Supplemental Information



Shawmut Avenue/ Washington Street Block

Submitted to: Boston Planning & Development Agency One City Hall Square Boston, MA 02201

Submitted by: DIV Shawmut, LLC Boston Chinese Evangelical Church Chinese Consolidated Benevolent Association of New England, Inc. Prepared by: Epsilon Associates, Inc. 3 Mill & Main Place, Suite 250 Maynard, MA 01754

In Association with: The Architectural Team, Inc. Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. Howard Stein Hudson Glenn Knowles

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Chapter 1

Introduction

1.0 INTRODUCTION

1.1 Overview

This Supplemental Submission is being submitted by DIV Shawmut, LLC (an affiliate of The Davis Companies), the Boston Chinese Evangelical Church ("BCEC"), and the Chinese Consolidated Benevolent Association of New England, Inc. ("CCBA", and collectively with DIV Shawmut, LLC and BCEC, the "Proponents") in support of the expanded Project Notification Form ("PNF") filed by DIV Shawmut, LLC with the Boston Planning & Development Agency ("BPDA") on August 29, 2017 pursuant to the provisions of Article 80B of the Boston Zoning Code, as amended (the "Zoning Code"), for the112 Shawmut Avenue project, as described in the PNF and further described in this supplemental filing. The developments by DIV Shawmut, LLC, BCEC (as described herein) and CCBA (as described herein) (collectively, the "Project") will be developed on three parcels of land comprising approximately 82,557 square foot ("sf") located in the South End neighborhood of Boston ("Project Site") bounded by Washington Street to the east, Shawmut Avenue to the west, Herald Street to the north, and privately-owned property to the south (see Figure 1-1).

This Supplemental Submission provides additional information on the 112 Shawmut Avenue building, as well as on the two other buildings to be developed as part of the Project, which will be developed by BCEC and the CCBA, respectively, as more fully described below. As described in Section 1.5.2 of the PNF, the Proponents propose to submit to the BPDA a Development Plan for a new Planned Development Area ("PDA") to encompass the Project Site (the "PDA Plan").

The proposed PDA would include three discrete Lots (as defined in the Zoning Code) that make up the Project Site as described below and shown on the plan included in Figure 1-1:

- the land with the existing building and associated parking lot located thereon at 112 Shawmut Avenue is owned by DIV Shawmut, LLC and is 28,380± sf in size (the "112 Shawmut Avenue Property"; see Figure 1-2);
- the land with the existing building and surface parking lot located at 50 Herald Street is owned by CCBA and is 32,909± sf in size (the "CCBA Property"; see Figure 1-3); and
- the land with the building located at 120 Shawmut Avenue is owned by BCEC and is 21,268± sf in size (the "BCEC Property"; see Figure 1-4).

Each of the Lots will be developed and financed separately by its respective owner. The Proponents are hereby commencing Article 80B review of the Project with this Supplemental Submission and the previously submitted PNF with the BPDA.

In 2016, DIV Shawmut, LLC initiated conversations with BCEC and CCBA about the possibility of coordinated planning and permitting for their respective parcels of land. DIV Shawmut, LLC, BCEC and CCBA discussed a coordinated approach to future development of the three properties that would yield compatible development on each property, as well as coordinated streetscape improvements such as street trees, street furniture (e.g., benches, bicycle racks) and improved street lighting in this area which lacks the pedestrian-friendly character that is so characteristic of the South End neighborhood (see Figure 1-5).

An important new public amenity associated with the development of the three properties could be a new east-west pedestrian connection that could be established at the southern boundaries of the CCBA and BCEC properties to provide through-block pedestrian connectivity between Washington Street and Shawmut Avenue, as well as a private way on the CCBA Property that could provide service, loading and parking access for the new residential project proposed to be constructed there. This new through-block connection could provide a route that connects residents living to the west of the three projects to streets, commercial establishments and other amenities located to the east, such as the new open space/recreational area created by the Massachusetts Department of Transportation under the I-93 overpass at Albany Street. Overall, the three new buildings as presented herein would occupy approximately 74% of the total lot area included within the PDA.

As a result, the three parties—DIV Shawmut, LLC, BCEC and CCBA—have collaborated on a proposed PDA Plan for submission to the BPDA pursuant to the provisions of Section 3-1A(a), Section 64-28 and Article 80C of the Zoning Code. The underlying South End zoning (Article 64 of the Zoning Code) permits the creation of planned development areas within the area proposed to be designated as a PDA. The proposed PDA Plan would create use, height and density requirements for each of the three properties, although the height of each of the buildings would be consistent with the 150-foot height limit for this area of the South End prescribed by Article 64 of the Zoning Code.

1.2 Proponents

DIV Shawmut, LLC

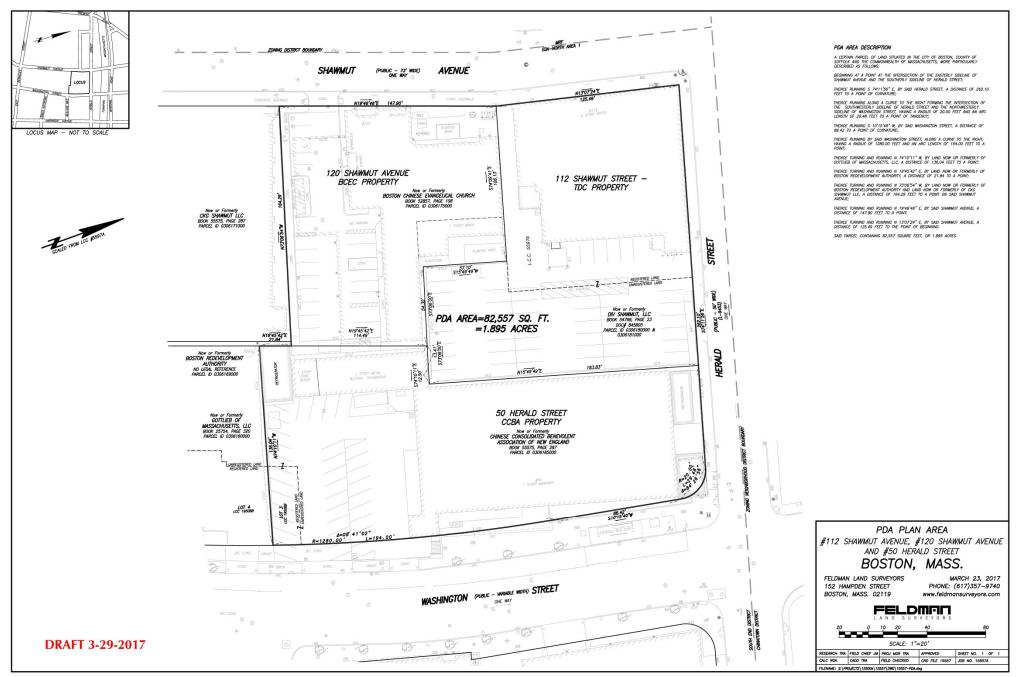
DIV Shawmut, LLC is an affiliate of The Davis Companies, which is a Boston-based national real estate investment, development and management company that has developed or rehabilitated over 3.5 million square feet of buildings across the United States, including residential and commercial developments in the Greater Boston area, such as the River Court condominiums in Cambridge, the Reservoir Woods office park in Waltham, the Telford 180 residential condominiums in the Allston-Brighton neighborhood of Boston, and the Charles River Plaza mixed-use complex in the Beacon Hill/West End neighborhood of Boston.

Chinese Consolidated Benevolent Association of New England, Inc.

CCBA is a non-profit organization established in 1986 to serve and unite the Chinese community, promote and preserve Chinese culture and traditions, and serve as a coordinating body for Chinese community charitable and educational activities. It sponsors an array of social and civic events, including the annual Lunar New Year and August Moon celebrations in Boston's Chinatown. Through separate affiliates, CCBA owns and operates two major affordable housing developments in Boston's Chinatown neighborhood: Tai Tung Village and Waterford Place. CCBA is headquartered at the former Quincy School at 90 Tyler Street in Chinatown, which was built in 1847 and has been nominated for inclusion on the National Register of Historic Places.

Boston Chinese Evangelical Church

Established in 1962, BCEC is a non-profit religious organization that comprises the largest Asian church in New England, with weekly attendance of over 1,200 people at its services. BCEC is composed of seven congregations conversant in English and/or Cantonese or Mandarin Chinese. BCEC has church facilities in the Chinatown neighborhood of Boston at 249 Harrison Avenue and in Newton, MA. As part of its religious mission, BCEC provides an array of social service, educational and recreational services to its congregation and members of the larger community, including English as a Second Language and citizenship classes, summer day camp for middle school students, and after-school program for middle and high school students, senior citizen programs, and youth programs. It also provides other community services on an as-needed basis, such as recently housing low-income persons displaced by a large Chinatown fire temporarily until permanent housing could be found for them.







BOUNDARY DESCRIPTIONS TITLE COMMITMENT NO. C22184-LP ISSUED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY, HAVING AN EFFECTIVE DATE OF NOVEMBER 12, 2015.

PARCEL I (REGISTERED LAND)

A CERTAIN PARCEL OF LAND SITUATED IN BOSTON, SUFFOLK COUNTY, MASSACHUSETTS, WITH THE BUILDINGS THEREON, SITUATED ON SHAMMUT AVENUE, CASTLE STREET AND HERALD STREET.

SAD LAND IS DETERMINED BY THE LAND COLINT TO BE LOCATED AS SHOWN ON A PLAN DRAWN BY EEDRIC H. SHRWHMA, SURVEYDR, DATED MAY 5, 1014, AS APPROVED BY SAD COLINT, FLED IN THE LAND REGISTRATION OFTICE AS PLAN NO. 5597-A, A COPY OF A PORTION OF WHICH IS FLED WITH CENTRICATE OF TITLE MO. 7788.

PARCEL II (UNREGISTERED LAND)

A CERTAIN PARCEL OF LAND IN BOSTON, SUFFOLK COUNTY, MASSACHUSETTS BEING PRESENTLY KNOWN AND INMBERED AS GO HERALD STREET AND COMPROMENSIG LOTS & THROUGH 12 INCLUSIEK AS SANNIN ON A PLAN BY S.C. ELLS DARD APRL, 1, 1880, AND RECORRED WITH SUFFOLK REGISTRY OF DECESS IN BOOK 1494, PAGE 640, SAID LOTS TOOETHER BEING BOUNDED AND DESCRIBED SA FOLLOWS:

NORTHERLY: BY HERALD STREET (FORMERLY CASTLE STREET), FORTY-EIGHT (48) FEET;

EASTERLY: BY MAYO STREET, ONE HUNDRED EIGHTY-THREE AND 90/100 (183.90) FEET; SOUTHERLY: BY LAND NOW OR FORMERLY OF THE HERS OF WILLIAM S. WHITE, SXTY-SEVEN

AND 71/100 (87.71) FEET; WESTERLY: BY LOTS 13 AND 14 SHOWN ON SAID PLAN, FIFTY-SEVEN AND 10/100 (57.10) FEET-

NORTHERLY: BY PARCEL 1 HEREINABOVE DESCRIBED, TWENTY-ONE AND 7/100 (21.07) FEET; AND

WESTERLY: BY PARCEL 1 HEREINABOVE DESCRIBED, ONE HUNDRED TWENTY-FIVE AND 42/100 (125.42) FEET.

EXCEPTIONS FROM COVERAGE (SURVEY RELATED ONLY) SCHEDULE B. SECTION 2. LISTED IN ITTLE COMMINMENT NO. C22184-LP ISSUED BY COMMONWENTH LAND ITTLE INSURANCE COMPANY. HAVING AN EFFECTIVE DATE OF NOVEMBER 12. 2015.

- (4) DISCONTINUANCE OF MAYO STREET, RECORDED WITH SUFFOK REDISTIN' OF DEEDS IN BOOK BOL, PINEZ 202, DECENTING AND RESERVANT TO THE CIT'OF BOSTON THE ROOM AND DESERVITY TO LIC, CONSTRUCT, MARINAR, ROOM AND ROBER WITHOUT AND STREET WORK N LOCITIZAS SHAMI ON FAMI RECORDED WITH SUFFOX REDISTIN' OF DEEDS IN BOOK 8012–END, (AS SHAMI HORDIN) (SEE INCE 19)
- (5) VOTE OF DESIGNATION BY THE BOSTON LANDMARKS COMMISSION RECORDED WITH SND DEEDS IN BOOK 11641, PAGE 62. (NOT PLOTTABLE)
- (6) NOTICE OF LASSE DATED DECEMBER 31, 1987 BETWEEN SHAMMUT 112 LIMITED PARTNERSHIP, LESSOR, AND HARRY R. FELDMAN, INC. ANTI H.R. MODIE ASSOCIATES, INC., LESSES, NECORDED IN BOOK 14488, PARC 52, (NOT PLOTTARLE)
- NOTICES OF LEASE DATED MARCH 8 1997 AND JULY 1, 1997, RESPECTIVELY, BETWEEN ACTION FOR BOSTON COMMUNITY DELEDIPLOIT REAL ESTATE COMPONITION AND CELLOD PARTNERSHIP D/9/A BELL ARANITO-ADBLE, MC (INOV PERST WHERESS BOSTON PCS, LLC), RECORDED IN BOCK 21861 PAGE 151 AND FILED AS DOCUMENT NO. 558167, (AS SHOWN HEREON)

BOUNDARY DESCRIPTION (PER SURVEY)

A CERTAIN PARCEL OF LAND, CONTAINING REGISTERED AND UNREGISTERED LAND, SITUATED IN THE CITY OF BOSTON, COLINY OF SUFFORK, AND COMMONWEALTH OF MASSACHUSETTS, BOUNDED AND DESCRIBED AND FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE EASTERLY SIDELINE OF SHAWMUT AVENUE AND THE SOUTHER SIDELINE OF HERALD STREET;

THENCE RUNNING 574"11"76"E ALONG SAU SOUTHERLY SIDELINE OF HERALD STREET, A DISTANCE OF 192.27 FEET TO A POINT;

THENCE TURNING AND RUNNING \$15'49'49'W, BY LAND NOW OR FORMERLY OF CHINESE CONSOLIDATED, A DISTANCE OF 183.83 FEET;

THENCE TURNING AND RUNNING N73'06'00 W, A DISTANCE OF 67.71 FEET;

THENCE TURNING AND RUNNING N154949°E, A DISTANCE OF 57.10 FEET; THENCE TURNING AND RUNNING N74'09'41'W, A A DISTANCE OF 106.13 FEET TO A POINT ON THE DISTERTY SDELING OF SWAMMUT AVENUE, THE PREVIOUS THREE COURSES BY LAND NOW OR FORMERVIC OF SOUTH OVE REALTY;

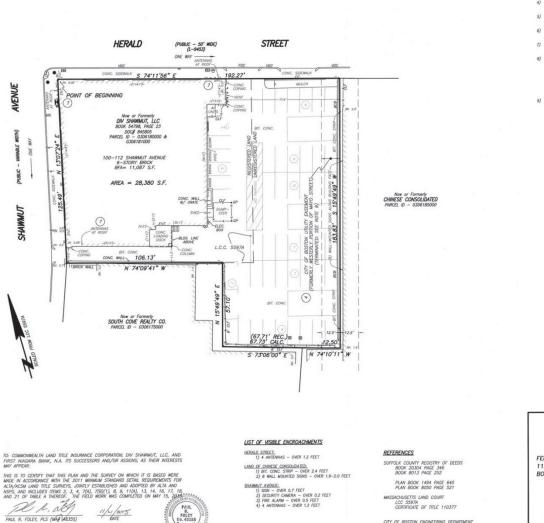
NOW OR FORMERLY OF SOUTH COVE REALTY; THENCE TURNING AND RUNNING ALONG SAID SHAMMUT AVENUE, N13'07'24"E, A DISTANCE OF 125.49 FEET TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINING AN AREA OF 28,380 SQUARE FEET.

Shawmut Avenue/Washington Street Block Boston, Massachusetts

PRF@FELDMANSURVEYORS.COM





ZONING CLASSIFICATION - "SOUTH END NEIGHBORHOOD" DISTRICT - ECONOMIC DEVELOPMENT AREA (EDA) NORTH

INIMUM LOT SIZE	
INIMUM FRONTAGE	
IINIMUM FRONT YARD	
INIMUM SIDE YARD	NONE
INIMUM REAR YARD	
IAXIMUM FLOOR AREA RATIO	4.0
IAXIMUM BUILDING HEIGHT	100 FEET
EE ARTICLE 64 OF CITY OF BOSTON ZONING CODE	Ε.

THE SOUTH END NEIGHBORHOOD DISTRICT IS WITHIN THE RESTRICTED PARKING (OVERLAY) DISTRICT, AND THE GROUNDWATER CONSERVATION OVERLAY DISTRICT.

> CITY OF BOSTON ENGINEERING DEPARTMENT FIELD BOOK 1286 PAGES 78-81

THERE WAS NO DESCRIED ENDOLES OF CUMBENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS. THERE WAS NO DESCRIED EVEDENCE OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDRIL.

NOTES:

5) TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO PROPOSED CHANGES IN STREET RIGHT OF WAY LINES.

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2) ZONING INFORMATION AS SHOWN HEREON WAS OBTAINED BY FELDMAN LAND SUMPTOPS VIA THE BOSTON REDORGIONARIA AUTHORITY'S WEBSTE, AND NOT PROVIDED BY THE TILLE WASKER'S A SEQUREMENT BY TIEM 6 (A OR B) OF TABLE "A" IN THE 2011 ALTA SURVEY REQUREMENTS.

6) THERE ARE 48 STRIPED PARKING SPACES PLUS 1 HANDICAP PARKING SPACE ON LOCUS.

 PROPERTY HAS ACCESS TO HERALD STREET AND SHAWMUT AVENUE, BOTH PUBLIC WAYS IN THE CITY OF BOSTON.

In this document is an instrument or service of feldman land supervise. Issued to our elant top humans, relation directly and subject to feldman land burgeroots score services under consolit to our relations. In the previous services is the service of the service relation of an and the previous services and the services relation and contract sources and the service services and the land out of the services and the services and the services relation of the services and the service services and the services and land the services and the services and the services and the land to the service of the services and the services and the land the services and the services and the services and the land the services and the services and the services.

 A TERMINATION OF THE WATER AND SEWER EASEMENT IN THE FORMER MAYO STREET IS RECORDED IN BOOK 54502, PAGE 281.

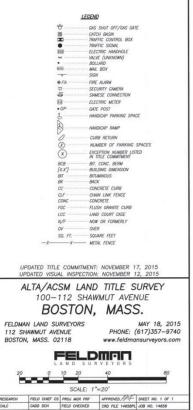
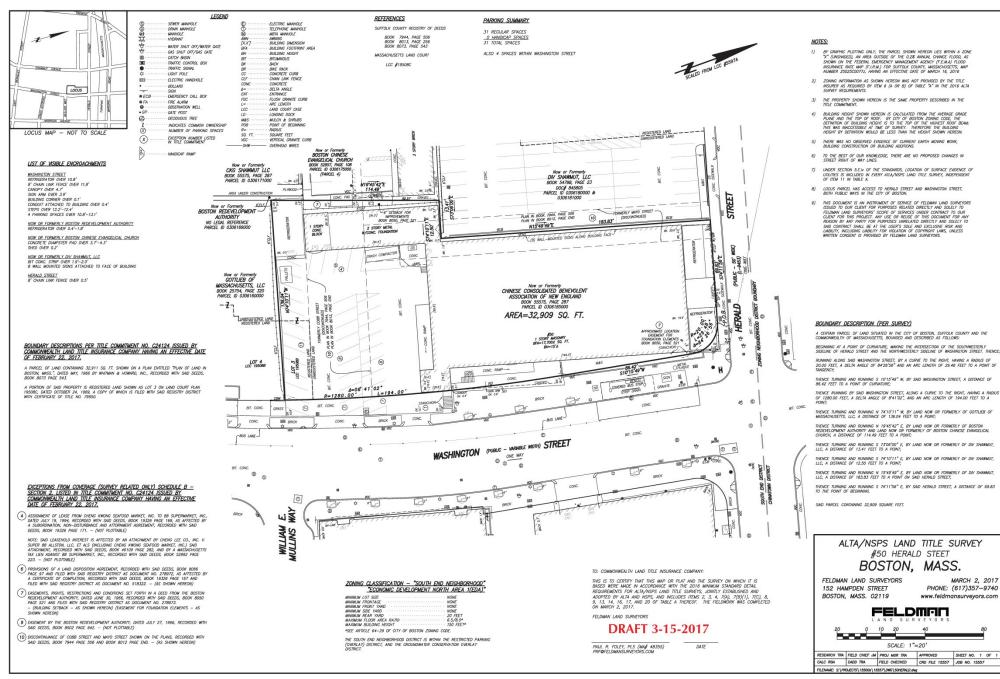


Figure 1-2 Survey of 112 Shawmut Avenue Property

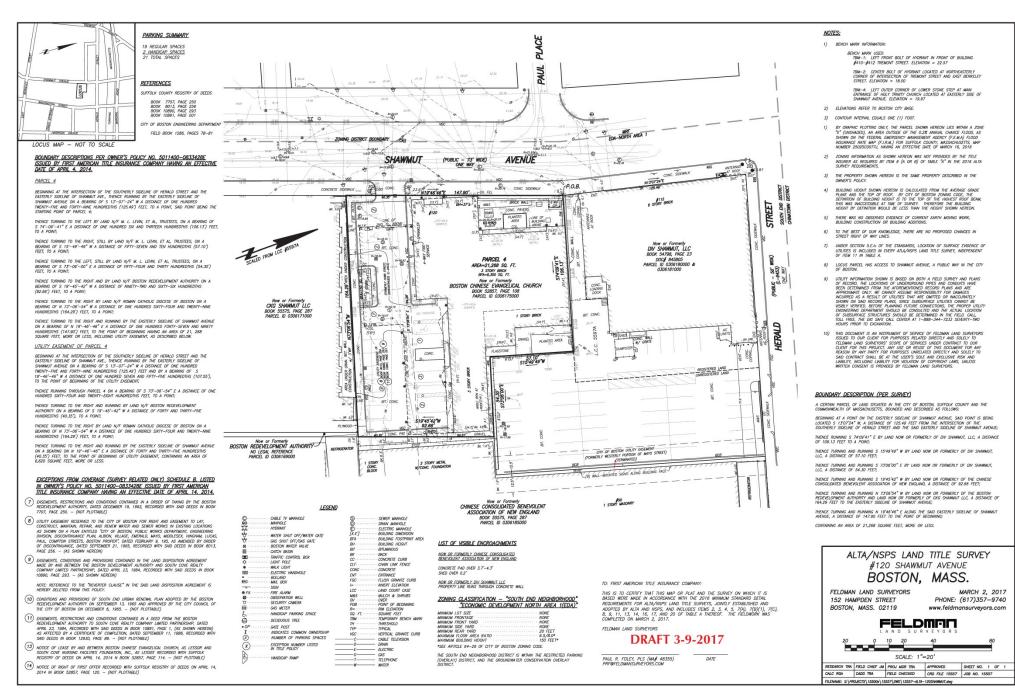
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Shawmut Avenue/Washington Street Block

Boston, Massachusetts

Epsilon



Shawmut Avenue/Washington Street Block

Boston, Massachusetts







Chapter 2

Project Descriptions

2.0 PROJECT DESCRIPTION

2.1 Project Site/PDA Plan Area

The Project Site/PDA Plan Area is made up of three Lots as described below.

DIV Shawmut, LLC Property

The 112 Shawmut Avenue Property is located on the southeast corner of the intersection of Herald Street and Shawmut Avenue. The existing building on the property is a six story concrete frame/brick façade former warehouse building formerly used as offices and ground floor day care space, with approximately 44 surface parking spaces, and minimal open space.

BCEC Property

The BCEC Property is located on Shawmut Avenue, south of the 112 Shawmut Avenue Property. The existing building was formerly operated as a nursing home, and now houses space in which BCEC operates educational and social services programs for its approximately 1,200-member congregation and other members of the community.

CCBA Property

The CCBA Property is located on the southwest corner of the intersection of Herald Street and Washington Street, and currently houses a single-story supermarket and an associated surface parking lot.

2.2 Project Building Descriptions

Table 2-1 and Figure 2-1 provide an overview of each of the three buildings of the Project. Figures 2-2 and 2-3 include massing diagrams of the Project.

Overall, the proposed lot coverage ratio for the PDA will be approximately 74%, consistent with the requirements of Section 64-29(3) of the Zoning Code. In addition, at least 20% of the residential units created within the PDA will be affordable units, consistent with the City's Inclusionary Development Policy ("IDP") requirements. The remainder of this section includes information on the Project buildings.

	Height	Uses	Stories	Gross SF	Residential Units	Parking
112 Shawmut Avenue (The Davis Companies)	150'±	Residential; retail/café; accessory parking	13	192,568 \pm sf	$143\pm$	124± spaces
50 Herald Street (CCBA)	150'±	Residential; retail, community and/or commercial; accessory underground parking	9-14±	261,275± sf	300±	120± spaces
120 Shawmut Avenue (BCEC) (assumes development of new building)	150'±	Religious; community center uses (which may include religious educational and social services meeting rooms, a gymnasium and offices); multi-family dwellings; small (2,000 ± sf) ground floor commercial space; accessory underground parking	11±	145,468± sf	72±	30± spaces

 Table 2-1
 Planned Development Area Project Buildings

112 Shawmut Avenue Building

The 112 Shawmut Avenue building, as described in the PNF, includes the construction of an approximately 192,568 sf, 13-story building consisting of approximately 143 residential units and residential amenity space, and approximately 980 sf of ground floor retail/café space. The building will include three levels of parking, one of which will be below-grade, to accommodate approximately 124 vehicles. The 112 Shawmut Avenue building will have a maximum Building Height (as defined in the Zoning Code) of approximately 150 feet. The roof of the building will include a rooftop deck and amenity space for residents' use, as well as enclosed mechanical space.

The existing building on the 112 Shawmut Avenue Property will be partially demolished, with the exception of the street-facing facades which will be incorporated into the building design. The new construction component of the 112 Shawmut Avenue Property will expand to the east and above the existing building. The ground floor will contain residential amenity spaces along Herald Street that will activate the street front, as well as a residential entry located along Shawmut Avenue. The garage will be accessed by an entrance/exit ramp on Herald Street and an entrance/exit ramp on Shawmut Avenue; because of the site geometry, the two parking areas in the garage will be independent of each other and not connected; this is designed to optimize the amount of open space at the

112 Shawmut Avenue Property. The loading bay at the 112 Shawmut Avenue Property will also be accessed from Shawmut Avenue. Bicycle racks for residents and visitors will be located near the entrances to the building, and there will also be bicycle racks for residents within the parking garage.

Public realm improvements, including new paving, street trees and new plant materials will be provided along Shawmut Avenue and Herald Street to create a more pedestrian-friendly experience in accordance with the City of Boston Complete Streets guidelines. A south and west-facing roof terrace on the 13th floor and a rooftop terrace at the 9th level will offer views of the Boston skyline, while also providing access to outdoor space for residents. Private balconies and rooftop terraces on the 7th floor will also provide outdoor space for specific units within the building.

BCEC Building

The improvements which may be constructed at the BCEC Property will consist of either the demolition of a portion of the existing facility and the construction of a vertical addition thereto, or the new construction of a 11-story structure of approximately 150 feet in Building Height to house two religious sanctuaries with combined seating for approximately 1,130 people, a gymnasium, fitness rooms, office, classroom and meeting space for religious educational, recreational and social services uses, a small (2,000 + sf) ground floor commercial space, and approximately 72 residential units on the upper 6 floors of the building. The new building would contain approximately 145,468 sf of Gross Floor Area, as well as a single level of underground parking for approximately 30 vehicles. The pedestrian and garage entrances to the BCEC Property will be off Shawmut Avenue. The new building setback along the northern property line will range along the length of the building starting at the property line and up to a 5 foot setback, and range from 5 feet to 20 feet on the eastern property line. The new construction BCEC building will include a pedestrian passageway on the southern boundary of the BCEC Property that will connect to a pedestrian passageway on the southern portion of the CCBA Property, and thereby provide cross-block pedestrian access from Shawmut Avenue to Washington Street and the residential and commercial community to the east. The lot coverage ratio for the BCEC Property would be approximately 75% if the new building is constructed. Alternatively, BCEC may renovate/augment the existing building with or without a vertical addition for some, but not necessarily all, of the uses enumerated above, in which case the existing sidewalk would remain and could be connected to a passageway to be constructed on the CCBA Property.

The construction of the BCEC building will enable BCEC to consolidate its existing religious services and community services at its new facility, and also provide a wider array of educational, recreational, and social services to its congregants as well as to members of the larger community. The residential component of the BCEC building would help offset costs associated with the BCEC building, as well as provide much-needed housing resources. The BCEC will comply with the City's IDP requirements, as determined by the BPDA.

Design plans for the BCEC building are included as Appendix A.

Public Benefits

The BCEC building is expected to provide the following public benefits:

- The expansion of BCEC's community ministries providing religious, social service, educational, recreational and support ministries in a language-sensitive and culturally-sensitive manner to the Greater Boston area Asian population;
- The creation of approximately 72 units of housing; and
- The creation of 5-20 permanent jobs and 140 construction jobs.

CCBA Building

The improvements to be constructed at the CCBA Property will consist of a building that is nine stories high at the corner of Herald and Washington Streets, rising to 14 stories further south along Washington Street. The building will be approximately 150 feet in Building Height and will contain approximately 300 residential units, together with approximately 14,200 sf of ground floor retail, commercial and/or community space along Washington Street. The building will be set back approximately 24 feet from the westerly property line, will contain approximately 261,275 sf of Gross Floor Area, and include an underground garage accommodating approximately 120 parking spaces. The entrances to the residential units and community/commercial space at the CCBA Property will be off Washington Street, and the loading, service and parking functions for the CCBA building will be accessed off a new or existing private alley/pedestrian passage located to the south of the new building. This pedestrian passageway will connect to a new pedestrian passageway on the BCEC Property and enhance pedestrian connectivity between Shawmut Avenue and Washington Street. The lot coverage ratio for the CCBA Property will be approximately 66%.

The CCBA Property currently contains a one-story structure housing a supermarket and an associated surface parking lot. The CCBA building is expected to proceed after the premises are vacated by the existing tenant. CCBA will comply with the City's IDP requirements on-site, and CCBA's goal is for at least 30% of the units within the CCBA building to be affordable to households earning 80% or less of the Area Median Income as determined by the U.S. Department of Housing and Urban Development.

Conceptual design plans for the CCBA building are included as Appendix B.

Public Benefits

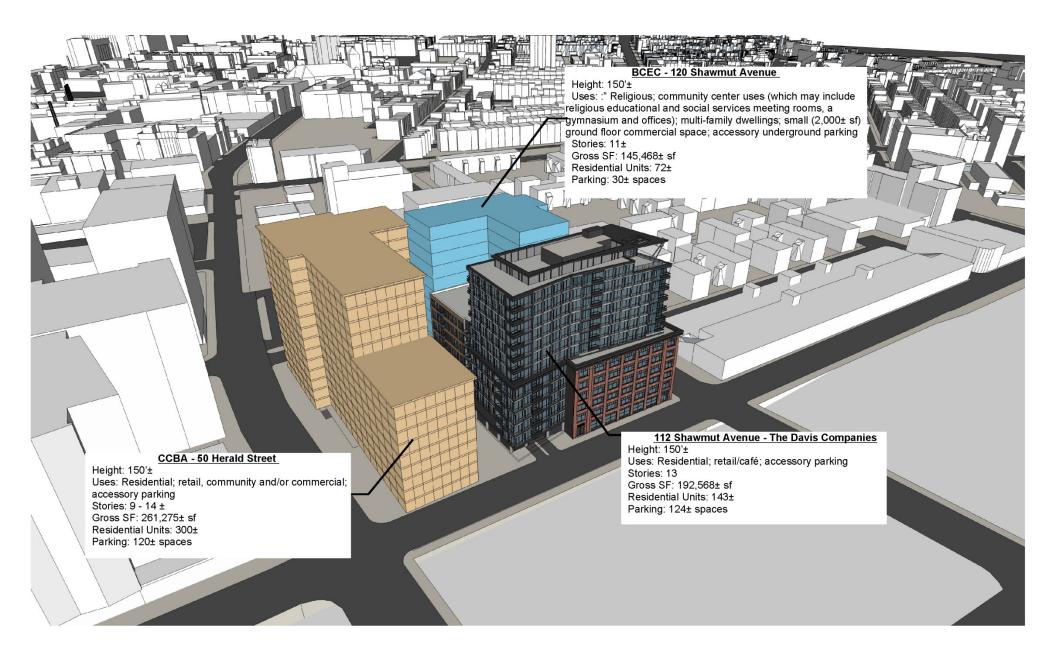
The CCBA building is expected to provide the following public benefits:

- The CCBA building will create approximately 300 units of new housing, at least 30% of which will be affordable housing units;
- The CCBA building will include approximately 14,200 sf of ground floor retail, commercial and/or community space that will enliven this part of Washington Street;
- The CCBA building will result in the conversion of an underutilized commercial site into a prominent mixed-use urban development that will be an important building along this portion of the Washington Street corridor;
- The CCBA building will generate significant property tax revenues and expand the City's tax base;
- Approximately 300 construction jobs and approximately 8-50 permanent jobs will be generated by the CCBA building, depending upon the ground floor non-residential use; and
- Streetscape improvements will be installed as part of the CCBA building along Washington Street to enhance its attractiveness as a key urban corridor.



	Height	Uses	Stories	Gross SF	Residential Units	Parking
112 Shawmut Avenue (The Davis Companies)	150'±	Residential; retail/café; accessory parking	13	192,568± sf	143±	124± spaces
50 Herald Street (CCBA)	150'±	Residential; retail, community and/or commercial; accessory underground parking	9-14±	261,275± sf	300±	120± spaces
120 Shawmut Avenue (BCEC) (assumes development of new building)	150'±	Religious; community center uses (which may include religious educational and social services meeting rooms, a gymnasium and offices); multi-family dwellings; small (2,000± sf) ground floor commercial space; accessory underground parking	11±	145,468± sf	72±	30± spaces











Chapter 3

Transportation

3.0 TRANSPORTATION

3.1 Introduction

As discussed in Chapter 2, the three properties are proposed to be part of an assembled PDA. This Supplemental Submission includes the following two conditions:

- No-Build (2024) Condition: This future scenario assumes none of the Project buildings are built-out; and
- **Build (2024) Condition**: This future scenario assumes the entire Project is fully builtout.

It should be noted that the Existing Condition from the PNF has not changed. Additionally, the PNF traffic study Build Condition and the Build Condition in this Supplemental Submission both determined the cumulative impact of all three sites since the BCEC and CCBA were previously in the No-Build Condition as presented in the PNF and are now in the Build Condition, as presented in this Supplemental Submission.

3.2 No-Build (2024) Condition

The No-Build (2024) 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.

For the purpose of this Supplemental Submission, the No-Build (2024) Condition does not include the Project-related impacts from the 112 Shawmut Avenue building, BCEC building or CCBA building. Therefore, the traffic volumes of the No-Build (2024) Condition in this filing are lower than the No-Build volumes in the PNF filing.

3.2.1 Background Traffic Growth

Based on a review of recent traffic studies conducted for nearby projects and historic traffic data, to account for any additional unforeseen traffic growth, a one-half percent per year annual traffic growth rate was used.

3.2.2 Specific Development Traffic Growth

Traffic volumes associated with known, larger or adjacent development projects can affect traffic patterns throughout the study area within the future analysis time horizon. Nearby

development projects were identified in the vicinity of the Project and are shown in Figure 3-1. Traffic volumes associated with the following projects were directly incorporated into the future conditions traffic volumes:

- 370-380 Harrison Avenue This project, located to the southeast of the Project Site, calls for the construction of a mixed-use building with approximately 314 residential units, 8,500 sf of commercial space, and 180 off-street parking spaces. This project has been approved by the BPDA Board.
- **80 East Berkeley Street** This project, located to the south of the Project Site, consists of the construction of a 308,000 sf, 11-story building with ground floor retail and 200 parking spaces. This project has been approved by the BPDA Board.
- 321 Harrison Avenue This project, located to the east of the Project Site, calls for the construction of 230,000 gross square feet of office space, a new lobby, and pedestrian realm improvements. This project is currently under construction.
- **345 Harrison Avenue** This project, located to the southeast of the Project Site, calls for the construction of two residential buildings with approximately 585 rental units and 40,000 sf of ground floor retail. This project is currently under construction.

Traffic volumes for other nearby development projects including Quincy Tower, Parcel P-7A (a/k/a 240 Tremont Street), 136 Shawmut Avenue, Ink Block – Phase III, and Parcel 24, will have minimal impact on the study area intersections and are therefore included in the general background traffic growth.

3.2.3 Infrastructure Improvements

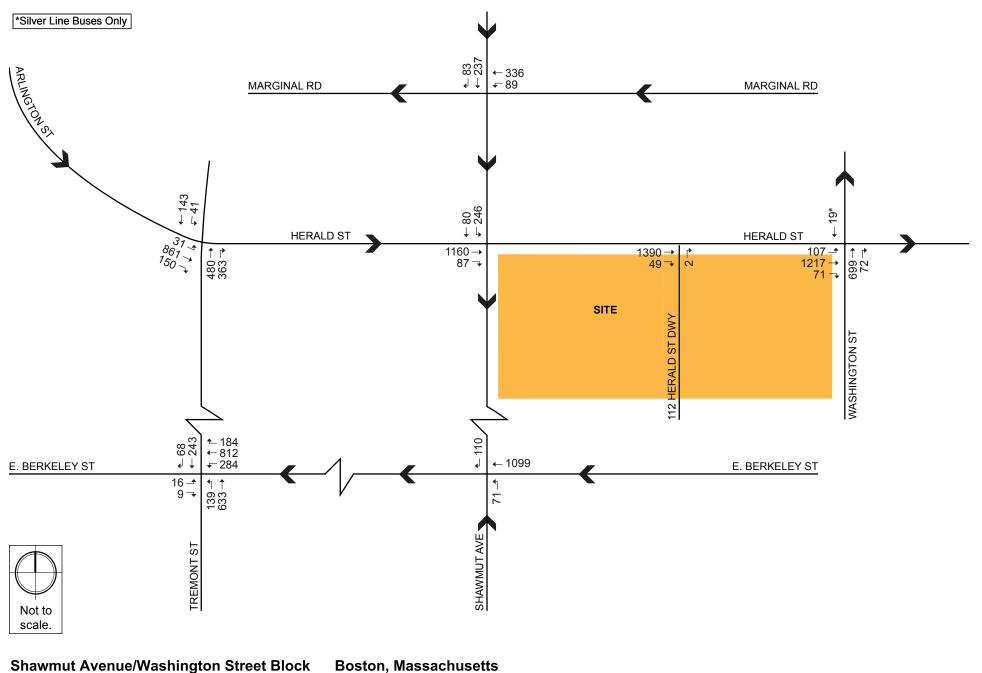
The No-Build (2024) Condition incorporates the planned roadway and circulation modifications to Washington Street, Harrison Avenue, and Traveler Street being completed by the Boston Transportation Department ("BTD"). Information related to the future roadway conditions, including expected traffic patterns, traffic signal timings, and changes in lane usage were provided by the BPDA and BTD.

3.2.4 No-Build (2024) Condition Traffic Volumes and Operations Analysis

The No-Build (2024) Condition weekday a.m. peak hour and weekday p.m. peak hour traffic volumes are shown on Figure 3-2 and Figure 3-3, respectively. Table 3-1 and Table 3-2 present the No-Build (2024) Condition capacity analysis for the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in Appendix C.



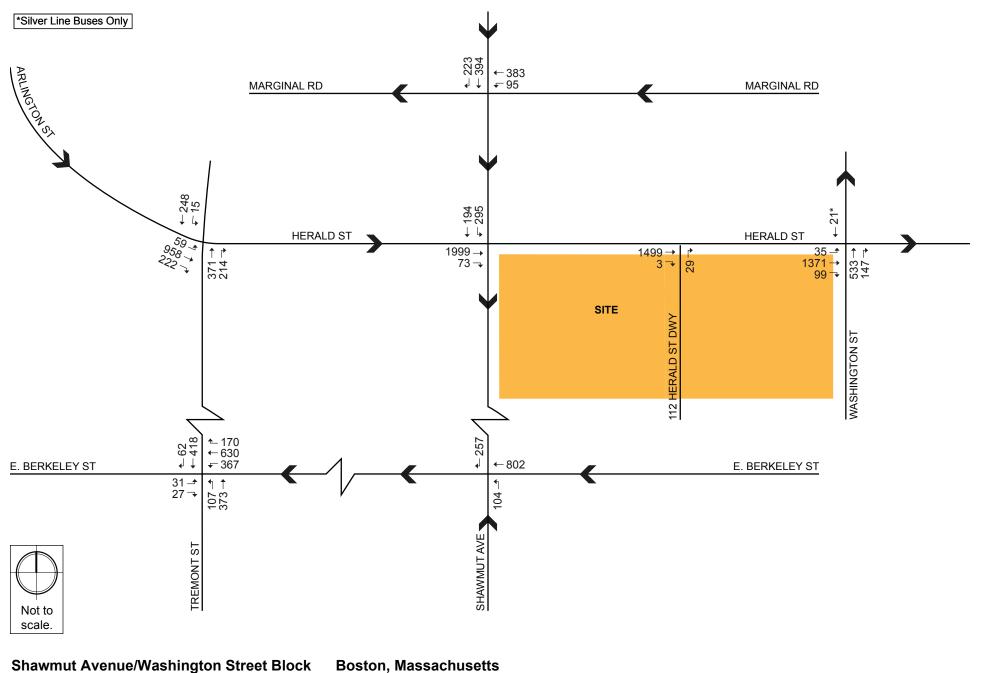




Boston, Massachusetts



Figure 3-2



Boston, Massachusetts



Figure 3-3

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Si	gnalized				
Arlington Street/Herald Street/Tremont Street	С	23.7	-	-	-
Arlington Street EB left/thru thru thru thru/right	С	24.9	0.51	152	185
Tremont Street NB thru thru/right	С	21.6	0.76	165	m121
Tremont Street SB left/thru thru	С	25.9	0.32	56	77
Herald Street/Shawmut Avenue	A	8.9	-	-	-
Herald Street EB thru thru thru/right	А	8.7	0.57	116	111
Shawmut Avenue SB left left	А	6.5	0.26	0	11
Shawmut Avenue SB thru thru	В	18.0	0.09	23	38
Herald Street/Washington Street	D	49.7	-	-	-
Herald Street left/thru thru thru/right	В	15.3	0.77	333	396
Washington Street NB thru	F	>80.0	>1.00	~619	#790
Washington Street NB right	В	12.8	0.18	21	48
Washington Street SB thru (Silver Line buses only)	В	15.6	0.06	9	20
East Berkeley Street/Shawmut Avenue	В	11.2	-	-	-
E Berkeley Street WB thru thru thru	В	12.0	0.48	149	180
Shawmut Avenue NB left	А	1.2	0.21	0	0
Shawmut Avenue SB right	В	10.1	0.41	0	0
Tremont Street/East Berkeley Street/Berkeley Street	F	>80.0	-	-	-
Berkeley Street EB left	D	39.0	0.28	9	29
Berkeley Street EB right	А	0.1	0.02	0	0
E Berkeley Street WB left	С	28.1	0.64	168	262
E Berkeley Street WB thru thru/right	F	>80.0	>1.00	~417	#551
Tremont Street NB left/thru thru	F	>80.0	>1.00	~293	#448
Tremont Street SB thru thru/right	С	30.6	0.54	113	149
Shawmut Avenue/Marginal Road	C	20.1	-	-	-
Marginal Road WB left/thru thru	С	20.6	0.36	104	139
Shawmut Avenue SB thru thru thru/right	В	19.2	0.23	42	65
Un	signalized				
Herald Street/112 Shawmut Avenue Driveway	-	-	-	-	-
Herald Street EB thru thru thru/right	А	0.0	0.34	-	0
112 Shawmut Avenue Driveway NB right	А	9.5	0.01	-	0

Table 3-1No-Build (2024) Condition Capacity Analysis Summary,
Weekday a.m. Peak Hour

95th percentile volume exceeds capacity.

 \sim 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after two cycles.

Grey shading indicates a decrease to LOS E or F.

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Si	gnalized				
Arlington Street/Herald Street/Tremont Street	С	24.8	-	-	-
Arlington Street EB left/thru thru thru thru/right	С	23.3	0.54	176	211
Tremont Street NB thru thru/right	С	26.6	0.61	151	211
Tremont Street SB left/thru thru	С	27.4	0.31	76	110
Herald Street/Shawmut Avenue	A	8.5	-	-	-
Herald Street EB thru thru thru/right	А	8.4	0.58	85	96
Shawmut Avenue SB left left	А	1.4	0.33	2	3
Shawmut Avenue SB thru thru	В	19.5	0.27	31	39
Herald Street/Washington Street	D	36.9	-	-	-
Herald Street left/thru thru thru/right	D	44.4	>1.00	~420	#519
Washington Street NB thru	С	23.4	0.71	262	399
Washington Street NB right	В	11.6	0.54	43	82
Washington Street SB thru (Silver Line buses only)	В	11.4	0.54	8	18
East Berkeley Street/Shawmut Avenue	A	9.3	-	-	-
E Berkeley Street WB thru thru thru	А	9.2	0.31	98	133
Shawmut Avenue NB left	А	2.1	0.33	0	0
Shawmut Avenue SB right	В	13.1	0.69	0	52
Tremont Street/East Berkeley Street/Berkeley Street	D	43.0	-	-	-
Berkeley Street EB left	F	>80.0	0.69	27	#70
Berkeley Street EB right	А	0.3	0.07	0	0
E Berkeley Street WB left	D	47.0	0.81	301	426
E Berkeley Street WB thru thru/right	D	47.4	0.91	352	#445
Tremont Street NB left/thru thru	С	34.9	0.71	164	206
Tremont Street SB thru thru/right	D	40.1	0.64	203	241
Shawmut Avenue/Marginal Road	С	22.1	-	-	-
Marginal Road WB left/thru thru	С	22.8	0.40	122	166
Shawmut Avenue SB thru thru thru/right	С	21.7	0.45	106	127
Un	signalized				
Herald Street/112 Shawmut Avenue Driveway	-	-	-	-	-
Herald Street EB thru thru thru/right	А	0.0	0.39	-	0
112 Shawmut Avenue Driveway NB right	А	9.3	0.04	-	3

Table 3-2No-Build (2024) Condition Capacity Analysis Summary,
Weekday p.m. Peak Hour

95th percentile volume exceeds capacity.

 \sim 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after two cycles. Grey shading indicates a decrease to LOS E or F.

The signalized intersection of **Herald Street/Washington Street** operates at an acceptable LOS during both the weekday peak hours under the No-Build (2024) Condition. During the a.m. peak hour, the Washington Street northbound through lane operates at LOS F. All other movements at the intersection operate at LOS D or better.

The signalized intersection of **Tremont Street/East Berkeley Street/Berkeley Street** operates at LOS F during the a.m. peak hour, and at LOS D during the p.m. peak hour under the No-Build (2024) Condition. During the a.m. peak hour, the East Berkeley Street westbound through and shared through/right lanes as well as the Tremont Street northbound left lane operate at LOS F. During the p.m. peak hour, the Berkeley Street eastbound left-turn lane operates at LOS F. All other movements at the intersection continue to operate at LOS D or better.

3.3 Build (2024) Condition

The Build (2024) Condition assumes all three buildings described in Chapter 2 will be developed. Both this Build (2024) Condition and the Build Condition in the PNF determined the cumulative impact of all three properties.

3.3.1 Trip Generation Methodology

To estimate the number of trips expected to be generated by the Project, data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual*¹ were used. ITE provides data to estimate the total number of unadjusted vehicular trips associated with the Project. In an urban setting well-served by transit, adjustments are necessary to account for other travel mode shares such as walking, bicycling, and transit.

To estimate the trip generation for the Project, the following ITE land use code (LUCs) were used:

Land Use Code 220 – Apartment. This land use code refers to dwelling units located within the same building with at least three other dwelling units. Trip generation estimates are based on ITE's average rate per dwelling unit.

Land Use Code 820 – Shopping Center. This land use code refers to an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. Trip generation estimates are based on ITE's average rate per 1,000 sf.

¹ Trip Generation Manual, 9th Edition; Institute of Transportation Engineers; Washington, D.C.; 2012.

3.3.2 Mode Share

BTD provides vehicle, transit, and walking mode split rates for different areas of Boston. The Project is located within designated Area 3 – South Core, Park Plaza. The unadjusted vehicular trips were converted to person trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA)². The person trips were then distributed to different modes according to the mode shares shown in Table 3-3.

Time Perioc		Land Use	Vehicle Occupancy Rate ¹	Walk/Bike Share²	Transit Share ²	Vehicle Share ²
	In	Desidential	1.13	48%	17%	35%
Deily	Out	Residential	1.13	48%	17%	35%
Daily	In	Retail	1.78	43%	17%	40%
	Out	Kelali	1.78	43%	17%	40%
	In	Residential	1.13	38%	17%	45%
a.m. Peak Hour	Out		1.13	65%	13%	22%
a.m. reak nour	In Out		1.78	33%	16%	51%
		Retail	1.78	79%	7%	14%
	In	Residential	1.13	65%	13%	22%
n m Dook Hour	Out	Residential	1.13	38%	17%	45%
p.m. Peak Hour	In	Retail	1.78	79%	7%	14%
	Out	NeldII	1.78	33%	16%	51%

Table 3-3Travel Mode Shares

1. 2009 National Household Travel Survey.

2. Based on rates published by the Boston Transportation Department for Area 3.

3.3.3 Trip Generation

3.3.3.3 Net Trip Generation

The net peak-hour vehicle trip generation for the Project was determined by adjusting the 112 Shawmut Avenue project-generated vehicle trips to account for the removal of the trips associated with the existing office use on-site. The net vehicle trip generation for the Project during the weekday a.m. peak hour results is zero additional trips in and 51 additional trips out. During the p.m. peak hour, the net vehicle trip generation results in 55 additional trips in and 40 additional trips out.

² *Summary of Travel Trends: 2009 National Household Travel Survey*, FHWA; Washington, D.C.; June 2011.

It should be noted that net trip generation was not applied to the BCEC or CCBA properties as it was with 112 Shawmut Avenue Property. Therefore, it is likely that the increase in the Build traffic volumes is overstated. In addition, according to ITE, during the a.m. Peak Hour, the BCEC church will generate 22 vehicle trips (compared to just 11 vehicle trips associated with the new residential units). It is unlikely that the church will be generating this many vehicle trips during a typical morning peak hour, much less this many new trips that are not already occurring on-site.

3.3.4 Trip Distribution

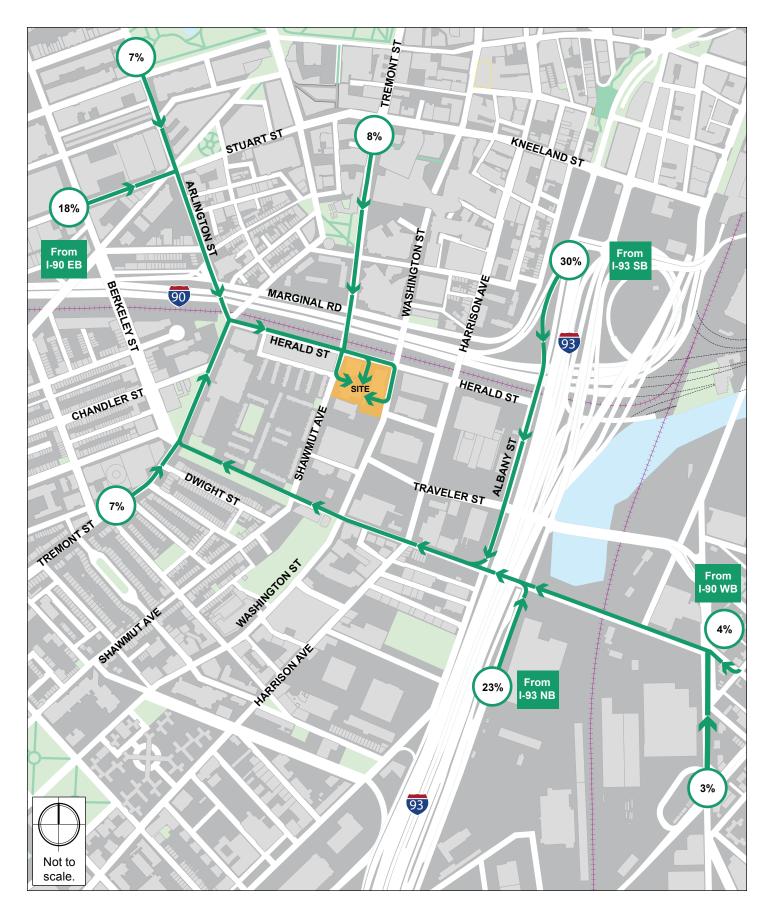
The vehicle trips associated with the Project were assigned to the proposed parking garages on-site. The trip distribution patterns for the Project are illustrated in Figures 3-4 and 3-5.

3.3.5 Build (2024) Condition Traffic Volumes

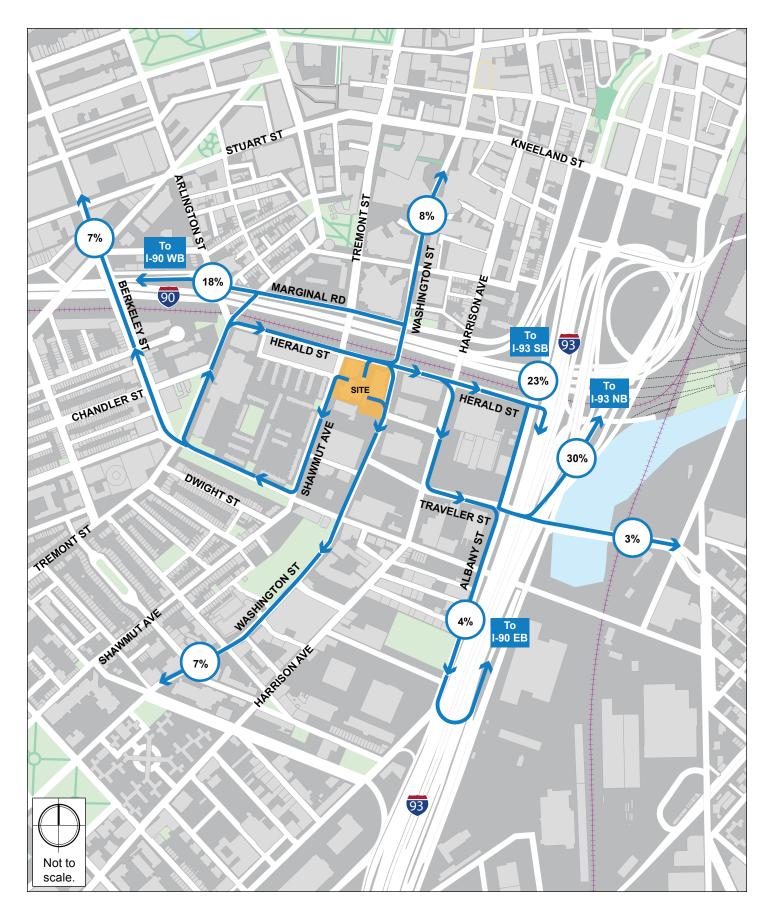
The Project-generated trips for the weekday a.m. peak hour and weekday p.m. peak hour are shown in Figure 3-6 and Figure 3-7, respectively. The net trip assignments were added to the No-Build (2024) Condition vehicular traffic volumes to develop the Build (2024) Condition vehicular traffic volumes. The Build (2024) Condition weekday a.m. peak hour and weekday p.m. peak hour traffic volumes are shown on Figure 3-8 and Figure 3-9, respectively.

3.3.5 Build (2024) Condition Traffic Operations Analysis

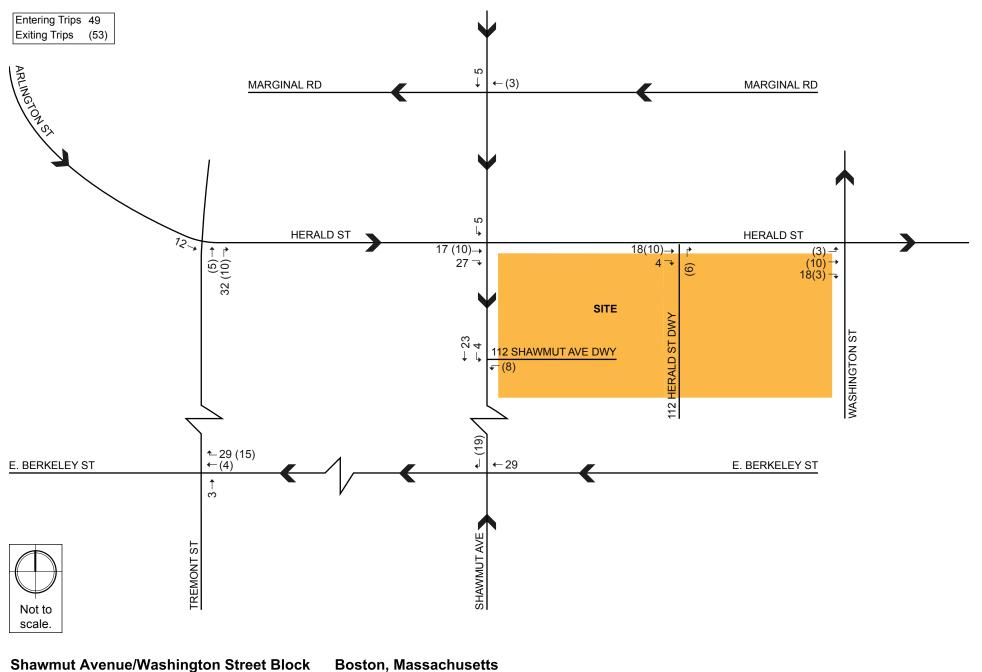
Table 3-4 and Table 3-5 present the Build (2024) Condition capacity analysis for the weekday a.m. peak hour and weekday p.m. peak hour, respectively. The detailed analysis sheets are provided in Appendix C.







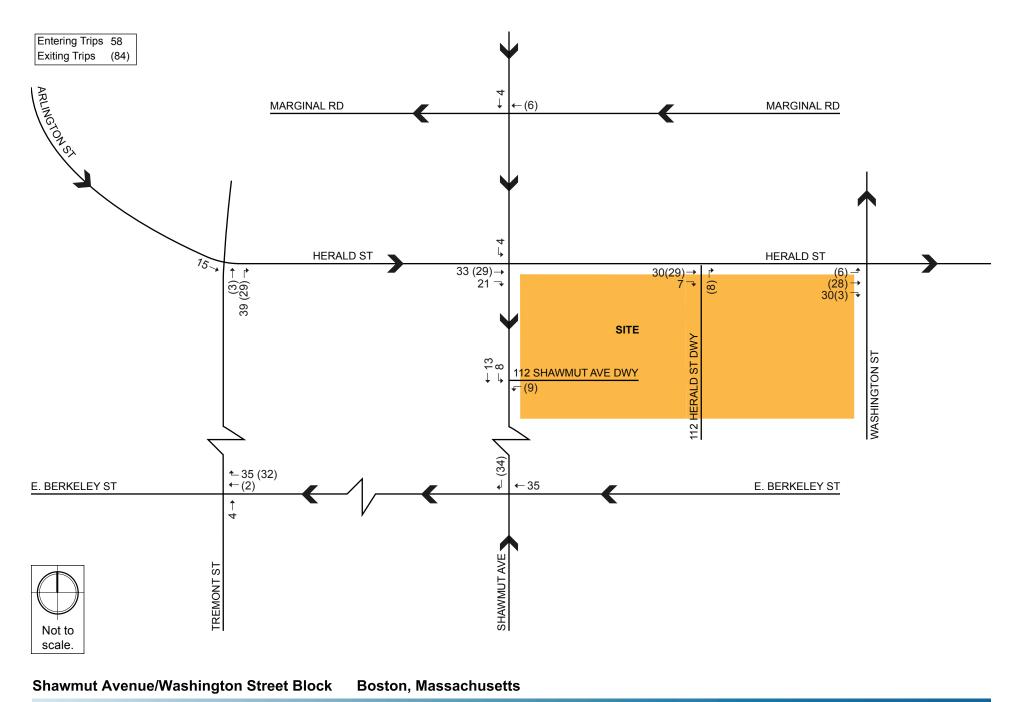




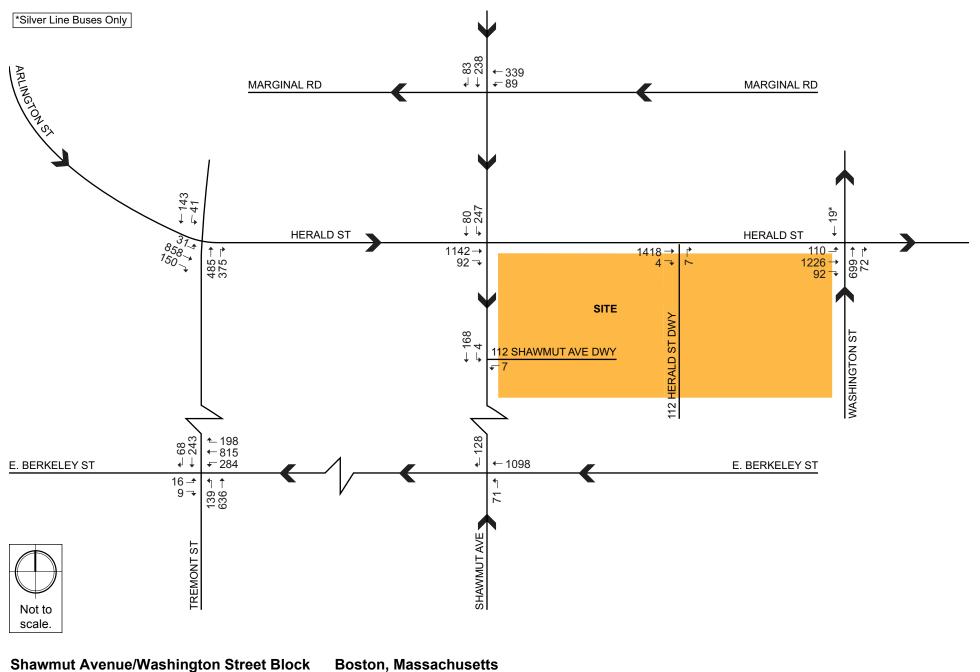
Shawmut Avenue/Washington Street Block



Figure 3-6

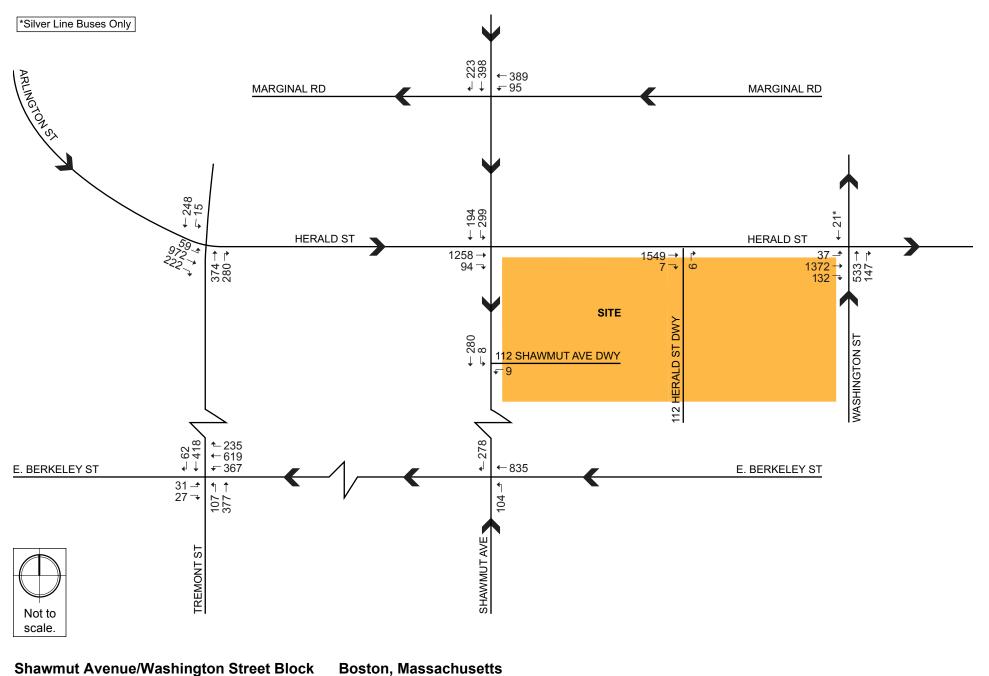


HOWARD STEIN HUDSON Engineers + Planners



Shawmut Avenue/Washington Street Block





Shawmut Avenue/Washington Street Block



Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)		
Signalized							
Arlington Street/Herald Street/Tremont Street	С	23.9	-	-	-		
Arlington Street EB left/thru thru thru thru/right	С	24.8	0.51	151	184		
Tremont Street NB thru thru/right	С	22.2	0.77	178	m128		
Tremont Street SB left/thru thru	С	26.0	0.32	56	78		
Herald Street/Shawmut Avenue	A	8.9	-	-	-		
Herald Street EB thru thru thru/right	А	8.8	0.58	117	112		
Shawmut Avenue SB left left	А	6.6	0.26	0	11		
Shawmut Avenue SB thru thru	В	18.0	0.09	23	38		
Herald Street/Washington Street	D	49.9	-	-	-		
Herald Street left/thru thru thru/right	В	16.4	0.79	343	407		
Washington Street NB thru	F	>80.0	>1.00	~619	#790		
Washington Street NB right	В	13.0	0.18	22	49		
Washington Street SB thru (Silver Line buses only)	В	15.6	0.06	9	20		
East Berkeley Street/Shawmut Avenue	В	11.2	-	-	-		
E Berkeley Street WB thru thru thru	В	12.0	0.48	149	180		
Shawmut Avenue NB left	А	1.2	0.21	0	0		
Shawmut Avenue SB right	В	10.5	0.48	3	3		
Tremont Street/East Berkeley Street/Berkeley Street	F	>80.0	-	-	-		
Berkeley Street EB left	D	39.0	0.28	9	29		
Berkeley Street EB right	А	0.1	0.02	0	0		
E Berkeley Street WB left	С	28.3	0.64	169	263		
E Berkeley Street WB thru thru/right	F	>80.0	>1.00	~ 429	#563		
Tremont Street NB left/thru thru	F	>80.0	>1.00	~296	#450		
Tremont Street SB thru thru/right	С	30.6	0.54	113	149		
Shawmut Avenue/Marginal Road	C	20.1	-	-	-		
Marginal Road WB left/thru thru	С	20.8	0.36	105	141		
Shawmut Avenue SB thru thru thru/right	В	19.2	0.23	42	66		
Un	signalizec				-		
Herald Street/112 Shawmut Avenue Driveway	-	-	-	-	-		
Herald Street EB thru thru thru/right	А	0.0	0.35	-	0		
112 Shawmut Avenue Driveway NB right	А	9.6	0.02	-	2		
Shawmut Avenue/112 Shawmut Avenue Driveway	-	-	-	-	-		
112 Shawmut Avenue Driveway WB left	А	9.5	0.01	-	1		
Shawmut Avenue SB left/thru	А	0.2	0.00	-	0		

Table 3-4Build (2024) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour

95th percentile volume exceeds capacity. ~ 50th percentile volume exceeds capacity. Queue may be longer.

Queue shown is the maximum after two cycles.

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)		
Signalized							
Arlington Street/Herald Street/Tremont Street	С	24.4	-	-	-		
Arlington Street EB left/thru thru thru thru/right	С	23.5	0.55	179	214		
Tremont Street NB thru thru/right	С	25.0	0.67	154	220		
Tremont Street SB left/thru thru	С	27.5	0.31	76	110		
Herald Street/Shawmut Avenue	A	8.5	-	-	-		
Herald Street EB thru thru thru/right	А	8.6	0.58	87	100		
Shawmut Avenue SB left left	А	1.4	0.33	2	3		
Shawmut Avenue SB thru thru	В	19.2	0.27	31	38		
Herald Street/Washington Street	D	42.3	-	-	-		
Herald Street left/thru thru thru/right	D	52.0	>1.00	~440	#538		
Washington Street NB thru	С	23.4	0.71	262	399		
Washington Street NB right	В	11.6	0.24	43	82		
Washington Street SB thru (Silver Line buses only)	В	11.4	0.05	8	18		
East Berkeley Street/Shawmut Avenue	В	10.8	-	-	-		
E Berkeley Street WB thru thru thru	В	9.9	0.32	103	152		
Shawmut Avenue NB left	А	2.1	0.32	0	0		
Shawmut Avenue SB right	В	17.5	0.74	0	79		
Tremont Street/East Berkeley Street/Berkeley Street	D	45.1	-	-	-		
Berkeley Street EB left	F	>80.0	0.73	28	#73		
Berkeley Street EB right	А	0.2	0.07	0	0		
E Berkeley Street WB left	D	45.4	0.80	302	#428		
E Berkeley Street WB thru thru/right	D	52.1	0.95	381	#494		
Tremont Street NB left/thru thru	D	36.0	0.73	165	207		
Tremont Street SB thru thru/right	D	40.8	0.65	203	241		
Shawmut Avenue/Marginal Road	C	22.3	-	-	-		
Marginal Road WB left/thru thru	С	22.9	0.41	124	168		
Shawmut Avenue SB thru thru thru/right	С	21.8	0.46	108	128		
Un	signalizec	l					
Herald Street/112 Shawmut Avenue Driveway	-	-	-	-	-		
Herald Street EB thru thru thru/right	А	0.0	0.40	-	0		
112 Shawmut Avenue Driveway NB right	А	9.2	0.01	-	1		
Shawmut Avenue/112 Shawmut Avenue Driveway	-	-	-	-	-		
112 Shawmut Avenue Driveway WB left	В	10.2	0.01	-	1		
Shawmut Avenue SB left/thru	А	0.3	0.01	-	0		

Table 3-5 Build (2024) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour

95th percentile volume exceeds capacity.
 ~ 50th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after two cycles.

Based on Tables 3-4 and Table 3-5, all of the study area intersections and movements continue to operate at similar LOS as the No-Build (2024) Condition. The East Berkeley Street/Shawmut Avenue intersection changes from an LOS A to B in the Build (2024) Condition, both of which are acceptable LOS. The Project is expected to generate minimal new trips throughout the study area when compared to the existing uses, and will not have a material impact on traffic operations at the study area intersections.

Chapter 4

Environmental Impacts

4.0 ENVIRONMENTAL IMPACTS

4.1 Introduction

This section provides discussions, and where appropriate, technical studies, for the environmental impacts related to wind, shadow, daylight and noise, as requested by the BPDA. These studies are based upon current designs for each of the Project buildings.

4.2 Wind

4.2.1 Introduction

Rowan Williams Davies & Irwin Inc. (RWDI) was retained to assess the pedestrian level wind impact of the Project. The qualitative assessment is based on the following:

- a review of the regional long-term meteorological data from Boston Logan International Airport;
- design drawings and documents received from the Project team on June 6, 8 and September 14, 2017;
- wind-tunnel studies undertaken by RWDI for similar projects in the Boston area, including projects on adjacent blocks;
- RWDI's engineering judgment, experience and expert knowledge of wind flows around buildings^{3,4,5}; and
- use of software developed by RWDI (Windestimator²) for estimating the potential wind conditions around generalized building forms.

This qualitative approach provides a screening-level estimation of potential wind conditions.

³ C.J. Williams, H. Wu, W.F. Waechter and H.A. Baker (1999), "Experience with Remedial Solutions to Control Pedestrian Wind Problems", 10th International Conference on Wind Engineering, Copenhagen, Denmark.

⁴ H. Wu, C.J. Williams, H.A. Baker and W.F. Waechter (2004), "Knowledge-based Desk-Top Analysis of Pedestrian Wind Conditions", ASCE Structure Congress 2004, Nashville, Tennessee.

⁵ H. Wu and F. Kriksic (2012). "Designing for Pedestrian Comfort in Response to Local Climate", Journal of Wind Engineering and Industrial Aerodynamics, vol.104-106, pp.397-407.

4.2.2 Site and Building Information

The 112 Shawmut Avenue Property is currently occupied by a low building up to six stories in height. The CCBA Property is currently occupied by a single-story supermarket and an associated surface parking lot. The BCEC Property is currently occupied by a three-story building. These three Lots are surrounded by parking lots, multi-lane roadways and buildings ranging from five to 20 stories in height in the immediate vicinity. The downtown core of Boston, with high-rise developments is to the northeast. The terrain to the north through west to southwest comprises dense arrays of three to five-story residential and commercial buildings. To the south through east, the surroundings are slightly less dense, consisting of residential and industrial development, with Dorchester Bay and Dorchester Bay about two miles to the east.

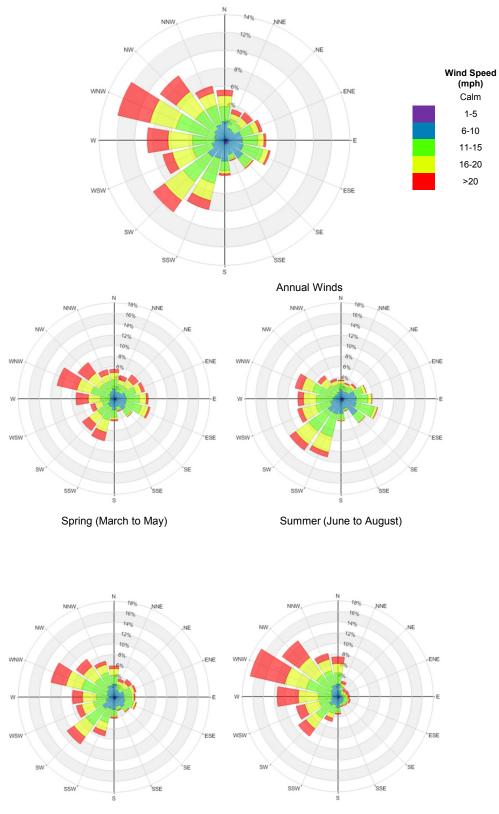
Several new buildings are under construction or approved in the adjacent lots. Most of these projects are proposed to be 10 stories in height or taller, and are likely to be complete before the proposed Project buildings. The proposed Project includes three mixed-use buildings, as described in Chapter 2. The proposed Project buildings will be similar in height to other mid-rise buildings in the surrounding area, including proposed buildings currently under construction in the vicinity.

Major pedestrian areas on and around the Project Site include main entrances to the 112 Shawmut Avenue building and BCEC building on Shawmut Avenue, a main entrance to the CCBA building on Washington Street, sidewalks on all neighboring streets, and terraces on Levels 7, 9 and 13 of the 112 Shawmut Avenue building.

4.2.3 Meteorological Data

Wind statistics at Boston Logan International Airport between 1990 and 2015 were analyzed and Figure 4-1 graphically depicts the distributions of wind frequency and directionality for the four seasons and for the annual period. When all winds are considered (regardless of speed), winds from the northwest and southwest quadrants are predominant. Northeasterly winds are also relatively frequent in the spring.

Strong winds with mean speeds greater than 20 miles per hour (mph)--red bands in the wind roses (see Figure 4-1)--are prevalent from the west-northwest direction throughout the year, while the strong winds from the southwest and northeast are also common. These are critical wind directions focused on in the following discussions.



Fall (September to November)

Winter (December to February)



4.2.4 Pedestrian Wind Criteria

The BPDA has adopted two standards for assessing the relative wind comfort of pedestrians.

First, the BPDA wind design guidance criterion states that an effective gust velocity (hourlymean wind speed + 1.5 times the root mean square wind speed) of 31 mph should not be exceeded more than one percent (1%) of the time. This criterion is hereby referred to as the gust criterion.

The second set of criteria used by the BPDA to determine the acceptability of specific locations is based on the work of Melbourne⁶. This set of criteria is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing and walking. The criteria are expressed in terms of benchmarks for the one-hour mean wind speed exceeded one percent of the time (i.e., the 99-percentile mean wind speed), as provided in Table 4-1.

Level of Comfort	Wind Speed	
Dangerous	> 27 mph	
Uncomfortable for Walking	>19 and ≤27 mph	
Comfortable for Walking	>15 and ≤19 mph	
Comfortable for Standing	> 12 and \leq 15 mph	
Comfortable for Sitting	<12 mph	

Table 4-1BPDA Mean Wind Criteria*

* Applicable to the hourly mean wind speed exceeded one percent of the time.

Pedestrians on sidewalks will be active and wind speeds comfortable for walking are appropriate at these locations. Lower wind speeds comfortable for standing are desired for building entrances where people are apt to linger. For any outdoor amenity at and above grade, low wind speeds comfortable for sitting or standing are desired in the summer months when such amenity spaces are typically in use. Wind speeds rated "Uncomfortable for Walking" and/or "Dangerous" are higher than desirable for any pedestrian activity.

The following discussions on pedestrian wind conditions is based on the annual wind climate. Typically, the summer and fall winds tend to be more comfortable than the annual winds, while the winter and spring winds are less comfortable than the annual winds.

⁶ Melbourne, W.H., 1978, "Criteria for Environmental Wind Conditions", Journal of Industrial Aerodynamics, 3 (1978) 241-249.

4.2.5 Pedestrian Wind Conditions

4.2.5.1 Background

Predicting wind speeds and frequencies of occurrence is complicated. It involves the assessment of building geometry, orientation, position and height of surrounding buildings, upwind terrain and the local wind climate. Over the years, RWDI has conducted thousands of wind tunnel model studies on pedestrian wind conditions around buildings, yielding a broad knowledge base. This knowledge has been incorporated into RWDI's proprietary software that allows, in many situations, for a screening-level qualitative estimation of pedestrian wind conditions without wind tunnel testing.

Wind generally tends to flow over dense arrays of buildings of even height (Figure 4-2, Image 1). Buildings taller than their surroundings tend to intercept the stronger winds at higher elevations and redirect them to the ground level. Such a Downwashing Flow (Figure 4-2, Image 2) is the main cause for increased wind activity around buildings at the pedestrian level. These Downwashed winds subsequently channel along street canyons make those areas windy (Figure 4-2, Image 3). If these building/wind combinations occur for prevailing winds, there is a greater potential for increased wind activity and uncomfortable conditions.

Stepping the windward façade (Figure 4-2, Image 4) is a positive design strategy that is often used for wind control. However, increased wind activity will be created on the lower windward roofs or terraces where low wind speeds are typically desired for amenity use.

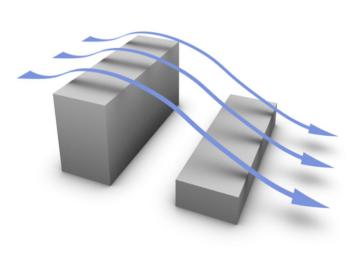
4.2.5.2 No Build: Effective Gust

Wind conditions on the Project Site are expected to be in compliance with the effective gust criterion, due to the low heights of the on-site buildings.

Off-site, existing tall buildings and approved and under construction buildings that are likely to be completed before the Project are expected to result in wind speeds that exceed the gust criterion on the sidewalks close to them, particularly near their western corners on Washington Street. These high wind conditions can be attributed to building-wind interactions as discussed in Section 4.2.5.1.

4.2.5.3 No-Build: Mean Speed

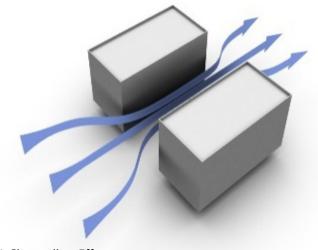
On an annual basis, wind conditions at most areas around the Project Site are currently predicted to be rated comfortable for sitting, standing or walking and therefore, suitable for pedestrian activities. This is largely due to the uniform height of surrounding buildings in the westerly and northeast directions that prevent the redirection of winds to street level (Figure 4-2, Image 1).

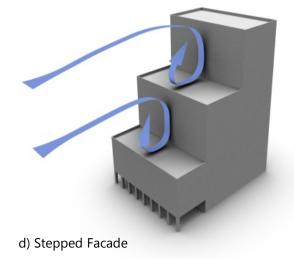




a) Wind Flow over Low-rise Buildings

b) Downwashing Flow





c) Channeling Effect



Wind conditions north of Herald Street on Shawmut Avenue and Washington Street are expected to be around the upper threshold for the walking category, and could potentially be uncomfortable for walking from time to time due to exposure to the prevailing winds.

Wind conditions at the intersections of these streets at Herald Street are also expected to be potentially uncomfortable due to wind acceleration around existing buildings at these intersections. Similar conditions are expected along Washington Street, south of Herald Street, close to the existing taller buildings due to the building-wind interactions discussed in Section 4.2.5.1.

4.2.5.4 Build: Project Features and Wind Flow

The three proposed buildings will be similar in height to mid-rise buildings that exist in the vicinity, and those that are under construction or approved in the neighboring area. The proposed buildings will be taller than the majority of the area to the west and southwest, predominantly consisting of low-rise buildings and roads, and therefore, exposed to winds from those directions. Although strong winds from the northeast are frequent, especially in the spring, the downtown core and taller buildings in that direction aid in lowering the impact of these winds on the Project.

The Project design includes large terraces formed by stepping the massing back at upper levels of the buildings. These massing setbacks are positive in that they capture downwashing flow and reduce wind impacts at grade level. The exposure of the buildings on their west and north side, however, subjects the proposed buildings to wind accelerations at the exposed northwest and southwest corners, which could potentially result in high and even severe wind conditions on the sidewalks near the corners of the buildings. Canopies and other potential measures are anticipated to be evaluated to mitigate these conditions for each Project component, as necessary. The northwesterly winds may also channel through the gap between the proposed 112 Shawmut Avenue building and the proposed BCEC building, creating high wind activity.

4.2.5.5 Build – Grade Level: Effective Gust

With the addition of the three buildings to the existing surroundings, wind conditions at most areas around the Project Site are expected to meet the effective gust criterion. The potential exception to this is at the northwest and southwest corners of the Project Site due to exposure and corner acceleration as discussed in Section 4.2.5.4. Apart from localized impacts close to the buildings, the proposed buildings are expected to have no significant impact on wind conditions in the extended surroundings.

The three buildings will afford shelter to the portion of Washington Street between Herald Street and William E. Mullins Way from the prevailing westerly winds. Therefore, it is anticipated that high wind activity expected in this street section under the No-Build scenario will be reduced, and wind conditions near the existing building in that section will meet the gust criterion.

Conditions in the surrounding area away from the Project Site are anticipated to be the same as the No-Build condition.

4.2.5.6 Build – Grade Level: Mean Speed

Sidewalks

Wind speeds around the Project Site are anticipated to be comfortable for walking or better at most areas. Winds near the western building corners are anticipated to be rated uncomfortable for walking. The sheltering effect of the proposed buildings is expected to reduce wind speeds on Washington Street and south of Herald Street. Conditions at other areas are generally expected to remain similar to those noted for the No-Build scenario in Section 4.2.5.3.

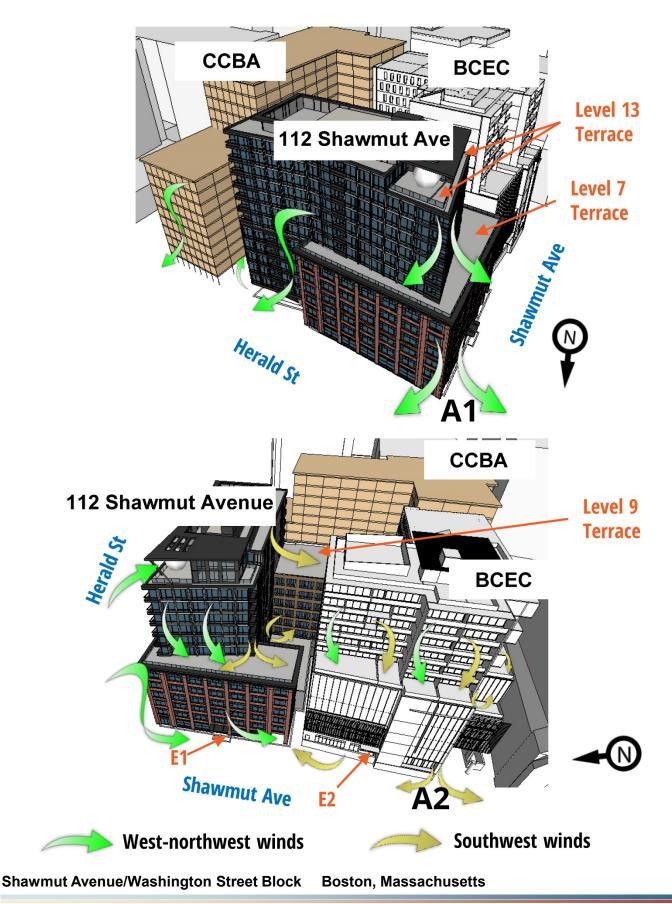
Main Entrance

The main entrances to the proposed 112 Shawmut Avenue building and proposed BCEC building are identified as E1 and E2 in Figure 4-3. The specific entrance location of the CCBA building is unknown at this stage of design. Anticipated large canopies above both identified entrances will protect these entrances from winds downwashing off the west façades. In addition, the entrance to the BCEC building is anticipated to be recessed from the main façade which is a positive design feature. However, entrance E1 to the 112 Shawmut Avenue building will be exposed to the winds that will accelerate at the northwest and southwest corners of the development and flow along the 112 Shawmut Avenue building and BCEC building on Shawmut Avenue. The Proponents will evaluate measures to mitigate the wind conditions along Shawmut Avenue, if necessary.

The closed vestibule at E1 would serve as a protected waiting area for pedestrians and is anticipated to be retained in the final design.

4.2.5.7 Build – Terraces

The proposed 112 Shawmut Avenue building includes large terraces. These terraces are planned on Level 7 (north and west sides), Level 9 (southeast) and Level 13 (Penthouse, northwest and southwest). Current designs for the BCEC and CCBA buildings do not proposed outdoor activities on the podiums of their respective buildings.





Wind speed increases with elevation; the large terraces are more exposed to winds due to the presence of very few tall buildings in the immediate vicinity in the windward directions. Wind speeds on the southeast terrace on Level 9 and the terrace on Level 13 would be relatively lower than on the terrace at Level 7 due to their location farthest from the windward (west) side (Level 9) and recessed location at a re-entrant corner under a large canopy (Level 13). However, conditions are expected to be windy from time to time. In addition, the terrace at Level 9 is sheltered from the predominant southwesterly winds by the proposed BCEC building. Thus, wind conditions on the terrace at Level 9 are expected to be comfortable for the intended use for most of the time.

4.2.6 Summary

Based on the height of the proposed buildings and their surroundings, local wind data, and RWDI's experience with similar projects, it is predicted that wind speeds at most areas around the Project Site will be suitable for pedestrian activity, and similar to conditions that exist currently. However, the exposure of the three buildings to the west-northwest and southwest winds, and the interaction of winds with the proposed buildings and the new surrounding buildings anticipated to be completed before the proposed buildings, will result in higher than desired wind conditions around the western corners. The main entrance to the 112 Shawmut Avenue building and terraces at Levels 7 and 13 are expected to be windy for the intended use due to their exposure to the prevailing winds. The Project team will continue to evaluate measures to mitigate wind impacts at the corners, main entrance and terraces as the designs progress.

Wind speeds that exceed the effective gust criterion are expected in the existing surroundings prior to the addition of the three buildings, and would remain after the buildings are constructed. The addition of the three buildings is expected to result in similar high gust conditions near the western corners. Mean wind speeds at the aforementioned areas are expected to be rated uncomfortable for walking. Wind conditions at most other areas are expected to remain largely unchanged compared to the existing conditions and be in the range comfortable for walking or standing.

The proposed buildings are expected to have little to no impact on wind conditions in the extended surroundings.

4.3 Shadow

4.3.1 Introduction and Methodology

A shadow impact analysis was conducted to investigate shadow impacts from the Project during three time periods (9:00 a.m., 12:00 noon, and 3:00 p.m.) during the vernal equinox (March 21), summer solstice (June 21), autumnal equinox (September 21), and winter solstice (December 21). In addition, shadow studies were conducted for the 6:00 p.m. time period during the summer solstice and autumnal equinox.

The shadow analysis presents the existing shadow and new shadow that would be created by the Project, illustrating the incremental impact of the Project. The analysis focuses on nearby open spaces, sidewalks and bus stops adjacent to and in the vicinity of the Project Site. Shadows have been determined using the applicable Altitude and Azimuth data for Boston. Figures showing the net new shadow from the Project are provided in Figures 4-4 to 4-17.

The results of the analysis show that new shadow from the Project will generally be limited to nearby streets and sidewalks. During one time period (December 21 at 3:00 p.m.), new shadow will be cast onto the temporary Quincy Upper School basketball court, the closest open space to the Project Site. New shadow will be cast onto the bus stop on Washington Street south of Herald Street in the afternoons by the CCBA building. No other bus stops will be impacted by new shadow from the Project.

4.3.2 Vernal Equinox (March 21)

At 9:00 a.m. during the vernal equinox, new shadow from the three buildings will be cast to the northwest. New shadow from the BCEC building will be cast onto Paul Place and its sidewalks, and minimal new shadow from the CCBA building and 112 Shawmut Avenue building will be cast onto small portions of Herald Street. Minimal new shadow from the 112 Shawmut Avenue building will be cast onto a minor portion of Paul Place and its northern sidewalk. No new shadow will be cast onto nearby bus stops or any existing public open spaces.

At 12:00 p.m., new shadow from the three buildings will be cast to the north. New shadow from the BCEC building and the 112 Shawmut Avenue building will be cast onto portions of Shawmut Avenue and its sidewalks. New shadow from the CCBA building and the 112 Shawmut Avenue building will be cast onto Herald Street and its sidewalks, as well as onto the commuter rail tracks and Massachusetts Turnpike to the north. No new shadow will be cast onto nearby bus stops or any existing public open spaces.

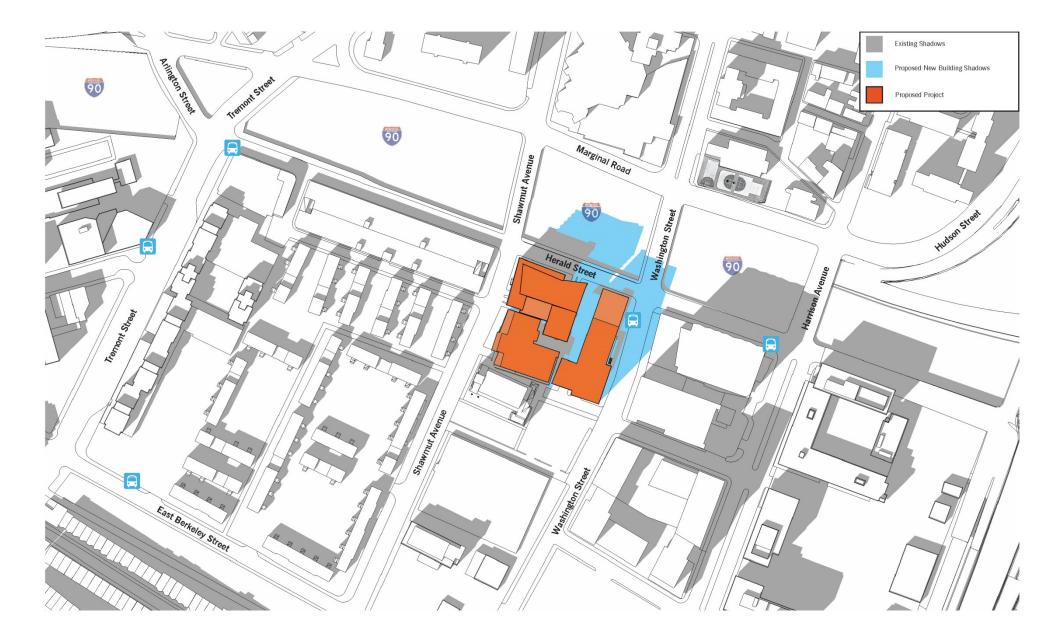
At 3:00 p.m., new shadow from the three buildings will be cast to the northeast. New shadow from the 112 Shawmut Avenue building and CCBA building will be cast across a portion of Herald Street and its sidewalks, as well as portions of the train tracks to the north and the Massachusetts Turnpike. New shadow from the CCBA building will also be cast onto Washington Street and its sidewalks, including the adjacent bus stop. New shadow from the BCEC building will be cast within the Project Site. No new shadow will be cast onto other nearby bus stops or any existing public open spaces.







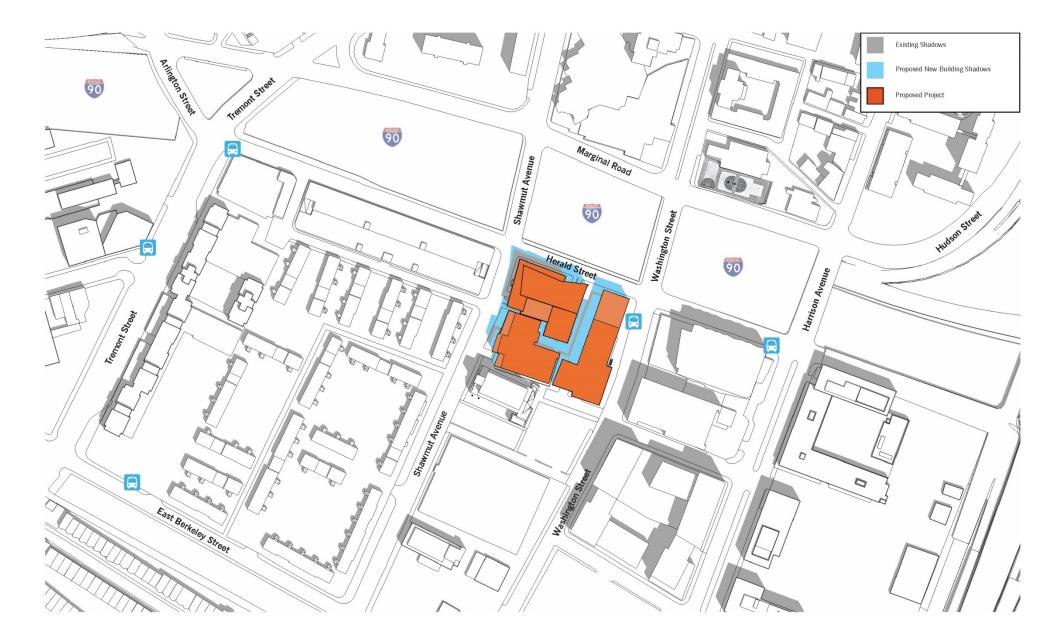




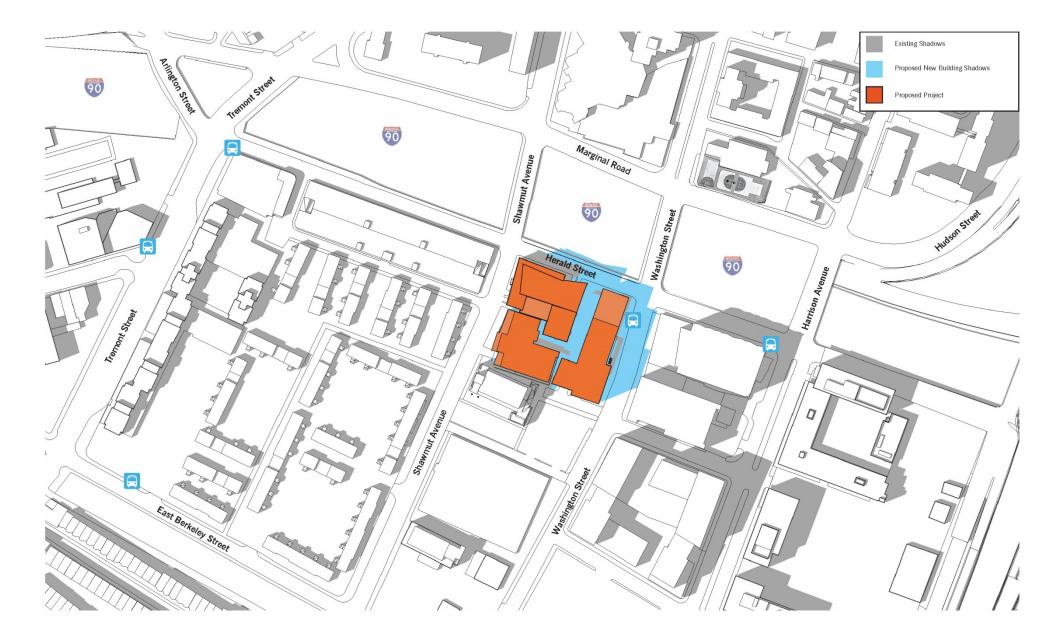




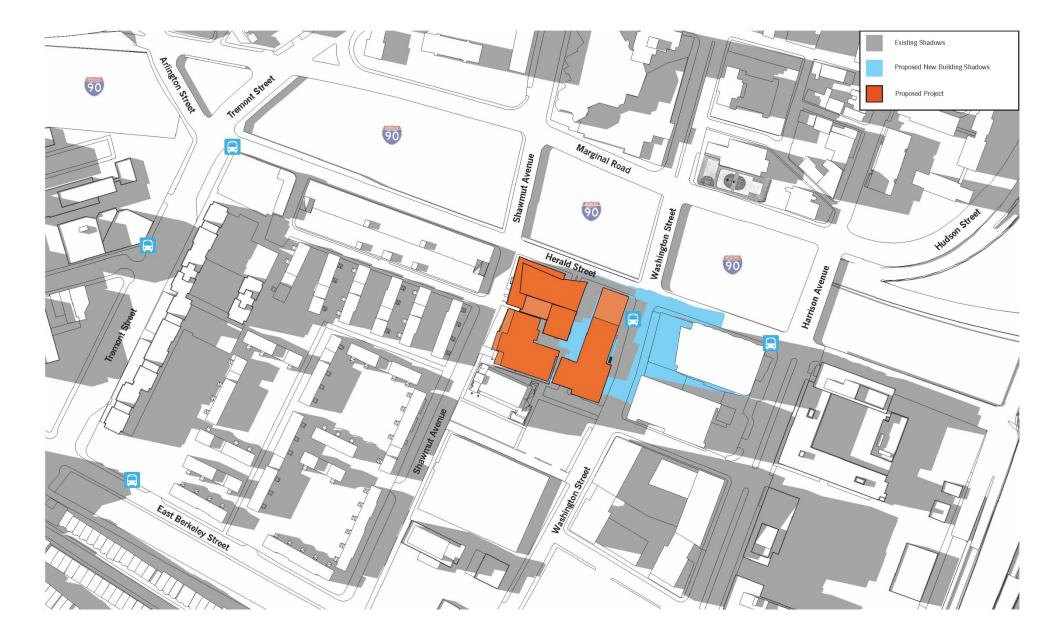








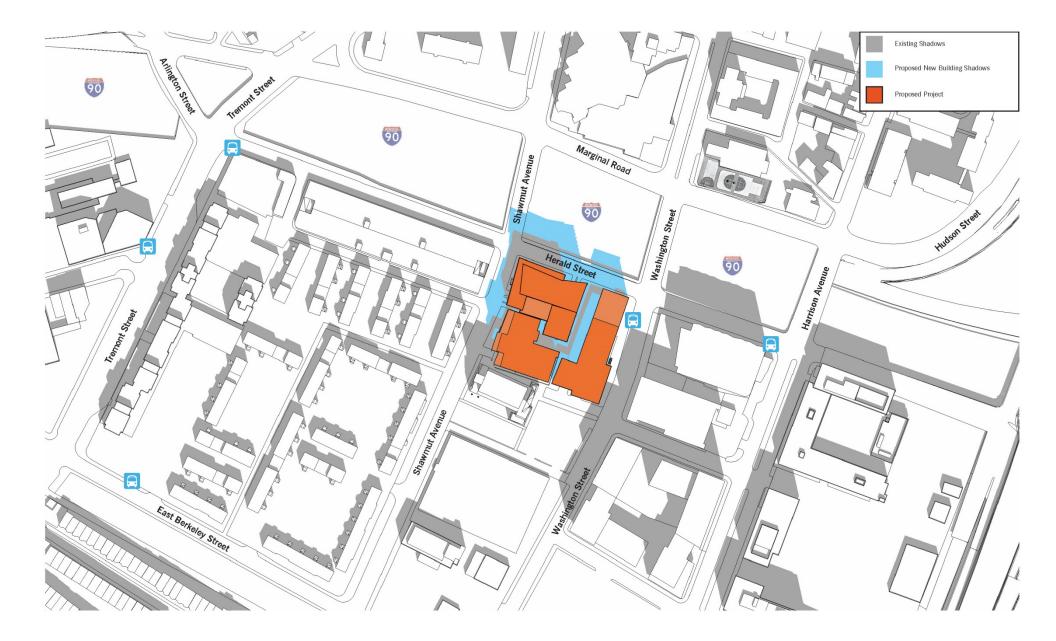




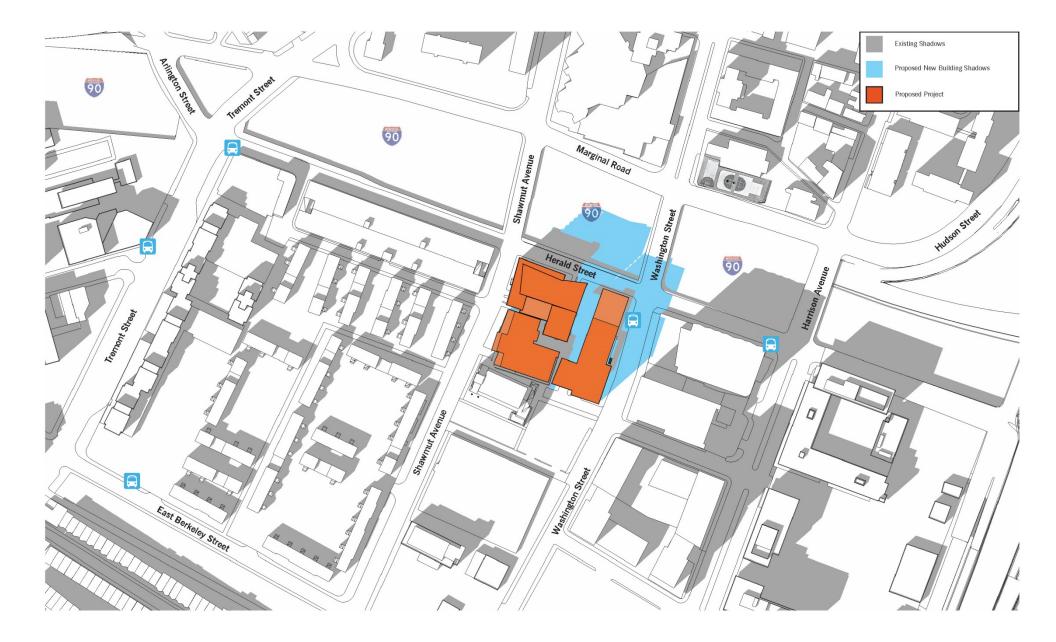




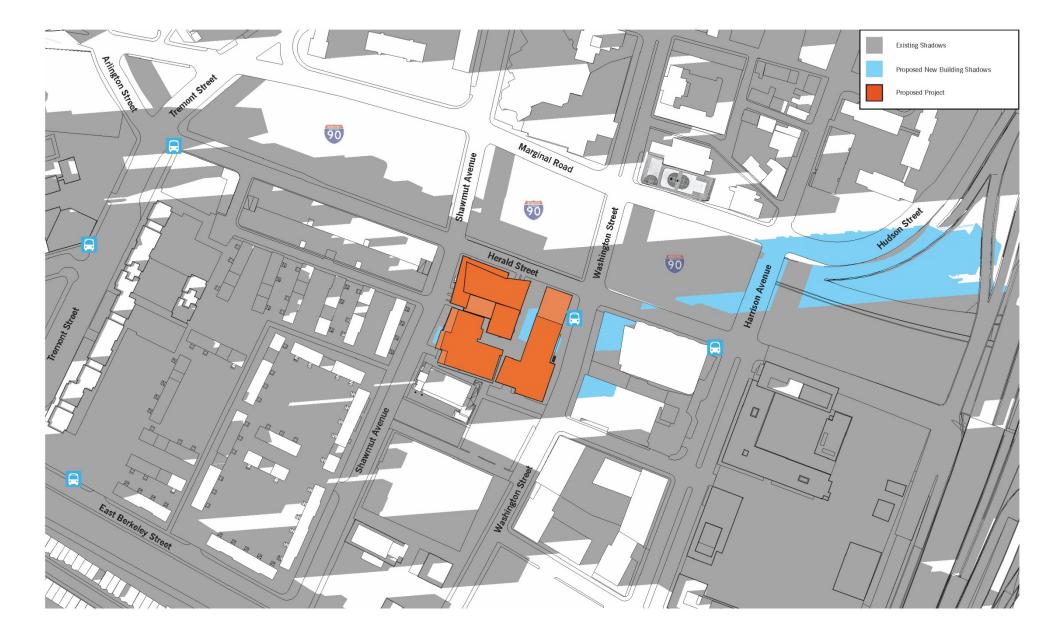








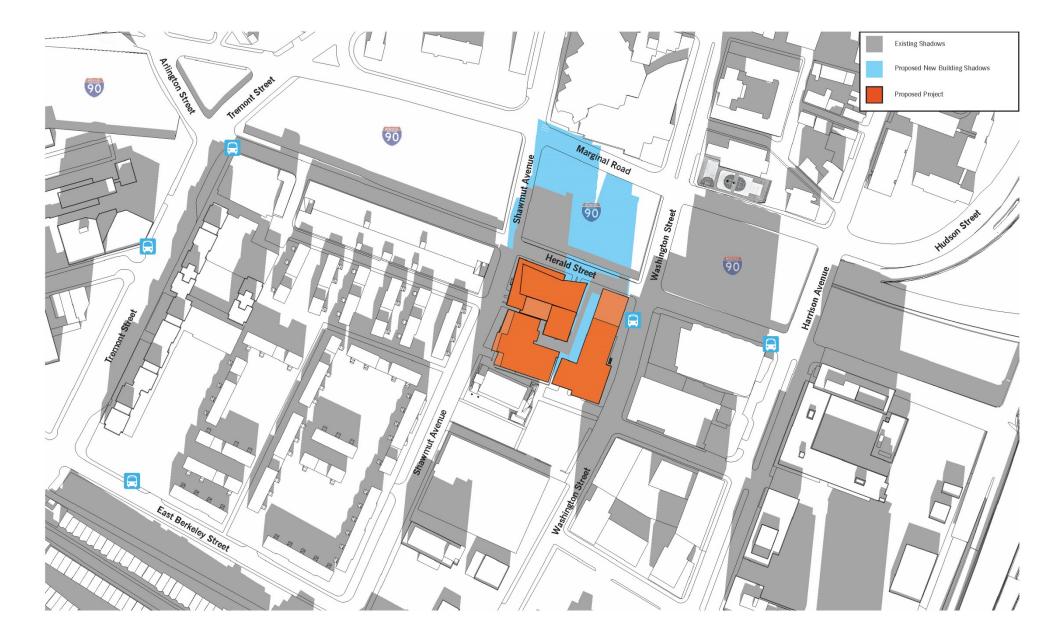


















4.3.3 Summer Solstice (June 21)

At 9:00 a.m. during the summer solstice, new shadow from the three buildings will be cast to the west. New shadow from the 112 Shawmut Avenue building will be cast onto a minor portion of the Paul Place northern sidewalk. New shadow from the BCEC building will be cast onto Shawmut Avenue and its sidewalks. New shadow from the CCBA building will be limited to the Project Site. No new shadow will be cast onto nearby bus stops or any existing public open spaces.

At 12:00 p.m., new shadow will be cast to the northwest. New shadow from the CCBA building and the 112 Shawmut Avenue building will be cast onto small portions of Herald Street and its southern sidewalk. New shadow from the BCEC building will be cast onto small portions of Shawmut Avenue and its eastern sidewalk. The 112 Shawmut Avenue building will also cast new shadow onto a small portion of Shawmut Avenue. No new shadow will be cast onto nearby bus stops or any existing public open spaces.

At 3:00 p.m., new shadow will be cast to the northeast. New shadow from the 112 Shawmut Avenue building will be cast over a portion of Herald Street and its sidewalks. New shadow from the CCBA building will be cast onto Herald Street, Washington Street and their sidewalks, including the adjacent bus stop. New shadow from the BCEC building will be limited to the Project Site. No new shadow will be cast onto other nearby bus stops or any existing public open spaces.

At 6:00 p.m., new shadow will be cast to the east. New shadow from the 112 Shawmut Avenue building will be cast onto a portion of Herald Street and its southern sidewalk. New shadow from the CCBA building will be cast onto Washington Street and its sidewalk, as well as Herald Street and its southern sidewalk. New shadow from the BCEC building will be limited to the Project Site. No new shadow will be cast onto nearby bus stops or any existing public open spaces.

4.3.4 Autumnal Equinox (September 21)

At 9:00 a.m. during the autumnal equinox, new shadow from the three buildings will be cast to the northwest. New shadow from the BCEC building will be cast onto Paul Place and its sidewalks, and minimal new shadow from the CCBA building and the 112 Shawmut Avenue building will be cast onto small portions of Herald Street. Minimal new shadow from the 112 Shawmut Avenue building will be cast onto a minor portion of Paul Place and its northern sidewalk. No new shadow will be cast onto nearby bus stops or any existing public open spaces.

At 12:00 p.m., new shadow from the three buildings will be cast to the north. New shadow from the BCEC building and the 112 Shawmut Avenue building will be cast onto portions of Shawmut Avenue and its sidewalks. New shadow from the CCBA building and the 112 Shawmut Avenue building will be cast onto Herald Street and its sidewalks, as well as onto

the commuter rail tracks to the north. No new shadow will be cast onto nearby bus stops or any existing public open spaces.

At 3:00 p.m., new shadow from the three buildings will be cast to the northeast. New shadow from the 112 Shawmut Avenue building and CCBA building will be cast across a portion of Herald Street and its sidewalks, as well as portions of the train tracks to the north and the Massachusetts Turnpike. New shadow from the CCBA building will also be cast onto Washington Street and its sidewalks, including the adjacent bus stop. New shadow from the BCEC building will be cast within the Project Site. No new shadow will be cast onto other nearby bus stops or any existing public open spaces.

At 6:00 p.m., new shadow will be cast to the east. New shadow from the 112 Shawmut Avenue building will be cast onto a portion of Harrison Avenue and its sidewalks, Marginal Road and its sidewalks, and Hudson Street and its sidewalks. New shadow from the CCBA building will be cast onto Harrison Avenue and its sidewalks, as well as the Massachusetts Turnpike and its westbound ramp. The BCEC building will not cast new shadow. No new shadow will be cast onto nearby bus stops or any existing public open spaces.

4.3.5 Winter Solstice (December 21)

At 9:00 a.m. during the winter solstice, new shadow from the three buildings will be cast to the northwest. New shadow from the 112 Shawmut Avenue building and CCBA building will be cast across a minor portion of Shawmut Avenue and its sidewalks, Marginal Road and its sidewalks, and the commuter rail tracks and Massachusetts Turnpike to the north. New shadow from the BCEC building will be cast onto the Massachusetts Turnpike. No new shadow will be cast onto nearby bus stops or any existing public open spaces.

At 12:00 p.m., new shadow will be cast to the north. New shadow from the BCEC building will be cast onto a small portion of Shawmut Avenue. New shadow from the 112 Shawmut Avenue building will be across a minor portion of Herald Street and its sidewalks, a small portion of Marginal Road and its sidewalks, a minor portion of Shawmut Avenue and its eastern sidewalk, as well as the commuter rail tracks and Massachusetts Turnpike to the north. New shadow from the CCBA building will be cast across a minor portion of Herald Street and its sidewalks, as well as the commuter rail tracks and Massachusetts Turnpike to the north. No new shadow will be cast onto nearby bus stops or any existing public open spaces.

At 3:00 p.m., new shadow will be cast to the northwest. New shadow from the 112 Shawmut Avenue building will be cast across small portions of Washington Street and its eastern sidewalk, Pine Street and its sidewalks, the commuter rail tracks and Massachusetts Turnpike to the north, and a minor portion of the temporary Quincy Upper School basketball court. New shadow from the CCBA building will be cast onto Marginal Road and its sidewalks, Pine Street and its sidewalks, the Massachusetts Turnpike and commuter rail tracks, and a minor portion of the Quincy Upper School playground. The BCEC building will not cast new shadow. No new shadow will be cast onto nearby bus stops or any existing public open spaces.

4.3.6 Conclusions

The shadow analysis examines the impact of new shadow from the Project on the surrounding area during 14 time periods. New shadow will mainly be cast onto nearby streets and sidewalks. During one time period (December 21 at 3:00 p.m.), new shadow will be cast onto the temporary Quincy Upper School basketball court. No new shadow will be cast onto nearby existing public open spaces during any of the other time periods studied. New shadow will be cast onto the bus stop on Washington Street south of Herald Street by the CCBA building during the afternoon hours. No new shadow will be cast onto other nearby bus stops during the 14 time periods studied.

4.4 Daylight

As described in the PNF, a daylight analysis was performed for the Project using the Boston Redevelopment Authority Daylight Analysis (BRADA) computer program.⁷ This program measures the percentage of sky dome that is obstructed by a project, and is considered a useful tool for evaluating the net change in obstruction from existing to build conditions at a specific site.

In addition to the daylight impacts studied for the proposed 112 Shawmut Avenue Property in the PNF, this filing includes additional daylight analyses for the proposed developments on the BCEC and CCBA properties. One viewpoint has been analyzed along Shawmut Avenue facing west toward the BCEC Property. Two viewpoints have been analyzed for the CCBA Property; one viewpoint was taken from Washington Street facing east toward the CCBA Property, and one viewpoint was taken from Herald Street facing south toward the CCBA Property. The results of these analyses have been compared to the Area Context viewpoints included within the PNF. Figure 4-18 shows the viewpoints studied as part of the daylight analysis. Figures 4-19 through 4-25 illustrate the BRADA results for each viewpoint.

Due to the low-rise buildings and surface parking lots that currently occupy the BCEC and CCBA properties, the development of the proposed buildings will increase daylight obstruction over the existing conditions. As shown in Table 4-2, daylight impacts for the proposed buildings on the BCEC and CCBA properties will be similar to the daylight obstruction values for the 112 Shawmut Avenue building, as well as the Area Context viewpoints.

⁷ Method developed by Harvey Bryan and Susan Stuebing, computer program developed by Ronald Fergle, Massachusetts Institute of Technology, Cambridge, MA, September 1984.

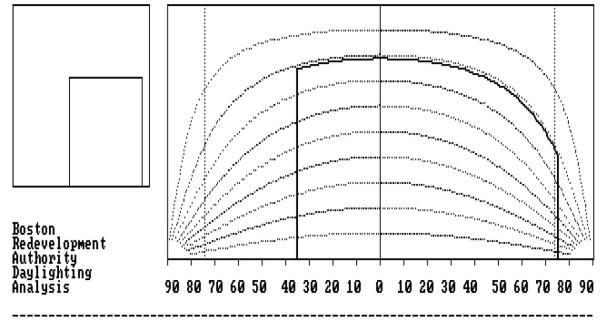
	Viewpoint Locations	Daylight Obstruction (Percent)			
		Existing	Proposed		
Viewpoint 1	View from the center of Herald Street facing south toward the 112 Shawmut Avenue Property	58.5%	77.8%		
Viewpoint 2	View from Shawmut Avenue facing east toward the 112 Shawmut Avenue Property	73.9%	75.9%		
Viewpoint 3	View from the center of Shawmut Avenue facing east toward the BCEC Property	42.9%	68.2%		
Viewpoint 4	View from Herald Street facing south toward the CCBA Property	32.1%	46.5%		
Viewpoint 5	View from Washington Street facing west toward the CCBA Property	20.8%	77.5%		
Area Context Points					
AC1	AC1View from the center of Herald Street facing the proposed building approved at 1000 Washington80.8Street1		N/A		
AC2	View from the center of Washington Street facing the proposed building approved at 345 Harrison Avenue ¹	70.8%	N/A		

Table 4-2Daylight Analysis Results

¹ "Approved" means approved by the BPDA pursuant to Article 80 of the Zoning Code.



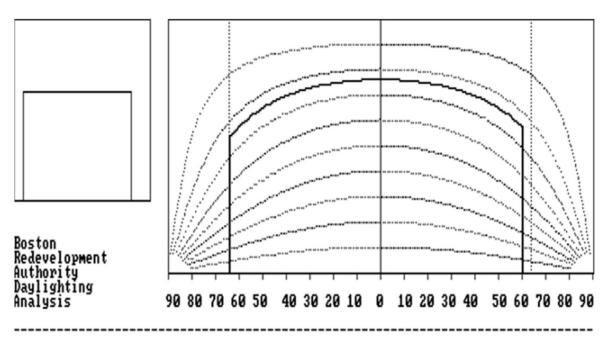




Viewpoint 1: View from Herald Street facing south toward the Project Site

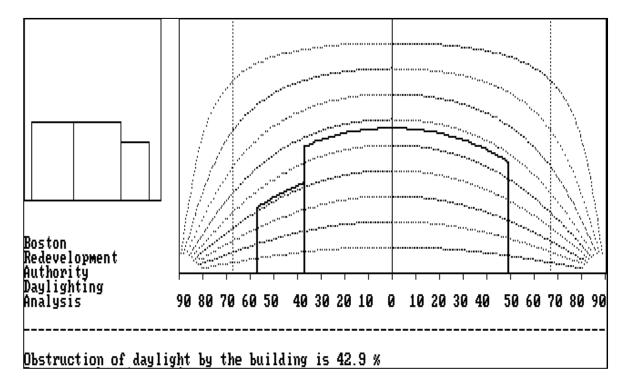
Obstruction of daylight by the building is 58.5 %

Viewpoint 2: View from Shawmut Avenue facing east toward the Project Site:



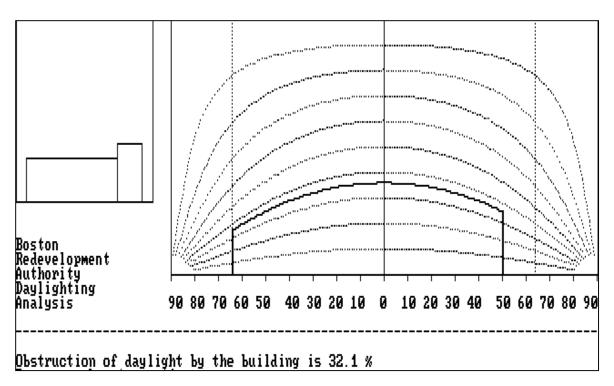
Obstruction of daylight by the building is 73.9 %



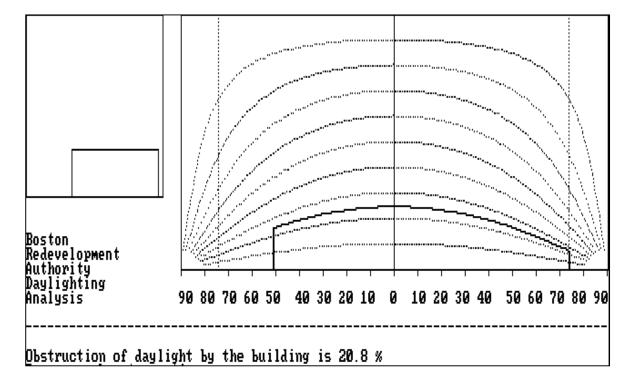


Viewpoint 3: View from Herald Street facing south toward the Project Site

Viewpoint 4: View from Shawmut Avenue facing east toward the Project Site:

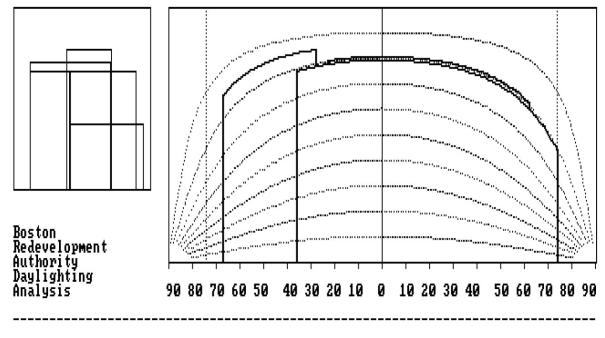






Viewpoint 5: View from Washington Street facing west toward the CCBA Property

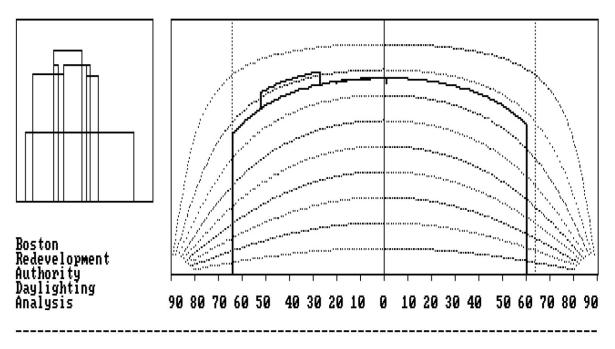




Viewpoint 1: View from Shawmut Avenue facing east toward the Project Site:

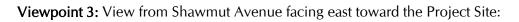
Obstruction of daylight by the building is 77.8 %

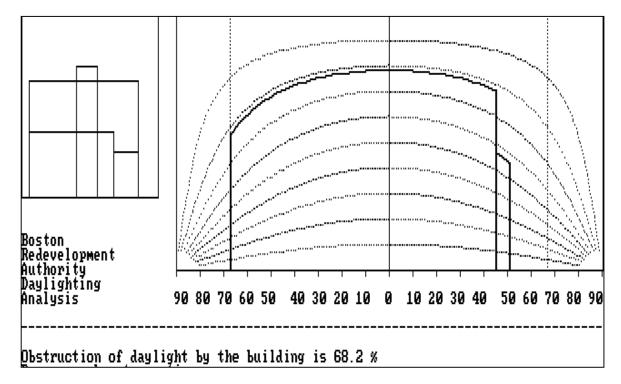
Viewpoint 2: View from Washington Street facing west toward the Project Site:



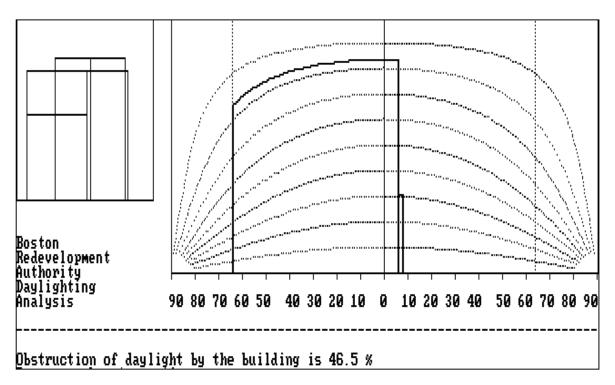
Obstruction of daylight by the building is 75.9 %



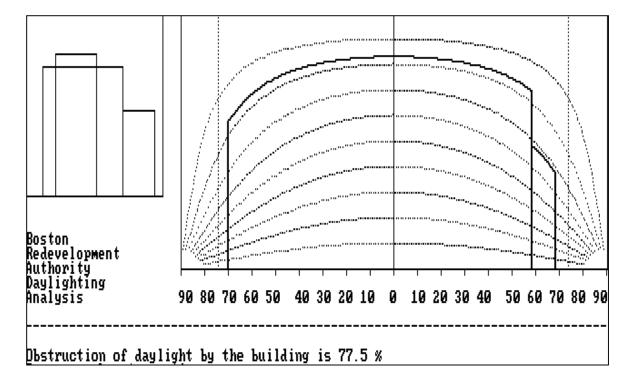




Viewpoint 4: View from Washington Street facing west toward the Project Site:

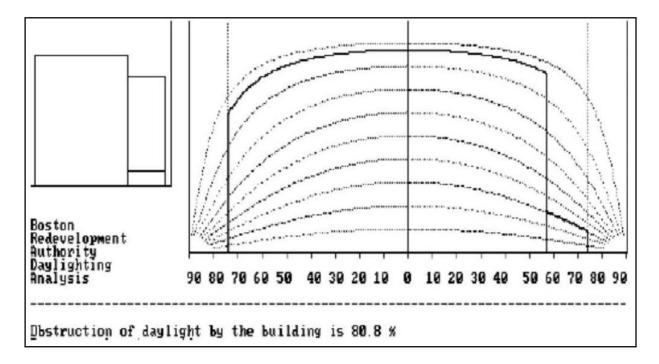






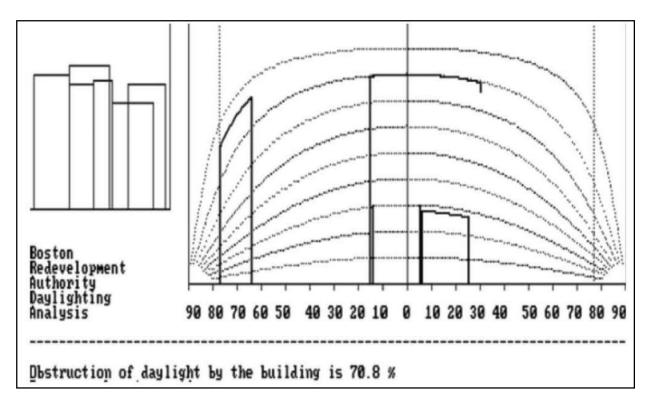
Viewpoint 5: View from Washington Street facing west toward the CCBA Property





AC1: View from Herald Street facing the proposed building approved at 1000 Washington Street

AC2:: View from Washington Street facing east toward the proposed building approved at 345 Harrison Avenue





4.5 Noise

The City of Boston has both a noise ordinance and noise regulations. Chapter 16, §26 of the Boston Municipal Code sets the general standard for noise that is unreasonable or excessive: louder than 50 decibels between the hours of 11:00 p.m. and 7:00 a.m., or louder than 70 decibels at all other hours. The Boston Air Pollution Control Commission (APCC) has adopted regulations based on the City's ordinance - "Regulations for the Control of Noise in the City of Boston," which distinguish among residential, business, and industrial districts in the city. In particular, APCC Regulation 2 is applicable to the sounds from the proposed Project.

Table 4-3 below presents the "Zoning District Noise Standards" contained in Regulation 2.5 of the APCC "Regulations for the Control of Noise in the City of Boston," adopted December 17, 1976. These maximum allowable sound pressure levels apply at the property line of the receiving property.

Octave-band Center	Residential Zoning District			al-Industrial g District	Business Zoning District	Industri Zoning Distric
Frequency	Daytime	All Other Times	Daytime	All Other Times	Anytime	Anytim
(Hz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
32	76	68	79	72	79	83
63	75	67	78	71	78	82
125	69	61	73	65	73	77
250	62	52	68	57	68	73
500	56	46	62	51	62	67
1000	50	40	56	45	56	61
2000	45	33	51	39	51	57
4000	40	28	47	34	47	53
8000	38	26	44	32	44	50
A-Weighted (dBA)	60	50	65	55	65	70

Table 4-3	City of Boston	Zoning	District	Noise	Standards,	Maximum	Allowable	Sound
	Pressure Levels							

Notes: Noise standards are extracted from Regulation 2.5, City of Boston Air Pollution Control Commission, "Regulations for the Control of Noise in the City of Boston", adopted December 17, 1976.

All standards apply at the property line of the receiving property.

dB and dBA based on a reference sound pressure of 20 micropascals.

'Daytime' refers to the period between 7:00 a.m. and 6:00 p.m. daily, excluding Sunday.

Additionally, the Massachusetts Department of Environmental Protection ("MassDEP") has the authority to regulate noise under 310 CMR 7.10, which is part of the Commonwealth's air pollution control regulations. According to MassDEP, "unnecessary" noise is considered an air contaminant and thus prohibited by 310 CMR 7.10. The MassDEP administers this regulation through Noise Policy DAQC 90-001 which limits a source to a 10 dBA increase above the L₉₀ ambient sound level measured at the Project property line and at the nearest residences. The MassDEP policy further prohibits "pure tone" conditions where the sound pressure level in one octave-band is 3 dB or more than the sound levels in each of two adjacent bands.

A noise analysis for the 112 Shawmut Avenue building was included in the PNF. While the details of the mechanical equipment associated with the BCEC and CCBA buildings have not yet been determined, steady operational noise from stationary sources will primarily involve heating, cooling, and ventilation equipment typical for modern mixed-use buildings such as the BCEC building, and in the case of the CCBA building, a primarily residential project.

During the final design phase of the Project, mechanical equipment and noise mitigation will be specified to meet the applicable City of Boston and MassDEP noise limits. Reasonable efforts will be made, as appropriate, to minimize noise impacts from the Project using routinely employed methods of noise control, including:

- Selection of "low-noise" equipment models;
- Fitting of inlet and discharge vents with duct silencers;
- Installation of screening barriers to provide shielding where appropriate;
- Use of sound-attenuating enclosures, acoustical blankets, or both on continuously operating equipment with outdoor exposure; and
- Siting of noisy equipment at locations that protect sensitive receptors by shielding or with increased distance.

Chapter 5

Historic Resources

5.0 HISTORIC RESOURCES

The PNF described the historic resources in the area surrounding the Project Site. The 112 Shawmut Avenue, BCEC and CCBA properties are located within the Harrison/Albany Protection Area of the South End Landmark District. This Protection Area acts as a visual buffer to the more architecturally significant portion of the South End that comprises the Landmark District proper. All three properties are also located within the South End Industrial Area, as surveyed by the Boston Landmarks Commission and included in the Massachusetts Historical Commission's ("MHC") Inventory of Historic and Archaeological Assets of the Commonwealth (the "Inventory"). Neither the South End Industrial Area nor the South End Landmark District's Harrison/Albany Protection Area is included in the State or National Registers.

Now occupied by the Boston Chinese Evangelical Church, 120 Shawmut Avenue was completed in 1982 as a nursing home and designed by the Boston-based architectural firm Jung Brannen. It is a three-story masonry building veneered in brick. The undistinguished single-story building at 50 Herald Street is operated as the C-Mart Supermarket. It was completed in 1966 and enlarged in 1993. The original permit to build indicates only the contractor, the Sydney Construction Company of Boston, rather than the involvement of an architect. The buildings on the BCEC and CCBA properties are not individually listed in the State or National Registers, or listed in the MHC Inventory.

Chapter 6

Sustainable Design

6.0 SUSTAINABLE DESIGN

The PNF included a description of the approach to sustainable design and compliance with Article 37 for the 112 Shawmut Avenue building. DIV Shawmut, LLC has a goal of achieving the Silver level under the Leadership in Energy and Environmental Design (LEED) v4 Building Design and Construction rating system for the 112 Shawmut Avenue building.

The CCBA and BCEC buildings will comply with Article 37 of the Zoning Code by being certifiable using the LEED v4 rating system, and the CCBA has a goal of achieving the Silver level under the LEED v4 rating system for the CCBA building. It is anticipated that the buildings will each achieve at least 12 points for being located in a dense urban area with access to numerous services located at the Ink Block mixed-use development nearby and in the surrounding South End and Chinatown neighborhoods, and near public transportation, including the Silver Line which runs on Washington Street, the Orange Line Tufts Medical Center Station, the Green Line Boylston Street Station, and the Red Line Broadway Station, each of which is within walking distance. Additional points are anticipated for parking strategies to reduce vehicle use, water conservation, energy efficiency beyond what is required by LEED due to the stricter Stretch Energy Code provision of the Massachusetts State Building Code, as well as energy efficiency from thermal and lighting controls, and the use of products that minimize impacts to the environment and indoor air quality.

The proponents of the CCBA and BCEC buildings will submit a LEED checklist at the appropriate time for their developments.

Chapter 7

Urban Design

7.0 URBAN DESIGN

The coordinated approach to future development DIV Shawmut, LLC, BCEC and CCBA have discussed for their respective properties will also yield an improved streetscape and urban character of the area that will comprise the proposed PDA. Considerable thought has been given by those parties to elements of the existing and planned pedestrian experience within the PDA that are focused on enhancing that experience and making it closer to the lively and attractive character that is so characteristic of the South End neighborhood as a whole.

The South End is partially defined by its pedestrian scale and walkability, but this portion of the South End contains larger city blocks, a product of earlier urban renewal efforts. In order to achieve a more pedestrian-friendly character, an east-west pedestrian-accessible connection has been proposed that would lie on the BCEC and CCBA properties (see Figure 1-5). This connection could create a new zone of pedestrian convenience at a location that was previously a very large block on both Shawmut Avenue and Washington Street. The creation of a permeable large block interior is consistent with the intent of the underlying Article 64 zoning requirements aimed at pedestrian experience improvement and the activation of alley conditions for service and pedestrian accessibility throughout the South End neighborhood.

The coordinated development of the 112 Shawmut Avenue Property, BCEC Property and CCBA Property as envisioned in the proposed Development Plan for the PDA could facilitate creation of a new zone of architecturally harmonious buildings that are also compatible in size and scale, as well as the addition of street trees and furniture, sidewalk paving, improved quality of street lighting, and other features consistent with the neighborhood at large (subject to applicable public approvals). The extension of these urban design elements to this area, which has long been the domain of surface and structured parking and other non-residential buildings with limited ability to define the street edge, could add greatly to the character of the area and serve to extend the physical definition and characteristics of the South End neighborhood to this area of Shawmut Avenue, Herald Street and Washington Street.

Chapter 8

Infrastructure

8.0 INFRASTRUCTURE

8.1 Introduction

The following section describes the existing sewer, water, and drainage systems surrounding the site, and explains how these systems will service the Project. The analysis includes a description of anticipated impacts related to the proposed three buildings on area utilities. The three buildings are in the early design stages, and as a more definitive design evolves for each, the owners of each building will coordinate with the various utility companies to ensure full services for the new buildings.

A Boston Water and Sewer Commission (BWSC) Site Plan and General Service Application will be required for the proposed new water and sewer connections. In addition, a Stormwater Pollution Prevention Plan (SWPPP) will be generated specifying best management practices (BMPs) for protecting the existing stormwater drainage system during construction of the buildings.

8.2 Sanitary Sewer System

8.2.1 Existing Sanitary Sewer System

BWSC record drawings indicate that the sanitary sewer system in the Project area (see Figure 8-1 at the end of this chapter) is owned and maintained by BWSC. BWSC record drawings indicate an existing 12-inch sanitary sewer line that runs southwest along Shawmut Avenue to the west of the Project Site, and an existing 12-inch sanitary sewer line that runs east along Herald Street, and turns to run southwesterly in Washington Street.

The 112 Shawmut Avenue Property includes an existing six-story building accommodating a mix of commercial uses. The BCEC Property contains a three-story brick building that had housed the South Cove Manor nursing home, which provided patient rooms and office space. The building now contains ministry uses and related educational and social service uses. The CCBA Property contains a one-story supermarket.

The estimated sewer flow from all existing facilities within the Project Site is summarized in Table 8-1, based on the existing building uses and design sewer flows provided in 310 CMR 15.000-The State Environmental Code, Title 5: Standard Requirements for the Siting, Construction, Inspection, Upgrade and Expansion of On-Site Sewage Treatment and Disposal Systems and for the Transport and Disposal of Septage ("Title V").

Number Sewage Generation Rate Use Total gpd **DIV Shawmut, LLC** 75 gpd/1,000 sf 68,382 sf 5,130 (112 Shawmut Ave) BCEC 34,000 sf 75 gpd/1,000 sf 2,550* (120 Shawmut Ave) CCBA 19,525 sf 97 gpd/ 1,000 sf 1,895 (50 Herald Street) Total Estimated PDA Existing Sewage Generation 9,575

Table 8-1 Existing Wastewater Generation

*Current use breakdown unknown. Unit flow rate for office building was applied to the gross square footage of the building.

8.2.2 Proposed Wastewater Service

The proposed wastewater services for the 112 Shawmut Avenue building and the BCEC building are expected to tie into the 12-inch sanitary sewer in Shawmut Avenue. The wastewater service for the CCBA building is expected to tie into the 12-inch sewer in Washington Street. Floor drains from enclosed parking areas will connect to an oil-water separator prior to connecting to the municipal sanitary sewer.

8.2.3 Estimated Project Wastewater Generation

The 112 Shawmut Avenue building, as described in the PNF, will generate an estimated 24,250 gallons per day (gpd) based on design sewer flows provided in Title V, and the proposed building program as summarized in Table 8-2. This is a net increase of 19,120 gpd over the estimated flows of the existing building.

The BCEC Project, as described in Section 2.2, would generate an estimated 20,796 gpd of new wastewater (see Table 8-2).

The CCBA Project, as described in Section 2.2, would generate an estimated 48,985 gpd of new wastewater (see Table 8-2).

The three proposed buildings will generate an estimated total flow of 98,476 gpd, or approximately 88,901 gpd of new wastewater flow. Based on the proposed estimated sanitary flow, which is greater than 15,000 gpd, BWSC will require the removal of infiltration/inflow (I/I) at a minimum 4:1 ratio of I/I removed to wastewater generated. All sewer connections will be reviewed as part of the BWSC Site Plan Review process for each building.

Location	Use	Number	Sewage Generation Rate	Total gpd
112	Family Dwelling	220 beds	110 gpd/bedroom	24,200
Shawmut Avenue	Retail	980 sf 50 gpd/1,000 sf		50
			Project Site Subtotal	24,250
BCEC	Place of Worship	1,130 seats	3 gpd/seat	3,390
	Classrooms (Preschool- Elementary	195	8 gpd/person	1,560
	Classrooms (Middle school- Adult	366	15 gpd/person	5,490
	Gymnasium	25 75	25 gpd/participant 3 gpd/spectator	850
	Office	2,347 sf	75 gpd/1,000 sf	176
Family Dwelling		108 beds ¹	110 gpd/bedroom	11,880
	·		BCEC Subtotal	23,346
ССВА	Family Dwelling	453 beds ¹	110 gpd/bedroom	49,830
	Retail, Commercial, Community Space	14,000 sf	75 gpd/1,000 sf ²	1,050
	50,880			
	98,476			

Table 8-2 Proposed Wastewater Generation

1. Assumed an average of 1½ bedrooms per unit

2. Unit flow for office space used for estimating

8.3 Water Supply System

8.3.1 Existing Water Service

The water distribution system near the Project area is owned and maintained by BWSC (see Figure 8-2 at the end of this chapter). BWSC record drawings indicate there is an existing 12-inch pit cast iron (PCI) water main installed in Shawmut Avenue, an existing 12-inch ductile iron cement-lined (DICL) water main installed in Herald Street, and an existing 16-inch PCI installed in Washington Street. These mains are part of BWSC's Southern Low distribution system. BWSC also maintains an 8-inch DICL in Washington Street, which is part of its Southern High distribution system, and is capped adjacent to the CCBA Property.

Fire hydrants are located in Shawmut Avenue and Herald Street to the northwest, southwest, and east of the Project area. It appears that these hydrants will provide sufficient coverage for the Project. Each building proponent will design appropriate domestic and fire

protection lines, and confirm the fire hydrant coverage for their respective building with the consultation of BWSC and the Boston Fire Department (BFD) during the detailed design phase.

8.3.2 Proposed Water Service

Each building will have its own domestic water service and fire protection service. The domestic water and fire protection services will have dedicated connections to a water main. The 112 Shawmut Avenue building and the BCEC building are expected to have their water services tie into the 12-inch main in Shawmut Avenue. The CCBA building will tie into the 16-inch main in Washington Street, unless BWSC requires connection of the fire protection service into the 8-inch main in Washington Street.

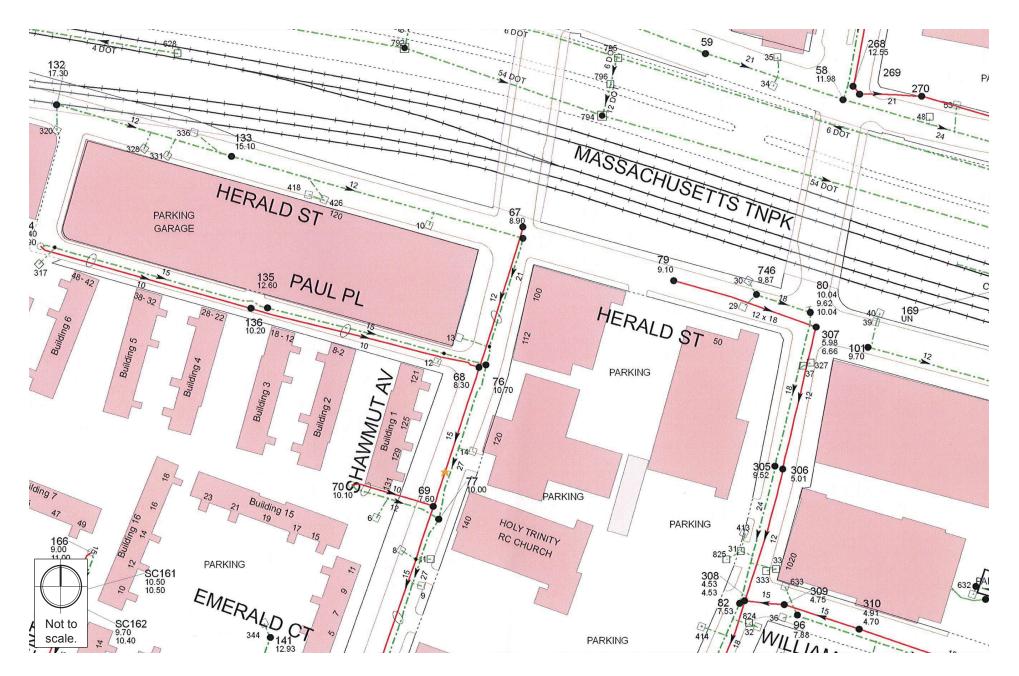
The location of hydrants and siamese connections will be reviewed by BWSC and BFD during the design development phase of each building. Water meters will be of a type approved by BWSC and tied into the BWSC's Automatic Meter Reading (AMR) System. Fixture counts and water meter sizing information will be provided, and services will be designed and coordinated with the BWSC as part of the Site Plan Review process and General Service Application for each building.

8.3.3 Anticipated Water Consumption

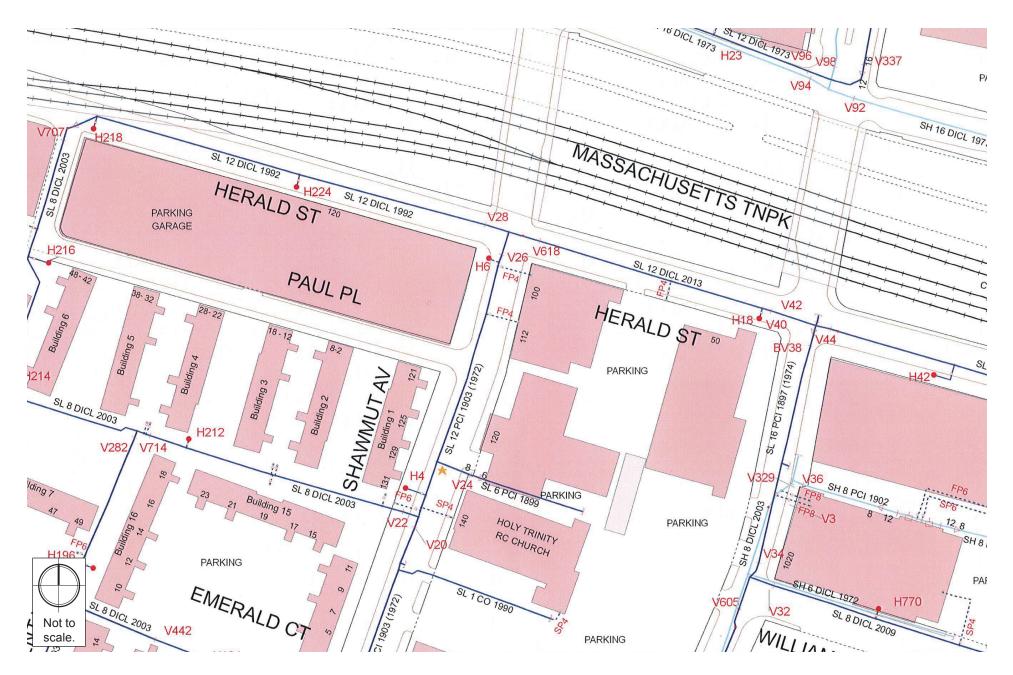
Each building's estimated water consumption is based on the building's estimated sewage generation, plus a factor to account for consumption, system losses, and other usages to estimate an average water demand. The estimated water demand for the full build-out of the Project is estimated at 108,324 gpd. More detailed water use and meter sizing calculations will be submitted to BWSC as part of the Site Plan Review process for each building.

8.4.4 City of Boston Groundwater Overlay District

The Project Site is located within the City of Boston Groundwater Conservation Overlay District (GCOD). Per the GCOD regulations, stormwater infiltration is required and must capture a minimum rainfall volume of one inch across the impervious area of the site. In order to meet this regulation, stormwater infiltration systems will be designed that best fits the needs of each of the three projects and their respective site constraints.



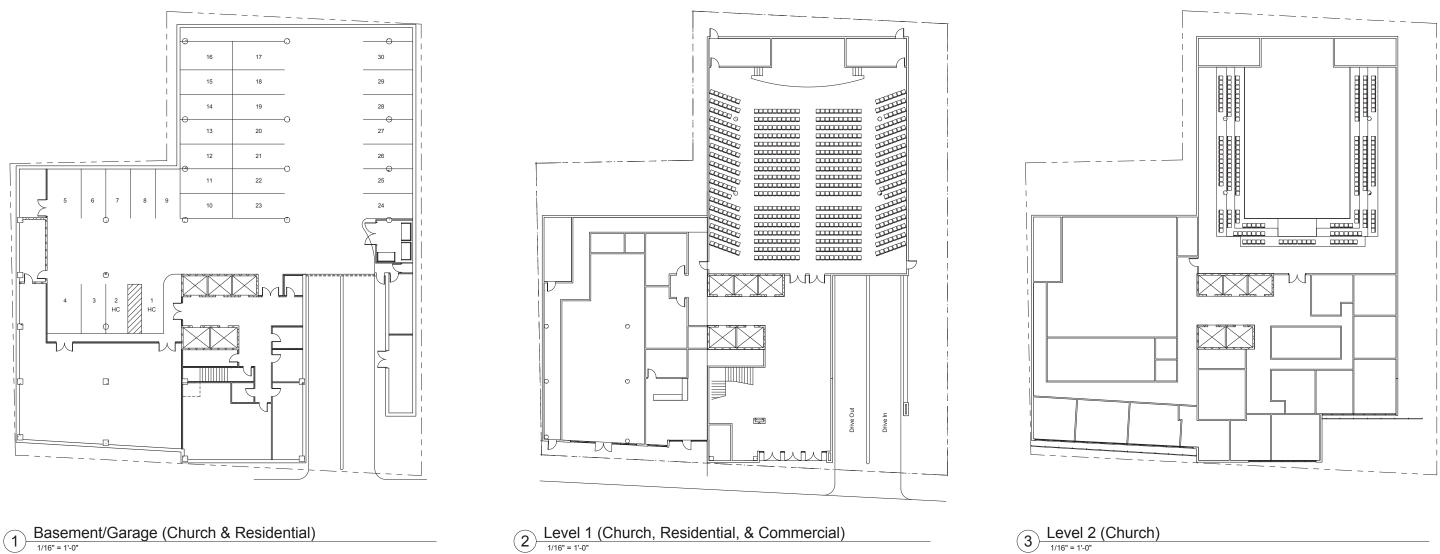






Appendix A

BCEC Project Conceptual Design Plans



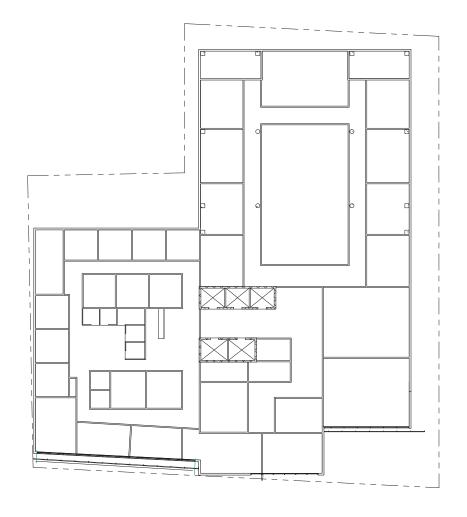
Basement, First Floor, Second Floor

drawing scale 1/16" = 1'-0"

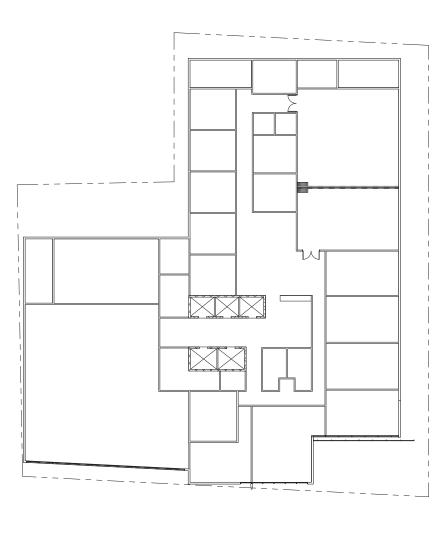
project number Project Number

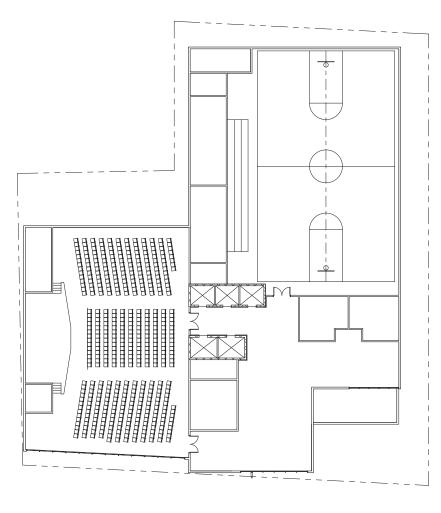
A101

date issued 03/23/17



1 Level 3 (Church)





2 Level 4 (Church)

3 Level 5 (Church)

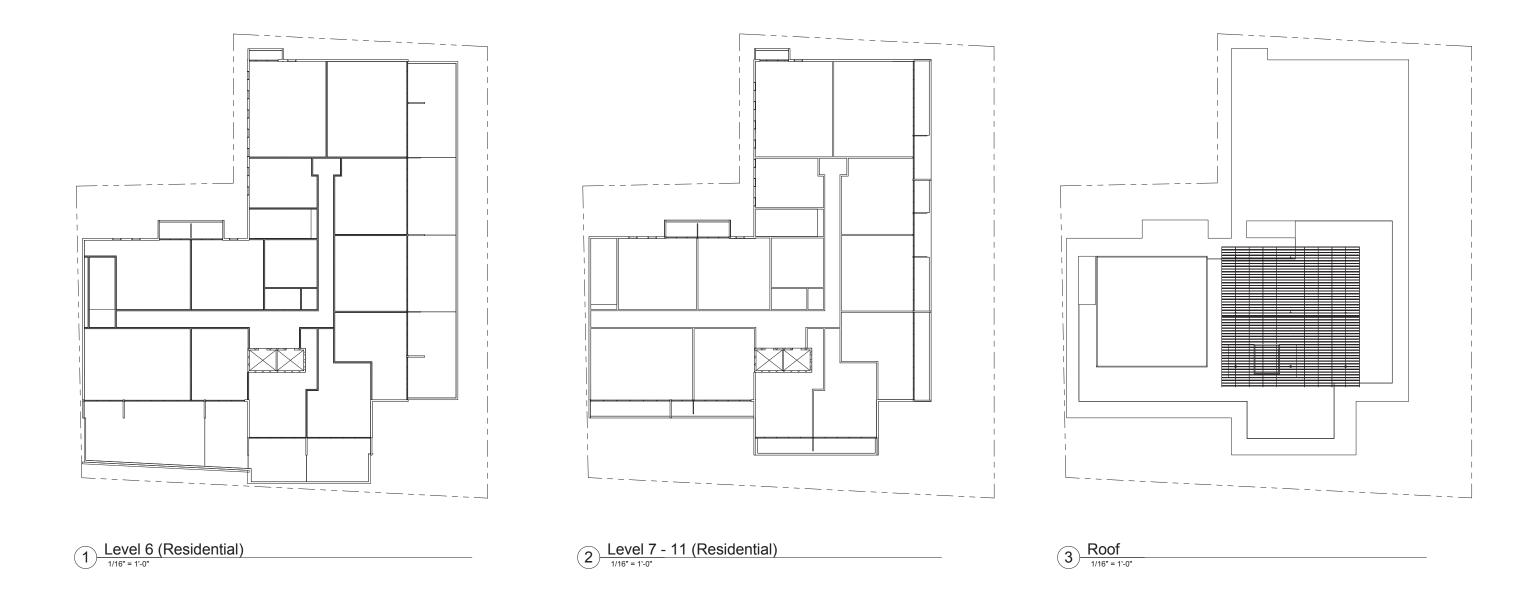
Boston Chinese Evangelical Church 120 Shawmut Ave., Boston, MA 02119

Third, Fourth, and Fifth Floors

drawing scale 1/16" = 1'-0" project number

A102

Project Number date issued 03/23/17



Boston Chinese Evangelical Church 120 Shawmut Ave., Boston, MA 02119

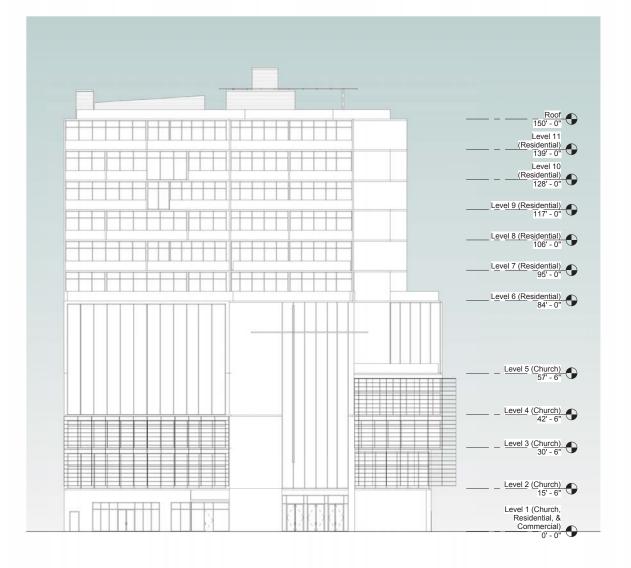
Sixth Floor, Seventh - Eleventh Floors, Roof

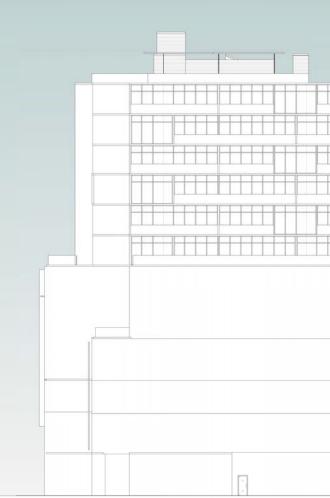
drawing scale 1/16" = 1'-0"

A103

project number Project Number date issued

03/23/17





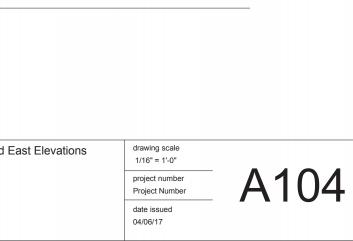
1 West - Shawmut Ave

2 South toward 136 Shawmut

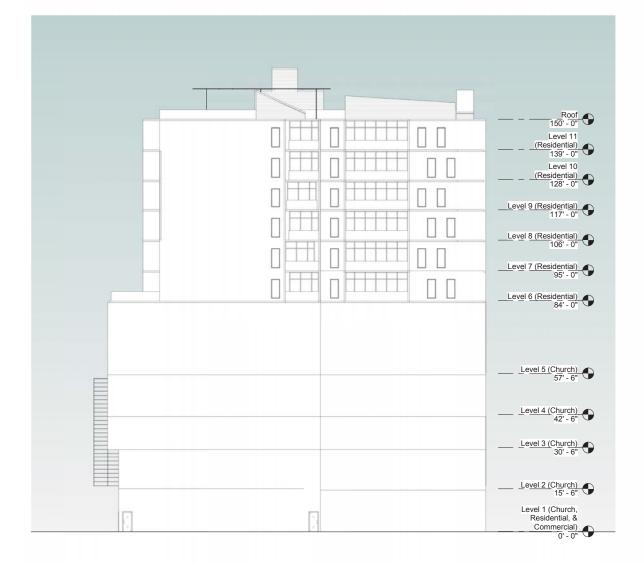
Boston Chinese Evangelical Church

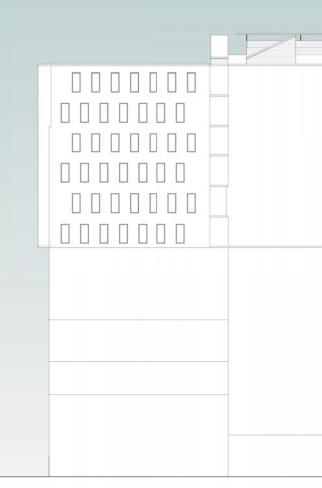
120 Shawmut Ave., Boston, MA 02119

South and East Elevations



	Roof 150' - 0"
	Level 11 (Residential) 139' - 0"
	Level 10
	(Residential) 128' - 0"
	evel 9 (Residential) 117' - 0"
	evel 8 (Residential) 106' - 0"
	evel 7 (Residential) 95' - 0"
u	evel 6 (Residential) 84' - 0"
	Level 5 (Church) 57' - 6"
	Level 4 (<u>Church)</u> 42' - 6"
· ·	Level 3 (Church) 30' - 6"
	_ <u>Level 2</u> (<u>Church)</u> 15' - 6"
	Level 1 (Church, Residential, & Commercial)
	<u>Commercial)</u> 0' - 0"





East toward Washington St (1)

North toward Herald St (2)

Boston Chinese Evangelical Church

120 Shawmut Ave., Boston, MA 02119

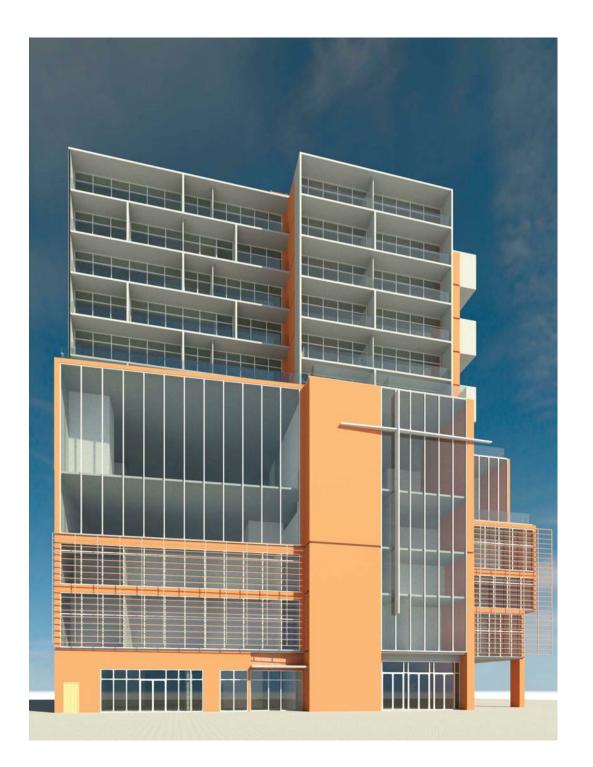
Roof 150' - 0" Level 11 esidential) 139' - 0" Level 10 (Residential) 128' - 0" evel 9 (Residential) 117' - 0" Level 8 (Residential) 106' - 0" Level 7 (Residential) 95' - 0" Level 6 (Residential) 84' - 0" _L<u>evel 5 (Church)</u> 57' - 6" Level 4 (Church) 42' - 6" Level 3 (Church) 30' - 6" Level 2 (Church) 15' - 6" Level 1 (Church, Residential, & Commercial) 0' - 0"

North and West Elevations

drawing scale 1/16" = 1'-0" project number

Project Number date issued 04/06/17

A105









Boston Chinese Evangelical Church 120 Shawmut Ave., Boston, MA 02119

Perspective Views

drawing scale 12" = 1'-0"

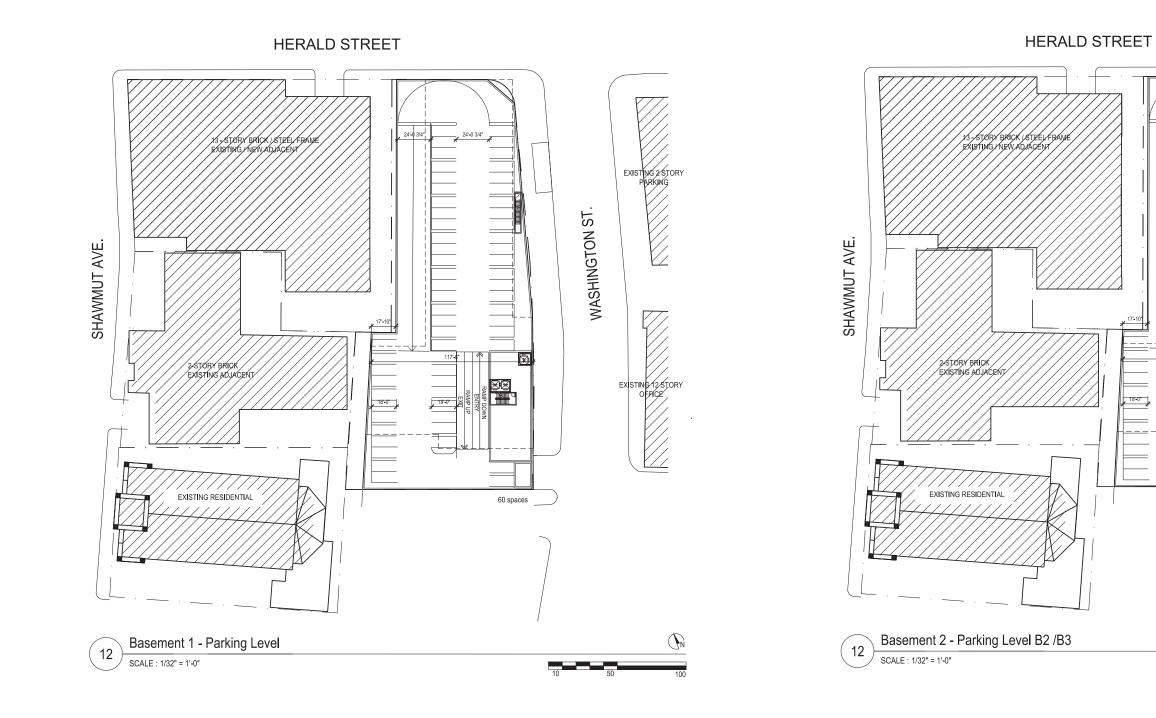
project number Project Number

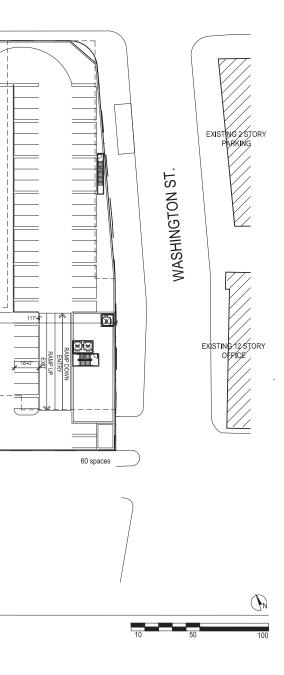


date issued 04/13/17

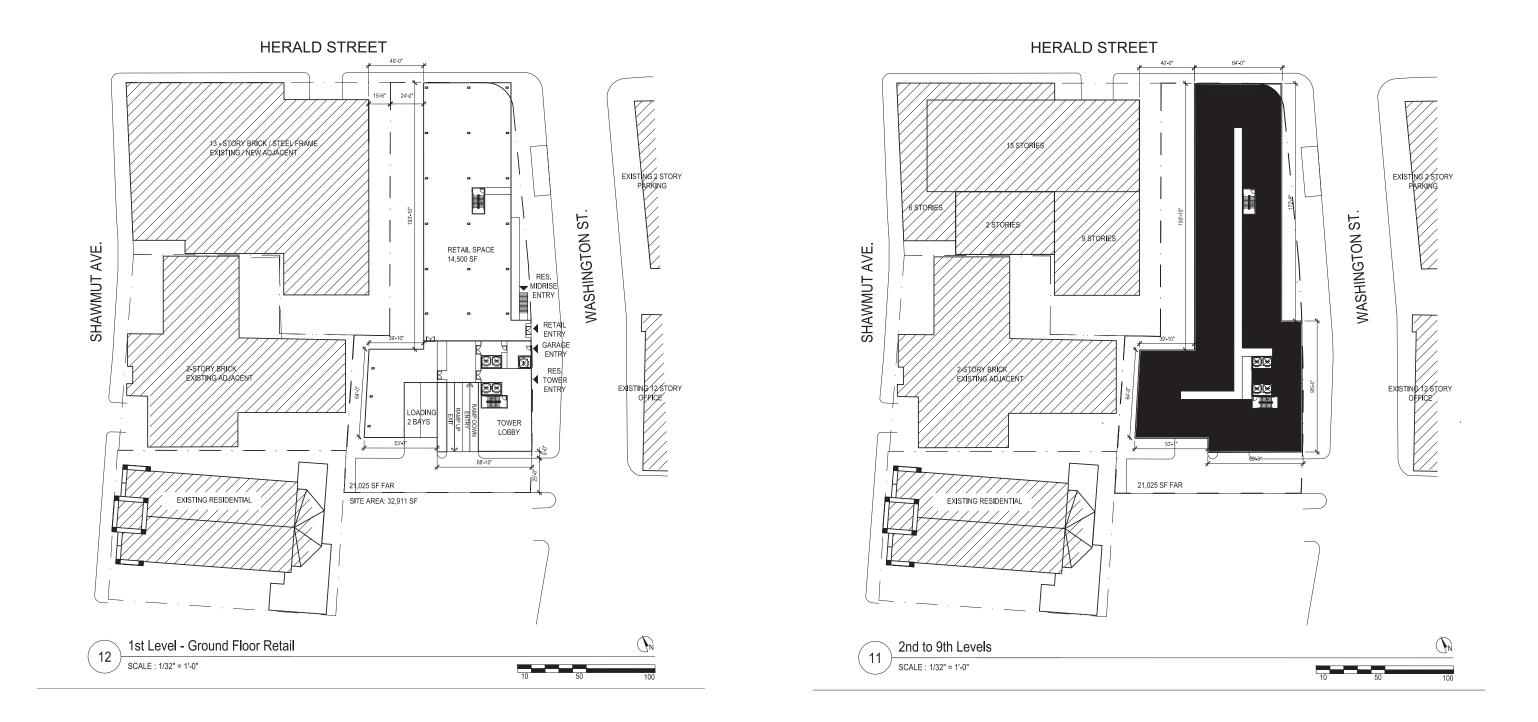
Appendix B

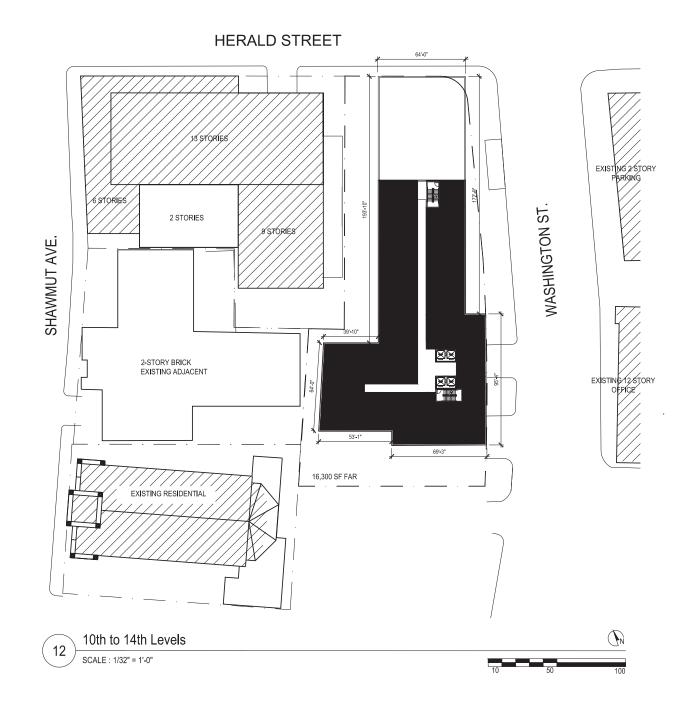
CCBA Project Conceptual Design Plans





18'-0"





Appendix C

Transportation

Appendix – Transportation

Synchro Intersection Level of Service Reports

- No-Build (2024) Condition
- Interim Build (2024) Condition
- Full Build (2024) Condition

• No-Build (2024) Condition

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations		4117						A			41 143		
Traffic Volume (vph)	31	861	150	0	0	0	0	480	363	41		0	
Future Volume (vph)	31	861	150	0	0	0	0	480	363	41	143	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor Ped Bike Factor	0.86	0.86 0.99	0.86	1.00	1.00	1.00	1.00	0.95 0.95	0.95	0.95	0.95 1.00	1.00	
Frt		0.99						0.935			1.00		
Flt Protected		0.999									0.989		
Satd. Flow (prot)	0	5991	0	0	0	0	0	3079	0	0	3340	0	
Flt Permitted		0.999									0.633		
Satd. Flow (perm)	0	5982	0	0	0	0	0	3079	0	0	2128	0	
Right Turn on Red		40	Yes			Yes		20/	Yes			Yes	
Satd. Flow (RTOR)		48			20			206			20		
Link Speed (mph) Link Distance (ft)		30 207			30 774			30 883			30 176		
Travel Time (s)		4.7			17.6			20.1			4.0		
Confl. Peds. (#/hr)	59	4.7	91		17.0			20.1	117	117	1.0		
Confl. Bikes (#/hr)			1										
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94	0.81	0.81	0.81	
Heavy Vehicles (%)	4%	5%	7%	2%	2%	2%	0%	6%	2%	3%	8%	0%	
Parking (#/hr)						0							
Adj. Flow (vph)	33	916	160	0	0	0	0	511	386	51	177	0	
Shared Lane Traffic (%)		1400	•	•	•	•	•	007	•	0	000	•	
Lane Group Flow (vph)	0 Calit	1109	0	0	0	0	0	897	0	0	228	0	
Turn Type Protected Phases	Split 1	NA 1						NA 5		Perm	NA 5		2
Protected Phases Permitted Phases	1	1						5		5	5		2
Detector Phase	1	1						5		5 5	5		
Switch Phase								5		5	5		
Minimum Initial (s)	10.0	10.0						10.0		10.0	10.0		8.0
Minimum Split (s)	41.0	41.0						38.0		38.0	38.0		21.0
Total Split (s)	41.0	41.0						38.0		38.0	38.0		21.0
Total Split (%)	41.0%	41.0%						38.0%		38.0%	38.0%		21%
Maximum Green (s)	36.0	36.0						34.0		34.0	34.0		14.0
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0		3.0
All-Red Time (s)	2.0	2.0						1.0		1.0	1.0		4.0
Lost Time Adjust (s) Total Lost Time (s)		0.0 5.0						0.0 4.0			0.0 4.0		
Lead/Lag	Lead	5.0 Lead						4.0			4.0		Lag
Lead-Lag Optimize?	Lead	Ledu											Lay
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0		0.2
Recall Mode	C-Max	C-Max						Max		Max	Max		None
Walk Time (s)	27.0	27.0						25.0		25.0	25.0		5.0
Flash Dont Walk (s)	9.0	9.0						9.0		9.0	9.0		9.0
Pedestrian Calls (#/hr)	0	0						0		0	0		357
Act Effct Green (s)		36.0						34.0			34.0		
Actuated g/C Ratio		0.36						0.34			0.34		
v/c Ratio		0.51						0.76			0.32		
Control Delay Queue Delay		24.9 0.0						21.6 0.0			25.9 0.0		
Total Delay		24.9						21.6			25.9		
LOS		24.7 C						21.0 C			23.7 C		
Approach Delay		24.9						21.6			25.9		
Approach LOS		С						С			С		
Queue Length 50th (ft)		152						165			56		
Queue Length 95th (ft)		185						m121			77		
Internal Link Dist (ft)		127			694			803			96		
Turn Bay Length (ft)		0107						1100			700		
Base Capacity (vph)		2187						1182			/23		
Starvation Cap Reductn Spillback Cap Reductn		0						0			0		
Storage Cap Reductn		0						0			0		
Reduced v/c Ratio		0.51						0.76			0.32		
		0.51						0.70			0.32		
Intersection Summary													
Area Type:	Other												
Cycle Length: 100													
Actuated Cycle Length: 100 Offset: 5 (5%), Referenced		TI Start o	f Groop										
Natural Cycle: 100	to priase 1.LD	TE, Start u	Gleen										
Control Type: Actuated-Coc	ordinated												
Maximum v/c Ratio: 0.76													
Intersection Signal Delay: 2					tersection								
Intersection Capacity Utiliza				IC	U Level of	Service C	:						
Analysis Period (min) 15													
m Volume for 95th percen	ntile queue is m	netered by	upstream	signal.									
Colline and Dh a T		Antin	Charles and the										
Splits and Phases: 1: Tre	mont Street &	Ariington	Street/Hera	aid Street			- 1						
Ø1 (R)							1	R _{Ø2}				4	Ø5
41.0							21	s				28	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations		#† ‡								ሻሻ	↑↑ 80		
Traffic Volume (vph)	0	1160	65	0	0	0	0	0	0	246		0	
Future Volume (vph) Ideal Flow (vphpl)	1900	1160 1900	65 1900	0 1900	0 1900	0 1900	0 1900	0 1900	0 1900	246 1900	80 1900	0 1900	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	
Ped Bike Factor		0.99								0.87			
Frt Flt Protected		0.992								0.950			
Satd. Flow (prot)	0	4928	0	0	0	0	0	0	0	3213	3574	0	
Flt Permitted										0.950			
Satd. Flow (perm)	0	4928	0	0	0	0	0	0	0	2801	3574	0	
Right Turn on Red Satd. Flow (RTOR)		11	Yes			Yes			Yes	Yes 300		Yes	
Link Speed (mph)		30			30			30		500	30		
Link Distance (ft)		774			148			1006			279		
Travel Time (s)		17.6	07		3.4			22.9		100	6.3		
Confl. Peds. (#/hr) Peak Hour Factor	0.94	0.94	86 0.94	0.92	0.92	0.92	0.92	0.92	0.92	128 0.82	0.82	0.82	
Heavy Vehicles (%)	0%	4%	0%	2%	2%	2%	2%	2%	2%	9%	1%	0%	
Adj. Flow (vph)	0	1234	69	0	0	0	0	0	0	300	98	0	
Shared Lane Traffic (%)	0	1202	0	0	0	0	0	0	0	200	98	0	
Lane Group Flow (vph) Turn Type	0	1303 NA	0	0	0	0	0	0	0	300 Split	98 NA	0	
Protected Phases		1								5	5		2
Permitted Phases													
Detector Phase Switch Phase		1								5	5		
Minimum Initial (s)		8.0								2.0	2.0		1.0
Minimum Split (s)		49.0								34.0	34.0		17.0
Total Split (s)		49.0								34.0	34.0		17.0
Total Split (%)		49.0%								34.0%	34.0%		17%
Maximum Green (s) Yellow Time (s)		46.0 2.0								30.0 3.0	30.0 3.0		11.0 2.0
All-Red Time (s)		1.0								1.0	1.0		4.0
Lost Time Adjust (s)		0.0								0.0	0.0		
Total Lost Time (s) Lead/Lag		3.0								4.0	4.0		
Lead-Lag Optimize?													
Vehicle Extension (s)		2.0								2.0	2.0		0.2
Recall Mode		C-Max								Max	Max		None
Walk Time (s) Flash Dont Walk (s)		35.0 11.0								21.0 9.0	21.0 9.0		5.0 6.0
Pedestrian Calls (#/hr)		0								0	0		373
Act Effct Green (s)		46.0								30.0	30.0		
Actuated g/C Ratio		0.46 0.57								0.30 0.26	0.30		
v/c Ratio Control Delay		8.5								0.20	0.09 18.0		
Queue Delay		0.2								0.4	0.0		
Total Delay		8.7								6.5	18.0		
LOS Approach Delay		A 8.7								А	B 9.3		
Approach LOS		0.7 A									7.3 A		
Queue Length 50th (ft)		116								0	23		
Queue Length 95th (ft)		111			(0			00/		11	38		
Internal Link Dist (ft) Turn Bay Length (ft)		694			68			926			199		
Base Capacity (vph)		2272								1173	1072		
Starvation Cap Reductn		0								454	0		
Spillback Cap Reductn		329 0								19	0		
Storage Cap Reductn Reduced v/c Ratio		0.67								0 0.42	0 0.09		
Intersection Summary													
	Other												
Cycle Length: 100													
Actuated Cycle Length: 100			_										
Offset: 6 (6%), Referenced to Natural Cycle: 100	pnase 1:EB1	, Start of	Green										
Control Type: Actuated-Coordi	inated												
Maximum v/c Ratio: 0.57													
Intersection Signal Delay: 8.9	50.00				tersection								
Intersection Capacity Utilizatio Analysis Period (min) 15	n 52.0%			IC	U Level of	Service A							
ranarysis i crioù (min) 15													
Splits and Phases: 2: Herald	d Street & Sh	nawmut Av	venue										
→ø1 (R)									<u>ا</u>	Ø2			05
49 s									17 s				34s

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	107	4 1 7	74	0	0	0	0	↑ 699	72	0	↑ 19	0
Traffic Volume (vph) Future Volume (vph)	107 107	1217 1217	71 71	0 0	0 0	0 0	0 0	699 699	72 72	0 0	19 19	0 0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft) Lane Util. Factor	11 0.91	11 0.91	12 0.91	12 1.00	12 1.00	12 1.00	12 1.00	11 1.00	11 1.00	12 1.00	12 1.00	12 1.00
Ped Bike Factor	0.71	1.00	0.71	1.00	1.00	1.00	1.00	1.00	0.79	1.00	1.00	1.00
Frt Elt Drotostad		0.992							0.850			
Flt Protected Satd. Flow (prot)	0	0.996 4168	0	0	0	0	0	1517	1243	0	919	0
Flt Permitted		0.996										
Satd. Flow (perm) Right Turn on Red	0	4165	0 Yes	0	0	0 Yes	0	1517	977 Yes	0	919	0 Yes
Satd. Flow (RTOR)		11	162			162			Yes 24			162
Link Speed (mph)		30			30			30			30	
Link Distance (ft) Travel Time (s)		200 4.5			204 4.6			253 5.8			221 5.0	
Confl. Peds. (#/hr)	12	4.0			4.0			5.0	165		3.0	
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.86	0.86	0.86	0.75	0.75	0.75
Heavy Vehicles (%) Bus Blockages (#/hr)	6% 0	6% 9	0% 9	0% 0	0% 0	0% 0	0% 0	9% 0	13% 0	0% 0	86% 0	0% 0
Adj. Flow (vph)	114	1295	76	0	0	0	0	813	84	0	25	0
Shared Lane Traffic (%)												
Lane Group Flow (vph) Turn Type	0 Perm	1485 NA	0	0	0	0	0	813 NA	84 Perm	0	25 NA	0
Protected Phases	remi	1						NA 6	r ei i i i		NA 6	
Permitted Phases	1								6			
Detector Phase	1	1						6	6		6	
Switch Phase Minimum Initial (s)	12.0	12.0						12.0	12.0		12.0	
Minimum Split (s)	50.0	50.0						29.0	29.0		29.0	
Total Split (s)	50.0	50.0						50.0	50.0		50.0	
Total Split (%) Maximum Green (s)	50.0% 45.0	50.0% 45.0						50.0% 45.0	50.0% 45.0		50.0% 45.0	
Yellow Time (s)	45.0	45.0 4.0						45.0	45.0 4.0		45.0	
All-Red Time (s)	1.0	1.0						1.0	1.0		1.0	
Lost Time Adjust (s) Total Lost Time (s)		-1.0 4.0						-1.0 4.0	-1.0 4.0		-1.0 4.0	
Lead/Lag		4.0						4.0	4.0		4.0	
Lead-Lag Optimize?												
Vehicle Extension (s) Recall Mode	3.0 C-Max	3.0 C-Max						3.0 None	3.0 None		3.0 None	
Walk Time (s)	36.0	36.0						15.0	15.0		15.0	
Flash Dont Walk (s)	9.0	9.0						9.0	9.0		9.0	
Pedestrian Calls (#/hr) Act Effct Green (s)	0	0 46.0						0 46.0	0 46.0		0 46.0	
Actuated g/C Ratio		46.0 0.46						46.0	46.0		46.0	
v/c Ratio		0.77						1.17	0.18		0.06	
Control Delay		14.3 1.0						117.5 0.0	12.8 0.0		15.6 0.0	
Queue Delay Total Delay		15.3						0.0 117.5	12.8		15.6	
LOS		В						F	B		В	
Approach Delay		15.3 B						107.7 F			15.6 B	
Approach LOS Queue Length 50th (ft)		333						⊦ ~619	21		В 9	
Queue Length 95th (ft)		396						#790	48		20	
Internal Link Dist (ft)		120			124			173			141	
Turn Bay Length (ft) Base Capacity (vph)		1921						697	462		422	
Starvation Cap Reductn		203						0	0		0	
Spillback Cap Reductn		0						0	0		0	
Storage Cap Reductn Reduced v/c Ratio		0 0.86						0 1.17	0		0 0.06	
		0.00						1.17	0.18		0.00	
Intersection Summary Area Type:	CBD											
Cycle Length: 100	CDD											
Actuated Cycle Length: 100)											
Offset: 19 (19%), Reference Natural Cycle: 110	ed to phase 1:E	BTL, Star	t of Green									
Control Type: Actuated-Coc	ordinated											
Maximum v/c Ratio: 1.17												
Intersection Signal Delay: 4	9.7				tersection		\ \					
Intersection Capacity Utiliza Analysis Period (min) 15	10011 / /.8%			IC	U LEVEL O	Service L	,					
 Volume exceeds capaci 			infinite.									
Queue shown is maximu	um after two cy	cles.										
# 95th percentile volume e Queue shown is maximu			may be lo	nger.								
Splits and Phases: 3: Wa	shington Stree	t & Herald	Street									
Ø1 (R)										₽ Ø6		
									50			

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_ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
ane Configurations	LUL	201	LDIN	L	†††					JUL	301		
	0	0	0	0	1099	0	71	0	0	0	0	110	
raffic Volume (vph)													
uture Volume (vph)	0	0	0	0	1099	0	71	0	0	0	0	110	
leal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
ane Util. Factor	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							0.88						
irt												0.865	
It Protected							0.950					0.000	
atd. Flow (prot)	0	0	0	0	4322	0	1593	0	0	0	0	1450	
	0	U	U	U	4322	0		U	U	U	U	1400	
It Permitted							0.950						
Satd. Flow (perm)	0	0	0	0	4322	0	1395	0	0	0	0	1450	
Right Turn on Red			Yes			Yes	Yes		Yes			Yes	
Satd. Flow (RTOR)							296					296	
ink Speed (mph)		30			30			30			30		
								598					
ink Distance (ft)		829			264						1006		
ravel Time (s)		18.8			6.0			13.6			22.9		
Confl. Peds. (#/hr)							62					62	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.86	0.86	0.86	0.69	0.69	0.69	
leavy Vehicles (%)	0%	0%	0%	0%	8%	0%	2%	0%	0%	0%	0%	2%	
dj. Flow (vph)	0 /8	078	0 /8	0 /8	1235	0 /8	83	0 /8	0 /8	0 /8	0 /8	159	
	0	0	U	U	1230	0	83	0	U	0	0	104	
hared Lane Traffic (%)													
ane Group Flow (vph)	0	0	0	0	1235	0	83	0	0	0	0	159	
urn Type					NA		Prot					Prot	
rotected Phases					1		5!					5!	2
Permitted Phases							0.					0.	-
					1		F					F	
Detector Phase					1		5					5	
Switch Phase													
/linimum Initial (s)					8.0		8.0					8.0	1.0
/inimum Split (s)					54.0		20.0					20.0	22.0
otal Split (s)					54.0		24.0					24.0	22.0
					54.0%		24.0%						
otal Split (%)												24.0%	22%
Aaximum Green (s)					49.0		19.0					19.0	16.0
ellow Time (s)					3.0		3.0					3.0	2.0
All-Red Time (s)					2.0		2.0					2.0	4.0
ost Time Adjust (s)					0.0		0.0					0.0	
otal Lost Time (s)					5.0		5.0					5.0	
							5.0					5.0	l en
_ead/Lag					Lead								Lag
_ead-Lag Optimize?													
/ehicle Extension (s)					2.0		2.0					2.0	0.2
Recall Mode					C-Max		None					None	None
Valk Time (s)					39.0		8.0					8.0	7.0
Flash Dont Walk (s)					10.0		7.0					7.0	9.0
					0		0					0	298
Pedestrian Calls (#/hr)													290
Act Effct Green (s)					60.0		8.0					8.0	
Actuated g/C Ratio					0.60		0.08					0.08	
/c Ratio					0.48		0.21					0.41	
Control Delay					12.0		1.2					10.1	
Queue Delay					0.0		0.0					0.0	
otal Delay					12.0		1.2					10.1	
OS					В		А					В	
pproach Delay					12.0			1.2			10.1		
pproach LOS					В			А			В		
Queue Length 50th (ft)					149		0				5	0	
Queue Length 95th (ft)					180		0				0.5.1	0	
nternal Link Dist (ft)		749			184			518			926		
urn Bay Length (ft)													
ase Capacity (vph)					2593		542					515	
tarvation Cap Reductn					0		0					0	
pillback Cap Reductn					0		0					0	
torage Cap Reductn					0		0					0	
educed v/c Ratio					0.48		0.15					0.31	
atoreaction Cummers													
ntersection Summary													
	CBD												
ycle Length: 100	CBD												
cycle Length: 100	CBD												
ctuated Cycle Length: 100		/RT Ctart	of Groop										
ctuated Cycle Length: 100 ffset: 53 (53%), Referenced to		/BT, Start	of Green										
ctuated Cycle Length: 100 iffset: 53 (53%), Referenced to atural Cycle: 100	o phase 1:W	/BT, Start	of Green										
ctuated Cycle Length: 100 Offset: 53 (53%), Referenced to latural Cycle: 100 control Type: Actuated-Coordir	o phase 1:W	/BT, Start	of Green										
ctuated Cycle Length: 100 ffset: 53 (53%), Referenced to atural Cycle: 100 ontrol Type: Actuated-Coordir laximum v/c Ratio: 0.48	o phase 1:W nated	/BT, Start	of Green										
ctuated Cycle Length: 100 Iffset: 53 (53%), Referenced to tatural Cycle: 100 ontrol Type: Actuated-Coordir laximum v/c Ratio: 0.48 tersection Signal Delay: 11.2	o phase 1:W nated	/BT, Start	of Green	Int	tersection	LOS: B							
ctuated Cycle Length: 100 Iffset: 53 (53%), Referenced to tatural Cycle: 100 ontrol Type: Actuated-Coordir laximum v/c Ratio: 0.48 tersection Signal Delay: 11.2	o phase 1:W nated	/BT, Start	of Green		tersection								
Close Length: 100 Cictuated Cycle Length: 100 Mfset: 53 (53%), Referenced tr latural Cycle: 100 Control Type: Actuated-Coordir faximum v/c Ratio: 0.48 itersection Signal Delay: 11.2 Itersection Signal Delay: 11.2	o phase 1:W nated	/BT, Start	of Green		tersection :U Level of								
ctuated Čycle Length: 100 0ffset: 53 (53%), Referenced to latural Cycle: 100 fontrol Type: Actuated-Coordir laximum v/c Ratio: 0.48 ttersection Signal Delay: 11.2 ttersection Capacity Utilization nalysis Period (min) 15	o phase 1:W nated n 52.1%	/BT, Start	of Green										
ctuated Čycle Length: 100 ffset: 53 (53%), Referenced to atural Cycle: 100 ontrol Type: Actuated-Coordir laximum v/c Ratio: 0.48 tersection Signal Delay: 11.2 itersection Capacity Utilization nalysis Period (min) 15	o phase 1:W nated n 52.1%	/BT, Start	of Green										
ctuated Cycle Length: 100 Offset: 53 (53%), Referenced to latural Cycle: 100 control Type: Actuated-Coordir Maximum v/c Ratio: 0.48 itersection Signal Delay: 11.2	o phase 1:W nated n 52.1%	/BT, Start	of Green										
cituated Cycle Length: 100 offset: 53 (53%), Referenced to latural Cycle: 100 control Type: Actuated-Coordin faximum v/c Ratio: 0.48 ntersection Signal Delay; 11.2 ntersection Capacity Utilization nalysis Period (min) 15 Phase conflict between lane	o phase 1:W nated n 52.1% e groups.			IC									
ctuated Čycle Length: 100 ffset: 53 (53%), Referenced tr atural Cycle: 100 ontrol Type: Actuated-Coordir laximum v/c Ratio: 0.48 itersection Signal Delay: 11.2 itersection Capacity Utilization nalysis Period (min) 15 Phase conflict between lane plits and Phases: 4: Shawrr	o phase 1:W nated n 52.1% e groups.			IC									
ctuated Ĉycle Length: 100 Iffset: 53 (53%), Referenced to latural Cycle: 100 ontrol Type: Actuated-Coordir laximum v/c Ratio: 0.48 Itersection Capacity Utilization nalysis Period (min) 15	o phase 1:W nated n 52.1% e groups.			IC							A _{Ø2}		Ø5

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations	<u>100</u>		1	1	≜ ⊅			41 633			243		
Traffic Volume (vph)	16	0	9	284	812	184	139		0	0		68	
Future Volume (vph)	16	0	9	284	812	184	139	633	0	0	243	68	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor Ped Bike Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95 0.99	0.95	
Fred bike r actor			0.850		0.972						0.967		
Flt Protected	0.950		2.500	0.950				0.991					
Satd. Flow (prot)	1624	0	1163	1547	2957	0	0	3091	0	0	2859	0	
Flt Permitted	0.129			0.950				0.705					
Satd. Flow (perm)	221	0	1163	1547	2957	0	0	2199	0	0	2859	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		00	120		28			00			33		
Link Speed (mph)		30			30			30			30		
Link Distance (ft) Travel Time (s)		647 14.7			829 18.8			409 9.3			883 20.1		
Confl. Peds. (#/hr)		14.7			10.0			7.3			20.1	40	
Confl. Bikes (#/hr)												2	
Peak Hour Factor	0.83	0.83	0.83	0.93	0.93	0.93	0.89	0.89	0.89	0.84	0.84	0.84	
Heavy Vehicles (%)	0%	0%	25%	5%	7%	6%	5%	4%	0%	0%	7%	13%	
Adj. Flow (vph)	19	0	11	305	873	198	156	711	0	0	289	81	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	19	0	11	305	1071	0	0	867	0	0	370	0	
Turn Type	D.Pm		Perm	Perm	NA		pm+pt	NA			NA		-
Protected Phases	-		-	-	5		6	16			1		2
Permitted Phases Detector Phase	5 5		5	5	5		16	1 4			1		
Switch Phase	5		5	5	C		6	16			I		
Minimum Initial (s)	5.0		5.0	5.0	5.0		4.0				10.0		1.0
Minimum Split (s)	9.0		9.0	9.0	9.0		8.0				27.0		25.0
Total Split (s)	35.0		35.0	35.0	35.0		13.0				27.0		25.0
Total Split (%)	35.0%		35.0%	35.0%	35.0%		13.0%				27.0%		25%
Maximum Green (s)	31.0		31.0	31.0	31.0		9.0				23.0		19.0
Yellow Time (s)	3.0		3.0	3.0	3.0		3.0				3.0		2.0
All-Red Time (s)	1.0		1.0	1.0	1.0		1.0				1.0		4.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0						0.0		
Total Lost Time (s)	4.0		4.0	4.0	4.0						4.0		1.00
Lead/Lag											Lead		Lag
Lead-Lag Optimize?	2.0		2.0	2.0	2.0		2.0				2.0		0.2
Vehicle Extension (s) Recall Mode	2.0 None		2.0 None	2.0 None	2.0 None		2.0 None				2.0 C-Max		0.2 None
Walk Time (s)	NULLE		NUTE	NUTE	NULLE		NUTE				17.0		None 8.0
Flash Dont Walk (s)											6.0		11.0
Pedestrian Calls (#/hr)											0		301
Act Effct Green (s)	31.0		31.0	31.0	31.0			32.0			23.0		
Actuated g/C Ratio	0.31		0.31	0.31	0.31			0.32			0.23		
v/c Ratio	0.28		0.02	0.64	1.15			1.11			0.54		
Control Delay	39.0		0.1	28.1	103.5			97.0			30.6		
Queue Delay	0.0		0.0	0.0	0.0			0.0			0.0		
Total Delay	39.0		0.1	28.1	103.5			97.0			30.6		
LOS Approach Delay	D	247	A	С	F			F			C		
Approach Delay		24.7 C			86.8 F			97.0 F			30.6 C		
Approach LOS Queue Length 50th (ft)	9	U	0	168	۲ 417~			~293			113		
Queue Length 95th (ft)	29		0	262	~417 #551			~293 #448			113		
Internal Link Dist (ft)	27	567	0	202	749			329			803		
Turn Bay Length (ft)		50.						527			200		
Base Capacity (vph)	68		443	479	935			783			682		
Starvation Cap Reductn	0		0	0	0			0			0		
Spillback Cap Reductn	0		0	0	0			0			0		
Storage Cap Reductn	0		0	0	0			0			0		
Reduced v/c Ratio	0.28		0.02	0.64	1.15			1.11			0.54		
Intersection Summary													
Area Type:	CBD												
Cycle Length: 100	000												
Actuated Cycle Length: 100)												
Offset: 38 (38%), Reference		BSB, Sta	rt of Greer	ı									
Natural Cycle: 130													
Control Type: Actuated-Coo	ordinated												
Maximum v/c Ratio: 1.15													
Intersection Signal Delay: 8					tersection		-						
Intersection Capacity Utiliza Analysis Period (min) 15	auon 84.6%			IC	CU Level of	Service E	-						
 Volume exceeds capaci 	ity muqua is the	oretically	infinito										
 Queue shown is maximu 			anninte.										
# 95th percentile volume			may be lo	onger.									
Queue shown is maximu			,	5									
	-												
Splits and Phases: 5: Tre	emont Street & I	Berkeley S	Street/Eas	t Berkeley	Street								
Ø1 (R)				1	12					*	5		
27 s				25 s	12					35 s	0		
				200						000			

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø
Lane Configurations	LOL	201	LDR		41		DL		Div	UDL	11	0.51	0
Traffic Volume (vph)	0	0	0	89	336	0	0	0	0	0	237	83	
Future Volume (vph)	0	0	0	89	336	0	0	0	0	0	237	83	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.91	0.91	
Ped Bike Factor Frt					1.00						0.98		
Fit Protected					0.990						0.961		
Satd. Flow (prot)	0	0	0	0	3456	0	0	0	0	0	4589	0	
Flt Permitted	v	Ū	U	v	0.990	v	Ū	U	v	U		Ū	
Satd. Flow (perm)	0	0	0	0	3451	0	0	0	0	0	4589	0	
Right Turn on Red			Yes	Yes		Yes			Yes			Yes	
Satd. Flow (RTOR)					39						87		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		266			231			279			323		
Travel Time (s) Confl. Peds. (#/hr)		6.0		9	5.3			6.3			7.3	59	
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.92	0.92	0.92	0.95	0.95	0.95	
Heavy Vehicles (%)	2%	2%	2%	5%	3%	2%	2%	2%	2%	0.95	8%	3%	
Adj. Flow (vph)	0	0	0	102	386	0	0	0	0	0	249	87	
Shared Lane Traffic (%)	-	-	-			-	-	-	-	-			
Lane Group Flow (vph)	0	0	0	0	488	0	0	0	0	0	336	0	
Turn Type				Split	NA						NA		
Protected Phases				1	1						5		
Permitted Phases											-		
Detector Phase				1	1						5		
Switch Phase Minimum Initial (s)				10.0	10.0						10.0		
Minimum Initial (s) Minimum Split (s)				43.0	43.0						35.0		
Total Split (s)				43.0	43.0						35.0		2
Total Split (%)				43.0%	43.0%						35.0%		2
Maximum Green (s)				39.0	39.0						31.0		2
Yellow Time (s)				3.0	3.0						3.0		
All-Red Time (s)				1.0	1.0						1.0		
Lost Time Adjust (s)					0.0						0.0		
Total Lost Time (s)					4.0						4.0		
Lead/Lag													
Lead-Lag Optimize? Vehicle Extension (s)				2.0	2.0						2.0		
Recall Mode				C-Max	C-Max						Z.0 Max		
Walk Time (s)				28.0	28.0						23.0		
Flash Dont Walk (s)				11.0	11.0						8.0		
Pedestrian Calls (#/hr)				0	0						0		
Act Effct Green (s)					39.0						31.0		
Actuated g/C Ratio					0.39						0.31		
v/c Ratio					0.36						0.23		
Control Delay					20.6						19.2		
Queue Delay					0.0						0.0		
Total Delay					20.6						19.2		
LOS Approach Delay					C 20.6						B 19.2		
Approach Delay Approach LOS					20.6 C						19.2 B		
Queue Length 50th (ft)					104						в 42		
Queue Length 95th (ft)					139						65		
Internal Link Dist (ft)		186			157			199			243		
Turn Bay Length (ft)													
Base Capacity (vph)					1371						1482		
Starvation Cap Reductn					0						0		
Spillback Cap Reductn					0						0		
Storage Cap Reductn					0						0		
Reduced v/c Ratio					0.36						0.23		
Intersection Summary													
Area Type:	Other												
Cycle Length: 100													
Actuated Cycle Length: 100													
Offset: 81 (81%), Reference	d to phase 1:V	VBTL, Sta	rt of Gree	n									
Natural Cycle: 100	edinatod												
Control Type: Actuated-Coor Maximum v/c Ratio: 0.36	rainated												
Intersection Signal Delay: 20) 1			In	tersection	105.0							
Intersection Capacity Utilizat					CU Level of								
Analysis Period (min) 15					5 20101 01	50. 100 F							
Splits and Phases: 6: Sha	wmut Avenue	& Margina	al Road										
		- 3.14						1.1					
₩Ø1 (R)								₽∎ _{Ø2}					•
								22 s					35 s

	→	~	4	+	<	*
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	*††	LDK	WDL	WDT	NDL	NDR
Traffic Volume (veh/h)	1390	49	0	0	0	2
Future Volume (Veh/h)	1390	49	0	0	0	2
Sign Control	Free		0	Free	Yield	-
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.92	0.92	0.92	0.38
Hourly flow rate (vph)	1448	51	0	0	0	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	148			200		
pX, platoon unblocked			0.81		0.81	0.81
vC, conflicting volume			1499		1474	508
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			803		772	0
tC, single (s)			4.1		6.8	7.6
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.6
p0 queue free %			100		100	99
cM capacity (veh/h)			663		276	805
Direction, Lane #	EB 1	EB 2	EB 3	NB 1		
Volume Total	579	579	341	5		
Volume Left	0	0	0	0		
Volume Right	0	0	51	5		
cSH	1700	1700	1700	805		
Volume to Capacity	0.34	0.34	0.20	0.01		
Queue Length 95th (ft)	0	0	0	0		
Control Delay (s)	0.0	0.0	0.0	9.5		
Lane LOS				А		
Approach Delay (s)	0.0			9.5		
Approach LOS				А		
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			37.9%	IC	U Level of	Service
Analysis Period (min)			15			

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Q
Lane Configurations	LUL	ৰাক	LDIX					≜ 1₽		JUL		0.51	,
Traffic Volume (vph)	59	958	222	0	0	0	0	371	214	15	41↑ 248	0	
Future Volume (vph)	59	958	222	0	0	0	0	371	214	15	248	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.86	0.86	0.86	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	
Ped Bike Factor		0.98						0.95			1.00		
Frt		0.973						0.945					
Flt Protected		0.998									0.997		
Satd. Flow (prot)	0	6131	0	0	0	0	0	3148	0	0	3437	0	
Flt Permitted		0.998									0.906		
Satd. Flow (perm)	0	6123	0	0	0	0	0	3148	0	0	3116	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		64						119					
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		230			765			886			173		
Travel Time (s)	07	5.2	07		17.4			20.1	100	100	3.9		
Confl. Peds. (#/hr)	37		97						130	130			
Confl. Bikes (#/hr)	0.01	0.04	3	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.90	0.90	0.90	0.88	0.88	0.88	
Heavy Vehicles (%)	4%	2%	1%	2%	2%	2%	0%	3%	3%	0%	5%	0%	
Adj. Flow (vph)	63	1019	236	0	0	0	0	412	238	17	282	0	
Shared Lane Traffic (%)		1010	0	0	0	0	0	(50	~	0	200	0	
Lane Group Flow (vph)	0	1318	0	0	0	0	0	650	0	0	299	0	
Turn Type	Split	NA						NA		Perm	NA		
Protected Phases	1	1						5		-	5		
Permitted Phases		1						-		5	-		
Detector Phase	1	1						5		5	5		
Switch Phase											46.5		
Minimum Initial (s)	10.0	10.0						10.0		10.0	10.0		8
Minimum Split (s)	44.0	44.0						35.0		35.0	35.0		21
Total Split (s)	44.0	44.0						35.0		35.0	35.0		2
Total Split (%)	44.0%	44.0%						35.0%		35.0%	35.0%		2
Maximum Green (s)	39.0	39.0						31.0		31.0	31.0		1
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0		
All-Red Time (s)	2.0	2.0						1.0		1.0	1.0		
Lost Time Adjust (s)		0.0						0.0			0.0		
Total Lost Time (s)		5.0						4.0			4.0		
Lead/Lag	Lead	Lead											
Lead-Lag Optimize?													
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0		
Recall Mode	C-Max	C-Max						Max		Max	Max		١
Walk Time (s)	30.0	30.0						22.0		22.0	22.0		
Flash Dont Walk (s)	9.0	9.0						9.0		9.0	9.0		
Pedestrian Calls (#/hr)	0	0						0		0	0		
Act Effct Green (s)		39.0						31.0			31.0		
Actuated g/C Ratio		0.39						0.31			0.31		
v/c Ratio		0.54						0.61			0.31		
Control Delay		23.3						26.6			27.4		
Queue Delay		0.0						0.0			0.0		
Total Delay		23.3						26.6			27.4		
LOS		С						С			С		
Approach Delay		23.3						26.6			27.4		
Approach LOS		С						С			С		
Queue Length 50th (ft)		176						151			76		
Queue Length 95th (ft)		211						211			110		
Internal Link Dist (ft)		150			685			806			93		
Turn Bay Length (ft)													
Base Capacity (vph)		2430						1057			965		
Starvation Cap Reductn		0						0			0		
Spillback Cap Reductn		0						0			0		
Storage Cap Reductn		0						0			0		
Reduced v/c Ratio		0.54						0.61			0.31		
Intersection Summary													
Area Type:	Other												
Cycle Length: 100													
Actuated Cycle Length: 100													
Offset: 89 (89%), Reference	ed to phase 1:	EBTL, Star	t of Green										
Natural Cycle: 100													
Control Type: Actuated-Co	ordinated												
Maximum v/c Ratio: 0.61													
Intersection Signal Delay: 2					tersection								
Intersection Capacity Utilization				IC	U Level of	Service C	;						
Analysis Period (min) 15													
Splits and Phases: 1: Tre	emont Street &	Arlington	Street/Hera	ald Street									
44 s								₽₿g					
Ø1 (R)									32				25
44 s								21 s					3

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations		<u>ተተኑ</u>								ሻሻ	††		
Traffic Volume (vph)	0	1199	73	0	0	0	0	0	0	295	194	0	
Future Volume (vph) Ideal Flow (vphpl)	0 1900	1199 1900	73 1900	0 1900	0 1900	0 1900	0 1900	0 1900	0 1900	295 1900	194 1900	0 1900	
Lane Util. Factor	1,00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	
Ped Bike Factor		0.99								0.90			
Frt		0.991											
Flt Protected										0.950			
Satd. Flow (prot)	0	4965	0	0	0	0	0	0	0	3367	3574	0	
Flt Permitted Satd. Flow (perm)	0	4965	0	0	0	0	0	0	0	0.950 3036	3574	0	
Right Turn on Red	0	4705	Yes	U	0	Yes	U	U	Yes	Yes	3374	Yes	
Satd. Flow (RTOR)		13								364			
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		765			139			1015			271		
Travel Time (s)		17.4	100		3.2			23.1		82	6.2		
Confl. Peds. (#/hr) Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.81	0.81	0.81	
Heavy Vehicles (%)	0%	3%	0%	2%	2%	2%	2%	2%	2%	4%	1%	0%	
Adj. Flow (vph)	0	1363	83	0	0	0	0	0	0	364	240	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	1446	0	0	0	0	0	0	0	364	240	0	
Turn Type Protocted Phases		NA 1								Split 5	NA 5		2
Protected Phases Permitted Phases		1								5	5		2
Detector Phase		1								5	5		
Switch Phase													
Minimum Initial (s)		8.0								2.0	2.0		1.0
Minimum Split (s)		54.0								29.0	29.0		17.0
Total Split (s)		54.0 54.0%								29.0	29.0		17.0
Total Split (%) Maximum Green (s)		54.0% 50.0								29.0% 25.0	29.0% 25.0		17% 11.0
Yellow Time (s)		3.0								3.0	3.0		2.0
All-Red Time (s)		1.0								1.0	1.0		4.0
Lost Time Adjust (s)		0.0								0.0	0.0		
Total Lost Time (s)		4.0								4.0	4.0		
Lead/Lag Lead-Lag Optimize?													
Vehicle Extension (s)		2.0								2.0	2.0		0.2
Recall Mode		C-Max								Max	Max		None
Walk Time (s)		39.0								16.0	16.0		5.0
Flash Dont Walk (s)		11.0								9.0	9.0		6.0
Pedestrian Calls (#/hr)		0								0	0		399
Act Effct Green (s) Actuated g/C Ratio		50.0 0.50								25.0 0.25	25.0 0.25		
v/c Ratio		0.58								0.23	0.27		
Control Delay		7.2								1.2	19.5		
Queue Delay		1.2								0.2	0.0		
Total Delay		8.4								1.4	19.5		
LOS Approach Dolou		A 8.4								A	B 8.6		
Approach Delay Approach LOS		0.4 A									6.0 A		
Queue Length 50th (ft)		85								2	31		
Queue Length 95th (ft)		96								3	39		
Internal Link Dist (ft)		685			59			935			191		
Turn Bay Length (ft)		2489								1114	893		
Base Capacity (vph) Starvation Cap Reductn		2489								254	893 0		
Spillback Cap Reductn		750								54	0		
Storage Cap Reductn		0								0	0		
Reduced v/c Ratio		0.83								0.42	0.27		
Intersection Summary													
Area Type:	Other												
Cycle Length: 100													
Actuated Cycle Length: 100			0										
Offset: 0 (0%), Referenced to	pnase 1:EB1	I, Start of	Green										
Natural Cycle: 100 Control Type: Actuated-Coord	linated												
Maximum v/c Ratio: 0.58	midiCu												
Intersection Signal Delay: 8.5				In	tersection	LOS: A							
Intersection Capacity Utilization					U Level o		3						
Analysis Period (min) 15													
Collins and Diseases 0. //	d Chro-+ 0 C	hours *											
Splits and Phases: 2: Heral	iu street & Sl	nawmut Av	venue										
→Ø1 (R)											₩ _{Ø2}		₽ø5
54 s										1	7 s		29 s

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		∢† †≽						1	1		†	
Traffic Volume (vph) Future Volume (vph)	35 35	1371 1371	99 99	0 0	0 0	0 0	0 0	533 533	147 147	0 0	21 21	0 0
Ideal Flow (vphpl)	35 1900	1371	1900	1900	1900	1900	1900	533 1900	147	1900	1900	1900
Lane Width (ft)	11	11	12	12	12	12	12	11	11	12	12	12
Lane Util. Factor	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor Frt		1.00 0.990							0.88 0.850			
Flt Protected		0.999										
Satd. Flow (prot)	0	4289	0	0	0	0	0	1503	1364	0	934	0
Flt Permitted Satd. Flow (perm)	0	0.999 4288	0	0	0	0	0	1503	1205	0	934	0
Right Turn on Red	0	4200	Yes	U	U	Yes	U	1505	Yes	U	754	Yes
Satd. Flow (RTOR)		13							22			
Link Speed (mph)		30			30			30			30	
Link Distance (ft) Travel Time (s)		203 4.6			204 4.6			266 6.0			224 5.1	
Confl. Peds. (#/hr)	8	1.0			1.0			0.0	188		5.1	
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.92	0.78	0.78	0.78
Heavy Vehicles (%) Bus Blockages (#/hr)	0% 0	3% 9	0% 0	0% 0	0% 0	0% 0	0% 0	10% 0	3% 0	0% 0	83% 0	0% 0
Adj. Flow (vph)	39	1523	110	0	0	0	0	579	160	0	27	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0 Dorm	1672	0	0	0	0	0	579	160	0	27	0
Turn Type Protected Phases	Perm	NA 1						NA 6	Perm		NA 6	
Permitted Phases	1							U	6		U	
Detector Phase	1	1						6	6		6	
Switch Phase											46.5	
Minimum Initial (s) Minimum Split (s)	12.0 42.0	12.0 42.0						12.0 58.0	12.0 58.0		12.0 58.0	
Minimum Split (s) Total Split (s)	42.0	42.0 42.0						58.0 58.0	58.0 58.0		58.0 58.0	
Total Split (%)	42.0%	42.0%						58.0%	58.0%		58.0%	
Maximum Green (s)	37.0	37.0						53.0	53.0		53.0	
Yellow Time (s)	4.0	4.0						4.0	4.0		4.0	
All-Red Time (s) Lost Time Adjust (s)	1.0	1.0 -1.0						1.0 -1.0	1.0 -1.0		1.0 -1.0	
Total Lost Time (s)		4.0						4.0	-1.0		-1.0	
Lead/Lag												
Lead-Lag Optimize?	2.0	2.0						2.0	2.0		2.0	
Vehicle Extension (s) Recall Mode	3.0 C-Max	3.0 C-Max						3.0 Max	3.0 Max		3.0 Max	
Walk Time (s)	28.0	28.0						44.0	44.0		44.0	
Flash Dont Walk (s)	9.0	9.0						9.0	9.0		9.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)		38.0 0.38						54.0 0.54	54.0		54.0 0.54	
Actuated g/C Ratio v/c Ratio		0.38						0.54	0.54 0.24		0.54	
Control Delay		44.4						23.4	11.6		11.4	
Queue Delay		0.0						0.0	0.0		0.0	
Total Delay		44.4						23.4	11.6		11.4 P	
LOS Approach Delay		D 44.4						C 20.8	В		B 11.4	
Approach LOS		44.4 D						20.8 C			11.4 B	
Queue Length 50th (ft)		~420						262	43		8	
Queue Length 95th (ft)		#519			101			399	82		18	
Internal Link Dist (ft) Turn Bay Length (ft)		123			124			186			144	
Base Capacity (vph)		1637						811	660		504	
Starvation Cap Reductn		0						0	0		0	
Spillback Cap Reductn		0						0	0		0	
Storage Cap Reductn		0 1.02						0 71	0 24		0	
Reduced v/c Ratio		1.02						0.71	0.24		0.05	
Intersection Summary	CDD											
Area Type: Cycle Length: 100	CBD											
Actuated Cycle Length: 100												
Offset: 14 (14%), Referenced	to phase 1:E	BTL, Star	t of Green									
Natural Cycle: 100												
Control Type: Actuated-Coordi	inated											
Maximum v/c Ratio: 1.02 Intersection Signal Delay: 36.9	9			In	tersection	LOS: D						
Intersection Capacity Utilizatio					U Level of							
Analysis Period (min) 15												
 Volume exceeds capacity, 			infinite.									
Queue shown is maximum # 95th percentile volume exc			may be lo	naer.								
Queue shown is maximum				5								
	-											
Splits and Phases: 3: Wash	ington Stree	t & Herald	Street					1.4				
Ø1 (R)								↓ ¶ø ₆				

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations	LUL	- 201	LDIX				1 NDL			0DL	0.01	1	DL
Traffic Volume (vph)	0	0	0	0	↑↑↑ 802	0	104	0	0	0	0	257	
Future Volume (vph)	0	0	0	0	802	0	104	0	0	0	0	257	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							0.89						
Frt							0.0777					0.865	
Tt Protected							0.950						
Satd. Flow (prot)	0	0	0	0	4532	0	1577	0	0	0	0	1465	
Fit Permitted		~			1500		0.950		~	~	~	14/5	
Satd. Flow (perm)	0	0	0	0	4532	0	1403	0	0	0	0	1465	
Right Turn on Red			Yes			Yes	Yes		Yes			Yes	
Satd. Flow (RTOR)		20			20		306	20			20	306	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		829			256			598			1015		
Travel Time (s)		18.8			5.8		46	13.6			23.1	14	
Confl. Peds. (#/hr) Confl. Bikes (#/hr)							40					46 2	
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.80	0.80	0.80	0.95	0.95	2 0.95	
Heavy Vehicles (%)	0.92	0.92	0.92	0.88	0.88	0.88	0.80	0.80	0.80	0.95	0.95	0.95	
Adj. Flow (vph)	0%	0%	0%	0%	3% 911	0%	3% 130	0%	0%	0%	0% 0	271	
	U	U	U	U	411	U	130	U	U	U	U	271	
Shared Lane Traffic (%) Lane Group Flow (vph)	0	0	0	0	911	0	130	0	0	0	0	271	
	U	U	U	U		U		U	U	U	U		
Turn Type Distocted Discos					NA		Prot					Prot	
Protected Phases					1		5!					5!	
Permitted Phases					1		F					F	
Detector Phase					1		5					5	
Switch Phase					0.0		0.0					0.0	
Minimum Initial (s)					8.0		8.0					8.0	2
Minimum Split (s)					62.0		20.0					20.0	2
Total Split (s)					62.0 51.7%		36.0					36.0	2
Total Split (%) Maximum Green (s)					51.7% 57.0		30.0% 31.0					30.0%	1
												31.0	
Yellow Time (s)					3.0		3.0					3.0	
All-Red Time (s)					2.0		2.0					2.0	
Lost Time Adjust (s)					0.0		0.0					0.0	
Total Lost Time (s)					5.0		5.0					5.0	
Lead/Lag					Lead								
Lead-Lag Optimize?					~ ~		~ ~					~ ~	
Vehicle Extension (s)					2.0		2.0					2.0	
Recall Mode					C-Max		None					None	
Walk Time (s)					47.0		8.0					8.0	
Flash Dont Walk (s)					10.0		7.0					7.0	
Pedestrian Calls (#/hr)					0		0					0	
Act Effct Green (s)					79.0		9.0					9.0	
Actuated g/C Ratio					0.66		0.08					0.08	
v/c Ratio					0.31		0.33					0.69	
Control Delay					9.2		2.1					13.1	
Queue Delay					0.0		0.0					0.0	
Total Delay					9.2		2.1					13.1	
LOS					А		А					В	
Approach Delay					9.2			2.1			13.1		
Approach LOS					А			А			В		
Queue Length 50th (ft)					98		0					0	
Queue Length 95th (ft)					133		0					52	
Internal Link Dist (ft)		749			176			518			935		
Turn Bay Length (ft)													
Base Capacity (vph)					2985		634					605	
Starvation Cap Reductn					0		0					0	
Spillback Cap Reductn					0		0					0	
Storage Cap Reductn					0		0					0	
Reduced v/c Ratio					0.31		0.21					0.45	
Intersection Summary													
	CBD												
Cycle Length: 120													
Actuated Cycle Length: 120													
Offset: 98 (82%), Referenced t	to phase 1:W	BT, Start	of Green										
Natural Cycle: 105													
Control Type: Actuated-Coordi	linated												
Maximum v/c Ratio: 0.69													
Intersection Signal Delay: 9.3					tersection								
Intersection Capacity Utilization	on 56.7%			IC	CU Level of	Service E	3						
Analysis Period (min) 15													
Phase conflict between lane	e groups.												
Splits and Phases: 4: Shaw	mut Avenue	& East Be	erkeley Str	eet									
←										H _{Ø2}			
Ø1 (R)										л Р Ø2			
02 S										22 S			

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations	LDL	LDI		WDL N	†	WDIX	NDL	4 †	NDI	JDL	17×	JUN	NE
Traffic Volume (vph)	31	0	27	367	630	170	107	373	0	0	418	62	
Future Volume (vph)	31	0	27	367	630	170	107	373	0	0	418	62	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1,00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95	0.95	
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	0.95	0.93	
Frt			0.850		0.968			0.77			0.99		
Flt Protected	0.950		0.030	0.950	0.700			0.989			0.701		
	1624	0	1454	1593	3039	0	0	3126	0	0	3053	0	
Satd. Flow (prot) Flt Permitted	0.108	U	1404	0.950	2029	U	U	0.591	U	U	3003	U	
		0	1454		2020	0	0		0	0	2052	0	
Satd. Flow (perm)	185	0	1454	1593	3039	0	0	1856	0	0	3053	0	
Right Turn on Red			Yes		0.0	Yes			Yes			Yes	
Satd. Flow (RTOR)			100		30						14		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		647			829			409			886		
Travel Time (s)		14.7			18.8			9.3			20.1		
Confl. Peds. (#/hr)							77					77	
Confl. Bikes (#/hr)						2						4	
Peak Hour Factor	0.75	0.75	0.75	0.88	0.88	0.88	0.87	0.87	0.87	0.83	0.83	0.83	
Heavy Vehicles (%)	0%	0%	0%	2%	3%	4%	2%	3%	0%	0%	3%	4%	
Adj. Flow (vph)	41	0	36	417	716	193	123	429	0	0	504	75	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	41	0	36	417	909	0	0	552	0	0	579	0	
Turn Type	D.Pm		Perm	Perm	NA		pm+pt	NA			NA		
Protected Phases					5		6	16			1		2
Permitted Phases	5		5	5	5		16	. 0					
Detector Phase	5		5	5	5		6	16			1		
Switch Phase	J		5	5	5		U	10					
	5.0		5.0	5.0	5.0		4.0				10.0		1.0
Minimum Initial (s)	5.0 9.0				5.0 9.0		4.0 8.0						25.0
Minimum Split (s)			9.0	9.0							38.0		
Total Split (s)	44.0		44.0	44.0	44.0		13.0				38.0		25.0
Total Split (%)	36.7%		36.7%	36.7%	36.7%		10.8%				31.7%		21%
Maximum Green (s)	40.0		40.0	40.0	40.0		9.0				34.0		19.0
Yellow Time (s)	3.0		3.0	3.0	3.0		3.0				3.0		2.0
All-Red Time (s)	1.0		1.0	1.0	1.0		1.0				1.0		4.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0						0.0		
Total Lost Time (s)	4.0		4.0	4.0	4.0						4.0		
Lead/Lag											Lead		Lag
Lead-Lag Optimize?													
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0				2.0		0.2
Recall Mode	None		None	None	None		None				C-Max		None
Walk Time (s)											28.0		8.0
Flash Dont Walk (s)											6.0		11.0
Pedestrian Calls (#/hr)											0		322
Act Effct Green (s)	38.7		38.7	38.7	38.7			44.3			35.3		
Actuated g/C Ratio	0.32		0.32	0.32	0.32			0.37			0.29		
v/c Ratio	0.69		0.07	0.81	0.91			0.71			0.64		
Control Delay	90.7		0.3	47.0	47.4			34.9			40.1		
Queue Delay	0.0		0.0	0.0	0.0			0.0			0.0		
Total Delay	90.7		0.3	47.0	47.4			34.9			40.1		
LOS	,0.7 F		A	-17.0 D	-7.4 D			C			D		
Approach Delay		48.4	~	U	47.3			34.9			40.1		
Approach LOS		40.4 D			47.3 D			C			40.1 D		
Queue Length 50th (ft)	27	D	0	301	352			164			203		
Queue Length 95th (ft)	#70		0	426	352 #445			206			203		
Internal Link Dist (ft)	π10	567	U	420	#445 749			329			806		
		307			747			527			000		
Furn Bay Length (ft)	61		551	531	1033			779			907		
Base Capacity (vph)													
Starvation Cap Reductn	0		0	0	0			0			0		
Spillback Cap Reductn	0		0	0	0			0			0		
Storage Cap Reductn	0		0	0	0			0			0		
Reduced v/c Ratio	0.67		0.07	0.79	0.88			0.71			0.64		
ntersection Summary													
	CBD												
Cycle Length: 120	500												
Actuated Cycle Length: 120													
Offect: 75 (620/) Deferoneed	to phase 1-M		rt of Cross	`									
	to phase 1:N	BSB, Sta	rt of Greer	1									
latural Cycle: 100		BSB, Sta	rt of Greer	1									
Natural Cycle: 100 Control Type: Actuated-Coord		BSB, Sta	rt of Greer	1									
Natural Cycle: 100 Control Type: Actuated-Coord Maximum v/c Ratio: 0.91	dinated	BSB, Sta	rt of Greer										
Offset: 75 (63%), Referenced Natural Cycle: 100 Control Type: Actuated-Coord Maximum v/c Ratio: 0.91 Intersection Signal Delay: 43.	dinated	BSB, Sta	rt of Greer	In	tersection								
Natural Cycle: 100 Control Type: Actuated-Coord Maximum v/c Ratio: 0.91 Intersection Signal Delay: 43. Intersection Capacity Utilizatio	dinated	BSB, Sta	rt of Greer	In	tersection CU Level of								
Natural Cycle: 100 Control Type: Actuated-Coord Maximum v/c Ratio: 0.91 Intersection Signal Delay: 43.1 Intersection Capacity Utilizatid Analysis Period (min) 15	dinated .0 on 82.5%			In IC									
Vatural Cycle: 100 Control Type: Actuated-Coord Maximum v/c Ratio: 0.91 Intersection Signal Delay: 43.1 Intersection Capacity Utilizatic Analysis Period (min) 15	dinated .0 on 82.5%			In			<u>.</u>						
latural Cycle: 100 control Type: Actuated-Coord faximum v/c Ratio: 0.91 ntersection Signal Delay: 43.1 ttersection Capacity Utilizatio nalysis Period (min) 15 95th percentile volume ex	dinated .0 on 82.5% kceeds capaci	ty, queue		In			<u>:</u>						
Vatural Cycle: 100 Control Type: Actuated-Coord Maximum v/c Ratio: 0.91 Intersection Signal Delay: 43.0 Intersection Capacity Utilizatio Analysis Period (min) 15	dinated .0 on 82.5% kceeds capaci	ty, queue		In									
latural Cycle: 100 control Type: Actuated-Coorc Maximum v/c Ratio: 0.91 ttersection Signal Delay: 43. htersection Capacity Utilizatic nalysis Period (min) 15 95th percentile volume ex Queue shown is maximum	dinated .0 on 82.5% kceeds capaci n after two cyc	ty, queue les.	may be lo	In IC inger.	CU Level of		<u>.</u>						
latural Cycle: 100 control Type: Actuated-Coorc laximum wic Ratio: 0.91 ntersection Signal Delay: 43.1 ntersection Capacity Utilizatii nalysis: Period (min) 15 95th percentile volume ex Queue shown is maximum splits and Phases: 5: Trem	dinated .0 on 82.5% kceeds capaci n after two cyc	ty, queue les.	may be lo	In IC inger.	CU Level of	Service E							1.4
Vatural Cycle: 100 Control Type: Actuated-Coord Maximum v/c Ratio: 0.91 Intersection Signal Delay: 43.1 Intersection Capacity Utilizatic Analysis Period (min) 15 95th percentile volume ex	dinated .0 on 82.5% kceeds capaci n after two cyc	ty, queue les.	may be lo	In IC inger.	CU Level of	Service E	: 			+	25		4 ₀₆

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations	LUL	LUT	LDIX	TIDE	4 †	WDIX.	NDL	ND1	NDI	JDL	*††;	JUN	02
Traffic Volume (vph)	0	0	0	95	383	0	0	0	0	0	394	223	
Future Volume (vph)	0	0	0	95	383	0	0	0	0	0	394	223	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.91	0.91	
Ped Bike Factor					0.99						0.97		
Frt											0.946		
Flt Protected					0.990								
Satd. Flow (prot)	0	0	0	0	3539	0	0	0	0	0	4660	0	
Flt Permitted					0.990								
Satd. Flow (perm)	0	0	0	0	3513	0	0	0	0	0	4660	0	
Right Turn on Red			Yes	Yes		Yes			Yes			Yes	
Satd. Flow (RTOR)					35						152		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		310			237			271			312		
Travel Time (s)		7.0		4.4	5.4			6.2			7.1	70	
Confl. Peds. (#/hr) Peak Hour Factor	0.92	0.92	0.92	44 0.89	0.89	0.89	0.92	0.92	0.92	0.83	0.83	73 0.83	
	0.92	2%	2%		0.89	2%	2%	2%	2%	0.83		0.83	
Heavy Vehicles (%) Adj. Flow (vph)	2%	2%	2%	1% 107	430	2%	2%	2% 0	2%	0%	2% 475	3% 269	
Adj. Flow (vpn) Shared Lane Traffic (%)	U	U	U	107	430	U	0	U	U	U	4/5	209	
Lane Group Flow (vph)	0	0	0	0	537	0	0	0	0	0	744	0	
Turn Type	U	U	U	Split	NA	U	0	U	0	0	NA	0	
Protected Phases				Jpiit 1	1						5		2
Permitted Phases				1	1						5		2
Detector Phase				1	1						5		
Switch Phase											5		
Minimum Initial (s)				10.0	10.0						10.0		1.0
Minimum Split (s)				41.0	41.0						37.0		22.0
Total Split (s)				41.0	41.0						37.0		22.0
Total Split (%)				41.0%	41.0%						37.0%		22%
Maximum Green (s)				37.0	37.0						33.0		20.0
Yellow Time (s)				3.0	3.0						3.0		2.0
All-Red Time (s)				1.0	1.0						1.0		0.
Lost Time Adjust (s)					0.0						0.0		
Total Lost Time (s)					4.0						4.0		
Lead/Lag													
Lead-Lag Optimize?													
Vehicle Extension (s)				2.0	2.0						2.0		0
Recall Mode				C-Max	C-Max						Max		Nor
Walk Time (s)				26.0	26.0						25.0		13
Flash Dont Walk (s)				11.0	11.0						8.0		7.
Pedestrian Calls (#/hr)				0	0						0		35
Act Effct Green (s)					37.0						33.0		
Actuated g/C Ratio					0.37						0.33		
v/c Ratio					0.40						0.45		
Control Delay					22.8						21.7		
Queue Delay					0.0						0.0		
Total Delay					22.8						21.7		
LOS Approach Delay					C						C		
Approach Delay					22.8						21.7		
Approach LOS					C						C		
Queue Length 50th (ft)					122						106		
Queue Length 95th (ft)		220			166			101			127		
Internal Link Dist (ft)		230			157			191			232		
Turn Bay Length (ft)					1001						1/20		
Base Capacity (vph)					1331						1639		
Starvation Cap Reductn					0						0		
Spillback Cap Reductn					0						0		
Storage Cap Reductn					0						0		
Reduced v/c Ratio					0.40						0.45		
Intersection Summary													
Area Type:	Other												
Cycle Length: 100													
Actuated Cycle Length: 100													
Offset: 1 (1%), Referenced to	phase 1:WB	TL, Start o	of Green										
Natural Cycle: 100													
Control Type: Actuated-Coord	dinated												
Maximum v/c Ratio: 0.45													
Intersection Signal Delay: 22.					tersection								
Intersection Capacity Utilizati	on 56.7%			IC	U Level of	Service B							
Analysis Period (min) 15													
0.111 1.01													
Splits and Phases: 6: Shave	vmut Avenue	& Margina	al Road									,	
🔽 Ø1 (R)							1	Ø2					↓ ø5
41e							22	-102					¥ 105 7e
715							22					3	75

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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	***	EDK	WDL	WDI	INDL	NBR 7
Traffic Volume (veh/h)	1490	3	0	0	0	29
Future Volume (Veh/h)	1490	3	0	0	0	29
Sign Control	Free	5	0	Free	Yield	27
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.75	0.75
Hourly flow rate (vph)	1637	3	0.72	0.72	0.75	39
Pedestrians	1037	5	U	U	U	57
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	139			203		
pX, platoon unblocked			0.80	200	0.80	0.80
vC, conflicting volume			1640		1638	547
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			929		927	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			586		217	874
Direction, Lane #	EB 1	EB 2	EB 3	NB 1		
Volume Total	655	655	330	39		
Volume Left	000	000	0	39 0		
Volume Right	0	0	3	39		
cSH	1700	1700	1700	874		
Volume to Capacity	0.39	0.39	0.19	0.04		
Queue Length 95th (ft)	0.37	0.37	0.19	3		
Control Delay (s)	0.0	0.0	0.0	9.3		
Lane LOS	0.0	0.0	0.0	7.5 A		
Approach Delay (s)	0.0			9.3		
Approach LOS	0.0			A.		
Intersection Summary			0.0			
Average Delay			0.2	10		
Intersection Capacity Utilization			38.9%	IC	U Level of	Service
Analysis Period (min)			15			

• Interim Build (2024) Condition

Tardit: Volking: (vip) 31 1848 150 0 0 0 422 343 41 143 0 disal Flow (vipple) 1900 140		٦	+	*	4	Ļ	•	~	Ť	1	•	ţ	~	
Lane Configurations 411b	Lane Group	FBI	FBT	FBR	WBI	WBT	WBR	NBI	NBT	NBR	SBI	SBT	SBR	Ø2
Linker Volken OP OP <thop< th=""> OP OP</thop<>	Lane Configurations												2.2.1	
diad Biok (php) 1900 100	Traffic Volume (vph)		848				0		482					
Lare UIL Fichols 0.86 0.85 1.00 1.00 1.00 0.95 0.95 0.95 0.95 1.00 Fill Method 0.978 0.978 0.978 0.978 0.978 0.978 Fill Method 0.978 0.977 740 8.978 0.977 740 8.978 0.978	Future Volume (vph)													
Pert Biolog 0.99 0.973 0.05 0.00 0.340 0 File Pertokeckd 0.988 0 0 0.00 0.973 0 0.340 0 File Pertokeckd 0.988 0 0 0.00 0.973 0 0.340 0 File Pertokeckd 0.988 0 0 0 0.973 Ves 0.438 0 File Pertokeckd 0.988 0 0 0 0.973 0 0.338 0 0 Sadel Flow (R10A) 48 9 9 9 9 9 9 9 10 <td< td=""><td>Ideal Flow (vphpl)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Ideal Flow (vphpl)													
rif 0.978 0.098 0.000 0		0.86		0.86	1.00	1.00	1.00	1.00		0.95	0.95		1.00	
The NoticeInd 0.984 0												1.00		
Sale Forward 0 598 0 0 0 0 307 0 0 338 0 Sale Forward Yes Yes <td< td=""><td>Fit Protected</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0.730</td><td></td><td></td><td>0.989</td><td></td><td></td></td<>	Fit Protected								0.730			0.989		
The Permitted 0.998 0	Satd. Flow (prot)	0		0	0	0	0	0	3093	0	0		0	
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Tum Type: Split NA NA Permited Permited Parameter S S Permited Pases 5 5 2 10 10 10 10 10 80 38.0 38.0 2 10		C	1005	0	0	0	0	0	070	0	0	220	0	
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Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street		1			5									
▲ _{Ø1(R)}	Splits and Phases: 1: Tree	mont Street &	Arlington S	Street/Hera	ald Street									
→Ø1(R) X ■Ø2 V Ø5	A							1	1					ŧ
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Lanes, volumes, m						•				,	1	,	
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations		<u></u> ↑↑₽								ሻሻ	††		
Traffic Volume (vph)	0	1123	69	0	0	0	0	0	0	243	80	0	
Future Volume (vph)	0	1123	69	0	0	0	0	0	0	243	80	0	
Ideal Flow (vphpl)	1900 1.00	1900	1900 0.91	1900 1.00	1900	1900	1900	1900	1900 1.00	1900	1900 0.95	1900	
Lane Util. Factor Ped Bike Factor	1.00	0.91 0.99	0.91	1.00	1.00	1.00	1.00	1.00	1.00	0.97 0.87	0.95	1.00	
Frt		0.991								0.07			
Flt Protected		0.771								0.950			
Satd. Flow (prot)	0	4922	0	0	0	0	0	0	0	3213	3574	0	
Flt Permitted										0.950			
Satd. Flow (perm)	0	4922	0	0	0	0	0	0	0	2801	3574	0	
Right Turn on Red		10	Yes			Yes			Yes	Yes		Yes	
Satd. Flow (RTOR)		12 30			30			30		296	30		
Link Speed (mph) Link Distance (ft)		30 774			30 148			30 155			279		
Travel Time (s)		17.6			3.4			3.5			6.3		
Confl. Peds. (#/hr)		17.0	86		0.1			0.0		128	0.0		
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.82	0.82	0.82	
Heavy Vehicles (%)	0%	4%	0%	2%	2%	2%	2%	2%	2%	9%	1%	0%	
Adj. Flow (vph)	0	1195	73	0	0	0	0	0	0	296	98	0	
Shared Lane Traffic (%)	0	40/0	0	0	0	0	0	0	0	00/	00	0	
Lane Group Flow (vph)	0	1268	0	0	0	0	0	0	0	296 Split	98	0	
Turn Type Protected Phases		NA 1								Split 5	NA 5		2
Permitted Phases										5	5		۷
Detector Phase		1								5	5		
Switch Phase													
Minimum Initial (s)		8.0								2.0	2.0		1.0
Minimum Split (s)		49.0								34.0	34.0		17.0
Total Split (s)		49.0								34.0	34.0		17.0
Total Split (%) Maximum Green (s)		49.0% 46.0								34.0% 30.0	34.0% 30.0		17% 11.0
Yellow Time (s)		40.0								30.0	30.0		2.0
All-Red Time (s)		1.0								1.0	1.0		4.0
Lost Time Adjust (s)		0.0								0.0	0.0		10
Total Lost Time (s)		3.0								4.0	4.0		
Lead/Lag													
Lead-Lag Optimize?													
Vehicle Extension (s)		2.0								2.0	2.0		0.2
Recall Mode Walk Time (s)		C-Max 35.0								Max 21.0	Max 21.0		None 5.0
Flash Dont Walk (s)		11.0								9.0	9.0		6.0
Pedestrian Calls (#/hr)		0								0	0		373
Act Effct Green (s)		46.0								30.0	30.0		
Actuated g/C Ratio		0.46								0.30	0.30		
v/c Ratio		0.56								0.25	0.09		
Control Delay		8.3								6.2	17.9		
Queue Delay		0.2								0.0	0.0		
Total Delay LOS		8.6 A								6.2 A	17.9 B		
Approach Delay		8.6								A	9.1		
Approach LOS		A									A		
Queue Length 50th (ft)		112								0	23		
Queue Length 95th (ft)		107								10	38		
Internal Link Dist (ft)		694			68			75			199		
Turn Bay Length (ft)		2270								1171	1070		
Base Capacity (vph) Starvation Cap Reductn		2270 0								1171 0	1072 0		
Spillback Cap Reductn		340								20	0		
Storage Cap Reductn		340								20	0		
Reduced v/c Ratio		0.66								0.26	0.09		
Intersection Summary													
Intersection Summary Area Type:	Other												
Cycle Length: 100	Juici												
Actuated Cycle Length: 100													
Offset: 6 (6%), Referenced to	o phase 1:EB	T, Start of	Green										
Natural Cycle: 100													
Control Type: Actuated-Coor	rdinated												
Maximum v/c Ratio: 0.56	_					100 1							
Intersection Signal Delay: 8.					tersection								
Intersection Capacity Utilizat Analysis Period (min) 15	10/1 51.9%			IC	CU Level o	Service A							
maysis Penda (IIIII) 15													
Splits and Phases: 2: Hera	ald Street & S	hawmut A	venue										
									1	1			
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49 S									1/ s	5			54 S

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	100	4177	70	0	0	0	0	† 699	72	0	↑ 19	0
Traffic Volume (vph) Future Volume (vph)	109 109	1224 1224	72 72	0 0	0 0	0 0	0 0	699 699	72 72	0 0	19 19	0 0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft) Lane Util. Factor	11 0.91	11 0.91	12 0.91	12 1.00	12 1.00	12 1.00	12 1.00	11 1.00	11 1.00	12 1.00	12 1.00	12 1.00
Ped Bike Factor	0.71	1.00	0.71	1.00	1.00	1.00	1.00	1.00	0.79	1.00	1.00	1.00
Frt Elt Desta sta d		0.992							0.850			
Flt Protected Satd. Flow (prot)	0	0.996 4168	0	0	0	0	0	1517	1243	0	919	0
Flt Permitted		0.996		-								
Satd. Flow (perm)	0	4165	0 Yes	0	0	0 Yes	0	1517	977 Voc	0	919	0 Yes
Right Turn on Red Satd. Flow (RTOR)		11	res			res			Yes 23			res
Link Speed (mph)		30			30			30			30	
Link Distance (ft) Travel Time (s)		200 4.5			204 4.6			253 5.8			221 5.0	
Confl. Peds. (#/hr)	12								165			
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.86	0.86	0.86	0.75	0.75	0.75
Heavy Vehicles (%) Bus Blockages (#/hr)	6% 0	6% 9	0% 9	0% 0	0% 0	0% 0	0% 0	9% 0	13% 0	0% 0	86% 0	0% 0
Adj. Flow (vph)	116	1302	77	0	0	0	0	813	84	0	25	0
Shared Lane Traffic (%)												
Lane Group Flow (vph) Turn Type	0 Perm	1495 NA	0	0	0	0	0	813 NA	84 Perm	0	25 NA	0
Protected Phases	renil	1						NA 6	FCIII		NA 6	
Permitted Phases	1								6			
Detector Phase	1	1						6	6		6	
Switch Phase Minimum Initial (s)	12.0	12.0						12.0	12.0		12.0	
Minimum Split (s)	50.0	50.0						29.0	29.0		29.0	
Total Split (s)	50.0	50.0						50.0	50.0		50.0	
Total Split (%) Maximum Green (s)	50.0% 45.0	50.0% 45.0						50.0% 45.0	50.0% 45.0		50.0% 45.0	
Yellow Time (s)	45.0	45.0						45.0	45.0		45.0	
All-Red Time (s)	1.0	1.0						1.0	1.0		1.0	
Lost Time Adjust (s) Total Lost Time (s)		-1.0 4.0						-1.0 4.0	-1.0 4.0		-1.0 4.0	
Lead/Lag		4.0						4.0	4.0		4.0	
Lead-Lag Optimize?												
Vehicle Extension (s) Recall Mode	3.0 C-Max	3.0 C-Max						3.0 None	3.0 None		3.0 None	
Walk Time (s)	C-IVIAX 36.0	C-Max 36.0						15.0	15.0		15.0	
Flash Dont Walk (s)	9.0	9.0						9.0	9.0		9.0	
Pedestrian Calls (#/hr)	0	0 46.0						0	0		0 46.0	
Act Effct Green (s) Actuated g/C Ratio		46.0 0.46						46.0 0.46	46.0 0.46		46.0 0.46	
v/c Ratio		0.78						1.17	0.18		0.06	
Control Delay		14.7						117.5	13.0		15.6	
Queue Delay Total Delay		1.1 15.8						0.0 117.5	0.0 13.0		0.0 15.6	
LOS		В						F	B		В	
Approach Delay		15.8						107.7			15.6	
Approach LOS Queue Length 50th (ft)		B 336						F ~619	22		B 9	
Queue Length 95th (ft)		398						#790	49		20	
Internal Link Dist (ft)		120			124			173			141	
Turn Bay Length (ft) Base Capacity (yph)		1921						697	461		422	
Base Capacity (vph) Starvation Cap Reductn		203						097	401		422	
Spillback Cap Reductn		0						0	0		0	
Storage Cap Reductn		0 97						0	0		0 04	
Reduced v/c Ratio		0.87						1.17	0.18		0.06	
Intersection Summary	CBD											
Area Type: Cycle Length: 100	CRD											
Actuated Cycle Length: 100	0											
Offset: 19 (19%), Reference	ed to phase 1:E	EBTL, Star	t of Green									
Natural Cycle: 110 Control Type: Actuated-Coo	ordinated											
Maximum v/c Ratio: 1.17	o, amatou											
Intersection Signal Delay: 4	19.9				tersection							
Intersection Capacity Utiliza Analysis Period (min) 15	ation 78.1%			IC	U Level of	Service D						
 Volume exceeds capac 	city, queue is the	eoretically	infinite.									
Queue shown is maximu	um after two cy	cles.										
# 95th percentile volume Oueue shown is maximu			may be lo	nger.								
Queue shown is maximu	uni aiter two Cy	UICS.										
Splits and Phases: 3: Wa	ashington Stree	t & Herald	I Street									
ø1 (R)										↓ ¶ _{Ø6}		
50 s									50			

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø
Lane Configurations	202		_0		^		1					1	~~
Traffic Volume (vph)	0	0	0	0	1073	0	71	0	0	0	0	117	
Future Volume (vph)	0	0	0	0	1073	0	71	0	0	0	0	117	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							0.88						
Frt												0.865	
Flt Protected							0.950						
Satd. Flow (prot)	0	0	0	0	4322	0	1593	0	0	0	0	1450	
Flt Permitted							0.950						
Satd. Flow (perm)	0	0	0	0	4322	0	1395	0	0	0	0	1450	
Right Turn on Red			Yes			Yes	Yes		Yes			Yes	
Satd. Flow (RTOR)							298					298	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		829			264			598			851		
Travel Time (s)		18.8			6.0			13.6			19.3		
Confl. Peds. (#/hr)							62					62	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.86	0.86	0.86	0.69	0.69	0.69	
Heavy Vehicles (%)	0%	0%	0%	0%	8%	0%	2%	0%	0%	0%	0%	2%	
Adj. Flow (vph)	0 /8	0 /8	078	078	1206	0 /8	83	0/8	0 /8	0 /8	0 /8	170	
Shared Lane Traffic (%)	U	U	U	0	1200	0	05	0	0	0	0	170	
Lane Group Flow (vph)	0	0	0	0	1206	0	83	0	0	0	0	170	
Turn Type	U	U	0	0	NA	0	Prot	U	0	U	0	Prot	
Protected Phases					1		P101 5!					5!	2
Protected Phases Permitted Phases							5!					5!	2
					1		F					F	
Detector Phase					1		5					5	
Switch Phase					~ ~		~ ~					0.0	
Minimum Initial (s)					8.0		8.0					8.0	1.0
Minimum Split (s)					54.0		20.0					20.0	22.0
Total Split (s)					54.0		24.0					24.0	22.0
Total Split (%)					54.0%		24.0%					24.0%	22%
Maximum Green (s)					49.0		19.0					19.0	16.0
Yellow Time (s)					3.0		3.0					3.0	2.0
All-Red Time (s)					2.0		2.0					2.0	4.0
Lost Time Adjust (s)					0.0		0.0					0.0	
Total Lost Time (s)					5.0		5.0					5.0	
Lead/Lag					Lead								Lá
Lead-Lag Optimize?													
Vehicle Extension (s)					2.0		2.0					2.0	0
Recall Mode					C-Max		None					None	Nor
Walk Time (s)					39.0		8.0					8.0	7
Flash Dont Walk (s)					10.0		7.0					7.0	9.
Pedestrian Calls (#/hr)					0		0					0	29
Act Effct Green (s)					60.0		8.0					8.0	21
Actuated g/C Ratio					0.60		0.08					0.08	
v/c Ratio					0.00		0.00					0.08	
Control Delay					0.47		1.2					9.9	
Queue Delay					0.0		0.0					9.9	
Total Delay					11.8 P		1.2					9.9	
LOS Approach Delau					B		А	10			0.0	А	
Approach Delay					11.8			1.2			9.9		
Approach LOS					В			A			A		
Queue Length 50th (ft)					144		0					0	
Queue Length 95th (ft)					175		0					0	
Internal Link Dist (ft)		749			184			518			771		
Turn Bay Length (ft)													
Base Capacity (vph)					2593		544					516	
Starvation Cap Reductn					0		0					0	
Spillback Cap Reductn					0		0					0	
Storage Cap Reductn					0		0					0	
Reduced v/c Ratio					0.47		0.15					0.33	
Intersection Summary													
Area Type:	CBD												
Cycle Length: 100													
Actuated Cycle Length: 100													
Offset: 53 (53%), Referenced	I to phase 1:V	VBT, Start	t of Green										
Natural Cycle: 100													
Control Type: Actuated-Coord	dinated												
Maximum v/c Ratio: 0.47													
Intersection Signal Delay: 11.	.0			In	tersection	LOS: B							
Intersection Capacity Utilization				IC	CU Level of	Service A	1						
Analysis Period (min) 15													
! Phase conflict between lar	ne groups.												
	0.000												
Splits and Phases: 4: Shav	vmut Avenue	& East Be	erkelev Str	eet									
		u Eust Bt	Sintoloj Our										
Ø1 (R)										J	Ø2		
										22			

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations	EBL	LDI	EBR	WBL	†	VVDR	NDL	₩B1	NON	JDL	5B1	JUK	02
Traffic Volume (vph)	16	0	9	284	812	165	139	634	0	0	243	68	
Future Volume (vph)	16	0	9	284	812	165	139	634	0	0	243	68	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95	0.95	
Ped Bike Factor Frt			0.850		0.975						0.99 0.967		
Flt Protected	0.950		0.000	0.950	0.713			0.991			0.707		
Satd. Flow (prot)	1624	0	1163	1547	2965	0	0	3091	0	0	2859	0	
Flt Permitted	0.129			0.950				0.706					
Satd. Flow (perm)	221	0	1163	1547	2965	0	0	2202	0	0	2859	0	
Right Turn on Red			Yes 120		25	Yes			Yes		33	Yes	
Satd. Flow (RTOR) Link Speed (mph)		30	120		25 30			30			33 30		
Link Distance (ft)		647			829			409			883		
Travel Time (s)		14.7			18.8			9.3			20.1		
Confl. Peds. (#/hr)												40	
Confl. Bikes (#/hr)												2	
Peak Hour Factor	0.83	0.83	0.83	0.93	0.93	0.93	0.89	0.89	0.89	0.84	0.84	0.84	
Heavy Vehicles (%) Adj. Flow (vph)	0% 19	0% 0	25% 11	5% 305	7% 873	6% 177	5% 156	4% 712	0% 0	0% 0	7% 289	13% 81	
Adj. Flow (vpn) Shared Lane Traffic (%)	14	U	11	202	0/3	1//	1:00	/12	U	U	209	01	
Lane Group Flow (vph)	19	0	11	305	1050	0	0	868	0	0	370	0	
Turn Type	D.Pm		Perm	Perm	NA	-	pm+pt	NA			NA		
Protected Phases					5		6	16			1		2
Permitted Phases	5		5	5			16						
Detector Phase	5		5	5	5		6	16			1		
Switch Phase	5.0		5.0	5.0	5.0		4.0				10.0		1.0
Minimum Initial (s) Minimum Split (s)	5.0 9.0		5.0 9.0	5.0 9.0	5.0 9.0		4.0 8.0				10.0 27.0		1.0 25.0
Total Split (s)	9.0 35.0		35.0	35.0	35.0		13.0				27.0		25.0
Total Split (%)	35.0%		35.0%	35.0%	35.0%		13.0%				27.0%		25%
Maximum Green (s)	31.0		31.0	31.0	31.0		9.0				23.0		19.0
Yellow Time (s)	3.0		3.0	3.0	3.0		3.0				3.0		2.0
All-Red Time (s)	1.0		1.0	1.0	1.0		1.0				1.0		4.0
Lost Time Adjust (s) Total Lost Time (s)	0.0 4.0		0.0 4.0	0.0 4.0	0.0 4.0						0.0 4.0		
Lead/Lag	4.0		4.0	4.0	4.0						4.0 Lead		Lag
Lead-Lag Optimize?											LCau		Lay
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0				2.0		0.2
Recall Mode	None		None	None	None		None				C-Max		None
Walk Time (s)											17.0		8.0
Flash Dont Walk (s)											6.0		11.0
Pedestrian Calls (#/hr)	-										0		301
Act Effct Green (s)	31.0		31.0	31.0	31.0			32.0			23.0		
Actuated g/C Ratio v/c Ratio	0.31 0.28		0.31 0.02	0.31 0.64	0.31 1.12			0.32 1.11			0.23 0.54		
Control Delay	0.28 39.0		0.02	28.2	94.5			96.9			30.7		
Queue Delay	0.0		0.0	0.0	0.0			0.0			0.0		
Total Delay	39.0		0.1	28.2	94.5			96.9			30.7		
LOS	D		A	С	F			F			С		
Approach Delay		24.7			79.6			96.9			30.7		
Approach LOS	^	С		1/0	E			F			C		
Queue Length 50th (ft) Queue Length 95th (ft)	9 29		0	168 262	~403 #536			~294 #448			113 149		
Internal Link Dist (ft)	29	567	U	202	#536 749			#448 329			803		
Turn Bay Length (ft)		507						527			000		
Base Capacity (vph)	68		443	479	936			784			682		
Starvation Cap Reductn	0		0	0	0			0			0		
Spillback Cap Reductn	0		0	0	0			0			0		
Storage Cap Reductn	0		0	0	0			0			0		
Reduced v/c Ratio	0.28		0.02	0.64	1.12			1.11			0.54		
Intersection Summary													
Area Type:	CBD												
Cycle Length: 100	_												
Actuated Cycle Length: 100			rt of Cross										
Offset: 38 (38%), Reference Natural Cycle: 130	ed to phase 1:N	IBSB, Sta	rt of Greet	1									
Control Type: Actuated-Con	ordinated												
Maximum v/c Ratio: 1.12													
Intersection Signal Delay: 7					tersection								
Intersection Capacity Utilization	ation 83.9%			IC	U Level of	Service E							
Analysis Period (min) 15													
 Volume exceeds capac Queue shown is maximu 			infinite.										
# 95th percentile volume			may he lo	naer									
 95ill percentile volume Queue shown is maximu 			may be it	nger.									
	of the system of the sys												
Splits and Phases: 5: Tre	emont Street & I	Berkeley S	Street/Eas	t Berkeley	Street								
Ø1 (R)				1. A	12					*	-		
7 v 1 01 (R)				25 s	12					35 s	5		
				200						000			

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
ane Configurations					4 ∿						ተተኈ		
Fraffic Volume (vph)	0	0	0	89	4↑ 337	0	0	0	0	0	236	83	
Future Volume (vph)	0	0	0	89	337	0	0	0	0	0	236	83	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
ane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.91	0.91	
Ped Bike Factor	1.00	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.71	
-eu bike i actoi					1.00						0.961		
Fit Protected					0.990						0.901		
Satd. Flow (prot)	0	0	0	0	3456	0	0	0	0	0	4589	0	
	0	U	0	0		0	0	0	U	0	4589	0	
Fit Permitted		0		0	0.990	0	0	0	0	0	1500		
Satd. Flow (perm)	0	0	0	0	3451	0	0	0	0	0	4589	0	
Right Turn on Red			Yes	Yes		Yes			Yes			Yes	
Satd. Flow (RTOR)					39						87		
ink Speed (mph)		30			30			30			30		
ink Distance (ft)		266			231			279			323		
Fravel Time (s)		6.0			5.3			6.3			7.3		
Confl. Peds. (#/hr)				9								59	
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.92	0.92	0.92	0.95	0.95	0.95	
Heavy Vehicles (%)	2%	2%	2%	5%	3%	2%	2%	2%	2%	0%	8%	3%	
Adj. Flow (vph)	0	0	0	102	387	0	0	0	0	0	248	87	
Shared Lane Traffic (%)	0	Ū	0	102	507	Ū	Ū	Ū	v	Ū	210	57	
ane Group Flow (vph)	0	0	0	0	489	0	0	0	0	0	335	0	
Furn Type	U	U	U	Split	A09 NA	0	U	U	U	0	NA	0	
Protected Phases				Spiit 1	1						NA 5		2
Protected Phases Permitted Phases				1	1						5		۷
				1	1						-		
Detector Phase				1	1						5		
Switch Phase											46.5		
Vinimum Initial (s)				10.0	10.0						10.0		1.0
Vinimum Split (s)				43.0	43.0						35.0		22.0
Fotal Split (s)				43.0	43.0						35.0		22.0
Fotal Split (%)				43.0%	43.0%						35.0%		22%
Vlaximum Green (s)				39.0	39.0						31.0		20.0
Yellow Time (s)				3.0	3.0						3.0		2.0
All-Red Time (s)				1.0	1.0						1.0		0.0
ost Time Adjust (s)					0.0						0.0		
Fotal Lost Time (s)					4.0						4.0		
_ead/Lag					1.0						110		
_ead-Lag Optimize?													
/ehicle Extension (s)				2.0	2.0						2.0		0.2
Recall Mode				C-Max	C-Max						Max		None
Walk Time (s)				28.0	28.0						23.0		13.0
Flash Dont Walk (s)				11.0	11.0						8.0		7.0
				0	0						0.0		315
Pedestrian Calls (#/hr)				0									315
Act Effct Green (s)					39.0						31.0		
Actuated g/C Ratio					0.39						0.31		
//c Ratio					0.36						0.23		
Control Delay					20.7						19.2		
Queue Delay					0.0						0.0		
Fotal Delay					20.7						19.2		
_OS					С						В		
Approach Delay					20.7						19.2		
Approach LOS					С						В		
Queue Length 50th (ft)					104						42		
Queue Length 95th (ft)					140						65		
nternal Link Dist (ft)		186			151			199			243		
Furn Bay Length (ft)													
Base Capacity (vph)					1371						1482		
Starvation Cap Reductn					0						0		
Spillback Cap Reductn					0						0		
Storage Cap Reductn					0						0		
Reduced v/c Ratio					0.36						0.23		
					0.00						0.20		
ntersection Summary													
	Other												
Cycle Length: 100													
Actuated Cycle Length: 100													
Offset: 81 (81%), Referenced to	phase 1:W	/BTL, Star	t of Green	1									
Vatural Cycle: 100		, otai											
Control Type: Actuated-Coordin	nated												
Maximum v/c Ratio: 0.36	alou												
ntersection Signal Delay: 20.1				In	tersection	05.0							
	51.0%												
ntersection Capacity Utilization	131.7%			IC	CU Level of	Service A							
inalysis Period (min) 15													
Analysis Period (min) 15	aut Aurore	0 Morris	Deci										
plits and Phases: 6: Shawm	nut Avenue	& Margina	al Road										
Splits and Phases: 6: Shawm	nut Avenue	& Margina	al Road					∦ ∎ _{Ø2}					↓ ø5

		~	4	+	<	1
	→	•			-	-
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u> ተተኑ</u>					1
Traffic Volume (veh/h)	1395	4	0	0	0	7
Future Volume (Veh/h)	1395	4	0	0	0	7
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.92	0.92	0.92	0.38
Hourly flow rate (vph)	1453	4	0	0	0	18
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	148			200		
pX, platoon unblocked			0.82		0.82	0.82
vC, conflicting volume			1457		1455	486
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			784		782	0
tC, single (s)			4.1		6.8	7.6
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.6
p0 queue free %			100		100	98
cM capacity (veh/h)			680		275	812
					215	012
Direction, Lane #	EB 1	EB 2	EB 3	NB 1		
Volume Total	581	581	295	18		
Volume Left	0	0	0	0		
Volume Right	0	0	4	18		
cSH	1700	1700	1700	812		
Volume to Capacity	0.34	0.34	0.17	0.02		
Queue Length 95th (ft)	0	0	0	2		
Control Delay (s)	0.0	0.0	0.0	9.5		
Lane LOS				А		
Approach Delay (s)	0.0			9.5		
Approach LOS				А		
Intersection Summary					_	
			0.1			
Average Delay			0.1	10	U.L. averal of	Conda
Intersection Capacity Utilization			37.0%	IC	U Level of	Service
Analysis Period (min)			15			

TICIM Offsignalized Int	0100011	on oup	acity / li	larysis		
	~	•	t	1	1	1
	1		1	<i>r</i>	-	ŧ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	NDL N	TUDI	NDI	HDR	JDL	<u>्र</u>
Traffic Volume (veh/h)	7	0	0	0	4	4 145
Future Volume (Veh/h)	7	0	0	0	4	145
		U		U	4	
Sign Control	Yield		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	0	0	0	4	158
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			851			155
pX, platoon unblocked	0.97		551			.55
vC, conflicting volume	166	0			0	
vC1, stage 1 conf vol	100	J			J	
vC2, stage 2 conf vol						
vC2, stage 2 coni voi vCu, unblocked vol	126	0			0	
tC, single (s)	6.4	6.2			4.1	
	6.4	0.2			4.1	
tC, 2 stage (s)	0.5	0.0			0.0	
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	841	1085			1623	
Direction, Lane #	WB 1	SB 1				
Volume Total	8					
		162				
Volume Left	8	4				
Volume Right	0	0				
cSH	841	1623				
Volume to Capacity	0.01	0.00				
Queue Length 95th (ft)	1	0				
Control Delay (s)	9.3	0.2				
Lane LOS	A	А				
Approach Delay (s)	9.3	0.2				
Approach LOS	А					
	_	_	_	_	_	_
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			17.9%	IC	U Level o	f Service
Analysis Period (min)			15			

Travel Time (c) 5.2 17.4 20.1 3.9 Contl. Pecks, (Mr) 3 3 130 Contl. Resks, (Mr) 3 3 5 5 Contl. Resks, (Mr) 63 286 0.92 0.92 0.90 0.90 0.88 0.88 0.88 Resk (Mr) 63 1022 226 0 0 0 0 0.83 0.86 0.88		٨	→	\mathbf{i}	1	+	×	•	t	1	1	Ļ		
Jame Configurations 411b	Lane Group	FBI	FBT	FBR	WBI	WBT	WBR	NBI	NBT	NBR	SBI	SBT	SBR	Ø2
Endure Schware (prin) 99 901 900		LDL		LDIX				DL		Div	JDL		ODIC	- DL
Endure Schuler (oph) 59 961 222 0 0 0 0 73 228 15 248 0 care UII Fractor 0.6 0.8 0.80 100		50	061	222	0	0	0	0	373	228	15	2/18	0	
dick of Kov 1900														
Lane UII Fairbin 0.66 0.86 1.00 1.00 1.00 0.95 0.9														
Part Biol 0.98														
rif 0.973		U.00		0.00	1.00	1.00	1.00	1.00		0.90	0.90		1.00	
Fit Protected 0.978 0 0 0 0 332 0 0.978 Fit Permited 0.978 Ves Ves Ves Ves Ves Ves Stand Fow (pm) 0 0.123 0 0 0 0 313 0 0.978 Stand Fow (PON) -4 - 15 Ves												1.00		
Sale / Fow (pon) 0 6 0 0 0 135 0 0 300 Sale / Fow (perm) 0 6123 0 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.943</td> <td></td> <td></td> <td>0.007</td> <td></td> <td></td>									0.943			0.007		
Fit Permitted 0 0 0 0 0 0 135 0 0 1313 0 Right Turn on Red Yes		2		0	0	0	0	0	2125	0	0		0	
Saki Fox (prom) 0 0 123 0 0 0 0 0 3135 0 0 0 3135 0 4 0 9 198 988 Saki Fox (RTOR) 64 989 989 Saki Fox (RTOR) 64 989 980 980 980 980 980 980 980 980 980		0		0	0	0	0	0	3135	0	0		0	
Right I union Reid Yes Yes Yes Yes Yes Link Speed (mph) 30 30 30 30 30 Link Speed (mph) 30 30 30 30 30 Carl Less (Mr) 37 97 130 100		_		-	-	0	0	-	0405	^	0		^	
Sale Law (RTOR) 64 135 Link Descent (mp) 30 30 30 Link Descent (mp) 30 765 866 173 Travel Time (s) 5.2 17.4 20.1 3.9 Cont Desc (Mn) 37 97 130 130 Cont Desc (Mn) 37 97 130 130 Cont Desc (Mn) 63 1022 226 0.92 0.92 0.90 0.90 0.88 0.88 0.88 Rear Hour (Factor 0.94 0.94 0.92 0.22 0		0	6123		0	0		0	3135		0	3113		
Link Speed (mph) 30 30 30 30 30 30 30 30 30 30 30 30 30				Yes			Yes			Yes			Yes	
Link Distance (n) 200 766 886 733 700 390 390 390 390 390 390 390 390 390 3														
Travel Time (a) 5.2 17.4 20.1 3.9 Confl. Resk, (r/h) 3 3 5 5 Confl. Resk, (r/h) 6.4 9.4 0.94 0.92 0.92 0.90														
Cond. Paces (inh) 37 97 130 130 130 130 130 Peak Hour Factor 0.94 0.94 0.92 0.92 0.90 0.90 0.88 0.83 0.83 <td>Link Distance (ft)</td> <td></td>	Link Distance (ft)													
Cont. Basis (Atri) 3 3 94 0.94 0.94 0.92 0.92 0.90 0.90 0.88 0.88 0.88 Heary Vehicles (%) 4% 2% 1% 2% 2% 0.92 0.90 0.90 0.88 </td <td>Travel Time (s)</td> <td></td> <td>5.2</td> <td></td> <td></td> <td>17.4</td> <td></td> <td></td> <td>20.1</td> <td></td> <td></td> <td>3.9</td> <td></td> <td></td>	Travel Time (s)		5.2			17.4			20.1			3.9		
Peak Hoar Pacter 200 0.94 0.94 0.94 0.92 0.92 0.92 0.90 0.90 0.90 0.88 0.88 0.88 0.44 1.690 Vehicle 23 0.72 236 0.0 0 0 0 414 253 7.7 22 0 0 5 100 10 0 0 0 414 253 7.7 2 4 1.690 100 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Confl. Peds. (#/hr)	37								130	130			
Heavy Vehicles (%) 4% 2% 1% 2% 2% 0% 3% 3% 3% 5% 0% Shared Lane Triffic (%) 0 <	Confl. Bikes (#/hr)			3										
Heavy Vehicles (%) 4% 2% 1% 2% 2% 0% 3% 3% 3% 5% 0% Shared Lane Triffic (%) 0 <	Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.90	0.90	0.90	0.88	0.88	0.88	
Add, Flow (vph) 63 102 236 0 0 0 0 67 0 0 299 0 Lane Group Flow (vph) 0 1321 0 0 0 0 67 0 0 299 0 Lane Group Flow (vph) 0 1321 0 0 0 0 677 0 0 299 0 Protected Phases 1 1 55 60 60 <td>Heavy Vehicles (%)</td> <td></td>	Heavy Vehicles (%)													
Shine Line Trafic (%) Shine Line Trafic (%) 0 <td>Adj. Flow (vph)</td> <td></td>	Adj. Flow (vph)													
Lane Coup Flow (ph) 0 1 0 0 0 667 0 0 299 0 Protected Phases 1 1 5 5 2 Protected Phases 1 1 5 5 2 Detector Phase 1 1 5 5 5 Detector Phase 1 1 50 5 5 Minimum Snift (s) 40.0 40.0 35.0 35.0 35.0 21.0 Total Spli (s) 44.0 44.0 35.0 35.0 35.0 22.0 10.0 10.0 10.0 0.0 0.0 Maintum Creen (s) 30.0		20			-	-	-	-					-	
Tum Type: Split NA PRA PPR NA PPR NA Permitted Phases 5 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 1 1 1 5 7		0	1321	0	0	0	0	0	667	0	0	299	0	
Protected Phases 1 1 5 5 Deckot Phase 1 1 5 5 Deckot Phase 1 1 5 5 Minimum Initial (s) 10.0 1				U	U	U	U	U		U			U	
Permitted Phases 5 Switch Phases 0 Minimum Indial (s) 100 100 100 80 Minimum Spitl (s) 44.0 44.0 35.0 35.0 35.0 21.0 Total Spit (s) 44.0 44.0 35.0 35.0 35.0 21.0 Total Spit (s) 44.0% 45.0% 35.0% 21.0% 21.0% Maximum Teren (s) 33.0 3.0 3.0 3.0 3.0 2.0 Cost Time Aging (Ls (s) 0.0 0.0 0.0 0.0 0.0 Cost Time Aging (Ls (s) 0.0 2.0 2.0 2.0 0.0 Cost Time (s) 5.0 4.0 4.0 1.0 1.0 0.0 Cost Time Aging (Ls (s) 0.0 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>reiiii</td><td></td><td></td><td>2</td></t<>											reiiii			2
Deelector Phase 1 1 1 5 5 5 Winimum Spill (s) 100 100 100 100 100 80 Minimum Spill (s) 44.0 44.0 44.0 35.0 35.0 35.0 21.0 Total Spill (s) 44.0 44.0 45.0 35.0 35.0 35.0 21.0 Total Spill (s) 44.0 44.0 35.0 35.0 35.0 21.0 Total Spill (s) 44.0 44.0 35.0 35.0 35.0 21.0 Total Spill (s) 44.0 44.0 35.0 35.0 35.0 21.0 Minimum Cent (s) 33.0 3.0 3.0 31.0 31.0 31.0 10.0 00 Vellow Time (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 2.0 Lead Hadre Time (s) 5.0 4.0 4.0 Lead Hadre Time (s) 5.0 4.0 4.0 Lead Lead Lead Lead 4.0 Lead Lead 2.0 Lead Lead 2.0 Lead Max Max Max Max Max Max Max Max Max More Mak Time (s) 3.0 3.0 3.0 Lead Max C.Max C.Max Max Max Max Max More Walk Time (s) 3.0 3.0 Lead Max C.Max C.Max Max Max Max Max More Mak Time (s) 3.0 3.0 Lead Max Max Max Max Max More Mak Time (s) 3.0 3.0 Lead Max Max Max Max Max More Mak Time (s) 3.0 3.0 Lead Max Max Max Max Max More Mak Time (s) 3.0 3.0 Lead Max Max Max Max Max More Mak Time (s) 3.0 3.0 Lead Max Max Max Max Max More Mak Time (s) 3.0 3.0 Lead Max Max Max Max Max More Mak Time (s) 3.0 Lead Max Max Max Max Max Max More Mak Time (s) 3.0 Lead Max Max Max Max Max Max More Mak Time (s) 3.0 Lead Max		1	1						0		E	0		2
Switch Phase 100 100 100 100 80 Minimum Indial (s) 100 440 440 350 350 350 210 Total Spit (s) 44.0 440 350 350 350 210 Total Spit (s) 44.04 440 350 350 350 210 Total Spit (s) 44.04 440 350 310 310 310 310 310 310 310 310 30 20 Maximum Green (s) 20		1	1						F			F		
Minimum Initial (s) 10.0 10.0 10.0 8.0 Minimum Sitt (s) 44.0 44.0 35.0 35.0 35.0 21.0 Total Spitt (s) 44.0% 44.0% 35.0% 35.0% 35.0% 21.0% Minimum Sitt (s) 44.0% 44.0% 44.0% 35.0% 35.0% 25.0% 21.0% Minimum Sitt (s) 3.0 3.0 3.0 3.0 3.0 3.0 2.0 Vielow Time (s) 3.0 0.0 0.0 0.0 0.0 0.0 LeadId (a) Lead Lead LeadId LeadId LeadId LeadId LeadId LeadId LeadId LeadId LeadId 0.0		1	1						5		5	5		
Minimum Spiit (\$) 44.0 44.0 35.0 35.0 21.0 Total Spiit (\$) 44.0 44.0 39.0 35.0 35.0 21.0 Total Spiit (\$) 44.0 44.0 35.0 35.0 35.0 21.0 Total Spiit (\$) 44.0 40.0 35.0 35.0 35.0 21.0 Total Spiit (\$) 44.0 40.0 35.0 35.0 35.0 21.0 Total Spiit (\$) 30.0 3.0 3.0 3.0 3.0 2.0 All-Red Time (\$) 2.0 2.0 1.0 1.0 1.0 0.0 Used Time (\$) 5.0 4.0 4.0 4.0 Lead-Lag Oplinize? Vehicle Extension (\$) 2.0 2.0 2.0 2.0 0.0 Recall Mode C-Max C-Max Max Max Max Max None Kead-Lag Oplinize? Vehicle Extension (\$) 2.0 2.0 2.0 2.0 2.0 0.0 Recall Mode C-Max C-Max Max Max Max Max None Hash Don Wak (\$) 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 Pedestrian Calls (#/rr) 0 0 0.0 0.0 Pedestrian Calls (#/rr) 0 0 0.0 0.0 Spii Det Keat C-Max C-Max C-Max C-Max Max Max Max Max None Vehicle Extension (\$) 2.0 2.0 2.0 2.0 2.0 2.0 0.0 Recall Mode C-Max C-Max C-Max Max Max Max Max None Vehicle Extension (\$) 3.0 3.0 3.0 Spii Det Keat C-Max C-Max C-Max Max Max Max Max None Vehicle Extension (\$) 3.0 0.0 3.0 Spii Det Keat C-Max C-Max C-Max Max Max Max Max None Veratio Calls (#/rr) 0 0 0.0 0.0 Total LST (C C C C C All Eff C Green (\$) 3.9.0 Spii Det Keat C-Max C-			40.5						40 -		40 -	40.5		0.5
Total Spiil (s) 44.0 35.0 35.0 35.0 21.0 Total Spiil (s) 44.0% 35.0% 35.0% 35.0% 21% Maximum Green (s) 30.0 30.0 31.0 31.0 31.0 210 Viellow Time (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 2.0 Maximum Green (s) 2.0 0.0 0.0 0.0 0.0 0.0 0.0 Lead Hag Optimize? 5.0 4.0 4.0 4.0 0.0 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>														
Total Spift (vb) 44.0% 35.0% 35.0% 35.0% 21% Maximum Green (s) 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 20 All-Red Time (s) 20 2.0 1.0 1.0 1.0 1.0 0.0 00														
Maximum Green (s) 39.0 31.0 31.0 31.0 19.0 Yellow Time (s) 3.0 3.0 3.0 3.0 2.0 M.Red Time (s) 2.0 0.0 0.0 0.0 Lost Time Adjust (s) 0.0 0.0 0.0 Load Las Time (s) 5.0 4.0 4.0 Leadd Lag Optimie? Vehicle Extension (s) 2.0 2.0 2.0 2.0 0.2 Recal Mode CMax C.Max Max Max Max None Waki Time (s) 3.00 3.0 3.0 3.0 3.0 3.0 Vehicle Extension (s) 2.0 2.0 2.0 2.0 0.0 2.0 2.0 0.0 Flash Dont Vaki (s) 9.0 <td>Total Split (s)</td> <td></td>	Total Split (s)													
Yellow Time (s) 3.0 3.0 3.0 3.0 3.0 2.0 All-Red Time (s) 2.0 2.0 1.0 1.0 1.0 0.0 Cost Time A(g) 0.0 0.0 0.0 0.0 0.0 Cost Time A(g) Ead Lead Lead-Lag Lead-Lag Lead-Lag Lead-Lag Lead-Lag Lead-Lag Lead-Lag Lead-Lag Lead-Lag Develop Earth State Lead-Lag Lead-Lag <t< td=""><td>Total Split (%)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Total Split (%)													
All-Red Time (s) 2.0 1.0 1.0 1.0 0.0 Least Time (s) 5.0 4.0 4.0 4.0 Lead Lag (time (s) 5.0 4.0 4.0 4.0 Lead Lag (time (s) 5.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 0.2 2.0 2.0 0.0<	Maximum Green (s)	39.0									31.0			
All-Red Time (s) 2.0 1.0 1.0 1.0 1.0 0.0 Least Time Adjust (s) 0.0 0.0 0.0 0.0 Leadil Last Time (s) 5.0 4.0 4.0 4.0 Leadil Last Time (s) 5.0 4.0 4.0 4.0 Leadil Last Time (s) 2.0 1.0	Yellow Time (s)	3.0	3.0						3.0		3.0	3.0		2.0
Lead Ine Adjing (s) 0.0 0.0 Total Lost Time (s) 5.0 4.0 4.0 Lead Lead Lead Lead Lead Lead-Lag Optimize?	All-Red Time (s)													
Total Los Time (s) 5.0 4.0 4.0 Lead/Lag Lead Lead Lag Lead/Lag Optimize? 2.0 2.0 2.0 0.2 Vehicle Extension (s) 2.0 2.0 2.0 0.2 0.2 Vehicle Extension (s) 3.0 30.0 22.0 22.0 22.0 10.0 Fash Dont Walk (s) 9.0 9.0 9.0 9.0 9.0 9.0 9.0 Pedestrian Calis (s/hr) 0 0 0 0 0 3.10 Act Eff Green (s) 39.0 3.1 0.31 0.31 0.31 vc Ratio 0.54 0.63 0.31 0.0 0.0 Dueue Delay 0.0 0.0 0.0 0.0 0.0 Dueue Delay 0.0 <td></td> <td>2.0</td> <td></td>		2.0												
Lead Lead Lead Lag Lead-Lag Optimize?														
Lead-Lag Oplimize? 2.0 2.0 2.0 0.0		heal							4.0			4.0		1 20
Vehicle Enersion (s) 2.0 2.0 2.0 2.0 0.2 Recall Mode C-Max Max Max Max Max None Wehicle Enersion (s) 3.0 30.0 22.0 22.0 22.0 0.0 0 Flash Dont Walk (s) 9.0 0.0 0.0 0.0		Leau	Ledu											Lay
Recall Mode C-Max Max Max Max Max Max Max None Walk Time (s) 30.0 30.0 22.0 22.0 22.0 10.0 Tash Dont Walk (s) 9.0 9.0 9.0 9.0 9.0 9.0 9.0 Pedestrian Calls (#/m) 0 0 0 0 0 31.0 Act Effct Green (s) 39.0 31.0 31.0 31.0 31.0 Actateid (JC Ratio 0.54 0.63 0.31 0.31 0.31 Control Delay 23.4 26.3 27.4 0.0 0.0 0.0 Control Delay 23.4 26.3 27.4 0.0 <td></td> <td>0.0</td> <td>2.0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2.0</td> <td></td> <td>2.0</td> <td>2.0</td> <td></td> <td>0.0</td>		0.0	2.0						2.0		2.0	2.0		0.0
Walk Time (s) 30.0 30.0 22.0 22.0 22.0 10.0 Flash Dont Walk (s) 9.0 9.0 9.0 9.0 9.0 9.0 9.0 Flash Dont Walk (s) 9.0 9.0 9.0 9.0 9.0 9.0 9.0 Flash Dont Walk (s) 9.0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0														
Flash Dont Walk (s) 9.0<														
Pedestrian Calls (#hr) 0 0 0 0 0 370 Act Eff Green (s) 39.0 31.0 31.0 31.0 31.0 Actuated gC Ratio 0.54 0.63 0.31 0.31 0.31 vic Ratio 0.54 0.63 0.31 0.01 00 <td></td>														
Act Effct Green (s) 39.0 31.0 31.0 Actuated g/C Ratio 0.39 0.31 0.31 We Ratio 0.54 0.63 0.31 Control Delay 23.4 26.3 27.4 Queue Delay 0.0 0.0 0.0 Total Delay 23.4 26.3 27.4 LOS C C C Approach Delay 23.4 26.3 27.4 LOS C C C Approach DS C C C Queue Length 50th (ft) 17.7 152 76 Queue Length 95th (ft) 212 214 110 Internal Link Dist (ft) 150 685 806 93 Turn Bay Length (ft) 150 685 965 Starvation Cap Reductin 0 0 Starvation Cap Reductin 0 0 0 0 0 0 Starvation Cap Reductin 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0														
Actuated g/C Ratio 0.39 0.31 0.31 v/c Ratio 0.54 0.63 0.31 Control Delay 23.4 26.3 27.4 Queue Delay 0.0 0.0 0.0 Total Delay 23.4 26.3 27.4 Queue Delay 0.0 0.0 0.0 Total Delay 23.4 26.3 27.4 Queue Length Solth (ft) 171 152 7.6 Queue Length Solth (ft) 177 152 76 Queue Length Solth (ft) 177 152 76 Queue Length Solth (ft) 177 152 76 Queue Length Solth (ft) 170 152 76 Queue Length Solth (ft) 2430 1065 965 Starvation Cap Reductn 0 0 0 Soltrage Cap Reductn 0 0 0 Soltrage Cap Reductn 0 0.63 0.31 Intersection Summary Intersection Summary Intersection Summary Interection Summary	Pedestrian Calls (#/hr)	0									0			370
wic Ratio 0.54 0.63 0.31 Control Delay 23.4 26.3 27.4 Dueue Delay 0.0 0.0 0.0 Total Delay 23.4 26.3 27.4 LOS C C C Approach Delay 23.4 26.3 27.4 LOS C C C Approach Delay 23.4 26.3 27.4 Approach Delay 23.4 26.3 27.4 Approach DS C C C Queue Length 50th (ft) 177 152 76 Queue Length 95th (ft) 212 214 110 Internal Link DSt (ft) 56 965 965 Starvation Cap Reductn 0 0 0 Starvation Cap Reductn 0 0 0 Storage Cap Reductn 0 0 0 Area Type: Other Cycle Length: 100 0 Actuated Cycle Length: 100 Other Cycle Length: 100 Other Control Type: Actuated-Cocordinated Maximu Wre Ratio: 0.63	Act Effct Green (s)													
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Queue Delay 0.0 0.0 Total Delay 23.4 26.3 27.4 LOS C C C Approach Delay 23.4 26.3 27.4 Approach Delay 23.4 26.3 27.4 Approach LOS C C C Oueue Length 50th (ft) 177 152 76 Oueue Length 95th (ft) 212 214 110 Internal Link Dist (ft) 150 685 806 93 Turn Bay Length (ft) 2430 1065 965 5 Starvation Cap Reductn 0 0 0 5 Storage Cap Reductn 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0.63 0.31 0.63 0.31 0.63 0.31 Intersection Summary Cycle Length: 100 0 0 0 0 0 0 0 0 <td>v/c Ratio</td> <td></td> <td>0.54</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.63</td> <td></td> <td></td> <td>0.31</td> <td></td> <td></td>	v/c Ratio		0.54						0.63			0.31		
Total Delay 23.4 26.3 27.4 LOS C C C Approach Delay 23.4 26.3 27.4 Approach LOS C C C Oueue Length S0th (ft) 177 152 76 Oueue Length S0th (ft) 212 214 110 Internal Link Dist (ft) 150 685 806 93 Turn Bay Length (ft) 2430 1065 965 Starvation Cap Reductn 0 0 0 Reduced v/c Ratio 0.54 0.63 0.31 Intersection Summary Acta Type: Other Cycle Length: 100 Acta Type: Other Cycle Length: 100 Control Type: Actaated-Coordinated Maximur Vc Ratio: 0.63 0.63 0.51 Control Type: Actaated-Coordinated Maximur Vc Ratio: 0.63 0.63 0.51 Control Type: Actaated-Coordinated Maximur Vc Ratio: 0.63 0.61 <	Control Delay		23.4						26.3			27.4		
Total Delay 23.4 26.3 27.4 LOS C C Approach Delay 23.4 26.3 27.4 Approach LOS C C C C Approach Delay 23.4 26.3 27.4 Approach LOS C S Startion S Startion S Startion S C C C C C Startion S Startion S C C C C C C C C C C	Queue Delay		0.0						0.0			0.0		
LOS C C C Approach Delay 23.4 26.3 27.4 Approach Delay 23.4 26.3 27.4 Approach Delay 23.4 26.3 27.4 Approach Delay 23.4 C C C Oueue Length 50th (ft) 177 152 76 C Oueue Length 95th (ft) 212 214 110 Internat Link Dist (ft) 150 685 806 93 Turn Bay Length (ft) Base Capacity (vph) 2430 065 965 Starvation Cap Reductn 0 0 Q Q Q Starvation Cap Reductn 0 0 Q <td>Total Delay</td> <td></td>	Total Delay													
Approach Delay 23.4 26.3 27.4 Approach LOS C C C Oueue Length 50th (th) 177 152 76 Oueue Length 95th (th) 212 214 110 Internal Link Dist (th) 150 685 806 93 Turn Bay Length (th) 2430 1065 965 Starvation Cap Reductn 0 0 0 Starvation Cap Reductn 0 0 0 Storage Cap Reductn 0 0.63 0.31 Intersection Summary Cataled Catale	LOS													
Approach LOS C C C Oueue Length 50th (tt) 177 152 76 Oueue Length 50th (tt) 212 214 110 Internal Link Dist (tt) 150 685 806 93 Turn Bay Length (tt) 150 685 965 Starvation Capacity (vph) 2430 1065 965 Starvation Cap Reductn 0														
Oureue Length 50th (ft) 177 152 76 Oureue Length 95th (ft) 212 214 110 Internal Link Dist (ft) 150 685 806 93 Turn Bay Length (ft)														
Queue Length 95th (ft) 212 214 110 Internal Link Dist (ft) 150 685 806 93 Tum Bay Length (ft) 100 685 806 93 Base Capacity (vph) 2430 1065 965 Starvation Cap Reductn 0 0 0 SplitBack Cap Reductn 0 0 0 Storage Cap Reductn 0 0 0 Storage Cap Reductn 0 0 0 Storage Cap Reductn 0 0 0 Reduced vic Ratio 0.54 0.63 0.31 Intersection Summary Intersection Summary Intersection Summary Intersection Summary Area Type: Other Otyce Length: 100 Other Other Orice Lag 89 (0%), Referenced to phase 1:EBTL, Start of Green Natural Cycle: 100 Intersection Control Type: Actuated-Coordinated Intersection LOS: C Intersection Signal Delay: 24.7 Intersection LOS: C Intersection Capacity Uillization 65.8% ICU Level of Service C Analysis Period (min) 15 Splits and Phases: 1: Tremo														
Internal Link Dist (tt) 150 685 806 93 Turn Bay Length (tt) 7430 1065 965 Starvation Cap Reductn 0 0 0 Spillback Cap Reductn 0 0 0 Spillback Cap Reductn 0 0 0 Storage Cap Reductn 0 0 0 Reduced vic Ratio 0.54 0.63 0.31 Intersection Summary Area Type: Other Cycle Length: 100 Actuated Cycle Length: 100 Offset: 89 (89%), Referenced to phase 1:EBTL, Start of Green Natural Cycle: 100 Control Type: Actuated-Coordinated Maximum vic Ratio: 0.63 Intersection Signal Delay: 24.7 Intersection LOS: C Intersection Capacity Utilization 65.8% ICU Level of Service C Analysis Period (min) 15														
Turn Bay Length (th) 2430 1065 965 Base Capacity (vph) 2430 0 0 Splitback Cap Reductn 0 0 0 Splitback Cap Reductn 0 0 0 Storage Cap Reductn 0 0 0 Reduced v/c Ratio 0.54 0.63 0.31 Intersection Summary Varea Type: 0 0 Area Type: Other Cycle Length: 100 0 Acturated Cycle Length: 100 Offset: 89 (89%), Referenced to phase 1:EBTL, Start of Green Natural Cycle: 10 Vartard Cycle: 10 Control Type: Acturated-Coordinated Maximum v/c Ratio: 0.63 Intersection LOS: C Intersection LOS: C Intersection Capacity Utilization 65.8% ICU Level of Service C Analysis Period (min) 15 Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street						105								
Base Capacity (vph) 2430 1065 965 Starvation Cap Reductn 0 0 0 Starvation Cap Reductn 0 0 0 Storage Cap Reductn 0 0 0 Storage Cap Reductn 0 0 0 Reduced vic Ratio 0.54 0.63 0.31 Intersection Summary			150			685			806			93		
Starvation Cap Reductn 0 0 Spillback Cap Reductn 0 0 Spillback Cap Reductn 0 0 Storage Cap Reductn 0 0 Reduced vic Ratio 0.54 0.63 0.31 Intersection Summary	Turn Bay Length (ft)													
Spillback Cap Reductn 0 0 Storage Cap Reductn 0 0 0 Reduced v/c Ratio 0.54 0.63 0.31 Intersection Summary Area Type: 0 0 Area Type: Other 0 0 Cycle Length: 100 Offset: 89 (89%), Referenced to phase 1:EBTL, Start of Green 0 0 Natural Cycle: 100 Other 0 0 0 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.63 0 0 Intersection Signal Delay: 24.7 Intersection LOS: C 1 1 Intersection Signal Delay: 24.7 Intersection Service C 3 3 Analysis Period (min) 15 Spilts and Phases: 1: Tremont Street & Arlington Street/Herald Street 5	Base Capacity (vph)		2430						1065			965		
Spillback Cap Reductn 0 0 Storage Cap Reductn 0	Starvation Cap Reductn		0						0			0		
Storage Cap 0 0 Reduced vic Ratio 0.54 0.63 0.31 Intersection Summary														
Reduced v/c Ratio 0.54 0.63 0.31 Intersection Summary Area Type: Other Area Type: Other Other Cycle Length: 100 Actuated Cycle Length: 100 Offsci: 89 (89%), Referenced to phase 1:EBTL, Start of Green Natural Cycle: 100 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.63 Maximum v/c Ratio: 0.63 Intersection LOS: C Intersection Signal Delay: 24.7 Intersection LOS: C Intersection Capacity Utilization 65.8% ICU Level of Service C Analysis Period (min) 15 Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street	Storage Cap Reductn													
Intersection Summary Area Type: Other Cycle Length: 100 Actuated Cycle Length: 100 Offset: 89 (89%), Referenced to phase 1:EBTL, Start of Green Natural Cycle: 100 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.63 Intersection Signal Delay: 24.7 Intersection Signal Delay: 24.7 Intersection Capacity Utilization 65.8% ICU Level of Service C Analysis Period (min) 15 Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street														
Area Type: Other Cycle Length: 100 Actuated Cycle Length: 100 Offset: 89 (89%), Referenced to phase 1:EBTL, Start of Green Natural Cycle: 100 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.63 Intersection Signal Delay: 24.7 Intersection LOS: C Intersection Capacity Utilization 65.8% ICU Level of Service C Analysis Period (min) 15 Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street			0.04						0.05			0.31		
Area Type: Other Cycle Length: 100 Actuated Cycle Length: 100 Offset: 89 (89%), Referenced to phase 1:EBTL, Start of Green Natural Cycle: 100 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.63 Intersection Signal Delay: 24.7 Intersection LOS: C Intersection Capacity Utilization 65.8% ICU Level of Service C Analysis Period (min) 15 Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street	Intersection Summary													
Cycle Length: 100 Actuated Cycle Length: 100 Offset: 89 (89%), Referenced to phase 1:EBTL, Start of Green Natural Cycle: 100 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.63 Intersection Signal Delay: 24.7 Intersection LOS: C Intersection Capacity Utilization 65.8% ICU Level of Service C Analysis Period (min) 15 Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street		Other												
Actuated Čycle Length: 100 Offset: 89 (89%), Referenced to phase 1:EBTL, Start of Green Natural Cycle: 100 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.63 Intersection Capacity Utilization 65.8% ICU Level of Service C Analysis Period (min) 15 Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street		2												
Offset: 89 (89%), Referenced to phase 1:EBTL, Start of Green Vatural Cycle: 100 Control Type: Actuated-Coordinated Maximum vic Ratio: 0.63 Intersection Signal Delay: 24.7 Intersection Capacity Utilization 65.8% ICU Level of Service C Analysis Period (min) 15 Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street		0												
Natural Cycle: 100 Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.63 Intersection Signal Delay: 24.7 Intersection Capacity Utilization 65.8% ICU Level of Service C Analysis Period (min) 15 Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street			EDTI Stor	t of Groop										
Control Type: Actuated-Coordinated Maximum v/c Ratio: 0.63 Intersection Signal Delay: 24.7 Intersection LOS: C Intersection Capacity Utilization 65.8% ICU Level of Service C Analysis Period (min) 15 Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street		cou to pridse 1:1	LUIL, SIdl	tor Green										
Maximum v/c Ratio: 0.63 Intersection Signal Delay: 24.7 Intersection LOS: C Intersection Capacity Utilization 65.8% ICU Level of Service C Analysis Period (min) 15 Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street		ordinated												
Intersection Signal Delay: 24.7 Intersection LOS: C Intersection Capacity Utilization 65.8% ICU Level of Service C Analysis Period (min) 15 Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street	CONTOL EVDE: ACTUATED-CO	Joi dinated												
Intersection Capacity Utilization 65.8% ICU Level of Service C Analysis Period (min) 15 Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street	Mandau and Dath Oak													
Analysis Period (min) 15 Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street	Maximum v/c Ratio: 0.63				In	tersection								
Splits and Phases: 1: Tremont Street & Arlington Street/Herald Street	Maximum v/c Ratio: 0.63 Intersection Signal Delay: 2													
	Maximum v/c Ratio: 0.63 Intersection Signal Delay: Intersection Capacity Utiliz					U Level of	f Service C)						
	Maximum v/c Ratio: 0.63 Intersection Signal Delay: 2					U Level of	f Service C	;						
	Maximum v/c Ratio: 0.63 Intersection Signal Delay: 2 Intersection Capacity Utiliz Analysis Period (min) 15	zation 65.8%			IC	U Level of	f Service C	;						
$\rightarrow 01(R)$	Maximum v/c Ratio: 0.63 Intersection Signal Delay: 2 Intersection Capacity Utiliz Analysis Period (min) 15	zation 65.8%	Arlington	Street/Hera	IC	U Level of	f Service C	;						
	Maximum v/c Ratio: 0.63 Intersection Signal Delay: 3 Intersection Capacity Utiliz Analysis Period (min) 15 Splits and Phases: 1: Tr	zation 65.8%	Arlington	Street/Hera	IC	U Level of	f Service (;	2.6					1.14

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Lanes, volumes, m	<u>, , , , , , , , , , , , , , , , , , , </u>				-					1	1	~	
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations Traffic Volume (vph)	0	↑↑↑ 1208	81	0	0	0	0	0	0	ካካ 296	↑↑ 194	0	
Future Volume (vph)	0	1208	81	0	0	0	0	0	0	290	194	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	
Ped Bike Factor		0.99								0.90			
Frt Flt Protected		0.991								0.950			
Satd. Flow (prot)	0	4963	0	0	0	0	0	0	0	3367	3574	0	
Flt Permitted										0.950			
Satd. Flow (perm)	0	4963	0	0	0	0	0	0	0	3036	3574	0	
Right Turn on Red		15	Yes			Yes			Yes	Yes		Yes	
Satd. Flow (RTOR) Link Speed (mph)		15 30			30			30		365	30		
Link Distance (ft)		765			139			152			271		
Travel Time (s)		17.4			3.2			3.5			6.2		
Confl. Peds. (#/hr)			100							82			
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.81	0.81	0.81	
Heavy Vehicles (%) Adj. Flow (vph)	0% 0	3% 1373	0% 92	2% 0	2% 0	2% 0	2% 0	2% 0	2% 0	4% 365	1% 240	0% 0	
Shared Lane Traffic (%)	0	1373	12	U	0	0	U	0	v	303	240	0	
Lane Group Flow (vph)	0	1465	0	0	0	0	0	0	0	365	240	0	
Turn Type		NA								Split	NA		
Protected Phases Permitted Phases		1								5	5		2
Detector Phases		1								5	5		
Switch Phase										5	0		
Minimum Initial (s)		8.0								2.0	2.0		1.0
Minimum Split (s)		54.0								29.0	29.0		17.0
Total Split (s)		54.0 54.0%								29.0 29.0%	29.0 29.0%		17.0 17%
Total Split (%) Maximum Green (s)		50.0								29.0%	29.0%		11.0
Yellow Time (s)		3.0								3.0	3.0		2.0
All-Red Time (s)		1.0								1.0	1.0		4.0
Lost Time Adjust (s)		0.0								0.0	0.0		
Total Lost Time (s) Lead/Lag		4.0								4.0	4.0		
Lead-Lag Optimize?													
Vehicle Extension (s)		2.0								2.0	2.0		0.2
Recall Mode		C-Max								Max	Max		None
Walk Time (s)		39.0								16.0	16.0		5.0
Flash Dont Walk (s) Pedestrian Calls (#/hr)		11.0 0								9.0 0	9.0 0		6.0 399
Act Effct Green (s)		50.0								25.0	25.0		577
Actuated g/C Ratio		0.50								0.25	0.25		
v/c Ratio		0.59								0.33	0.27		
Control Delay		7.5 1.2								1.2 0.2	19.5		
Queue Delay Total Delay		8.6								1.4	0.0 19.5		
LOS		A								A	B		
Approach Delay		8.6									8.6		
Approach LOS		А									А		
Queue Length 50th (ft)		88 100								2	31 39		
Queue Length 95th (ft) Internal Link Dist (ft)		685			59			72		3	39 191		
Turn Bay Length (ft)		500						12					
Base Capacity (vph)		2489								1115	893		
Starvation Cap Reductn		0								254	0		
Spillback Cap Reductn Storage Cap Reductn		725 0								53 0	0		
Reduced v/c Ratio		0.83								0.42	0.27		
Intersection Summary		2.00											
Area Type:	Other												
Cycle Length: 100	5010												
Actuated Cycle Length: 100													
Offset: 0 (0%), Referenced to	phase 1:EB	T, Start of	Green										
Natural Cycle: 100	dinatod												
Control Type: Actuated-Coord Maximum v/c Ratio: 0.59	unated												
Intersection Signal Delay: 8.6	ı			In	tersection	LOS: A							
Intersection Capacity Utilization						f Service E	3						
Analysis Period (min) 15													
Splits and Phases: 2: Hera	Id Street 9 C	haumut A.	VODUC										
Spills and Flidses: 2: Hela	ים שוופרו ע א	nawiiiul A	vende								2.4		<u>k</u>
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		€ †₽						†	1		†	
Traffic Volume (vph) Future Volume (vph)	34 34	1354 1354	100 100	0 0	0 0	0 0	0 0	533 533	147 147	0 0	21 21	0 0
Ideal Flow (vphpl)	34 1900	1354 1900	1900	1900	1900	1900	1900	533 1900	147	1900	1900	1900
Lane Width (ft)	11	11	12	12	12	12	12	11	11	12	12	12
Lane Util. Factor	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor Frt		1.00 0.990							0.88 0.850			
Flt Protected		0.999										
Satd. Flow (prot)	0	4289	0	0	0	0	0	1503	1364	0	934	0
Flt Permitted Satd. Flow (perm)	0	0.999 4288	0	0	0	0	0	1503	1205	0	934	0
Right Turn on Red	U	4200	Yes	U	U	Yes	U	1005	Yes	U	734	Yes
Satd. Flow (RTOR)		13							22			
Link Speed (mph)		30			30			30			30	
Link Distance (ft) Travel Time (s)		203 4.6			204 4.6			266 6.0			224 5.1	
Confl. Peds. (#/hr)	8	-1.U			-1.U			0.0	188		0.1	
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92 0%	0.92 0%	0.92	0.92	0.92	0.78	0.78	0.78
Heavy Vehicles (%) Bus Blockages (#/hr)	0% 0	3% 9	0% 0	0% 0	0%	0%	0% 0	10% 0	3% 0	0% 0	83% 0	0% 0
Adj. Flow (vph)	38	1504	111	0	0	0	0	579	160	0	27	0
Shared Lane Traffic (%)								_				
Lane Group Flow (vph)	0 Dorm	1653 NA	0	0	0	0	0	579 NA	160 Porm	0	27 NA	0
Turn Type Protected Phases	Perm	NA 1						NA 6	Perm		NA 6	
Permitted Phases	1							J	6		U	
Detector Phase	1	1						6	6		6	
Switch Phase	10.0	10.0						10.0	10.0		10.0	
Minimum Initial (s) Minimum Split (s)	12.0 42.0	12.0 42.0						12.0 58.0	12.0 58.0		12.0 58.0	
Total Split (s)	42.0	42.0						58.0	58.0		58.0	
Total Split (%)	42.0%	42.0%						58.0%	58.0%		58.0%	
Maximum Green (s)	37.0	37.0						53.0	53.0		53.0	
Yellow Time (s) All-Red Time (s)	4.0 1.0	4.0 1.0						4.0 1.0	4.0 1.0		4.0 1.0	
Lost Time Adjust (s)	1.0	-1.0						-1.0	-1.0		-1.0	
Total Lost Time (s)		4.0						4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize? Vehicle Extension (s)	3.0	3.0						3.0	3.0		3.0	
Recall Mode	C-Max	C-Max						3.0 Max	3.0 Max		3.0 Max	
Walk Time (s)	28.0	28.0						44.0	44.0		44.0	
Flash Dont Walk (s)	9.0	9.0						9.0	9.0		9.0	
Pedestrian Calls (#/hr)	0	0 38.0						0 54.0	0 54.0		0 54.0	
Act Effct Green (s) Actuated g/C Ratio		38.0 0.38						54.0 0.54	54.0 0.54		54.0 0.54	
v/c Ratio		1.01						0.71	0.24		0.05	
Control Delay		40.6						23.4	11.6		11.4	
Queue Delay Total Delay		0.0 40.6						0.0 23.4	0.0 11.6		0.0 11.4	
LOS		40.6 D						23.4 C	11.6 B		11.4 B	
Approach Delay		40.6						20.8	5		11.4	
Approach LOS		D						С			В	
Queue Length 50th (ft)		~399 #508						262 399	43 82		8 18	
Queue Length 95th (ft) Internal Link Dist (ft)		#508 123			124			399 186	82		18	
Turn Bay Length (ft)												
Base Capacity (vph)		1637						811	660		504	
Starvation Cap Reductn Spillback Cap Reductn		0						0	0		0 0	
Spillback Cap Reductn Storage Cap Reductn		0						0	0		0	
Reduced v/c Ratio		1.01						0.71	0.24		0.05	
Intersection Summary												
Area Type:	CBD											
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 14 (14%), Referenced Natural Cycle: 100	to phase 1:	EBTL, Star	t of Green									
Control Type: Actuated-Coord	dinated											
Maximum v/c Ratio: 1.01												
Intersection Signal Delay: 34.					tersection							
Intersection Capacity Utilization Analysis Period (min) 15	ion 83.1%			IC	U Level of	Service E	1					
 Volume exceeds capacity 	, queue is th	eoretically	infinite									
Queue shown is maximum	n after two cy	cles.										
# 95th percentile volume ex			may be lo	nger.								
Queue shown is maximum	n atter two cy	cies.										
Splits and Phases: 3: Wasl	hington Stree	et & Heraln	Street									
- A								↓ ↑ _{Ø6}				
/ →Ø1 (R)								♥ 1 Ø6				
72.5								30.5				

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations	LUL	LDT	LDIX	TIDE	444	TON		nD1	NDI	JDL	501		
Traffic Volume (vph)	0	0	0	0	↑↑↑ 809	0	104	0	0	0	0	253	
Future Volume (vph)	0	0	0	0	809	0	104	0	0	0	0	253	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							0.89						
Frt												0.865	
Flt Protected							0.950						
Satd. Flow (prot)	0	0	0	0	4532	0	1577	0	0	0	0	1465	
Flt Permitted							0.950						
Satd. Flow (perm)	0	0	0	0	4532	0	1403	0	0	0	0	1465	
Right Turn on Red			Yes			Yes	Yes		Yes			Yes	
Satd. Flow (RTOR)							304					304	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		829			256			598			862		
Travel Time (s)		18.8			5.8			13.6			19.6		
Confl. Peds. (#/hr)							46					46	
Confl. Bikes (#/hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	2	
Peak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.80	0.80	0.80	0.95	0.95	0.95	
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	3%	0%	0%	0%	0%	1%	
Adj. Flow (vph)	0	0	0	0	919	0	130	0	0	0	0	266	
Shared Lane Traffic (%)	0	0	0	0	919	0	130	0	0	0	0	266	
Lane Group Flow (vph)	U	U	U	U	919 NA	U		U	U	U	U	266 Prot	
Turn Type Protoctod Phasos					NA 1		Prot						2
Protected Phases Permitted Phases					1		5!					5!	2
Detector Phase					1		5					5	
Switch Phase					1		U					J	
Minimum Initial (s)					8.0		8.0					8.0	1.0
Minimum Split (s)					62.0		20.0					20.0	22.0
Total Split (s)					62.0		36.0					36.0	22.0
Total Split (%)					51.7%		30.0%					30.0%	18%
Maximum Green (s)					57.0		31.0					31.0	16.0
Yellow Time (s)					3.0		3.0					3.0	2.0
All-Red Time (s)					2.0		2.0					2.0	4.0
Lost Time Adjust (s)					0.0		0.0					0.0	1.0
Total Lost Time (s)					5.0		5.0					5.0	
Lead/Lag					Lead								Lag
Lead-Lag Optimize?													5
Vehicle Extension (s)					2.0		2.0					2.0	0.2
Recall Mode					C-Max		None					None	None
Walk Time (s)					47.0		8.0					8.0	7.0
Flash Dont Walk (s)					10.0		7.0					7.0	9.0
Pedestrian Calls (#/hr)					0		0					0	240
Act Effct Green (s)					79.1		8.9					8.9	
Actuated g/C Ratio					0.66		0.07					0.07	
v/c Ratio					0.31		0.33					0.68	
Control Delay					9.2		2.2					12.7	
Queue Delay					0.0		0.0					0.0	
Total Delay					9.2		2.2					12.7	
LOS					A		A					В	
Approach Delay					9.2			2.2			12.7		
Approach LOS					A		•	A			В	0	
Queue Length 50th (ft)					99 122		0					0	
Queue Length 95th (ft) Internal Link Dist (ft)		749			133 176		0	518			782	50	
Turn Bay Length (ft)		749			1/0			510			182		
Base Capacity (vph)					2988		632					603	
							032						
Starvation Cap Reductn Spillback Cap Reductn					0		0					0	
Storage Cap Reductin					0		0					0	
Reduced v/c Ratio					0.31		0.21					0.44	
					0.01		0.21					0.44	
Intersection Summary													
	CBD												
Cycle Length: 120													
Actuated Cycle Length: 120 Offset: 98 (82%), Referenced Natural Cycle: 105	to phase 1:V	VBT, Start	of Green										
Control Type: Actuated-Coord	linated												
Maximum v/c Ratio: 0.68	mdleu												
				J	torcostlar	105.4							
Intersection Signal Delay: 9.2 Intersection Capacity Utilization	n 56 40/				tersection CU Level of		2						
Analysis Period (min) 15	0.0%			IC.	C Level OI	Service E	,						
Phase conflict between lan	ie groups.												
Splits and Phases: 4: Shaw	mut Avenue	& East Be	erkeley Str	eet									F.
←Ø1(R)										₽∎ø2			♣ ø5
PT IV													125

22.9

Sections Text Res Mot M		۶	+	*	4	ł	•	<	1	~	ŕ	Ŧ	~	
Line Configurations 1 0 10 10 10 10 10 10 10 10 10 10 10 10	Lane Group	FRI	FBT	FRD	WBI	W/BT	WRP	NRI	NRT	NRP	SRI	SBT	SRD	(0)
			LDT				W DIC	NDL		NDI	JDL		JUN	NE
find at back (ph) iii iiii iiii iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii			0			618	185	107	NT 374	0	0	/18	62	
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Include<														
rinU.S.5U.S.5U.S.5U.S.5U.S.5Elevation of the constraint of		1.00	1.00	1.00	1.00		0.95	0.95		1.00	1.00		0.95	
Fit Preduction0.0230.01641032020.01032002030.00.02032030.00.02032030.00.02032030.00.02030.00.02030.00.02032030.00.00.02032030.00.02032030.00.02032030.00.02032030.00.02032030.02032030.02032030.02032030.02032030.02032030.02032030.0203203203203				0.950					0.77					
State Poor profit 104 0 103 202 0 0 303 0 State Poor profit 103 0 103 0 103 0 0 003 0 State Poor profit 30 100 30 100		0.050		0.050	0.050	0.705			0 0 0 0			0.701		
			0	1454		2020	0	0		0	0	2052	0	
Shafe Face (PCOP)NoN			U	1404		3020	U	U		U	U	3005	U	
Kiph Line RoleYesYesYesYesLink Speed (pan)403333Link Speed (pan)40333030Link Speed (pan)40403030Coll Posk (r)977771Coll Posk (r)075075075075075Coll Posk (r)075075075075075075Sheed Land Total (r)1000075075075Sheed Land Total (r)10000000Sheed Land Total (r)10000000Sheed Land Total (r)10000000Sheed Land Total (r)10000000Sheed Land Total (r)0000000Sheed Land Total (r)00			0	1454		2020	0	0		0	0	2052	0	
Side Fox (PTOR) 30 35		183	0		1093	3028		0	1803		0	3053		
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<pre>Link Deckorp (n)</pre>				100										
Travel me (s)														
Cont Plos (inf) 77 77 Plant Hot Fabry 0.70 0.75 0.76 0.88 0.87 0.87 0.83 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>														
Contr. Bics. (mb) U <tdu< td=""> U U</tdu<>			14.7			18.8			9.3			20.1		
Pase Hour Face 0.7 0.7 0.7 0.8 0.87 0.87 0.87 0.8 0.81 0.8 0.81 0.8 0.81 0.8 0.81 0.8 0.81								11						
Hany Value (1) ON ON <thon< th=""> ON ON</thon<>														
Shined Lami Patter (6) June Patter Perm Perm Patter (1) Patter (1) </td <td></td>														
Jame Group Plew (ph)4103541797200553005790Nucle of PracesPremeNAPremeNA <td></td> <td>41</td> <td>0</td> <td>36</td> <td>417</td> <td>702</td> <td>210</td> <td>123</td> <td>430</td> <td>0</td> <td>0</td> <td>504</td> <td>75</td> <td></td>		41	0	36	417	702	210	123	430	0	0	504	75	
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Theore is a serie of a field of a serie of a seri			0	36			0	0		0	0		0	
Permited Phases 5 5 5 6 16 Saked, Phase - - 10 10 Minum Midel, S 5 5 5 40 100 10 Minum Spit (s) 90 60 90 80 380 Z50 Sintel, Minum Grad, Sint (s) 8.6 8.78 8.78 10.8 31.78 215 Sintel, Minum Grad, Sint (s) 4.0 4.0 4.0 10 10 10 Minum Sint (s) 10 10 10 30 30 20 Minum Sint (s) 10 10 10 30 30 10 Minum Sint (s) 10 10 10 30 10 10 Sint (s) 10 10 10 10 10 10 Minum Sint (s) 10 10 10 10 10 Sint (s) 10 20 20 20 20 20 Sint (s) 10		D.Pm		Perm	Perm			pm+pt				NA		
Delector Phrase556161Minnum nilai (c)5.05.05.05.03.0	Protected Phases											1		2
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Minimum faile (s)5.05.05.05.05.06.01.0Minimum faile (s)9.09.09.08.038.025.0Toal Sgit (s)44.044.041.013.038.025.0Toal Sgit (s)56.7%8.6.7%6.7%10.0%31.0%21%Maximum Ceen (s)40.040.040.031.01010.010.044. Fed. Time (s)1.01.01.01.010.04.0Call Time (s)1.01.01.01.010.04.0Call Line (s)0.00.00.00.00.00.0Call Line (s)1.01.01.01.010.0Call Line (s)1.01.01.01.010.0Call Line (s)2.02.02.02.02.00.0Call Line (s)2.02.02.02.02.00.0Feed Standon (s)7.02.02.02.02.00.0Pedesting Call (s) (f)5.05.03.010.0Call Line (s)8.83.83.84.4.23.2Call Line (s)3.33.83.83.84.4.23.2Call Line (s)0.00.00.00.00.00.0Call Line (s)4.8.34.94.7.53.5.040.1Call Line (s)4.8.34.94.7.53.5.040.1Call Line (s)4.00.00.00														
Winnum Serie (s) 9.0 9.0 9.0 8.0 8.0 8.0 250 Total Split (s) 34.7% 36.7% 36.7% 56.7% 10.8% 37.7% 27.5% Total Split (s) 3.0 <td></td> <td>5.0</td> <td></td> <td>5.0</td> <td>5.0</td> <td>5.0</td> <td></td> <td>4.0</td> <td></td> <td></td> <td></td> <td>10.0</td> <td></td> <td>1.0</td>		5.0		5.0	5.0	5.0		4.0				10.0		1.0
Trad Spit (s) 44.0 44.0 44.0 13.0 38.0 25.0 Ideal Spit (s) 36.7% 36.7% 36.7% 10.8% 31.7% 21% Ideal Spit (s) 30.3 30 </td <td></td>														
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Vehicle Extension (s) 2.0 2.0 2.0 2.0 2.0 2.0 0.2 Walk Time (s) None None None None 28.0 8.0 Fash Dorl Valk (s) - 6.0 11.0 32.2 32.1 32.1 32.1 32.1 32.1 32.1 32.2 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Lead</td><td></td><td>Lag</td></td<>												Lead		Lag
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Flach Don Walk (s) 6.0 11.0 Pedestrian Calls (fr/m) 0.32 0.32 0.32 Art LEft Green (s) 38.8 38.8 38.8 44.2 55.2 Artaled (gC Ratio 0.32 0.32 0.32 0.37 0.29 t/c Ratio 0.69 0.07 0.81 0.91 0.71 0.64 Control Delay 90.8 0.2 46.9 47.5 35.0 40.1 Duce Delay 90.8 0.2 46.9 47.5 35.0 40.1 Ouce Delay 90.8 0.2 46.9 47.5 35.0 40.1 Option Delay 48.5 47.3 35.0 40.1 40.0		None		None	None	None		None						
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w/c Raio 0.69 0.07 0.81 0.91 0.71 0.64 Control Delay 90.8 0.2 46.9 47.5 35.0 40.1 Ducue Delay 90.8 0.2 46.9 47.5 35.0 40.1 Ducue Delay 90.8 0.2 46.9 47.5 35.0 40.1 Approach Delay 48.5 47.3 35.0 40.1 Approach Delay 48.5 47.3 35.0 40.1 Deue Length S0h (ft) 27 0 301 35.2 164 203 Ducue Length S0h (ft) 470 0 42.7 74.8 207 241 Ducue Length S0h (ft) 70 0 42.7 74.8 207 241 Sac Length (ft) 567 74.9 32.9 806 53 53.1 103.2 77.8 906 Starvation Cap Reductn 0 <td></td>														
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Dueue Length 95th (ft) #70 0 427 #448 207 241 nemal Link Dist (ft) 567 749 329 806 Tum Bay Length (ft) 567 749 329 806 Base Capacity (vph) 61 551 531 1032 778 906 Starvation Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0.67 0.07 0.79 0.88 0.71 0.64 tere Tops 57 5(3%), Referenced to phase 1:NBSB, Start of Green Valuated Cycle Length: 120 Storage Cap Reduct Coordinated Jarvation (Signa) Referenced to phase 1:NBSB, Start of Green Valuated Cycle Length: 120 Control Type: Actuated-Coordinated Jarvation (Signa) Delay, 43.0 Intersection IOS: D Intersection Capacity Utilization 82.5% ICU Level of Service E <td>Queue Length 50th (ft)</td> <td></td> <td></td> <td>0</td> <td></td>	Queue Length 50th (ft)			0										
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Starvation Cap Reductn 0 0 0 0 0 Starvation Cap Reductn 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 Storage Cap Reductn 0 0.07 0.79 0.88 0.71 0.64 Intersection Summary Vrea Type: CBD Storage Carl Reduct for Green Laturat Cycle: 100 Intersection LOS: D Intersection Capacity Utilization 82.5% ICU Level of Service E Value shown is maximum after two cycles.		61		551	531	1032			778			906		
Spillack Cap Reductn 0														
Storage Cap Reductn 0 0 0 0 0 0 0 Reduced V/c Ratio 0.67 0.7 0.79 0.88 0.71 0.64 Intersection Summary Intersection Su	Spillback Cap Reductn													
Reduced v/c Ratio 0.67 0.07 0.79 0.88 0.71 0.64 Intersection Summary CBD														
Intersection Summary vrea Type: CBD Lycle Length: 120 CBD Kituated Cycle Length: 120 CBD JfSet: 75 (63%), Referenced to phase 1:NBSB, Start of Green CBD katural Cycle: 100 Control Type: Actuated-Coordinated Jaximum v/c Ratio: 0.91 Intersection LOS: D Intersection Signal Delay: 43.0 Intersection LOS: D Intersection Capacity Utilization 82.5% ICU Level of Service E vnalysis Period (min) 15 FSth percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles. Street & Berkeley Street/East Berkeley Street														
Area Type: CBD Cycle Length: 120 CBD Actuated Cycle Length: 120 Control Type: Actuated-Coordinated Maximum vic Ratio: 0.91 Intersection LOS: D Intersection Signal Delay: 43.0 Intersection LOS: D Intersection Capacity Utilization 82.5% ICU Level of Service E Analysis Period (min) 15 # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles. Sintis and Phases: Sintis and Phases: 5: Tremont Street & Berkeley Street/Fast Berkeley Street		0.07	_				_	_		_	_		_	
Cycle Length: 120 System 25 (63%), Referenced to phase 1:NBSB, Start of Green Jatural Cycle: 100 Control Type: Actuated-Coordinated Aaximum v/c Ratio: 0.91 Intersection Signal Delay: 43.0 Intersection LOS: D Intersection Capacity Utilization 82.5% ICU Level of Service E Inalysis Period (min) 15 95th percentille volume exceeds capacity, queue may be longer. Oueue shown is maximum after two cycles. Street & Berkeley Street/East Berkeley Street														
Adurated Cycle Length: 120 Jffset: 75 (63%), Referenced to phase 1:NBSB, Start of Green Valural Cycle: 100 Ontrol Type: Actuated-Coordinated Aaximum v/c Ratio: 0.91 Intersection Signal Delay: 43.0 Intersection LOS: D Intersection Capacity Utilization 82.5% ICU Level of Service E Inalysis Period (min) 15		CBD												
Jifset: 75 (63%), Referenced to phase 1:NBSB, Start of Green Jatural Cycle: 100 Sontrol Type: Actuated-Coordinated Jaximum vic Ratio: 0.91 Itersection Signal Delay: 43.0 Intersection LOS: D Itersection Capacity Utilization 82.5% ICU Level of Service E Inalysis Period (min) 15														
latural Cycle: 100 Sontrol Type: Actuated-Coordinated Jakimum vic Ratio: 0.91 Intersection Signal Delay: 43.0 Intersection LOS: D Intersection Capacity Utilization 82.5% ICU Level of Service E Inalysis Period (min) 15 Sthe percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles. Joints and Phases: 5: Tremont Street & Berkeley Street														
latural Cycle: 100 Control Type: Actuated-Coordinated Control Type: Actuated-Coordinat		to phase 1:N	BSB, Star	rt of Greer	ı									
Control Type: Actuated-Coordinated taximum v/c Ratio: 0.91 tersection Signal Delay: 43.0 Intersection LOS: D itersection Capacity Utilization 82.5% ICU Level of Service E inalysis Period (min) 15	latural Cycle: 100													
Maximum Vic Ratio: 0.91 tersection Signal Delay: 43.0 Intersection LOS: D tersection Capacity Utilization 82.5% ICU Level of Service E nalysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.		dinated												
Intersection Signal Delay: 43.0 Intersection LOS: D Itersection Capacity Utilization 82.5% ICU Level of Service E Inalysis Period (min) 15 ICU Evel of Service E Oueue shown is maximum after two cycles. ICU Evel View														
ICU Level of Service E ICU Level of Service E <t< td=""><td></td><td>.0</td><td></td><td></td><td>In</td><td>tersection</td><td>LOS; D</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>		.0			In	tersection	LOS; D							
Analysis Period (min) 15 # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles. Splits and Phases: 5: Tremont Street & Berkeley Street/East Berkeley Street														
	Analysis Period (min) 15					2 20101 01	5011100 L							
Queue shown is maximum after two cycles.		(ceeds canaci	tv queue	may be lo	naer									
Shilits and Phases: 5: Tremont Street & Berkeley Street/East Berkeley Street					ngor.									
splits and Phases: 5: Tremont Street & Berkeley Street/East Berkeley Street	Cacac Showin IS Maximun	i anci iwo cyt												
pmo unit maso,, monoria oroct a bulkally ditectedat bulkally dite	inlits and Phases 5. Trom	nont Straat & I	Rerkelav	Street/Fac	t Borkolov	Street								
		וטרוג שוויפנו מ נ	Der Kelley 3	SUCCI/EdS	L DEI KEIEY						-			الد ا
↓↑ _{Ø1(R)} ★↓ _{Ø2} ★↓ _{Ø5}	Ø1 (R)					- 	0 2					ð5		▲ <i>D</i> 6
	18 s					25 s								13 s

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations	LUL	201	LDR		41					ODL	11	0.51	
Traffic Volume (vph)	0	0	0	95	384	0	0	0	0	0	395	223	
Future Volume (vph)	0	0	0	95	384	0	0	0	0	0	395	223	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.91	0.91	
Ped Bike Factor					0.99						0.97		
Frt											0.946		
Flt Protected					0.990								
Satd. Flow (prot)	0	0	0	0	3539	0	0	0	0	0	4660	0	
Flt Permitted					0.990								
Satd. Flow (perm)	0	0	0	0	3513	0	0	0	0	0	4660	0	
Right Turn on Red			Yes	Yes		Yes			Yes			Yes	
Satd. Flow (RTOR)					35						152		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		310			237			271			312		
Travel Time (s)		7.0		4.4	5.4			6.2			7.1	70	
Confl. Peds. (#/hr) Peak Hour Factor	0.92	0.92	0.92	44 0.89	0.89	0.89	0.92	0.92	0.92	0.83	0.83	73 0.83	
	0.92	2%	2%		0.89	2%	2%	2%	2%	0.83		0.83	
Heavy Vehicles (%) Adj. Flow (vph)	2%	2%	2%	1% 107	431	2% 0	2%	2%	2%	0%	2% 476	3% 269	
Adj. Flow (vpn) Shared Lane Traffic (%)	U	U	U	107	431	U	0	0	U	U	4/0	209	
Lane Group Flow (vph)	0	0	0	0	538	0	0	0	0	0	745	0	
Turn Type	U	U	0	Split	NA	0	0	U	0	0	NA	0	
Protected Phases				3piit 1	1						5		2
Permitted Phases					1						5		2
Detector Phase				1	1						5		
Switch Phase											5		
Minimum Initial (s)				10.0	10.0						10.0		1.0
Minimum Split (s)				41.0	41.0						37.0		22.0
Total Split (s)				41.0	41.0						37.0		22.0
Total Split (%)				41.0%	41.0%						37.0%		22%
Maximum Green (s)				37.0	37.0						33.0		20.0
Yellow Time (s)				3.0	3.0						3.0		2.0
All-Red Time (s)				1.0	1.0						1.0		0.0
Lost Time Adjust (s)					0.0						0.0		
Total Lost Time (s)					4.0						4.0		
Lead/Lag													
Lead-Lag Optimize?													
Vehicle Extension (s)				2.0	2.0						2.0		0.
Recall Mode				C-Max	C-Max						Max		Nor
Walk Time (s)				26.0	26.0						25.0		13.
Flash Dont Walk (s)				11.0	11.0						8.0		7.
Pedestrian Calls (#/hr)				0	0						0		35
Act Effct Green (s)					37.0						33.0		
Actuated g/C Ratio					0.37						0.33		
v/c Ratio					0.40						0.45		
Control Delay					22.8						21.7		
Queue Delay					0.0						0.0		
Total Delay					22.8						21.7		
LOS					С						С		
Approach Delay					22.8						21.7		
Approach LOS					C						C		
Queue Length 50th (ft)					122						106		
Queue Length 95th (ft)		000			166			101			127		
Internal Link Dist (ft)		230			157			191			232		
Turn Bay Length (ft)					1004						1/00		
Base Capacity (vph)					1331						1639		
Starvation Cap Reductn					0						0		
Spillback Cap Reductn					0						0		
Storage Cap Reductn					0						0		
Reduced v/c Ratio					0.40						0.45		
Intersection Summary													
Area Type:	Other												
Cycle Length: 100													
Actuated Cycle Length: 100													
Offset: 1 (1%), Referenced to	phase 1:WB	TL, Start o	of Green										
Natural Cycle: 100													
Control Type: Actuated-Coord	dinated												
Maximum v/c Ratio: 0.45													
Intersection Signal Delay: 22.					tersection								
Intersection Capacity Utilization	on 56.8%			IC	CU Level of	Service B							
Analysis Period (min) 15													
Splits and Phases: 6: Shav	vmut Avenue	& Margina	al Road										
₩ Ø1 (R)							1	k _{ø2}				Т	- ar
▼ Ø1(R)							22	- 102					♦ Ø5
							22 9					3	75

	-	\mathbf{r}	4	+	•	*
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u>ቀ</u> ቀኑ					1
Traffic Volume (veh/h)	1496	7	0	0	0	6
Future Volume (Veh/h)	1496	7	0	0	0	6
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.75	0.75
Hourly flow rate (vph)	1644	8	0	0	0	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	139			203		
pX, platoon unblocked	.57		0.80	200	0.80	0.80
vC, conflicting volume			1652		1648	552
vC1, stage 1 conf vol			1002			002
vC2, stage 2 conf vol						
vCu, unblocked vol			928		923	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)			76.1		0.0	0.7
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			584		217	870
1 2 1 1					217	0/0
Direction, Lane #	EB 1	EB 2	EB 3	NB 1		
Volume Total	658	658	337	8		
Volume Left	0	0	0	0		
Volume Right	0	0	8	8		
cSH	1700	1700	1700	870		
Volume to Capacity	0.39	0.39	0.20	0.01		
Queue Length 95th (ft)	0	0	0	1		
Control Delay (s)	0.0	0.0	0.0	9.2		
Lane LOS				А		
Approach Delay (s)	0.0			9.2		
Approach LOS				А		
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			39.1%	10	U Level of	Sonvico
Analysis Period (min)			15	IC.		JUNICE
Analysis Penou (IIIII)			15			

TICIN Offsignalized int	0.00010	on oap		nary 515		
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	*	-	I	(-	*
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	5					स्
Traffic Volume (veh/h)	11	0	0	0	8	267
Future Volume (Veh/h)	11	0	0	0	8	267
Sign Control	Yield		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	0.72	0.72	0.72	9	290
Pedestrians		Ū	Ŭ	Ū	,	270
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)			NULIC			NULC
Upstream signal (ft)			862			152
pX, platoon unblocked	0.93		002			152
vC, conflicting volume	308	0			0	
	308	U			U	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol	222	0			0	
vCu, unblocked vol	222	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	0.5	0.6			0.6	
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			99	
cM capacity (veh/h)	711	1085			1623	
Direction, Lane #	WB 1	SB 1				
Volume Total	12	299				
Volume Left	12	299				
Volume Right	0	9				
cSH	711	1623				
	0.02	0.01				
Volume to Capacity	0.02	0.01				
Queue Length 95th (ft)		0.3				
Control Delay (s)	10.2					
Lane LOS	B	A				
Approach Delay (s)	10.2	0.3				
Approach LOS	В					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			24.5%	IC	U Level o	f Service
Analysis Period (min)			15	10		

• Full Build (2024) Condition

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations		41112						≜ ¶⊅					~~
Traffic Volume (vph)	31	857	150	0	0	0	0	482	368	41	41↑ 143	0	
Future Volume (vph)	31	857	150	0	0	0	0	482	368	41	143	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.86	0.86	0.86	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	
Ped Bike Factor		0.99						0.95			1.00		
Frt Fit Desta start		0.978						0.935			0.000		
Flt Protected		0.999	_	_				0.0		_	0.989	_	
Satd. Flow (prot)	0	5990	0	0	0	0	0	3079	0	0	3340	0	
Fit Permitted	0	0.999	0	0	0	0	0	2070	0	0	0.631	0	
Satd. Flow (perm) Right Turn on Red	0	5982	0 Yes	0	0	0 Yes	0	3079	0 Yes	0	2121	Yes	
Satd. Flow (RTOR)		48	res			162		209	res			162	
Link Speed (mph)		48 30			30			209			30		
Link Distance (ft)		207			30 774			883			176		
Travel Time (s)		4.7			17.6			20.1			4.0		
Confl. Peds. (#/hr)	59	4.7	91		17.0			20.1	117	117	1.0		
Confl. Bikes (#/hr)			1										
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94	0.81	0.81	0.81	
Heavy Vehicles (%)	4%	5%	7%	2%	2%	2%	0%	6%	2%	3%	8%	0%	
Parking (#/hr)		0.0		270	270	0	570	0.0	270	5.0	5.0	570	
Adj. Flow (vph)	33	912	160	0	0	0	0	513	391	51	177	0	
Shared Lane Traffic (%)				-	-	-	-					-	
Lane Group Flow (vph)	0	1105	0	0	0	0	0	904	0	0	228	0	
Turn Type	Split	NA	Ŭ	v		v	v	NA	Ū	Perm	NA	Ŭ	
Protected Phases	3piit 1	1						5			5		2
Permitted Phases								Ŭ		5	v		-
Detector Phase	1	1						5		5	5		
Switch Phase								-		-			
Minimum Initial (s)	10.0	10.0						10.0		10.0	10.0		8.0
Minimum Split (s)	41.0	41.0						38.0		38.0	38.0		21.0
Total Split (s)	41.0	41.0						38.0		38.0	38.0		21.0
Total Split (%)	41.0%	41.0%						38.0%		38.0%	38.0%		21%
Maximum Green (s)	36.0	36.0						34.0		34.0	34.0		14.0
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0		3.0
All-Red Time (s)	2.0	2.0						1.0		1.0	1.0		4.0
Lost Time Adjust (s)		0.0						0.0			0.0		
Total Lost Time (s)		5.0						4.0			4.0		
Lead/Lag	Lead	Lead											La
Lead-Lag Optimize?													
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0		0.2
Recall Mode	C-Max	C-Max						Max		Max	Max		None
Walk Time (s)	27.0	27.0						25.0		25.0	25.0		5.0
Flash Dont Walk (s)	9.0	9.0						9.0		9.0	9.0		9.0
Pedestrian Calls (#/hr)	0	0						0		0	0		357
Act Effct Green (s)		36.0						34.0			34.0		
Actuated g/C Ratio		0.36						0.34			0.34		
v/c Ratio		0.51						0.76			0.32		
Control Delay		24.8						21.7			25.9		
Queue Delay		0.0						0.0			0.0		
Total Delay		24.8						21.7			25.9		
LOS		С						C			С		
Approach Delay		24.8						21.7			25.9		
Approach LOS		С						С			С		
Queue Length 50th (ft)		151						168			56		
Queue Length 95th (ft)		184						m120			77		
Internal Link Dist (ft)		127			694			803			96		
Turn Bay Length (ft)													
Base Capacity (vph)		2187						1184			721		
Starvation Cap Reductn		0						0			0		
Spillback Cap Reductn		0						0			0		
Storage Cap Reductn		0						0			0		
Reduced v/c Ratio		0.51						0.76			0.32		
Intersection Summary													
Area Type:	Other												
Cycle Length: 100	Uner												
Actuated Cycle Length: 100													
Offset: 5 (5%), Referenced to	o nhaco 1-EP	TI Start o	f Groop										
Natural Cycle: 100	u priase i.eb	IL, SIdI I U	Gleen										
Control Type: Actuated-Coor	rdinatod												
Maximum v/c Ratio: 0.76	andica												
Intersection Signal Delay: 23	27			In	tersection	105.0							
Intersection Signal Delay: 23 Intersection Capacity Utilizat						Service C							
Analysis Period (min) 15	1011 / 1.7 /0			iC	C LOVEI UI	JUI VILE L							
m Volume for 95th percent	ile queue is m	etered by	unstream	signal									
volume for zour percent	queue is li	isioicu by	apsocall	Signal.									
Splits and Phases: 1: Trer	mont Straat 9.		Street/Hor	ald Stract									
	הטות שנוכבו מ	, ann giur i		and Jücel			-					- 1	
								Ø2					ØS
Ø1 (R)													-

Lanes, volumes, m										,		,	
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations		<u></u> ↑↑₽								ካካ 244	††		
Traffic Volume (vph)	0	1135	91	0	0	0	0	0	0		81	0	
Future Volume (vph)	0	1135	91	0	0	0	0	0	0	244	81	0	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor Ped Bike Factor	1.00	0.91 0.99	0.91	1.00	1.00	1.00	1.00	1.00	1.00	0.97 0.87	0.95	1.00	
Frt		0.989								0.07			
Flt Protected		0.707								0.950			
Satd. Flow (prot)	0	4906	0	0	0	0	0	0	0	3213	3574	0	
Flt Permitted										0.950			
Satd. Flow (perm)	0	4906	0	0	0	0	0	0	0	2801	3574	0	
Right Turn on Red		47	Yes			Yes			Yes	Yes		Yes	
Satd. Flow (RTOR)		17 30			30			30		298	30		
Link Speed (mph) Link Distance (ft)		30 774			30 148			30 155			279		
Travel Time (s)		17.6			3.4			3.5			6.3		
Confl. Peds. (#/hr)		17.0	86		0.1			0.0		128	0.0		
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.82	0.82	0.82	
Heavy Vehicles (%)	0%	4%	0%	2%	2%	2%	2%	2%	2%	9%	1%	0%	
Adj. Flow (vph)	0	1207	97	0	0	0	0	0	0	298	99	0	
Shared Lane Traffic (%)	0	1001		0	0	0		0	0	000	00		
Lane Group Flow (vph)	0	1304	0	0	0	0	0	0	0	298 Collit	99	0	
Turn Type Protoctod Phasos		NA 1								Split 5	NA 5		2
Protected Phases Permitted Phases		1								5	5		2
Detector Phase		1								5	5		
Switch Phase											Ŭ		
Minimum Initial (s)		8.0								2.0	2.0		1.0
Minimum Split (s)		49.0								34.0	34.0		17.0
Total Split (s)		49.0								34.0	34.0		17.0
Total Split (%)		49.0%								34.0%	34.0%		17%
Maximum Green (s) Yellow Time (s)		46.0 2.0								30.0 3.0	30.0 3.0		11.0 2.0
All-Red Time (s)		1.0								1.0	1.0		4.0
Lost Time Adjust (s)		0.0								0.0	0.0		т.0
Total Lost Time (s)		3.0								4.0	4.0		
Lead/Lag													
Lead-Lag Optimize?													
Vehicle Extension (s)		2.0								2.0	2.0		0.2
Recall Mode		C-Max								Max	Max		None
Walk Time (s) Flash Dont Walk (s)		35.0 11.0								21.0 9.0	21.0 9.0		5.0 6.0
Pedestrian Calls (#/hr)		0								9.0	9.0		373
Act Effct Green (s)		46.0								30.0	30.0		0.0
Actuated g/C Ratio		0.46								0.30	0.30		
v/c Ratio		0.58								0.25	0.09		
Control Delay		8.4								6.1	18.0		
Queue Delay		0.3								0.0	0.0		
Total Delay		8.7								6.1	18.0		
LOS Approach Dolou		A 8.7								А	B 9.1		
Approach Delay Approach LOS		0.7 A									9.1 A		
Queue Length 50th (ft)		116								0	23		
Queue Length 95th (ft)		111								10	39		
Internal Link Dist (ft)		694			68			75			199		
Turn Bay Length (ft)													
Base Capacity (vph)		2265								1172	1072		
Starvation Cap Reductn		0								0	0		
Spillback Cap Reductn Storage Cap Reductn		353 0								21 0	0		
Reduced v/c Ratio		0.68								0.26	0.09		
		0.00								0.20	0.07		
Intersection Summary	Other												
Area Type: Cycle Length: 100	Other												
Actuated Cycle Length: 100													
Offset: 6 (6%), Referenced to	o phase 1·FR	T. Start of	Green										
Natural Cycle: 100	- pridoo 1.20	., otari 01	210011										
Control Type: Actuated-Coor	dinated												
Maximum v/c Ratio: 0.58													
Intersection Signal Delay: 8.8					tersection								
Intersection Capacity Utilizati	ion 52.0%			IC	U Level o	f Service A	1						
Analysis Period (min) 15													
Splits and Phases: 2: Hera	ald Street 8. C	hawmut A	VODUC										
Spins and midses: Z: Hera	שות אווקהו אין איז	nawifiul A	venue										
➡Ø1 (R)									<u>k</u>	Ø2			₽ø5
49 s									17 s	S			34 s

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	110	4 1 220	70	0	0	0	0	† 700	7 93	0	↑ 19	0
Traffic Volume (vph) Future Volume (vph)	110 110	1230 1230	78 78	0 0	0 0	0 0	0 0	700	93 93	0 0	19 19	0 0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft) Lane Util. Factor	11 0.91	11 0.91	12 0.91	12 1.00	12 1.00	12 1.00	12 1.00	11 1.00	11 1.00	12 1.00	12 1.00	12 1.00
Ped Bike Factor	0.71	1.00	0.71	1.00	1.00	1.00	1.00	1.00	0.79	1.00	1.00	1.00
Frt Elt Drotostad		0.992							0.850			
Flt Protected Satd. Flow (prot)	0	0.996 4169	0	0	0	0	0	1517	1243	0	919	0
Flt Permitted		0.996										
Satd. Flow (perm) Right Turn on Red	0	4166	0 Yes	0	0	0 Yes	0	1517	977 Yes	0	919	0 Yes
Satd. Flow (RTOR)		12	res			res			23			res
Link Speed (mph)		30			30			30			30	
Link Distance (ft) Travel Time (s)		200 4.5			204 4.6			253 5.8			221 5.0	
Confl. Peds. (#/hr)	12	4.0			4.0			5.0	165		3.0	
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.86	0.86	0.86	0.75	0.75	0.75
Heavy Vehicles (%) Bus Blockages (#/hr)	6% 0	6% 9	0% 9	0% 0	0% 0	0% 0	0% 0	9% 0	13% 0	0% 0	86% 0	0% 0
Adj. Flow (vph)	117	1309	83	0	0	0	0	814	108	0	25	0
Shared Lane Traffic (%)	_											
Lane Group Flow (vph) Turn Type	0 Perm	1509 NA	0	0	0	0	0	814 NA	108 Perm	0	25 NA	0
Protected Phases	r Cilil	NA 1						6	r chin		6	
Permitted Phases	1								6			
Detector Phase Switch Phase	1	1						6	6		6	
Minimum Initial (s)	12.0	12.0						12.0	12.0		12.0	
Minimum Split (s)	50.0	50.0						29.0	29.0		29.0	
Total Split (s) Total Split (%)	50.0 50.0%	50.0 50.0%						50.0 50.0%	50.0 50.0%		50.0 50.0%	
Total Split (%) Maximum Green (s)	50.0% 45.0	50.0% 45.0						50.0% 45.0	50.0% 45.0		50.0% 45.0	
Yellow Time (s)	4.0	4.0						4.0	4.0		4.0	
All-Red Time (s)	1.0	1.0						1.0	1.0		1.0	
Lost Time Adjust (s) Total Lost Time (s)		-1.0 4.0						-1.0 4.0	-1.0 4.0		-1.0 4.0	
Lead/Lag												
Lead-Lag Optimize?	20	2.0						2.0	2.0		2.0	
Vehicle Extension (s) Recall Mode	3.0 C-Max	3.0 C-Max						3.0 None	3.0 None		3.0 None	
Walk Time (s)	36.0	36.0						15.0	15.0		15.0	
Flash Dont Walk (s)	9.0	9.0						9.0	9.0		9.0	
Pedestrian Calls (#/hr) Act Effct Green (s)	0	0 46.0						0 46.0	0 46.0		0 46.0	
Actuated g/C Ratio		0.46						0.46	0.46		0.46	
v/c Ratio		0.79						1.17	0.23		0.06	
Control Delay Queue Delay		14.9 1.1						118.0 0.0	14.3 0.0		15.6 0.0	
Total Delay		16.1						118.0	14.3		15.6	
LOS		В						F	В		В	
Approach Delay Approach LOS		16.1 B						105.9 F			15.6 B	
Queue Length 50th (ft)		339						~620	31		9	
Queue Length 95th (ft)		403						#793	64		20	
Internal Link Dist (ft) Turn Bay Length (ft)		120			124			173			141	
Base Capacity (vph)		1922						697	461		422	
Starvation Cap Reductn		202						0	0		0	
Spillback Cap Reductn Storage Cap Reductn		0						0	0		0	
Storage Cap Reductn Reduced v/c Ratio		0 0.88						0 1.17	0 0.23		0 0.06	
Intersection Summary		2.00										
Area Type:	CBD											
Cycle Length: 100												
Actuated Cycle Length: 100) ad ta nhaaa 1.F	DTI Ctor	t of Croop									
Offset: 19 (19%), Reference Natural Cycle: 110	eu io phase l'E	LDTE, Star	t or Green									
Control Type: Actuated-Coc	ordinated											
Maximum v/c Ratio: 1.17	0.0				toro/'							
Intersection Signal Delay: 4 Intersection Capacity Utiliza	9.8 ation 78.4%				tersection)					
Analysis Period (min) 15				10	5 201010	SOLAIGE L						
 Volume exceeds capaci 			infinite.									
Queue shown is maximu # 95th percentile volume			may he lo	nder								
Queue shown is maximu				nger.								
			Ch. /									
Splits and Phases: 3: Wa	shington Stree	t & Herald	Street						1	1.		
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50 s									50	S		

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations	LUL	201	LUIN		^		Ĭ			UUL	501	7	SL
Traffic Volume (vph)	0	0	0	0	1090	0	72	0	0	0	0	128	
Future Volume (vph)	0	0	0	0	1090	0	72	0	0	0	0	128	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							0.88						
Frt												0.865	
Flt Protected							0.950						
Satd. Flow (prot)	0	0	0	0	4322	0	1593	0	0	0	0	1450	
Flt Permitted							0.950						
Satd. Flow (perm)	0	0	0	0	4322	0	1395	0	0	0	0	1450	
Right Turn on Red			Yes			Yes	Yes		Yes			Yes	
Satd. Flow (RTOR)							297					297	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		829			264			598			851		
Travel Time (s)		18.8			6.0			13.6			19.3		
Confl. Peds. (#/hr)							62					62	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.86	0.86	0.86	0.69	0.69	0.69	
Heavy Vehicles (%)	0%	0%	0%	0%	8%	0%	2%	0%	0%	0%	0%	2%	
Adj. Flow (vph)	0	0	0	0	1225	0	84	0	0	0	0	186	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	0	0	0	1225	0	84	0	0	0	0	186	
Turn Type					NA		Prot					Prot	
Protected Phases					1		5!					5!	2
Permitted Phases													_
Detector Phase					1		5					5	
Switch Phase							Ŭ					v	
Minimum Initial (s)					8.0		8.0					8.0	1.0
Minimum Split (s)					54.0		20.0					20.0	22.0
Total Split (s)					54.0		24.0					24.0	22.0
Total Split (%)					54.0%		24.0%					24.0%	22.0
Maximum Green (s)					49.0		19.0					19.0	16.0
Yellow Time (s)					3.0		3.0					3.0	2.0
All-Red Time (s)					2.0		2.0					2.0	4.0
Lost Time Adjust (s)					0.0		0.0					0.0	4.0
Total Lost Time (s)					5.0		5.0					5.0	
Lead/Lag					5.0 Lead		0.0					5.0	1.00
					read								Lag
Lead-Lag Optimize?					2.0		2.0					2.0	0.2
Vehicle Extension (s)					2.0		2.0					2.0	0.2
Recall Mode					C-Max		None					None	None
Walk Time (s)					39.0		8.0					8.0	7.0
Flash Dont Walk (s)					10.0		7.0					7.0	9.0
Pedestrian Calls (#/hr)					0		0					0	298
Act Effct Green (s)					60.0		8.0					8.0	
Actuated g/C Ratio					0.60		0.08					0.08	
v/c Ratio					0.47		0.21					0.48	
Control Delay					11.9		1.2					10.2	
Queue Delay					0.0		0.0					0.0	
Total Delay					11.9		1.2					10.2	
LOS					В		А					В	
Approach Delay					11.9			1.2			10.2		
Approach LOS					В			А			В		
Queue Length 50th (ft)					147		0					2	
Queue Length 95th (ft)					178		0					2	
Internal Link Dist (ft)		749			184			518			771		
Turn Bay Length (ft)													
Base Capacity (vph)					2593		543					516	
Starvation Cap Reductn					0		0					0	
Spillback Cap Reductn					0		0					0	
Storage Cap Reductn					0		0					0	
Reduced v/c Ratio					0.47		0.15					0.36	
					0.47		0.10					0.00	
Intersection Summary													
Area Type:	CBD												
Cycle Length: 100													
Actuated Cycle Length: 100													
Offset: 53 (53%), Referenced	d to phase 1:W	/BT, Start	of Green										
Natural Cycle: 100													
Control Type: Actuated-Coor	dinated												
Maximum v/c Ratio: 0.48													
Intersection Signal Delay: 11	.1			In	tersection	LOS: B							
Intersection Capacity Utilizati					CU Level of		1						
Analysis Period (min) 15													
! Phase conflict between la	ne groups.												
	. <u>9 a</u> poi												
Splits and Phases: 4: Sha	wmut Avenue	& Fast Re	orkelev Str	eet									
	WITHIN AVENUE		sincley Sur	CCI									
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations	EBL	CDI	EBR	VVBL	†	NOK	NDL	₩B1	NDK	JUL	5B1	JUK	WZ
Traffic Volume (vph)	16	0	9	285	818	187	139	637	0	0	243	68	
Future Volume (vph)	16	0	9	285	818	187	139	637	0	0	243	68	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95 0.99	0.95	
Ped Bike Factor Frt			0.850		0.972						0.99		
Flt Protected	0.950		0.000	0.950	0.772			0.991			0.707		
Satd. Flow (prot)	1624	0	1163	1547	2957	0	0	3091	0	0	2859	0	
Flt Permitted	0.129			0.950				0.706					
Satd. Flow (perm)	221	0	1163	1547	2957	0	0	2202	0	0	2859	0	
Right Turn on Red			Yes		20	Yes			Yes		22	Yes	
Satd. Flow (RTOR) Link Speed (mph)		30	120		28 30			30			33 30		
Link Distance (ft)		30 647			30 829			409			883		
Travel Time (s)		14.7			18.8			9.3			20.1		
Confl. Peds. (#/hr)					. 0.0			7.0				40	
Confl. Bikes (#/hr)												2	
Peak Hour Factor	0.83	0.83	0.83	0.93	0.93	0.93	0.89	0.89	0.89	0.84	0.84	0.84	
Heavy Vehicles (%)	0%	0%	25%	5%	7%	6%	5%	4%	0%	0%	7%	13%	
Adj. Flow (vph)	19	0	11	306	880	201	156	716	0	0	289	81	
Shared Lane Traffic (%)	10	0	11	207	1001	0	0	070	0	0	270	0	
Lane Group Flow (vph) Turn Type	19 D.Pm	0	11 Porm	306 Perm	1081 NA	0	0	872 NA	0	0	370 NA	0	
Furn Type Protected Phases	D.PM		Perm	Peim	NA 5		pm+pt 6	NA 16			NA 1		2
Permitted Phases	5		5	5	J		16	10			1		2
Detector Phase	5		5	5	5		6	16			1		
Switch Phase	-		-		-								
Minimum Initial (s)	5.0		5.0	5.0	5.0		4.0				10.0		1.0
Minimum Split (s)	9.0		9.0	9.0	9.0		8.0				27.0		25.0
Total Split (s)	35.0		35.0	35.0	35.0		13.0				27.0		25.0
Total Split (%)	35.0%		35.0%	35.0%	35.0%		13.0%				27.0%		25%
Maximum Green (s)	31.0 3.0		31.0 3.0	31.0	31.0 3.0		9.0 3.0				23.0 3.0		19.0 2.0
Yellow Time (s) All-Red Time (s)	3.0 1.0		3.0 1.0	3.0 1.0	3.0 1.0		3.0 1.0				3.0 1.0		2.0 4.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		1.0				0.0		+.0
Total Lost Time (s)	4.0		4.0	4.0	4.0						4.0		
Lead/Lag											Lead		Lag
Lead-Lag Optimize?													5
Vehicle Extension (s)	2.0		2.0	2.0	2.0		2.0				2.0		0.2
Recall Mode	None		None	None	None		None				C-Max		None
Walk Time (s)											17.0		8.0
Flash Dont Walk (s)											6.0		11.0
Pedestrian Calls (#/hr)	21.0		21.0	21.0	21.0			22.0			0		301
Act Effct Green (s) Actuated g/C Ratio	31.0 0.31		31.0 0.31	31.0 0.31	31.0 0.31			32.0 0.32			23.0 0.23		
v/c Ratio	0.31		0.31	0.31	1.16			0.32			0.23		
Control Delay	39.0		0.02	28.4	107.9			98.8			30.6		
Queue Delay	0.0		0.0	0.0	0.0			0.0			0.0		
Total Delay	39.0		0.1	28.4	107.9			98.8			30.6		
LOS	D		А	С	F			F			С		
Approach Delay		24.7			90.4			98.8			30.6		
Approach LOS		С	-		F			F			C		
Queue Length 50th (ft)	9		0	169	~425			~297			113		
Queue Length 95th (ft) Internal Link Dist (ft)	29	567	0	264	#558 749			#451 329			149 803		
Turn Bay Length (ft)		007			749			529			003		
Base Capacity (vph)	68		443	479	935			784			682		
Starvation Cap Reductn	0		0	0	0			0			0		
Spillback Cap Reductn	0		0	0	0			0			0		
Storage Cap Reductn	0		0	0	0			0			0		
Reduced v/c Ratio	0.28		0.02	0.64	1.16			1.11			0.54		
Intersection Summary													
Area Type:	CBD												
Cycle Length: 100													
Actuated Cycle Length: 100													
Offset: 38 (38%), Reference	d to phase 1:N	BSB, Sta	rt of Greer	ı									
Natural Cycle: 130													
Control Type: Actuated-Coor	dinated												
Maximum v/c Ratio: 1.16	1				toroo -ti -								
Intersection Signal Delay: 84					tersection		-						
Intersection Capacity Utilizat Analysis Period (min) 15	1011 03.0%			iC	U Level of	Service	-						
 Volume exceeds capacit 	v, queue is the	oretically	infinite.										
Queue shown is maximur			to.										
 # 95th percentile volume e 			may be lo	onger.									
Queue shown is maximur													
			_	_									
Splits and Phases: 5: Tren	nont Street & I	Berkeley S	Street/Eas										
Ø1 (R)				₩ k e	12					*	5		
27 s				25 s						35 s	5		

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations	LUL	201	LDR	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	41					ODL	11	0.51	~~
Traffic Volume (vph)	0	0	0	89	337	0	0	0	0	0	236	83	
Future Volume (vph)	0	0	0	89	337	0	0	0	0	0	236	83	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.91	0.91	
Ped Bike Factor					1.00						0.98		
Frt											0.961		
Flt Protected					0.990								
Satd. Flow (prot)	0	0	0	0	3456	0	0	0	0	0	4589	0	
Flt Permitted					0.990								
Satd. Flow (perm)	0	0	0	0	3451	0	0	0	0	0	4589	0	
Right Turn on Red			Yes	Yes		Yes			Yes			Yes	
Satd. Flow (RTOR)					39						87		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		266			231			279			323		
Travel Time (s)		6.0			5.3			6.3			7.3		
Confl. Peds. (#/hr)	0.00	0.00	0.00	9	0.07	0.07	0.00	0.00	0.00	0.05	0.05	59	
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.92	0.92	0.92	0.95	0.95	0.95	
Heavy Vehicles (%)	2%	2%	2%	5%	3%	2%	2%	2%	2%	0%	8%	3%	
Adj. Flow (vph)	0	0	0	102	387	0	0	0	0	0	248	87	
Shared Lane Traffic (%)	0	0	0	0	489	0	0	0	0	0	335	0	
Lane Group Flow (vph)	U	0	0		489 NA	0	U	0	0	U	335 NA	0	
Turn Type Protected Phases				Split 1	NA 1						NA 5		2
Protected Phases Permitted Phases					1						5		2
Permitted Phases Detector Phase				1	1						5		
Switch Phase					1						С		
Minimum Initial (s)				10.0	10.0						10.0		1.0
Minimum Split (s)				43.0	43.0						35.0		22.0
Total Split (s)				43.0	43.0						35.0		22.0
Total Split (%)				43.0%	43.0%						35.0%		22.0
Maximum Green (s)				43.0%	43.0%						31.0		20.0
Yellow Time (s)				37.0	37.0						31.0		20.0
All-Red Time (s)				1.0	1.0						1.0		0.0
Lost Time Adjust (s)				1.0	0.0						0.0		0.0
Total Lost Time (s)					4.0						4.0		
Lead/Lag													
Lead-Lag Optimize?													
Vehicle Extension (s)				2.0	2.0						2.0		0.2
Recall Mode				C-Max	C-Max						Max		None
Walk Time (s)				28.0	28.0						23.0		13.0
Flash Dont Walk (s)				11.0	11.0						8.0		7.0
Pedestrian Calls (#/hr)				0	0						0		315
Act Effct Green (s)					39.0						31.0		
Actuated g/C Ratio					0.39						0.31		
v/c Ratio					0.36						0.23		
Control Delay					20.7						19.2		
Queue Delay					0.0						0.0		
Total Delay					20.7						19.2		
LOS					С						В		
Approach Delay					20.7						19.2		
Approach LOS					С						В		
Queue Length 50th (ft)					104						42		
Queue Length 95th (ft)					140						65		
Internal Link Dist (ft)		186			151			199			243		
Turn Bay Length (ft)													
Base Capacity (vph)					1371						1482		
Starvation Cap Reductn					0						0		
Spillback Cap Reductn					0						0		
Storage Cap Reductn					0						0		
Reduced v/c Ratio					0.36						0.23		
Intersection Summary													
	Othor												
Area Type: Cyclo Longth: 100	Other												
Cycle Length: 100 Actuated Cycle Length: 100													
Offset: 81 (81%), Referenced	d to phace 1.M		rt of Croo	n									
Natural Cycle: 100	a to priase riv	VDIL, SIdi	n or Greek										
Control Type: Actuated-Coor	rdinated												
Maximum v/c Ratio: 0.36	andicu												
Intersection Signal Delay: 20	0.1			In	tersection	LOS: C							
Intersection Capacity Utilizat					CU Level of		1						
Analysis Period (min) 15													
radigolo i onod (min) ro													
Splits and Phases: 6: Sha	wmut Avenue	& Margina	al Road										
Splits and Phases: 6: Sha	awmut Avenue	& Margina	al Road					1.1					
	awmut Avenue	& Margina	al Road					A lø2					↓ ¢

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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	† †î>	LDK	VYDL	WDI	NDL	
Traffic Volume (veh/h)	1408	4	0	0	0	7
Future Volume (Veh/h)	1408	4	0	0	0	7
Sign Control	Free	4	5	Free	Yield	,
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.92	0.92	0.92	0.38
Hourly flow rate (vph)	1467	4	0.72	0.72	0.72	18
Pedestrians	1107		Ū	0	0	10
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	148			200		
pX, platoon unblocked	. 10		0.81	200	0.81	0.81
vC, conflicting volume			1471		1469	491
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			768		766	0
tC, single (s)			4.1		6.8	7.6
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.6
p0 queue free %			100		100	98
cM capacity (veh/h)			683		279	805
Direction, Lane #	EB 1	EB 2	EB 3	NB 1		
Volume Total	587	587	297	18		
Volume Left	0	0	0	0		
Volume Right	0	0	4	18		
cSH	1700	1700	1700	805		
Volume to Capacity	0.35	0.35	0.17	0.02		
Queue Length 95th (ft)	0.55	0.55	0.17	2		
Control Delay (s)	0.0	0.0	0.0	9.6		
Lane LOS	0.0	0.0	0.0	7.0 A		
Approach Delay (s)	0.0			9.6		
Approach LOS	0.0			7.0 A		
Intersection Summary			0.1			
Average Delay			0.1	10		0
Intersection Capacity Utilization			37.3%	IC	U Level of	Service
Analysis Period (min)			15			

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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	5					Ą
Traffic Volume (veh/h)	7	0	0	0	4	168
Future Volume (Veh/h)	7	0	0	0	4	168
Sign Control	Yield	-	Free	-		Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0.72	0.72	0.72	0.72	4	183
Pedestrians	0	0	0	0	7	105
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			851			155
pX, platoon unblocked	0.97					
vC, conflicting volume	191	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	151	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	814	1085			1623	
1 2 1 1						
Direction, Lane #	WB 1	SB 1				
Volume Total	8	187				
Volume Left	8	4				
Volume Right	0	0				
cSH	814	1623				
Volume to Capacity	0.01	0.00				
Queue Length 95th (ft)	1	0				
Control Delay (s)	9.5	0.2				
Lane LOS	A	A				
Approach Delay (s)	9.5	0.2				
Approach LOS	A					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			19.1%	IC	U Level o	Service
Analysis Period (min)			15			

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations	LUL	41112	LDIX						Div	ODL	4 †	0.51	
Traffic Volume (vph)	59	968	222	0	0	0	0	↑↑ 373	258	15	248	0	
Future Volume (vph)	59	968	222	0	0	0	0	373	258	15	248	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.86	0.86	0.86	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	
Ped Bike Factor		0.98						0.94			1.00		
Frt		0.973						0.939					
Flt Protected		0.998									0.997		
Satd. Flow (prot)	0	6132	0	0	0	0	0	3109	0	0	3437	0	
Flt Permitted		0.998									0.903		
Satd. Flow (perm)	0	6123	0	0	0	0	0	3109	0	0	3106	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		64						183					
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		230			765			886			173		
Travel Time (s)		5.2	07		17.4			20.1	100	100	3.9		
Confl. Peds. (#/hr)	37		97						130	130			
Confl. Bikes (#/hr)	0.04	0.04	3	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.90	0.90	0.90	0.88	0.88	0.88	
Heavy Vehicles (%) Adj. Flow (vph)	4% 63	2% 1030	1% 236	2% 0	2% 0	2% 0	0% 0	3% 414	3% 287	0% 17	5% 282	0% 0	
Shared Lane Traffic (%)	03	1030	200	U	U	U	U	414	207	17	202	U	
Lane Group Flow (vph)	0	1329	0	0	0	0	0	701	0	0	299	0	
Turn Type	Split	NA	U	U	U	U	U	NA	U	Perm	NA	U	
Protected Phases	Spiit 1	NA 1						5		r enn	NA 5		2
Permitted Phases	1	1						U		5	J		2
Detector Phase	1	1						5		5	5		
Switch Phase	1							5		5	5		
Minimum Initial (s)	10.0	10.0						10.0		10.0	10.0		8.0
Minimum Split (s)	44.0	44.0						35.0		35.0	35.0		21.0
Total Split (s)	44.0	44.0						35.0		35.0	35.0		21.0
Total Split (%)	44.0%	44.0%						35.0%		35.0%	35.0%		21%
Maximum Green (s)	39.0	39.0						31.0		31.0	31.0		19.0
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0		2.0
All-Red Time (s)	2.0	2.0						1.0		1.0	1.0		0.0
Lost Time Adjust (s)		0.0						0.0			0.0		
Total Lost Time (s)		5.0						4.0			4.0		
Lead/Lag	Lead	Lead											Lag
Lead-Lag Optimize?													-
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0		0.2
Recall Mode	C-Max	C-Max						Max		Max	Max		None
Walk Time (s)	30.0	30.0						22.0		22.0	22.0		10.0
Flash Dont Walk (s)	9.0	9.0						9.0		9.0	9.0		9.0
Pedestrian Calls (#/hr)	0	0						0		0	0		370
Act Effct Green (s)		39.0						31.0			31.0		
Actuated g/C Ratio		0.39						0.31			0.31		
v/c Ratio		0.55						0.64			0.31		
Control Delay		23.4						24.7			27.5		
Queue Delay		0.0						0.0			0.0		
Total Delay		23.4						24.7			27.5		
LOS		C						C			С		
Approach Delay		23.4						24.7			27.5		
Approach LOS		C						C			C		
Queue Length 50th (ft)		178						148			76		
Queue Length 95th (ft)		213			(05			212			110		
Internal Link Dist (ft)		150			685			806			93		
Turn Bay Length (ft)		2420						1000			0/2		
Base Capacity (vph)		2430						1090			962		
Starvation Cap Reductn		0						0			0		
Spillback Cap Reductn		0						0			0		
Storage Cap Reductn		0						0			0		
Reduced v/c Ratio		0.55						0.64			0.31		
Intersection Summary													
Area Type:	Other												
Cycle Length: 100													
Actuated Cycle Length: 10	0												
Offset: 89 (89%), Reference	ced to phase 1:E	BTL, Star	t of Green										
Natural Cycle: 100													
Control Type: Actuated-Co	ordinated												
Maximum v/c Ratio: 0.64													
Intersection Signal Delay:					tersection								
Intersection Capacity Utiliz	ation 65.8%			IC	U Level of	f Service C							
Analysis Period (min) 15													
Callia and Dh		Antha	Char - 2 // 1										
Splits and Phases: 1: Tr	emont Street &	Arlington	Street/Hera	aid Street									1 14
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations		^†† ,								ሻሻ	††	-	
Traffic Volume (vph) Future Volume (vph)	0	1232 1232	93 93	0 0	0 0	0 0	0 0	0 0	0 0	298 298	195 195	0 0	
Ideal Flow (vphpl)	1900	1232	93 1900	1900	1900	1900	1900	1900	1900	1900	190	1900	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	
Ped Bike Factor		0.99								0.90			
Frt		0.989											
Flt Protected										0.950			
Satd. Flow (prot)	0	4949	0	0	0	0	0	0	0	3367	3574	0	
Flt Permitted Satd. Flow (perm)	0	4949	0	0	0	0	0	0	0	0.950 3036	3574	0	
Right Turn on Red	0	4747	Yes	0	0	Yes	U	0	Yes	Yes	3374	Yes	
Satd. Flow (RTOR)		17	100			100			.05	368		105	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		765			139			152			271		
Travel Time (s)		17.4			3.2			3.5			6.2		
Confl. Peds. (#/hr)	0.00	0.00	100	0.00	0.00	0.00	0.00	0.00	0.00	82	0.01	0.01	
Peak Hour Factor	0.88	0.88 3%	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.81	0.81	0.81	
Heavy Vehicles (%) Adj. Flow (vph)	0% 0	3% 1400	0% 106	2% 0	2% 0	2% 0	2% 0	2% 0	2% 0	4% 368	1% 241	0% 0	
Shared Lane Traffic (%)	0	1400	100	0	0	0	U	0	0	300	241	U	
Lane Group Flow (vph)	0	1506	0	0	0	0	0	0	0	368	241	0	
Turn Type	-	NA	-		-		-	-	-	Split	NA		
Protected Phases		1								5	5		2
Permitted Phases													
Detector Phase		1								5	5		
Switch Phase Minimum Initial (s)		8.0								2.0	2.0		1.0
Minimum Split (s)		8.0 54.0								2.0	2.0		1.0
Total Split (s)		54.0								29.0	29.0		17.0
Total Split (%)		54.0%								29.0%	29.0%		17%
Maximum Green (s)		50.0								25.0	25.0		11.0
Yellow Time (s)		3.0								3.0	3.0		2.0
All-Red Time (s)		1.0								1.0	1.0		4.0
Lost Time Adjust (s)		0.0								0.0	0.0		
Total Lost Time (s) Lead/Lag		4.0								4.0	4.0		
Lead-Lag Optimize?													
Vehicle Extension (s)		2.0								2.0	2.0		0.2
Recall Mode		C-Max								Max	Max		None
Walk Time (s)		39.0								16.0	16.0		5.0
Flash Dont Walk (s)		11.0								9.0	9.0		6.0
Pedestrian Calls (#/hr)		0								0	0		399
Act Effct Green (s)		50.0								25.0	25.0		
Actuated g/C Ratio v/c Ratio		0.50 0.61								0.25 0.33	0.25 0.27		
Control Delay		8.1								1.2	19.3		
Queue Delay		1.4								0.2	0.0		
Total Delay		9.5								1.4	19.3		
LOS		А								А	В		
Approach Delay		9.5									8.5		
Approach LOS		A									A		
Queue Length 50th (ft)		94 106								2 3	31 39		
Queue Length 95th (ft) Internal Link Dist (ft)		685			59			72		3	39 191		
Turn Bay Length (ft)		000			37			12			171		
Base Capacity (vph)		2483								1117	893		
Starvation Cap Reductn		0								253	0		
Spillback Cap Reductn		718								53	0		
Storage Cap Reductn		0								0	0		
Reduced v/c Ratio		0.85								0.43	0.27		
Intersection Summary													
Area Type:	Other												
Cycle Length: 100													
Actuated Cycle Length: 100		T Charles	Croos										
Offset: 0 (0%), Referenced t Natural Cycle: 100	io pnasė TEB	r, Start of	Green										
Control Type: Actuated-Coo	rdinated												
Maximum v/c Ratio: 0.61	anacu												
Intersection Signal Delay: 9.	.2			In	tersection	LOS: A							
Intersection Capacity Utilization					CU Level o								
Analysis Period (min) 15													
Splits and Phases: 2: Her	ald Street & S	hawmut A	venue										
→ø1 (R)											A Ø2		↓ •ø5
54 s										1	7 s		29 s

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		-{1 † 1≽						↑	1		1	
Traffic Volume (vph) Future Volume (vph)	35 35	1369 1369	110 110	0 0	0 0	0 0	0 0	535 535	179 179	0 0	21 21	0
Ideal Flow (vphpl)	35 1900	1369	1900	1900	1900	1900	1900	535 1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	12	12	12	11	11	12	12	12
Lane Util. Factor	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor Frt		1.00 0.989							0.88 0.850			
Flt Protected		0.999										
Satd. Flow (prot)	0	4285	0	0	0	0	0	1503	1364	0	934	0
Flt Permitted Satd. Flow (perm)	0	0.999 4284	0	0	0	0	0	1503	1205	0	934	0
Right Turn on Red	U	4204	Yes	0	U	Yes	U	1505	Yes	0	7J4	Yes
Satd. Flow (RTOR)		14							22			
Link Speed (mph)		30			30			30			30	
Link Distance (ft) Travel Time (s)		203 4.6			204 4.6			266 6.0			224 5.1	
Confl. Peds. (#/hr)	8	1.0			1.0			0.0	188		0.1	
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.92	0.78	0.78	0.78
Heavy Vehicles (%) Bus Blockages (#/hr)	0% 0	3% 9	0% 0	0% 0	0% 0	0% 0	0% 0	10% 0	3% 0	0% 0	83% 0	0% 0
Adj. Flow (vph)	39	1521	122	0	0	0	0	582	195	0	27	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0 Dorm	1682	0	0	0	0	0	582	195 Dorm	0	27	0
Turn Type Protected Phases	Perm	NA 1						NA 6	Perm		NA 6	
Permitted Phases	1	1						U	6		U	
Detector Phase	1	1						6	6		6	
Switch Phase											46.5	
Minimum Initial (s)	12.0 42.0	12.0 42.0						12.0 58.0	12.0 58.0		12.0 58.0	
Minimum Split (s) Total Split (s)	42.0	42.0 42.0						58.0 58.0	58.0 58.0		58.0 58.0	
Total Split (%)	42.0%	42.0%						58.0%	58.0%		58.0%	
Maximum Green (s)	37.0	37.0						53.0	53.0		53.0	
Yellow Time (s)	4.0	4.0						4.0	4.0		4.0	
All-Red Time (s) Lost Time Adjust (s)	1.0	1.0 -1.0						1.0 -1.0	1.0 -1.0		1.0 -1.0	
Total Lost Time (s)		4.0						-1.0	-1.0		4.0	
Lead/Lag												
Lead-Lag Optimize?									A -		0.7	
Vehicle Extension (s) Recall Mode	3.0 C-Max	3.0 C-Max						3.0 Max	3.0 Max		3.0 Max	
Walk Time (s)	28.0	28.0						44.0	44.0		44.0	
Flash Dont Walk (s)	9.0	9.0						9.0	9.0		9.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	
Act Effct Green (s)		38.0						54.0	54.0		54.0	
Actuated g/C Ratio v/c Ratio		0.38 1.03						0.54 0.72	0.54 0.30		0.54 0.05	
Control Delay		45.6						23.5	12.5		11.4	
Queue Delay		0.0						0.0	0.0		0.0	
Total Delay		45.6						23.5	12.5		11.4	
LOS Approach Dolou		D						C 20.9	В		B	
Approach Delay Approach LOS		45.6 D						20.8 C			11.4 B	
Queue Length 50th (ft)		~424						264	56		8	
Queue Length 95th (ft)		#523						403	102		18	
Internal Link Dist (ft)		123			124			186			144	
Turn Bay Length (ft) Base Capacity (vph)		1636						811	660		504	
Starvation Cap Reductn		1030						811	000		504 0	
Spillback Cap Reductn		0						0	0		0	
Storage Cap Reductn		0						0	0		0	
Reduced v/c Ratio		1.03						0.72	0.30		0.05	
Intersection Summary												
Area Type:	CBD											
Cycle Length: 100 Actuated Cycle Length: 100												
Offset: 14 (14%), Referenced	to phase 1:	EBTL, Star	t of Green									
Natural Cycle: 100		, 2101										
Control Type: Actuated-Coord	dinated											
Maximum v/c Ratio: 1.03 Intersection Signal Delay: 37.	5			Lo.	tersection							
Intersection Signal Delay: 37.					U Level of							
Analysis Period (min) 15												
~ Volume exceeds capacity			infinite.									
Queue shown is maximum			mayhal	ngor								
# 95th percentile volume ex Queue shown is maximum			may be lo	nger.								
Splits and Phases: 3: Was	hington Stree	et & Herald	d Street									
→ø1 (R)								↓ ¶ø ₆				
42 s								▼11206 58 s				

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
ane Configurations					† ††		٦					1	
raffic Volume (vph)	0	0	0	0	821	0	105	0	0	0	0	278	
uture Volume (vph)	0	0	0	0	821	0	105	0	0	0	0	278	
leal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
ane Util. Factor	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							0.89						
rt												0.865	
It Protected							0.950						
Satd. Flow (prot)	0	0	0	0	4532	0	1577	0	0	0	0	1465	
It Permitted	Ū	0	0	0	1002	0	0.950	0	0	U	0	1405	
	0	0	0	0	4500	0		0	0	0	0	14/5	
atd. Flow (perm)	0	0	0	0	4532	0	1403	0	0	0	0	1465	
light Turn on Red			Yes			Yes	Yes		Yes			Yes	
atd. Flow (RTOR)							301					301	
ink Speed (mph)		30			30			30			30		
ink Distance (ft)		829			256			598			862		
ravel Time (s)		18.8			5.8			13.6			19.6		
onfl. Peds. (#/hr)		10.0			5.0		46	13.0			17.0	46	
							40						
Confl. Bikes (#/hr)												2	
eak Hour Factor	0.92	0.92	0.92	0.88	0.88	0.88	0.80	0.80	0.80	0.95	0.95	0.95	
eavy Vehicles (%)	0%	0%	0%	0%	3%	0%	3%	0%	0%	0%	0%	1%	
lj. Flow (vph)	0	0	0	0	933	0	131	0	0	0	0	293	
ared Lane Traffic (%)	-	-	-	-		-		-	-		-		
	0	0	0	0	933	0	131	0	0	0	0	293	
ne Group Flow (vph)	U	U	U	U		U		U	U	U	U		
irn Type					NA		Prot					Prot	
otected Phases					1		5!					5!	2
ermitted Phases													
etector Phase					1		5					5	
vitch Phase							5					5	
					0.0		0.0					0.0	10
inimum Initial (s)					8.0		8.0					8.0	1.0
inimum Split (s)					62.0		20.0					20.0	22.0
otal Split (s)					62.0		36.0					36.0	22.0
tal Split (%)					51.7%		30.0%					30.0%	18%
aximum Green (s)					57.0		31.0					31.0	16.0
ellow Time (s)					3.0		3.0					3.0	2.0
I-Red Time (s)					2.0		2.0					2.0	4.0
ost Time Adjust (s)					0.0		0.0					0.0	
otal Lost Time (s)					5.0		5.0					5.0	
ead/Lag					Lead								Lag
ead-Lag Optimize?													5
ehicle Extension (s)					2.0		2.0					2.0	0.2
					C-Max								
ecall Mode							None					None	None
/alk Time (s)					47.0		8.0					8.0	7.0
lash Dont Walk (s)					10.0		7.0					7.0	9.0
edestrian Calls (#/hr)					0		0					0	240
ct Effct Green (s)					78.3		9.7					9.7	
ctuated g/C Ratio					0.65		0.08					0.08	
c Ratio					0.32		0.32					0.74	
ontrol Delay					9.8		2.1					17.2	
Jeue Delay					0.0		0.0					0.0	
tal Delay					9.8		2.1					17.2	
)S					А		А					В	
proach Delay					9.8			2.1			17.2	-	
proach LOS					7.0 A			2.1 A			17.2 B		
							0	А			D	0	
eue Length 50th (ft)					101		0					0	
ieue Length 95th (ft)					148		0					78	
ernal Link Dist (ft)		749			176			518			782		
rn Bay Length (ft)													
se Capacity (vph)					2956		630					601	
arvation Cap Reductn					0		0					0	
billback Cap Reductn					0		0					0	
orage Cap Reductn					0		0					0	
duced v/c Ratio					0.32		0.21					0.49	
ersection Summary													
	CBD												
cle Length: 120													
tuated Cycle Length: 120													
iset: 98 (82%), Referenced to	o nhaco 1-M	/RT Start	of Groop										
	o priase 1:W	וטו, stall	or Green										
tural Cycle: 105													
ontrol Type: Actuated-Coordir	nated												
aximum v/c Ratio: 0.74													
ersection Signal Delay: 10.6				Int	tersection	LOS' B							
ersection Capacity Utilization	1 38.0%			IC	U Level of	Service E							
alysis Period (min) 15													
Phase conflict between lane	e groups.												
its and Phases: 4: Shawn	nut Avenue	& East Be	rkeley Stre	eet									
Hits and Phases: 4: Shawm	nut Avenue	& East Be	rkeley Stre	eet						₩∎ø2			Ø5

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
ane Configurations		LDI		VVDL		WDI	NDL		NDI	JDL		JUN	
	1 31	0	27	1 369	↑1 → 629	210	107	4↑ 379	0	0	↑î→ 418	62	
raffic Volume (vph) uture Volume (vph)	31	0	27	369 369	629 629	210	107	379	0	0	418	62 62	
leal Flow (vphpl) ane Util. Factor	1900 1.00	1900 1.00	1900 1.00	1900 1.00	1900 0.95	1900 0.95	1900 0.95	1900 0.95	1900 1.00	1900 1.00	1900 0.95	1900 0.95	
	1.00	1.00	1.00	1.00		0.95	0.95		1.00	1.00		0.95	
Ped Bike Factor			0.050		1.00			0.99			0.99		
It Protected	0.950		0.850	0.950	0.962			0.989			0.981		
		0	1454	0.950	3017	0	0	3126	0	0	3053	0	
atd. Flow (prot)	1624	0	1454		3017	0	0		0	0	3053	U	
It Permitted	0.102	0	1454	0.950	2017	0	0	0.589	0	0	2052	0	
atd. Flow (perm)	174	0	1454	1593	3017	0	0	1850	0	0	3053	0	
light Turn on Red			Yes			Yes			Yes			Yes	
atd. Flow (RTOR)			100		41						14		
nk Speed (mph)		30			30			30			30		
nk Distance (ft)		647			829			409			886		
avel Time (s)		14.7			18.8			9.3			20.1		
onfl. Peds. (#/hr)							77					77	
onfl. Bikes (#/hr)						2						4	
eak Hour Factor	0.75	0.75	0.75	0.88	0.88	0.88	0.87	0.87	0.87	0.83	0.83	0.83	
eavy Vehicles (%)	0%	0%	0%	2%	3%	4%	2%	3%	0%	0%	3%	4%	
dj. Flow (vph)	41	078	36	419	715	239	123	436	078	0 /8	504	75	
	41	U	30	+17	715	237	123	-10	U	U	JU4	75	
hared Lane Traffic (%)	41	0	27	(10	054	0	0	650	0	0	E70	0	
ne Group Flow (vph)	41	0	36	419	954	0	0	559	0	0	579	0	
irn Type	D.Pm		Perm	Perm	NA		pm+pt	NA			NA		
otected Phases					5		6	16			1		2
ermitted Phases	5		5	5			16						
etector Phase	5		5	5	5		6	16			1		
vitch Phase													
nimum Initial (s)	5.0		5.0	5.0	5.0		4.0				10.0		1.0
inimum Split (s)	9.0		9.0	9.0	9.0		8.0				38.0		25.0
otal Split (s)	44.0		44.0	44.0	44.0		13.0				38.0		25.0
otal Split (%)	36.7%		36.7%	36.7%	36.7%		10.8%				31.7%		21%
							10.8% 9.0						19.0
aximum Green (s)	40.0		40.0	40.0	40.0						34.0		
ellow Time (s)	3.0		3.0	3.0	3.0		3.0				3.0		2.0
I-Red Time (s)	1.0		1.0	1.0	1.0		1.0				1.0		4.0
ost Time Adjust (s)	0.0		0.0	0.0	0.0						0.0		
otal Lost Time (s)	4.0		4.0	4.0	4.0						4.0		
ead/Lag											Lead		Lag
ead-Lag Optimize?													
ehicle Extension (s)	2.0		2.0	2.0	2.0		2.0				2.0		0.2
ecall Mode	None		None	None	None		None				C-Max		None
alk Time (s)											28.0		8.0
ash Dont Walk (s)											6.0		11.0
edestrian Calls (#/hr)											0.0		322
ct Effct Green (s)	39.3		39.3	39.3	39.3			43.7			34.7		
ctuated g/C Ratio	0.33		0.33	0.33	0.33			0.36			0.29		
c Ratio	0.33		0.33	0.33	0.33			0.36			0.29		
	96.8		0.07										
ontrol Delay				46.0	50.8			35.9			40.6		
ueue Delay	0.0		0.0	0.0	0.0			0.0			0.0		
ital Delay	96.8		0.2	46.0	50.8			35.9			40.6		
)S	F	_	А	D	D			D			D		
proach Delay		51.7			49.3			35.9			40.6		
proach LOS		D			D			D			D		
ueue Length 50th (ft)	28		0	304	374			166			203		
ueue Length 95th (ft)	#73		0	#428	#482			209			241		
ternal Link Dist (ft)		567			749			329			806		
rn Bay Length (ft)													
se Capacity (vph)	58		551	531	1033			768			892		
arvation Cap Reductn	0		0	0	0			0			0		
illback Cap Reductn	0		0	0	0			0			0		
orage Cap Reductn	0		0	0	0			0			0		
educed v/c Ratio	0.71												
cuuceu v/c Rallo	0.71		0.07	0.79	0.92			0.73			0.65		
ersection Summary													
ea Type:	CBD												
cle Length: 120	500												
tuated Cycle Length: 120													
fset: 75 (63%), Referenced	to phase 1-M	DCD Ctor	rt of Croce	,									
	no prase 1:N	D2D, 2(9)	it of Green										
atural Cycle: 100	aller at 1												
ontrol Type: Actuated-Coor	dinated												
aximum v/c Ratio: 0.94													
tersection Signal Delay: 44					tersection								
ntersection Capacity Utilizati					U Level of								
nalysis Period (min) 15													
95th percentile volume ex	ceeds canaci	tv. queue	may be lo	nger.									
Queue shown is maximun	n after two cvo	165											
Cacac Showin IS Maximun	i anci iwo cyt												
lite and Dhacoes E. Tron	ont Street •	orkolov	Stroot/Eco	t Porkolou	Street								
olits and Phases: 5: Tren	IUI IL SIFEEL & L	serkeley S	sueet/Eas	и венкенеу						- 4			1 26
14					1 2 4								
Ø1 (R)					÷.	72				*	75		N 76

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2
Lane Configurations	LUL	201	LDIX	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						UDL	11	0.51	
Traffic Volume (vph)	0	0	0	95	384	0	0	0	0	0	398	223	
Future Volume (vph)	0	0	0	95	384	0	0	0	0	0	398	223	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.91	0.91	
Ped Bike Factor					0.99						0.97		
Frt											0.946		
Flt Protected					0.990								
Satd. Flow (prot)	0	0	0	0	3539	0	0	0	0	0	4661	0	
Flt Permitted					0.990								
Satd. Flow (perm)	0	0	0	0	3513	0	0	0	0	0	4661	0	
Right Turn on Red			Yes	Yes		Yes			Yes			Yes	
Satd. Flow (RTOR)					35						151		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		310			237			271			312		
Travel Time (s)		7.0			5.4			6.2			7.1		
Confl. Peds. (#/hr)				44								73	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92	0.83	0.83	0.83	
Heavy Vehicles (%)	2%	2%	2%	1%	1%	2%	2%	2%	2%	0%	2%	3%	
Adj. Flow (vph)	0	0	0	107	431	0	0	0	0	0	480	269	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	0	0	0	538	0	0	0	0	0	749	0	
Turn Type				Split	NA						NA		
Protected Phases				1	1						5		2
Permitted Phases													
Detector Phase				1	1						5		
Switch Phase											-		
Minimum Initial (s)				10.0	10.0						10.0		1.0
Minimum Split (s)				41.0	41.0						37.0		22.0
Total Split (s)				41.0	41.0						37.0		22.0
Total Split (%)				41.0%	41.0%						37.0%		22%
Maximum Green (s)				37.0	37.0						33.0		22.0
Yellow Time (s)				37.0	37.0						3.0		20.0
All-Red Time (s)				1.0	1.0						1.0		0.0
Lost Time Adjust (s)				1.0	0.0						0.0		0.
Total Lost Time (s)					4.0						4.0		
Lead/Lag					4.0						4.0		
Lead-Lag Optimize?				2.0	2.0						2.0		0.
Vehicle Extension (s)				2.0	2.0						2.0		
Recall Mode				C-Max	C-Max						Max		Nor
Walk Time (s)				26.0	26.0						25.0		13.
Flash Dont Walk (s)				11.0	11.0						8.0		7.
Pedestrian Calls (#/hr)				0	0						0		35
Act Effct Green (s)					37.0						33.0		
Actuated g/C Ratio					0.37						0.33		
v/c Ratio					0.40						0.46		
Control Delay					22.8						21.8		
Queue Delay					0.0						0.0		
Total Delay					22.8						21.8		
LOS					С						С		
Approach Delay					22.8						21.8		
Approach LOS					С						С		
Queue Length 50th (ft)					122						108		
Queue Length 95th (ft)					166						128		
Internal Link Dist (ft)		230			157			191			232		
Turn Bay Length (ft)													
Base Capacity (vph)					1331						1639		
Starvation Cap Reductn					0						0		
Spillback Cap Reductn					0						0		
Storage Cap Reductn					0						0		
Reduced v/c Ratio					0.40						0.46		
Reduced we Rallo					0.40						0.40		
Intersection Summary													
Area Type:	Other												
Cycle Length: 100													
Actuated Cycle Length: 100)												
Offset: 1 (1%), Referenced I	to phase 1:WB	TL. Start o	of Green										
Natural Cycle: 100													
Control Type: Actuated-Coo	ordinated												
Maximum v/c Ratio: 0.46	and to d												
Intersection Signal Delay: 22	2.2			In	tersection	1 OS: C							
Intersection Capacity Utiliza					CU Level of								
Analysis Period (min) 15						50, 100 B							
r anarysis i criou (min) is													
Solits and Dhacon 4. Che	awmut Avonus	8. Marain	al Road										
Splits and Phases: 6: Sha	awmut Avenue	a wargina	n K090										-
7 (1(P)								602				I	• as
₩ Ø1 (R)							×	k _{Ø2}					

	-	\mathbf{F}	4	+	•	*
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	朴朴					1
Traffic Volume (veh/h)	1522	7	0	0	0	6
Future Volume (Veh/h)	1522	7	0	0	0	6
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.75	0.75
Hourly flow rate (vph)	1673	8	0	0	0	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	139			203		
pX, platoon unblocked			0.79		0.79	0.79
vC, conflicting volume			1681		1677	562
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			924		919	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			579		216	860
	50.4	50.0	50.0	ND 4		
Direction, Lane #	EB 1	EB 2	EB 3	NB 1		
Volume Total	669	669	343	8		
Volume Left	0	0	0	0		
Volume Right	0	0	8	8		
cSH	1700	1700	1700	860		
Volume to Capacity	0.39	0.39	0.20	0.01		
Queue Length 95th (ft)	0	0	0	1		
Control Delay (s)	0.0	0.0	0.0	9.2		
Lane LOS				А		
Approach Delay (s)	0.0			9.2		
Approach LOS				А		
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			39.6%	IC	U Level of	Service
Analysis Period (min)			15			

ane Configurations Image: Configurations Image: Configurations Image: Control of the control o	TICIN Onsignalized int	0.0001	on oap		nary 515		
Weil WBR NBT NBR SBL SBT ane Configurations 1 0 0 0 8 280 and Configurations 1 0 0 0 8 280 atfit: Volume (veh/h) 11 0 0 0 8 280 ign Control Yield Free Free Free Free rade 0% 0.92 0.92 0.92 0.92 0.92 outry flow rate (vph) 12 0 0 9 304 edestrians ane Width (ft) faiking Speed (ft/s) Free Free Free fill Um flare (veh) edian type None None None Set fill Um flare (veh) edian type None None Set fill Um flare (veh) fill Um flare (veh) edian type None None Set fill Um flare (veh) fill Um flare (veh) fight Um flare (veh) 62 152 fill (set) fill			•	+	*	_	1
ane Configurations Image: Configurations Image: Configurations Image: Configurations raffic Volume (Veh/h) 11 0 0 8 280 ign Control Yield Free Free Free rade 0% 0% 0% 0% eak Hour Factor 0.92 0.92 0.92 0.92 0.92 outry flow rate (vph) 12 0 0 9 304 edestrians ane Width (th) 1 6 0 9 304 recent Blockage ight turn fare (veh) 1 862 152 152 152 K, platoon unblocked 0.93 0 0 0 25 152 153 152 </td <td></td> <td></td> <td>-</td> <td>I</td> <td>(</td> <td>-</td> <td>*</td>			-	I	(-	*
ane Configurations Image: static Volume (veh/h) 11 0 0 8 280 ign Control Yield Free	Movement	WBL	WBR	NBT	NBR	SBL	SBT
raffic Volume (veh/h) 11 0 0 0 0 8 280 uture Volume (Veh/h) 11 0 0 0 0 8 280 gir Control Yield Free Free rade 0% 0% 0% eak Hour Factor 0.92 0.92 0.92 0.92 0.92 outy flow rate (vph) 12 0 0 0 9 304 edestrians ane Width (ft) falking Speed (tr/s) ercent Blockage ight turn flare (veh) Eddian type None None Eddian type None None Eddian type 1 862 152 X, platoon unblocked 0.93 C, conflicting volume 322 0 0 C1, stage 1 conf vol 22, stage 2 conf vol 22, stage 2 conf vol 22, stage 2 conf vol 22, stage 1 conf vol 22, stage 2 conf vol 20, unblocked vol 236 0 0 C1, stage 1 conf vol 22, stage 2 conf vol 20, unblocked vol 236 0 0 C1, stage 1 conf vol 22, stage 2 conf vol 20, unblocked vol 236 0 0 C1, stage 1 conf vol 22, stage 2 conf vol 20, unblocked vol 236 0 0 C1, stage 1 conf vol 20, unblocked vol 236 0 0 queue free % 98 100 999 V capacity (veh/h) 697 1085 1623 irecton, Lane # WB 1 SB 1 Irecton, Lane # WB 1 SB 1 olume Flotl 12 9 olume Left 12 9 olume Flotl 0 SH 697 1623 SH 697 1623 Free None Ersection Sumary Verage Delay (s) 10.3 0.3 pproach LOS B Hersection Capacity Utilization 25.2% ICU Level of Service A							
uture Volume (Veh/h) 11 0 0 0 8 280 gn Control Vield Free Free rade 0% 0% 0% eak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 ourly flow rate (vph) 12 0 0 0 9 304 dedstrians ane Width (ft) falking Speed (ft/s) erecnt Blockage ight turn flare (veh) Erdian storage veh) perream signal (ft) 862 152 C, onflicling volume 322 0 0 C, onflicling volume 322 0 C, onflicling volume 323 0 C, onflicling volume 323 0 C, single (s) 6.4 6.2 4.1 C, z stage (s) C, single (s) 6.4 6.2 C, stage 1 C, stage 1	Traffic Volume (veh/h)		0	0	0	8	280
ign Control Yield Free Free rade 0% 0% 0% 0% eak Hour Factor 0.92 0.92 0.92 0.92 0.92 ourly flow rate (vph) 12 0 0 0 9 304 edestinas ane Width (ft) falking Speed (ft/s) ercent Blockage ight turn flare (veh) ledian type None None edian storage veh) pertram signal (ft) 862 152 X, platoon unblocked 0.93 C, conflicting volume 322 0 0 0 C, stage 1 Conf vol 22, stage 2 conf vol 23, stage 1 Conf vol 23, stage 1 Conf vol 24, stage 2 conf vol 25, stage 1 Conf vol 20 queue free % 98 100 99 M capacity (veh/h) 697 1085 1623 irection, Lane # WB 1 SB 1 Olume Total 12 313 olume Left 12 9 olume Right 0 0 SH 697 1623 olume Left 0 SH 697 1623 SH 697 1623							
Take 0% 0% 0% 0% eak Hour Factor 0.92 0.92 0.92 0.92 0.92 eak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 edestrians 0 0 0 9 304 edestrians ane Width (ft) ////////////////////////////////////			0		U	U	
eak Hour Factor 0.92	Grade						
ourly flow rate (vph) 12 0 0 9 304 edestrians ane Width (ft) falking Speed (ft/s) ercent Blockage istemation (ft) recent Blockage istemation (ft) istemation (ft) ight turn flare (veh) edian type None None ledian storage veh) 862 152 (ft) pstream signal (ft) 862 152 (ft) (ft) page 1 conf vol 22 0 0 0 2, stage 2 conf vol 0 0 2, stage 2 conf vol 0 2, stage 1 conf vol 236 0 0 0 2, stage 1 conf vol 236 0 0 0 2, stage 2 conf vol 0 0 0 0 (s) 3.5 3.3 2.2 0 0 0 queue free % 98 100 99 99 99 M capacity (veh/h) 697 1085 1623 1623 1623 olume Left 12 9 1623 1623 1623 1623 1623 1623<			0.02		0.02	0.02	
edestrians Image With (ft) ane With (ft) Image With (ft) light turn flare (veh) Image With (ft) etclian storage veh) Image With (ft) pstream signal (ft) 862 152 X, platoon unblocked 0.93 Image With (ft) C, conflicting volume 322 0 0 C1, stage 1 conf vol 22 0 0 C2, stage 1 conf vol 236 0 0 C2, stage 2 conf vol 236 0 0 C2, stage 1 conf vol 235 3.3 2.2 D queue free % 98 100 99 M capacity (veh/th) 697 1085 1623 olume Total 12 313 0 10 olume Kight 0 0 0							
ane Width (1) Jaking Speed (1t/s) ercent Blockage ight turn fare (veh) ledian storage veh) perteam signal (1) Sptram sign		12	U	U	U	9	304
/alking Speed (tt/s) ercent Blockage ight turn flare (veh) ledian type None None ledian type None None ledian type 862 152 X, platoon unblocked 0.93 C, conflicting volume 322 0 0 C1, stage 1 conf vol 22, stage 2 conf vol C2, stage 3 conf vol C2, stage 3 conf vol 2, stage (s) (s) 3.5 3.3 2.2 0 queue free % 98 100 99 M capacity (veh/h) 697 1085 1623 irrection, Lane # WB 1 SB 1 olume Total 12 313 olume Left 12 9 olume Right 0 0 SH 697 1623 olume Loft 12 9 olume I Capacity 0 0.02 SH 697 1623 olume Loga 5 B A pproach Delay (s) 10.3 0.3 ane LOS B A pproach LOS B tersection Summary verage Delay 0.6 tersection Capacity Utilization 25.2% ICU Level of Service A							
ercent Blockage ight turn frare (veh) ledian storage veh) pstream signal (ft) 862 152 X, platoon unblocked 0.93 C, conflicting volume 322 0 0 0 C1, stage 1 conf vol 22, stage 2 conf vol 20, unblocked vol 236 0 0 2, single (s) 6.4 6.2 4.1 (s) 3.5 3.3 2.2 0 queue free % 98 100 99 M capacity (veh/h) 697 1085 1623 irrection, Lane ≢ WB 1 SB 1 olume 1 ctal 12 313 olume 1 ctal 12 313 olume total 12 9 olume 1 ctal 12 9 olume 1 ctal 12 0 SH 697 1623 olume 1 ctal 1 0 SH 697 1623 SH							
ight lum flare (veh) ledian storage veh) persenn signal (ft) 862 152 X, platoon unblocked 0.93 C, conflicting volume 322 0 0 0 C1, stage 1 conf vol C2, stage 2 conf vol C1, stage 1 conf vol C2, stage 2 conf vol							
edian type None None ledian tsorage veh) storage veh) storage veh) pstream signal (ft) 862 152 X, platoon unblocked 0.93							
ledian slorage veh) pstream signal (ft)							
pstream signal (ft) 862 152 X, platon unblocked 0.93				None			None
x, platon unblocked 0.93 c, conflicting volume 322 0 0 C, stage 1 conf vol 22 0 0 C2, stage 2 conf vol 0 0 0 Cu, unblocked vol 236 0 0 0 Cu, unblocked vol 236 0 0 0 Cu, unblocked vol 236 0 0 0 S, single (s) . . 4.1 . . (s) 3.5 3.3 2.2 . . . D queue free % 98 100 99 V capacity (veh/h) 697 1085 1623 .	Median storage veh)						
C, conflicting volume 322 0 0 C1, stage 1 conf vol 236 0 0 S2, stage 2 conf vol 236 0 0 Cu, unbiocked vol 236 0 0 2, singe (s) 6.4 6.2 4.1 2, 2 stage (s)	Upstream signal (ft)			862			152
C1, stage 1 conf vol 22, stage 2 conf vol 2, stage 1 2, stage (s) (s) 3, stage (s) (s) 3, stage (s) (s) 0 queue free % 98 100 99 M capacity (veh/h) 697 1085 12 313 olume Total 12 313 olume Right 0 0 control Delay (s) 10.3 0.3 ane LOS B tersection Summary verage Delay 0.6 tersection Capacity Utilization 25.2% ICU Level of Service	pX, platoon unblocked						
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