volumes associated with the larger or closer known development projects can affect traffic patterns throughout the study area within the future analysis time horizon. Five such projects were specifically accounted for in the future traffic. **Figure D-8** shows the nearby development projects.

1789 Centre Street – This project will include the demolition of the existing West Roxbury Motors site and the construction of a new building consisting of approximately 16 residential units, one office unit, and 29 parking spaces. This project is under construction.

West Roxbury YMCA – This project includes the demolition of 16,000 sf of the existing pool and gym and the construction of a new gym and aquatic center totaling 24,000 sf, bringing the entire YMCA to 36,000 sf. The project is currently under construction

100 Weld Street – This project includes the construction of 17 residential condominiums and 29 parking spaces. This project is currently under construction.

400 Belgrade Avenue – This project will include the demolition of the existing one-story building and the construction of a new four-story building consisting of approximately 20 residential units and 20 parking spaces. This project has been approved by the BPDA.

317 Belgrade Avenue – This project includes the construction of a four-story residential mixed-use building including of 21 residential units, ground floor retail space, and 24 below grade parking spaces. This project has been approved by the BPDA board.

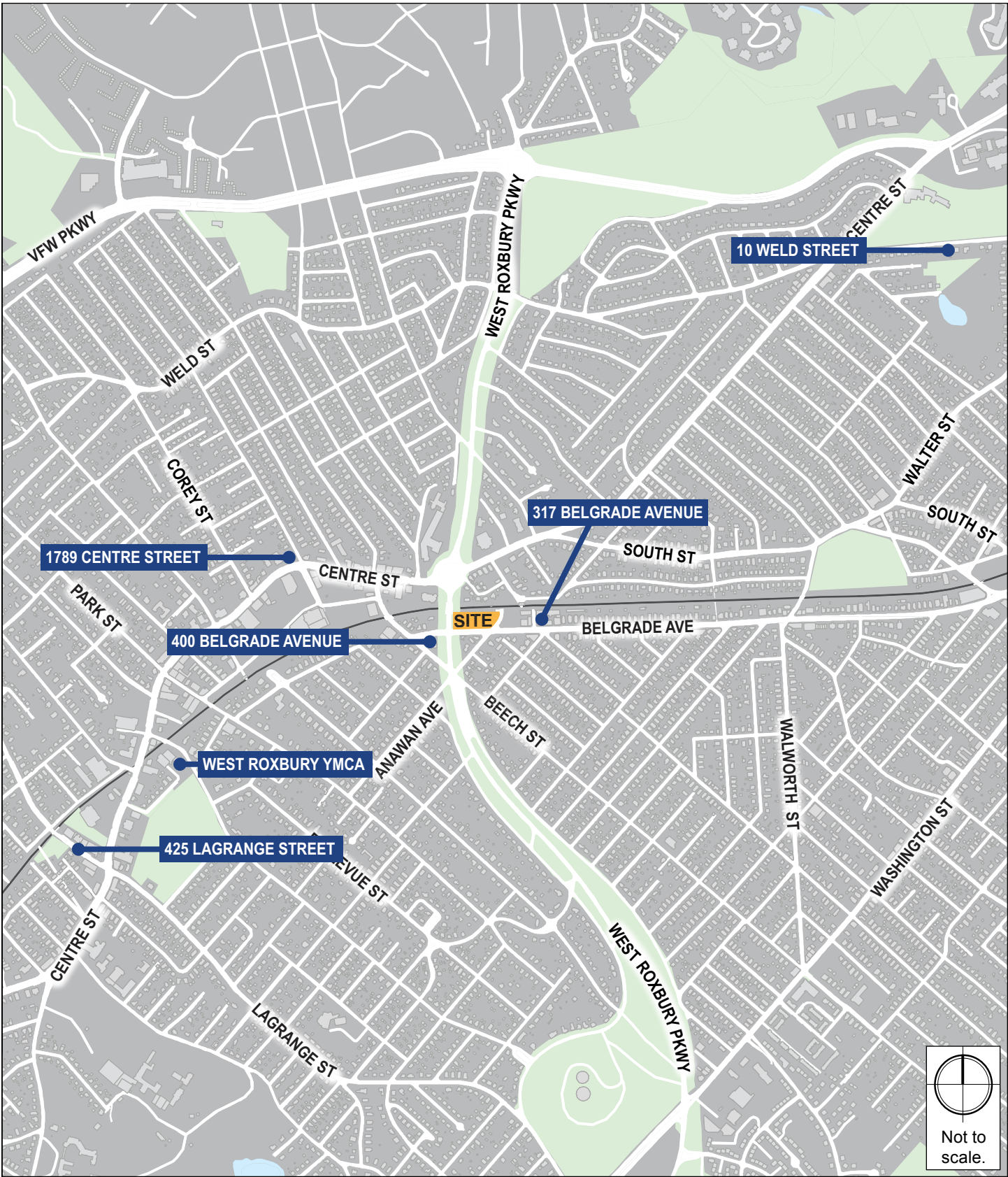


Figure D-8.
Specific Development Projects

425 Lagrange Street – This project consists of the construction of a new residential building consisting of 48 units and parking for 81 vehicles. This project has been approved by the BPDA.

D.3.3 Proposed Infrastructure Improvements

A review of planned improvements to roadway, transit, bicycle, and pedestrian facilities was conducted to determine if there are any nearby improvement projects in the vicinity of the study area. Based on this review, no planned infrastructure improvements that will have an effect on traffic patterns are expected in the area.

D.3.4 No-Build (2023) Condition Traffic Volumes

The one-half percent per year annual growth rate was applied to the Existing Condition traffic volumes, then the traffic volumes associated with the background development project listed above was added to develop the No-Build (2023) Condition traffic volumes. The No-Build (2023) weekday a.m. Peak Hour and weekday p.m. Peak Hour traffic volumes are shown on **Figure D-9**.

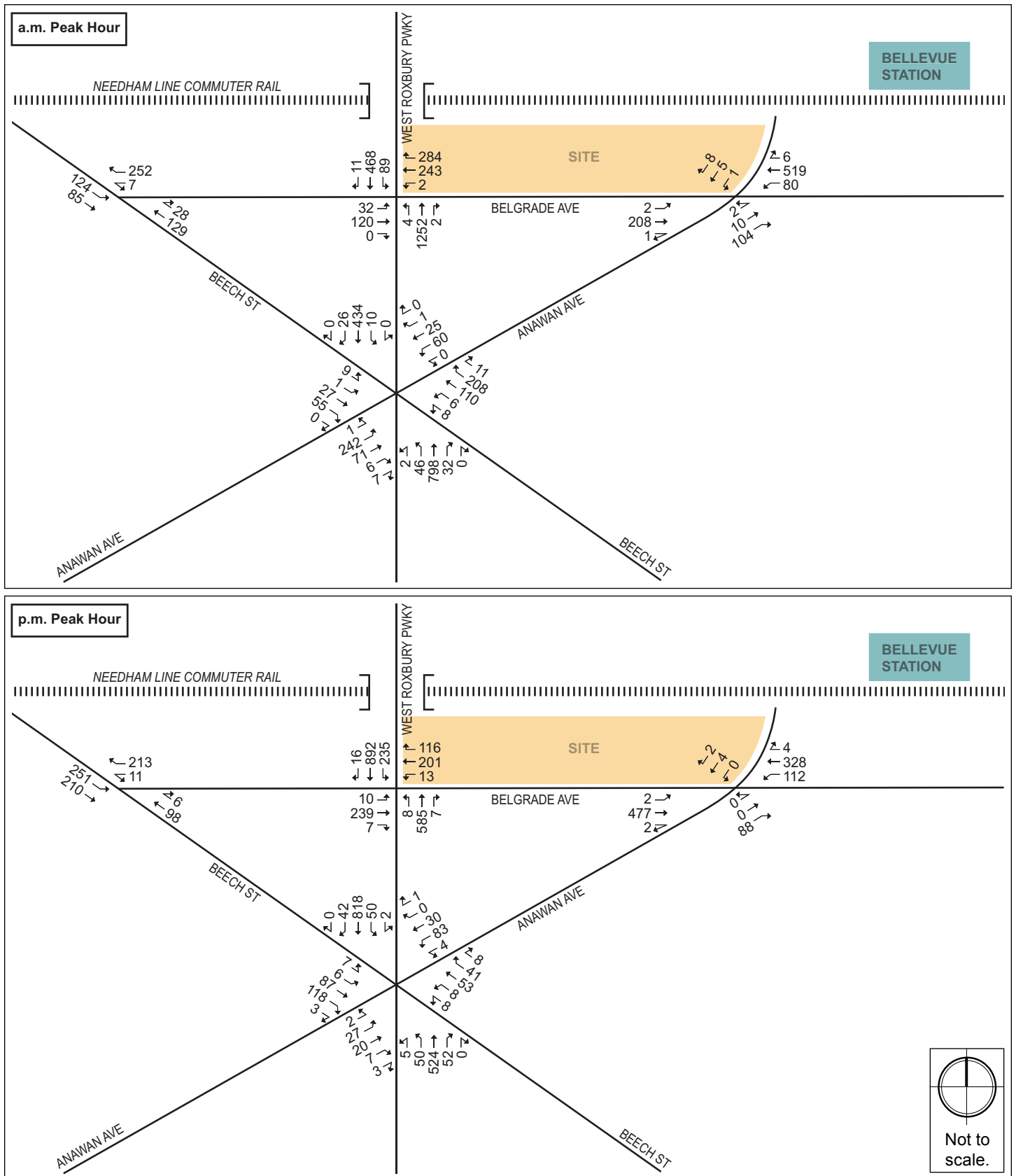


Figure D-9.
No-Build (2023) Condition Traffic Volumes, Weekday a.m. and p.m. Peak Hours

D.4 Build (2023) Condition

As previously summarized, the Project site is located at 361 Belgrade Avenue in Boston's Roslindale neighborhood. The Project will include the construction of a new charter school expected to have a maximum enrollment of approximately 562 students and 67 staff at full capacity. The Project will construct a new circular, short-term, pick-up/drop-off along Anawan Avenue that will serve both the school and Bellevue Station. The proposed circular end to Anawan Ave will accommodate the vehicular movements, while the enlarged pedestrian plaza will accommodate all visitors waiting to enter the school.

Staff parking for 46 vehicles will be provided in an underground parking garage. The Project will also construct a courtyard to the west of the school that will be able to accommodate an additional 20 parking spaces or more during school events, with the assistance of a valet operator.

The school day will begin and end to best match up with the schedule for the Needham Line. Although most students are expected to travel to the school via the bus from Forest Hills, the Needham Line will offer an additional public transportation option that could serve many students, especially from neighborhoods that have easy access to South Station or Back Bay Station. Depending on the future Needham Line schedule, the school day will begin approximately 15 minutes after an outbound train stops at Bellevue Station and the school day will end approximately 15 minutes before an inbound train stops at Bellevue. The site plan is shown in **Figure D-10**.

D.4.1 Site Access and Vehicle Circulation

The Project site is located on the north side of Belgrade Avenue. There are two main pedestrian entrances; one on the southern edge of the building along Belgrade Avenue that will be used by pedestrians and visitors utilizing the MBTA buses. The second one is at the northeast corner of the building along Anawan Road and will be used by vehicular pick-up and drop-off as well as visitors utilizing the commuter rail.

The parking garage is accessed from Anawan Avenue. An existing curb cut along Belgrade Avenue will access the shared courtyard that can be used for parking when needed during events. Three existing curb cuts along Belgrade Avenue will be closed.

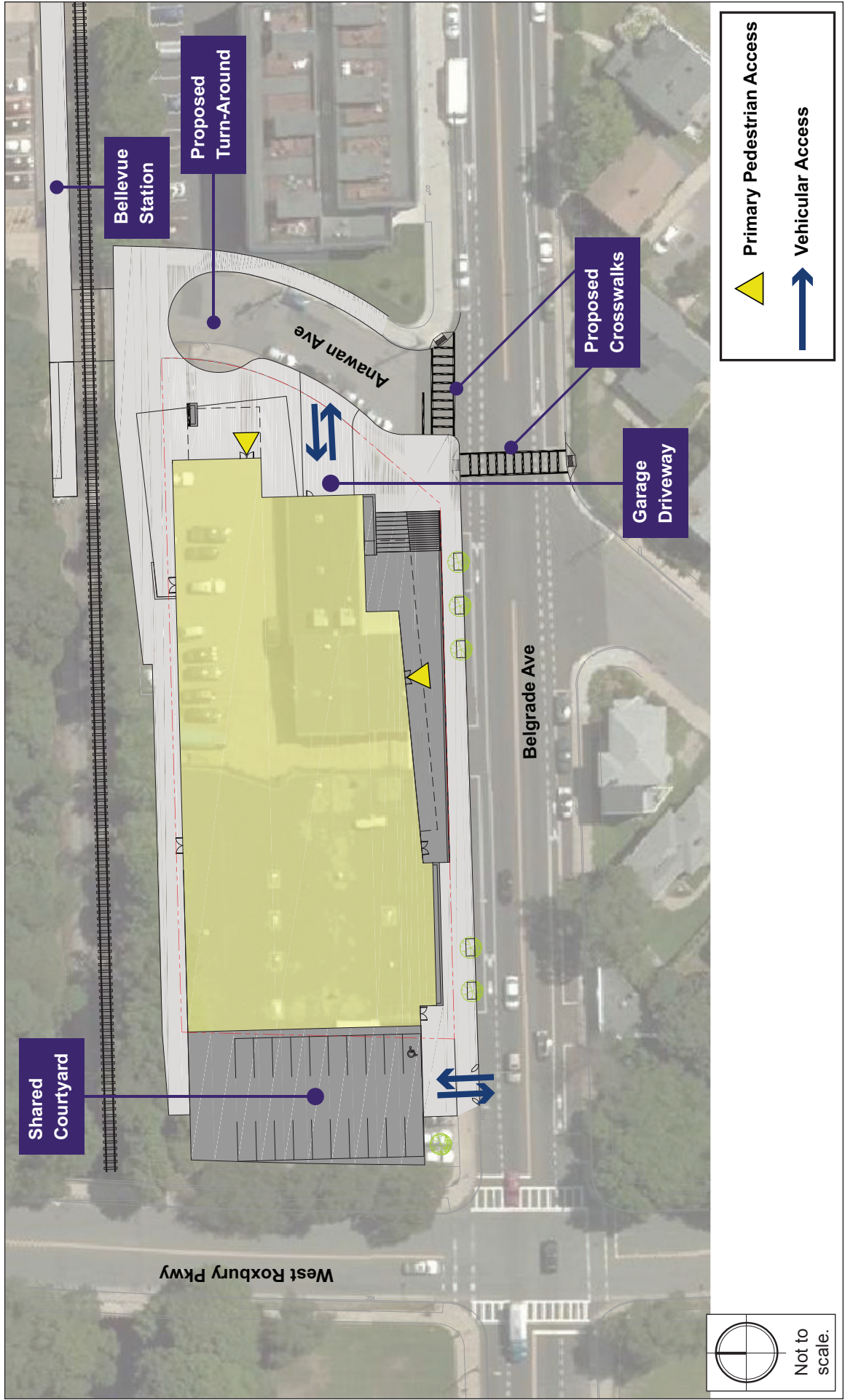


Figure D-10.
Site Access Plan

D.4.2 Parking

The project will construct 46 parking spaces in an underground garage. The parking garage will accommodate 30 vehicles in tandem parking spaces, and the remaining 16 spaces in regular perpendicular parking spaces. The garage will include two handicapped parking spaces.

A courtyard will be located to the west of the site for overflow parking during school events. While parking spaces will not be marked, it is estimated that approximately 20 vehicles will be able to park in the courtyard. During events with additional parking demand, such as school plays or graduation, the Project will hire a valet operator or park an additional 10 vehicles in the courtyard as well as the underground parking garage to reduce the impact on the neighborhood. The courtyard will be used as a playground for outside activities when overflow vehicle parking is not needed.

D.4.3 Loading and Service Accommodations

Loading and service operations will occur on-site, however a designated loading area has not been determined. The school will primarily generate delivery trips related to small packages, and food for the cafeteria. Deliveries are expected to be made multiple times a week during off-peak hours in small box-trucks approximately 36-feet long.

D.4.4 Bicycle Accommodations

BTD has established guidelines requiring projects subject to Transportation Access Plan Agreements to provide secure bicycle parking new buildings. The Project will provide on-site bicycle parking via outdoor bicycle racks for students and secure covered storage for staff. Specific placement of bicycle parking facilities has not been identified.

D.4.5 Trip Generation Methodology

Determining the future trip generation of the Project is a complex, multi-step process that produces an estimate of vehicle trips, transit trips, walk trips, and bicycle trips associated with a proposed development and a specific land use program. A project's location and proximity to regional roadways and different travel modes determines how people will travel to and from a project site.

The trip generation is based on information provided by the Proponent According to the proponent there will be approximately 562 students and 67 staff at the new location.

D.4.6 Mode Share

The mode share is the percentage of students and staff expected to travel to the site by driving, public transit, or walking/biking. The mode share for this Project have been developed through data provided by the Proponent. Mode shares were developed for students and staff separately, since

there will not be any student parking permitted. The student mode vehicle mode share includes parent pick-up/drop-off activity, while the staff vehicle mode share includes drive along as well as carpool estimates. The student and staff mode share projections are shown in **Table D-3**.

Table D-3 Travel Mode Shares

Time Period	Vehicle Share			Walk/Bike Share	Transit Share
	Drive Alone	Carpool	Parent Pick-up/Drop-Off		
Students	N/A	N/A	7%	3%	90%
Staff	60%	19%	N/A	1%	20%

D.4.7 Project Vehicular Trip Generation

The vehicle mode share percentages shown in **Table D-3** were applied to the number of person trips to develop vehicle trip generation estimate, as shown in **Table D-4**. The vehicle trip generation consist of staff drive alone vehicle trips, staff carpool vehicle trips, and parent pick-up/drop-off vehicle trips. It is assumed that all staff driving to school enter the site for school arrival and exit the site during school dismissal. Parent pick-up/drop-off activity includes one entering trip and one exiting trip for each student being dropped off or picked up.

Table D-4 Vehicle Trip Generation Summary

Time Period		Staff Drive Alone	Staff Carpool	Parent Pick-up/Drop-Off	Total Auto Trips
a.m. Peak Hour	In	41	12	39	92
	Out	<u>0</u>	<u>0</u>	<u>39</u>	<u>39</u>
	Total	41	12	78	131
p.m. Peak Hour	In	0	0	39	39
	Out	<u>41</u>	<u>12</u>	<u>39</u>	<u>92</u>
	Total	41	12	78	131

As shown in **Table D-4**, during both the a.m. and p.m. peak hour, the Project is estimated to generate 131 total vehicle trips including 41 staff drive alone trips (entering during arrival and exiting during dismissal), 12 staff carpool trips (entering during arrival and exiting during dismissal), and 78 parent pick-up/drop-off vehicle trips (39 entering and exiting during both the arrival and dismissal).

D.4.8 Vehicle Trip Distribution

The trip distribution patterns identify the various travel paths for vehicles arriving and leaving the Project site. Trip distribution for the Project were based on student and staff zip code data provided by the Proponent. The trip distribution patterns for the Project are shown in **Figure D-11**.

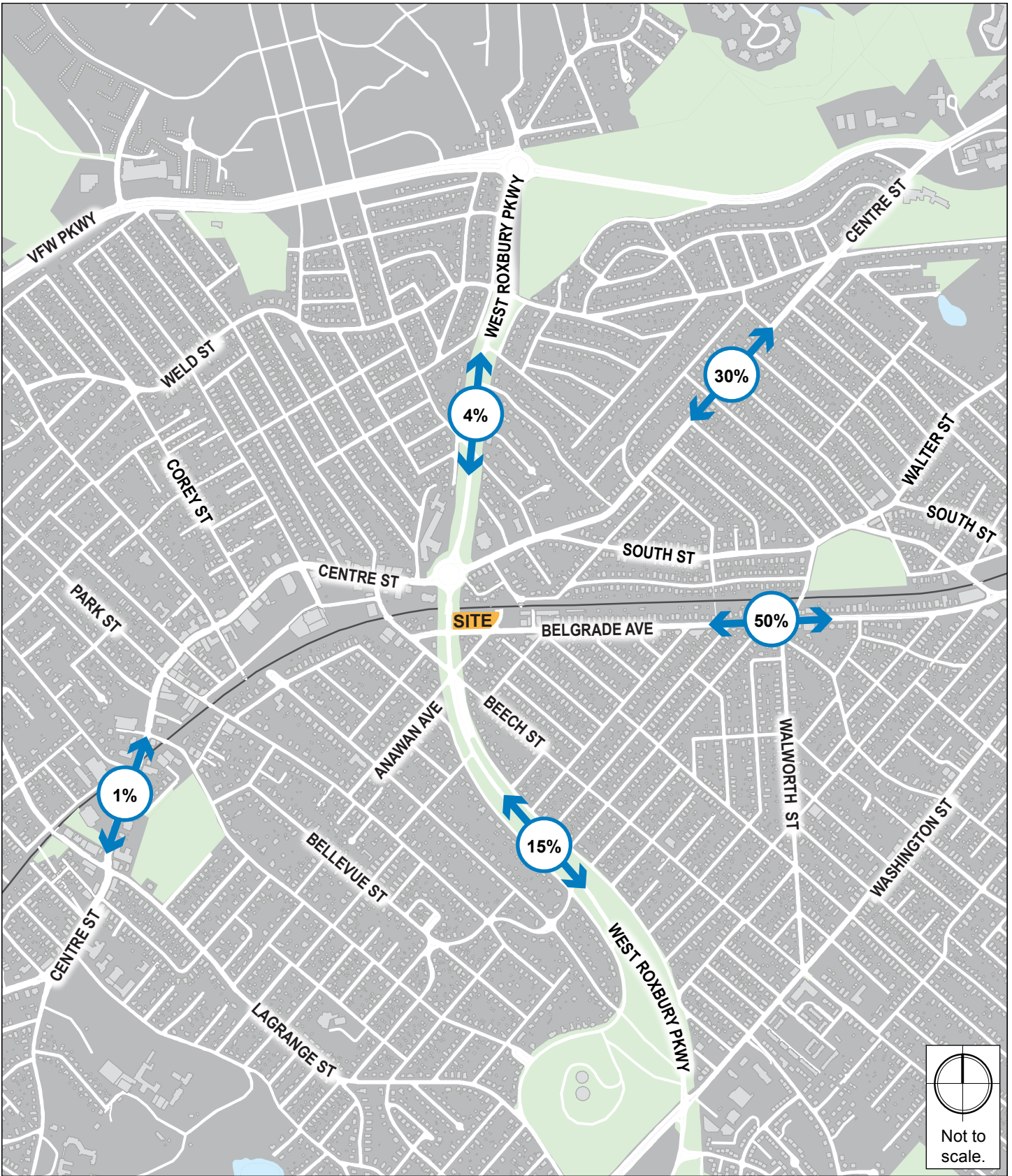


Figure D-11.
Vehicle Trip Distribution

D.4.9 Build (2023) Traffic Volumes

The vehicle trips were distributed through the study area. The Project-generated trips for the weekday a.m. and p.m. peak hours are shown in **Figure D-12**. The trip assignments were added to the No-Build (2023) Condition vehicular traffic volumes to develop the Build (2023) Condition vehicular traffic volumes. The Build (2023) weekday a.m. and p.m. peak hour traffic volumes are shown on **Figure D-13**.

D.4.10 Project Non-Vehicular Trip Generation

The non-vehicle mode share percentages shown in **Table D-3** were applied to the number of person trips to develop student and staff walk/bike and public transportation trip generation estimates, shown in **Table D-5**.

Table D-5 Non-Vehicle Trip Generation Summary

Time Period		Walk/Bike			Public Transportation		
		Students	Staff	Total	Students	Staff	Total
a.m. Peak Hour	In	17	1	18	506	13	519
	Out	0	0	0	0	0	0
	Total	17	1	18	506	13	519
p.m. Peak Hour	In	0	0	0	0	0	0
	Out	17	1	18	506	13	519
	Total	17	1	18	506	13	519

As shown in **Table D-5**, the Project is estimated to generate 36 daily walk/bike trips, 1,038 daily public transportation trips. During the morning arrival peak hour and the afternoon dismissal peak hour, the Project is estimated to generate 17 student walk/bike trips, 1 staff walk/bike trip, 506 student public transportation trips, and 13 staff public transportation trips entering or exiting the site.

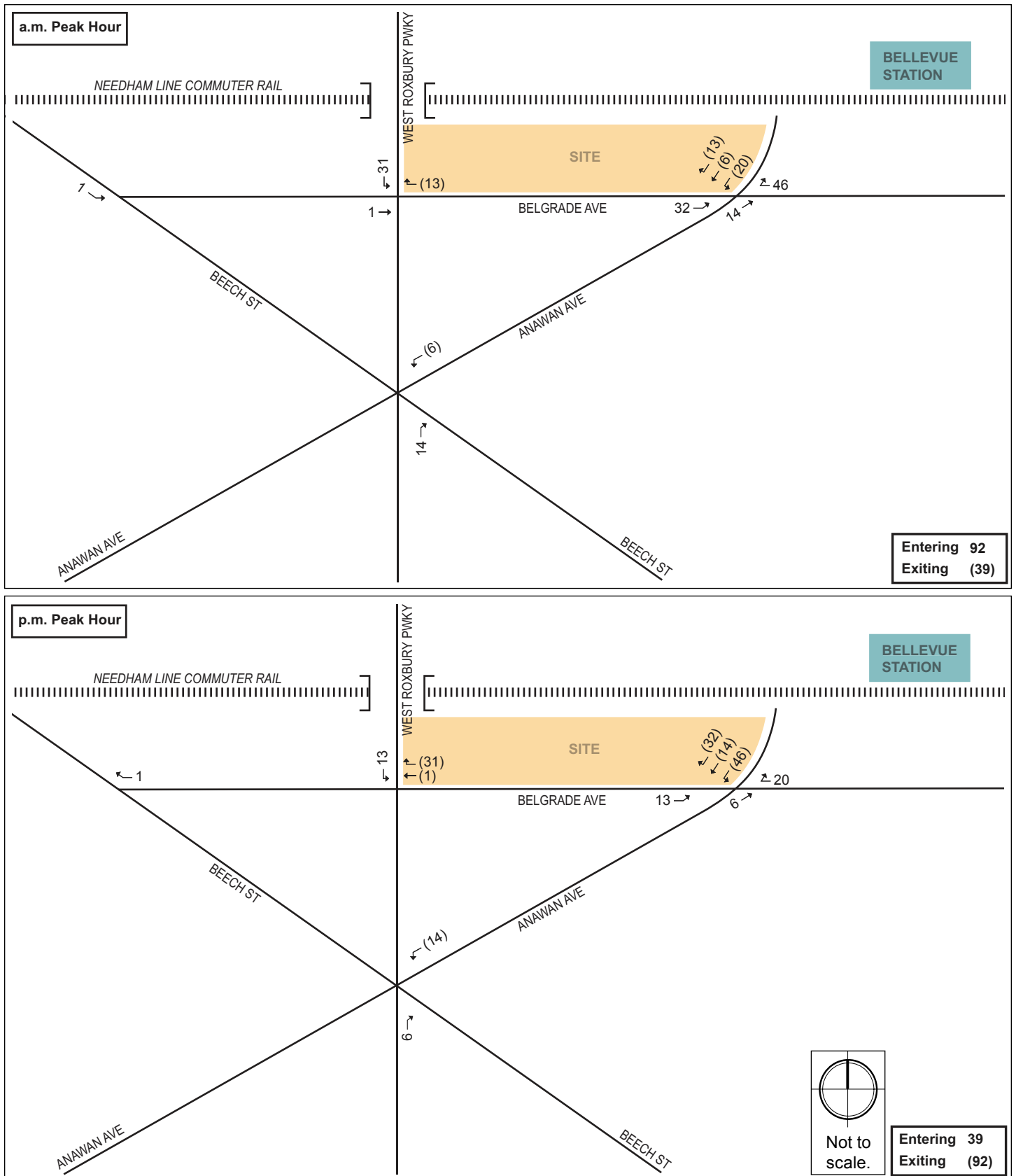
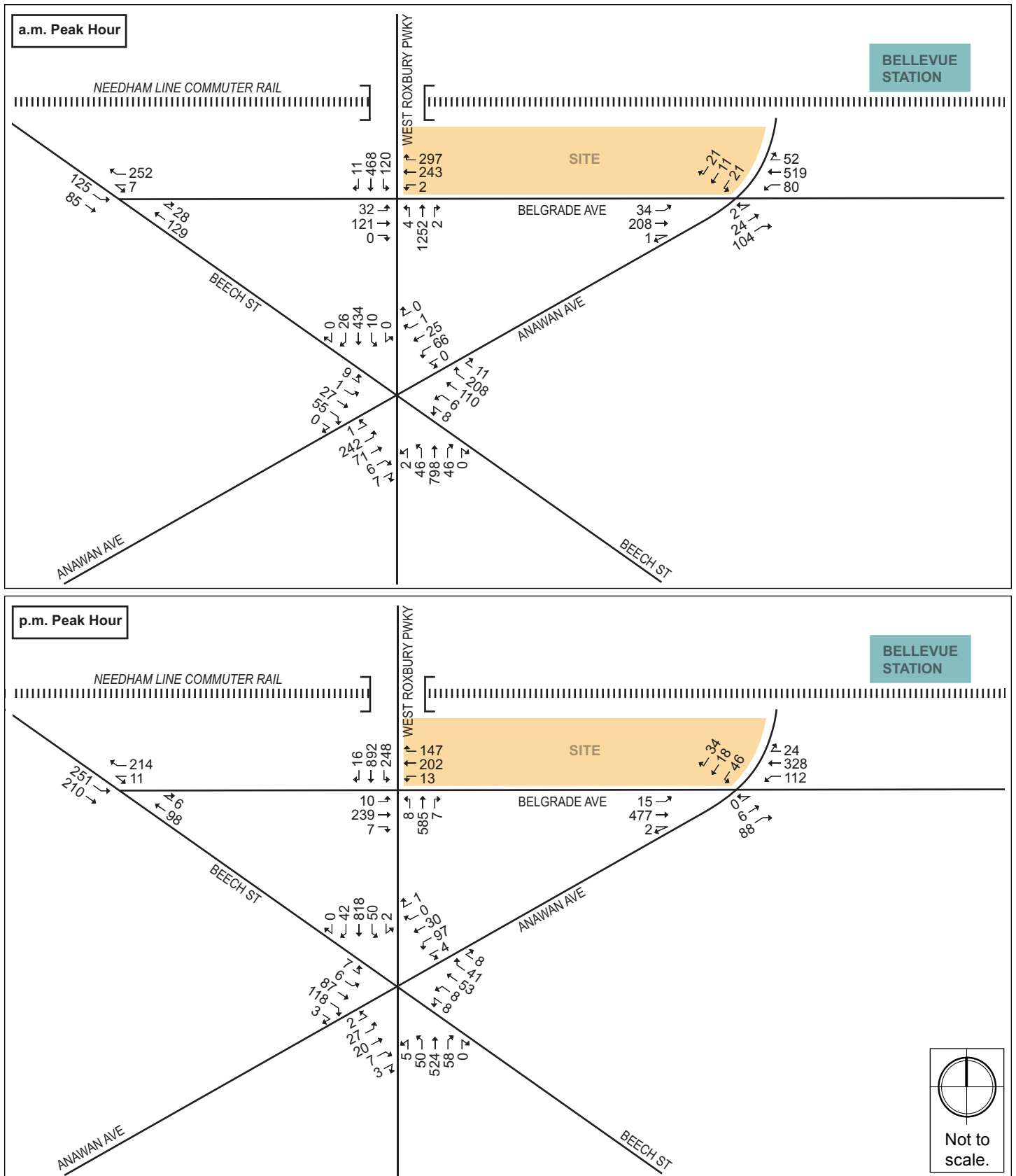


Figure D-12.
Project-Generated Vehicles Trips, Weekday a.m. and p.m. Peak Hours



D.4.11 Public Transportation Services and Capacity

There are multiple public transportation options students and staff can take to Project site including four MBTA bus lines, the MBTA 35, 36, 37 and 38 bus routes, or the Needham Line of the commuter rail. Most students that utilize public transportation are expected to reverse commute, meaning that students will travel outbound in the morning to arrive at school and inbound in the evening to leave school, opposite of most commuters.

Many students are expected to utilize the bus from Forest Hills Station. A significant percentage of students that currently attend the Roxbury Prep High School are from the neighborhoods of Dorchester, Dudley, Mattapan, Hyde Square, and Roslindale. These students are expected to take one of many bus lines or the Orange Line that serve Forest Hills, and then transfer to a bus that serves the Project. Students from South Boston, Charlestown, and Back Bay that have access to South Station or Back Bay Station are expected to utilize the Needham Line to travel to Bellevue Station, adjacent to the Project. Additionally, some students might transfer to the Needham Line at Forest Hills instead of transferring to a bus route.

Based on the residential zip codes of the existing student population and the frequency of the buses compared to the commuter rail, it is estimated that 75% of the students will use the bus and 25% of the students will use the Needham Line. The detailed ridership data is provided in the **Appendix** to this study.

MBTA Commuter Rail Capacity

Students that plan to take the commuter rail will likely board at South Station or Back Bay Station and take the commuter rail directly to the Bellevue Station in the morning and reverse direction after school. Some students could also board at Forest Hills Station and other stations located in Boston along the Needham Line.

According to the 2012 passenger counts, students were observed taking the reverse commuter train to West Roxbury Station to schools nearby, including Catholic Memorial School. Bellevue Station is located within Zone 1, which costs roughly 3 times the amount as a Zone 1A station and the local buses. In order to encourage students to take the commuter rail, the school has agreed to fund the difference in price, so students are able to take the Needham Line to Bellevue Station at no additional cost.

The school will coordinate the school start and end times to align with the Needham Line schedule. Based on the Needham Line schedule at the time, the school day will begin approximately 15 minutes after an outbound train stops at Bellevue Station and the school day will end approximately 15 minutes before an inbound train stops at Bellevue Station.

As shown in **Table D-1** there is capacity for over 500 passengers on each of the reverse commute trains. Any one of these trains could not only accommodate the expected commuter rail demand, but the entire public transportation demand of the school.

MBTA Bus Capacity

Between Forest Hills and the Project site, the 35, 36, and 37 bus routes are expected to take between 7 – 11 minutes in the outbound direction and 11 – 15 minutes in the inbound direction. The 38 Bus Route is expected to take approximately 12 – 14 minutes in the outbound direction and 16 minutes in the inbound direction between Forest Hills and the Project site.

All four MBTA bus routes that serve the Project, use the upper busway at Forest Hills Station, allowing for students to wait at the same place and take the first available bus. Since the students can take any of the four bus routes, they can be analyzed as one single route. Looking at them together, one of the four buses leaves Forest Hills an average of every four minutes in the morning and passes the site an average of every five minutes in the afternoon to get back to Forest Hills Station.

As shown in **Table D-2**, there is an average outbound available capacity of approximately 40 passengers per bus. There would only need to be approximately 10 buses to accommodate this demand. In reality, there is approximately 15 to 20 buses traveling past the site in the hour before school start and school dismissal.

D.5 Traffic Operations Analysis

Trafficware's Synchro (version 9) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2010 Highway Capacity Manual (HCM).

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. **Table D-6** 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. LOS D or better is typically considered acceptable in an urban area. However, LOS E or F is often typical for a stop controlled minor street that intersects a major roadway.

Table D-6 Vehicle Level of Service Criteria

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

Source: 2010 Highway Capacity Manual, Transportation Research Board.

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

The volume-to-capacity (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 a cycle of the traffic signal with typical (or median) entering traffic volumes.

The 95th percentile queue length, measured in feet, represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during five percent of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only five percent of the time and would typically not occur during off-peak hours. Since volumes fluctuate throughout the hour, the 95th percentile queue represents what can be considered a “worst case” scenario. Queues at the intersection are generally below the 95th percentile queue throughout the course of the peak hour. It is also unlikely that the 95th percentile queues for each approach to the intersection will occur simultaneously.

Table D-7 and **Table D-8** summarize the Existing Condition, the No-Build (2025) Condition, and the Build (2025) Condition capacity analysis for the study area intersection during the weekday a.m. and p.m. peak hours, respectively. The detailed analysis of the Synchro results is provided in the **Appendix** to this study.

APPENDIX D. COMPREHENSIVE TRANSPORTATION STUDY - 361 Belgrade Ave

Table D-7 Capacity Analysis Summary, Weekday a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	%ile Queue (ft)		LOS	Delay (s)	V/C Ratio	%ile Queue (ft)		LOS	Delay (s)	V/C Ratio	%ile Queue (ft)	
				50 th	95 th				50 th	95 th				50 th	95 th
	Existing Condition						No-Build (2023) Condition					Build (2023) Condition			
Signalized Intersections															
WRP/Belgrade Ave	C	28.7	-	-	-	C	32.1	-	-	-	C	33.2	-	-	-
Belgrade Ave EB L/T	D	35.7	0.53	77	135	D	36.5	0.55	79	140	D	36.4	0.55	80	141
Belgrade Ave EB R	A	0.0	0.00	0	0	A	0.0	0.00	0	0	A	0.0	0.00	0	0
Belgrade Ave WB L/T	D	39.3	0.67	136	204	D	39.7	0.69	140	211	D	39.4	0.68	140	211
Belgrade Ave WB R	B	10.2	0.55	25	86	B	11.0	0.57	30	93	B	11.1	0.58	32	97
WRP NB L/T T/R	C	32.1	0.79	~421	#561	D	37.9	0.82	~480	#592	D	39.0	0.83	~480	#592
WRP SB L/T T/R	C	23.9	1.18dl	163	#256	C	25.5	1.21l	175	#276	C	28.8	1.66l	195	#309
WRP/Beech St/Anawan Ave	F	124.2	-	-	-	F	133.5	-	-	-	F	132.8	-	-	-
WRP NB L/T T/R	D	41.7	0.85	360	#487	D	44.6	0.87	381	#522	D	46.0	0.89	390	#535
WRP SB L/T T/R	C	31.1	0.48	180	210	C	31.6	0.49	188	219	C	31.7	0.49	189	220
Beech St SEB L/T/R	D	53.0	0.53	94	118	D	53.7	0.55	97	123	D	53.7	0.55	97	123
Beech St NWB L/T/R	F	207.3	1.45	~528	#533	F	292.9	1.54	~554	#555	F	292.9	1.54	~554	#555
Anawan Ave NEB L/T/R	F	319.8	1.43	~463	#570	F	347.0	1.67	~485	#590	F	344.1	1.66	~485	#590
Anawan Ave SWB L/T/R	D	49.1	0.41	86	109	D	49.7	0.47	90	112	D	50.8	0.51	97	120
Unsignalized Intersections															
Belgrade Ave/Beech St	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Belgrade Avenue EB T/R	A	0.0	0.14	-	0	A	0.0	0.28	-	0	A	0.0	0.15	-	0
Belgrade Avenue WB L/T	A	0.3	0.01	-	1	A	0.5	0.01	-	1	A	0.3	0.01	-	1
Beech Street NB L/R	B	14.0	0.31	-	33	C	15.7	0.27	-	26	B	14.5	0.33	-	36
Belgrade Ave/Anawan Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Belgrade Ave EB L/T/R	A	0.1	0.00	-	0	A	0.1	0.00	-	0	A	1.7	0.04	-	4
Belgrade Ave WB L/T/R	A	1.8	0.07	-	6	A	3.2	0.11	-	10	A	1.9	0.08	-	6
Anawan Ave NB L/T/R	B	12.9	0.25	-	25	B	12.1	0.16	-	14	C	19.2	0.41	-	49
Anawan Ave SB L/T/R	C	18.5	0.06	-	4	C	20.5	0.03	-	3	F	51.8	0.45	-	51

Grey shading indicates LOS E or F under Existing Condition or a decrease to LOS E or F under the No-Build (2023) or Build (2023) Condition.

dl indicates defacto left turn lane

~ 50th percentile volumes exceed capacity. Queue shown is maximum after two cycles

95th percentile volumes exceed capacity. Queue shown is maximum after two cycles

APPENDIX D. COMPREHENSIVE TRANSPORTATION STUDY - 361 Belgrade Ave

Table D-8 Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	%ile Queue (ft)		LOS	Delay (s)	V/C Ratio	%ile Queue (ft)		LOS	Delay (s)	V/C Ratio	%ile Queue (ft)	
				50 th	95 th				50 th	95 th				50 th	95 th
	Existing Condition				No-Build (2023) Condition				Build (2023) Condition						
Signalized Intersections															
WRP/Belgrade Ave	D	43.4	-	-	-	D	52.7	-	-	-	E	56.8	-	-	-
Belgrade Ave EB L/T	D	39.9	0.69	142	207	D	40.4	0.70	147	214	D	39.9	0.70	145	214
Belgrade Ave EB R	A	0.1	0.02	0	0	A	0.1	0.02	0	0	A	0.1	0.02	0	0
Belgrade Ave WB L/T	D	38.5	0.65	130	175	D	38.8	0.66	134	181	D	38.6	0.66	133	182
Belgrade Ave WB R	A	8.6	0.30	9	39	A	9.1	0.31	11	42	A	9.0	0.37	14	47
WRP NB L/T T/R	B	17.2	0.39	144	192	B	17.5	0.41	152	200	B	17.6	0.41	155	200
WRP Pkwy SB L/T T/R	E	64.0	1.04	~480	#630	F	83.1	1.10	~516	#663	F	92.8	1.12	~535	#674
WRP/Beech St/Anawan Ave	E	56.1	-	-	-	E	64.8	-	-	-	E	66.2	-	-	-
WRP NB L/T T/R	D	36.5	0.78	265	#345	D	40.8	0.85	285	#379	D	43.1	0.87	294	#398
WRP SB L/T T/R	E	75.7	0.87	373	#547	F	92.2	0.93	~431	#591	F	93.8	0.94	~439	#608
Beech St SEB L/T/R	E	60.2	0.78	168	#309	E	61.1	0.79	175	#326	E	62.3	0.80	177	#333
Beech St NWB L/T/R	D	44.7	0.45	83	148	D	44.9	0.46	86	153	D	45.7	0.46	86	155
Anawan Ave NEB L/T/R	D	51.0	0.40	45	84	D	51.0	0.41	47	86	D	49.3	0.38	47	85
Anawan Ave SWB L/T/R	C	27.2	0.55	32	80	C	28.4	0.57	36	84	C	32.1	0.62	48	100
Unsignalized Intersections															
Belgrade Ave/Beech St	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Belgrade Avenue EB T/R	A	0.0	0.28	-	0	A	0.0	0.29	-	0	A	0.0	0.29	-	0
Belgrade Avenue WB L/T	A	0.5	0.01	-	1	A	0.5	0.01	-	1	A	0.5	0.01	-	1
Beech Street NB L/R	C	15.7	0.27	-	26	C	16.4	0.28	-	29	C	16.3	0.28	-	29
Belgrade Ave/Anawan Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Belgrade Ave EB L/T/R	A	0.1	0.00	-	0	A	0.1	0.00	-	0	A	0.4	0.01	-	1
Belgrade Ave WB L/T/R	A	3.2	0.11	-	10	A	3.3	0.12	-	10	A	3.3	0.12	-	10
Anawan Ave NB L/T/R	B	12.1	0.16	-	14	B	12.4	0.17	-	15	B	14.7	0.22	-	21
Anawan Ave SB L/T/R	C	20.5	0.03	-	3	C	21.6	0.04	-	3	E	45.9	0.41	-	44

Grey shading indicates LOS E or F under Existing Condition or a decrease to LOS E or F under the No-Build (2023) or Build (2023) Condition.

~ 50th percentile volumes exceed capacity. Queue shown is maximum after two cycles

95th percentile volumes exceed capacity. Queue shown is maximum after two cycles

As shown in **Table D-7** and **Table D-8**, all intersections and the majority of approaches have acceptable operations (LOS D or better) under all conditions with the following exceptions:

The **West Roxbury Avenue/Belgrade Avenue** intersection operates at LOS C during the weekday morning peak hour and LOS D during the weekday evening peak hour under the Existing Condition. The intersection continues to operate at LOS C during the weekday morning peak hour under both the No-Build (2023) Condition and Build (2023) Condition. During the weekday evening peak hour, the intersection continues to operate at LOS D for the No-Build (2023) Condition and decreases to LOS E for the Build (2023) Condition. The West Roxbury Parkway southbound left/thru | thru/right movement will decrease from LOS E to LOS F during the weekday evening peak hour under the No-Build (2023) Condition. This is due to an increase in traffic projected from the background traffic growth of the surrounding area, and the increased traffic from the Project. The longest queue lengths occur at the West Roxbury Parkway northbound approach during the weekday morning peak hour and range from 480 feet to 592 feet (19 to 24 vehicles) and at the West Roxbury Parkway southbound approach during the weekday evening peak hour ranging from 535 feet to 674 feet (21 to 27 vehicles).

The **West Roxbury Avenue/Beech Street/Anawan Avenue** intersection operates at LOS F during the weekday morning peak hour and LOS E during the weekday evening peak hour under the Existing Condition. The intersection continues to operate at LOS F during the weekday morning peak hour and LOS E during the weekday evening peak hour under both the No-Build (2023) Condition and Build (2023) Condition. During the weekday morning peak hour, the Beech Street north-westbound approach operates at LOS F. During the weekday evening peak hour, the West Roxbury Parkway southbound approach and the Beech Street south-eastbound approach both operate at LOS E. During the weekday evening peak hour, the West Roxbury Parkway southbound approach will decrease from LOS E to LOS F under the No-Build (2023) Condition. This is due to an increase in traffic projected from the background traffic growth of the surrounding area. The longest queue lengths occur at the Anawan Avenue northeastbound approach during the weekday morning peak hour and range from 485 feet to 590 feet (19 to 24 vehicles) and at the West Roxbury Parkway southbound approach during the weekday evening peak hour ranging from 439 feet to 608 feet (18 to 24 vehicles).

At the unsignalized **Belgrade Avenue/Beech Street** intersection, all approaches operate at an acceptable LOS during the weekday morning and evening peak hours for Existing, No-Build (2023), and Build (2023) Conditions. The longest queue lengths occur at the Beech Street northbound approach during both the weekday morning and evening peak hours and range from 29 to 36 feet (1 to 2 vehicles).

At the unsignalized **Belgrade Avenue/Anawan Avenue** intersection, the Anawan Avenue southbound approach will decrease from LOS C to LOS F during the morning peak hour and from LOS C to LOS E during the evening peak hours under the Build (2023) Condition. This is due to an increase in traffic from parent pick-up/drop-off activity in the newly constructed turn around

area and the garage driveway. The longest queue lengths occur at the Anawan Avenue southbound approach during both the weekday morning and evening peak hours and range from 44 to 51 feet (2 vehicles).

D.6 Transportation Demand Management

The Proponent is committed to implementing Transportation Demand Management (TDM) measures to minimize automobile usage and Project-traffic impacts. The TDM program may include an on-site transportation coordinator; transit pass subsidies for students and staff; secure bicycle parking areas; and distributions of transit maps and schedules to students, staff, and visitors. TDM measures will be described and evaluated in Transportation Access Plan Agreement (“TAPA”).

On-site management will keep a supply of transit information (schedules, maps, and fare information) to be made available to the students, staff, and visitors of the site. The Proponent will work with the City to develop a TDM program appropriate to the Proposed Project and consistent with its level of impact.

The Proponent is prepared to take advantage of good transit access to allow students and staff convenient travel to/from the school. The Proponent will develop a TDM program that will encourage the use of non-vehicular modes of travel. The TDM measures for the Proposed Project may include but are not limited to the following:

Alternative Mode Benefits/Tactics

The primary alternative transportation modes to be encouraged will be public transportation, bicycling, and walking.

- The Proponent will designate a transportation coordinator to oversee transportation issues, including parking, service and loading, and deliveries;
- The Proponent will encourage carpooling for staff to reduce the number of single-occupancy vehicles and the demand for on-site parking.
- The Proponent will provide orientation packets to students and staff containing information on available transportation choices, including public transportation routes/schedules, nearby vehicle sharing and bicycle sharing locations, and walking opportunities;
- Provide information on travel alternatives for students, staff, and visitors via the Internet and in the building lobby.

Bicycle/Pedestrian Trips

Promotions and incentives to encourage bicycle and pedestrian trips include:

- Providing covered, secure bicycle storage for staff; and
- Providing on-site external bike racks for students and visitors.

Public Transportation

The goal of the following promotion and incentive measures are to increase public transit use to and from the site:

- The school arrival and dismissal times will be coordinated to match up with the current MBTA schedule;
- Posting information about public transportation in the lobby of the school;
- The proponent will subsidize the purchase of monthly transit passes for students and staff;
- Work with the MBTA commuter rail to provide extra reverse commute stops to better serve the school;
- The proponent will fund the difference between the Zone 1 pass and the Zone 1A pass to encourage students to take the commuter rail instead of the buses; and
- The proponent will work with the MBTA and BTM to relocate the bus stops to be located adjacent to the school.

D.7 Transportation Mitigation Measures

The Proponent will continue to work with the City of Boston to create a Project that efficiently serves vehicle trips, improves the pedestrian environment, and encourages transit and bicycle use. As part of the Project, the Proponent will bring all abutting sidewalks and pedestrian ramps to the City of Boston standards in accordance with the Boston Complete Streets design guidelines. This will include the reconstruction and widening of the sidewalks where possible, the installation of new, accessible ramps, improvements to street lighting where necessary, planting of street trees, and providing bicycle storage racks surrounding the site, where appropriate.

The Proponent is responsible for preparation of the Transportation Access Plan Agreement (TAPA), a formal legal agreement between the Proponent and the BTM. The TAPA formalizes the findings of the transportation study, mitigation commitments, elements of access and physical design, travel demand management measures, and any other responsibilities that are agreed to by both the Proponent and the BTM. Because the TAPA must incorporate the results of the technical analysis, it must be executed after these other processes have been completed. The proposed

measures listed above and any additional transportation improvements to be undertaken as part of this Project will be defined and documented in the TAPA.

The Proponent will also produce a Construction Management Plan (CMP) for review and approval by BTM. The CMP will detail the schedule, staging, parking, delivery, and other associated impacts of the construction of the Project.

D.8 Evaluation of Short-Term Construction Impacts

Most construction activities will be accommodated within the current site boundaries. Details of the overall construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes will be addressed in detail in a Construction Management Plan to be filed with BTM in accordance with the City's transportation maintenance plan requirements.

To minimize transportation impacts during the construction period, the following measures will be considered for the Construction Management Plan:

- Limited construction worker parking on-site;
- Encouragement of worker carpooling;
- Consideration of a subsidy for MBTA passes for full-time employees; and
- Providing secure spaces on-site for workers' supplies and tools so they do not have to be brought to the site each day.

The Construction Management Plan to be executed with the City prior to commencement of construction will document all committed measures.



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: West Roxbury Parkway
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 B
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	West Roxbury Parkway From North				Belgrade Avenue From East				West Roxbury Parkway From South				Belgrade Avenue From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
06:30 AM	0	33	7	0	63	34	1	0	0	287	1	0	0	20	3	0	449
06:45 AM	1	67	13	0	73	46	0	0	2	359	2	0	0	14	4	0	581
Total	1	100	20	0	136	80	1	0	2	646	3	0	0	34	7	0	1030
07:00 AM	0	71	15	0	70	57	0	0	0	327	1	0	0	24	9	0	574
07:15 AM	2	113	16	0	62	50	0	0	1	363	1	0	0	31	8	0	647
07:30 AM	4	115	22	0	80	69	1	0	1	305	0	0	0	29	8	0	634
07:45 AM	5	117	23	0	65	68	1	0	0	268	2	0	0	29	6	0	584
Total	11	416	76	0	277	244	2	0	2	1263	4	0	0	113	31	0	2439
08:00 AM	4	149	38	0	50	51	2	0	1	234	1	0	0	29	8	0	567
08:15 AM	2	105	23	0	66	47	0	0	0	267	0	0	0	40	3	0	553
08:30 AM	2	116	20	0	46	52	2	0	1	270	1	0	1	33	4	0	548
08:45 AM	0	96	28	0	47	35	0	0	2	242	1	0	0	28	5	0	484
Total	8	466	109	0	209	185	4	0	4	1013	3	0	1	130	20	0	2152
Grand Total	20	982	205	0	622	509	7	0	8	2922	10	0	1	277	58	0	5621
Apprch %	1.7	81.4	17	0	54.7	44.7	0.6	0	0.3	99.4	0.3	0	0.3	82.4	17.3	0	
Total %	0.4	17.5	3.6	0	11.1	9.1	0.1	0	0.1	52	0.2	0	0	4.9	1	0	
Cars	20	948	193	0	614	448	5	0	7	2879	2	0	1	225	58	0	5400
% Cars	100	96.5	94.1	0	98.7	88	71.4	0	87.5	98.5	20	0	100	81.2	100	0	96.1
Heavy Vehicles	0	34	12	0	8	61	2	0	1	43	8	0	0	52	0	0	221
% Heavy Vehicles	0	3.5	5.9	0	1.3	12	28.6	0	12.5	1.5	80	0	0	18.8	0	0	3.9

Start Time	West Roxbury Parkway From North					Belgrade Avenue From East					West Roxbury Parkway From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
07:00 AM	0	71	15	0	86	70	57	0	0	127	0	327	1	0	328	0	24	9	0	33	574
07:15 AM	2	113	16	0	131	62	50	0	0	112	1	363	1	0	365	0	31	8	0	39	647
07:30 AM	4	115	22	0	141	80	69	1	0	150	1	305	0	0	306	0	29	8	0	37	634
07:45 AM	5	117	23	0	145	65	68	1	0	134	0	268	2	0	270	0	29	6	0	35	584
Total Volume	11	416	76	0	503	277	244	2	0	523	2	1263	4	0	1269	0	113	31	0	144	2439
% App. Total	2.2	82.7	15.1	0		53	46.7	0.4	0		0.2	99.5	0.3	0		0	78.5	21.5	0		
PHF	.550	.889	.826	.000	.867	.866	.884	.500	.000	.872	.500	.870	.500	.000	.869	.000	.911	.861	.000	.923	.942
Cars	11	408	73	0	492	275	220	1	0	496	2	1248	2	0	1252	0	90	31	0	121	2361
% Cars	100	98.1	96.1	0	97.8	99.3	90.2	50.0	0	94.8	100	98.8	50.0	0	98.7	0	79.6	100	0	84.0	96.8
Heavy Vehicles	0	8	3	0	11	2	24	1	0	27	0	15	2	0	17	0	23	0	0	23	78
% Heavy Vehicles	0	1.9	3.9	0	2.2	0.7	9.8	50.0	0	5.2	0	1.2	50.0	0	1.3	0	20.4	0	0	16.0	3.2

Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: West Roxbury Parkway
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 B
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars

Start Time	West Roxbury Parkway From North				Belgrade Avenue From East				West Roxbury Parkway From South				Belgrade Avenue From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
06:30 AM	0	31	7	0	62	28	1	0	0	285	0	0	0	15	3	0	432
06:45 AM	1	65	12	0	72	37	0	0	2	356	0	0	0	9	4	0	558
Total	1	96	19	0	134	65	1	0	2	641	0	0	0	24	7	0	990
07:00 AM	0	70	15	0	70	49	0	0	0	324	1	0	0	19	9	0	557
07:15 AM	2	109	15	0	61	46	0	0	1	359	0	0	0	24	8	0	625
07:30 AM	4	114	22	0	80	63	0	0	1	301	0	0	0	22	8	0	615
07:45 AM	5	115	21	0	64	62	1	0	0	264	1	0	0	25	6	0	564
Total	11	408	73	0	275	220	1	0	2	1248	2	0	0	90	31	0	2361
08:00 AM	4	142	36	0	49	44	1	0	0	230	0	0	0	24	8	0	538
08:15 AM	2	103	22	0	65	42	0	0	0	263	0	0	0	34	3	0	534
08:30 AM	2	108	20	0	44	45	2	0	1	262	0	0	1	28	4	0	517
08:45 AM	0	91	23	0	47	32	0	0	2	235	0	0	0	25	5	0	460
Total	8	444	101	0	205	163	3	0	3	990	0	0	1	111	20	0	2049
Grand Total	20	948	193	0	614	448	5	0	7	2879	2	0	1	225	58	0	5400
Apprch %	1.7	81.7	16.6	0	57.5	42	0.5	0	0.2	99.7	0.1	0	0.4	79.2	20.4	0	
Total %	0.4	17.6	3.6	0	11.4	8.3	0.1	0	0.1	53.3	0	0	0	4.2	1.1	0	

Start Time	West Roxbury Parkway From North					Belgrade Avenue From East					West Roxbury Parkway From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	70	15	0	85	70	49	0	0	119	0	324	1	0	325	0	19	9	0	28	557
07:15 AM	2	109	15	0	126	61	46	0	0	107	1	359	0	0	360	0	24	8	0	32	625
07:30 AM	4	114	22	0	140	80	63	0	0	143	1	301	0	0	302	0	22	8	0	30	615
07:45 AM	5	115	21	0	141	64	62	1	0	127	0	264	1	0	265	0	25	6	0	31	564
Total Volume	11	408	73	0	492	275	220	1	0	496	2	1248	2	0	1252	0	90	31	0	121	2361
% App. Total	2.2	82.9	14.8	0		55.4	44.4	0.2	0		0.2	99.7	0.2	0		0	74.4	25.6	0		
PHF	.550	.887	.830	.000	.872	.859	.873	.250	.000	.867	.500	.869	.500	.000	.869	.000	.900	.861	.000	.945	.944



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: West Roxbury Parkway
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 B
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	West Roxbury Parkway From North				Belgrade Avenue From East				West Roxbury Parkway From South				Belgrade Avenue From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
06:30 AM	0	2	0	0	1	6	0	0	0	2	1	0	0	5	0	0	17
06:45 AM	0	2	1	0	1	9	0	0	0	3	2	0	0	5	0	0	23
Total	0	4	1	0	2	15	0	0	0	5	3	0	0	10	0	0	40
07:00 AM	0	1	0	0	0	8	0	0	0	3	0	0	0	5	0	0	17
07:15 AM	0	4	1	0	1	4	0	0	0	4	1	0	0	7	0	0	22
07:30 AM	0	1	0	0	0	6	1	0	0	4	0	0	0	7	0	0	19
07:45 AM	0	2	2	0	1	6	0	0	0	4	1	0	0	4	0	0	20
Total	0	8	3	0	2	24	1	0	0	15	2	0	0	23	0	0	78
08:00 AM	0	7	2	0	1	7	1	0	1	4	1	0	0	5	0	0	29
08:15 AM	0	2	1	0	1	5	0	0	0	4	0	0	0	6	0	0	19
08:30 AM	0	8	0	0	2	7	0	0	0	8	1	0	0	5	0	0	31
08:45 AM	0	5	5	0	0	3	0	0	0	7	1	0	0	3	0	0	24
Total	0	22	8	0	4	22	1	0	1	23	3	0	0	19	0	0	103
Grand Total	0	34	12	0	8	61	2	0	1	43	8	0	0	52	0	0	221
Apprch %	0	73.9	26.1	0	11.3	85.9	2.8	0	1.9	82.7	15.4	0	0	100	0	0	
Total %	0	15.4	5.4	0	3.6	27.6	0.9	0	0.5	19.5	3.6	0	0	23.5	0	0	

Start Time	West Roxbury Parkway From North					Belgrade Avenue From East					West Roxbury Parkway From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	7	2	0	9	1	7	1	0	9	1	4	1	0	6	0	5	0	0	5	29
08:15 AM	0	2	1	0	3	1	5	0	0	6	0	4	0	0	4	0	6	0	0	6	19
08:30 AM	0	8	0	0	8	2	7	0	0	9	0	8	1	0	9	0	5	0	0	5	31
08:45 AM	0	5	5	0	10	0	3	0	0	3	0	7	1	0	8	0	3	0	0	3	24
Total Volume	0	22	8	0	30	4	22	1	0	27	1	23	3	0	27	0	19	0	0	19	103
% App. Total	0	73.3	26.7	0		14.8	81.5	3.7	0		3.7	85.2	11.1	0		0	100	0	0		
PHF	.000	.688	.400	.000	.750	.500	.786	.250	.000	.750	.250	.719	.750	.000	.750	.000	.792	.000	.000	.792	.831



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: West Roxbury Parkway
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 B
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Peds and Bikes

Start Time	West Roxbury Parkway From North					Belgrade Avenue From East					West Roxbury Parkway From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
06:30 AM	0	0	0	2	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	6
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	1
Total	0	0	0	2	2	0	0	0	1	1	0	1	0	1	1	0	0	0	0	0	1
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	3
07:30 AM	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	5
07:45 AM	0	0	1	2	0	0	0	0	0	2	0	0	0	0	1	0	0	0	3	0	9
Total	0	0	1	3	2	0	0	0	1	3	0	0	0	1	1	0	1	0	4	0	17
08:00 AM	0	0	0	0	2	0	1	0	1	0	0	0	0	2	0	0	0	0	0	1	7
08:15 AM	0	0	0	1	4	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	8
08:30 AM	0	0	0	0	1	1	2	0	0	1	0	1	0	1	0	0	1	0	1	2	11
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	2	5
Total	0	0	0	1	7	1	4	0	1	1	0	1	0	4	2	0	1	0	3	5	31
Grand Total	0	0	1	6	11	1	4	0	3	5	0	2	0	6	4	0	2	0	7	6	58
Apprch %	0	0	5.6	33.3	61.1	7.7	30.8	0	23.1	38.5	0	16.7	0	50	33.3	0	13.3	0	46.7	40	
Total %	0	0	1.7	10.3	19	1.7	6.9	0	5.2	8.6	0	3.4	0	10.3	6.9	0	3.4	0	12.1	10.3	

Start Time	West Roxbury Parkway From North						Belgrade Avenue From East						West Roxbury Parkway From South						Belgrade Avenue From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 07:45 AM																									
07:45 AM	0	0	1	2	0	3	0	0	0	0	2	2	0	0	0	0	1	1	0	0	0	3	0	3	9
08:00 AM	0	0	0	0	2	2	0	1	0	1	0	2	0	0	0	2	0	2	0	0	0	0	1	1	7
08:15 AM	0	0	0	1	4	5	0	1	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	1	8
08:30 AM	0	0	0	0	1	1	1	2	0	0	1	4	0	1	0	1	0	2	0	1	0	1	2	4	11
Total Volume	0	0	1	3	7	11	1	4	0	1	3	9	0	1	0	4	1	6	0	1	0	5	3	9	35
% App. Total	0	0	9.1	27.3	63.6	11.1	44.4	0	11.1	33.3	0	16.7	0	66.7	16.7	0	11.1	0	55.6	33.3					
PHF	.000	.000	.250	.375	.438	.550	.250	.500	.000	.250	.375	.563	.000	.250	.000	.500	.250	.750	.000	.250	.000	.417	.375	.563	.795



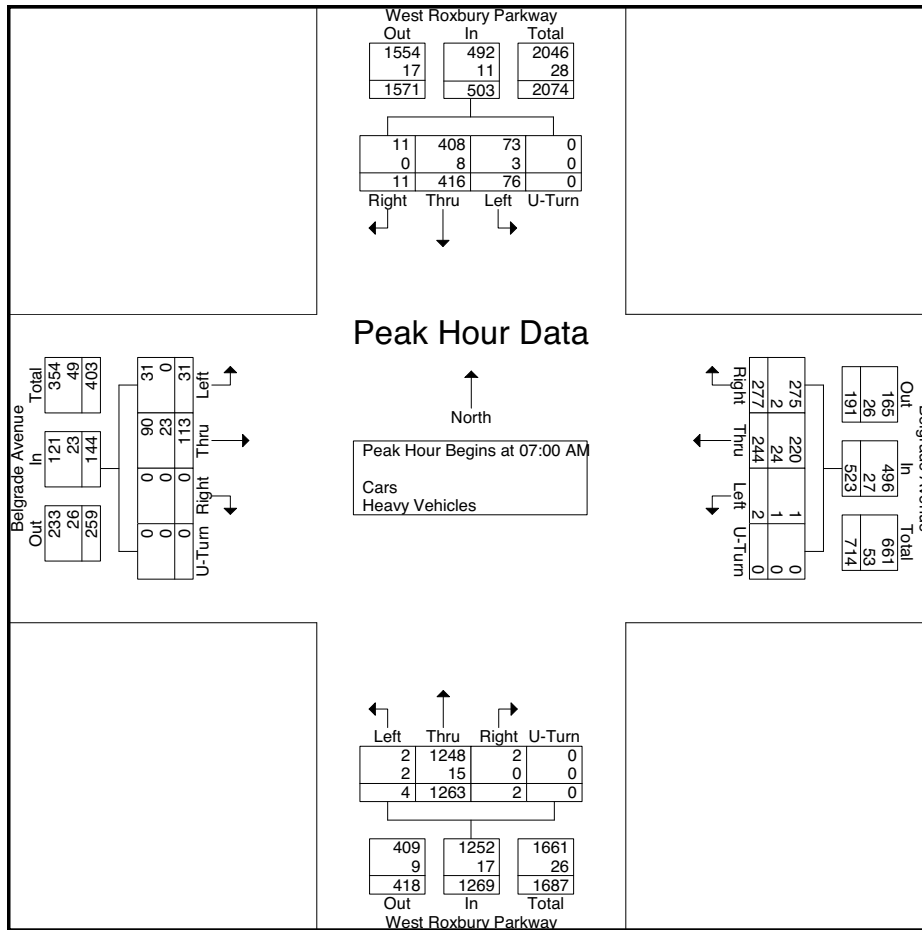
PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: West Roxbury Parkway
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 B
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Start Time	West Roxbury Parkway From North					Belgrade Avenue From East					West Roxbury Parkway From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	71	15	0	86	70	57	0	0	127	0	327	1	0	328	0	24	9	0	33	574
07:15 AM	2	113	16	0	131	62	50	0	0	112	1	363	1	0	365	0	31	8	0	39	647
07:30 AM	4	115	22	0	141	80	69	1	0	150	1	305	0	0	306	0	29	8	0	37	634
07:45 AM	5	117	23	0	145	65	68	1	0	134	0	268	2	0	270	0	29	6	0	35	584
Total Volume	11	416	76	0	503	277	244	2	0	523	2	1263	4	0	1269	0	113	31	0	144	2439
% App. Total	2.2	82.7	15.1	0		53	46.7	0.4	0		0.2	99.5	0.3	0		0	78.5	21.5	0		
PHF	.550	.889	.826	.000	.867	.866	.884	.500	.000	.872	.500	.870	.500	.000	.869	.000	.911	.861	.000	.923	.942
Cars	11	408	73	0	492	275	220	1	0	496	2	1248	2	0	1252	0	90	31	0	121	2361
% Cars	100	98.1	96.1	0	97.8	99.3	90.2	50.0	0	94.8	100	98.8	50.0	0	98.7	0	79.6	100	0	84.0	96.8
Heavy Vehicles	0	8	3	0	11	2	24	1	0	27	0	15	2	0	17	0	23	0	0	23	78
% Heavy Vehicles	0	1.9	3.9	0	2.2	0.7	9.8	50.0	0	5.2	0	1.2	50.0	0	1.3	0	20.4	0	0	16.0	3.2





PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: West Roxbury Parkway
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 BB
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	West Roxbury Parkway From North				Belgrade Avenue From East				West Roxbury Parkway From South				Belgrade Avenue From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
02:30 PM	4	149	39	0	31	38	2	0	4	134	2	0	1	36	4	0	444
02:45 PM	5	172	45	0	23	44	2	0	2	123	2	0	0	44	3	0	465
Total	9	321	84	0	54	82	4	0	6	257	4	0	1	80	7	0	909
03:00 PM	2	186	44	0	35	44	3	0	0	118	3	0	4	55	2	0	496
03:15 PM	8	195	54	0	30	45	2	0	0	126	2	0	0	53	2	0	517
03:30 PM	7	218	53	0	32	33	1	0	2	136	2	0	3	48	5	0	540
03:45 PM	6	223	65	0	31	36	2	0	1	133	2	0	1	53	3	0	556
Total	23	822	216	0	128	158	8	0	3	513	9	0	8	209	12	0	2109
04:00 PM	7	211	66	0	26	53	1	0	2	119	4	0	0	48	4	0	541
04:15 PM	4	190	59	0	23	38	3	0	3	106	0	0	1	47	2	0	476
04:30 PM	5	209	62	0	30	59	3	0	5	106	1	0	0	55	3	0	538
04:45 PM	5	174	63	0	32	47	4	0	0	116	2	0	1	52	2	0	498
Total	21	784	250	0	111	197	11	0	10	447	7	0	2	202	11	0	2053
05:00 PM	4	247	56	0	37	56	4	0	3	119	3	0	0	51	3	0	583
05:15 PM	6	184	50	0	31	42	2	0	1	129	2	0	3	63	1	0	514
05:30 PM	3	229	58	0	23	40	3	0	1	166	2	0	2	50	3	0	580
05:45 PM	2	201	63	0	21	48	4	0	2	150	1	0	2	67	3	0	564
Total	15	861	227	0	112	186	13	0	7	564	8	0	7	231	10	0	2241
Grand Total	68	2788	777	0	405	623	36	0	26	1781	28	0	18	722	40	0	7312
Apprch %	1.9	76.7	21.4	0	38.1	58.6	3.4	0	1.4	97.1	1.5	0	2.3	92.6	5.1	0	
Total %	0.9	38.1	10.6	0	5.5	8.5	0.5	0	0.4	24.4	0.4	0	0.2	9.9	0.5	0	
Cars	66	2739	764	0	396	562	35	0	25	1743	21	0	16	660	39	0	7066
% Cars	97.1	98.2	98.3	0	97.8	90.2	97.2	0	96.2	97.9	75	0	88.9	91.4	97.5	0	96.6
Heavy Vehicles	2	49	13	0	9	61	1	0	1	38	7	0	2	62	1	0	246
% Heavy Vehicles	2.9	1.8	1.7	0	2.2	9.8	2.8	0	3.8	2.1	25	0	11.1	8.6	2.5	0	3.4

Start Time	West Roxbury Parkway From North					Belgrade Avenue From East					West Roxbury Parkway From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	4	247	56	0	307	37	56	4	0	97	3	119	3	0	125	0	51	3	0	54	583
05:15 PM	6	184	50	0	240	31	42	2	0	75	1	129	2	0	132	3	63	1	0	67	514
05:30 PM	3	229	58	0	290	23	40	3	0	66	1	166	2	0	169	2	50	3	0	55	580
05:45 PM	2	201	63	0	266	21	48	4	0	73	2	150	1	0	153	2	67	3	0	72	564
Total Volume	15	861	227	0	1103	112	186	13	0	311	7	564	8	0	579	7	231	10	0	248	2241
% App. Total	1.4	78.1	20.6	0		36	59.8	4.2	0		1.2	97.4	1.4	0		2.8	93.1	4	0		
PHF	.625	.871	.901	.000	.898	.757	.830	.813	.000	.802	.583	.849	.667	.000	.857	.583	.862	.833	.000	.861	.961
Cars	15	839	226	0	1080	111	169	12	0	292	7	556	5	0	568	5	214	9	0	228	2168
% Cars	100	97.4	99.6	0	97.9	99.1	90.9	92.3	0	93.9	100	98.6	62.5	0	98.1	71.4	92.6	90.0	0	91.9	96.7
Heavy Vehicles	0	22	1	0	23	1	17	1	0	19	0	8	3	0	11	2	17	1	0	20	73
% Heavy Vehicles	0	2.6	0.4	0	2.1	0.9	9.1	7.7	0	6.1	0	1.4	37.5	0	1.9	28.6	7.4	10.0	0	8.1	3.3



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: West Roxbury Parkway
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 BB
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars

Start Time	West Roxbury Parkway From North				Belgrade Avenue From East				West Roxbury Parkway From South				Belgrade Avenue From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
02:30 PM	4	148	38	0	30	34	2	0	4	128	1	0	1	34	4	0	428
02:45 PM	4	168	44	0	21	38	2	0	2	120	2	0	0	39	3	0	443
Total	8	316	82	0	51	72	4	0	6	248	3	0	1	73	7	0	871
03:00 PM	1	181	42	0	34	41	3	0	0	114	2	0	4	51	2	0	475
03:15 PM	8	191	53	0	29	40	2	0	0	124	2	0	0	50	2	0	501
03:30 PM	7	214	53	0	31	32	1	0	2	133	2	0	3	43	5	0	526
03:45 PM	6	220	63	0	30	33	2	0	1	127	1	0	1	46	3	0	533
Total	22	806	211	0	124	146	8	0	3	498	7	0	8	190	12	0	2035
04:00 PM	7	209	66	0	25	47	1	0	1	115	4	0	0	42	4	0	521
04:15 PM	4	188	58	0	23	33	3	0	3	105	0	0	1	42	2	0	462
04:30 PM	5	207	59	0	30	51	3	0	5	105	0	0	0	51	3	0	519
04:45 PM	5	174	62	0	32	44	4	0	0	116	2	0	1	48	2	0	490
Total	21	778	245	0	110	175	11	0	9	441	6	0	2	183	11	0	1992
05:00 PM	4	241	56	0	37	53	3	0	3	118	1	0	0	47	3	0	566
05:15 PM	6	180	50	0	30	34	2	0	1	127	2	0	3	57	1	0	493
05:30 PM	3	222	58	0	23	35	3	0	1	165	1	0	1	48	3	0	563
05:45 PM	2	196	62	0	21	47	4	0	2	146	1	0	1	62	2	0	546
Total	15	839	226	0	111	169	12	0	7	556	5	0	5	214	9	0	2168
Grand Total	66	2739	764	0	396	562	35	0	25	1743	21	0	16	660	39	0	7066
Apprch %	1.8	76.7	21.4	0	39.9	56.6	3.5	0	1.4	97.4	1.2	0	2.2	92.3	5.5	0	
Total %	0.9	38.8	10.8	0	5.6	8	0.5	0	0.4	24.7	0.3	0	0.2	9.3	0.6	0	

Start Time	West Roxbury Parkway From North					Belgrade Avenue From East					West Roxbury Parkway From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	4	241	56	0	301	37	53	3	0	93	3	118	1	0	122	0	47	3	0	50	566
05:15 PM	6	180	50	0	236	30	34	2	0	66	1	127	2	0	130	3	57	1	0	61	493
05:30 PM	3	222	58	0	283	23	35	3	0	61	1	165	1	0	167	1	48	3	0	52	563
05:45 PM	2	196	62	0	260	21	47	4	0	72	2	146	1	0	149	1	62	2	0	65	546
Total Volume	15	839	226	0	1080	111	169	12	0	292	7	556	5	0	568	5	214	9	0	228	2168
% App. Total	1.4	77.7	20.9	0		38	57.9	4.1	0		1.2	97.9	0.9	0		2.2	93.9	3.9	0		
PHF	.625	.870	.911	.000	.897	.750	.797	.750	.000	.785	.583	.842	.625	.000	.850	.417	.863	.750	.000	.877	.958



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: West Roxbury Parkway
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 BB
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	West Roxbury Parkway From North				Belgrade Avenue From East				West Roxbury Parkway From South				Belgrade Avenue From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
02:30 PM	0	1	1	0	1	4	0	0	0	6	1	0	0	2	0	0	16
02:45 PM	1	4	1	0	2	6	0	0	0	3	0	0	0	5	0	0	22
Total	1	5	2	0	3	10	0	0	0	9	1	0	0	7	0	0	38
03:00 PM	1	5	2	0	1	3	0	0	0	4	1	0	0	4	0	0	21
03:15 PM	0	4	1	0	1	5	0	0	0	2	0	0	0	3	0	0	16
03:30 PM	0	4	0	0	1	1	0	0	0	3	0	0	0	5	0	0	14
03:45 PM	0	3	2	0	1	3	0	0	0	6	1	0	0	7	0	0	23
Total	1	16	5	0	4	12	0	0	0	15	2	0	0	19	0	0	74
04:00 PM	0	2	0	0	1	6	0	0	1	4	0	0	0	6	0	0	20
04:15 PM	0	2	1	0	0	5	0	0	0	1	0	0	0	5	0	0	14
04:30 PM	0	2	3	0	0	8	0	0	0	1	1	0	0	4	0	0	19
04:45 PM	0	0	1	0	0	3	0	0	0	0	0	0	0	4	0	0	8
Total	0	6	5	0	1	22	0	0	1	6	1	0	0	19	0	0	61
05:00 PM	0	6	0	0	0	3	1	0	0	1	2	0	0	4	0	0	17
05:15 PM	0	4	0	0	1	8	0	0	0	2	0	0	0	6	0	0	21
05:30 PM	0	7	0	0	0	5	0	0	0	1	1	0	1	2	0	0	17
05:45 PM	0	5	1	0	0	1	0	0	0	4	0	0	1	5	1	0	18
Total	0	22	1	0	1	17	1	0	0	8	3	0	2	17	1	0	73
Grand Total	2	49	13	0	9	61	1	0	1	38	7	0	2	62	1	0	246
Apprch %	3.1	76.6	20.3	0	12.7	85.9	1.4	0	2.2	82.6	15.2	0	3.1	95.4	1.5	0	
Total %	0.8	19.9	5.3	0	3.7	24.8	0.4	0	0.4	15.4	2.8	0	0.8	25.2	0.4	0	

Start Time	West Roxbury Parkway From North					Belgrade Avenue From East					West Roxbury Parkway From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	3	2	0	5	1	3	0	0	4	0	6	1	0	7	0	7	0	0	7	23
04:00 PM	0	2	0	0	2	1	6	0	0	7	1	4	0	0	5	0	6	0	0	6	20
04:15 PM	0	2	1	0	3	0	5	0	0	5	0	1	0	0	1	0	5	0	0	5	14
04:30 PM	0	2	3	0	5	0	8	0	0	8	0	1	1	0	2	0	4	0	0	4	19
Total Volume	0	9	6	0	15	2	22	0	0	24	1	12	2	0	15	0	22	0	0	22	76
% App. Total	0	60	40	0		8.3	91.7	0	0		6.7	80	13.3	0		0	100	0	0		
PHF	.000	.750	.500	.000	.750	.500	.688	.000	.000	.750	.250	.500	.500	.000	.536	.000	.786	.000	.000	.786	.826



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: West Roxbury Parkway
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 BB
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Peds and Bikes

Start Time	West Roxbury Parkway From North					Belgrade Avenue From East					West Roxbury Parkway From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
02:30 PM	0	0	1	1	0	0	1	0	1	0	0	0	0	3	1	0	0	0	0	0	8
02:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	4
Total	0	0	1	2	1	0	1	0	1	0	0	0	0	3	2	0	0	0	0	1	12
03:00 PM	0	0	0	3	2	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	8
03:15 PM	0	1	0	2	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	2	8
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
03:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
Total	0	1	0	6	2	0	1	0	0	1	0	0	0	2	3	0	0	0	0	3	19
04:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
04:15 PM	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4
04:30 PM	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	4
04:45 PM	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	10
Total	0	0	0	5	7	0	0	0	1	1	0	0	0	0	1	0	0	0	2	4	21
05:00 PM	0	0	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
05:15 PM	0	1	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	1	4	10
05:30 PM	0	0	0	1	1	0	1	0	3	0	0	0	0	0	0	0	0	0	1	0	7
05:45 PM	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	4
Total	0	1	2	5	3	0	4	0	3	0	0	0	0	0	1	0	0	0	3	4	26
Grand Total	0	2	3	18	13	0	6	0	5	2	0	0	0	5	7	0	0	0	5	12	78
Apprch %	0	5.6	8.3	50	36.1	0	46.2	0	38.5	15.4	0	0	0	41.7	58.3	0	0	0	29.4	70.6	
Total %	0	2.6	3.8	23.1	16.7	0	7.7	0	6.4	2.6	0	0	0	6.4	9	0	0	0	6.4	15.4	

Start Time	West Roxbury Parkway From North						Belgrade Avenue From East						West Roxbury Parkway From South						Belgrade Avenue From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 04:45 PM																									
04:45 PM	0	0	0	2	4	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4	10
05:00 PM	0	0	1	3	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
05:15 PM	0	1	1	0	1	3	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	1	4	5	10
05:30 PM	0	0	0	1	1	2	0	1	0	3	0	4	0	0	0	0	0	0	0	0	0	1	0	1	7
Total Volume	0	1	2	6	7	16	0	3	0	3	0	6	0	0	0	0	0	0	0	0	0	3	7	10	32
% App. Total	0	6.2	12.5	37.5	43.8	0	50	0	50	0	0	0	0	0	0	0	0	0	30	70					
PHF	.000	.250	.500	.500	.438	.667	.000	.375	.000	.250	.000	.375	.000	.000	.000	.000	.000	.000	.000	.000	.000	.750	.438	.500	.800



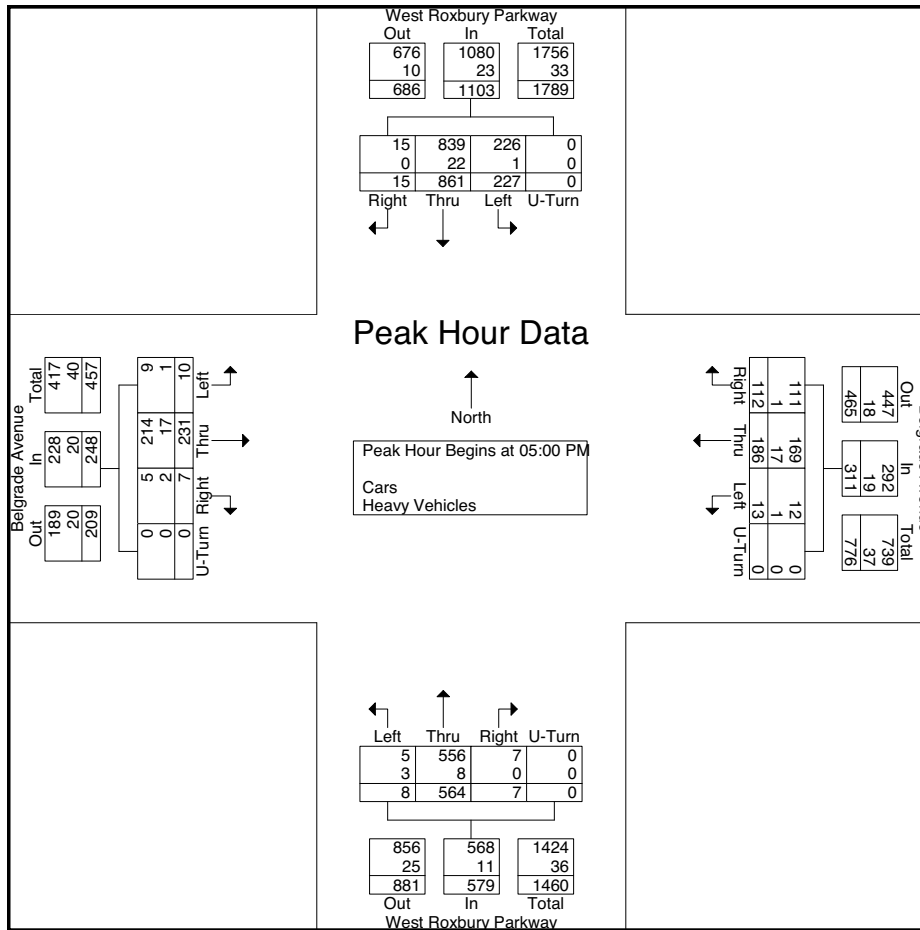
PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: West Roxbury Parkway
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 BB
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Start Time	West Roxbury Parkway From North					Belgrade Avenue From East					West Roxbury Parkway From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	4	247	56	0	307	37	56	4	0	97	3	119	3	0	125	0	51	3	0	54	583
05:15 PM	6	184	50	0	240	31	42	2	0	75	1	129	2	0	132	3	63	1	0	67	514
05:30 PM	3	229	58	0	290	23	40	3	0	66	1	166	2	0	169	2	50	3	0	55	580
05:45 PM	2	201	63	0	266	21	48	4	0	73	2	150	1	0	153	2	67	3	0	72	564
Total Volume	15	861	227	0	1103	112	186	13	0	311	7	564	8	0	579	7	231	10	0	248	2241
% App. Total	1.4	78.1	20.6	0		36	59.8	4.2	0		1.2	97.4	1.4	0		2.8	93.1	4	0		
PHF	.625	.871	.901	.000	.898	.757	.830	.813	.000	.802	.583	.849	.667	.000	.857	.583	.862	.833	.000	.861	.961
Cars	15	839	226	0	1080	111	169	12	0	292	7	556	5	0	568	5	214	9	0	228	2168
% Cars	100	97.4	99.6	0	97.9	99.1	90.9	92.3	0	93.9	100	98.6	62.5	0	98.1	71.4	92.6	90.0	0	91.9	96.7
Heavy Vehicles	0	22	1	0	23	1	17	1	0	19	0	8	3	0	11	2	17	1	0	20	73
% Heavy Vehicles	0	2.6	0.4	0	2.1	0.9	9.1	7.7	0	6.1	0	1.4	37.5	0	1.9	28.6	7.4	10.0	0	8.1	3.3





PRECISION
DATA
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdilc.com

N/S/NW: West Roxbury Pkwy/ Beech Street
E/W/SE: Anawan Avenue/ Beech Street
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 D
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	West Roxbury Parkway From North						Anawan Avenue From East						Beech Street From Southeast						West Roxbury Parkway From South						Anawan Avenue From West						Beech Street From Northwest								
	Right			Left			Right			Left			Right			Left			Right			Left			Right			Left			Right			Left			Right		
	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn			
06:30 AM	0	36	0	0	0	0	3	34	10	2	1	0	0	7	207	6	0	0	0	0	0	0	0	0	0	6	4	0	0	0	0	0	0	0	0	0	0	374	
06:45 AM	0	5	62	0	0	0	1	50	11	3	0	0	7	245	6	0	0	0	0	0	0	0	0	0	0	8	1	0	0	0	0	0	0	0	0	0	0	475	
Total	0	5	98	0	0	0	4	84	21	3	4	0	0	14	452	12	0	0	0	0	0	0	0	0	0	14	5	0	0	0	0	0	0	0	0	0	0	849	
07:00 AM	0	2	64	2	0	0	0	0	0	1	1	0	0	2	212	4	0	0	0	0	0	0	0	0	0	1	14	75	2	0	0	0	18	3	1	0	484		
07:15 AM	0	3	103	4	0	0	0	4	11	0	0	0	0	5	195	5	1	0	0	1	0	0	1	0	0	8	7	0	0	2	0	0	8	7	0	2	551		
07:30 AM	0	6	117	2	0	0	0	6	16	0	0	0	0	6	204	9	0	0	0	2	10	57	0	0	0	16	2	0	0	0	16	2	0	0	524				
07:45 AM	0	7	97	3	0	0	0	1	6	9	0	0	0	9	174	8	0	0	0	1	4	20	56	0	0	7	7	0	0	0	7	7	0	0	487				
Total	0	18	381	11	0	0	0	16	47	1	0	0	0	22	785	26	1	0	0	3	7	58	268	2	1	0	49	19	1	7	0	0	0	0	2046				
08:00 AM			141												167																								
08:15 AM	0	2	103	5	0	0	0	3	11	0	0	0	0	14	189	13	0	0	0	0	0	0	0	0	0	1	10	33	1	0	1	17	9	1	0	479			
08:30 AM	0	3	112	4	0	0	0	1	11	0	0	0	0	5	193	7	0	0	0	1	1	10	47	2	0	0	11	6	0	1	0	11	6	0	1	0	469		
08:45 AM	0	1	96	3	1	0	0	0	3	9	1	0	0	12	191	10	0	0	0	1	1	7	36	1	0	0	22	9	0	0	0	22	9	0	0	457			
Total	0	15	452	13	1	0	0	0	15	54	1	0	0	19	116	66	9	13	0	6	3	49	148	5	0	1	68	32	2	5	0	1	68	32	2	5	0	1918	
Grand Total	0	38	931	24	1	0	0	3	1	35	110	2	0	33	421	162	20	25	0	9	12	126	508	11	1	1	131	56	3	12	0	1	131	56	3	12	0	4813	
Approach %	0	3.8	93.7	2.4	0.1	0	0	2	0.7	23.2	72.8	1.3	0	5	63.7	24.5	3	3.8	0	0	1.3	18.9	76.2	1.6	0.1	0.5	64.5	27.6	1.5	5.9	0	0	0	0	0	0			
Total %	0	0.8	19.3	0.5	0	0	0	0.1	0	0.7	2.3	0	0	0.7	8.7	3.4	0.4	0.5	0	0	0.2	0.2	2.6	10.6	0.2	0	0.2	7.7	1.2	0.1	0.2	0	0	0	0	0	0		
% Cars	0	31	907	22	1	0	0	3	1	33	106	2	0	31	418	158	19	25	0	0	8	12	124	495	11	1	121	53	3	10	0	1	121	53	3	10	0	4683	
% Heavy Vehicles	0	81.6	97.4	91.7	100	0	100	100	94.3	96.4	100	100	93.9	99.3	97.5	100	100	100	0	88.9	100	98.4	97.4	100	100	100	92.4	94.6	100	83.3	0	100	92.4	94.6	100	83.3	0	130	
% Heavy Vehicles	0	18.4	2.6	8.3	0	0	0	0	0	5.7	3.6	0	0	6.1	0.7	2.5	5	0	0	11.1	0	1.6	2.6	0	0	0	7.6	5.4	0	16.7	0	0	7.6	5.4	0	16.7	0	2.7	

Start Time	West Roxbury Parkway From North						Anawan Avenue From East						Beech Street From Southeast						West Roxbury Parkway From South						Anawan Avenue From West						Beech Street From Northwest								
	Right			Left			Right			Left			Right			Left			Right			Left			Right			Left			Right			Left			Right		
	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn	Head	Thru	U-Turn
07:15 AM	0	3	103	4	0	0	0	0	4	11	0	0	0	5	195	5	1	0	0	0	0	0	0	0	0	0	14	80	0	1	0	8	7	0	2	0	0	17	551
07:30 AM	0	6	117	2	0	0	0	0	6	16	0	0	0	6	204	9	0	0	0	0	0	0	0	0	0	0	16	57	0	0	0	16	2	0	0	20	524		
07:45 AM	0	7	97	3	0	0	0	1	6	9	0	0	0	9	174	8	0	0	0	0	0	0	0	0	0	0	7	36	1	0	0	7	7	0	0	16	487		
08:00 AM	0	9	141	1	0	0	0	0	8	23	0	0	0	10	167	13	1	0	0	0	0	0	0	0	0	0	18	8	1	3	0	30	513						
Total Volume	0	25	458	10	0	0	0	1	24	59	0	0	0	30	740	35	2	0	0	7	6	66	225	1	1	306	0	49	24	1	9	0	83	2075					
% App. Total	0	5.1	92.9	2	0	0	0	0	1.2	28.6	70.2	0	0	3.7	91.7	4.3	0.2	0	0	2.3	2	21.6	73.5	0.3	0.3	0	59	28.9	1.2	10.8	0	0	59	28.9	1.2	10.8	0	83	
PHF	0.00	0.894	0.812	0.655	0.00	0.00	0.00	0.250	0.750	0.641	0.00	0.00	0.550	0.627	0.840	0.560	0.687	0.00	0.00	0.438	0.375	0.750	0.703	0.250	0.250	0.00	0.681	0.750	0.250	0.00	0.692	0.692	0.00	0.692	0.692	0.00	0.692	0.941	
% Cars	0	22	447	9	0	0	0	1	23	56	0	0	0	28	729	28	1	0	0	6	6	64	220	1	1	298	0	47	23	1	8	0	79	2020					
% Heavy Vehicles	0	88.0	97.6	90.0	0	0	0	0	100	95.8	94.9	0	0	93.3	98.5	80.0	50.0	0	0	97.4	95.7	97.0	97.8	100	100	97.4	0	95.9	95.8	100	88.9	0	95.2	97.3	97.3	97.3	0	95.2	97.3
% Heavy Vehicles	0	3	11	1	0	0	0	0	0	1	3	0	0	2	11	7	1	0	0	0	0	2	5	0	0	8	0	2	1	0	1	0	4	55					
% Heavy Vehicles	0	12.0	2.4	10.0	0	0	0	0	0	4.2	5.1	0	0	6.7	1.5	20.0	50.0	0	0	14.3	0	3.0	2.2	0	0	2.6	0	4.1	4.2	0	11.1	0	4.1	4.2	0	11.1	0	4.8	2.7

Peak Hour for Entire Intersection Begins at 07:15 AM
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1



**PRECISION
DATA
INDUSTRIES, LLC**

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdilc.com

N/S/NW: West Roxbury Pkwy/ Beech Street
E/W/SE: Anawan Avenue/ Beech Street
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 D
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars

Start Time	West Roxbury Parkway From North										Anawan Avenue From East										Beech Street From Southeast										West Roxbury Parkway From South										Anawan Avenue From West										Beech Street From Northwest									
	Right			Left			U-Turn			Right			Left			U-Turn			Right			Left			U-Turn			Right			Left			U-Turn			Right			Left			U-Turn			Right			Left			U-Turn								
	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left									
06:30 AM	0	0	34	0	0	0	0	2	5	0	0	0	3	34	9	1	1	0	0	0	0	0	7	206	6	0	0	0	0	10	34	2	0	0	4	3	0	0	0	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0						
06:45 AM	0	4	61	0	0	0	1	0	4	0	0	0	1	50	11	3	0	0	0	7	241	5	0	0	0	0	0	2	9	54	2	0	0	0	7	1	0	0	0	0	7	1	0	0	0	0	0	0	0	0	0	0	0	0						
Total	0	4	95	0	0	0	3	0	9	0	0	0	4	84	20	4	0	0	0	14	447	11	0	0	0	0	2	19	88	4	0	11	4	0	0	0	0	11	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
07:00 AM	0	1	64	2	0	0	0	0	10	1	0	0	2	53	10	3	3	0	0	2	210	4	0	0	0	0	0	0	14	73	2	0	0	0	18	3	1	1	1	0	18	3	1	1	1	0	18	3	1	1	1	0	18	3						
07:15 AM	0	3	100	3	0	0	0	4	11	0	0	0	1	77	25	2	2	0	0	5	194	3	1	0	0	1	0	0	14	79	0	1	0	0	8	7	0	2	0	0	8	7	0	2	0	0	8	7	0	2	0	0	8	7						
07:30 AM	0	5	115	2	0	0	0	6	14	0	0	0	5	39	21	0	2	0	0	5	203	6	0	0	0	1	2	10	55	0	0	16	2	0	0	0	16	2	0	0	0	0	16	2	0	0	0	0	16	2	0	0	0							
07:45 AM	0	7	97	3	0	0	0	1	6	8	0	0	2	51	18	3	1	0	0	8	169	6	0	0	0	1	4	19	55	0	0	7	6	0	0	0	7	6	0	0	0	0	7	6	0	0	0	0	7	6										
Total	0	16	376	10	0	0	0	16	43	1	0	0	10	220	74	8	8	0	0	20	776	19	1	0	0	3	7	57	262	2	1	0	49	18	1	0	49	18	1	0	49	18	1	0	49	18	1	0												
08:00 AM	135																																																											
08:15 AM	0	2	102	5	0	0	0	0	3	11	0	0	2	41	16	2	3	0	0	14	183	11	0	0	0	0	0	1	10	33	1	0	1	17	9	1	1	17	9	1	1	17	9	1	1	17	9	1	1	17	9									
08:30 AM	0	1	106	4	0	0	0	1	11	0	0	0	8	27	12	2	3	0	0	5	190	7	0	0	0	1	1	10	46	2	0	9	6	0	0	0	9	6	0	0	9	6	0	0	9	6	0	0	9	6										
08:45 AM	0	1	93	2	1	0	0	0	3	9	1	0	5	21	17	4	4	0	0	12	183	8	0	0	0	1	1	7	35	1	0	19	8	0	0	0	19	8	0	0	19	8	0	0	19	8	0	0	19	8										
Total	0	11	436	12	1	0	0	0	14	54	1	0	17	114	64	9	13	0	0	41	719	39	0	0	0	5	3	48	145	5	0	1	61	31	2	3	0	1	61	31	2	3	0	1	61	31	2	3												
Grand Total	0	31	907	22	1	0	0	3	1	33	106	2	0	31	418	158	25	0	0	75	1942	69	1	0	8	12	124	495	11	1	1	121	53	3	10	1	121	53	3	10	1	121	53	3	10	1	121													
Approach %	0	3.2	94.4	2.3	0.1	0	0	2.1	0.7	22.8	73.1	1.4	0	4.8	64.2	24.3	3.8	0	0	3.6	93.1	3.3	0	0	1.2	1.8	19	76	1.7	0.2	0.5	64.4	26.2	1.6	5.3	0	0.5	64.4	26.2	1.6	5.3	0	0.5	64.4																
Total %	0	0.7	19.4	0.5	0	0	0	0.1	0	0.7	2.3	0	0	0.7	8.9	3.4	0.4	0.5	0	1.6	41.5	1.5	0	0	0.2	0.3	2.6	10.6	0.2	0	2.6	1.1	0.1	0.2	0	2.6	1.1	0.1	0.2	0	2.6	1.1																		

Start Time	West Roxbury Parkway From North										Anawan Avenue From East										Beech Street From Southeast										West Roxbury Parkway From South										Anawan Avenue From West										Beech Street From Northwest																													
	Right			Left			U-Turn			Right			Left			U-Turn			Right			Left			U-Turn			Right			Left			U-Turn			Right			Left			U-Turn			Right			Left			U-Turn																												
	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left	Head	Thru	Left																																
07:15 AM	0	3	100	3	0	0	0	0	4	11	0	0	15	77	25	2	2	0	0	5	194	3	1	0	0	1	14	79	0	1	8	7	0	0	8	7	0	2	0	0	8	7	0	2	0	0	8	7	0	2	0																													
07:30 AM	0	5	115	2	0	0	0	6	14	0	0	0	20	53	21	0	2	0	0	5	203	6	0	0	0	2	10	55	0	0	16	2	0	0	16	2	0	0	16	2	0	0	16	2	0	0	16	2	0	0	16	2																												
07:45 AM	0	7	97	3	0	0	0	1	6	8	0	0	30	25	19	1	3	0	0	8	169	6	0	0	0	3	21	31	1	0	16	2	0	0	16	2	0	0	16	2	0	0	16	2	0	0	16	2																																
08:00 AM	0	7	135	1	0	0	0	7	23	0	0	0	80	192	83	6	8	0	0	28	729	28	1	0	0	6	64	220	1	1	298	0	47	23	1	8	0	47	23	1	8	0	47	23	1	8	0	47	23																															
Total Volume	0	22	447	9	0	0	0	1	23	56	0	0	0	3.3	64.2	27.8	2	2.7	0	0	3.6	92.7	3.6	0.1	0	2	2	21.5	73.8	0.3	0.3	59.5	26.1	1.3	10.1	0	59.5	26.1	1.3	10.1	0	59.5	26.1																																					
%App. Total	0.000	0.786	82.8	0.750	0.000	0.000	0.000	0.250	0.821	60.9	0.000	0.000	0.667	500	623	830	500	667	0.000	0.699	0.000	700	899	558	0.250	0.000	0.918	0.500	375	782	696	0.250	0.000	0.784	0.000	734	719	250	0.000	731	0.930																																							
PHF																																											0.000	0.786	82.8	0.750	0.000	0.000	0.836	0.000	0.000	0.667	500	623	830	500	667	0.000	0.699	0.000	700	899	558	0.250	0.000	0.918	0.500	375	782	696	0.250	0.000	0.784	0.000	734	719	250	0.000	731	0.930

Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:15 AM



PRECISION
DATA
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdilic.com

N/S/NW: West Roxbury Pkwy/ Beech Street
E/W/SE: Anawan Avenue/ Beech Street
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 D
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Peds and Bikes

Start Time	West Roxbury Parkway From North										Anawan Avenue From East										Beech Street From Southeast										West Roxbury Parkway From South										Anawan Avenue From West										Beech Street From Northwest									
	From North					From East					From Southeast					From South					From West					From Northwest																																		
	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total																									
06:30 AM	0	0	0	2	2	0	0	0	2	2	0	0	0	2	2	0	0	0	3	3	0	0	0	3	3	0	0	0	3	3	0	0	0	3	3	0	0	0	3	3																				
06:45 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
Total	0	0	0	3	3	0	0	0	2	2	0	0	0	2	2	0	0	0	3	3	0	0	0	3	3	0	0	0	3	3	0	0	0	3	3	0	0	0	3	3																				
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	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																				
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
Grand Total	0	0	0	4	4	0	0	0	5	3	2	0	2	0	2	0	0	1	4	3	0	0	1	0	0	0	0	1	0	0	0	0	3	0	0	0	0	4	3	0																				
Approch %	0	0	0	50	50	0	0	0	55.6	33.3	25	0	25	0	25	0	0	12.5	50	37.5	0	0	30	0	0	0	0	40	30	0	0	0	0	0	0	0	0	58.8	41.2																					
Total %	0	0	0	6.7	6.7	0	0	0	8.3	5	3.3	0	0	3.3	0	0	1.7	6.7	5	0	0	5	0	0	0	0	6.7	5	0	0	0	6.7	5	0	0	0	16.7	11.7																						

Start Time	West Roxbury Parkway From North										Anawan Avenue From East										Beech Street From Southeast										West Roxbury Parkway From South										Anawan Avenue From West										Beech Street From Northwest									
	From North					From East					From Southeast					From South					From West					From Northwest																																		
	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total																									
07:30 AM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1																				
07:45 AM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1																				
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																				
Total	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1																				
Grand Total	0	0	0	0	4	0	0	0	0	4	2	0	2	0	2	0	0	1	4	3	0	0	1	0	0	0	0	1	0	0	0	0	3	0	0	0	0	4	3	0																				
Approch %	0	0	0	0	50	0	0	0	11.1	0	0	55.6	33.3	25	0	25	0	0	12.5	50	37.5	0	0	30	0	0	0	0	40	30	0	0	0	0	0	0	0	0	58.8	41.2																				
Total %	0	0	0	0	6.7	0	0	0	0	6.7	0	0	1.7	0	3.3	0	0	1.7	6.7	5	0	0	5	0	0	0	0	6.7	5	0	0	0	6.7	5	0	0	0	16.7	11.7																					

Peak Hour for Entire Intersection Begins at 07:30 AM

Start Time	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total	Har Right	Thr Right	Bear Left	Peds WB	App Total					
07:30 AM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1
07:45 AM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1
PHF	0.000	0.000	0.000	0.000	.500	0.000	0.000	0.000	0.000	.750	0.000	0.000	0.000	0.000	.417	0.000	0.000	0.000	0.000	.500	0.000	0.000	0.000	0.000	.250	0.000	0.000	0.000	0.000	.625	0.000	0.000	0.000	0.000	.833					



**PRECISION
DATA
INDUSTRIES, LLC**

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdilc.com

N/S/NW: West Roxbury Pkwy/ Beech Street
E/W/SE: Anawan Avenue/ Beech Street
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 D
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Start Time	West Roxbury Parkway From North					Anawan Avenue From East					Beech Street From Southeast					West Roxbury Parkway From South					Anawan Avenue From West					Beech Street From Northwest																	
	West Right	West Left	West Thru	West Right	West Left	East Right	East Left	East Thru	East Right	East Left	SE Right	SE Left	SE Thru	SE Right	SE Left	SW Right	SW Left	SW Thru	SW Right	SW Left	West Right	West Left	West Thru	West Right	West Left	West Thru	West Right	West Left	West Thru	NW Right	NW Left	NW Thru	NW Right	NW Left	NW Thru								
07:15 AM	0	3	103	4	0	0	110	0	0	4	11	0	0	15	1	77	25	2	2	0	107	0	5	185	5	1	0	206	1	0	14	80	0	1	96	0	8	7	0	2	0	17	551
07:30 AM	0	6	117	2	0	0	125	0	0	6	16	0	0	22	5	40	21	0	2	0	68	0	6	204	9	0	0	219	1	2	10	57	0	0	70	0	16	2	0	2	0	20	524
07:45 AM	0	7	97	3	0	0	107	0	1	6	9	0	0	16	2	51	19	3	1	0	76	0	9	174	8	0	0	191	4	0	20	56	0	0	81	0	7	7	0	2	0	16	487
08:00 AM	0	9	141	1	0	0	151	0	0	8	23	0	0	31	3	25	19	1	3	0	51	0	10	167	13	1	0	191	4	0	22	32	1	0	59	0	18	8	1	3	0	30	513
Total Volume	0	25	458	10	0	0	493	0	1	24	59	0	0	84	11	193	84	6	8	0	302	0	30	740	35	2	0	807	7	6	66	225	1	1	306	0	49	24	1	9	0	83	2075
% App. Total	0	5.1	92.9	2	0	0	0	0	1.2	28.6	70.2	0	0	0	3.6	63.9	27.8	2	2.6	0	0	0	3.7	91.7	4.3	0.2	0	2.3	2	21.6	73.5	0.3	0.3	0	0	59	28.9	1.2	10.8	0	0	692	941
PHF	.000	.694	.812	.625	.000	.000	.816	.000	.250	.750	.841	.000	.677	.550	.627	.840	.500	.667	.000	.706	.000	.750	.907	.673	.500	.000	.921	.438	.375	.750	.703	.250	.250	.797	.000	.681	.750	.250	.750	.000	.692	.941	
Cars	0	22	447	9	0	0	478	0	1	23	56	0	0	80	10	192	83	6	8	0	299	0	28	729	28	1	0	786	6	6	64	220	1	1	298	0	47	23	1	8	0	79	2020
% Cars	0	88.0	97.6	90.0	0	0	97.0	0	100	95.8	94.9	0	0	95.2	90.9	99.5	98.8	100	100	0	99.0	0	93.3	98.5	80.0	50.0	0	97.4	85.7	100	97.0	97.8	100	100	97.4	0	95.9	95.8	100	88.9	0	95.2	97.3
Heavy Vehicles	0	3	11	1	0	0	15	0	0	1	3	0	0	4	1	1	1	0	0	3	0	2	11	7	1	0	21	1	0	2	5	0	0	8	0	2	1	0	1	0	4	55	
% Heavy Vehicles	0	12.0	2.4	10.0	0	0	3.0	0	0	4.2	5.1	0	0	4.8	9.1	0.5	1.2	0	0	1.0	0	6.7	1.5	20.0	50.0	0	2.6	14.3	0	3.0	2.2	0	0	2.6	0	4.1	4.2	0	11.1	0	4.8	2.7	

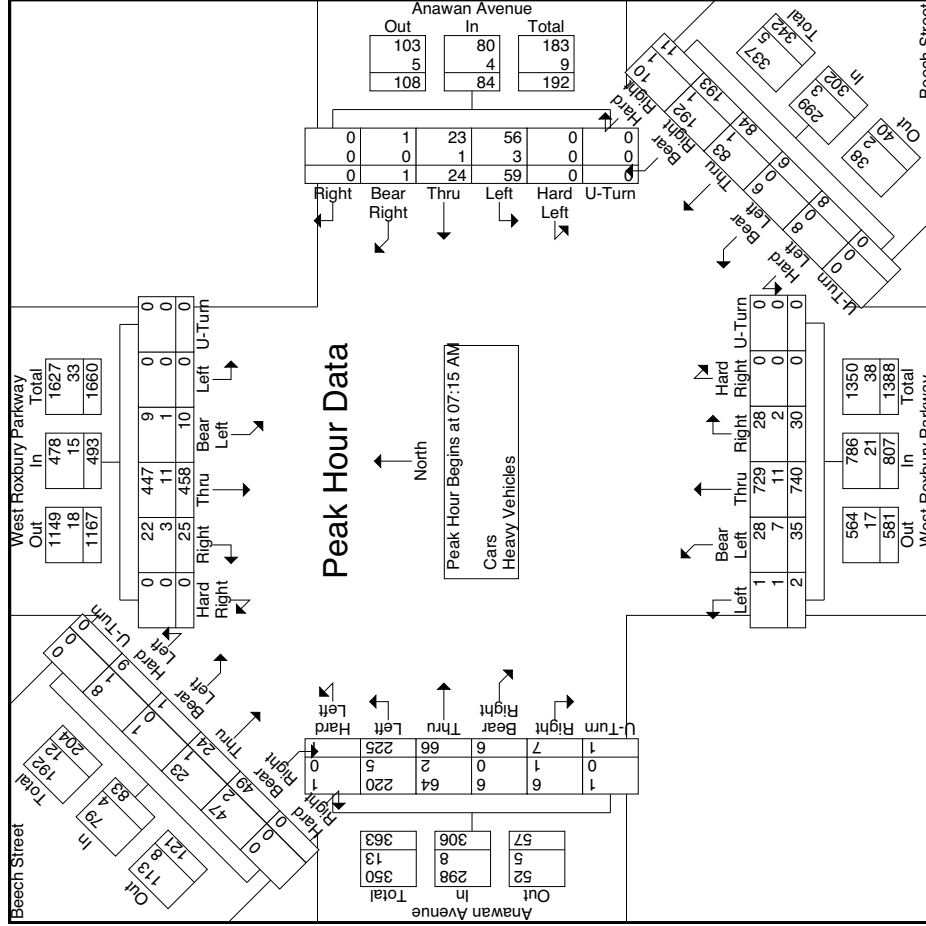
N/S/NW: West Roxbury Pkwy/ Beech Street
 E/W/SE: Anawan Avenue/ Beech Street
 City, State: West Roxbury, MA
 Client: HSH/ M. Santos



**PRECISION
 DATA
 INDUSTRIES, LLC**

46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdillc.com

File Name : 165344 D
 Site Code : 16170.00
 Start Date : 10/26/2016
 Page No : 2





**PRECISION
DATA
INDUSTRIES, LLC**

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdilc.com

N/S/NW: West Roxbury Pkwy/ Beech Street
E/W/SE: Anawan Avenue/ Beech Street
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 DD
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	West Roxbury Parkway From North						Anawan Avenue From East						Beech Street From Southeast						West Roxbury Parkway From South						Anawan Avenue From West						Beech Street From Northwest									
	Head Right	Thru	Beer Left	U-Turn	Head Left	Beer Right	Thru	Beer Left	U-Turn	Head Left	Beer Right	Thru	Beer Left	U-Turn	Head Left	Beer Right	Thru	Beer Left	U-Turn	Head Left	Beer Right	Thru	Beer Left	U-Turn	Head Left	Beer Right	Thru	Beer Left	U-Turn	Head Left	Beer Right	Thru	Beer Left	U-Turn	Head Left	Beer Right	Thru	Beer Left	U-Turn	
02:30 PM	2	10	127	9	0	0	1	0	3	7	0	0	2	9	5	1	4	0	0	17	126	15	1	0	1	3	5	5	2	0	0	25	18	0	0	0	0	398		
02:45 PM	0	11	158	4	0	0	0	2	5	9	1	0	5	10	9	1	2	0	0	12	113	24	2	0	3	1	1	5	0	0	2	20	10	0	0	0	0	412		
Total	2	21	285	13	0	0	1	2	8	16	1	0	7	19	14	2	6	0	0	29	239	39	3	0	4	6	10	2	0	2	45	28	0	2	45	28	0			
03:00 PM	1	10	181	6	0	0	0	0	3	23	1	0	0	8	11	0	1	0	0	15	111	12	0	0	1	1	4	4	0	0	2	29	15	0	1	0	0	440		
03:15 PM	0	5	175	11	0	0	1	1	8	16	1	0	1	11	4	4	1	0	0	9	110	14	0	0	1	1	5	5	1	0	0	31	14	0	0	0	0	429		
03:30 PM	0	7	210	13	0	0	0	0	5	24	2	0	1	12	18	1	2	0	0	14	125	12	0	0	2	5	2	5	1	0	2	27	15	0	0	0	0	505		
03:45 PM	0	5	214	15	0	0	0	0	0	5	17	1	0	0	12	2	3	0	0	11	103	9	1	0	1	0	3	9	0	0	0	23	20	1	0	0	0	467		
Total	1	27	780	45	0	0	1	21	80	5	0	2	43	45	7	7	0	0	0	49	449	47	1	0	5	7	14	23	2	0	4	110	64	1	1	0	0	1841		
04:00 PM	195																																							
04:15 PM	0	7	172	11	0	0	0	0	9	20	0	0	1	11	13	0	0	0	0	11	99	12	2	0	0	1	4	4	1	0	0	28	13	0	0	0	0	420		
04:30 PM	0	7	195	17	1	0	0	1	11	22	0	0	2	8	12	1	0	0	0	13	101	7	2	0	0	3	2	7	1	0	2	23	16	0	1	0	0	455		
04:45 PM	0	2	182	11	0	0	0	0	7	18	0	0	4	8	13	4	0	0	0	16	94	14	1	0	1	0	3	8	1	0	2	21	15	1	0	0	0	426		
Total	0	27	744	54	1	0	0	1	33	79	0	0	9	37	48	9	0	0	0	61	407	41	5	0	2	5	11	25	3	0	4	94	63	3	1	0	0	1768		
05:00 PM	226																																							
05:15 PM	0	6	166	12	2	0	0	0	5	11	1	0	4	16	11	0	1	0	0	12	117	5	1	0	0	2	6	4	2	0	2	18	17	2	0	0	0	423		
05:30 PM	0	13	223	15	0	0	1	0	12	21	2	0	0	8	12	1	1	0	0	15	152	17	2	0	0	2	3	12	0	0	0	27	28	2	0	0	0	569		
05:45 PM	0	9	175	11	0	0	0	0	9	24	1	0	3	8	11	4	1	0	0	10	127	10	2	0	2	0	4	3	0	0	1	33	13	1	3	0	0	465		
Total	0	41	790	48	2	0	1	0	30	83	4	0	8	40	47	8	8	0	0	49	506	44	5	0	3	7	19	26	2	0	3	109	80	6	7	0	0	1976		
Grand Total	3	116	2599	160	3	0	2	4	92	258	10	0	26	139	154	26	21	0	0	188	1601	171	14	0	14	23	50	84	9	0	13	358	235	10	11	0	0	6395		
Approach %	0.1	4	90.2	5.6	0.1	0	0.5	1.1	25.1	70.5	2.7	0	7.1	38	42.1	7.1	5.7	0	0.1	9.5	81.1	8.7	0.7	0	7.8	12.8	27.8	46.7	5	0	2.1	57.1	37.5	1.6	1.8	0	0	0		
Total %	0	1.8	40.6	2.5	0	0	0	0	1.4	4	0.2	0	0.4	2.2	2.4	0.4	0.3	0	0	2.9	25	2.7	0.2	0	0.2	0.4	0.8	1.3	0.1	0	0.2	5.6	3.7	0.2	0.2	0	0	0		
Cars	3	106	2554	158	3	0	2	3	92	256	10	0	25	138	149	26	19	0	0	186	1567	170	13	0	13	23	47	76	9	0	13	349	230	10	11	0	0	6262		
% Cars	100	91.4	98.3	98.8	100	0	100	100	99.2	100	100	96.2	99.3	96.8	100	90.5	90.5	0	0	100	98.9	97.9	99.4	92.9	0	92.9	100	90.5	100	97.5	97.9	100	100	97.5	97.9	100	100	0	0	0
Heavy Vehicles	0	10	45	2	0	0	0	1	0	2	0	0	1	1	5	0	2	0	0	2	34	1	1	0	1	0	3	8	0	0	0	9	5	0	0	0	0	0		
% Heavy Vehicles	0	8.6	1.7	1.2	0	0	0	2.5	0	0.8	0	0	3.8	0.7	3.2	0	9.5	0	0	1.1	2.1	0.6	7.1	0	7.1	0	6	9.5	0	0	0	2.5	2.1	0	0	0	0	0		



**PRECISION
DATA
INDUSTRIES, LLC**

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdilic.com

N/S/NW: West Roxbury Pkwy/ Beech Street
E/W/SE: Anawan Avenue/ Beech Street
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 DD
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Start Time	West Roxbury Parkway From North						Anawan Avenue From East						Beech Street From Southeast						West Roxbury Parkway From South						Anawan Avenue From West						Beech Street From Northwest															
	Right		Thru		Left		Right		Thru		Left		Right		Thru		Left		Right		Thru		Left		Right		Thru		Left		Right		Thru		Left		Right		Thru		Left					
	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy	Light						
05:00 PM	0	13	226	10	0	0	0	249	0	0	4	27	0	0	0	31	1	8	13	3	5	0	30	0	12	110	12	0	0	134	1	3	6	7	0	0	17	0	31	22	1	4	0	58	0	519
05:15 PM	0	6	166	12	2	0	186	0	0	5	11	1	0	17	4	16	11	0	1	0	32	0	12	117	5	1	0	135	0	2	6	4	2	0	14	2	18	17	2	0	0	39	0	423		
05:30 PM	0	13	223	15	0	0	251	1	0	12	21	2	0	36	0	8	12	1	1	0	22	0	15	152	17	2	0	186	0	2	3	12	0	0	17	0	27	28	2	0	0	57	0	569		
05:45 PM	0	9	175	11	0	0	195	0	0	9	24	1	0	34	3	8	11	4	1	0	27	0	10	127	10	2	0	149	2	0	4	3	0	0	9	1	33	13	1	3	0	51	0	465		
Total Volume	0	41	790	48	2	0	881	1	0	30	83	4	0	118	8	40	47	8	8	0	111	0	49	506	44	5	0	604	3	7	19	26	2	0	57	3	109	80	6	7	0	205	1.5	1976		
% App. Total	0	4.7	88.7	5.4	0.2	0	0	0.8	0	25.4	70.3	3.4	0	7.2	36	42.3	7.2	7.2	0	0	8.1	88.8	7.3	0.8	0	5.3	12.3	33.3	45.6	3.5	0	1.5	53.2	39	2.9	3.4	0	0.000	884							
PHF	0.000	.788	.874	.800	.250	.000	.877	.250	.000	.625	.769	.500	.000	.819	.500	.625	.904	.500	.400	.000	.867	.000	.817	.832	.647	.625	.000	.812	.375	.583	.792	.542	.250	.000	.838	.375	.826	.714	.750	.438	.000	.884	.884	.868		
Cars	0	36	770	47	2	0	855	1	0	30	83	4	0	118	8	39	46	8	8	0	109	0	49	499	44	5	0	597	3	7	19	23	2	0	54	3	107	78	6	7	0	201	3	184		
% Cars	0	87.8	97.5	97.9	100	0	97.0	100	0	100	100	100	0	98.2	0	100	97.5	97.9	100	100	98.2	0	100	98.6	100	100	0	98.8	100	100	100	88.5	100	0	94.7	100	98.2	97.5	100	100	0	98.0	100	97.9		
Heavy Vehicles	0	5	20	1	0	0	26	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	7	0	0	0	7	0	0	0	3	0	0	3	0	2	2	0	0	0	4	0	4			
% Heavy Vehicles	0	12.2	2.5	2.1	0	0	3.0	0	0	0	0	0	0	0	0	2.5	2.1	0	0	1.8	0	0	1.4	0	0	0	1.2	0	0	0	11.5	0	0	5.3	0	1.8	2.5	0	0	0	2.0	0	2.1			

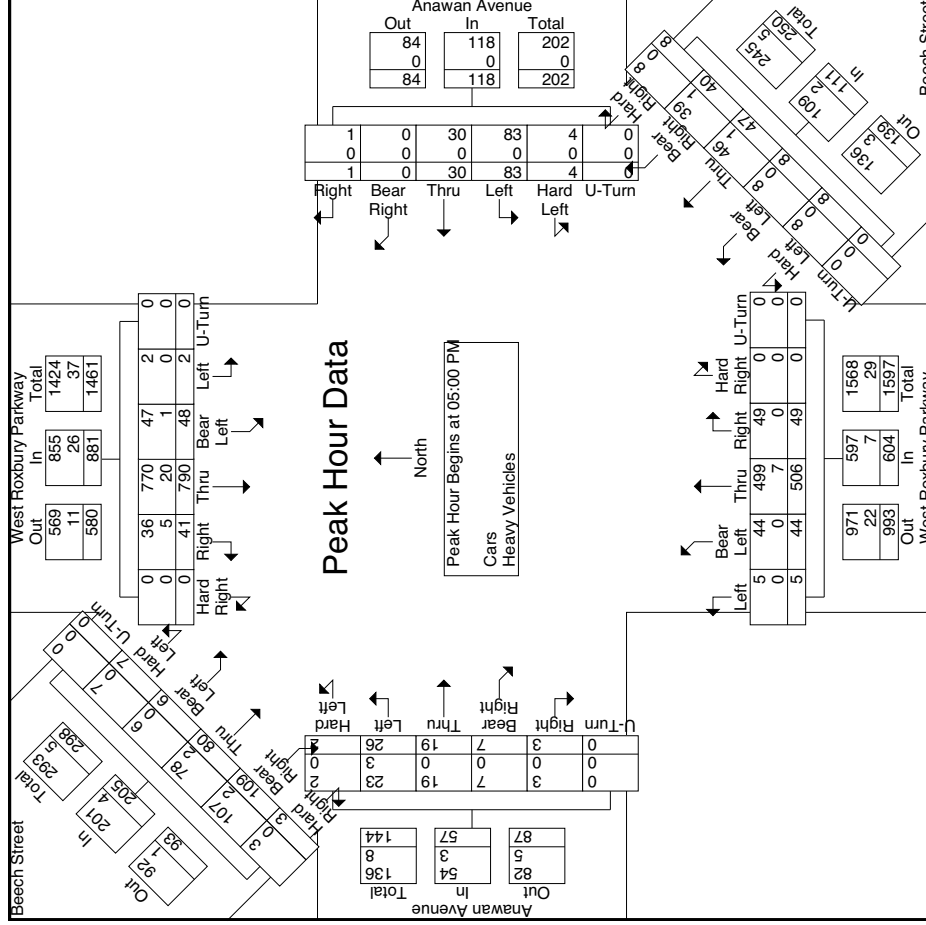
N/S/NW: West Roxbury Pkwy/ Beech Street
 E/W/SE: Anawan Avenue/ Beech Street
 City, State: West Roxbury, MA
 Client: HSH/ M. Santos



**PRECISION
 DATA
 INDUSTRIES, LLC**

46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdillc.com

File Name : 165344 DD
 Site Code : 16170.00
 Start Date : 10/26/2016
 Page No : 2





PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Avenue/ Beech Street
E: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 A
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	Belgrade Avenue From North			Belgrade Avenue From East			Beech Street From South			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
06:30 AM	8	22	0	34	0	0	3	27	0	94
06:45 AM	10	13	0	50	1	0	4	23	0	101
Total	18	35	0	84	1	0	7	50	0	195
07:00 AM	21	24	0	59	1	0	11	29	0	145
07:15 AM	12	34	0	52	0	0	8	43	0	149
07:30 AM	20	26	0	69	2	0	7	44	0	168
07:45 AM	14	29	0	74	3	0	7	51	0	178
Total	67	113	0	254	6	0	33	167	0	640
08:00 AM	28	29	0	54	2	0	8	38	0	159
08:15 AM	28	36	0	46	0	0	5	38	0	153
08:30 AM	18	32	1	52	1	0	4	34	0	142
08:45 AM	32	31	0	38	0	0	6	38	0	145
Total	106	128	1	190	3	0	23	148	0	599
Grand Total	191	276	1	528	10	0	63	365	0	1434
Apprch %	40.8	59	0.2	98.1	1.9	0	14.7	85.3	0	
Total %	13.3	19.2	0.1	36.8	0.7	0	4.4	25.5	0	
Cars	176	223	1	458	10	0	63	346	0	1277
% Cars	92.1	80.8	100	86.7	100	0	100	94.8	0	89.1
Heavy Vehicles	15	53	0	70	0	0	0	19	0	157
% Heavy Vehicles	7.9	19.2	0	13.3	0	0	0	5.2	0	10.9

Start Time	Belgrade Avenue From North				Belgrade Avenue From East				Beech Street From South				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	20	26	0	46	69	2	0	71	7	44	0	51	168
07:45 AM	14	29	0	43	74	3	0	77	7	51	0	58	178
08:00 AM	28	29	0	57	54	2	0	56	8	38	0	46	159
08:15 AM	28	36	0	64	46	0	0	46	5	38	0	43	153
Total Volume	90	120	0	210	243	7	0	250	27	171	0	198	658
% App. Total	42.9	57.1	0		97.2	2.8	0		13.6	86.4	0		
PHF	.804	.833	.000	.820	.821	.583	.000	.812	.844	.838	.000	.853	.924
Cars	85	99	0	184	216	7	0	223	27	162	0	189	596
% Cars	94.4	82.5	0	87.6	88.9	100	0	89.2	100	94.7	0	95.5	90.6
Heavy Vehicles	5	21	0	26	27	0	0	27	0	9	0	9	62
% Heavy Vehicles	5.6	17.5	0	12.4	11.1	0	0	10.8	0	5.3	0	4.5	9.4



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Avenue/ Beech Street
E: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 A
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars

Start Time	Belgrade Avenue From North			Belgrade Avenue From East			Beech Street From South			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
06:30 AM	5	17	0	28	0	0	3	26	0	79
06:45 AM	9	8	0	38	1	0	4	22	0	82
Total	14	25	0	66	1	0	7	48	0	161
07:00 AM	21	19	0	52	1	0	11	29	0	133
07:15 AM	12	27	0	47	0	0	8	41	0	135
07:30 AM	20	20	0	63	2	0	7	41	0	153
07:45 AM	13	25	0	67	3	0	7	48	0	163
Total	66	91	0	229	6	0	33	159	0	584
08:00 AM	24	23	0	46	2	0	8	37	0	140
08:15 AM	28	31	0	40	0	0	5	36	0	140
08:30 AM	16	25	1	43	1	0	4	31	0	121
08:45 AM	28	28	0	34	0	0	6	35	0	131
Total	96	107	1	163	3	0	23	139	0	532
Grand Total	176	223	1	458	10	0	63	346	0	1277
Apprch %	44	55.8	0.2	97.9	2.1	0	15.4	84.6	0	
Total %	13.8	17.5	0.1	35.9	0.8	0	4.9	27.1	0	

Start Time	Belgrade Avenue From North				Belgrade Avenue From East				Beech Street From South				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	20	20	0	40	63	2	0	65	7	41	0	48	153
07:45 AM	13	25	0	38	67	3	0	70	7	48	0	55	163
08:00 AM	24	23	0	47	46	2	0	48	8	37	0	45	140
08:15 AM	28	31	0	59	40	0	0	40	5	36	0	41	140
Total Volume	85	99	0	184	216	7	0	223	27	162	0	189	596
% App. Total	46.2	53.8	0		96.9	3.1	0		14.3	85.7	0		
PHF	.759	.798	.000	.780	.806	.583	.000	.796	.844	.844	.000	.859	.914



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Avenue/ Beech Street
E: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 A
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Belgrade Avenue From North			Belgrade Avenue From East			Beech Street From South			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
06:30 AM	3	5	0	6	0	0	0	1	0	15
06:45 AM	1	5	0	12	0	0	0	1	0	19
Total	4	10	0	18	0	0	0	2	0	34
07:00 AM	0	5	0	7	0	0	0	0	0	12
07:15 AM	0	7	0	5	0	0	0	2	0	14
07:30 AM	0	6	0	6	0	0	0	3	0	15
07:45 AM	1	4	0	7	0	0	0	3	0	15
Total	1	22	0	25	0	0	0	8	0	56
08:00 AM	4	6	0	8	0	0	0	1	0	19
08:15 AM	0	5	0	6	0	0	0	2	0	13
08:30 AM	2	7	0	9	0	0	0	3	0	21
08:45 AM	4	3	0	4	0	0	0	3	0	14
Total	10	21	0	27	0	0	0	9	0	67
Grand Total	15	53	0	70	0	0	0	19	0	157
Apprch %	22.1	77.9	0	100	0	0	0	100	0	
Total %	9.6	33.8	0	44.6	0	0	0	12.1	0	

Start Time	Belgrade Avenue From North				Belgrade Avenue From East				Beech Street From South				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	1	4	0	5	7	0	0	7	0	3	0	3	15
08:00 AM	4	6	0	10	8	0	0	8	0	1	0	1	19
08:15 AM	0	5	0	5	6	0	0	6	0	2	0	2	13
08:30 AM	2	7	0	9	9	0	0	9	0	3	0	3	21
Total Volume	7	22	0	29	30	0	0	30	0	9	0	9	68
% App. Total	24.1	75.9	0		100	0	0		0	100	0		
PHF	.438	.786	.000	.725	.833	.000	.000	.833	.000	.750	.000	.750	.810



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Avenue/ Beech Street
E: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 A
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Peds and Bikes

Start Time	Belgrade Avenue From North				Belgrade Avenue From East				Beech Street From South				Int. Total
	Thru	Left	Peds EB	Peds WB	Right	Left	Peds SB	Peds NB	Right	Thru	Peds WB	Peds EB	
06:30 AM	0	0	1	1	0	0	0	0	0	0	0	0	2
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	0	0	1	1	0	0	0	0	0	0	0	1	3
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	1	0	0	0	0	0	0	0	1	0	2
07:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
07:45 AM	0	0	1	0	0	0	0	0	0	0	0	1	2
Total	0	0	2	0	0	0	0	0	1	0	1	1	5
08:00 AM	0	0	0	0	1	0	0	0	0	1	0	0	2
08:15 AM	0	0	0	1	1	0	0	0	0	1	1	0	4
08:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	2
08:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	1	0	1	4	0	0	0	0	2	1	0	9
Grand Total	0	1	3	2	4	0	0	0	1	2	2	2	17
Apprch %	0	16.7	50	33.3	100	0	0	0	14.3	28.6	28.6	28.6	
Total %	0	5.9	17.6	11.8	23.5	0	0	0	5.9	11.8	11.8	11.8	

Start Time	Belgrade Avenue From North					Belgrade Avenue From East					Beech Street From South					Int. Total
	Thru	Left	Peds EB	Peds WB	App. Total	Right	Left	Peds SB	Peds NB	App. Total	Right	Thru	Peds WB	Peds EB	App. Total	
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 07:45 AM																
07:45 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	2
08:00 AM	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	2
08:15 AM	0	0	0	1	1	1	0	0	0	1	0	1	1	0	2	4
08:30 AM	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	2
Total Volume	0	1	1	1	3	3	0	0	0	3	0	2	1	1	4	10
% App. Total	0	33.3	33.3	33.3		100	0	0	0		0	50	25	25		
PHF	.000	.250	.250	.250	.750	.750	.000	.000	.000	.750	.000	.500	.250	.250	.500	.625



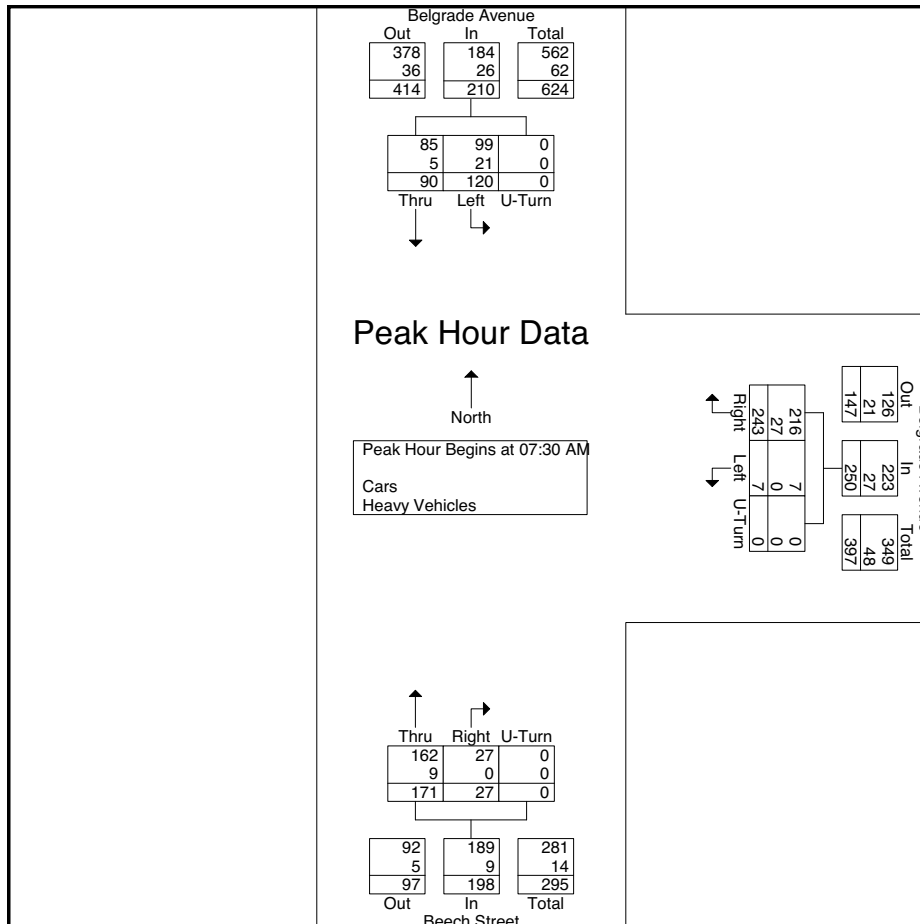
PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Avenue/ Beech Street
E: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 A
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Start Time	Belgrade Avenue From North			App. Total	Belgrade Avenue From East			App. Total	Beech Street From South			Int. Total	
	Thru	Left	U-Turn		Right	Left	U-Turn		Right	Thru	U-Turn		App. Total
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	20	26	0	46	69	2	0	71	7	44	0	51	168
07:45 AM	14	29	0	43	74	3	0	77	7	51	0	58	178
08:00 AM	28	29	0	57	54	2	0	56	8	38	0	46	159
08:15 AM	28	36	0	64	46	0	0	46	5	38	0	43	153
Total Volume	90	120	0	210	243	7	0	250	27	171	0	198	658
% App. Total	42.9	57.1	0		97.2	2.8	0		13.6	86.4	0		
PHF	.804	.833	.000	.820	.821	.583	.000	.812	.844	.838	.000	.853	.924
Cars	85	99	0	184	216	7	0	223	27	162	0	189	596
% Cars	94.4	82.5	0	87.6	88.9	100	0	89.2	100	94.7	0	95.5	90.6
Heavy Vehicles	5	21	0	26	27	0	0	27	0	9	0	9	62
% Heavy Vehicles	5.6	17.5	0	12.4	11.1	0	0	10.8	0	5.3	0	4.5	9.4





PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Avenue/ Beech Street
E: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 AA
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	Belgrade Avenue From North			Belgrade Avenue From East			Beech Street From South			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
02:30 PM	43	43	0	41	3	0	1	23	0	154
02:45 PM	33	46	0	50	1	0	0	33	0	163
Total	76	89	0	91	4	0	1	56	0	317
03:00 PM	50	59	0	48	1	0	3	23	1	185
03:15 PM	50	54	0	45	5	0	1	22	0	177
03:30 PM	43	55	0	37	4	0	1	29	0	169
03:45 PM	49	58	0	42	2	0	3	21	0	175
Total	192	226	0	172	12	0	8	95	1	706
04:00 PM	41	49	0	58	2	0	0	20	0	170
04:15 PM	42	50	0	41	2	0	1	24	0	160
04:30 PM	47	57	0	65	1	0	1	22	0	193
04:45 PM	38	49	0	59	3	0	2	28	0	179
Total	168	205	0	223	8	0	4	94	0	702
05:00 PM	61	58	0	60	4	0	2	31	0	216
05:15 PM	40	66	0	51	4	0	1	18	0	180
05:30 PM	61	55	0	43	1	0	1	31	0	192
05:45 PM	52	71	0	52	2	0	2	23	0	202
Total	214	250	0	206	11	0	6	103	0	790
Grand Total	650	770	0	692	35	0	19	348	1	2515
Apprch %	45.8	54.2	0	95.2	4.8	0	5.2	94.6	0.3	
Total %	25.8	30.6	0	27.5	1.4	0	0.8	13.8	0	
Cars	636	706	0	622	35	0	16	342	1	2358
% Cars	97.8	91.7	0	89.9	100	0	84.2	98.3	100	93.8
Heavy Vehicles	14	64	0	70	0	0	3	6	0	157
% Heavy Vehicles	2.2	8.3	0	10.1	0	0	15.8	1.7	0	6.2

Start Time	Belgrade Avenue From North				Belgrade Avenue From East				Beech Street From South				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	61	58	0	119	60	4	0	64	2	31	0	33	216
05:15 PM	40	66	0	106	51	4	0	55	1	18	0	19	180
05:30 PM	61	55	0	116	43	1	0	44	1	31	0	32	192
05:45 PM	52	71	0	123	52	2	0	54	2	23	0	25	202
Total Volume	214	250	0	464	206	11	0	217	6	103	0	109	790
% App. Total	46.1	53.9	0		94.9	5.1	0		5.5	94.5	0		
PHF	.877	.880	.000	.943	.858	.688	.000	.848	.750	.831	.000	.826	.914
Cars	210	228	0	438	185	11	0	196	6	102	0	108	742
% Cars	98.1	91.2	0	94.4	89.8	100	0	90.3	100	99.0	0	99.1	93.9
Heavy Vehicles	4	22	0	26	21	0	0	21	0	1	0	1	48
% Heavy Vehicles	1.9	8.8	0	5.6	10.2	0	0	9.7	0	1.0	0	0.9	6.1



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Avenue/ Beech Street
E: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 AA
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars

Start Time	Belgrade Avenue From North			Belgrade Avenue From East			Beech Street From South			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
02:30 PM	42	41	0	37	3	0	1	23	0	147
02:45 PM	32	41	0	43	1	0	0	33	0	150
Total	74	82	0	80	4	0	1	56	0	297
03:00 PM	50	56	0	43	1	0	2	22	1	175
03:15 PM	49	51	0	40	5	0	1	22	0	168
03:30 PM	43	50	0	36	4	0	1	27	0	161
03:45 PM	49	49	0	38	2	0	2	20	0	160
Total	191	206	0	157	12	0	6	91	1	664
04:00 PM	37	45	0	52	2	0	0	20	0	156
04:15 PM	41	45	0	36	2	0	1	23	0	148
04:30 PM	45	54	0	57	1	0	1	22	0	180
04:45 PM	38	46	0	55	3	0	1	28	0	171
Total	161	190	0	200	8	0	3	93	0	655
05:00 PM	60	53	0	55	4	0	2	30	0	204
05:15 PM	38	60	0	42	4	0	1	18	0	163
05:30 PM	61	51	0	38	1	0	1	31	0	183
05:45 PM	51	64	0	50	2	0	2	23	0	192
Total	210	228	0	185	11	0	6	102	0	742
Grand Total	636	706	0	622	35	0	16	342	1	2358
Apprch %	47.4	52.6	0	94.7	5.3	0	4.5	95.3	0.3	
Total %	27	29.9	0	26.4	1.5	0	0.7	14.5	0	

Start Time	Belgrade Avenue From North				Belgrade Avenue From East				Beech Street From South				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	60	53	0	113	55	4	0	59	2	30	0	32	204
05:15 PM	38	60	0	98	42	4	0	46	1	18	0	19	163
05:30 PM	61	51	0	112	38	1	0	39	1	31	0	32	183
05:45 PM	51	64	0	115	50	2	0	52	2	23	0	25	192
Total Volume	210	228	0	438	185	11	0	196	6	102	0	108	742
% App. Total	47.9	52.1	0		94.4	5.6	0		5.6	94.4	0		
PHF	.861	.891	.000	.952	.841	.688	.000	.831	.750	.823	.000	.844	.909



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Avenue/ Beech Street
E: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 AA
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Belgrade Avenue From North			Belgrade Avenue From East			Beech Street From South			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
02:30 PM	1	2	0	4	0	0	0	0	0	7
02:45 PM	1	5	0	7	0	0	0	0	0	13
Total	2	7	0	11	0	0	0	0	0	20
03:00 PM	0	3	0	5	0	0	1	1	0	10
03:15 PM	1	3	0	5	0	0	0	0	0	9
03:30 PM	0	5	0	1	0	0	0	2	0	8
03:45 PM	0	9	0	4	0	0	1	1	0	15
Total	1	20	0	15	0	0	2	4	0	42
04:00 PM	4	4	0	6	0	0	0	0	0	14
04:15 PM	1	5	0	5	0	0	0	1	0	12
04:30 PM	2	3	0	8	0	0	0	0	0	13
04:45 PM	0	3	0	4	0	0	1	0	0	8
Total	7	15	0	23	0	0	1	1	0	47
05:00 PM	1	5	0	5	0	0	0	1	0	12
05:15 PM	2	6	0	9	0	0	0	0	0	17
05:30 PM	0	4	0	5	0	0	0	0	0	9
05:45 PM	1	7	0	2	0	0	0	0	0	10
Total	4	22	0	21	0	0	0	1	0	48
Grand Total	14	64	0	70	0	0	3	6	0	157
Apprch %	17.9	82.1	0	100	0	0	33.3	66.7	0	
Total %	8.9	40.8	0	44.6	0	0	1.9	3.8	0	

Start Time	Belgrade Avenue From North				Belgrade Avenue From East				Beech Street From South				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:45 PM													
03:45 PM	0	9	0	9	4	0	0	4	1	1	0	2	15
04:00 PM	4	4	0	8	6	0	0	6	0	0	0	0	14
04:15 PM	1	5	0	6	5	0	0	5	0	1	0	1	12
04:30 PM	2	3	0	5	8	0	0	8	0	0	0	0	13
Total Volume	7	21	0	28	23	0	0	23	1	2	0	3	54
% App. Total	25	75	0		100	0	0		33.3	66.7	0		
PHF	.438	.583	.000	.778	.719	.000	.000	.719	.250	.500	.000	.375	.900



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Avenue/ Beech Street
E: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 AA
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Peds and Bikes

Start Time	Belgrade Avenue From North				Belgrade Avenue From East				Beech Street From South				Int. Total
	Thru	Left	Peds EB	Peds WB	Right	Left	Peds SB	Peds NB	Right	Thru	Peds WB	Peds EB	
02:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
02:45 PM	0	0	2	1	0	0	0	0	0	0	0	1	4
Total	0	0	2	1	1	0	0	0	0	0	0	1	5
03:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	2
03:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
03:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
03:45 PM	0	0	1	1	0	0	0	0	0	0	2	0	4
Total	0	0	2	3	1	0	0	0	0	0	2	0	8
04:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
04:15 PM	1	0	1	0	0	0	0	0	0	0	0	0	2
04:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	1	1	0	0	0	1	0	0	0	0	4
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
05:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	2
Total	1	0	0	0	3	0	0	0	0	0	0	0	4
Grand Total	2	0	5	5	5	0	0	1	0	0	2	1	21
Apprch %	16.7	0	41.7	41.7	83.3	0	0	16.7	0	0	66.7	33.3	
Total %	9.5	0	23.8	23.8	23.8	0	0	4.8	0	0	9.5	4.8	

Start Time	Belgrade Avenue From North					Belgrade Avenue From East					Beech Street From South					Int. Total
	Thru	Left	Peds EB	Peds WB	App. Total	Right	Left	Peds SB	Peds NB	App. Total	Right	Thru	Peds WB	Peds EB	App. Total	
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 02:30 PM																
02:30 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
02:45 PM	0	0	2	1	3	0	0	0	0	0	0	0	0	1	1	4
03:00 PM	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	2
03:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
Total Volume	0	0	3	2	5	2	0	0	0	2	0	0	0	1	1	8
% App. Total	0	0	60	40		100	0	0	0		0	0	0	100		
PHF	.000	.000	.375	.500	.417	.500	.000	.000	.000	.500	.000	.000	.000	.250	.250	.500



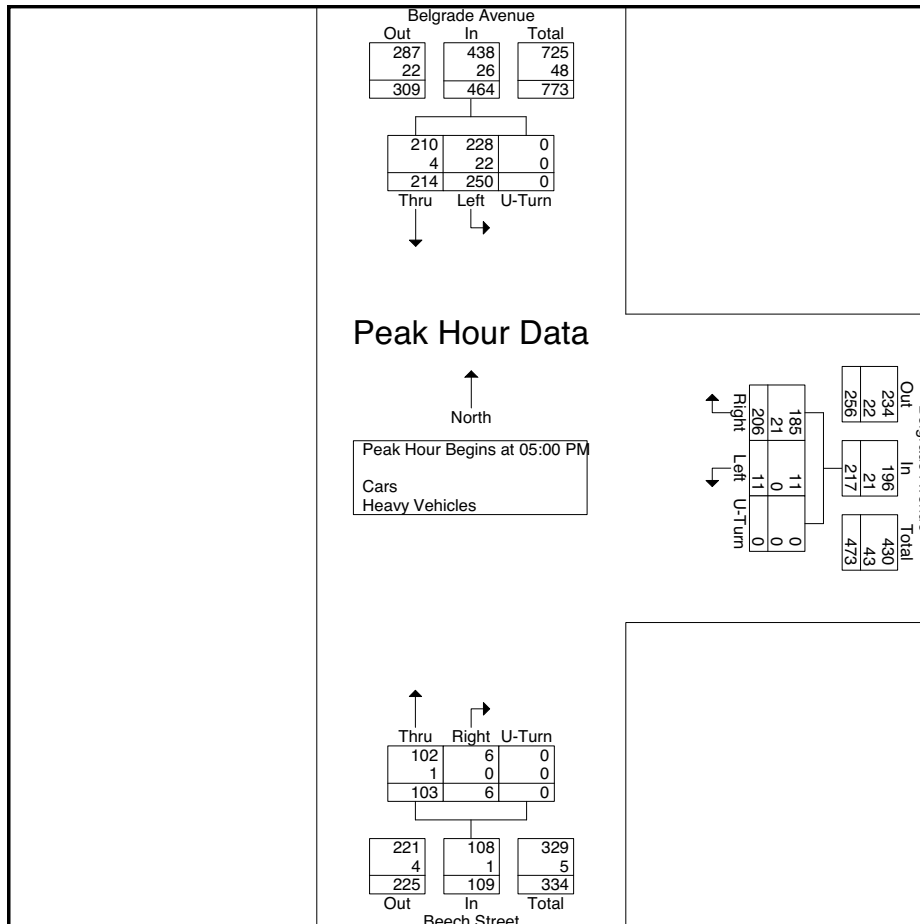
PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Avenue/ Beech Street
E: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 AA
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Start Time	Belgrade Avenue From North			App. Total	Belgrade Avenue From East			App. Total	Beech Street From South			App. Total	Int. Total
	Thru	Left	U-Turn		Right	Left	U-Turn		Right	Thru	U-Turn		
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	61	58	0	119	60	4	0	64	2	31	0	33	216
05:15 PM	40	66	0	106	51	4	0	55	1	18	0	19	180
05:30 PM	61	55	0	116	43	1	0	44	1	31	0	32	192
05:45 PM	52	71	0	123	52	2	0	54	2	23	0	25	202
Total Volume	214	250	0	464	206	11	0	217	6	103	0	109	790
% App. Total	46.1	53.9	0		94.9	5.1	0		5.5	94.5	0		
PHF	.877	.880	.000	.943	.858	.688	.000	.848	.750	.831	.000	.826	.914
Cars	210	228	0	438	185	11	0	196	6	102	0	108	742
% Cars	98.1	91.2	0	94.4	89.8	100	0	90.3	100	99.0	0	99.1	93.9
Heavy Vehicles	4	22	0	26	21	0	0	21	0	1	0	1	48
% Heavy Vehicles	1.9	8.8	0	5.6	10.2	0	0	9.7	0	1.0	0	0.9	6.1





PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Terrace/ Anawan Avenue
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 C
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	Belgrade Terrace From North				Belgrade Avenue From East				Anawan Avenue From South				Belgrade Avenue From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
06:30 AM	1	0	0	0	0	101	8	0	18	0	1	0	1	26	0	0	156
06:45 AM	2	0	0	0	0	124	6	0	13	3	0	0	0	31	0	0	179
Total	3	0	0	0	0	225	14	0	31	3	1	0	1	57	0	0	335
07:00 AM	0	1	0	0	0	133	13	0	19	1	1	0	0	38	0	0	206
07:15 AM	1	0	0	0	1	109	13	0	19	0	0	0	0	46	1	0	190
07:30 AM	1	1	0	0	0	156	22	0	18	3	0	0	0	50	0	0	251
07:45 AM	2	2	0	0	1	131	12	2	25	3	0	0	1	50	1	0	230
Total	4	4	0	0	2	529	60	2	81	7	1	0	1	184	2	0	877
08:00 AM	3	1	0	0	1	101	28	0	37	1	0	1	0	68	1	0	242
08:15 AM	2	1	1	0	4	109	13	0	23	3	2	0	0	61	0	0	219
08:30 AM	3	0	2	0	2	102	10	1	21	2	0	0	0	49	1	0	193
08:45 AM	1	1	3	0	0	76	11	0	26	0	2	0	2	56	1	0	179
Total	9	3	6	0	7	388	62	1	107	6	4	1	2	234	3	0	833
Grand Total	16	7	6	0	9	1142	136	3	219	16	6	1	4	475	5	0	2045
Apprch %	55.2	24.1	20.7	0	0.7	88.5	10.5	0.2	90.5	6.6	2.5	0.4	0.8	98.1	1	0	
Total %	0.8	0.3	0.3	0	0.4	55.8	6.7	0.1	10.7	0.8	0.3	0	0.2	23.2	0.2	0	
Cars	16	7	6	0	9	1070	132	3	215	16	6	0	4	410	5	0	1899
% Cars	100	100	100	0	100	93.7	97.1	100	98.2	100	100	0	100	86.3	100	0	92.9
Heavy Vehicles	0	0	0	0	0	72	4	0	4	0	0	1	0	65	0	0	146
% Heavy Vehicles	0	0	0	0	0	6.3	2.9	0	1.8	0	0	100	0	13.7	0	0	7.1

Start Time	Belgrade Terrace From North					Belgrade Avenue From East					Anawan Avenue From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
07:30 AM	1	1	0	0	2	0	156	22	0	178	18	3	0	0	21	0	50	0	0	50	251
07:45 AM	2	2	0	0	4	1	131	12	2	146	25	3	0	0	28	1	50	1	0	52	230
08:00 AM	3	1	0	0	4	1	101	28	0	130	37	1	0	1	39	0	68	1	0	69	242
08:15 AM	2	1	1	0	4	4	109	13	0	126	23	3	2	0	28	0	61	0	0	61	219
Total Volume	8	5	1	0	14	6	497	75	2	580	103	10	2	1	116	1	229	2	0	232	942
% App. Total	57.1	35.7	7.1	0		1	85.7	12.9	0.3		88.8	8.6	1.7	0.9		0.4	98.7	0.9	0		
PHF	.667	.625	.250	.000	.875	.375	.796	.670	.250	.815	.696	.833	.250	.250	.744	.250	.842	.500	.000	.841	.938
Cars	8	5	1	0	14	6	466	72	2	546	100	10	2	0	112	1	201	2	0	204	876
% Cars	100	100	100	0	100	100	93.8	96.0	100	94.1	97.1	100	100	0	96.6	100	87.8	100	0	87.9	93.0
Heavy Vehicles	0	0	0	0	0	0	31	3	0	34	3	0	0	1	4	0	28	0	0	28	66
% Heavy Vehicles	0	0	0	0	0	0	6.2	4.0	0	5.9	2.9	0	0	100	3.4	0	12.2	0	0	12.1	7.0

Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:30 AM



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Terrace/ Anawan Avenue
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 C
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars

Start Time	Belgrade Terrace From North				Belgrade Avenue From East				Anawan Avenue From South				Belgrade Avenue From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
06:30 AM	1	0	0	0	0	93	7	0	18	0	1	0	1	23	0	0	144
06:45 AM	2	0	0	0	0	115	6	0	13	3	0	0	0	24	0	0	163
Total	3	0	0	0	0	208	13	0	31	3	1	0	1	47	0	0	307
07:00 AM	0	1	0	0	0	126	13	0	19	1	1	0	0	33	0	0	194
07:15 AM	1	0	0	0	1	104	13	0	19	0	0	0	0	39	1	0	178
07:30 AM	1	1	0	0	0	149	20	0	18	3	0	0	0	43	0	0	235
07:45 AM	2	2	0	0	1	124	11	2	24	3	0	0	1	44	1	0	215
Total	4	4	0	0	2	503	57	2	80	7	1	0	1	159	2	0	822
08:00 AM	3	1	0	0	1	92	28	0	35	1	0	0	0	60	1	0	222
08:15 AM	2	1	1	0	4	101	13	0	23	3	2	0	0	54	0	0	204
08:30 AM	3	0	2	0	2	95	10	1	21	2	0	0	0	43	1	0	180
08:45 AM	1	1	3	0	0	71	11	0	25	0	2	0	2	47	1	0	164
Total	9	3	6	0	7	359	62	1	104	6	4	0	2	204	3	0	770
Grand Total	16	7	6	0	9	1070	132	3	215	16	6	0	4	410	5	0	1899
Apprch %	55.2	24.1	20.7	0	0.7	88.1	10.9	0.2	90.7	6.8	2.5	0	1	97.9	1.2	0	
Total %	0.8	0.4	0.3	0	0.5	56.3	7	0.2	11.3	0.8	0.3	0	0.2	21.6	0.3	0	

Start Time	Belgrade Terrace From North					Belgrade Avenue From East					Anawan Avenue From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	1	1	0	0	2	0	149	20	0	169	18	3	0	0	21	0	43	0	0	43	235
07:45 AM	2	2	0	0	4	1	124	11	2	138	24	3	0	0	27	1	44	1	0	46	215
08:00 AM	3	1	0	0	4	1	92	28	0	121	35	1	0	0	36	0	60	1	0	61	222
08:15 AM	2	1	1	0	4	4	101	13	0	118	23	3	2	0	28	0	54	0	0	54	204
Total Volume	8	5	1	0	14	6	466	72	2	546	100	10	2	0	112	1	201	2	0	204	876
% App. Total	57.1	35.7	7.1	0		1.1	85.3	13.2	0.4		89.3	8.9	1.8	0		0.5	98.5	1	0		
PHF	.667	.625	.250	.000	.875	.375	.782	.643	.250	.808	.714	.833	.250	.000	.778	.250	.838	.500	.000	.836	.932



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Terrace/ Anawan Avenue
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 C
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Belgrade Terrace From North				Belgrade Avenue From East				Anawan Avenue From South				Belgrade Avenue From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
06:30 AM	0	0	0	0	0	8	1	0	0	0	0	0	0	3	0	0	12
06:45 AM	0	0	0	0	0	9	0	0	0	0	0	0	0	7	0	0	16
Total	0	0	0	0	0	17	1	0	0	0	0	0	0	10	0	0	28
07:00 AM	0	0	0	0	0	7	0	0	0	0	0	0	0	5	0	0	12
07:15 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	7	0	0	12
07:30 AM	0	0	0	0	0	7	2	0	0	0	0	0	0	7	0	0	16
07:45 AM	0	0	0	0	0	7	1	0	1	0	0	0	0	6	0	0	15
Total	0	0	0	0	0	26	3	0	1	0	0	0	0	25	0	0	55
08:00 AM	0	0	0	0	0	9	0	0	2	0	0	1	0	8	0	0	20
08:15 AM	0	0	0	0	0	8	0	0	0	0	0	0	0	7	0	0	15
08:30 AM	0	0	0	0	0	7	0	0	0	0	0	0	0	6	0	0	13
08:45 AM	0	0	0	0	0	5	0	0	1	0	0	0	0	9	0	0	15
Total	0	0	0	0	0	29	0	0	3	0	0	1	0	30	0	0	63
Grand Total	0	0	0	0	0	72	4	0	4	0	0	1	0	65	0	0	146
Apprch %	0	0	0	0	0	94.7	5.3	0	80	0	0	20	0	100	0	0	
Total %	0	0	0	0	0	49.3	2.7	0	2.7	0	0	0.7	0	44.5	0	0	

Start Time	Belgrade Terrace From North					Belgrade Avenue From East					Anawan Avenue From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	0	7	2	0	9	0	0	0	0	0	0	7	0	0	7	16
07:45 AM	0	0	0	0	0	0	7	1	0	8	1	0	0	0	1	0	6	0	0	6	15
08:00 AM	0	0	0	0	0	0	9	0	0	9	2	0	0	1	3	0	8	0	0	8	20
08:15 AM	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	7	0	0	7	15
Total Volume	0	0	0	0	0	0	31	3	0	34	3	0	0	1	4	0	28	0	0	28	66
% App. Total	0	0	0	0	0	0	91.2	8.8	0		75	0	0	25		0	100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.861	.375	.000	.944	.375	.000	.000	.250	.333	.000	.875	.000	.000	.875	.825



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Terrace/ Anawan Avenue
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 C
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Peds and Bikes

Start Time	Belgrade Terrace From North					Belgrade Avenue From East					Anawan Avenue From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
06:30 AM	0	0	0	1	2	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	5
06:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	3
Total	0	0	0	1	2	0	0	0	1	1	0	0	0	0	2	0	0	0	1	0	8
07:00 AM	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	3
07:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
07:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	4
Total	0	1	0	0	0	0	0	0	0	2	2	0	0	1	1	0	2	0	1	0	10
08:00 AM	0	0	0	0	2	0	1	0	1	0	0	0	0	1	0	0	0	0	2	0	7
08:15 AM	0	0	0	2	4	0	1	0	0	0	2	0	0	1	0	0	0	0	0	0	10
08:30 AM	0	0	0	1	0	0	2	0	0	0	1	0	0	1	0	0	1	0	0	0	6
08:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
Total	0	0	0	4	6	0	4	0	1	0	3	0	0	3	1	0	1	0	2	0	25
Grand Total	0	1	0	5	8	0	4	0	2	3	5	0	0	4	4	0	3	0	4	0	43
Apprch %	0	7.1	0	35.7	57.1	0	44.4	0	22.2	33.3	38.5	0	0	30.8	30.8	0	42.9	0	57.1	0	
Total %	0	2.3	0	11.6	18.6	0	9.3	0	4.7	7	11.6	0	0	9.3	9.3	0	7	0	9.3	0	

Start Time	Belgrade Terrace From North						Belgrade Avenue From East						Anawan Avenue From South						Belgrade Avenue From West						Int. Total				
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total					
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1																													
Peak Hour for Entire Intersection Begins at 07:45 AM																													
07:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	2	0	2	0	2	7
08:00 AM	0	0	0	0	2	2	0	1	0	1	0	2	0	0	0	1	0	1	0	0	0	2	0	2	0	0	0	0	10
08:15 AM	0	0	0	2	4	6	0	1	0	0	0	1	2	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	6
08:30 AM	0	0	0	1	0	1	0	2	0	0	0	2	1	0	0	1	0	2	0	1	0	0	0	1	0	1	0	1	6
Total Volume	0	1	0	3	6	10	0	4	0	1	0	5	3	0	0	3	1	7	0	2	0	3	0	5	0	2	0	3	27
% App. Total	0	10	0	30	60		0	80	0	20	0		42.9	0	0	42.9	14.3		0	40	0	60	0		0	40	0	60	
PHF	.000	.250	.000	.375	.375	.417	.000	.500	.000	.250	.000	.625	.375	.000	.000	.750	.250	.583	.000	.500	.000	.375	.000	.625	.000	.500	.000	.375	.675

N/S: Belgrade Terrace/ Anawan Avenue
 E/W: Belgrade Avenue
 City, State: West Roxbury, MA
 Client: HSH/ M. Santos

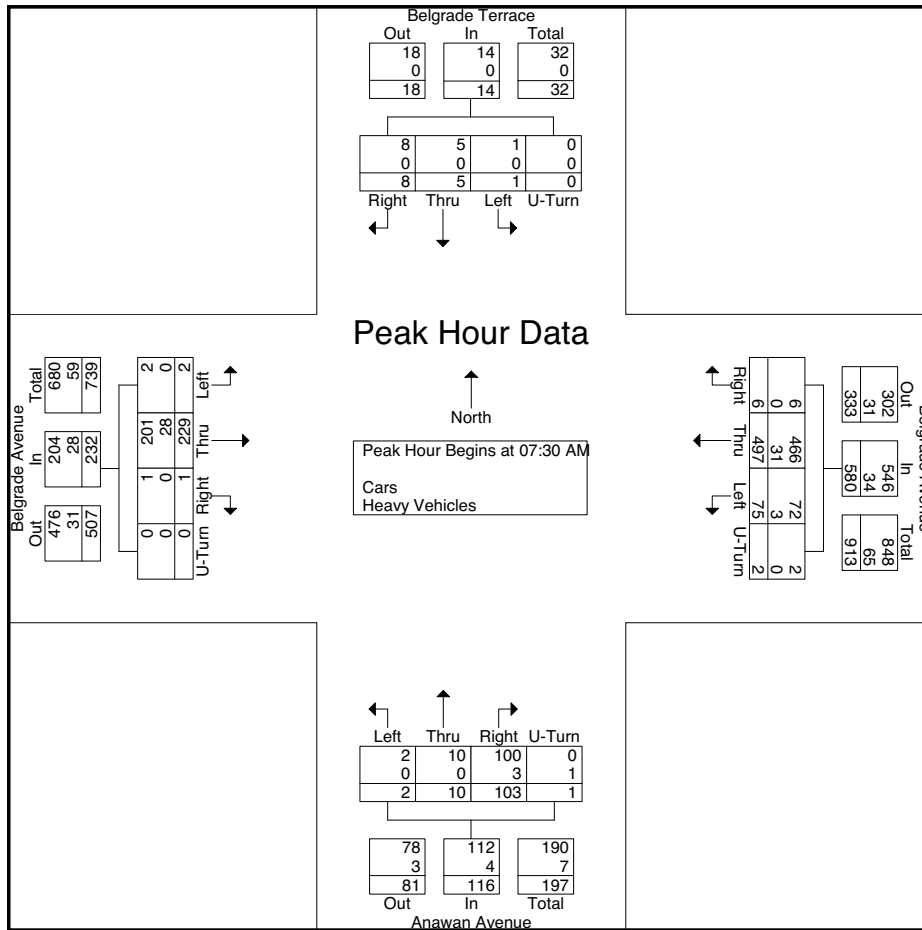


PRECISION
 D A T A
 INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdillc.com

File Name : 165344 C
 Site Code : 16170.00
 Start Date : 10/26/2016
 Page No : 1

Start Time	Belgrade Terrace From North					Belgrade Avenue From East					Anawan Avenue From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	1	1	0	0	2	0	156	22	0	178	18	3	0	0	21	0	50	0	0	50	251
07:45 AM	2	2	0	0	4	1	131	12	2	146	25	3	0	0	28	1	50	1	0	52	230
08:00 AM	3	1	0	0	4	1	101	28	0	130	37	1	0	1	39	0	68	1	0	69	242
08:15 AM	2	1	1	0	4	4	109	13	0	126	23	3	2	0	28	0	61	0	0	61	219
Total Volume	8	5	1	0	14	6	497	75	2	580	103	10	2	1	116	1	229	2	0	232	942
% App. Total	57.1	35.7	7.1	0		1	85.7	12.9	0.3		88.8	8.6	1.7	0.9		0.4	98.7	0.9	0		
PHF	.667	.625	.250	.000	.875	.375	.796	.670	.250	.815	.696	.833	.250	.250	.744	.250	.842	.500	.000	.841	.938
Cars	8	5	1	0	14	6	466	72	2	546	100	10	2	0	112	1	201	2	0	204	876
% Cars	100	100	100	0	100	100	93.8	96.0	100	94.1	97.1	100	100	0	96.6	100	87.8	100	0	87.9	93.0
Heavy Vehicles	0	0	0	0	0	0	31	3	0	34	3	0	0	1	4	0	28	0	0	28	66
% Heavy Vehicles	0	0	0	0	0	0	6.2	4.0	0	5.9	2.9	0	0	100	3.4	0	12.2	0	0	12.1	7.0





PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Terrace/ Anawan Avenue
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 CC
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	Belgrade Terrace From North				Belgrade Avenue From East				Anawan Avenue From South				Belgrade Avenue From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
02:30 PM	2	0	0	0	1	65	10	0	22	0	0	0	0	78	1	0	179
02:45 PM	1	0	0	1	1	72	10	0	20	0	0	0	0	91	3	0	199
Total	3	0	0	1	2	137	20	0	42	0	0	0	0	169	4	0	378
03:00 PM	0	0	1	0	0	75	27	0	19	0	1	0	0	97	0	0	220
03:15 PM	3	1	0	0	1	73	25	0	15	0	1	0	0	106	0	0	225
03:30 PM	1	0	0	0	1	72	30	0	15	2	0	0	0	102	0	0	223
03:45 PM	2	2	2	0	1	68	18	0	16	0	0	0	1	119	0	0	229
Total	6	3	3	0	3	288	100	0	65	2	2	0	1	424	0	0	897
04:00 PM	0	1	1	0	0	85	26	1	24	2	0	0	1	111	0	0	252
04:15 PM	1	0	1	0	0	66	28	0	17	0	0	0	0	113	1	0	227
04:30 PM	1	1	0	0	1	90	33	0	17	0	0	0	1	123	0	0	267
04:45 PM	0	0	0	0	2	88	24	0	23	0	0	0	0	113	2	0	252
Total	2	2	2	0	3	329	111	1	81	2	0	0	2	460	3	0	998
05:00 PM	1	1	0	0	0	99	31	0	22	0	0	0	0	110	0	0	264
05:15 PM	0	2	0	0	1	76	16	0	24	0	0	0	1	115	0	0	235
05:30 PM	1	0	0	0	1	60	32	0	16	0	2	0	1	107	0	0	220
05:45 PM	0	3	0	0	1	74	29	0	19	0	0	0	1	126	5	0	258
Total	2	6	0	0	3	309	108	0	81	0	2	0	3	458	5	0	977
Grand Total	13	11	5	1	11	1063	339	1	269	4	4	0	6	1511	12	0	3250
Apprch %	43.3	36.7	16.7	3.3	0.8	75.2	24	0.1	97.1	1.4	1.4	0	0.4	98.8	0.8	0	
Total %	0.4	0.3	0.2	0	0.3	32.7	10.4	0	8.3	0.1	0.1	0	0.2	46.5	0.4	0	
Cars	13	11	5	1	11	993	336	1	264	4	4	0	6	1436	12	0	3097
% Cars	100	100	100	100	100	93.4	99.1	100	98.1	100	100	0	100	95	100	0	95.3
Heavy Vehicles	0	0	0	0	0	70	3	0	5	0	0	0	0	75	0	0	153
% Heavy Vehicles	0	0	0	0	0	6.6	0.9	0	1.9	0	0	0	0	5	0	0	4.7

Start Time	Belgrade Terrace From North					Belgrade Avenue From East					Anawan Avenue From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
04:30 PM	1	1	0	0	2	1	90	33	0	124	17	0	0	0	17	1	123	0	0	124	267
04:45 PM	0	0	0	0	0	2	88	24	0	114	23	0	0	0	23	0	113	2	0	115	252
05:00 PM	1	1	0	0	2	0	99	31	0	130	22	0	0	0	22	0	110	0	0	110	264
05:15 PM	0	2	0	0	2	1	76	16	0	93	24	0	0	0	24	1	115	0	0	116	235
Total Volume	2	4	0	0	6	4	353	104	0	461	86	0	0	0	86	2	461	2	0	465	1018
% App. Total	33.3	66.7	0	0	0	0.9	76.6	22.6	0		100	0	0	0		0.4	99.1	0.4	0		
PHF	.500	.500	.000	.000	.750	.500	.891	.788	.000	.887	.896	.000	.000	.000	.896	.500	.937	.250	.000	.938	.953
Cars	2	4	0	0	6	4	328	104	0	436	85	0	0	0	85	2	440	2	0	444	971
% Cars	100	100	0	0	100	100	92.9	100	0	94.6	98.8	0	0	0	98.8	100	95.4	100	0	95.5	95.4
Heavy Vehicles	0	0	0	0	0	0	25	0	0	25	1	0	0	0	1	0	21	0	0	21	47
% Heavy Vehicles	0	0	0	0	0	0	7.1	0	0	5.4	1.2	0	0	0	1.2	0	4.6	0	0	4.5	4.6

Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Terrace/ Anawan Avenue
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 CC
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Cars

Start Time	Belgrade Terrace From North				Belgrade Avenue From East				Anawan Avenue From South				Belgrade Avenue From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
02:30 PM	2	0	0	0	1	61	10	0	21	0	0	0	0	75	1	0	171
02:45 PM	1	0	0	1	1	63	8	0	19	0	0	0	0	85	3	0	181
Total	3	0	0	1	2	124	18	0	40	0	0	0	0	160	4	0	352
03:00 PM	0	0	1	0	0	72	27	0	18	0	1	0	0	91	0	0	210
03:15 PM	3	1	0	0	1	67	24	0	14	0	1	0	0	102	0	0	213
03:30 PM	1	0	0	0	1	68	30	0	15	2	0	0	0	97	0	0	214
03:45 PM	2	2	2	0	1	65	18	0	16	0	0	0	1	109	0	0	216
Total	6	3	3	0	3	272	99	0	63	2	2	0	1	399	0	0	853
04:00 PM	0	1	1	0	0	77	26	1	24	2	0	0	1	104	0	0	237
04:15 PM	1	0	1	0	0	62	28	0	17	0	0	0	0	107	1	0	217
04:30 PM	1	1	0	0	1	83	33	0	17	0	0	0	1	116	0	0	253
04:45 PM	0	0	0	0	2	85	24	0	22	0	0	0	0	108	2	0	243
Total	2	2	2	0	3	307	111	1	80	2	0	0	2	435	3	0	950
05:00 PM	1	1	0	0	0	96	31	0	22	0	0	0	0	107	0	0	258
05:15 PM	0	2	0	0	1	64	16	0	24	0	0	0	1	109	0	0	217
05:30 PM	1	0	0	0	1	57	32	0	16	0	2	0	1	105	0	0	215
05:45 PM	0	3	0	0	1	73	29	0	19	0	0	0	1	121	5	0	252
Total	2	6	0	0	3	290	108	0	81	0	2	0	3	442	5	0	942
Grand Total	13	11	5	1	11	993	336	1	264	4	4	0	6	1436	12	0	3097
Apprch %	43.3	36.7	16.7	3.3	0.8	74	25.1	0.1	97.1	1.5	1.5	0	0.4	98.8	0.8	0	
Total %	0.4	0.4	0.2	0	0.4	32.1	10.8	0	8.5	0.1	0.1	0	0.2	46.4	0.4	0	

Start Time	Belgrade Terrace From North					Belgrade Avenue From East					Anawan Avenue From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	1	0	1	0	2	0	62	28	0	90	17	0	0	0	17	0	107	1	0	108	217
04:30 PM	1	1	0	0	2	1	83	33	0	117	17	0	0	0	17	1	116	0	0	117	253
04:45 PM	0	0	0	0	0	2	85	24	0	111	22	0	0	0	22	0	108	2	0	110	243
05:00 PM	1	1	0	0	2	0	96	31	0	127	22	0	0	0	22	0	107	0	0	107	258
Total Volume	3	2	1	0	6	3	326	116	0	445	78	0	0	0	78	1	438	3	0	442	971
% App. Total	50	33.3	16.7	0		0.7	73.3	26.1	0		100	0	0	0		0.2	99.1	0.7	0		
PHF	.750	.500	.250	.000	.750	.375	.849	.879	.000	.876	.886	.000	.000	.000	.886	.250	.944	.375	.000	.944	.941



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Terrace/ Anawan Avenue
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 CC
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Belgrade Terrace From North				Belgrade Avenue From East				Anawan Avenue From South				Belgrade Avenue From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
02:30 PM	0	0	0	0	0	4	0	0	1	0	0	0	0	3	0	0	8
02:45 PM	0	0	0	0	0	9	2	0	1	0	0	0	0	6	0	0	18
Total	0	0	0	0	0	13	2	0	2	0	0	0	0	9	0	0	26
03:00 PM	0	0	0	0	0	3	0	0	1	0	0	0	0	6	0	0	10
03:15 PM	0	0	0	0	0	6	1	0	1	0	0	0	0	4	0	0	12
03:30 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	5	0	0	9
03:45 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	10	0	0	13
Total	0	0	0	0	0	16	1	0	2	0	0	0	0	25	0	0	44
04:00 PM	0	0	0	0	0	8	0	0	0	0	0	0	0	7	0	0	15
04:15 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	6	0	0	10
04:30 PM	0	0	0	0	0	7	0	0	0	0	0	0	0	7	0	0	14
04:45 PM	0	0	0	0	0	3	0	0	1	0	0	0	0	5	0	0	9
Total	0	0	0	0	0	22	0	0	1	0	0	0	0	25	0	0	48
05:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	6
05:15 PM	0	0	0	0	0	12	0	0	0	0	0	0	0	6	0	0	18
05:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0	5
05:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	5	0	0	6
Total	0	0	0	0	0	19	0	0	0	0	0	0	0	16	0	0	35
Grand Total	0	0	0	0	0	70	3	0	5	0	0	0	0	75	0	0	153
Apprch %	0	0	0	0	0	95.9	4.1	0	100	0	0	0	0	100	0	0	
Total %	0	0	0	0	0	45.8	2	0	3.3	0	0	0	0	49	0	0	

Start Time	Belgrade Terrace From North					Belgrade Avenue From East					Anawan Avenue From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	10	0	0	10	13
04:00 PM	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	7	0	0	7	15
04:15 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	6	0	0	6	10
04:30 PM	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	7	0	0	7	14
Total Volume	0	0	0	0	0	0	22	0	0	22	0	0	0	0	0	0	30	0	0	30	52
% App. Total	0	0	0	0	0	0	100	0	0	100	0	0	0	0	0	0	100	0	0	100	
PHF	.000	.000	.000	.000	.000	.000	.688	.000	.000	.688	.000	.000	.000	.000	.000	.000	.750	.000	.000	.750	.867



PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Terrace/ Anawan Avenue
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 CC
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Groups Printed- Peds and Bikes

Start Time	Belgrade Terrace From North					Belgrade Avenue From East					Anawan Avenue From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
02:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	3
02:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
Total	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	0	1	0	0	0	5
03:00 PM	0	1	0	3	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	8
03:15 PM	0	0	0	2	0	0	1	0	4	0	0	0	0	1	2	0	0	0	0	2	12
03:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
03:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
Total	0	1	0	7	2	0	1	0	4	0	0	0	0	3	3	0	0	0	0	3	24
04:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	4	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	6
04:30 PM	0	0	0	0	1	0	0	0	1	0	1	0	0	0	2	0	0	0	1	0	6
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	4	2	0	0	0	1	0	2	0	0	1	2	0	0	0	1	0	13
05:00 PM	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	6
05:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2
05:30 PM	0	0	0	1	5	0	1	0	0	0	0	0	0	0	2	0	0	0	1	0	10
05:45 PM	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	4
Total	0	0	0	6	5	0	3	0	1	0	1	0	0	0	2	0	2	0	1	1	22
Grand Total	0	1	0	18	9	0	5	0	6	0	3	0	0	5	8	0	3	0	2	4	64
Apprch %	0	3.6	0	64.3	32.1	0	45.5	0	54.5	0	18.8	0	0	31.2	50	0	33.3	0	22.2	44.4	
Total %	0	1.6	0	28.1	14.1	0	7.8	0	9.4	0	4.7	0	0	7.8	12.5	0	4.7	0	3.1	6.2	

Start Time	Belgrade Terrace From North						Belgrade Avenue From East						Anawan Avenue From South						Belgrade Avenue From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 02:30 PM																									
02:30 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	1	0	1	0	0	0	1	3
02:45 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
03:00 PM	0	1	0	3	2	6	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	1	8
03:15 PM	0	0	0	2	0	2	0	1	0	4	0	5	0	0	0	1	2	3	0	0	0	0	2	2	12
Total Volume	0	1	0	6	2	9	0	2	0	4	0	6	0	0	0	3	3	6	0	1	0	0	3	4	25
% App. Total	0	11.1	0	66.7	22.2		0	33.3	0	66.7	0		0	0	0	50	50		0	25	0	0	75		
PHF	.000	.250	.000	.500	.250	.375	.000	.500	.000	.250	.000	.300	.000	.000	.000	.750	.375	.500	.000	.250	.000	.000	.375	.500	.521



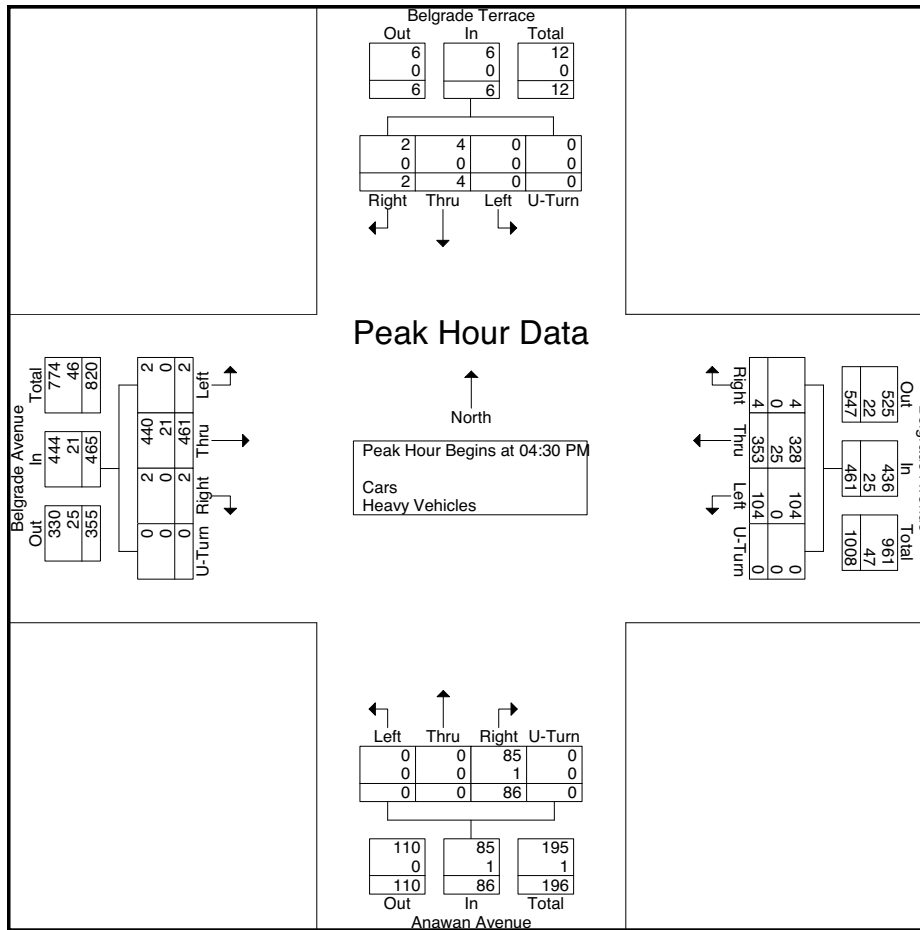
PRECISION
D A T A
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Belgrade Terrace/ Anawan Avenue
E/W: Belgrade Avenue
City, State: West Roxbury, MA
Client: HSH/ M. Santos

File Name : 165344 CC
Site Code : 16170.00
Start Date : 10/26/2016
Page No : 1

Start Time	Belgrade Terrace From North					Belgrade Avenue From East					Anawan Avenue From South					Belgrade Avenue From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	1	1	0	0	2	1	90	33	0	124	17	0	0	0	17	1	123	0	0	124	267
04:45 PM	0	0	0	0	0	2	88	24	0	114	23	0	0	0	23	0	113	2	0	115	252
05:00 PM	1	1	0	0	2	0	99	31	0	130	22	0	0	0	22	0	110	0	0	110	264
05:15 PM	0	2	0	0	2	1	76	16	0	93	24	0	0	0	24	1	115	0	0	116	235
Total Volume	2	4	0	0	6	4	353	104	0	461	86	0	0	0	86	2	461	2	0	465	1018
% App. Total	33.3	66.7	0	0		0.9	76.6	22.6	0		100	0	0	0		0.4	99.1	0.4	0		
PHF	.500	.500	.000	.000	.750	.500	.891	.788	.000	.887	.896	.000	.000	.000	.896	.500	.937	.250	.000	.938	.953
Cars	2	4	0	0	6	4	328	104	0	436	85	0	0	0	85	2	440	2	0	444	971
% Cars	100	100	0	0	100	100	92.9	100	0	94.6	98.8	0	0	0	98.8	100	95.4	100	0	95.5	95.4
Heavy Vehicles	0	0	0	0	0	0	25	0	0	25	1	0	0	0	1	0	21	0	0	21	47
% Heavy Vehicles	0	0	0	0	0	0	7.1	0	0	5.4	1.2	0	0	0	1.2	0	4.6	0	0	4.5	4.6



MASSACHUSETTS HIGHWAY DEPARTMENT - STATEWIDE TRAFFIC DATA COLLECTION

2011 WEEKDAY SEASONAL FACTORS *

* Note: These are weekday factors. The average of the factors for the year will not equal 1, as weekend data are not considered.

FACTOR GROUP	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
GROUP 1 - WEST INTERSTATE	0.98	0.93	0.90	0.89	0.90	0.88	0.91	0.90	0.89	0.89	0.93	0.95
GROUP 2 - RURAL MAJOR COLLECTOR (R-5) Use group 2 for R5, R6, & R0	1.12	1.12	1.07	0.99	0.91	0.90	0.86	0.86	0.92	0.93	1.01	1.05
GROUP 3A - RECREATIONAL **(1-4) See below	1.26	1.25	1.20	1.06	0.96	0.89	0.76	0.76	0.92	0.99	1.08	1.14
GROUP 3B - RECREATIONAL *** (5) See below	1.22	1.26	1.22	1.06	0.96	0.90	0.72	0.74	0.97	1.02	1.14	1.15
GROUP 4 - I-495 INTERSTATE	1.02	1.00	1.00	0.96	0.92	0.89	0.85	0.83	0.93	0.96	1.01	1.03
GROUP 5 - EAST INTERSTATE	1.04	1.00	0.96	0.93	0.92	0.91	0.91	0.89	0.93	0.93	0.96	1.01
GROUP 6: Use group 6 for U2, U3, U5, U6, U0, R2, & R3	1.03	1.01	0.96	0.92	0.91	0.90	0.92	0.92	0.93	0.92	0.97	0.97
URBAN ARTERIALS, COLLECTORS & RURAL ARTERIALS (R-2, R-3)												
GROUP 7 - I-84 PROXIMITY (STA. 17, 3921)	1.24	1.24	1.15	1.04	0.99	1.00	0.93	0.89	1.05	1.05	1.05	1.12
GROUP 8 - I-295 PROXIMITY (STA. 6590)	1.00	0.99	0.95	0.92	0.94	0.91	0.93	0.92	0.95	0.94	0.97	0.95
GROUP 9 - I-195 PROXIMITY (STA. 7)	1.13	1.05	1.03	0.95	0.89	0.87	0.86	0.79	0.88	0.91	0.99	1.03

RECREATIONAL: (ALL YEARS)

**GROUP 3A:

1. CAPE COD (ALL TOWNS)

2. PLYMOUTH(SOUTH OF RTE.3A)

7014, 7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108,7178

3. MARTHA'S VINEYARD

4. NANTUCKET

***GROUP 3B:

5. PERMANENTS 2 & 189

1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,

1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,

1105,1106,1107,1108,1113,1114,1116,2196,2197,2198

2011 AXLE CORRECTION FACTORS

ROAD INVENTORY

AXLE CORRECTION

FACTOR

FUNCTIONAL CLASSIFICATION

RURAL

1

0.95

2

0.97

3

0.98

0,5,6

0.98

URBAN

1

0.96

2,3

0.98

5

0.98

0,6

0.99

I-84

0.90

ROUND OFF

0 - 999.....10

> 1,000.....100

Apply I-84 factor to stations:

3290, 3921, 3929

Massachusetts Bay Transportation Authority

Route 35

Weekday - Outbound

(Urban Transportation Associates)

Seq - StopID - Stop Name	Trip (RouteVar)(Block) [Observations]							
	06:50 (35.0)(B184) [53]{FA17}	07:15 (35.0)(B143) [59]{FA17}	07:27 (35.0)(B142) [60]{FA17}	07:48 (35.0)(B055) [54]{FA17}	08:18 (35.0)(B143) [51]{FA17}	08:44 (35.1)(B142) [59]{FA17}	Load	Load
35 - 10642 - FOREST HILLS STATION UPPER BU	5.9	7	8.6	8.6	8.5	8.5	15.5	15.5
36 - 596 - 3867 WASHINGTON ST OPP TOLLGA	5.8	6.9	9.2	8.7	8.5	8.5	15.5	15.5
37 - 597 - WASHINGTON ST @ LOCHDALE RD	5.7	7	9.1	8.7	8.6	8.6	15.5	15.5
38 - 598 - WASHINGTON ST @ ARCHDALE RD	5.7	7.1	9.5	8.8	8.6	8.6	16.1	16.1
39 - 599 - WASHINGTON ST @ MOSGROVE AVE	5.8	7.1	9.4	8.9	8.6	8.6	16.3	16.3
40 - 600 - WASHINGTON ST OPP GRANFIELD A	5.9	7.1	9.5	8.9	8.8	8.8	16.4	16.4
41 - 601 - WASHINGTON ST @ SOUTH ST	5.8	7.2	9.3	8.7	8.6	8.6	15.9	15.9
42 - 602 - SOUTH ST @ TAFT HILL TERR	5.5	7.2	8.5	7	6.6	6.6	12.7	12.7
43 - 797 - BELGRADE AVE @ ROBERT ST	5.3	7.1	8.6	7.1	6.5	6.5	13.7	13.7
44 - 798 - BELGRADE AVE OPP PINEHURST ST	5.3	7.2	8.7	7.1	6.6	6.6	13.7	13.7
45 - 799 - BELGRADE AVE OPP PENFIELD ST	5.4	7.2	8.7	7.2	6.5	6.5	13.7	13.7
46 - 800 - BELGRADE AVE @ WALWORTH ST	5.6	8.4	8.5	7.3	6.7	6.7	14.4	14.4
47 - 801 - BELGRADE AVE OPP ALDRICH ST	5.9	8.3	8.6	7.1	6.9	6.9	14.2	14.2
48 - 802 - 277 BELGRADE AVE OPP REXHAME	5.9	8.3	8.6	7.1	7	7	14.2	14.2
49 - 803 - BELGRADE AVE @ MCGRAW ST	5.9	8.3	8.5	7	6.9	6.9	13.9	13.9

Maximum

Average Load

Maximum Load

Average Capacity

Minimum Capacity

a.m. headway

5.9 8.4 9.5 8.9 8.8 16.4
 9.7 8.8 16.4
 16.4 45.4
 45.4 38.6
 38.6 12-30

Massachusetts Bay Transportation Authority
Route 38
Weekday - Outbound

Seq - StopID - Stop Name	Trip (RouteVar)(Block) [Observations]											
	06:54 (38.0)(B185) [59] {FA17}	07:16 (38.0)(B259) [44] {FA17}	07:38 (38.0)(B185) [60] {FA17}	08:00 (38.0)(B259) [63] {FA17}	08:22 (38.0)(B196) [50] {FA17}	08:44 (38.0)(B227) [57] {FA17}						
	Load	Load	Load	Load	Load	Load						
14 - 10642 - FOREST HILLS STATION UPPER BU	7.5	6.6	9	9.6	8.4	7.4						
15 - 1936 - SOUTH ST @ SPALDING ST	7.5	6.5	8.9	9.8	8.4	7.4						
16 - 1937 - SOUTH ST @ CHILD ST	7.5	6.6	8.9	8.3	7.2	7.1						
17 - 1938 - SOUTH ST @ CAROLINA AVE	7.5	6.5	8.8	7.9	6.7	7						
18 - 11939 - CENTRE ST @ ELIOT ST	7.7	6.6	10	8.7	7.5	7.8						
19 - 1940 - CENTRE ST @ ALDORTH ST	7.8	6.6	10.1	8.7	7.4	7.8						
20 - 1941 - CENTRE ST @ ORCHARD ST	7.3	6.5	10	8.5	7.2	7.8						
21 - 5241 - CENTRE ST @ HILLCROFT RD	6.8	6.5	9.3	7.4	6.5	7.6						
22 - 15241 - CENTRE ST @ LOUDERS LN	6.3	6	9.3	7.4	6.4	7.4						
23 - 5243 - CENTRE ST @ RAMBLER RD	6.3	6	9.3	7.3	6.4	7.4						
24 - 5244 - CENTRE ST @ WESTCHESTER RD	6.1	5.7	9.1	7.1	6	7.1						
25 - 5245 - CENTRE ST @ FAULKNER HOSPITAL	3.4	3.6	5.8	4.7	4	5.3						
26 - 5246 - CENTRE ST OPP WALTER ST	1.6	3.4	5.6	4.4	3.6	4.8						
27 - 5247 - CENTRE ST @ VFW PKWY	0.7	1.2	1.4	1.5	1.6	3.4						
28 - 5248 - CENTRE ST @ BUCHANAN RD	0.7	1.3	1.4	1.5	1.6	3.4						
29 - 5249 - CENTRE ST @ WELD ST	0.6	0.7	1.3	1.5	1.5	2.8						
30 - 5250 - 1437 CENTRE ST OPP ARDALE ST	0.6	0.7	1.3	1.5	1.5	2.8						
31 - 5251 - 1467 CENTRE ST OPP HEWLETT ST	0.5	0.7	1.1	1.3	1.5	2.8						
32 - 5252 - CENTRE ST @ FLETCHER ST	0.5	0.8	1.1	1.4	1.5	2.7						
33 - 5253 - 1539 CENTRE ST OPP BRADFIELD	0.5	0.7	0.9	1.3	1.5	2.7						
34 - 5254 - CENTRE ST @ MONTCLAIR AVE	0.5	0.7	0.9	1.3	1.4	2.7						
35 - 5255 - CENTRE ST @ CHURCH ST	0.5	0.6	1	1.3	1.3	2.6						
36 - 5256 - CENTRE ST @ W ROXBURY PKWY	0.5	0.6	0.9	1.3	1.2	2.4						
37 - 5257 - W ROXBURY PKWY @ BELGRADE AVE	0.2	0.5	0.8	1.1	1.1	2						
Maximum	7.8	6.6	10.1	9.8	8.4	7.8						
Average Load	8.4											
Maximum Load	10.1											
Average Capacity	46.6											
Minimum Capacity	44.9											
a.m. headway	20											

MBTA NEEDHAM LINE – INBOUND
WEEKDAY BOARDINGS, ALIGHTINGS, AND LOADS BY TRAIN AND STATION
 Winter/Spring 2012 CTPS Commuter Rail Passenger Counts

Station	Train 600					Train 602					Train 604					Train 606					Train 608				
	Scheduled Time (AM)	Ons	Offs	Load		Scheduled Time (AM)	Ons	Offs	Load		Scheduled Time (AM)	Ons	Offs	Load		Scheduled Time (AM)	Ons	Offs	Load		Scheduled Time (AM)	Ons	Offs	Load	
Needham Heights	6:10	23	0	23		6:45	36	0	36		7:30	63	0	63		8:02	49	0	49		8:30	36	0	36	
Needham Center	6:14	15	0	38		6:49	25	0	61		7:34	45	0	108		8:06	38	0	87		8:34	15	0	51	
Needham Junction	6:18	55	0	93		6:53	99	0	160		7:38	107	0	215		8:10	61	0	148		8:38	33	0	84	
Hersey	6:21	38	0	131		6:56	97	1	256		7:42	158	0	373		8:13	125	0	273		8:41	56	0	140	
West Roxbury	6:25	28	0	159		7:01	62	4	314		7:47	79	4	448		8:18	87	0	360		8:46	39	0	179	
Highland	6:28	46	0	205		7:05	42	0	356		7:50	69	0	517		8:20	53	0	413		8:49	49	0	228	
Bellevue	6:31	26	1	230		7:08	69	0	425		7:53	53	0	570		8:22	48	0	461		8:52	33	0	261	
Roslindale Village	6:34	12	0	242		7:12	56	0	481		7:57	93	0	663		8:25	102	0	563		8:55	65	0	326	
Forest Hills	6:37	6	0	248		7:15	5	2	484		8:00	16	1	678		8:28	29	1	591		8:58	3	5	324	
Ruggles	6:41	0	51	197		7:20	4	55	433		8:05	1	54	625		8:33	0	45	546		9:04	1	37	288	
Back Bay	6:45	1	59	139		7:24	7	122	318		8:09	5	207	423		8:37	10	173	383		9:08	11	123	176	
South Station	6:50		139			7:29		318			8:14		423			8:42		383			9:13		176		
Total Riders		250		250			502		502			689		689			602		602			341		341	
Maximum Load				248					484					678					591						326
Max. Load Point				Forest Hills					Forest Hills					Forest Hills					Forest Hills						Roslindale
S. Sta. Offs/Max. Load				56.0%					65.7%					62.4%					64.8%						54.0%
Interzone Pct.				0.4%					1.0%					0.6%					0.0%						0.0%

Notes: Times are based on schedule effective 9/12/11
 "f" before time indicates train stops only on request
 " - " indicates train does not serve this station
 "S. Sta. Offs/Max. Load" = South Station alightings/maximum load on train
 Interzone Pct. = Percent of offs before Forest Hills

MBTA NEEDHAM LINE – INBOUND
WEEKDAY BOARDINGS, ALIGHTINGS, AND LOADS BY TRAIN AND STATION
 Winter/Spring 2012 CTPS Commuter Rail Passenger Counts

Station	Train 610					Train 612					Train 614					Train 616					Train 618				
	Scheduled Time (AM)	Ons	Offs	Load		Scheduled Time (AM)	Ons	Offs	Load		Scheduled Time (PM)	Ons	Offs	Load		Scheduled Time (PM)	Ons	Offs	Load		Scheduled Time (PM)	Ons	Offs	Load	
Needham Heights	9:35	7	0	7		10:55	7	0	7		12:55	8	0	8		3:05	3	0	3		3:50	3	0	3	
Needham Center	9:39	11	0	18		10:59	5	0	12		12:59	2	0	10		3:09	3	0	6		3:54	6	0	9	
Needham Junction	9:43	10	0	28		11:03	1	0	13		1:03	1	0	11		3:13	2	0	8		3:58	2	0	11	
Hersey	9:46	15	0	43		11:06	10	1	22		1:06	2	0	13		3:16	2	0	10		4:01	1	0	12	
West Roxbury	9:51	10	0	53		11:11	7	0	29		1:11	8	0	21		3:28	19	1	28		4:06	4	0	16	
Highland	9:53	10	0	63		11:13	5	0	34		1:13	4	0	25		3:30	1	0	29		4:08	3	1	18	
Bellevue	9:56	4	0	67		11:15	3	0	37		1:15	3	0	28		3:32	1	1	29		4:10	3	2	19	
Roslindale Village	9:59	6	1	72		11:17	10	2	45		1:17	1	0	29		3:34	2	2	29		4:13	2	4	17	
Forest Hills	10:02	5	1	76		11:20	0	0	45		1:20	2	1	30		3:37	0	4	25		4:15	0	2	15	
Ruggles	10:07	0	8	68		11:24	0	5	40		1:24	0	6	24		--	--	--	25		--	--	--	15	
Back Bay	10:11	0	20	48		11:28	1	11	30		1:28	3	8	19		3:45	3	9	19		4:22	24	10	29	
South Station	10:16		48			11:33		30			1:33		19			3:50		19			4:27		29		
Total Riders		78	78				49	49				34	34				36	36				48	48		
Maximum Load				76					45										29						29
Max. Load Point				Forest Hills					Forest Hills										Roslindale						Back Bay
S. Sta. Offs/Max. Load				63.2%					66.7%										65.5%						100%
Interzone Pct.				1.3%					6.1%										11.1%						14.6%

MBTA NEEDHAM LINE – INBOUND
WEEKDAY BOARDINGS, ALIGHTINGS, AND LOADS BY TRAIN AND STATION
 Winter/Spring 2012 CTPS Commuter Rail Passenger Counts

Station	Train 620				Train 622				Train 626				Train 628				Train 630			
	Scheduled Time (PM)	Ons	Offs	Load	Scheduled Time (PM)	Ons	Offs	Load	Scheduled Time (PM)	Ons	Offs	Load	Scheduled Time (PM)	Ons	Offs	Load	Scheduled Time (PM)	Ons	Offs	Load
Needham Heights	5:00	3	0	3	5:35	5	0	5	7:18	4	0	4	8:00	5	0	5	9:00	1	0	1
Needham Center	5:04	8	0	11	5:39	2	0	7	7:22	1	0	5	8:04	1	0	6	9:04	3	0	4
Needham Junction	5:08	8	0	19	5:43	1	0	8	7:26	3	0	8	8:08	1	0	7	9:08	0	0	4
Hersey	5:15	4	0	23	5:46	3	0	11	7:29	2	0	10	8:11	0	0	7	9:11	0	0	4
West Roxbury	5:20	2	1	24	5:57	2	1	12	7:39	0	0	10	8:16	0	0	7	9:16	0	0	4
Highland	5:22	4	0	28	--	--	--	12	7:41	1	1	10	--	--	--	7	9:18	0	0	4
Belleveue	5:24	3	0	31	--	--	--	12	7:43	2	0	12	--	--	--	7	9:20	0	0	4
Roslindale Village	5:26	1	4	28	--	--	--	12	7:45	0	3	9	--	--	--	7	9:22	0	0	4
Forest Hills	5:29	0	9	19	6:04	0	5	7	7:48	0	1	8	8:23	0	3	4	9:25	0	0	4
Ruggles	--	--	--	19	--	--	--	7	7:52	0	0	8	8:27	0	0	4	9:29	0	2	2
Back Bay	5:37	9	12	16	6:12	4	3	8	7:56	3	2	9	8:31	1	3	2	9:33	0	1	1
South Station	5:50	16	16	16	6:17	8	8	8	8:01	9	9	9	8:36	2	2	2	9:38	1	1	1
Total Riders		42	42	42		17	17	17		16	16	16		8	8	8		4	4	4
Maximum Load				31				12				12				7				4
Max. Load Point				Belleveue				Roslindale				Belleveue				Roslindale				Forest Hills
S. Sta. Offs/Max. Load				51.6%				66.7%				75.0%				28.6%				25.0%
Interzone Pct.				11.9%				5.9%				25.0%				0.0%				0.0%

MBTA NEEDHAM LINE – INBOUND
WEEKDAY BOARDINGS, ALIGHTINGS, AND LOADS BY TRAIN AND STATION
 Winter/Spring 2012 CTPS Commuter Rail Passenger Counts

SUMMARY BY TIME PERIOD

Station	Train 632			AM Peak Trains 600–608		Midday Trains 610–616		PM Peak Trains 618–622		Evening Trains 626–632		All Day Trains 600–632	
	Scheduled Time (PM)	Ons	Offs	Ons	Offs	Ons	Offs	Ons	Offs	Ons	Offs	Ons	Offs
Needham Heights	10:10	1	0	207	0	25	0	11	0	11	0	254	0
Needham Center	10:14	0	0	138	0	21	0	16	0	5	0	180	0
Needham Junction	10:18	2	0	355	0	14	0	11	0	6	0	386	0
Hersey	10:21	0	0	474	1	29	1	8	0	2	0	513	2
West Roxbury	10:26	0	0	295	8	44	1	8	2	0	0	347	11
Highland	10:28	2	0	259	0	20	0	7	1	3	1	289	2
Bellevue	10:30	0	0	229	1	11	1	6	2	2	0	248	4
Roslindale Village	10:32	3	0	328	0	19	5	3	8	3	3	353	16
Forest Hills	10:35	0	2	59	9	7	6	0	16	0	6	66	37
Ruggles	10:39	0	0	6	242	0	19	0	0	0	0	6	263
Back Bay	10:42	0	3	34	684	7	48	37	25	4	9	82	766
South Station	10:47	0	3	1,439	0	116	53	53	15	15	15	1,623	0
Total Riders		8	8	2,384	2,384	197	197	107	107	36	36	2,724	2,724

Maximum Load Max. Load Point S. Sta. Offs/Max. Load Interzone Pct.	INTERZONE PERCENT (Percent of Offs before Forest Hills)			
	AM Peak	Midday	PM Peak	Evening
Roslindale	0.4%	4.1%	12.1%	11.1%
				1.3%

MBTA NEEDHAM LINE – OUTBOUND
WEEKDAY BOARDINGS, ALIGHTINGS, AND LOADS BY TRAIN AND STATION
 Winter/Spring 2012 CTPS Commuter Rail Passenger Counts

Station	Train 605				Train 607				Train 609				Train 611				Train 613			
	Scheduled Time (AM)	Ons	Offs	Load	Scheduled Time (AM)	Ons	Offs	Load	Scheduled Time (AM)	Ons	Offs	Load	Scheduled Time (AM)	Ons	Offs	Load	Scheduled Time (PM)	Ons	Offs	Load
South Station	7:05	14		14	7:25	49		49	8:40	84		84	10:00	10		10	12:00	20		20
Back Bay	7:10	11	2	23	7:30	8	45	12	8:45	5	64	25	10:05	5	3	12	12:05	10	3	27
Ruggles	--	--	--	23	--	--	--	12	--	--	--	25	--	--	--	12	12:08	3	0	30
Forest Hills	7:16	14	0	37	7:36	5	0	17	--	--	--	25	10:12	2	0	14	12:13	0	0	30
Roslindale Village	7:20	6	0	43	--	--	--	17	8:59	5	2	28	10:15	2	0	16	12:16	4	4	30
Bellevue	7:22	0	0	43	--	--	--	17	9:01	0	0	28	10:17	0	1	15	12:18	0	3	27
Highland	7:24	2	1	44	--	--	--	17	9:03	0	1	27	10:19	0	0	15	12:18	0	3	24
West Roxbury	7:26	0	20	24	7:42	0	4	13	9:05	0	11	16	10:21	0	0	15	12:22	0	2	22
Hersey	7:32	0	4	20	7:54	0	2	11	9:10	0	0	16	10:27	0	2	13	12:27	2	7	17
Needham Junction	7:42	0	2	18	8:12	0	4	7	9:13	0	2	14	10:30	0	4	9	12:30	0	7	10
Needham Center	7:46	0	5	13	8:16	1	0	8	9:17	0	5	9	10:34	0	5	4	12:34	0	3	7
Needham Heights	7:50		13		8:20		8		9:21		9		10:38		4		12:38		7	
Total Riders		47	47			63	63			94	94			19	19			39	39	
Maximum Load			44				49				84				16				30	
Max. Load Point			Highland				South Station				South Station				Roslindale				Ruggles	
S. Sta. Ons/Max. Load			31.8%			100%	100%				100%				62.5%				66.7%	
Interzone Pct.			17.0%			1.6%					5.3%				10.5%				15.4%	

Notes: Times are based on schedule effective 9/12/11
 "f" before time indicates train stops only on request
 " -- " indicates train does not serve this station
 "S. Sta. Ons/Max. Load" = South Station boardings/maximum load on train
 Interzone Pct. = Percent of ons after Forest Hills

MBTA NEEDHAM LINE – OUTBOUND
WEEKDAY BOARDINGS, ALIGHTINGS, AND LOADS BY TRAIN AND STATION
 Winter/Spring 2012 CTPS Commuter Rail Passenger Counts

Station	Train 615					Train 617					Train 619					Train 621					Train 623									
	Scheduled Time (PM)	Ons	Offs	Load		Scheduled Time (PM)	Ons	Offs	Load		Scheduled Time (PM)	Ons	Offs	Load		Scheduled Time (PM)	Ons	Offs	Load		Scheduled Time (PM)	Ons	Offs	Load		Scheduled Time (PM)	Ons	Offs	Load	
South Station	2:00	27	0	27		3:00	51	0	51		4:00	105	0	105		4:40	250	0	250		5:20	448	0	448		5:20	448	0	448	
Back Bay	2:05	18	0	45		3:05	39	1	89		4:05	92	1	196		4:45	151	6	395		5:25	206	1	653		5:25	206	1	653	
Ruggles	2:08	8	1	52		3:08	65	1	153		4:08	12	0	208		4:49	57	1	451		5:29	47	2	698		5:29	47	2	698	
Forest Hills	2:14	0	2	50		3:13	1	8	146		4:13	1	12	197		4:54	5	20	436		5:34	0	33	665		5:34	0	33	665	
Roslindale Village	2:18	2	2	50		3:16	0	17	129		4:16	0	34	163		4:57	0	52	384		5:37	0	102	563		5:37	0	102	563	
Bellevue	2:21	0	8	42		3:18	0	15	114		4:19	0	16	147		5:00	0	31	353		5:40	0	59	504		5:40	0	59	504	
Highland	2:23	1	9	34		3:20	0	41	73		4:21	0	33	114		5:03	0	39	314		5:43	0	88	416		5:43	0	88	416	
West Roxbury	2:27	1	3	32		3:22	4	28	49		4:23	2	34	82		5:06	3	121	196		5:49	3	97	322		5:49	3	97	322	
Hersey	2:32	0	9	23		3:27	0	16	33		4:28	0	29	53		5:11	0	82	114		5:54	0	126	196		5:54	0	126	196	
Needham Junction	2:35	0	7	16		3:30	0	14	19		4:31	0	25	28		5:14	0	44	70		5:58	0	75	121		5:58	0	75	121	
Needham Center	2:39	0	4	12		3:34	0	12	7		4:35	0	8	20		5:18	0	26	44		6:02	0	61	60		6:02	0	61	60	
Needham Heights	2:43		12			3:38		7			4:40		20			5:22		44			6:06		60		6:06		60		60	
Total Riders		57	57				160	160				212	212				466	466				704	704				704	704		704
Maximum Load				52					153					208					451											698
Max. Load Point				Ruggles					Ruggles					Ruggles					Ruggles											Ruggles
S. Sta. Ons/Max. Load				51.9%					33.3%					50.5%					55.4%											64.2%
Interzone Pct.				7.0%					2.5%					0.9%					0.6%											0.4%

MBTA NEEDHAM LINE – OUTBOUND
WEEKDAY BOARDINGS, ALIGHTINGS, AND LOADS BY TRAIN AND STATION
 Winter/Spring 2012 CTPS Commuter Rail Passenger Counts

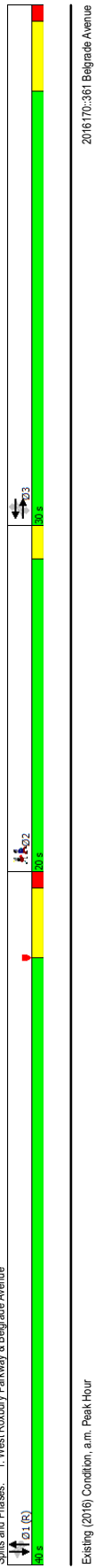
Station	Train 625				Train 627				Train 629				Train 631				Train 633			
	Scheduled Time (PM)	Ons	Offs	Load	Scheduled Time (PM)	Ons	Offs	Load	Scheduled Time (PM)	Ons	Offs	Load	Scheduled Time (PM)	Ons	Offs	Load	Scheduled Time (PM)	Ons	Offs	Load
South Station	5:55	403	0	403	6:25	183	0	183	7:10	128	0	128	8:10	63	0	63	9:15	35	0	35
Back Bay	6:00	137	0	540	6:30	68	4	247	7:15	35	3	160	8:15	32	1	94	9:20	18	0	53
Ruggles	6:04	30	2	568	6:34	20	0	267	7:19	17	3	174	8:18	12	0	106	9:23	3	0	56
Forest Hills	6:09	2	22	548	6:39	1	4	264	7:24	0	4	170	8:23	0	3	103	9:28	0	0	56
Roslindale Village	6:12	0	147	401	6:42	1	37	228	7:27	0	19	151	8:26	0	10	93	9:31	0	11	45
Bellevue	6:15	0	38	363	6:45	0	21	207	7:30	0	23	128	8:29	0	10	83	9:34	0	4	41
Highland	6:18	0	52	311	6:47	0	33	174	7:32	0	25	103	8:31	0	16	67	9:36	0	3	38
West Roxbury	6:21	0	48	263	6:49	0	37	137	7:34	0	19	84	8:33	1	12	56	9:38	0	7	31
Hersey	6:26	0	119	144	6:54	0	56	81	7:39	0	16	68	8:38	0	22	34	9:43	0	8	23
Needham Junction	6:29	0	57	87	6:57	0	33	48	7:42	0	28	40	8:41	0	14	20	9:46	0	6	17
Needham Center	6:33	0	44	43	7:01	0	17	31	7:46	0	18	22	8:45	0	6	14	9:50	0	8	9
Needham Heights	6:37	0	43	0	7:05	0	31	0	7:50	0	22	0	8:49	0	14	0	9:54	0	9	0
Total Riders		572	572		273	273	273		180	180	180		108	108	108		56	56	56	
Maximum Load				568				267				174				106				56
Max. Load Point				Ruggles				Ruggles				Ruggles				Ruggles				Ruggles
S. Sta. Ons/Max. Load				71.0%				68.5%				73.6%				59.4%				62.5%
Interzone Pct.				0.0%				0.4%				0.0%				0.9%				0.0%

MBTA NEEDHAM LINE – OUTBOUND
WEEKDAY BOARDINGS, ALIGHTINGS, AND LOADS BY TRAIN AND STATION
 Winter/Spring 2012 CTPS Commuter Rail Passenger Counts

SUMMARY BY TIME PERIOD

Station	Train 635			AM Peak Trains 605-609		Midday Trains 611-617		PM Peak Trains 619-627		Evening Trains 629-635		All Day Trains 605-635	
	Scheduled Time (PM)	Ons	Offs	Ons	Offs	Ons	Offs	Ons	Offs	Ons	Offs	Ons	Offs
South Station	10:30	24	24	147	108	108	1,389	250	1,894	250	1,894	850	134
Back Bay	10:35	15	0	24	72	72	654	100	850	100	850	275	11
Ruggles	10:38	1	1	0	76	76	166	33	275	33	275	31	109
Forest Hills	10:43	0	1	19	3	10	9	0	31	0	31	20	442
Roslindale Village	10:46	0	5	11	8	23	1	0	20	0	20	0	234
Bellevue	10:49	0	5	0	0	27	0	0	0	0	0	42	0
Highland	10:51	0	4	2	1	53	0	0	3	0	3	48	348
West Roxbury	10:53	0	6	0	5	33	8	1	14	1	14	44	449
Hersey	10:58	0	2	0	2	34	0	0	2	0	2	48	500
Needham Junction	11:01	0	6	0	0	32	0	0	0	0	0	54	0
Needham Center	11:05	0	7	1	0	24	0	0	1	0	1	39	229
Needham Heights	11:09	0	3	0	0	30	0	0	0	0	0	48	306
Total Riders		40	40	204	275	275	2,227	384	3,090	384	3,090	3,090	3,090
Maximum Load			39										
Max. Load Point			Back Bay										
S. Sta. Ons/Max. Load			61.5%										
Interzone Pct.			0.0%										
INTERZONE PERCENT (Percent of Ons after Forest Hills)													
				AM Peak		Midday		PM Peak		Evening		All Day	
				6.9%		5.8%		0.4%		0.3%		1.3%	

EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR	Q2
Lane Configurations								
31	116	0	2	235	274	4	1209	2
31	116	0	2	235	274	4	1209	2
1900	1900	1900	1900	1900	1900	1900	1900	1900
0	100	0	75	0	0	0	0	0
0	1	0	1	0	0	0	0	0
25	1623	1900	0	1723	1599	0	3588	0
0	0.784	0	0.998	0	0.953	0	0.539	0
0	1287	1900	0	1719	1599	0	3400	0
0	1287	1900	0	1719	1599	0	3400	0
30	30	30	30	30	30	30	30	30
338	338	331	331	338	338	377	377	377
7.6	7.5	7.5	7.5	7.7	7.7	8.6	8.6	8.6
0.92	0.92	0.87	0.87	0.87	0.87	0.87	0.87	0.87
0%	20%	0%	50%	10%	1%	0%	4%	2%
0%	20%	0%	50%	10%	1%	0%	4%	2%
0	160	0	272	315	0	1397	0	632
Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
3	3	3	3	3	3	1	1	1
3	3	3	3	3	3	1	1	1
6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
30.0	30.0	30.0	30.0	30.0	40.0	40.0	40.0	200
33.3%	33.3%	33.3%	33.3%	33.3%	44.4%	44.4%	44.4%	22%
4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
None	None	None	None	None	None	None	None	None
21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2
0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
0.53	0.53	0.67	0.55	0.79	0.79	1.188	1.188	1.188
35.7	35.7	39.3	10.2	26.6	23.9	23.9	23.9	23.9
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35.7	35.7	39.3	10.2	26.6	23.9	23.9	23.9	23.9
D	D	D	B	C	C	C	C	C
35.7	23.6	23.6	32.1	32.1	23.9	23.9	23.9	23.9
D	C	C	C	C	C	C	C	C
77	136	25	~421	163	163	#256	#256	297
135	204	86	#561	258	258	258	258	258
256	251	251	251	258	258	258	258	258
357	477	629	1767	987	987	987	987	987
0	0	0	314	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0.45	0.57	0.50	0.96	0.64	0.64	0.64	0.64	0.64
Intersection Summary								
Area Type: Other								
Cycle Length: 90								
Actuated Cycle Length: 90								
Offset: 0 (0%), Referenced to phase 1: NBSB, Start of Yellow, Master Intersection								
Natural Cycle: 80								
Control Type: Actuated-Coordinated								
Maximum v/c Ratio: 0.79								
Intersection Signal Delay: 28.7								
Intersection Capacity Utilization: 85.5%								
Analysis Period (min): 15								
- Volume exceeds capacity, queue is theoretically infinite.								
- Queue shown is maximum after two cycles.								
# 85th percentile volume exceeds capacity, queue may be longer.								
- Queue shown is maximum after two cycles.								
dl Defacto Left Lane. Record with 1 though lane as a left lane.								



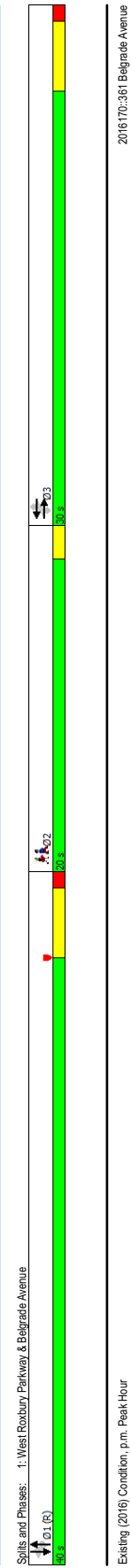
Area	NBL2	NBL	NBT	NBR	SBL	SBL	SBR	SEL2	SEL	SET	SER	NWL2	NWL	NWT	NWR2	NWR	NEL2	NEL	NET	NER2	NER	SVL	SVR	SWR	Ø2	
Lane Configurations																										
Traffic Volume (vph)	2	44	771	31	10	419	25	9	1	26	53	8	6	106	201	11	234	69	6	7	58	24	1			
Future Volume (vph)	2	44	771	31	10	419	25	9	1	26	53	8	6	106	201	11	234	69	6	7	58	24	1			
Ideal Flow (Vppl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Sat. Flow (prot)	0	0	3466	0	0	3483	0	0	0	1660	0	0	0	1712	0	0	1777	0	0	0	0	0	0	1752	0	
Flt Permitted	0	0	0.866	0	0	0.927	0	0	0	0.778	0	0	0	0.985	0	0	0.727	0	0	0	0	0	0	0.803	0	
Sat. Flow (perm)	0	0	3010	0	0	3232	0	0	0	1298	0	0	0	1690	0	0	1340	0	0	0	0	0	0	1456	0	
Right Turn on Red																										
Sat. Flow (RTOR)																										
Link Speed (mph)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
Link Distance (ft)	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	
Travel Time (s)	10.8	10.8	7.7	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	
Peak Hour Factor	0.92	0.92	0.92	0.82	0.82	0.82	0.82	0.69	0.69	0.69	0.69	0.71	0.71	0.71	0.71	0.71	0.80	0.80	0.80	0.80	0.80	0.68	0.68	0.68	0.68	
Heavy Vehicles (%)	50%	20%	2%	7%	10%	2%	12%	11%	0%	4%	4%	0%	0%	1%	1%	9%	0%	2%	3%	0%	0%	5%	4%	0%	0%	
Shared Lane Traffic (%)																										
Lane Group Flow (vph)	Perm	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	
Turn Type Phases	1	1	1	1	1	1	1	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	2	
Permitted Phases	1	1	1	1	1	1	1	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	2	
Detector Phase	1	1	1	1	1	1	1	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	2	
Switch Phase																										
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	
Minimum Sppt (s)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Last Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Min	Min	Min	Min	Min	Min	Min	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	
Act Effect Green (s)	40.2	40.2	0.37	0.37	0.37	0.37	0.37	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19		
v/c Ratio	0.84	0.84	0.47	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54		
Control Delay	41.7	41.7	30.0	30.0	30.0	30.0	30.0	270.3	270.3	270.3	270.3	270.3	270.3	270.3	270.3	270.3	319.8	319.8	319.8	319.8	319.8	319.8	319.8	319.8		
Queue Delay	41.7	41.7	31.1	31.1	31.1	31.1	31.1	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	319.8	319.8	319.8	319.8	319.8	319.8	319.8	319.8		
Total Delay	41.7	41.7	31.1	31.1	31.1	31.1	31.1	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	319.8	319.8	319.8	319.8	319.8	319.8	319.8	319.8		
LOS	D	D	C	C	C	C	C	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	F	F	D	
Approach Delay	41.7	41.7	31.1	31.1	31.1	31.1	31.1	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	53.0	319.8	319.8	319.8	319.8	319.8	319.8	319.8	319.8		
Approach LOS	D	D	C	C	C	C	C	D	D	D	D	D	D	D	D	D	F	F	F	F	F	F	F	F	D	
Queue Length 50th (ft)	380	380	180	180	180	180	180	94	94	94	94	94	94	94	94	94	-463	-463	-463	-463	-463	-463	-463	-463		
Queue Length 95th (ft)	#487	#487	210	210	210	210	210	118	118	118	118	118	118	118	118	118	#570	#570	#570	#570	#570	#570	#570	#570		
Internal Link Dist (ft)	396	396	258	258	258	258	258	383	383	383	383	383	383	383	383	383	369	369	369	369	369	369	369	369		
Turn Bay Length (ft)	1112	1112	1194	1194	1194	1194	1194	240	240	240	240	240	240	240	240	240	248	248	248	248	248	248	248	248		
Starvation Cap Reduct	0	0	387	387	387	387	387	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reduct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reduct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.83	0.83	0.69	0.69	0.69	0.69	0.69	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60		
Intersection Summary																										
Area Type:	Other																									
Cycle Length:	120																									
Actuated Cycle Length:	109.7																									
Natural Cycle:	150																									
Control Type:	Actuated-Uncoordinated																									
Maximum v/c Ratio:	1.60																									
Intersection Signal Delay:	124.2																									
Intersection Capacity Utilization:	94.8%																									
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.																										
Spits and Phases: 2: Anawan Avenue & West Roxbury Parkway & Beech Street																										

Movement	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (veh/h)	120	82	7	243	27
Future Volume (veh/h)	120	82	7	243	27
Signal Control	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%
Peak Hour Factor	0.82	0.81	0.81	0.85	0.85
Hourly flow rate (vph)	146	100	9	300	147
Peakstations	2				
Lane Width (ft)	12.0			12.0	
Walking Speed (ft/s)	3.5			3.5	
Percent Backage	0			0	
Right turn flare (veh)	None			None	
Median storage (veh)	None			None	
Upstream signal (ft)	336			336	
PK placement (blocked)				248	
VC conflicting volume				248	
VC1 stage 1 cont vol				248	
VC2 stage 2 cont vol				362	
IC undivided vol				6.4	
IC single (s)				6.2	
IC 2 stage (s)				2.2	
IC queue free %				99	
IC capacity (veh/h)				1327	
Direction, Lane #	EB 1	WB 1	NB 1		
Volume Total	246	309	179		
Volume Left	0	9	147		
Volume Right	100	0	32		
ESH	1700	1327	576		
Volume to Capacity	0.14	0.01	0.31		
Queue Length 95th (ft)	0	1	33		
Control Delay (s)	0.0	0.3	14.0		
Lane LOS	A	A	B		
Approach Delay (s)	0.0	0.3	14.0		
Approach LOS		B			
Intersection Summary					
Average Delay	3.5				
Intersection Capacity Utilization	33.7%				
Analysis Period (min)	15				
ICU Level of Service	A				

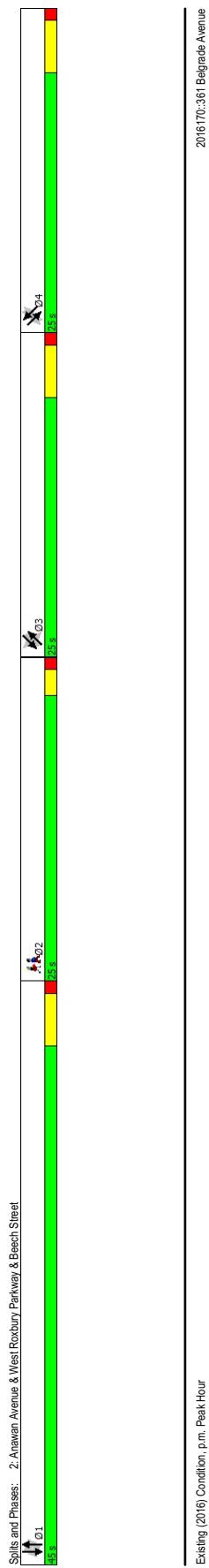
Synchro 9 Report
HCM Unsignalized Intersection Capacity Analysis

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBR	
Lane Configurations										
Traffic Volume (veh/h)	201	1	77	501	6	2	10	100	1	5
Future Volume (veh/h)	201	1	77	501	6	2	10	100	1	5
Sign Control	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.84	0.84	0.82	0.82	0.74	0.74	0.74	0.88	0.88	0.88
Hourly flow rate (vph)	2	239	1	94	611	7	14	135	1	6
Pedestrians	3	3	1	12.0	12.0	3.5	3.5	3.5	3.5	3.5
Walking Speed (ft/s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Percent Blockage	0	0	0	0	0	0	0	0	0	1
Right turn flare (veh)	None	None	None	None	None	None	None	None	None	None
Median storage (veh)	None	None	None	None	None	None	None	None	None	None
Upstream signal (ft)	331	331	331	331	331	331	331	331	331	331
IC: platoon blocked	627	627	627	627	627	627	627	627	627	627
IC: conflicting volume	627	627	627	627	627	627	627	627	627	627
IC: stage 1 cont vol	627	627	627	627	627	627	627	627	627	627
IC: undivided vol	627	627	627	627	627	627	627	627	627	627
IC: single (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
IC: 2-stage (s)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
IC: queue free %	100	100	100	100	100	100	100	100	100	100
IC: capacity (veh/h)	956	1311	1311	1311	1311	1311	1311	1311	1311	1311
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	EB 1	WB 1	NB 1	SB 1	EB 1	WB 1
Volume Total	242	712	152	16	242	712	152	16	242	712
Volume Left	2	94	3	1	2	94	3	1	2	94
Volume Right	1	7	135	9	1	7	135	9	1	7
ESH	956	1311	605	282	956	1311	605	282	956	1311
Volume to Capacity	0.00	0.07	0.25	0.06	0.00	0.07	0.25	0.06	0.00	0.07
Queue Length 95th (ft)	0	6	25	4	0	6	25	4	0	6
Control Delay (s)	0.1	1.8	12.9	18.5	0.1	1.8	12.9	18.5	0.1	1.8
Lane LOS	A	A	B	C	A	A	B	C	A	A
Approach Delay (s)	0.1	1.8	12.9	18.5	0.1	1.8	12.9	18.5	0.1	1.8
Approach LOS	B	B	C	C	B	B	C	C	B	B
Intersection Summary										
Average Delay	3.2									
Intersection Capacity Utilization	59.7%									
Analysis Period (min)	15									
ICU Level of Service	B									

EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR	Q2
Lane Configurations								
10	231	7	13	194	112	8	565	7
10	231	7	13	194	112	8	565	7
1900	1900	1900	1900	1900	1900	1900	1900	1900
0	100	0	75	0	0	0	0	0
0	1	0	1	0	0	0	0	0
25	25	25	25	25	25	25	25	25
0	1770	1252	0	1739	1599	0	3547	0
0	0.981	0	0.969	0	0.936	0	0.644	0
0	1740	1252	0	1690	1599	0	3323	0
0	48	Yes	Yes	120	2	Yes	2	Yes
30	30	30	30	30	30	30	30	30
338	331	338	331	338	331	338	331	338
7.6	7.5	7.5	7.7	7.7	8.6	8.6	8.6	8.6
0.86	0.86	0.80	0.80	0.86	0.86	0.86	0.90	0.90
10%	7%	29%	6%	9%	1%	0%	0%	3%
0	281	8	0	259	140	0	674	0
Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
3	3	3	3	3	3	3	3	3
3	3	3	3	3	3	3	3	3
6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%
4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
None	None	None	None	None	None	None	None	None
21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2
0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
0.69	0.02	0.65	0.30	0.39	0.39	0.64	0.64	0.64
39.9	0.1	38.5	8.6	16.9	16.9	64.0	64.0	64.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39.9	0.1	38.5	8.6	17.2	17.2	64.0	64.0	64.0
D	A	D	A	B	B	E	E	E
38.8	28.0	28.0	17.2	17.2	64.0	64.0	64.0	64.0
142	0	130	9	144	480	480	480	480
207	0	175	39	192	480	480	480	480
256	251	251	251	251	251	251	251	251
483	382	469	530	1728	1179	1179	1179	1179
0	0	0	0	422	0	0	0	0
0	0	0	0	0	0	0	0	0
0.58	0.02	0.55	0.26	0.52	1.04	1.04	1.04	1.04



Lane Group	NBL2	NBL	NBT	NBR	SBL2	SBL	SBT	SBR	SEL2	SEL	SER	SER2	NWL2	NWL	NVT	NVR	NVR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL	SWT	SWR2	Ø2
Lane Configurations																											
Traffic Volume (vph)	5	48	506	50	2	48	790	41	7	6	84	114	3	8	8	51	40	8	2	26	19	7	3	4	80	29	1
Future Volume (vph)	5	48	506	50	2	48	790	41	7	6	84	114	3	8	51	40	8	2	26	19	7	3	4	80	29	1	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	0	3523	0	0	3458	0	0	0	1716	0	0	0	0	1747	0	0	0	0	1716	0	0	0	0	1830	0	
Flt Permitted	0	0	0.658	0	0	0.805	0	0	0.977	0	0	0.888	0	0	0.1562	0	0	0	0	0.829	0	0	0	0	0.781	0	
Right Turn on Red	0	0	2328	0	0	2792	0	0	0	1681	0	0	0	0	1562	0	0	0	0	1458	0	0	0	0	1482	0	
Satd. Flow (RTOR)															3					2						91	
Link Speed (mph)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
Link Distance (ft)	476	463	476	463	476	463	476	463	476	463	476	463	476	463	476	463	476	463	476	463	476	463	476	463	476	463	
Travel Time (s)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.87	0.87	0.87	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.82	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	2%	3%	12%	0%	0%	3%	2%	0%	0%	0%	2%	3%	0%	0%	12%	0%	0%	0%	0%	0%	0%	
Shared Lane Traffic (%)																											
Lane Group Flow (vph)	Perm	Perm	NA	0	0	1002	0	0	0	243	0	0	0	0	132	0	0	0	0	68	0	0	0	0	139	0	
Turn Type Phases	Perm	Perm	NA	0	0	1002	0	0	0	243	0	0	0	0	132	0	0	0	0	68	0	0	0	0	139	0	
Permitted Phases	1	1	1	1	1	1	1	1	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	2	
Detector Phase	1	1	1	1	1	1	1	1	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	2	
Switch Phase																											
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	1.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	25.0	
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	25.0	
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	21%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lag	
Recall Mode	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	
Act Effect Green (s)	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	11.6		
Actuated G/C Ratio	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12		
v/c Ratio	0.78	0.78	0.78	0.78	0.87	0.87	0.87	0.87	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40		
Control Delay	36.5	36.5	36.5	36.5	40.2	40.2	40.2	40.2	60.2	60.2	60.2	60.2	60.2	60.2	44.7	44.7	44.7	51.0	51.0	51.0	51.0	51.0	51.0	51.0	27.2		
Queue Delay	0.0	0.0	0.0	0.0	35.5	35.5	35.5	35.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Totd Delay	36.5	36.5	36.5	36.5	75.7	75.7	75.7	75.7	60.2	60.2	60.2	60.2	60.2	60.2	44.7	44.7	44.7	51.0	51.0	51.0	51.0	51.0	51.0	51.0	27.2		
LOS	D	D	D	D	E	E	E	E	E	E	E	E	E	E	D	D	D	D	D	D	D	D	D	D	D	C	
Approach Delay	36.5	36.5	36.5	36.5	75.7	75.7	75.7	75.7	60.2	60.2	60.2	60.2	60.2	60.2	44.7	44.7	44.7	51.0	51.0	51.0	51.0	51.0	51.0	51.0	27.2		
Approach LOS	D	D	D	D	E	E	E	E	E	E	E	E	E	E	D	D	D	D	D	D	D	D	D	D	D	C	
Queue Length 50th (ft)	285	285	285	285	373	373	373	373	168	168	168	168	168	168	83	83	83	45	45	45	45	45	45	45	32		
Queue Length 95th (ft)	#345	#345	#345	#345	#547	#547	#547	#547	#309	#309	#309	#309	#309	#309	148	148	148	84	84	84	84	84	84	84	80		
Internal Link Dist (ft)	396	396	396	396	258	258	258	258	383	383	383	383	383	383	294	294	294	389	389	389	389	389	389	389	384		
Turn Bay Length (ft)																											
Base Capacity (vph)	961	961	961	961	1152	1152	1152	1152	347	347	347	347	347	347	324	324	324	302	302	302	302	302	302	302	377		
Starvation Cap Reductn	0	0	0	0	215	215	215	215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.78	0.78	0.78	0.78	1.07	1.07	1.07	1.07	0.70	0.70	0.70	0.70	0.70	0.41	0.41	0.41	0.41	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.37		
Intersection Summary																											
Area Type: Other																											
Cycle Length: 120																											
Actuated Cycle Length: 100.1																											
Natural Cycle: 90																											
Control Type: Actuated-Uncoordinated																											
Maximum v/c Ratio: 0.87																											
Intersection Signal Delay: 56.1																											
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.																											

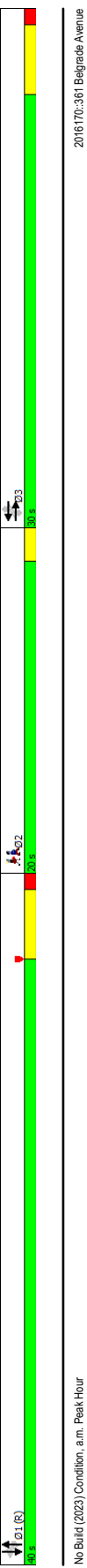


Movement	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (veh/h)	242	203	11	206	95
Future Volume (veh/h)	242	203	11	206	95
Sign Control	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%
Peak Hour Factor	0.94	0.94	0.85	0.85	0.83
Hourly flow rate (vph)	257	216	13	242	114
Pedestrians	5			1	7
Lane Width (ft)	12.0			12.0	3.5
Walking Speed (ft/s)	3.5			3.5	0
Percent Backage	0			0	
Right turn flare (veh)	None			None	
Median storage (veh)	None			336	
Upstream signal (ft)				474	
PK placement (blocked)				474	366
VC conflicting volume				474	366
VC1 stage 1 cont vol				474	366
VC2 stage 2 cont vol				4.1	6.4
IC single (s)				2.2	3.5
IC 2 stage (s)				99	74
pl queue free %				1097	447
ctrl capacity (veh/h)				EB 1	NB 1
Direction, Lane #	473	255	121	473	255
Volume Total	0	13	114	0	13
Volume Left	216	0	7	216	0
Volume Right	1700	1097	456	1700	1097
ESH	0.28	0.01	0.27	0.28	0.01
Volume to Capacity	0	1	26	0	1
Queue Length 95th (ft)	0.0	0.5	15.7	0.0	0.5
Control Delay (s)	A	C		A	C
Lane LOS	A	C		A	C
Approach Delay (s)	0.0	0.5	15.7	0.0	0.5
Approach LOS					
Intersection Summary					
Average Delay	2.4				
Intersection Capacity Utilization	37.5%				
Analysis Period (min)	15				
ICU Level of Service	A				

Synchro 9 Report
HCM Unsignalized Intersection Capacity Analysis

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations									
Traffic Volume (veh/h)	2	461	2	108	317	4	0	85	0
Future Volume (veh/h)	2	461	2	108	317	4	0	85	0
Sign Control	Free	Free	Free	Free	Stop	Stop	0%	0%	0%
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.94	0.94	0.89	0.89	0.90	0.90	0.90	0.75	0.75
Hourly flow rate (vph)	2	490	2	121	356	4	0	94	0
Peakstations	7	4	4	4	12.0	12.0	3.5	3.5	3.5
Lane Width (ft)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Walking Speed (ft/s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Percent Blockage	1	0	0	0	0	0	0	0	0
Right turn flare (veh)	None	None	None	None	None	None	None	None	None
Median storage (veh)	None	None	None	None	None	None	None	None	None
Upstream signal (ft)	331	331	331	331	331	331	331	331	331
ICU placement (blocked)	368	368	368	368	368	368	368	368	368
ICU conflicting volume	368	368	368	368	368	368	368	368	368
ICU stage 1 cont vol	368	368	368	368	368	368	368	368	368
ICU stage 2 cont vol	368	368	368	368	368	368	368	368	368
ICU unblocked vol	368	368	368	368	368	368	368	368	368
IC: single (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
IC: 2-stage (s)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
IC: queue free %	100	100	100	100	100	100	100	100	100
ICU capacity (veh/h)	1193	1057	1057	155	173	589	114	173	688
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	EB 1	WB 1	NB 1	SB 1	EB 1
Volume Total	494	481	94	8	494	481	94	8	494
Volume Left	2	121	0	0	2	121	0	0	2
Volume Right	2	4	94	3	2	4	94	3	2
ESH	1193	1057	599	240	1193	1057	599	240	1193
Volume to Capacity	0.00	0.11	0.16	0.03	0.00	0.11	0.16	0.03	0.00
Queue Length 95th (ft)	0	10	14	3	0	10	14	3	0
Control Delay (s)	0.1	3.2	12.1	20.5	0.1	3.2	12.1	20.5	0.1
Lane LOS	A	A	B	C	A	A	B	C	A
Approach Delay (s)	0.1	3.2	12.1	20.5	0.1	3.2	12.1	20.5	0.1
Approach LOS	B	B	C	C	B	B	C	C	B
Intersection Summary									
Average Delay	2.7								
Intersection Capacity Utilization	64.1%								
Analysis Period (min)	15								
ICU Level of Service	C								

EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR	Q2			
32	120	0	2	243	284	4	1252	2	89	468	11
32	120	0	2	243	284	4	1252	2	89	468	11
1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
0	100	0	75	0	0	0	0	0	0	0	0
0	1	0	1	0	0	0	0	0	0	0	0
25	1900	0	1723	1599	0	3568	0	0	3491	0	0
0	0.766	0	0.998	0	0.953	0	0.527	0	1855	0	0
0	1257	1900	0	1719	1599	0	3401	0	0	1855	0
0	1257	1900	0	1719	1599	0	3401	0	0	1855	0
30	30	30	30	30	30	30	30	30	30	30	30
338	331	331	338	338	338	338	338	338	338	338	338
7.6	7.5	7.5	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
0.92	0.92	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
0%	20%	0%	50%	10%	1%	50%	1%	0%	4%	2%	0%
0	165	0	281	326	0	1446	0	0	653	0	0
Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
3	3	3	3	3	3	3	3	3	3	3	3
3	3	3	3	3	3	3	3	3	3	3	3
6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%
4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
None	None	None	None	None	None	None	None	None	None	None	None
21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
0.55	0.69	0.57	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
36.5	39.7	11.0	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36.5	39.7	11.0	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1
D	D	D	D	D	D	D	D	D	D	D	D
36.5	24.3	24.3	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9
D	C	C	D	D	D	D	D	D	D	D	D
79	140	30	~480	175	175	175	175	175	175	175	175
140	211	93	#592	#276	#276	#276	#276	#276	#276	#276	#276
256	251	251	258	258	258	258	258	258	258	258	258
349	477	629	1758	960	960	960	960	960	960	960	960
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0.47	0.59	0.52	0.99	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68



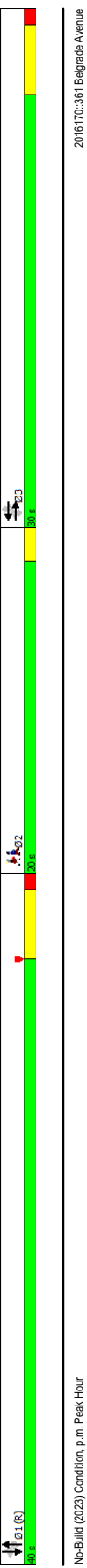
LANE GROUP	NBL2	NBL	NBT	NBR	SBL	SBR	SEL2	SEL	SET	SER	NWL2	NWL	NWT	NWR2	NWR	NEL	NEL2	NER	NER2	SVL	SVR	SWR	Ø2		
Lane Configurations																									
Traffic Volume (vph)	2	46	798	32	10	434	26	9	27	55	8	6	110	208	11	242	71	6	7	60	25	1			
Future Volume (vph)	2	46	798	32	10	434	26	9	27	55	8	6	110	208	11	242	71	6	7	60	25	1			
Ideal Flow (Vppl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Sat. Flow (prot)	0	0	3466	0	0	3483	0	0	1660	0	0	0	1712	0	0	1777	0	0	0	0	0	1752	0		
Flt Permitted	0	0	0.852	0	0	0.915	0	0	0.782	0	0	0	0.988	0	0	0.724	0	0	0	0	0	0.804	0		
Sat. Flow (perm)	0	0	2962	0	0	3190	0	0	1395	0	0	0	1692	0	0	1335	0	0	0	0	0	1458	0		
Right Turn on Red																									
Sat. Flow (RTOR)																									
Link Speed (mph)			30			30			30				30			30						30			
Link Distance (ft)			476			338			463				374			449						464			
Travel Time (s)			10.8			7.7			10.5				8.5			10.2						10.5			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.82	0.82	0.82	0.69	0.69	0.69	0.71	0.71	0.71	0.71	0.71	0.80	0.80	0.80	0.80	0.80	0.68	0.68	0.68		
Heavy Vehicles (%)	50%	20%	2%	7%	10%	2%	12%	11%	4%	4%	0%	0%	1%	9%	9%	2%	3%	0%	0%	14%	5%	4%	0%		
Shared Lane Traffic (%)																									
Lane Group Flow (vph)	Perm	Perm	NA	0	0	573	0	0	133	0	0	0	482	0	0	410	0	0	0	0	0	126	0		
Turn Type Phases	1	1	1	1	1	1	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	2		
Permitted Phases	1	1	1	1	1	1	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	2		
Detector Phase	1	1	1	1	1	1	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	2		
Switch Phase																									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0		
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0		
Total Spilt (%)	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%		
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	Min	Min	Min	Min	Min	Min	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None		
Act Effect Green (s)	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5		
Actuated G/C Ratio	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37		
v/c Ratio	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87		
Control Delay	44.6	44.6	30.4	44.6	44.6	53.7	30.4	44.6	53.7	30.4	44.6	44.6	292.9	30.4	44.6	347.0	44.6	44.6	44.6	44.6	44.6	44.6	44.6		
Queue Delay	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	44.6	44.6	31.6	44.6	44.6	53.7	31.6	44.6	53.7	31.6	44.6	44.6	292.9	31.6	44.6	347.0	44.6	44.6	44.6	44.6	44.6	44.6	44.6		
LOS	D	D	C	D	D	D	C	D	D	D	D	D	F	D	D	F	D	D	D	D	D	D	D		
Approach Delay	44.6	44.6	31.6	44.6	44.6	53.7	31.6	44.6	53.7	31.6	44.6	44.6	292.9	31.6	44.6	347.0	44.6	44.6	44.6	44.6	44.6	44.6	44.6		
Approach LOS	D	D	C	D	D	D	C	D	D	D	D	D	F	D	D	F	D	D	D	D	D	D	D		
Queue Length 50th (ft)	381	381	188	381	381	97	188	381	97	188	381	381	-554	188	381	-485	381	381	381	381	381	381	381		
Queue Length 95th (ft)	#522	#522	219	#522	#522	123	219	#522	123	219	#522	#522	#555	219	#522	#590	#522	#522	#522	#522	#522	#522	#522	#522	
Internal Link Dist (ft)	396	396	258	396	396	383	258	396	383	258	396	396	294	396	396	369	396	396	396	396	396	396	396		
Turn Bay Length (ft)	1091	1091	1175	1091	1091	1175	1091	1091	1175	1091	1091	1091	312	1091	1091	246	1091	1091	1091	1091	1091	1091	1091		
Starvation Cap Reduct	0	0	371	0	0	371	0	0	371	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reduct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reduct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.87	0.87	0.71	0.87	0.87	0.55	0.71	0.87	0.55	0.71	0.87	0.87	1.54	0.71	0.87	1.67	0.87	0.87	0.87	0.87	0.87	0.87	0.87		
Intersection Summary																									
Area Type: Other																									
Cycle Length: 120																									
Actuated Cycle Length: 110																									
Natural Cycle: 150																									
Control Type: Actuated-Uncoordinated																									
Maximum v/c Ratio: 1.67																									
Intersection Signal Delay: 133.5																									
Intersection Capacity Utilization 97.5%																									
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.																									
Spills and Phases: 2: Anawan Avenue & West Roxbury Parkway & Beech Street																									

Movement	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (veh/h)	124	85	7	252	129
Future Volume (veh/h)	124	85	7	252	129
Sign Control	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%
Peak Hour Factor	0.82	0.82	0.81	0.85	0.85
Hourly flow rate (vph)	151	104	9	311	152
Peakstations	2	2	2	2	2
Lane Width (ft)	12.0	12.0	12.0	12.0	12.0
Walking Speed (ft/s)	3.5	3.5	3.5	3.5	3.5
Percent Backage	0	0	0	0	0
Right turn flare (veh)	None	None	None	None	None
Median storage (veh)	None	None	None	None	None
Upstream signal (ft)	336	336	336	336	336
PK placement (blocked)	257	257	257	257	257
VC1: stage 1 cont rol	257	257	257	257	257
VC2: stage 2 cont rol	4.1	4.1	4.1	4.1	4.1
IC: single (s)	2.2	2.2	2.2	2.2	2.2
IC: 2 stage (s)	99	99	99	99	99
pl queue free %	1317	1317	1317	1317	1317
ctrl capacity (veh/h)	EB 1	WB 1	WB 1	NB 1	NB 1
Volume Total	255	320	185	185	185
Volume Left	0	9	152	0	0
Volume Right	104	0	33	1700	1317
ESH	0.15	0.01	0.33	0.15	0.33
Volume to Capacity	0.0	0.3	14.5	0.0	0.3
Queue Length 95th (ft)	0.0	0.3	14.5	0.0	0.3
Control Delay (s)	0.0	0.3	14.5	0.0	0.3
Lane LOS	A	B	B	A	B
Approach Delay (s)	0.0	0.3	14.5	0.0	0.3
Approach LOS	A	B	B	A	B
Intersection Summary					
Average Delay	3.6				
Intersection Capacity Utilization	34.4%				
Analysis Period (min)	15				
ICU Level of Service	A				

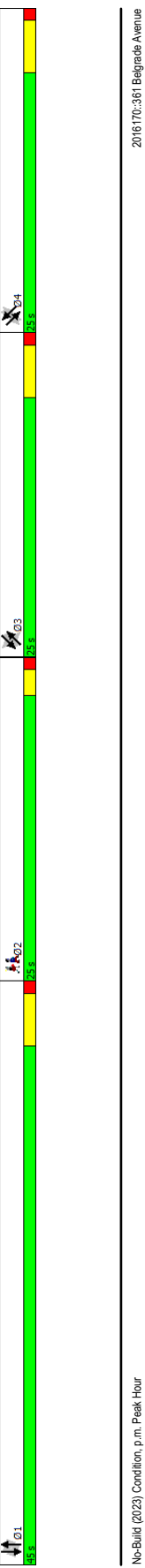
Synchro 9 Report
HCM Unsignalized Intersection Capacity Analysis

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations									
Traffic Volume (veh/h)	208	180	519	6	2	10	104	1	5
Future Volume (veh/h)	208	180	519	6	2	10	104	1	5
Sign Control	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.84	0.84	0.82	0.82	0.74	0.74	0.74	0.88	0.88
Hourly flow rate (vph)	248	198	633	7	3	14	141	1	6
Pedestrians	3	1	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Lane Width (ft)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Walking Speed (ft/s)	0	0	0	0	0	0	0	0	0
Percent Blockage	None	None	None	None	None	None	None	None	None
Right turn flare (veh)	None	None	None	None	None	None	None	None	None
Median storage (veh)	331	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Upstream signal (ft)	649	253	1104	1102	254	1243	1038	648	648
IC conflicting volume	649	190	1084	1081	190	1220	1078	648	648
IC1: stage 1 conf vol	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2	6.2
IC2: uncontrolled vol	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3	3.3
IC: single (s)	100	92	98	93	83	99	97	98	98
IC queue free %	938	1301	163	190	811	107	191	488	488
IC capacity (veh/h)	251	738	158	16	16	16	16	16	16
Volume Total	251	738	158	16	16	16	16	16	16
Volume Left	2	98	3	1	1	1	1	1	1
Volume Right	1	7	141	9	9	9	9	9	9
ESH	938	1301	595	267	267	267	267	267	267
Volume to Capacity	0.00	0.08	0.27	0.06	0.06	0.06	0.06	0.06	0.06
Queue Length 95th (ft)	0	6	27	5	5	5	5	5	5
Control Delay (s)	0.1	1.9	13.2	19.3	19.3	19.3	19.3	19.3	19.3
Lane LOS	A	A	B	C	C	C	C	C	C
Approach Delay (s)	0.1	1.9	13.2	19.3	19.3	19.3	19.3	19.3	19.3
Approach LOS	B	B	C	C	C	C	C	C	C
Intersection Summary									
Average Delay	3.3								
Intersection Capacity Utilization	61.3%								
Analysis Period (min)	15								
ICU Level of Service	B								

EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBR	OZ
Lane Group								
10	239	7	13	201	116	8	595	7
Traffic Volume (vph)								
10	239	7	13	201	116	8	595	7
Future Volume (vph)								
1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (Vppl)								
0	100	0	75	0	0	0	0	0
Storage Length (ft)								
25	1	0	1	0	0	0	0	0
Taper Length (ft)								
1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95
Lane Util. Factor								
0.998	0.997	0.997	0.998	0.998	0.999	0.999	0.998	0.998
Flt Predicted								
0	1770	1252	0	1739	1599	0	3547	0
Satd. Flow (prot)								
0	1770	1252	0	1739	1599	0	3547	0
Flt Permitted								
0	1740	1252	0	1692	1599	0	3320	0
Satd. Flow (perm)								
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Right Turn on Red								
48	30	30	30	30	30	30	30	30
Satd. Flow (RTOR)								
30	30	30	30	30	30	30	30	30
Link Speed (mph)								
7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Travel Time (s)								
12	278	8	16	215	145	9	690	8
Adj. Flow (vph)								
0	290	8	0	267	145	0	697	0
Lane Group Flow (vph)								
Perm	NA	Perm	NA	Perm	NA	Perm	NA	2
Turn Type								
3	3	3	3	3	3	3	3	3
Permitted Phases								
3	3	3	3	3	3	3	3	3
Detector Phase								
Switch Phase								
8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Initial (s)								
13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
Minimum Split (s)								
30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (s)								
33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%
Total Split (%)								
4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Yellow Time (s)								
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
All-Red Time (s)								
5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Total Lost Time (s)								
Lead/Lag								
Lead-Lag Optimize?								
None	None	None	None	None	None	None	None	None
Recall Mode								
21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4
Act Effect Green (s)								
0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Actuated G/C Ratio								
0.70	0.02	0.66	0.31	0.41	0.41	1.10	1.10	1.10
v/c Ratio								
40.4	0.1	38.8	9.1	17.3	83.1	83.1	83.1	83.1
Control Delay								
0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Queue Delay								
40.4	0.1	38.8	9.1	17.5	83.1	83.1	83.1	83.1
Total Delay								
39.3	28.4	A	A	A	B	F	F	F
Approach Delay								
39.3	28.4	A	A	A	B	F	F	F
Approach LOS								
D	D	C	C	C	B	F	F	F
Queue Length 50th (ft)								
147	0	134	11	152	516	516	516	516
Queue Length 95th (ft)								
214	0	181	42	200	663	663	663	663
Internal Link Dist (ft)								
256	251	251	251	258	297	297	297	297
Turn Bay Length (ft)								
100	75	75	75	75	1159	1159	1159	1159
Base Capacity (vph)								
483	382	470	530	1718	1159	1159	1159	1159
Starvation Cap Reductn								
0	0	0	0	0	0	0	0	0
Spillback Cap Reductn								
0	0	0	0	0	0	0	0	0
Storage Cap Reductn								
0	0	0	0	0	0	0	0	0
Reduced v/c Ratio								
0.60	0.02	0.57	0.27	0.53	1.10	1.10	1.10	1.10
Intersection Summary								
Area Type: Other								
Cycle Length: 90								
Actuated Cycle Length: 90								
Offset: 0 (0%), Referenced to phase 1:NBSS, Start of Yellow								
Natural Cycle: 120								
Control Type: Actuated-Coordinated								
Maximum v/c Ratio: 1.10								
Intersection Signal Delay: 52.7								
Intersection Capacity Utilization 82.4%								
Analysis Period (min) 15								
- Volume exceeds capacity, queue is theoretically infinite.								
Queue shown is maximum after two cycles.								
# 95th percentile volume exceeds capacity, queue may be longer.								
Queue shown is maximum after two cycles.								



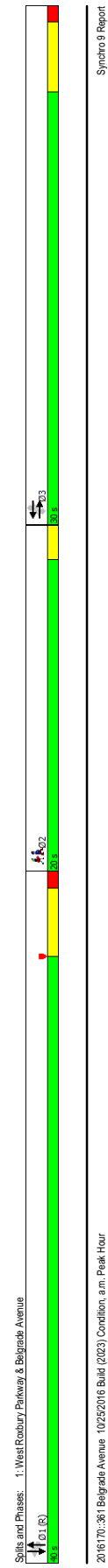
Area	NBL2	NBL	NBT	NBR	SBL2	SBL	SBT	SBR	SEL2	SEL	SER	SER2	NWL2	NWL	NWT	NWR	NWR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL	SWT	SMR2	Ø2
Lane Configurations																											
Traffic Volume (vph)	5	50	524	52	2	50	818	42	7	6	87	118	3	8	8	53	41	8	2	27	20	7	3	4	83	30	1
Future Volume (vph)	5	50	524	52	2	50	818	42	7	6	87	118	3	8	8	53	41	8	2	27	20	7	3	4	83	30	1
Ideal Flow (Vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flt Predicted	0	0	0.988	0	0	0	0.997	0	0	0	0.926	0	0	0	0.944	0	0	0	0	0.976	0	0	0	0	0.989	0	
Satd. Flow (prot)	0	0	3523	0	0	0	3458	0	0	0	1716	0	0	0	1747	0	0	0	0	1718	0	0	0	0	1832	0	
Flt Permitted	0	0	0.636	0	0	0	0.786	0	0	0	0.978	0	0	0	0.886	0	0	0	0	0.827	0	0	0	0	0.776	0	
Right Turn on Red	0	0	2250	0	0	0	2726	0	0	0	1683	0	0	0	1559	0	0	0	0	1455	0	0	0	0	1473	0	
Right Turn on Red																											
Satd. Flow (RTOR)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
Link Speed (mph)	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	
Link Distance (ft)	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3		
Travel Time (s)	6	62	647	64	2	57	630	48	8	7	98	134	3	9	9	61	47	9	2	32	24	8	4	5	101	37	
Adj. Flow (vph)	0	0	779	0	0	0	1037	0	0	0	251	0	0	0	135	0	0	0	0	70	0	0	0	0	144	0	
Lane Group Flow (vph)	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm	NA	Perm	Perm	Perm	Perm	NA	NA	
Turn Type Phases	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Permitted Phases	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Detector Phase	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Switch Phase																											
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0		
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%		
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%		
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	
Act/Effct Green (s)	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8		
Actuated g/C Ratio	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12		
v/c Ratio	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41		
Control Delay	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0		
LOS	D	D	F	F	F	F	F	F	E	E	E	E	E	E	E	E	E	D	D	D	D	D	D	D	D		
Approach Delay	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	61.1	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0		
Approach LOS	D	D	F	F	F	F	F	F	E	E	E	E	E	E	E	E	E	D	D	D	D	D	D	D	D		
Queue Length 50th (ft)	285	285	285	285	285	285	285	285	431	431	431	431	431	431	431	431	431	47	47	47	47	47	47	47	47		
Queue Length 95th (ft)	#579	#579	#579	#579	#579	#579	#579	#579	#326	#326	#326	#326	#326	#326	#326	#326	#326	86	86	86	86	86	86	86	86		
Internal Link Dist (ft)	396	396	396	396	396	396	396	396	258	258	258	258	258	258	258	258	258	369	369	369	369	369	369	369	369		
Turn Bay Length (ft)	921	921	921	921	921	921	921	921	344	344	344	344	344	344	344	344	344	299	299	299	299	299	299	299	299		
Starvation Cap Reductn	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		
Spillback Cap Reductn	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		
Storage Cap Reductn	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		
Reduced v/c Ratio	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23		
Intersection Summary																											
Area Type:	Other																										
Cycle Length:	120																										
Actuated Cycle Length:	100.7																										
Natural Cycle:	100																										
Control Type:	Actuated-Uncoordinated																										
Maximum v/c Ratio:	0.83																										
Intersection Signal Delay:	64.8																										
Intersection Capacity Utilization:	83.5%																										
Analysis Period (min):	15																										
- Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles. # 85th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.																											



Movement	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (veh/h)	251	210	11	213	98
Future Volume (veh/h)	251	210	11	213	98
Sign Control	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%
Peak Hour Factor	0.94	0.94	0.85	0.85	0.83
Hourly flow rate (vph)	267	223	13	251	118
Pedestrians	5			1	7
Lane Width (ft)	12.0			12.0	
Walking Speed (ft/s)	3.5			3.5	
Percent Backage	0			0	
Right turn flare (veh)	None			None	
Median storage (veh)	None			None	
Upstream signal (ft)	336			336	
PK placement (blocked)				491	
VC conflicting volume				491	
VC1 stage 1 cont vol				491	
VC2 stage 2 cont vol				4.1	
IC single (s)				6.4	
IC 2 stage (s)				2.2	
pl queue free %				99	
ctrl capacity (veh/h)				1062	
Direction, Lane #	EB 1	WB 1	NB 1	NB 1	
Volume Total	400	264	125		
Volume Left	0	13	118		
Volume Right	223	0	7		
ESH	1700	1082	441		
Volume to Capacity	0.29	0.01	0.28		
Queue Length 95th (ft)	0	1	29		
Control Delay (s)	0.0	0.5	16.4		
Lane LOS	A	A	C		
Approach Delay (s)	0.0	0.5	16.4		
Approach LOS		C			
Intersection Summary					
Average Delay	2.5				
Intersection Capacity Utilization	38.6%				
Analysis Period (min)	15				
	ICU Level of Service A				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	
Lane Configurations												
Traffic Volume (veh/h)	2	477	2	112	328	4	0	0	88	0	4	
Future Volume (veh/h)	2	477	2	112	328	4	0	0	88	0	4	
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.90	0.90	0.90	0.75	0.75	
Hourly flow rate (vph)	2	507	2	126	369	4	0	0	98	0	5	
Pedestrians	7			4			6			8		
Lane Width (ft)	12.0			12.0			12.0			12.0		
Walking Speed (ft/s)	3.5			3.5			3.5			3.5		
Percent Blockage	1			0			1			1		
Right turn flare (veh)	None											
Median type	None											
Median storage (veh)	None											
Upstream signal (ft)	331											
PK placement (meters)	381											
VC conflicting volume	381											
VC1 stage 1 cont vol	381											
VC2 stage 2 cont vol	381											
IC undivided vol	381											
IC single (s)	4.1			4.1			7.1			6.2		
IC Z-stage (s)	2.2			2.2			3.5			4.0		
IC queue free %	100			86			100			87		
IC capacity (veh/h)	1179			1039			143			161		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	EB 1	WB 1	NB 1	SB 1	EB 1	WB 1	NB 1	
Volume Total	511	499	98	8	511	499	98	8	511	499	98	
Volume Left	2	126	0	0	2	126	0	0	2	126	0	
Volume Right	2	4	98	3	2	4	98	3	2	4	98	
ESH	1179	1039	585	225	1179	1039	585	225	1179	1039	585	
Volume to Capacity	0.00	0.12	0.17	0.04	0.00	0.12	0.17	0.04	0.00	0.12	0.17	
Queue Length 95th (ft)	0			10			15			3		
Control Delay (s)	0.1			3.3			12.4			21.6		
Lane LOS	A			A			B			C		
Approach Delay (s)	0.1			3.3			12.4			21.6		
Approach LOS	B			B			C			C		
Intersection Summary												
Average Delay	2.7											
Intersection Capacity Utilization	65.9%											
Analysis Period (min)	15											
ICU Level of Service	C											

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Q2
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Q2
Lane Configurations	32	121	0	2	243	297	4	1252	2	120	468	11	
Traffic Volume (vph)	32	121	0	2	243	297	4	1252	2	120	468	11	
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Meal Flow (vph)	0	100	0	0	0	0	0	0	0	0	0	0	
Storage Length (ft)	0	1	0	1	0	0	0	0	0	0	0	0	
Turn Length (ft)	25	100	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95	
RT Predicted	0.690			0.650						0.997			
RT Predicted (min)	1624	1900	0	1723	1599	0	3569	0	3569	0	3590	0	
RT Predicted (sec)	0.771	0.998	0.000	0.698	0.663	0.000	0.963	0.000	0.963	0.000	0.968	0.000	
Satd Flow (perm)	0	1265	1900	0	1719	1599	0	3401	0	0	1788	0	
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Satd. Flow (RTOR)	30	269	0	269	0	0	0	0	0	2	0	0	
Link Speed (mph)	30	30	30	30	30	30	30	30	30	30	30	30	
Link Distance (ft)	336	331	336	331	336	331	336	331	336	331	336	331	
Travel Time (s)	7.6	7.5	7.6	7.5	7.6	7.5	7.6	7.5	7.6	7.5	7.6	7.5	
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	
Heavy Vehicles (%)	0%	20%	0%	50%	10%	1%	50%	1%	0%	4%	2%	0%	
Adj. Flow (vph)	35	132	0	279	341	5	1439	2	138	538	13	0	
Shared Lane Traffic (%)	0	167	0	0	281	341	0	1446	0	0	689	0	
Lane Group Flow (vph)	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	
Turn Type Phases	3	3	3	3	3	3	1	1	1	1	1	1	2
Permitted Phases	3	3	3	3	3	3	1	1	1	1	1	1	
Detector Phase	3	3	3	3	3	3	1	1	1	1	1	1	
Switch Phase	3	3	3	3	3	3	1	1	1	1	1	1	
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	1.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	20.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0	40.0	40.0	20.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	44.4%	44.4%	44.4%	44.4%	44.4%	44.4%	22%
Maximum Green (s)	25.0	25.0	25.0	25.0	25.0	25.0	35.0	35.0	35.0	35.0	35.0	35.0	18.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0.0
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lag
Lead/Lag Offset (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	0.2
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None
Walk Time (s)	None	None	None	None	None	None	7.0	7.0	7.0	7.0	7.0	7.0	11.0
Flash Dont Walk (s)	None	None	None	None	None	None	None	None	None	None	None	None	27
Pedestrian Calls (#/hr)	216	216	216	216	216	216	46.4	46.4	46.4	46.4	46.4	46.4	27
Act Eff: Green (s)	0.24	0.24	0.24	0.24	0.24	0.24	0.52	0.52	0.52	0.52	0.52	0.52	0.2
Actuated g/C Ratio	0.55	0.68	0.58	0.58	0.83	1.660	0.83	0.83	1.660	0.83	1.660	0.83	0.2
v/c Ratio	36.4	39.4	39.4	11.1	28.3	28.8	11.1	10.7	28.8	11.1	28.8	28.8	0.2
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	36.4	39.4	39.4	11.1	28.3	28.8	11.1	10.7	28.8	11.1	28.8	28.8	0.0
Total Delay	36.4	39.4	39.4	11.1	28.3	28.8	11.1	10.7	28.8	11.1	28.8	28.8	0.0
LOS	D	D	D	B	B	B	C	C	C	C	C	C	D
Approach Delay	36.4	39.4	39.4	11.1	28.3	28.8	11.1	10.7	28.8	11.1	28.8	28.8	0.0
Approach LOS	D	D	D	B	B	B	C	C	C	C	C	C	D
Queue Length 50th (ft)	80	140	140	32	480	480	195	195	195	195	195	195	0
Queue Length 95th (ft)	141	211	211	97	4502	4502	297	297	297	297	297	297	0
Internal Link Dist (ft)	256	251	251	75	1751	1751	920	920	920	920	920	920	0
Turn Bay Length (ft)	351	477	477	638	1751	1751	920	920	920	920	920	920	0
Base Capacity (vph)	0	0	0	0	0	0	300	300	300	300	300	300	0
Stavation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.59	0.53	1.00	1.00	1.00	0.75	0.75	0.75	0.75	0.75	0.75	0.0
Intersection Summary													
Area Type: Other													
Cycle Length: 90													
Actuated Cycle Length: 90													
Offset: 0 (0%), Referenced to phase 1 NBSB, Start of Yellow, Master Intersection													
Natural Cycle: 90													
Control Type: Actuated-Coordinated													
Maximum v/c Ratio: 0.93													
Intersection Signal Delay: 33.2													
Intersection Capacity Utilization: 683%													
Analysis Period (min): 15													
Queue shown is maximum after two cycles.													
# 95th percentile volume exceeds capacity, queue may be longer.													
Queue shown is maximum after two cycles.													
d. Delivered Left Lane. Record with 1 though lane as a left lane.													



Lanes, Volumes, Timings
2-Anawan Avenue & West Roxbury Parkway & Beech Street

LANE GROUP	NBL2	NBL	NBT	NBR	SBL	SBR	SBL2	SEL	SET	SER	NWL2	NWL	NWT	NWR	NWR2	NEL2	NEL	NET	NER2	SWL	SWT	SWR	Ø2
Lane Configurations	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1	4+1
Traffic Volume (vph)	2	46	798	46	10	434	26	9	27	55	8	6	110	208	11	242	71	6	7	66	25	1	1
Future Volume (vph)	2	46	798	46	10	434	26	9	27	55	8	6	110	208	11	242	71	6	7	66	25	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Fit	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	
Flt Preceded	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sat'd Flow (poof)	0	0	3457	0	0	3483	0	0	1680	0	0	0	1712	0	0	0	0	1777	0	0	0	0	0
Flt Permitted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sat'd Flow (perm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Signal Phases	0	0	2856	0	0	3165	0	0	1305	0	0	0	1692	0	0	0	0	1539	0	0	0	0	0
Signal (RTOR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Link Speed (mph)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
Link Distance (ft)	476	338	463	374	449	484	374	449	484	374	449	484	374	449	484	374	449	484	374	449	484	374	
Travel Time (s)	10.8	7.7	10.5	8.5	10.2	10.2	8.5	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	50%	20%	2%	7%	10%	2%	12%	11%	0%	4%	0%	0%	1%	1%	9%	0%	2%	3%	0%	14%	5%	4%	0%
Adj. Flow (vph)	2	50	867	50	12	529	32	13	39	80	11	8	155	293	15	303	89	8	9	97	37	1	
Shared Lane Traffic (%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	Perm	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Turn Type	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Permitted Phases	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Display Phase	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Minimum (in/s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	
Maximum Green (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	
Lead-Lag Optimizer?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Merge	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	
Vehicle Merge	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	
Flash Dim Walk (ft/hr)	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	
Act/Eff Green (s)	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	
Actuated g/C Ratio	0.89	0.49	1.54	0.55	292.9	53.7	292.9	53.7	292.9	53.7	292.9	53.7	292.9	53.7	292.9	53.7	292.9	53.7	292.9	53.7	292.9	53.7	
Control Delay	46.0	30.5	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	
Queue Delay	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	
Total Delay	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	
LOS	D	C	C	D	C	C	D	C	D	C	C	D	C	C	D	C	C	D	C	C	D	C	
Approach Delay	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	46.0	31.7	
Approach LOS	D	C	C	D	C	C	D	C	D	C	C	D	C	C	D	C	C	D	C	C	D	C	
Queue Length 50th (ft)	58	18	22	58	18	22	58	18	22	58	18	22	58	18	22	58	18	22	58	18	22	58	
Queue Length 95th (ft)	123	42	42	123	42	42	123	42	42	123	42	42	123	42	42	123	42	42	123	42	42	123	
Interval Link Dist (ft)	386	258	386	386	258	386	386	258	386	386	258	386	386	258	386	386	258	386	386	258	386	386	
Turn Bay Length (ft)	1900	1166	386	0	386	0	386	0	386	0	386	0	386	0	386	0	386	0	386	0	386	0	
Base Capacity (vph)	0	386	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Stationing Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.89	0.72	0.89	0.89	0.72	0.89	0.89	0.72	0.89	0.89	0.72	0.89	0.89	0.72	0.89	0.89	0.72	0.89	0.89	0.72	0.89	0.89	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 110
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.66
 Intersection Signal Delay: 132.8
 Intersection Capacity Utilization: 97.5%
 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.

Soils and Phases: 2-Anawan Avenue & West Roxbury Parkway & Beech Street

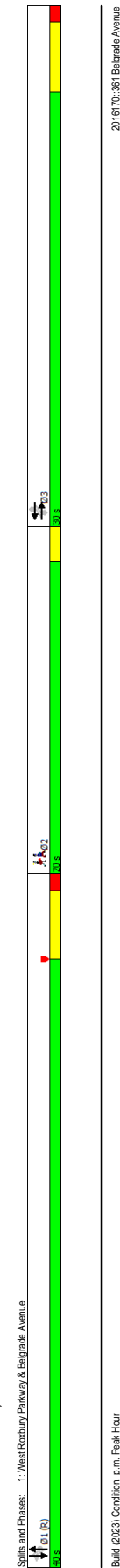
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	125	85	7	252	129	28
Traffic Volume (veh/h)	125	85	7	252	129	28
Future Volume (veh/h)	125	85	7	252	129	28
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.82	0.82	0.81	0.81	0.85	0.85
Hourly flow rate (vph)	152	104	9	311	152	33
Pedestrians	2					
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	3.5				3.5	
Right Turn Lane	0				0	
Median Type	None			None		
Median Storage (veh)				336		
Upstream Signal (ft)				0.86		
pX, platoon unblocked				537		206
vC, conflicting volume			258			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			258		377	206
fC, single (s)			4.1		6.4	6.2
fC, 2 stage (s)			2.2		3.5	3.3
fT (s)			2.8		7.7	6.6
RT queue fee %			1316		525	638
RT capacity (veh/h)						
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	256	320	185			
Volume Left	0	9	152			
Volume Right	104	0	33			
GSV	700	1316	592			
Volume to Capacity	0.15	0.01	0.33			
Volume to High Sat (ft)	0	0.3	14.5			
Control Delay (s)	0	0.3	14.5			
Lane LOS	A	A	B			
Approach Delay (s)	0.0	0.3	14.5			
Approach LOS	B	B	B			
Intersection Summary						
Average Delay				3.6		
Intersection Capacity Utilization				34.4%	ICU Level of Service	A
Analysis Period (min)				15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	34	208	1	80	519	52	2	24	104	21	11	21
Traffic Volume (veh/h)	34	208	1	80	519	52	2	24	104	21	11	21
Future Volume (veh/h)	34	208	1	80	519	52	2	24	104	21	11	21
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.84	0.84	0.84	0.82	0.82	0.82	0.74	0.74	0.74	0.88	0.88	0.88
Hourly flow rate (vph)	40	248	1	96	633	63	3	32	141	24	13	24
Pedestrians	3			1				4			9	
Lane Width (ft)	12.0			12.0			12.0		12.0		12.0	
Walking Speed (ft/s)	3.5			3.5			3.5		3.5		3.5	
Left Turn Percentage	0			0			0		0		1	
Right Turn Lane	None			None			None		None		None	
Median Storage (veh)												
Median Storage (ft)												
px, platoon unblocked												
vc, conflicting volume	705			0.95			0.95		0.95		0.95	
vc1, stage 1 conf vol				253			1226		1234		254	
vc2, stage 2 conf vol												676
vcu, unblocked vol	705			188			1212		1220		188	
ic, single (s)	4.1			4.1			7.1		6.5		6.2	
ic, 2 stage (s)												
f (s)	2.2			2.2			3.5		4.0		3.5	
platoon free %	86			82			97		79		83	
cn capacity (veh/h)	885			1301			120		151		812	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	289	794	176	61								
Volume Left	40	98	3	24								
Volume Right	1	63	141	24								
GSB	885	1301	428	136								
Volume to Capacity	0.04	0.08	0.41	0.49								
Control High Side (ft)	1.7	1.9	19.2	51.8								
Control Delay (s)	A	A	C	F								
Lane LOS	A	A	C	F								
Approach Delay (s)	1.7	1.9	19.2	51.8								
Approach LOS	C	C	F	F								

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

Synchro 9 Report
Lanes, Volumes, Timings

EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	SBR	Q2
Lane Group												
10	239	7	13	202	147	8	585	7	248	892	16	
Traffic Volume (vph)												
10	239	7	13	202	147	8	585	7	248	892	16	
Future Volume (vph)												
1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Meal Flow (vph)												
0	100	0	0	75	0	0	0	0	0	0	0	
Storage Length (ft)												
25	100	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95	
Lane Util. Factor												
0.650	0.650	0.650	0.650	0.650	0.650	0.638	0.638	0.638	0.638	0.638	0.638	
Fit Predicted												
0	1370	1252	0	1750	1559	0	3297	0	0	3297	0	
Fit Predicted (ft)												
0	1740	1252	0	1682	1559	0	3320	0	0	3320	0	
Said Flow (perm)												
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Right Turn on Red												
48						1					2	
Said Flow (RTOR)												
30	30	30	30	30	30	30	30	30	30	30	30	
Link Speed (mph)												
336	331	331	331	331	331	338	338	338	338	338	338	
Link Distance (ft)												
7.6	7.5	7.5	7.5	7.5	7.5	7.7	7.7	7.7	7.7	7.7	7.7	
Travel Time (s)												
0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	
Peak Hour Factor												
10%	7%	29%	8%	9%	1%	38%	1%	0%	3%	0%	0%	
Heavy Vehicles (%)												
12	278	8	16	253	184	9	680	8	276	951	18	
Adj. Flow (vph)												
0	230	8	0	289	184	0	697	0	0	1285	0	
Shared Lane Traffic (%)												
Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	
Lane Group Flow (vph)												
3	3	3	3	3	3	1	1	1	1	1	2	
Permitted Phases												
3	3	3	3	3	3	1	1	1	1	1	2	
Detector Phase												
8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	
Minimum Initial (s)												
13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	
Minimum Split (s)												
30.0	30.0	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0	40.0	40.0	
Total Split (s)												
33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	44.4%	44.4%	44.4%	44.4%	44.4%	44.4%	
Total Split (%)												
25.0	25.0	25.0	25.0	25.0	25.0	35.0	35.0	35.0	35.0	35.0	35.0	
Maximum Green (s)												
4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Yellow Time (s)												
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
All-Red Time (s)												
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lost Time Adjust (s)												
5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Total Lost Time (s)												
Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	
Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Lead/Lag Options?												
4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)												
None	None	None	None	None	None	None	None	None	None	None	None	
Recall Mode												
None	None	None	None	None	None	None	None	None	None	None	None	
Flash Don't Walk (s)												
21.6	21.6	21.6	21.6	21.6	21.6	46.4	46.4	46.4	46.4	46.4	46.4	
Pedestrian Calls (#/hr)												
0.24	0.24	0.24	0.24	0.24	0.24	0.52	0.52	0.52	0.52	0.52	0.52	
Act Eff: Green (s)												
0.70	0.02	0.66	0.37	0.41	1.12	1.12	1.12	1.12	1.12	1.12	1.12	
Act Eff: Red (s)												
39.9	0.1	38.6	9.0	17.4	92.8	92.8	92.8	92.8	92.8	92.8	92.8	
Control Delay												
0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	
Queue Delay												
39.9	0.1	38.6	9.0	17.4	92.8	92.8	92.8	92.8	92.8	92.8	92.8	
Total Delay												
38.6	A	38.6	A	17.4	92.8	92.8	92.8	92.8	92.8	92.8	92.8	
LOS												
D	A	D	A	C	B	B	B	B	B	B	B	
Approach Delay												
145	0	133	14	165	-535	-535	-535	-535	-535	-535	-535	
Queue Length 50th (ft)												
214	0	182	47	200	674	674	674	674	674	674	674	
Queue Length 95th (ft)												
256	100	251	75	258	297	297	297	297	297	297	297	
Internal Link Dist (ft)												
483	382	470	553	1711	1146	1146	1146	1146	1146	1146	1146	
Turn Bay Length (ft)												
0	0	0	0	0	0	0	0	0	0	0	0	
Base Capacity (vph)												
0	0	0	0	0	0	0	0	0	0	0	0	
Starvation Cap Reductn												
0	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn												
0	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn												
0.60	0.02	0.57	0.33	0.53	1.12	1.12	1.12	1.12	1.12	1.12	1.12	
Reduced v/c Ratio												
Intersection Summary												
Area Type:												
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 0 (0%), Referenced to phase 1 NBSB, Start of Yellow												
Natural Cycle: 140												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.12												
Intersection Signal Delay: 59.8												
Intersection Capacity Utilization: 92.8%												
Analysis Period (min): 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
Spills and Phases: 1: West Roxbury Parkway & Belgrade Avenue												



Synchro 9 Report
HCM Unsignalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	251	210	11	213	98	6
Traffic Volume (veh/h)	251	210	11	213	98	6
Future Volume (veh/h)	251	210	11	213	98	6
Sign Control	Free	Free	Free	Free	Stop	0%
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.94	0.94	0.85	0.85	0.83	0.83
Hourly flow rate (vph)	287	223	13	251	118	7
Pedestrians	5				1	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	3.5				3.5	
Left Turn Percentage	0				0	
Right Turn Percentage						
Median Type	None		None			
Median Storage (veh)				336		
Upstream Signal (ft)					0.88	
pX, platoon unblocked				481	662	380
vC, conflicting volume						
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				481	543	380
iC, single (s)				4.1	6.4	6.2
iC, 2 stage (s)						
IF (s)				2.2	3.5	3.3
RT queue fee %				3	13	69
GM capacity (veh/h)				1682	453	671
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	490	264	125			
Volume Left	0	13	118			
Volume Right	223	0	7			
GSB	700	1082	441			
Volume to Capacity	0.29	0.01	0.28			
Control Length (ft)						
Control Delay (s)	0	0.5	16.3			
Lane LOS	A	A	C			
Approach Delay (s)	0.0	0.5	16.3			
Approach LOS		C	C			
Intersection Summary						
Average Delay	2.5		38.6%		ICU Level of Service	
Intersection Capacity Utilization	38.6%				A	
Analysis Period (min)	19					

Synchro 9 Report
HCM Unsignalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Traffic Volume (veh/h)	16	491	2	112	328	23	0	6	88	19	10	16
Future Volume (veh/h)	16	491	2	112	328	23	0	6	88	19	10	16
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.90	0.90	0.90	0.75	0.75	0.75
Hourly flow rate (vph)	17	522	2	126	369	26	0	7	98	25	13	21
Pedestrians	7	7	4	4	4	4	4	4	4	4	4	4
Lane Width (ft)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Walking Speed (ft/s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Left Turn Lane	1	1	0	0	0	0	0	0	0	0	0	0
Right Turn Lane	None	None	None	None	None	None	None	None	None	None	None	None
Median Type	None	None	None	None	None	None	None	None	None	None	None	None
Median Storage (veh)	331	331	331	331	331	331	331	331	331	331	331	331
Unstream signal (ft)	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
pX, platoon unblocked	530	530	530	530	530	530	530	530	530	530	530	530
vC, conflicting volume	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232
vC1, stage 1 conf vol	403	403	403	403	403	403	403	403	403	403	403	403
vC2, stage 2 conf vol	403	403	403	403	403	403	403	403	403	403	403	403
vCu, unblocked vol	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
IC, single (s)	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
IC, 2 stage (s)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
IF (s)	100	100	100	100	100	100	100	100	100	100	100	100
PL queue fee %	158	158	158	158	158	158	158	158	158	158	158	158
CA capacity (veh/h)	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	EB 1	WB 1	NB 1	SB 1	EB 1	WB 1	NB 1	SB 1
Volume Total	541	521	105	59	541	521	105	59	541	521	105	59
Volume Left	17	126	0	25	17	126	0	25	17	126	0	25
Volume Right	2	26	98	21	2	26	98	21	2	26	98	21
GSB	158	1024	477	146	158	1024	477	146	158	1024	477	146
Volume to Capacity	0.01	0.12	0.22	0.41	0.01	0.12	0.22	0.41	0.01	0.12	0.22	0.41
Control Length (ft)	0.4	3.3	14.7	45.9	0.4	3.3	14.7	45.9	0.4	3.3	14.7	45.9
Control Delay (s)	A	A	B	E	A	A	B	E	A	A	B	E
Lane LOS	A	A	B	E	A	A	B	E	A	A	B	E
Approach Delay (s)	0.4	3.3	14.7	45.9	0.4	3.3	14.7	45.9	0.4	3.3	14.7	45.9
Approach LOS	B	B	E	E	B	B	E	E	B	B	E	E
Intersection Summary												
Average Delay	5.0											
Intersection Capacity Utilization	72.0%											
ICU Level of Service	C											
Analysis Period (min)	15											



Roxbury Prep Charter High School