161 South Huntington

Expanded Project Notification Form

Submitted Pursuant to Article 80 of the Boston Zoning Code

Submitted to:
Boston Redevelopment Authority
One City Hall Square
Boston, Massachusetts 02201

Prepared by:
Epsilon Associates, Inc.
3 Clock Tower Place, Suite 250
Maynard, Massachusetts 01754

Submitted by:
BRG 161 South Huntington LLC
c/o Boston Residential Group
221 Massachusetts Avenue
Suite 402
Boston, Massachusetts 02115

In Association with:
Boston Andes Capital
ADD Inc
Nixon Peabody LLP
Howard/Stein-Hudson Associates, Inc.
Haley & Aldrich
John Moriarty and Associates
Shadley Associates
KVAssociates, Inc

March 27, 2012

BOSTON RESIDENTIAL GROUP

Epsilon ASSOCIATES INC.

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Section 1.0

Project Description and General Information

1.0 PROJECT DESCRIPTION AND GENERAL INFORMATION

1.1 Introduction

BRG 161 South Huntington LLC, an affiliate of Boston Residential Group, LLC (the Proponent) proposes to construct a new 190,000 square foot (sf) residential development at the current site of The Home for Little Wanderers (the Project) (Figure 1-1). The Project will create much needed housing and concentrates development in an area that has existing infrastructure and excellent access to public transportation. The 196-unit project will enhance an underutilized parcel of land close to the Longwood Medical and Academic Area (LMA) with excellent access to downtown Boston and other parts of the Boston metropolitan area.

The Project's massing and design will help tie the neighborhood's varied building stock and uses together by respecting the fabric of the neighborhood and the use will add a residential presence along South Huntington which will complement the existing uses of this vibrant city neighborhood. The Project is a transit-oriented development which will include many sustainable design measures as well as provide affordable housing to the neighborhood.

In a move announced in August and anticipated to happen in the fall of 2012, The Home for Little Wanderers will relocate its programming and services from its oldest and most-well known facility -- the Knight Children's Center -- to a section of its 166-acre site at Longview Farm in Walpole that is undergoing $19-million in new construction. The Home for Little Wanderers, a 213-year-old nonprofit, has held other programming at other sites, including on former farmland in Walpole since 1940.

The Proponent has an executed purchase and sale agreement with the current owner allowing The Home for Little Wanderers to benefit from the sale of the site and relocate its services.

This Expanded PNF is being submitted to initiate Large Project Review under Article 80 of the Boston Zoning Code.

1.2 Project Identification

Project Name:	161 South Huntington
Address/Location:	161 South Huntington Avenue Boston, MA

161 SOUTH HUNTINGTON BOSTON, MASSACHUSETTS

BOSTON RESIDENTIAL GROUP

Figure 1-1
Aerial Locus Map

1.3 Project Team

Proponent:

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c/o Boston Residential Group, LLC
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(978) 897-7100
Cindy Schlessinger
Doug Kelleher
Elizabeth Grob

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Civil Engineers:	Howard/Stein-Hudson Associates, Inc. 38 Chauncy Street Boston, MA 02111 (617) 482-7080 Richard Lantini
Geotechnical Engineers:	Haley & Aldrich 465 Medford Street, Suite 2200 Boston, MA 02129 (617) 886-7400 Marya Gorczyca Scott Goldkamp
Construction Manager	John Moriarty and Associates 3 Church Street Winchester, MA 01890 (781) 729-3900 John Moriarty Rob Carpentier
Landscape Architect	Shadley Associates 1730 Massachusetts Avenue Lexington, MA 02420 (781) 652-8809 JP Shadley
Construction Advisor	KVAssociates, Inc. 303 Congress Street 5th Floor Boston, MA 02210 (617) 426-1215 Frank Vanzler

1.4 Project Description

1.4.1 Project Site

The Project site is approximately 3.49 acres and is located two miles west of downtown Boston in the Jamaica Plain neighborhood near Brookline. The Project site is bounded by South Huntington Avenue to the east; the Jamaicaway to the west; the Sherrill House at 135 South Huntington Avenue, a five to six story skilled nursing facility to the north; and the Goddard House at 201 South Huntington Avenue, a six to seven story skilled nursing and rehabilitation center to the south (see Figure 1-1).

The area has become increasingly popular for working, living, and playing given its close proximity to major employment centers, retail areas, and recreational resources. The MBTA Heath Street Green Line Subway is one block away for service to downtown Boston and points west and the #39 bus stop is nearby. Olmsted Park and Jamaica Pond are immediately adjacent offering gardens, athletic fields, trails and boating, the LMA is ½ mile away, and the commercial areas of Jamaica Plain, Brookline Village and Hyde Square are easily accessible.

As envisioned, the Project will contribute to the vibrant activity in one of Boston's most dynamic mixed-use neighborhoods. The Project will be designed to embrace the natural setting of the Emerald Necklace and provide a much anticipated residential face on South Huntington Avenue.

1.4.2 Existing Site Uses

The site is currently occupied by The Home for Little Wanderers, which is relocating and consolidating some of its operations and functions to its facility in Walpole, Massachusetts. The relocation to the Walpole facility is anticipated to be completed in late 2012. The South Huntington Avenue facility dates back to 1914 and the existing buildings currently house classrooms, offices, student residences, and a gymnasium. The three existing buildings total approximately 55,580 sf of development.

Figure 1-2 provides an existing conditions site plan with the proposed Project overlaid. Figure 1-3 includes the proposed Site Configuration Plan. Photographs of existing conditions are provided in Appendix A.

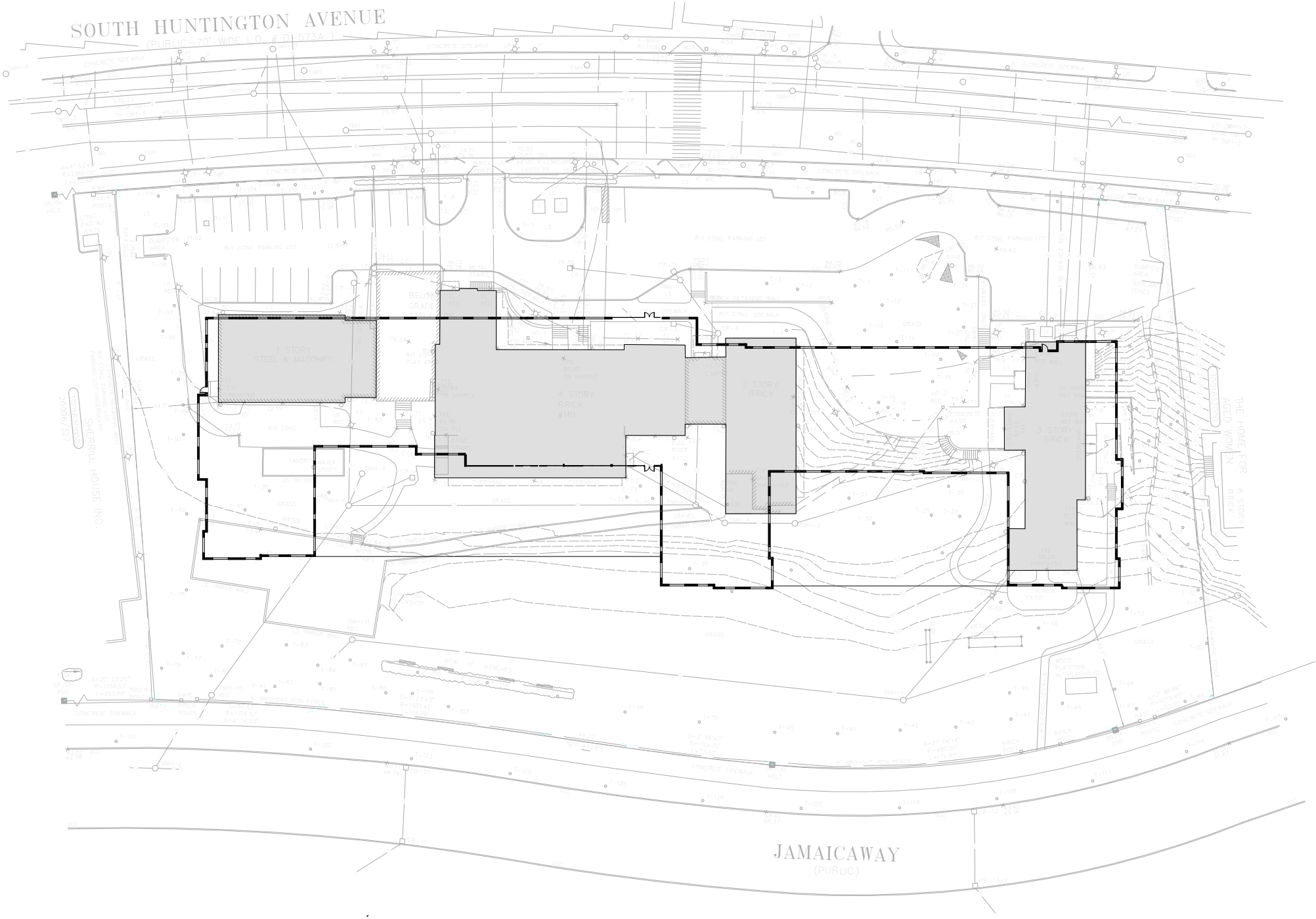

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Figure 1-2
Existing Conditions Site Plan

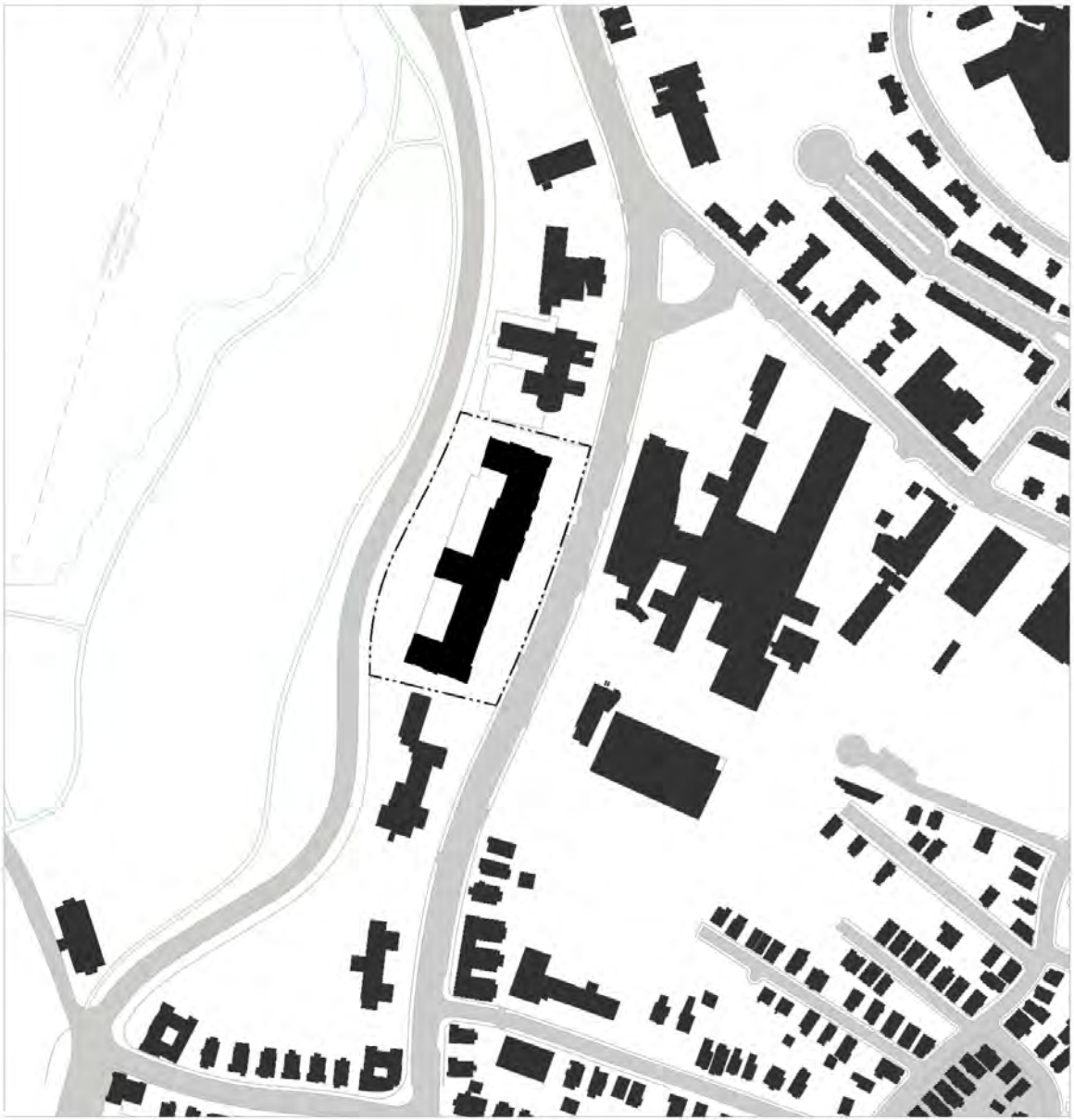


Figure 1-3
Proposed Site Plan

1.4.3 Detailed Project Description

Program

The Project will include the construction of a single new residential building totaling approximately 190,000 sf (134,420 net new sf on the site). The new building will be organized into two parts, one having four and the other five stories. The building will feature a range of tenant amenities located on the ground floor consisting of a common room and lounge, private dining room and kitchen, fitness center and concierge. On floors two through five, the Project will incorporate approximately 196 residential apartments consisting of one and two bedroom units. These uses will add a residential presence along South Huntington Avenue, and will complement the existing uses of this vibrant city neighborhood. Outside and connected to the interior common spaces will be two landscaped elevated terraces with outdoor seating and lounging spaces, a pool and outdoor cooking facilities.

Landscape

The overall character of the landscape of the Project will be enhanced with extensive new plantings and quality site furnishings. The unique Project site calls for a two-sided landscape design response. Along South Huntington Avenue the setting is decidedly urban and the landscape design will engage with the contemporary streetscape conditions. Conversely, the landscape on the Jamaicaway side of the property has the naturalistic character of the historic Olmsted-designed Emerald Necklace and the landscape design will be sensitive to that character.

On South Huntington Avenue the landscape concept is mindful of South Huntington's heritage and recognizes that the Project Site provides a contemporary place to live. The design responds to the traditional and non-traditional Boston neighborhood by engaging the street and civic life. Unlike the current edge of the property, in which the existing iron picket fence and masonry piers are a strong perimeter barrier clearly separating the public and private realms, the new design uses a modern interpretation of the picket fencing and pier elements in a less rigid way.

The design employs a series of varied orthogonal shapes and spaces in the landscape, which allow for a garden ambience. The fence occasionally steps back while the landscape steps forward, creating visual interest and also allowing for the interplay of the landscape with the rectilinear modulation of the building. Curbed plant beds, maintained by the Proponent, are to be placed on the outer side of the fence adjacent to the sidewalk for the enjoyment of passersby and residents alike.

At the primary building entry area along South Huntington Avenue, the landscape consolidates several necessary functions. The design integrates the heavily used crosswalk and bus stop, which are both retained in their current configurations. The landscape opens out from the architecture by extending a broad, well landscaped "invitation" from the building's front door to the sidewalk and vice versa (Figure 1-4).

The southern curb cut is maintained in its existing location while the northern curb cut is widened and moved approximately 16' southward, nearer to the front door. This configuration consolidates and reduces the mixed pedestrian and vehicular traffic area and helps to resolve the steep existing off-site sidewalk cross pitches, all of which contribute to a more garden like entry and a higher level of pedestrian comfort, safety and ADA compliance.

On the Jamaicaway side, the landscape context is primarily forested, with modest sidewalks and walking paths which weave into and out of Olmsted Park. The Project intends to continue the primarily sylvan character in the Project's new landscape. There is a mature stand of approximately 28 existing red oak trees on the site, and they contribute to the visual quality of the property and the experience of the public along the Jamaicaway. The Proponent is intending to protect the trees throughout construction.

Other key aspects of the landscape along the Jamaicaway include an historic existing iron picket fence which runs the entire length of the property which will be retained and restored.

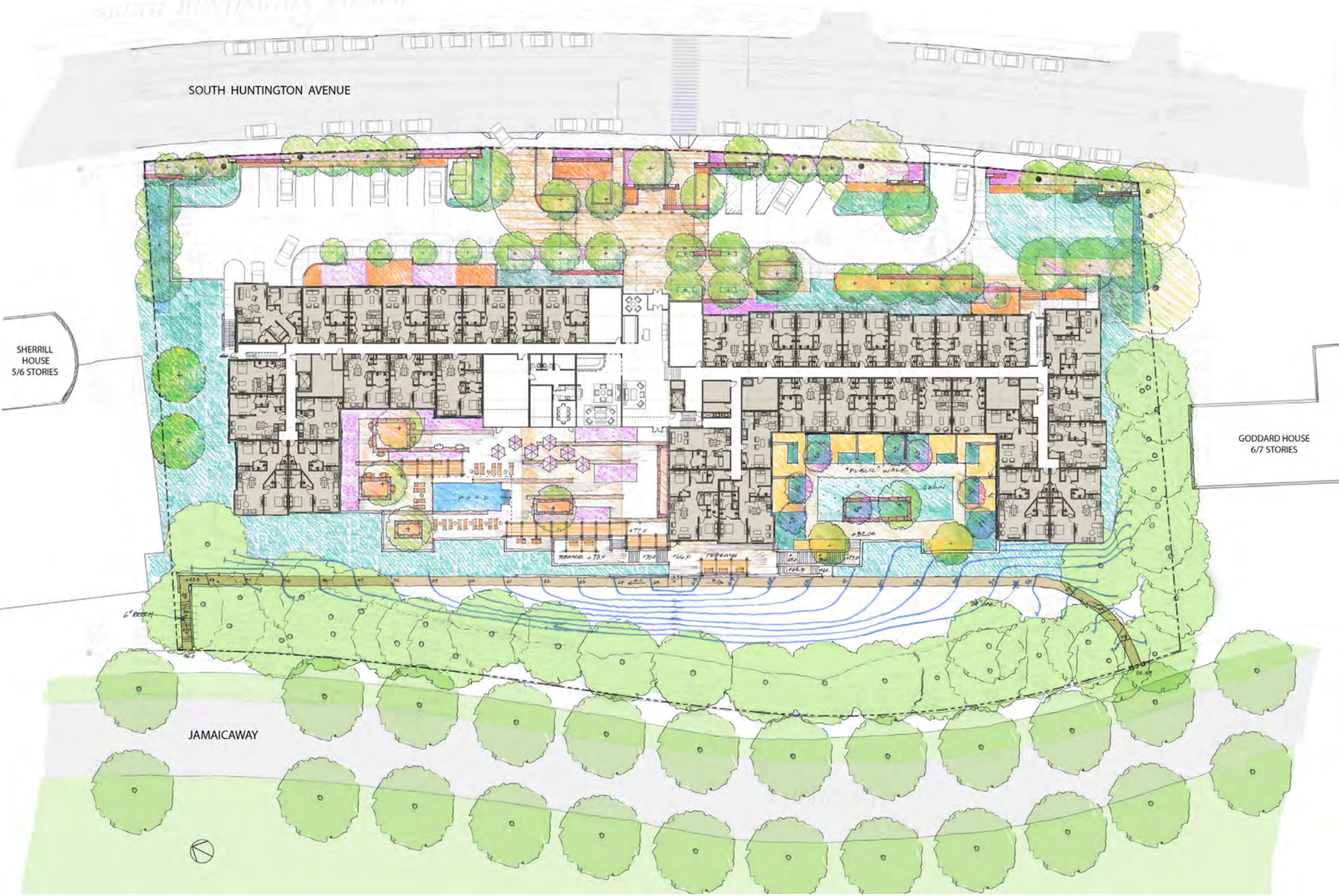
Parking and Access

Approximately 154 parking spaces will be included in a partially below grade parking garage which is not visible from South Huntington Avenue while 16 visitor spaces with two handicapped accessible spaces will be provided at grade totaling 170 spaces.

The proposed Project has been designed to maintain access from South Huntington Avenue much as it is today. Dual vehicular travel lanes leading to the north from the northern curb cut provide two-way access to and from the structured parking below the building, while a narrower one-way vehicular loop between the building entry and the southern curb cut provides adequate emergency vehicle passing, and will provide a drop off area with all service occurring off the loop drive with a dedicated service lane. A raised pedestrian table with ornamental pavers that passes in front of the building entry will contribute to the traffic calming, pedestrian comfort and safety.

Height and Massing

The building will be 65 feet in height as measured in accordance with the City of Boston Zoning Code. (Figures 1-5 through 1-10 include floor plans and sections).



161 SOUTH HUNTINGTON BOSTON, MASSACHUSETTS

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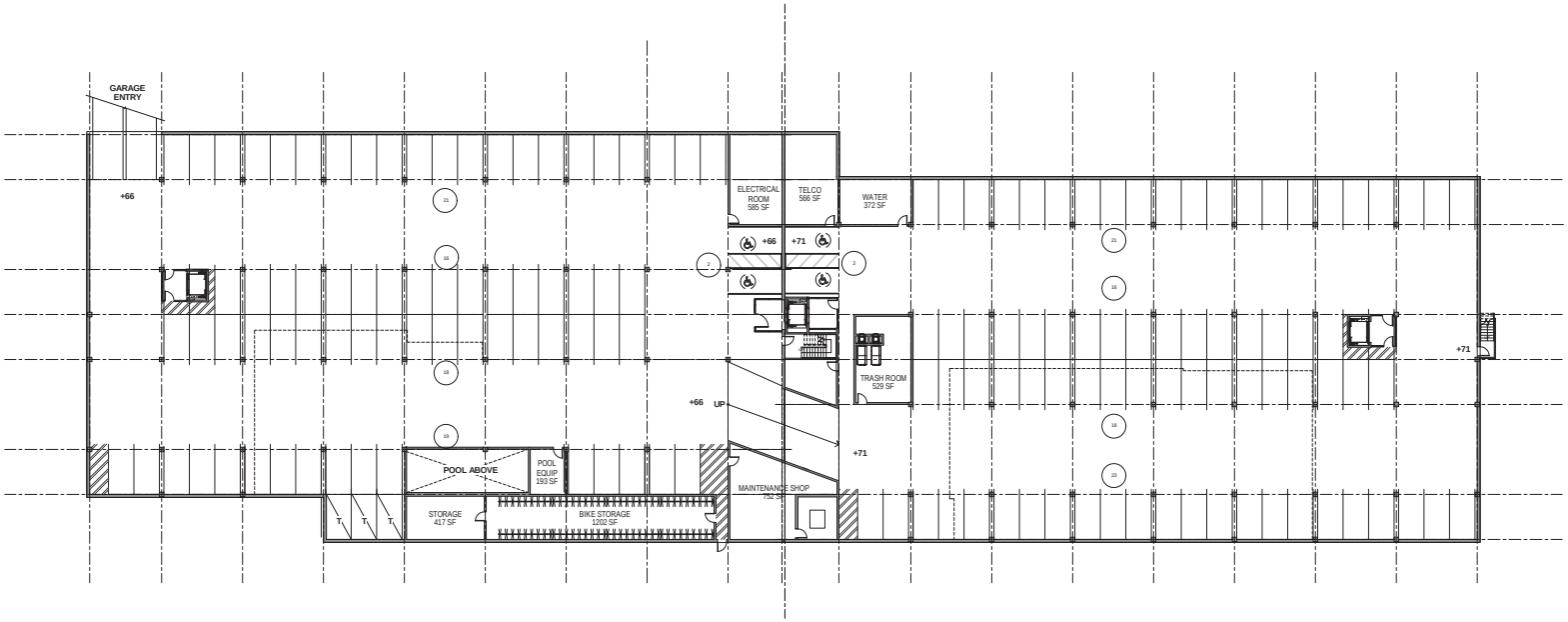
Figure 1-4
Proposed Landscape Plan

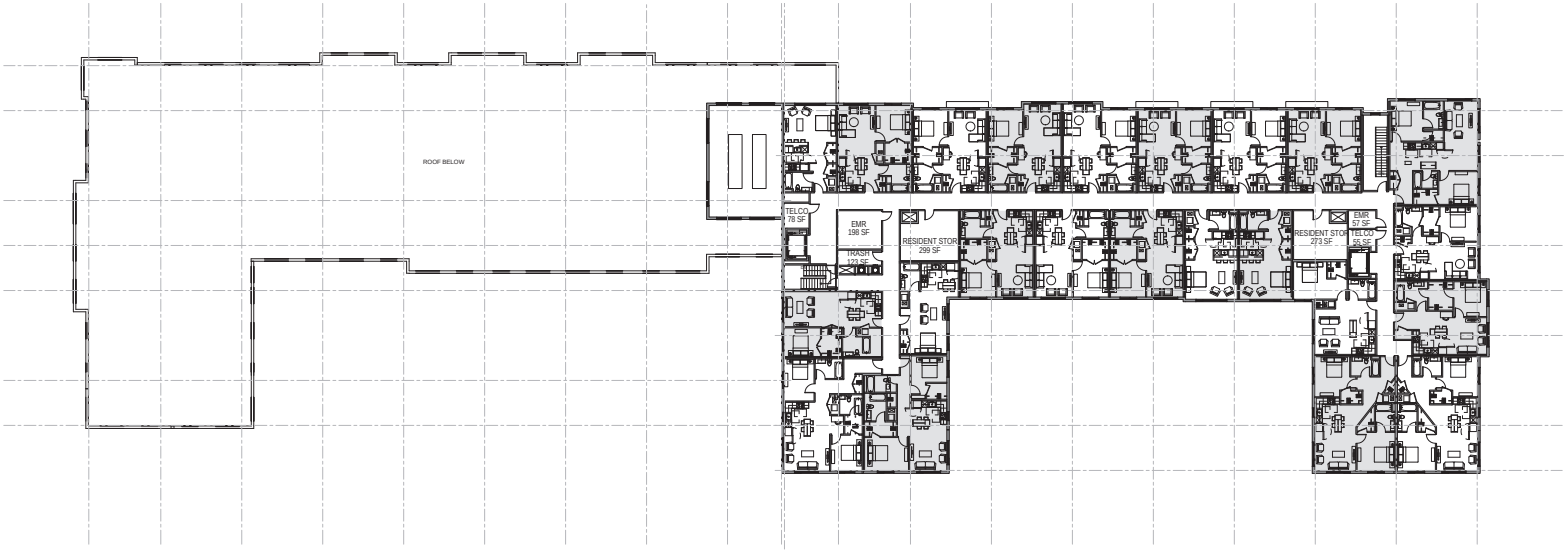


PARKING SPACES - 149
TANDEM SPACES - 3
ACCESSIBLE SPACES - 4
TOTAL PARKING SPACES - 156

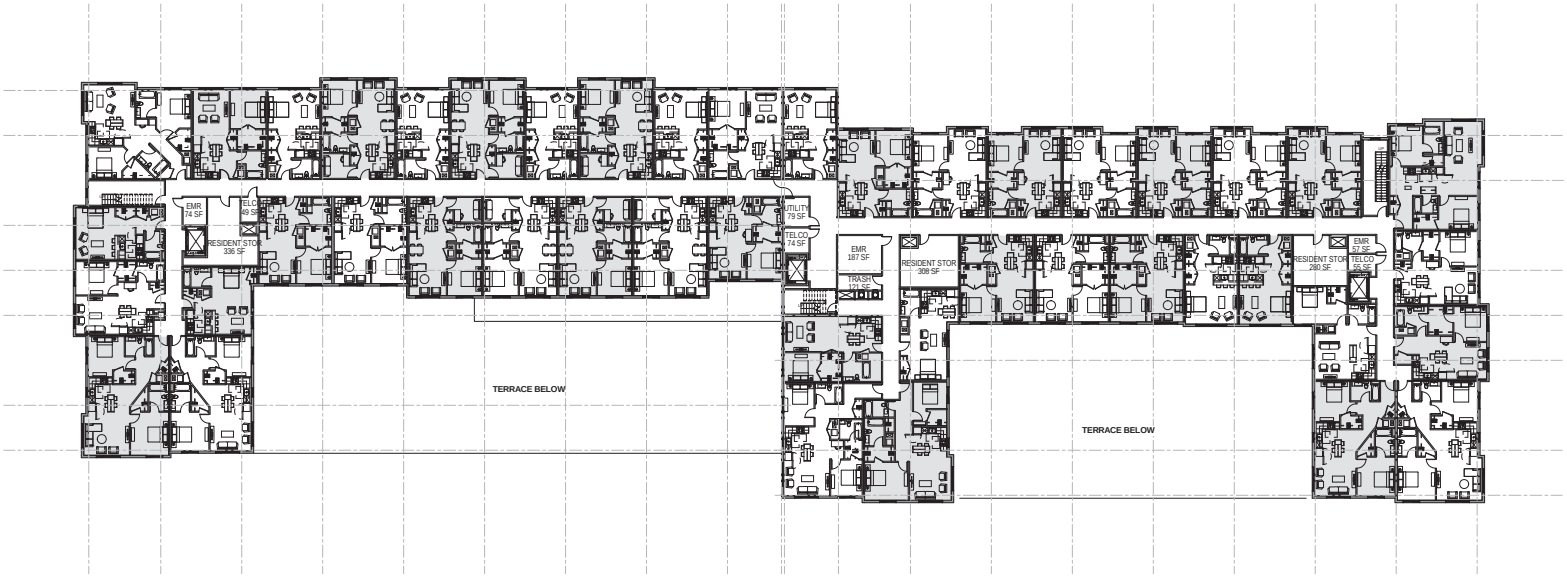
161 SOUTH HUNTINGTON BOSTON, MASSACHUSETTS

BOSTON RESIDENTIAL GROUP

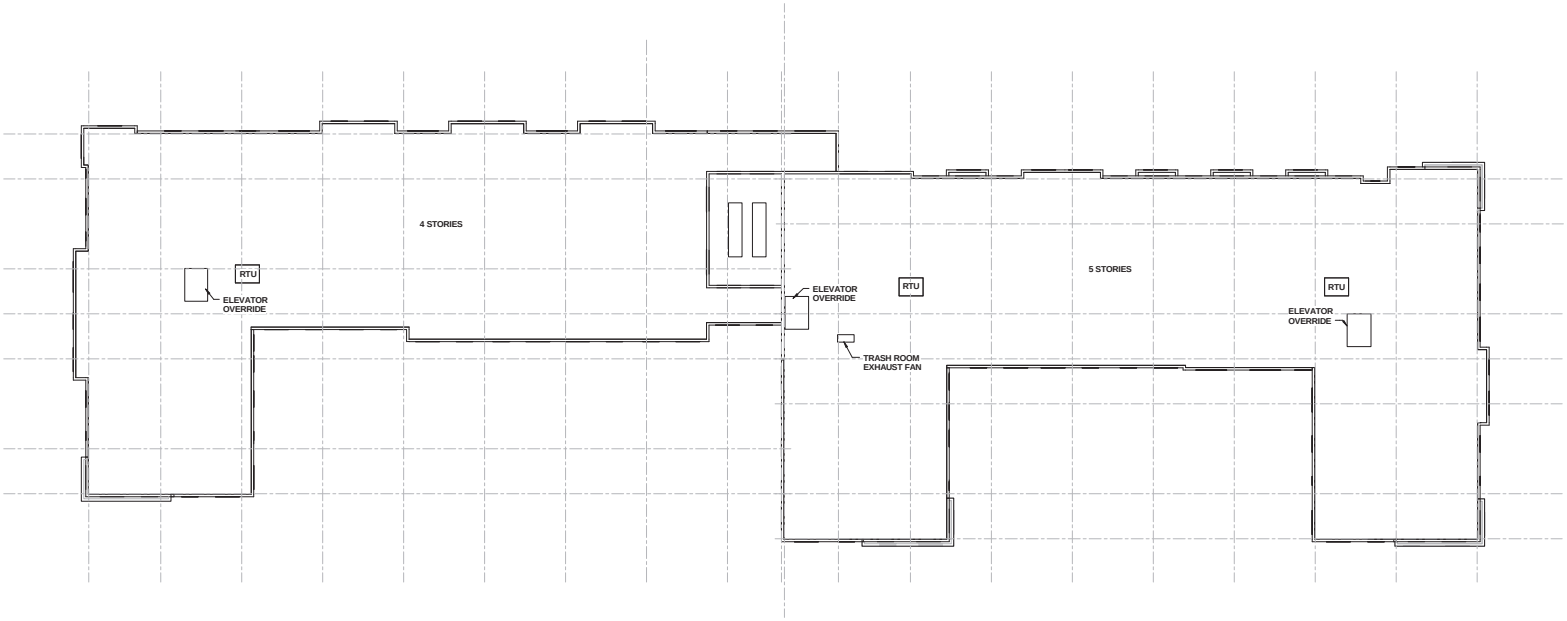
Figure 1-6
Ground Floor Plan

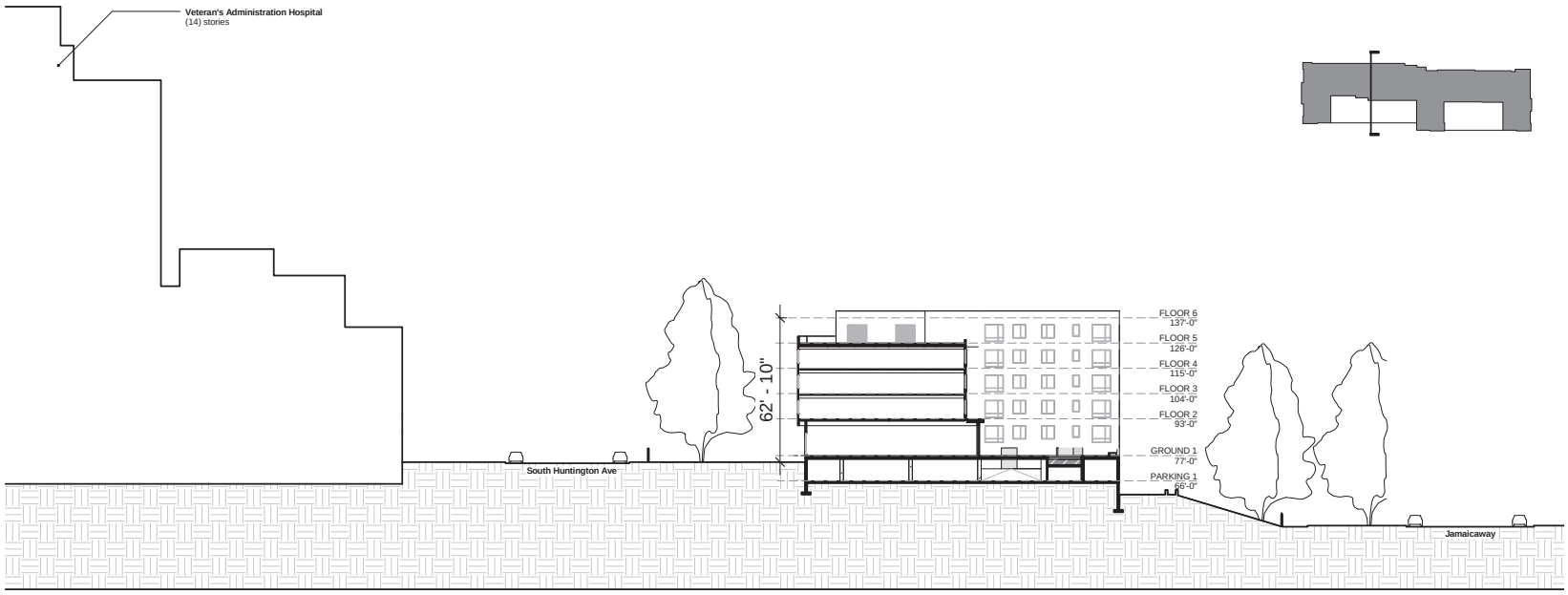


Fifth Floor Plan

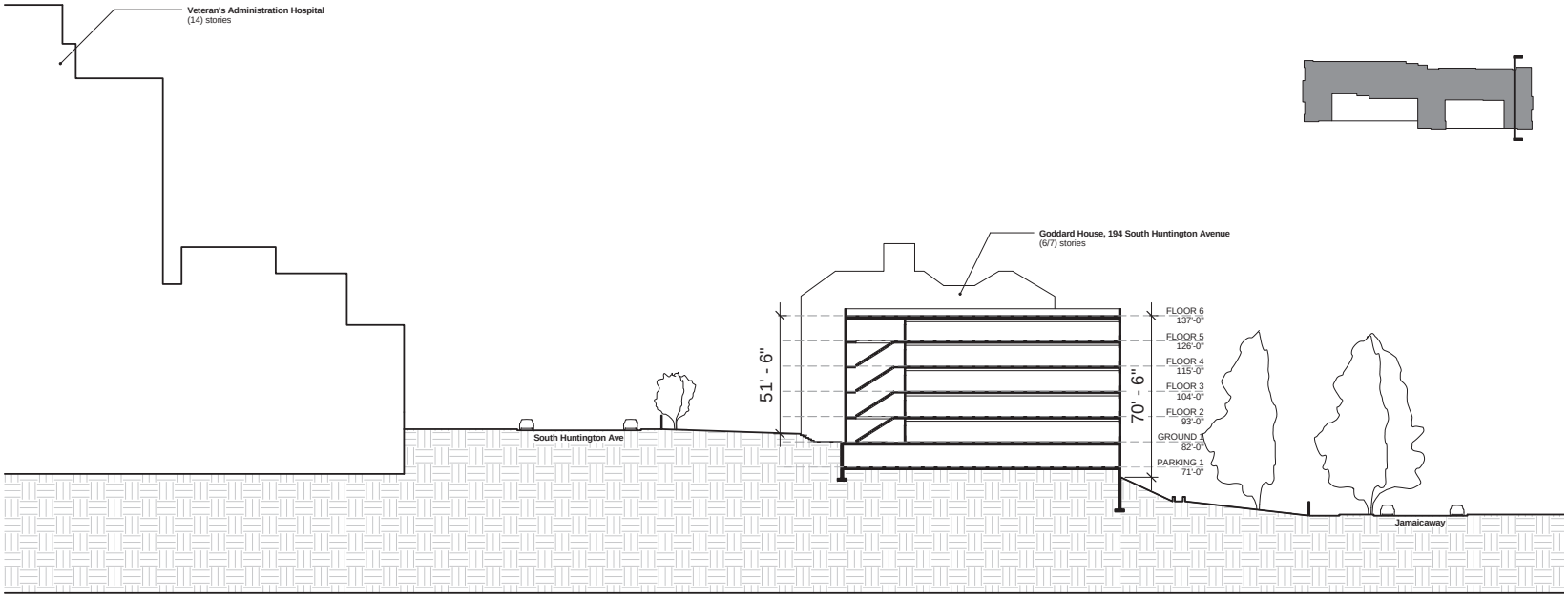


Second Floor Plan - Typical Floor

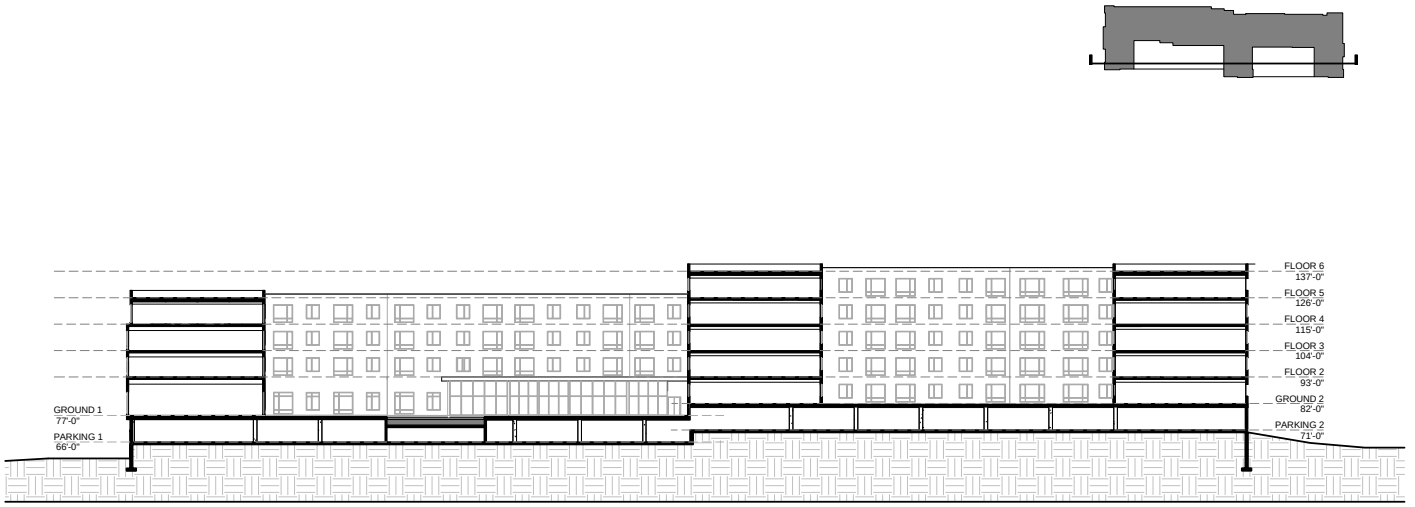

4 STORIES
RTU
ELEVATOR OVERRIDE
5 STORIES
RTU
ELEVATOR OVERRIDE
RTU
ELEVATOR OVERRIDE
TRASH ROOM EXHAUST FAN



Cross Section Thru 4 Story Portion



Cross Section Thru 5 Story Portion


FLOOR 6
137'-0"
FLOOR 5
126'-0"
FLOOR 4
115'-0"
FLOOR 3
104'-0"
FLOOR 2
93'-0"
GROUND 2
82'-0"
PARKING 2
71'-0"
GROUND 1
77'-0"
PARKING 1
66'-0"

The Project's massing and design will help tie the neighborhood's varied building stock and uses together by respecting the fabric of the neighborhood. Over the course of the past several months, the Proponent has evaluated the appropriate design approach for the Project and has focused on the following priorities in developing the design:

- Respecting and supporting the integrity of the Emerald Necklace;
- Reflecting the context of the buildings within the Jamaica Plain neighborhood;
- Providing streetscape and public realm improvements through upgrades to sidewalks, street lighting, landscaping, signage, fencing, and paving;
- Locating development along a readily accessible transit line, the MBTA's Heath Street Green line as well as the #39 bus are both one block away
- Developing urban infill sites; and
- Expanding the residential fabric of Jamaica Plain.

1.4.3.1 Project Context

The Project is bound on the north by Sherrill House, a five to six story skilled nursing facility, and on the south by Goddard House, a six to seven story skilled nursing and rehabilitation center. On the east across South Huntington Avenue is the Veterans Administration (VA) Hospital, a campus of buildings ranging in height from four to 14 stories, and on the west, the Jamaicaway and then across the street, a portion of the Olmsted Park and Leverett Pond.

Both adjacent nursing facility buildings are generally constructed of masonry with the Sherrill House having a contemporary addition closest to the site featuring bays of metal panel. The VA Hospital is constructed of smooth and textured white and blue metal panels.

The contrast between the South Huntington Avenue and Jamaicaway streetscape is extreme. South Huntington Avenue is a wide linear and active roadway with single car travel lanes, bikes lanes and parallel parking on both sides of the street. The sidewalk adjacent to the property is approximately five feet in width set between parallel parked cars and a deteriorated six foot tall iron fence. In contrast, the Jamaicaway is a tree lined curvelinear four lane roadway with wide planted green strips and eight foot sidewalks on both sides.

The Project is consistent with the larger urban planning goals to promote smart growth by developing urban infill sites and discouraging building on 'greenfield' sites. The Project will address the local need for residential use and will enhance an underutilized parcel of land close to the LMA and downtown. In addition, the Project concentrates development in an area that has existing infrastructure and excellent access to public transportation.

1.4.3.2 Project Alternatives / Evolution of Design

The Project design has evolved and several conceptual design scenarios were studied before arriving at the Project design. Options included maintaining and renovating the oldest of the existing structures, paired with a new tower building of approximately 12 stories. Parking would have been provided in a garage structure below the tower and at grade. The drawbacks included greater shadow impacts, significant added costs to both renovate the existing structure and construct a high-rise building and garage, conflict with the context regarding height, and lack of maintenance of the street wall.

Another scenario studied assumed two separate four story buildings with three story townhouses fronting South Huntington Avenue at the center of the site. With this scenario, the building and parking encroached into the existing mature trees on the Jamaicaway that are required to be maintained, did not provide an adequate level of density, and did not maintain the desired street wall.

1.4.3.3 Design

The site will be redeveloped from the existing condition to an active residential development with a robust resident amenity package. The majority of the parking will be provided under the building and out of sight in a partially below grade garage.

The Project's massing and design will help tie the neighborhood's varied building stock and uses together by respecting the fabric of the neighborhood. The design of the new building centers on simple volumes which are broken down in scale through the modulation of façade depth, bay windows, building heights, and varying materials of masonry, metal panel, and glass. The building generally aligns with adjacent parcels to provide definition to South Huntington Avenue. The design acknowledges the sloped site by stepping the building and is devised into two major elements of four stories and five stories. The development will enhance pedestrian access at South Huntington Avenue by providing new sidewalks, landscaping elements, fencing, and lighting and will offer an active streetscape with multiple pedestrian entry points

The building will seek LEED Certification through the USGBC at a minimum of a Certified level, exceeding the requirements of Article 37 of the Boston Zoning Code. The redevelopment of the site will promote public safety, encourage walking and transit usage and improve safety and the pedestrian environment.

1.4.4 Approximate Dimensions

Site Area		3.49 Acres
Project		**Square Feet** (Approximate)
	Residential	183,500 sf (196 units)
	Ground Floor Residential Amenities	3,000 sf
	Ground Floor Lobby and Management Office	3,500 sf
	Total	**190,000 gsf**
Maximum building height		The building height is 65 feet as measured in accordance with the Boston Zoning Code.
Parking		154 partially below grade parking spaces 16 at-grade visitor spaces Total: 170 parking spaces.

1.4.5 Schedule

Construction of the Project is estimated to last approximately 18 months, with initial site work expected to begin in the last quarter of 2012. There will be a one-month site mobilization period.

Typical construction hours will be in compliance with the City's Construction Ordinance: from 7:00 A.M. to 6:00 P.M. Monday through Friday with no work anticipated on the weekends. In the event that weekend work is necessary, the Proponent will obtain required City approvals.

1.5 Public Benefits

The development at 161 South Huntington Avenue will generate a myriad of public benefits for the surrounding neighborhoods and the City of Boston as a whole. These public benefits fall into multiple categories, outlined below.

1.5.1 Financial Benefits

The Project will result in significant financial benefits to the City of Boston, including:

- Returning the property to the City's tax rolls following 100 years of ownership by a tax exempt entity;

- Creating significant additional real estate tax revenues to the City's General Fund commencing after project completion, totaling over $9 million of net new tax revenue over the next 20 years;

- Creating approximately 26 affordable housing units located on-site;

- Creating approximately 225 construction jobs and 10 new permanent, on-site jobs;

- Providing additional customers for retail shops and markets in the neighborhood of the Project.

1.5.2 Urban Design Benefits

The development of the Project will help to define the image and design quality of the Jamaicaway edge of the area, and will enhance the overall urban design quality and public realm of the corridor as a whole in the vicinity of the Project. The Project will include significant streetscape improvements to the pedestrian realm on both sides of the Project site formed by South Huntington Avenue and the Jamaicaway. These improvements will include the following:

South Huntington Avenue:

- Extending Jamaica Plain's residential fabric into an area primarily made up of institutional uses;

- Constructing 26 affordable housing units on site;

- Creating a high-quality, appealing and consistently designed edge to the pedestrian environment along the side of South Huntington Avenue;

- Constructing a new concrete sidewalk with handicapped accessible access to main lobby entry, opposite the existing pedestrian cross-walk;

- Replacing existing damaged fence with new continuous metal fencing integrated into new landscape elements;

- Developing new flush decorative paving at primary pedestrian entries;

- Planting new street trees, shrubs and seasonal perennials;

- Improving vehicular entrance to the site, roadway quality, traffic flow, and pedestrian safety;

- Re-grading and reconstructing existing sidewalks to eliminate accessibility issues and cross-slope issues; and

- Reducing on-grade parking along South Huntington Avenue from 53 spaces to 16 spaces and reducing impervious paving. The balance of the parking will be placed below the building.

Jamaicaway:

- Maintaining, repairing and repainting the existing iron fence and brick piers;
- Maintaining and caring for the mature stand of existing oak trees, with infill of native shrubs, ground cover, and perennial planting, and stabilizing the eroding slope;
- Cooperating with The Emerald Necklace Conservancy, including support for programs;
- Setting back structures on the Jamaicaway in excess of the adjacent building setbacks; and
- Extending residential fabric of Jamaica Plain.

1.5.3 Smart Growth/Transit-Oriented Development

The Project represents the epitome of smart-growth and transit-oriented development by concentrating new residential uses in close proximity to major regional rapid transit and bus lines that provide easy access to the Project site from all neighborhoods of the City of Boston and the City's suburbs. The Project will create many new pedestrian trips every day, enlivening the proximate streetscape and providing more foot traffic for local businesses and restaurants. The Project will likely eliminate many hours of commuter travel per year by residents of the Project who may have lived further away from their workplaces.

1.5.3.1 Sustainable Development

Sustainability informs every design decision. Enduring and efficient buildings conserve embodied energy and preserve natural resources. The Project at 161 South Huntington Avenue is designed to satisfy market demands for efficient, urban apartment homes with flexible layouts. Durable materials will be used throughout the buildings. The Project embraces the opportunity to positively influence the urban environment. Its urban location takes advantage of existing infrastructure while convenient access to mass transportation will reduce dependence on single occupant vehicle trips and minimize transportation impacts. Bicycle storage will be provided on-site at a ratio of one bike per apartment, and Zipcar access will provide residents with transportation alternatives. The building will seek LEED Certification at a minimum of a Certified level under the LEED rating system through the submission of a LEED scorecard which will include an explanation of the Project's approach to achieving each of the identified LEED points.

1.6 Regulatory Controls and Permits

As noted above, the Project is subject to Large Project Review under Article 80 of the Boston Zoning Code. This expanded Project Notification Form (PNF) is being prepared to initiate that review and the Proponent requests that the requirements for a Draft and Final Project Impact Report be waived.

Table 1-1 lists the federal, state and local agencies from which permits or other actions may be required.

Table 1-1 Anticipated Permits and Approvals

Agency	Permit, Review or Approval
Federal and State Agencies	
US EPA	National Pollutant Discharge Elimination System (NPDES) Construction General Permit
Department of Environmental Protection	Notification of Demolition/ Construction BWPAQ 06
Department of Environmental Protection Division of Air Quality Control	Environmental Results Program
City Agencies	
Boston Civic Design Commission	Design Review
Boston Landmarks Commission	Article 85 (Demolition Delay) Review
Boston Inspectional Services Department	Building Permit Certificate(s) of Occupancy
Boston Fire Department	Approval of Fire Safety Equipment
Boston Public Improvement Commission / Boston Department of Public Works	Specific Repair Plan and other PIC approvals
Boston Redevelopment Authority	Article 80 Large Project Review
Boston Conservation Commission	Order Of Conditions if required
Boston Transportation Department	Construction Management Plan Transportation Access Plan Agreement (TAPA)
Boston Water and Sewer Commission	Water and Sewer Connection Permits General Service Application Temporary Construction Dewatering Permit Site Plan Review
Zoning Board of Appeal	Greenbelt Protection Overlay District Dimensional variances (Height and FAR)

1.7 Consistency with Zoning Regulations

1.7.1 Large Project Review

The proposed Project is subject to the BRA's Article 80 Large Project Review process as a result of the new construction.

1.7.2 Consistency with Zoning

According to Zoning Map 9B, the Property is located within a Neighborhood Institutional ("NI") Subdistrict and the Greenbelt Protection Overlay District ("GPOD") of the Jamaica Plain Neighborhood District (Map 9B of the Zoning Districts of the City of Boston). As described below, it is anticipated that the Project will require a GPOD Conditional Use Permit and dimensional variances.

1.7.3 Use Regulations

Multi-family residential uses and accessory parking are allowed as of right in the NI Subdistrict. Therefore, no zoning relief is needed for the proposed uses at the Property.

1.7.3.1 Greenbelt Protection Overlay District

Article 29 requires the Board of Appeals to issue a Conditional Use Permit for any proposed project in excess of 5,000 square feet of gross floor area within the GPOD. The proposed project will have approximately 190,000 square feet of gross floor area; accordingly, a Conditional Use Permit will be required for the proposed project.

1.7.4 Bulk and Dimensional Restrictions

Table I of Article 55 contains the relevant dimensional regulations for the NI Subdistrict. It is anticipated that zoning relief will be required from the following bulk and dimensional requirements:

- Minimum Lot Size for Dwelling Units;
- Floor Area Ratio; and
- Building Height.

1.7.4.1 Off-Street Parking and Off-Street Loading

The Proponent proposes to construct 170 off-street parking spaces, 154 of which will be located in a garage partially underground. Under the Zoning Code, the BRA determines off-street parking requirements during Large Project Review.

As stated in Section 55-40 of the Zoning Code, the BRA will determine any off-street loading requirements during Large Project Review.

1.7.5 Inclusionary Housing

The Project is also consistent with the City's inclusionary development requirement. The Proponent will construct 26 affordable housing units on site.

1.8 Legal Information

1.8.1 Legal Judgments Adverse to the Proposed Project

The Proponent is not aware of any legal judgments in effect or legal actions pending that are adverse to the Project.

1.8.2 History of Tax Arrears on Property

The Proponent is not in tax arrears on any property owned within the City of Boston.

1.8.3 Site Control / Public Easements

The property is currently owned by The Home for Little Wanderers, Inc. BRG 161 South Huntington LLC has the right to purchase the property pursuant to the Purchase and Sale Agreement. There are no public easements on the site.

Section 2.0

Transportation

2.0 TRANSPORTATION

2.1 Introduction

In accordance with the Boston Transportation Department's (BTD's) *Transportation Access Plan Guidelines* (2001) and the *BRA Development Review Guidelines* (2006), this Section describes roadway, pedestrian, and bicycle conditions; transportation issues; parking and loading; and transportation goals for the 161 South Huntington Avenue Project ("the Project").

2.1.1. Project Description

The Project site, located at 161 South Huntington Avenue in Jamaica Plain, is bounded by Jamaicaway to the west, South Huntington Avenue to the east and institutional-use buildings to the north and south (see Figure 2-1). The site currently contains the former Home for Little Wanderers.

The Project will include construction of approximately 196 residential apartments with 170 parking spaces. Of the 170 parking spaces designed to support the residential units, 154 will be located in the garage below the building and 16 in the front surface lot.

Vehicular access to the site is currently provided via two curb cuts on South Huntington Avenue, including one approximately 19-foot wide curb and one approximately 18-foot wide curb, both providing access to surface parking lots. Access to the site will continue to be provided on South Huntington Avenue in approximately the same location as the current driveways. The northern site driveway will be widened and will shift south to accommodate improved access for two-way traffic. The southern site driveway will remain in its same location but will also be widened and will serve as a one-way, right-only exit.

All loading, trash pick-up, and move-in/move-out activities will occur on-site from the front surface parking lot.

The primary pedestrian access to the residential building will be provided along South Huntington Avenue.

2.1.2 Methodology

As described above, in accordance with Boston Transportation Department (BTD) *Transportation Access Plan Guidelines* (2001), the study team conducted a transportation analysis for the Project. The analysis is summarized in the following sections:

- The first section comprises an inventory of existing transportation conditions, including roadway and intersection conditions, parking, transit, pedestrian and bicycle circulation, loading, and site conditions.

Not to scale.

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Figure 2-1
Locus Map

- The second section evaluates future transportation conditions and assesses potential traffic impacts associated with the Project and other neighboring projects. Long-term impacts are evaluated for the year 2017, based on a five-year horizon from the 2012 base year. Expected roadway, parking, transit, pedestrian, and loading capacities and deficiencies are identified. In addition to an Existing Conditions analysis, the study includes the following scenarios:

  - The No-Build Scenario (2017) includes only general background growth as no proposed or planned projects are close enough or large enough to impact the vicinity of the site; and

  - The Build Scenario (2017) includes specific travel demand forecasts for the Project.

- A third section identifies appropriate measures to mitigate project-related impacts identified above.

- Finally, an evaluation of the short-term traffic impacts during construction is also included.

2.1.3 Study Area

The study area includes the following five intersections (see Figure 2-2):

1. South Huntington Avenue/Veteran's Hospital Mid-block Crossing (signalized);
2. South Huntington Avenue/Bynner Street (signalized);
3. South Huntington Avenue/North Site Drive (unsignalized);
4. South Huntington Avenue/Hospital Entrance (unsignalized); and
5. South Huntington Avenue/South Site Drive (unsignalized).

2.2 Existing Conditions

2.2.1 Roadway Network

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

Not to scale.

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Figure 2-2
Study Area Intersections

South Huntington Avenue, an urban minor arterial, runs northwest-southeast between Huntington Avenue to the northwest and Centre Street to the southeast. South Huntington Avenue consists of two vehicle and two bicycle travel lanes, one each in each direction, plus sidewalks on each side. In the immediate vicinity of the Project, unrestricted parking, and MBTA bus stops occupy the curb fronts on both sides of the street.

Bynner Street is a local roadway running east-west between Creighton Street to the east and Jamaicaway to the west. Unrestricted parking is provided on both sides of Bynner Street.

2.2.2 Intersection Conditions

2.2.2.1 Signalized Intersections

South Huntington Avenue/Veteran's Hospital Mid-block Crossing is a signalized mid-block pedestrian crossing. The South Huntington Avenue northbound and southbound approaches each consist of a 12-foot through lane with a 6-foot bicycle lane and 8.5-foot parking lane. Parking is not allowed on any of the approaches at the intersection. A crosswalk with wheelchair ramps on each side crosses the intersection from east to west. Pedestrian pushbuttons activate a pedestrian signal phase at the intersection.

South Huntington Avenue/Bynner Street is a four-way signalized intersection. The Bynner Street eastbound approach consists of a 10-foot, shared left/through/right-turn lane. The Bynner Street westbound approach consists of a 9-foot, shared left/through/right-turn lane. The South Huntington Avenue northbound approach consists of a 12-foot, shared left/through/right-turn lane. The South Huntington Avenue southbound approach consists of a 12-foot, shared left/through/right-turn lane and a 14.5-foot, unmarked, exclusive right-turn lane with 6-foot bicycle lanes running north and south along South Huntington Avenue. Parking is permitted along both Bynner Street approaches. An MBTA bus stop is located at the approach of South Huntington Avenue northbound. Crosswalks and wheel chair ramps are provided at all four legs of the intersection. Pushbuttons activate pedestrian phases at the intersection.

2.2.2.2 Unsignalized Intersections

South Huntington Avenue/North Site Drive is an unsignalized intersection with three approaches. The North Site Drive eastbound approach, which operates under stop sign control, consists of a 9.5-foot, shared left/right-turn lane. The South Huntington Avenue northbound approach consists of a 12-foot, shared left-turn/through lane. The South Huntington Avenue southbound approach consists of a 12-foot, shared through/right-turn lane with a 6-foot bicycle lane and 8.5-foot parking lane provided along both sides of South Huntington Avenue.

South Huntington Avenue/South Site Drive is an unsignalized intersection with three approaches. The South Site Drive eastbound approach, which operates under stop sign control, consists of a 9-foot, shared left/right-turn lane. The South Huntington Avenue

northbound approach consists of a 12-foot, shared left-turn/through lane. The South Huntington Avenue southbound approach consists of a 12-foot, shared through/right-turn lane. A 6-foot bicycle lane and parking lane are provided along both sides of South Huntington Avenue.

South Huntington Avenue/Hospital Entrance is an unsignalized intersection with three approaches. The Hospital Entrance westbound approach, which operates under stop sign control, consists of a 12-foot, shared left/right-turn lane. The South Huntington Avenue northbound approach consists of a 12-foot, shared through/right-turn lane. The South Huntington Avenue southbound approach consists of a 12-foot, shared left-turn/through lane. A 6-foot bicycle lane and parking lane are provided along both sides of South Huntington Avenue.

2.2.3 Traffic Conditions

Turning movement counts were based on data collected during the weekday morning (7:00 a.m. to 9:00 a.m.) and evening (4:00 p.m. to 6:00 p.m.) peak periods on Thursday, February 2, 2012. Based on these counts, the weekday peak hours were identified as 7:30–8:30 a.m. and 4:00–5:00 p.m.

Figure 2-3 shows the existing peak-hour turning volumes for the study area intersections. The existing traffic volumes include the traffic generated by the existing, approximately 55,580-sf of institutional space located at 161 South Huntington Avenue. Complete traffic count data are provided in Appendix B.

2.2.3.1 Traffic Operations

The study team used Trafficware's Synchro 6 software to analyze Level of Service (LOS) and delay at study area intersections. This tool is based on the methodology specified in the Transportation Research Board's *2000 Highway Capacity Manual (HCM).* HCM methods analyze the capacity of an intersection by determining the LOS, delay (in seconds), volume-to-capacity (v/c) ratio, and 95th percentile queue length (in feet), based on the intersection geometry, traffic control, and available traffic data for each intersection.

The ***v/c ratio*** is a measure of congestion at an intersection approach. A v/c ratio of 1 or greater indicates that the traffic volume on the intersection approach exceeds capacity.

The ***95th percentile queue length*** represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during 95% of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only 5% of the time. These queues would typically not be seen during off-peak hours.

Not to scale.

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Figure 2-3

Existing Conditions (2012) Turning Movement Counts, a.m. Peak Hour (7:30–8:30 a.m.) and p.m. Peak Hour (4:00–5:00 p.m.)

Table 2-1, derived from the HCM, provides LOS criteria for signalized and unsignalized intersections. LOS A defines the most favorable condition, with minimum traffic delay. LOS F represents the worst condition (unacceptable), with significant traffic delay. LOS D is generally considered acceptable in an urban environment.

Table 2-1 Level of Service Criteria (HCM Excerpt)

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

Source: 2000 Highway Capacity Manual, Transportation Research Board.

Existing Conditions signal timing and phasing information was provided by the Boston Transportation Department. Field observations were also made to verify Synchro model accuracy as well as to calibrate the model as necessary to match existing traffic conditions as closely as possible. To depict behavior as observed in the field, the model was modified to include 25-foot storage lanes on South Huntington Avenue both for right turning vehicles coming from the north and for left turning vehicle movements coming from the south.

Table 2-2 and Table 2-3 summarize the existing weekday a.m. peak hour and p.m. peak hour Level of Service results for the study area intersections. Capacity analysis reports are provided in Appendix B.

All of the study area intersections operate at an acceptable overall LOS (LOS D or better) during both peak hours. In the p.m. peak hour, all approaches actually operate at LOS C or better. Only two individual intersection approaches operate below LOS D, in the a.m. peak hour only.

- *South Huntington Avenue/Bynner Street* – the Bynner Street eastbound shared left-turn/through/right-turn lane operates at LOS E due to the high volume of left turns at this approach (approximately 200 vehicles per hour); and

- *South Huntington Avenue/North Site Drive* – the North Site Drive eastbound shared left/right-turn lane operates at LOS F due to the high volume of traffic from the through movements on South Huntington northbound.

Table 2-2 Existing Conditions (2012) Level of Service Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	95% Queue Length (ft)
Signalized Intersections				
South Huntington/Veteran's Hospital Mid-block Crossing	**A**	**6.7**	–	–
South Huntington NB thru	A	8.6	0.76	717
South Huntington SB thru	A	1.7	0.27	118
South Huntington/Bynner Street	**D**	**39.7**	–	–
Bynner EB left/thru/right	E	78.4	>1.00	#379
Bynner WB left/thru/right	B	13.1	0.38	103
South Huntington NB left*	B	14.3	0.18	57
South Huntington NB thru/right	D	36.4	0.91	#699
South Huntington SB left/thru	D	36.7	0.80	#288
South Huntington SB right*	A	8.4	0.11	44
Unsignalized Intersections				
South Huntington/North Site Drive				
North Site Drive EB left/right	F	>50.0	>1.00	–
South Huntington NB left/thru	A	0.2	0.01	0
South Huntington SB thru/right	A	0.0	0.27	0
South Huntington/Hospital Entrance				
Hospital Entrance WB left/right	D	31.1	0.16	14
South Huntington NB thru/right	A	0.0	0.66	0
South Huntington SB left/thru	A	3.1	0.11	9
South Huntington/South Site Drive				
South Site Drive EB left/right	D	32.7	0.01	1
South Huntington NB left/thru	A	0.1	0.00	0
South Huntington SB thru/right	A	0.0	0.23	0

= 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.

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

* Defacto lane-operates as a 25 foot storage lane for calibration purposes.

Table 2-3 Existing Conditions (2012) Level of Service Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	95% Queue Length (ft)
Signalized Intersections				
South Huntington/Veteran's Hospital Mid-block Crossing	**A**	**2.1**	–	–
South Huntington NB thru	A	1.9	0.30	133
South Huntington SB thru	A	2.3	0.39	213
South Huntington/Bynner Street	**B**	**18.0**	–	–
Bynner EB left/thru/right	C	31.0	0.71	169
Bynner WB left/thru/right	C	24.1	0.37	71
South Huntington NB left*	B	18.9	0.36	48
South Huntington NB thru/right	B	11.8	0.39	255
South Huntington SB left/thru	C	20.1	0.69	#524
South Huntington SB right*	A	8.7	0.29	147
Unsignalized Intersections				
South Huntington/North Site Drive				
North Site Drive EB left/right	C	18.3	0.04	3
South Huntington NB left/thru	A	0.2	0.01	0
South Huntington SB thru/right	A	0.0	0.36	0
South Huntington/Hospital Entrance				
Hospital Entrance WB left/right	C	18.3	0.15	13
South Huntington NB thru/right	A	0.0	0.28	0
South Huntington SB left/thru	A	0.5	0.02	1
South Huntington/South Site Drive				
South Site Drive EB left/right	B	14.7	0.03	2
South Huntington NB left/thru	A	0.1	0.00	0
South Huntington SB thru/right	A	0.0	0.36	0

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* Defacto lane-operates as a 25 foot storage lane for calibration purposes.

2.2.4 Parking

2.2.4.1 On-street Parking

Figure 2-4 presents an inventory of existing curb use and parking restrictions along South Huntington Avenue adjacent to the Project site. On-street parking adjacent to the site consists of mainly unrestricted parking and no-stopping zones, on both sides of the street.

2.2.4.2 Off-street Parking

Within the study area, there is no public off-street parking. On the east side of South Huntington Avenue, however, there is a large surface lot used for employees, patients and visitors of the Veterans Administration Hospital.

2.2.5 Public Transportation in the Study Area

The Project site is located within convenient walking distance of the Massachusetts Bay Transportation Authority (MBTA) Green Line station at Heath Street, as well as local bus service. Public transportation services within the approximate quarter mile (5 to 10-minute walk) of the Project site are summarized in Table 2-4 and illustrated in Figure 2-5.

Table 2-4 MBTA Transit Service in the Study Area

Transit line/ Bus Route	Route Description	Peak Period Headway (minutes)
Green Line-Heath Street (E)	Lechmere Station-Heath Street Station	6
14	Roslindale Square - Heath Street via Dudley Station	35
35	Forest Hills Station via Centre Street	15-20
38	Forest Hills Station via Centre Street & South Street	20-25
39	Forest Hills Station via Huntington Ave	1-7
192	Forest Hills Station via South Street	30

The Project is also located approximately one-half mile (a 10-15 minute walk) from the MBTA's Brookline Village stop on the Green Riverside (D) Line, as well as many other MBTA bus routes.

2.2.6 Pedestrian Access and Circulation

Sidewalks are provided on both sides of all roadways within the study area. As is common in urban settings, the effective widths of sidewalks in the study area are narrowed due to the presence of light posts, parking meters, street trees, and other obstacles located along the sidewalk path. The conditions of the sidewalks within the study are described below:

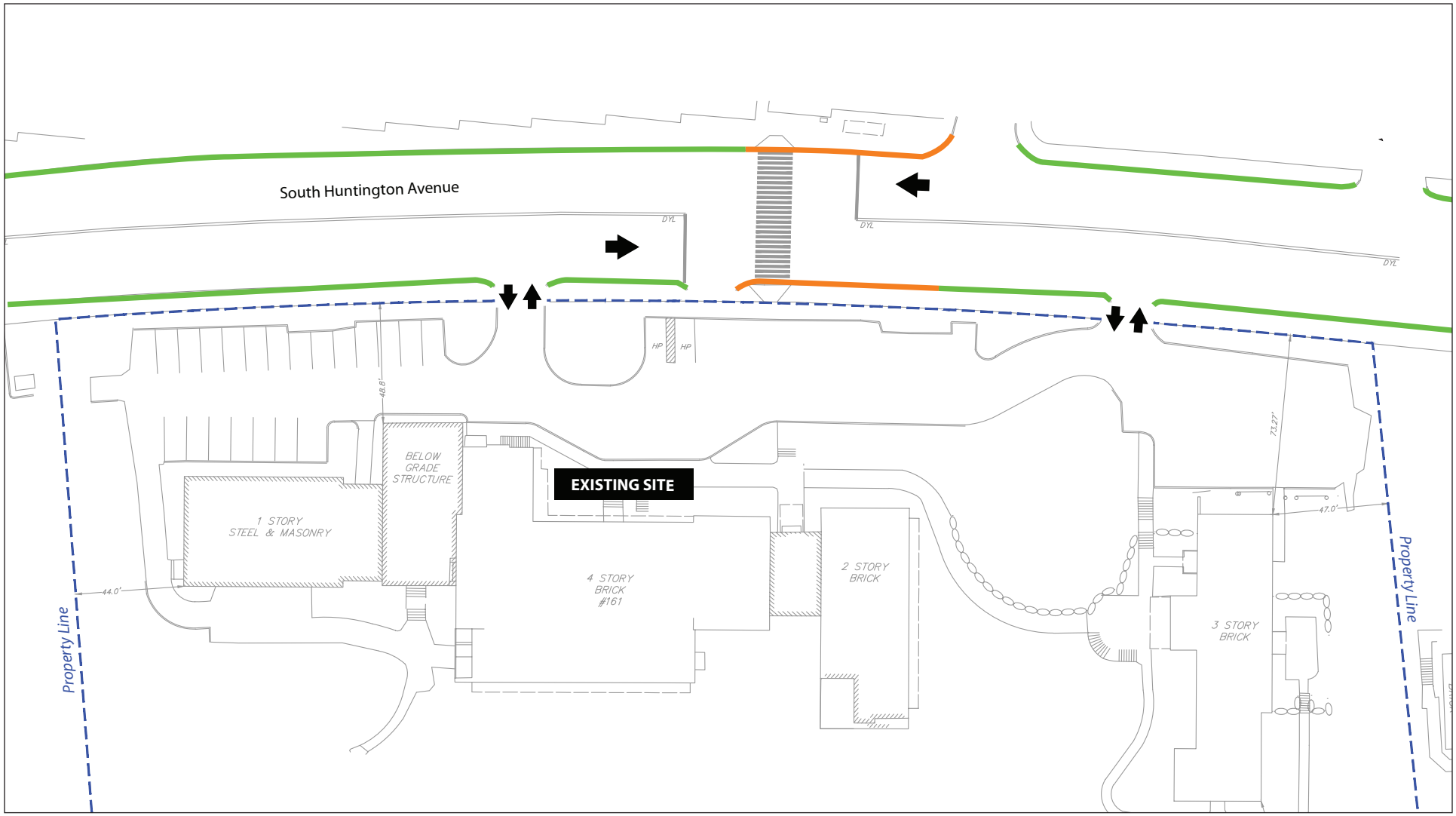

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Figure 2-4
Existing On-street Parking in the Study Area

Not to scale.

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Figure 2-5
Public Transportation in the Study Area

- ***South Huntington Avenue*** – In the vicinity of the Project site, sidewalks in good condition between 7 and 15 feet wide are provided along both sides of South Huntington Avenue.

- ***Bynner Street*** – Sidewalks are provided along both sides of Bynner Street ranging in width between 7 and 10 feet. Sidewalks are generally in good condition.

Crosswalks, handicap accessible ramps, and concurrent pedestrian phases are provided at all study area intersections and the midblock pedestrian crossing. Figure 2-6 illustrates existing pedestrian volumes during the a.m. and p.m. peak hours.

2.2.7 Bicycle Accommodations

South Huntington Avenue is classified as suitable for "intermediate" cyclists according to the *2010 Bike Routes of Boston Map.* The Project site is also located within approximately one-half mile of the Jamaicaway Path, which is a recreational trail for the exclusive use of cyclists and pedestrians. The path travels from the southernmost part of Jamaica Pond Park to the MBTA Green Line Fenway Station.

In July 2011, the City of Boston launched Hubway, a bicycle sharing program. To date, Hubway hosts 600 bicycles at 60 different locations across the city. As part of this program, cyclists are able to rent a bicycle from one location and return it to any other station, facilitating point-to-point travel within the City. Two Hubway stations are proposed within approximately one mile of the Project site, including the intersections of Brigham Circle/Calumet Street, and Tremont Street/Columbus Avenue. Except for the winter season, these bicycle facilities will be available to the public at all times

Bicycle volumes during the weekday a. m. and p.m. peak hour are illustrated in Figure 2-7; bicycle volumes in the study area are generally moderate. No bicycle racks are currently provided on-site.

2.3 Evaluation of Long-term Impacts

This section describes and evaluates the 2017 No-Build and Build Conditions. The methodology is in keeping with the City of Boston's *Transportation access Guidelines* (2001).

2.3.1 No-Build Conditions

No-Build traffic conditions, independent of the proposed Project, include existing traffic plus any new traffic expected in the study area either from general background growth or identified development projects in the area.

Not to scale.

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Figure 2-6

Existing Conditions (2012) Pedestrian Movements, a.m. and p.m. Peak Hour

Not to scale.

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Figure 2-7
Existing Conditions (2012) Bicycle Volumes, a.m. and p.m. Peak Hour

2.3.1.1 Background Traffic Growth

Two procedures are generally used in combination to determine background traffic growth. The first procedure is to estimate traffic generated by planned new major developments and anticipated roadway changes. In collaboration with the Boston Redevelopment Authority (BRA), the study team identified no development projects in the immediate area that would be constructed within the five-year planning horizon.

The second part of the procedure is to apply a general growth rate to account other smaller planned/approved development projects and changes in demographics, auto usage, and auto ownership. For this study a background growth rate of approximately one-half percent per year was selected. No traffic improvements that would affect the analysis were planned within the study area by the Build year.

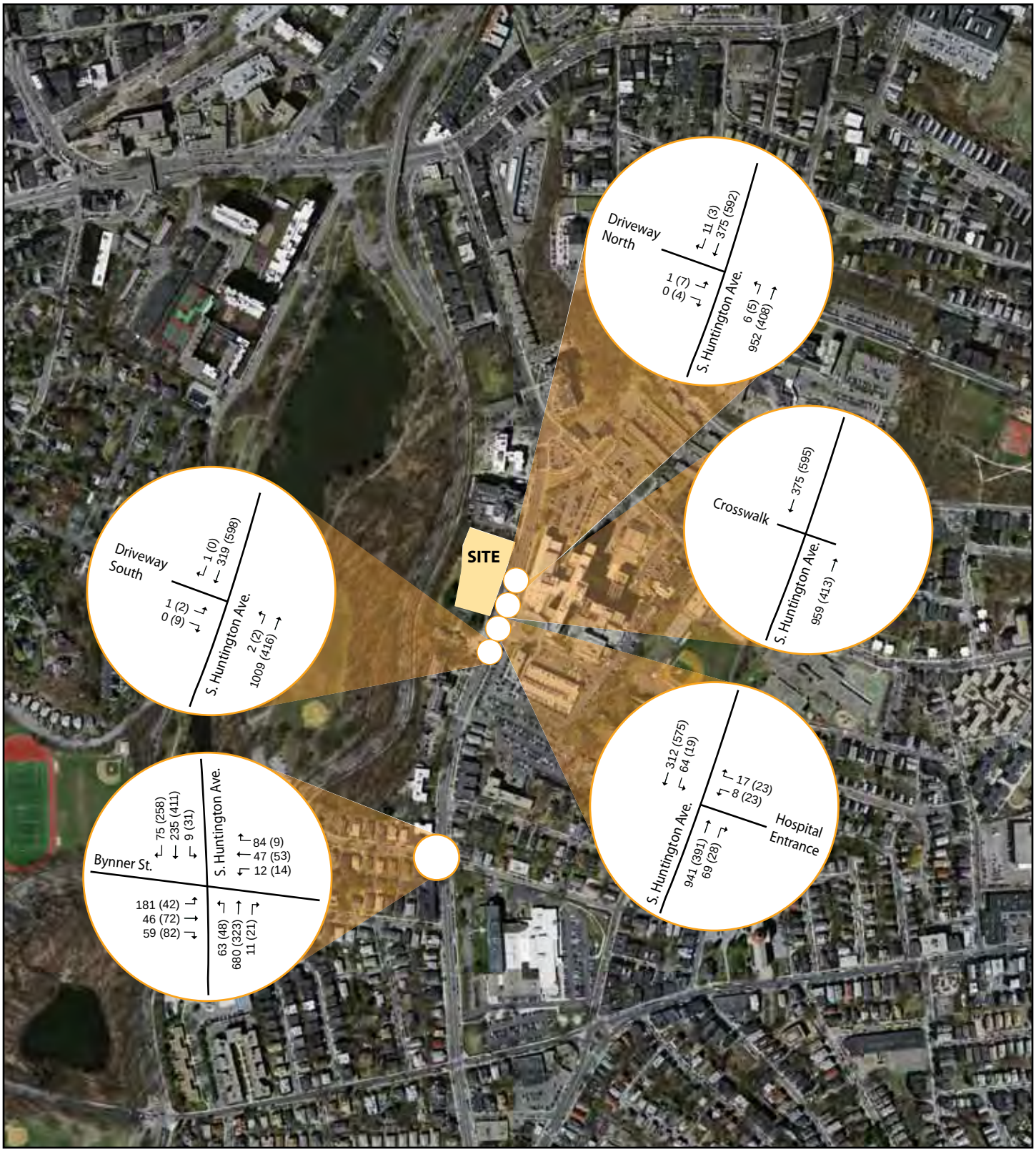
2.3.1.2 No-Build Conditions Traffic Operations

The 2017 No-Build analysis uses the methodology described under Existing Conditions. No-Build traffic volumes are shown in Figure 2-8. The resulting intersection operations are shown in Table 2-5 and Table 2-6. Complete Synchro reports are provided in Appendix B.

Intersection and approach LOS remain largely unchanged under No-Build conditions. However, at South Huntington Avenue/Bynner Street one approach that that already operates below LOS D will experience a decrease in level of service during both peak periods. During the a.m. peak hour, LOS on the Bynner Street eastbound left-turn/through/right-turn lane will decrease from LOS E to LOS F without changing the acceptable LOS D for the overall intersection.

Table 2-5 No-Build Conditions (2017) Level of Service Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	95% Queue Length (ft)
Signalized Intersections				
South Huntington/Veteran's Hospital Mid-block Crossing	**A**	**7.2**	–	–
South Huntington NB thru	A	9.2	0.78	787
South Huntington SB thru	A	1.8	0.27	122
South Huntington/Bynner Street	**D**	**45.1**	–	–
Bynner EB left/thru/right	F	>80.0	>1.00	#390
Bynner WB left/thru/right	B	13.2	0.38	105
South Huntington NB left*	B	14.5	0.19	58
South Huntington NB thru/right	D	39.6	0.93	#722
South Huntington SB left/thru	D	49.6	0.89	#312
South Huntington SB right*	A	8.5	0.11	44



Not to scale.

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Figure 2-8

No-Build (2017) Turning Movement Counts, a.m. Peak Hour (7:30–8:30 a.m.) and p.m. Peak Hour (4:00–5:00 p.m.)

Table 2-5 No-Build Conditions (2017) Level of Service Summary, a.m. Peak Hour (Continued)

Intersection	LOS	Delay (seconds)	V/C Ratio	95% Queue Length (ft)
Unsignalized Intersections				
South Huntington/North Site Drive				
North Site Drive EB left/right	F	>50.0	>1.00	N/A
South Huntington NB left/thru	A	0.2	0.01	0
South Huntington SB thru/right	A	0.0	0.28	0
South Huntington/Hospital Entrance				
Hospital Entrance WB left/right	D	32.9	0.17	15
South Huntington NB thru/right	A	0.0	0.68	0
South Huntington SB left/thru	A	3.2	0.11	10
South Huntington/South Site Drive				
South Site Drive EB left/right	D	34.3	0.01	1
South Huntington NB left/thru	A	0.1	0.00	0
South Huntington SB thru/right	A	0.0	0.23	0

=95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.

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

* Defacto lane-operates as a 25 foot storage lane for calibration purposes.

Gray cell shading indicates a decrease in LOS from Existing Conditions

Table 2-6 No-Build Conditions (2017) Level of Service Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	95% Queue Length (ft)
Signalized Intersections				
South Huntington/Veteran's Hospital Mid-block Crossing	A	2.2	–	–
South Huntington NB thru	A	1.9	0.31	138
South Huntington SB thru	A	2.4	0.40	222
South Huntington/Bynner Street	B	18.8	–	–
Bynner EB left/thru/right	C	31.8	0.72	175
Bynner WB left/thru/right	C	24.0	0.37	72
South Huntington NB left*	C	20.7	0.38	49
South Huntington NB thru/right	B	12.0	0.40	263
South Huntington SB left/thru	C	21.7	0.73	#548
South Huntington SB right*	A	8.8	0.30	152

Table 2-6 No-Build Conditions (2017) Level of Service Summary, p.m. Peak Hour (Continued)

Intersection	LOS	Delay (seconds)	V/C Ratio	95% Queue Length (ft)
Unsignalized Intersections				
South Huntington/North Site Drive				
North Site Drive EB left/right	C	18.8	0.04	3
South Huntington NB left/thru	A	0.2	0.01	0
South Huntington SB thru/right	A	0.0	0.37	0
South Huntington/Hospital Entrance				
Hospital Entrance WB left/right	C	19.0	0.16	14
South Huntington NB thru/right	A	0.0	0.29	0
South Huntington SB left/thru	A	0.5	0.02	1
South Huntington/South Site Drive				
South Site Drive EB left/right	B	15.0	0.03	2
South Huntington NB left/thru	A	0.1	0.00	0
South Huntington SB thru/right	A	0.0	0.37	0

= 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.

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

* Defacto lane-operates as a 25 foot storage lane for calibration purposes.

Gray cell shading indicates a decrease in LOS from Existing Conditions

2.3.2 Build Conditions

As summarized in Section 2.1.1 Project Description, the Project will result in the construction of approximately 196 residential apartments and 170 parking spaces. The site access and circulation plan is show in Figure 2-9.

2.3.2.1 Site Access and Circulation

Vehicular access to the site is currently provided via two curb cuts on South Huntington Avenue, including one approximately 19 feet wide and a second approximately 18 feet foot wide. Both driveways provide access to a surface parking lot. Access to the site will continue to be provided on South Huntington Avenue in approximately the same locations as the current driveways. The Northern Site Driveway will be widened and shift south to accommodate two-way traffic. The Southern Site Driveway will remain in the same location but will also be widened and made one-way to act as a right-turn only exit.

All loading, trash pick-up, and move-in/move-out activities will occur on-site from the front surface parking lot.

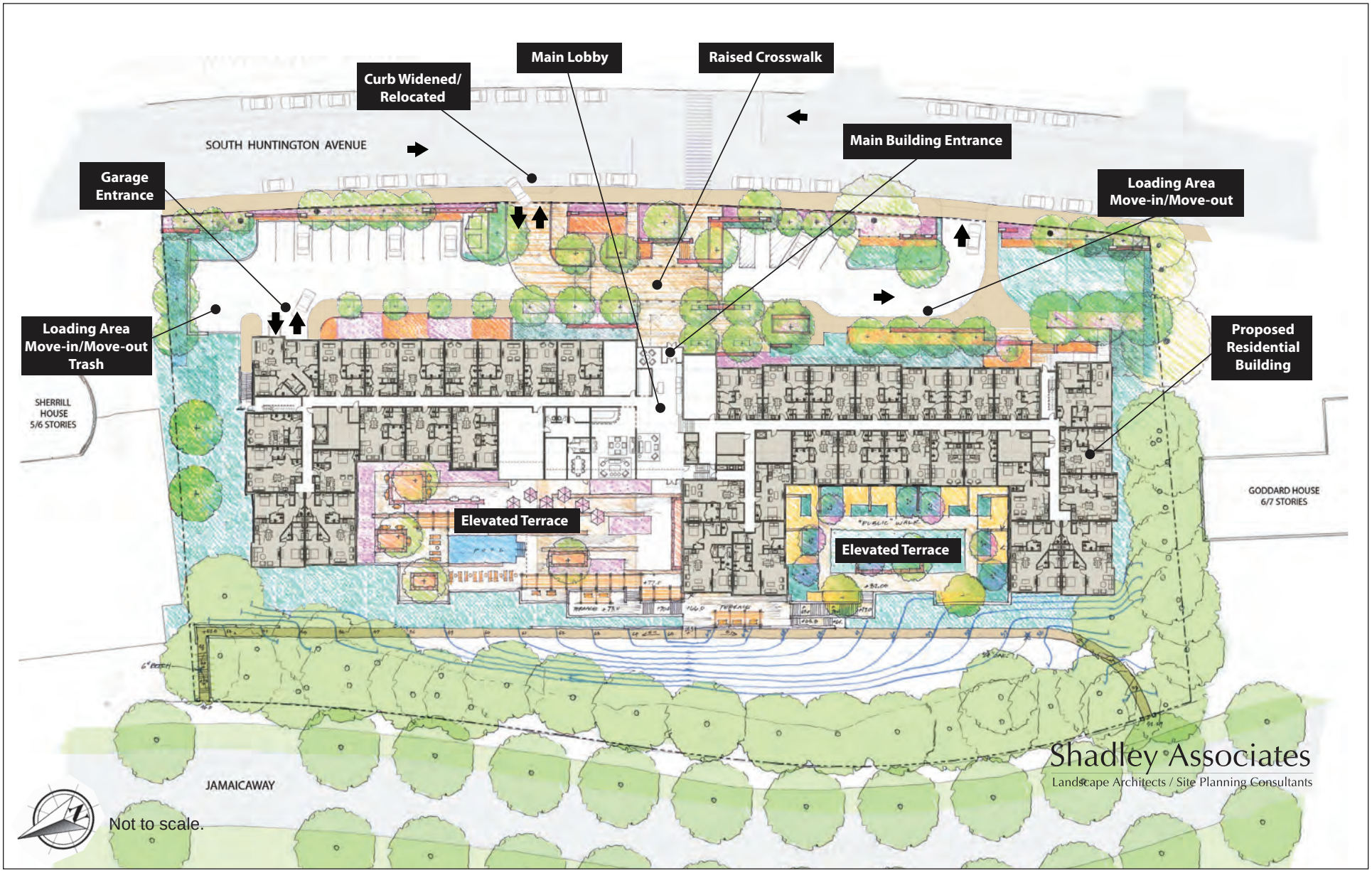

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Figure 2-9
Site Circulation Plan

2.3.2.2 Trip Generation and Mode Split

Trip generation for the proposed retail uses was derived from the Institute of Transportation Engineers' (ITE) publication *Trip Generation* (8th edition, 2008), using the following Land Use Codes (LUC):

- *LUC 223 – Mid-Rise Apartment* – is used for rental dwelling units located within the same building of between three and 10 floors. This LUC was chosen as the closest match to that of the proposed residential use for the a.m. and p.m. peak hour. The average rates were used to estimate person trips associated with the residential use during all time periods; and

- *LUC 222 – High-Rise Apartment* – is used for rental dwelling units located within the same building that have more than 10 floors. Since the trip generation data for LUC 223 is only available for the a.m. and p.m. peak hour, the daily tip generation was estimated using data form this LUC, since it was the next closest match. The fitted curve equation was used to estimate person trips associated with the residential use.

BTD publishes transit, walk/bike, and vehicle mode split rates for different areas of Boston; the Project is located within designated Area 5. Mode split assumptions based on BTD's Area 5 data and local vehicle occupancy rates from 2009 *National Household Travel Survey* and the 2000 U.S. Census are summarized in Table 2-7.

Table 2-7 Peak-Hour Mode Split

Period	Direction	Transit Share[1]	Walk/Bike Share[1]	Auto Share[1]	Local Vehicle Occupancy Rate[2]
Daily	In	16%	38%	46%	1.1
	Out	16%	38%	46%	1.1
a.m. Peak Hour	In	22%	39%	39%	1.1
	Out	18%	45%	37%	1.1
p.m. Peak Hour	In	18%	45%	37%	1.1
	Out	22%	39%	39%	1.1

1. Boston Transportation Department mode share data for Area 5.
2. 2000 Census data and 2009 National Household Travel Survey

Based on the land use trip rates, mode split assumptions, and local vehicle occupancy rates, the resulting transit, walk/bike, and vehicle trips were identified. The Project-generated trips are summarized in Table 2-8, with detailed trip generation information provided in Appendix B.

Table 2-8 Project Trip Generation

	Direction	Transit Trips	Walk/Bike Trips	Auto Trips
Daily	In	89	212	234
	Out	89	212	234
	Total	178	424	468
a.m. Peak Hour	In	5	8	7
	Out	8	21	15
	Total	13	29	22
p.m. Peak Hour	In	9	23	17
	Out	8	14	12
	Total	17	37	29

To estimate the net new trips associated with redevelopment of the site, trip generation for the existing site uses was determined from the driveway counts and subtracted from the Project-generated trips. The adjusted net new vehicle trips for the Project are summarized in Table 2-9.

Peak hour trip generation from the Project is virtually unchanged from the existing use on the site. During the a.m. peak hour, there will be only one more vehicle trip generated by the Project, while during the p.m. peak hour, vehicle trip generation at the site will decrease by two trips. The use of the driveways will redistribute site traffic somewhat, however.

Table 2-9 Net New Project Vehicle Trips

	Direction	Auto Trips
a.m. Peak Hour	In	-13
	Out	-7
	Total	1
p.m. Peak Hour	In	7
	Out	-10
	Total	-2

2.3.2.3 Trip Distribution

Vehicular trip distribution was conducted based on traffic counts from February 2, 2012. Total Project generated trips for the Project are shown in Figure 2-10 and Figure 2-11. The figure reflects the change in the use of the site driveways.

Not to scale.

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Figure 2-10
Project-generated Vehicle Trips, a.m. Peak Hour and p.m. Peak Hour

Not to scale.

161 South Huntington Avenue Boston, Massachusetts

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CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-11

Build (2017) Turning Movement Volumes, a.m. Peak Hour (7:30–8:30 a.m.) and p.m. Peak Hour (4:00–5:00 p.m.)

2.3.2.4 Build Conditions Traffic Operations

The LOS analysis for Build Conditions, which was conducted using the methodology described for Existing and No-Build Conditions, appears in Table 2-10 and Table 2-11.

Table 2-10 Build Conditions (2017) Level of Service Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	95% Queue Length (ft)
Signalized Intersections				
South Huntington/Veteran's Hospital Mid-block Crossing	**A**	**7.1**	–	–
South Huntington NB thru	A	9.1	0.78	773
South Huntington SB thru	A	1.8	0.27	121
South Huntington/Bynner Street	**D**	**43.9**	–	–
Bynner EB left/thru/right	F	>80.0	>1.00	#387
Bynner WB left/thru/right	B	13.1	0.38	105
South Huntington NB left*	B	14.5	0.19	58
South Huntington NB thru/right	D	39.0	0.93	#719
South Huntington SB left/thru	D	47.4	0.88	#310
South Huntington SB right*	A	8.5	0.11	44
Unsignalized Intersections				
South Huntington/North Site Drive				
North Site Drive EB left/right	F	>50.0	>1.00	N/A
South Huntington NB left/thru	A	0.1	0.00	0
South Huntington SB thru/right	A	0.0	0.27	0
South Huntington/Hospital Entrance				
Hospital Entrance WB left/right	D	32.7	0.17	15
South Huntington NB thru/right	A	0.0	0.68	0
South Huntington SB left/thru	A	3.2	0.11	10
South Huntington/South Site Drive				
South Site Drive EB right	–	–	–	–
South Huntington NB thru	A	0.0	0.68	0
South Huntington SB thru	A	0.0	0.23	0

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* Defacto lane-operates as a 25 foot storage lane for calibration purposes.

Table 2-11 Build Conditions (2017) Level of Service Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	95% Queue Length (ft)
Signalized Intersections				
South Huntington/Veteran's Hospital Mid-block Crossing	**A**	**2.2**	–	–
South Huntington NB thru	A	1.9	0.31	140
South Huntington SB thru	A	2.4	0.40	220
South Huntington/Bynner Street	**B**	**18.8**	–	–
Bynner EB left/thru/right	C	31.8	0.72	175
Bynner WB left/thru/right	C	24.0	0.37	72
South Huntington NB left*	C	20.1	0.38	49
South Huntington NB thru/right	B	12.0	0.40	267
South Huntington SB left/thru	C	21.8	0.73	#545
South Huntington SB right*	A	8.8	0.30	151
Unsignalized Intersections				
South Huntington/North Site Drive				
North Site Drive EB left/right	C	19.7	0.03	2
South Huntington NB left/thru	A	0.4	0.01	1
South Huntington SB thru/right	A	0.0	0.37	0
South Huntington/Hospital Entrance				
Hospital Entrance WB left/right	C	19.1	0.16	14
South Huntington NB thru/right	A	0.0	0.29	0
South Huntington SB left/thru	A	0.5	0.02	2
South Huntington/South Site Drive				
South Site Drive EB right	B	13.1	0.01	1
South Huntington NB thru	A	0.0	0.29	0
South Huntington SB thru	A	0.0	0.37	0

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* Defacto lane-operates as a 25 foot storage lane for calibration purposes.

With the addition of the small number of new vehicle trips added by the Project, all study area intersections will continue to operate with the same level of service as under No-Build Conditions, and no adverse impacts from the Project will occur. During the morning peak hour, approaches at two intersection locations operate poorly while the overall intersection will function within acceptable ranges.

2.3.2.5 Parking Supply and Demand

With 170 combined surface and garage parking spaces for 196 residential units, the resulting parking ratio is 0.87 spaces per unit. The Boston Transportation Department (BTD) has set parking space goals and guidelines throughout the City to establish the amount of parking supply provided with new developments. BTD's maximum parking ratio guidelines for residential use in Jamaica Plain near an MBTA Station is 0.75-1.25 spaces per unit. Distance "near MBTA Station" is defined as within 10 minute walking distance; the site fits that definition, as it is within one-quarter mile (a 5-10 minute walk) from the MBTA Green Line Heath Street Station.

2.3.2.6 Public Transportation

As shown in **Table 2-8**, the Project will generate an estimated 178 daily transit trips; with 13 transit trips (9 boarding and 8 alighting) during the a.m. peak hour and 17 new trips (7 boarding and 8 alighting) during the p.m. peak hour. The small number of project-generated transit trips is not expected to affect transit service adversely in the study area. The Proponent is committed to promoting transit use among Project residents and visitors, as discussed under the Transportation Demand Management section below.

2.3.2.7 Pedestrian Access and Circulation

On a daily basis, the Project will generate an estimated 212 pedestrian and bicycle trips in addition to the 178 new transit trips that will require a walk to or from the site. This results in an additional 390 new pedestrian or bicycle trips per day. Approximately 29 pedestrian and bicycle trips in and out of the site will occur during the a.m. peak hour, and 37 pedestrian or bicycle trips in and out will occur during the p.m. peak hour, plus 13 and 17 transit trips, respectively. Pedestrian and bicycle trip generation is summarized in Table 2-8, with detailed trip generation data provided in Appendix B The Proponent is committed to promoting bicycle use among Project residents, workers and visitors, as discussed under the Transportation Demand Management section below.

2.3.2.8 Bicycle Accommodations

Secure bicycle storage will be made available for building residents and tenants within the parking garage area and/or within the proposed building per City of Boston *Bicycle Parking Guidelines*, which require a minimum of one bicycle parking space per residential unit. Additional bicycle racks for workers, visitors, and guests will also be provided near main entrances to the new building.

All bicycle racks, signs, and parking areas will conform to BTD standards and be sited in safe, secure locations. The Proponent will work with BTD to identify the most appropriate quantity and location for bicycle racks on the Project site as part of the Transportation Access Plan Agreement (TAPA) process.

2.3.2.9 Loading and Service

All loading, trash pick-up, and move-in/move-out activities for the Project will occur on-site in the front surface parking lot (see **Figure 2-9**).

The expected loading and service vehicle demands of the Project, by use, are presented in **Table 2-12**.

Table 2-12 Expected Loading and Service Activity

Land Use	Typical Vehicle & Size	Number of Vehicles (per day)	Typical Delivery Periods
Residential (200 units, approx. 193,000 sf)	Car/Van to SU-36 and Trash	6 to 10[1]	7:00 a.m. to 7:00 p.m.

1. 0.04 trucks per day/1,000 sf residential, per HSH survey of Tremont-on-the-Common

As shown above, the loading demand for the Project is between 6 and 10 deliveries per day, which corresponds to between 12 and 20 total vehicle trips in and out per day; these trips are included in the trip generation estimates provided in **Table 2-8.** With the exception of trash pick-up and move-in/move-out activities, most residential deliveries are made via smaller vehicles - cars, vans, or small panel trucks. Residential deliveries typically include overnight packages and food deliveries.

A Transportation Coordinator will be appointed by the Project to manage loading activity and to coordinate residential move-in/move-out activities. Where possible, these activities will be scheduled during off-peak hours. Permanent "No Idling" signs will be posted in the loading and parking areas.

2.4 Traffic Mitigation Measures

As the Project will generate virtually the same number of vehicle trips as the current land use on the site, no off-site geometric or traffic signal mitigation measures are proposed or necessary. Geometric and safety improvements are proposed for the site driveways and within the surface parking lot. The Proponent is committed to implementing appropriate transportation demand management (TDM) measures, as discussed in Section 2.6, below.

2.5 Evaluation of Short-term Construction Impacts

Details of the overall construction schedule, working hours, number of construction workers, worker transportation, and parking, number of construction vehicles, and routes will be addressed in detail in a Construction Management Plan (CMP) to be filed with BTD in accordance with the City's transportation maintenance plan requirements. The CMP will also address the need for pedestrian detours, lane closures, and/or parking restrictions, if necessary, to accommodate a safe and secure work zone.

To minimize transportation impacts during the construction period, the following measures will be incorporated into the CMP:

- Construction worker parking will be limited on-site. Workers will be encouraged to use public transportation and/or carpool;
- A subsidy for MBTA passes will be considered for full-time employees; and
- Secure spaces will be provided on-site for workers' supplies and tools so they do not have to be brought to the site each day.

Additional information on the Project's construction-period impacts is presented in Section 3.11 of this PNF.

2.6 Transportation Demand Management

The Proponent is committed to implementing Transportation Demand Management (TDM) measures that support the City's efforts to reduce dependency on the automobile by encouraging travelers to use alternatives to driving alone, especially during peak periods. TDM will be facilitated by the nature of the Project and its proximity to public transit.

The Proponent will emphasize the site's convenient transit and pedestrian access in marketing the Project to future residents and tenants. On-site management will provide transit information (schedules, maps, fare information) in the building lobbies for residents, workers, and visitors.

- Additional TDM measures may include, but are not limited to, the following:
- Bicycle Storage – The Project Proponent will provide secure bicycle storage for residents, workers, and visitors in accordance with the *City of Boston Bicycle Parking Guidelines* and will investigate the possibility of sponsoring a shared-bicycle location near the site.
- Constrained Parking – The Project does not exceed BTD district maximum parking ratios.

- Electric Vehicle Charging – The Proponent will explore the feasibility of providing electric vehicle charging stations on-site.

- Project Web Site – The Proponent will include public transportation information for residents and visitors will be included on the Project's Web Site.

- Shared-Car Service -- The Proponent will also evaluate the feasibility of providing shared cars on-site (e.g., Zipcar), as there are no spaces provided within a one-half mile radius. The Proponent will allocate spaces in the front surface parking lot for shared-car services to allow access to these from the neighborhood.

- Tenant and Employee Orientation Packet – These packets will provide all new tenants with information concerning available TDM programs and public transportation in the area, including route maps, schedules, and fare information.

Transportation Coordinator – An on-site transportation coordinator will oversee transportation issues, including parking, residential move-in and move-out, and service and loading. The transportation coordinator will also work with residents as they move in to raise awareness of public transportation alternatives.

2.7 Summary and Conclusions

With the addition of the small number of new vehicle trips added by the Project, all study area intersections will continue to operate with the same, if not better, level of service as under No-Build Conditions, and no adverse impacts will occur.

Section 3.0

Environmental Protection

3.0 ENVIRONMENTAL PROTECTION

3.1 Wind

The Project involves the demolition of three existing buildings ranging in height from 25 feet to 50 feet. The Project will be similar in height and scale to the existing building on the Project site. Further, the Project is similar in height and scale to the surrounding neighborhood buildings including both the five - six story Sherrill House to the north as well as the six – seven story Goddard House to the south. Buildings of similar height in an area tend to shelter one another from wind. The Project is not expected to cause negative impacts to pedestrian level winds.

3.2 Shadow

The Proponent conducted a shadow impact analysis as typically required by the BRA. The analysis evaluated shadow conditions during three time periods (9:00 a.m., 12:00 noon, and 3:00 p.m.) during the summer solstice (June 21), autumnal equinox (September 21), and the winter solstice (December 21). The shadow impacts from the vernal equinox (March 21) and the autumnal equinox would be virtually the same if studied at the same time periods. Therefore for this study, the vernal equinox shadow impacts are studied as if March 21 was still in Standard Time, meaning they are studied during the time periods of 10:00 a.m., 1:00 p.m., and 4:00 p.m. In addition, shadow studies were conducted for the 6:00 p.m. time period during the summer solstice and autumnal equinox. Shadows were determined using the applicable altitude and azimuth data for Boston.

The shadow impact analysis includes net new shadow as well as existing shadow. The incremental impact of new shadow cast by the Project is shown in light orange in Figures 3-1 through 3-14, while existing shadows are shown in gray. The shadow analysis focuses on public open spaces, major pedestrian areas, sidewalks, and plazas in the Project vicinity.

The studies measure the increase in shadow from existing to full-build conditions, but the studies do not take into consideration shadows cast by existing trees, which in this case is significant due to the density of the large and mature stand of trees being maintained along the Jamaicaway. There are approximately 12 oak trees of 34-inch caliper or greater with heights averaging from 60 to 80 feet along the Jamaicaway sidewalk. Inside the sidewalk there are 35 trees, consisting mainly of oaks ranging in size from 18 to 24 inches with heights averaging from 50 to 80 feet. These trees are all deciduous and cast significant shadows when fully leafed, and also impact shadows in the winter months.

The shadow impact analysis shows that new shadow from the Project will mainly occur on the Project site. No new shadow will be cast onto Olmsted Park during 13 of the 14 time periods studied. No new shadow will be cast onto Jamaicaway during 12 of the 14 time periods studied. New shadow is cast onto small portions of South Huntington Avenue

during the afternoon time periods; however, bus stops on South Huntington Avenue are free from new shadow during 12 of the 14 time periods studied. No new shadow is cast onto any other open spaces in the surrounding area.

3.2.1 Vernal Equinox (March 21)

At 10:00 a.m. on the vernal equinox, new shadow from the Project will extend in a westerly direction toward but not onto Jamaicaway and Olmsted Park (see Figure 3-1). Three fingers of new shadow will extend into the wooded area on the western side of the Project site.

At 1:00 p.m., the Project will cast new shadow across a portion of the proposed elevated terraces (see Figure 3-2). New shadow will also extend north of the Project.

At 4:00 p.m., new shadow from the proposed Project will extend east and northeast across the parking lot and access drive (see Figure 3-3). New shadow will cover a short stretch of South Huntington Avenue and its western sidewalk.

No new shadows reach the Jamaicaway or Olmsted Park during the vernal equinox time periods studied.

3.2.2 Summer Solstice (June 21)

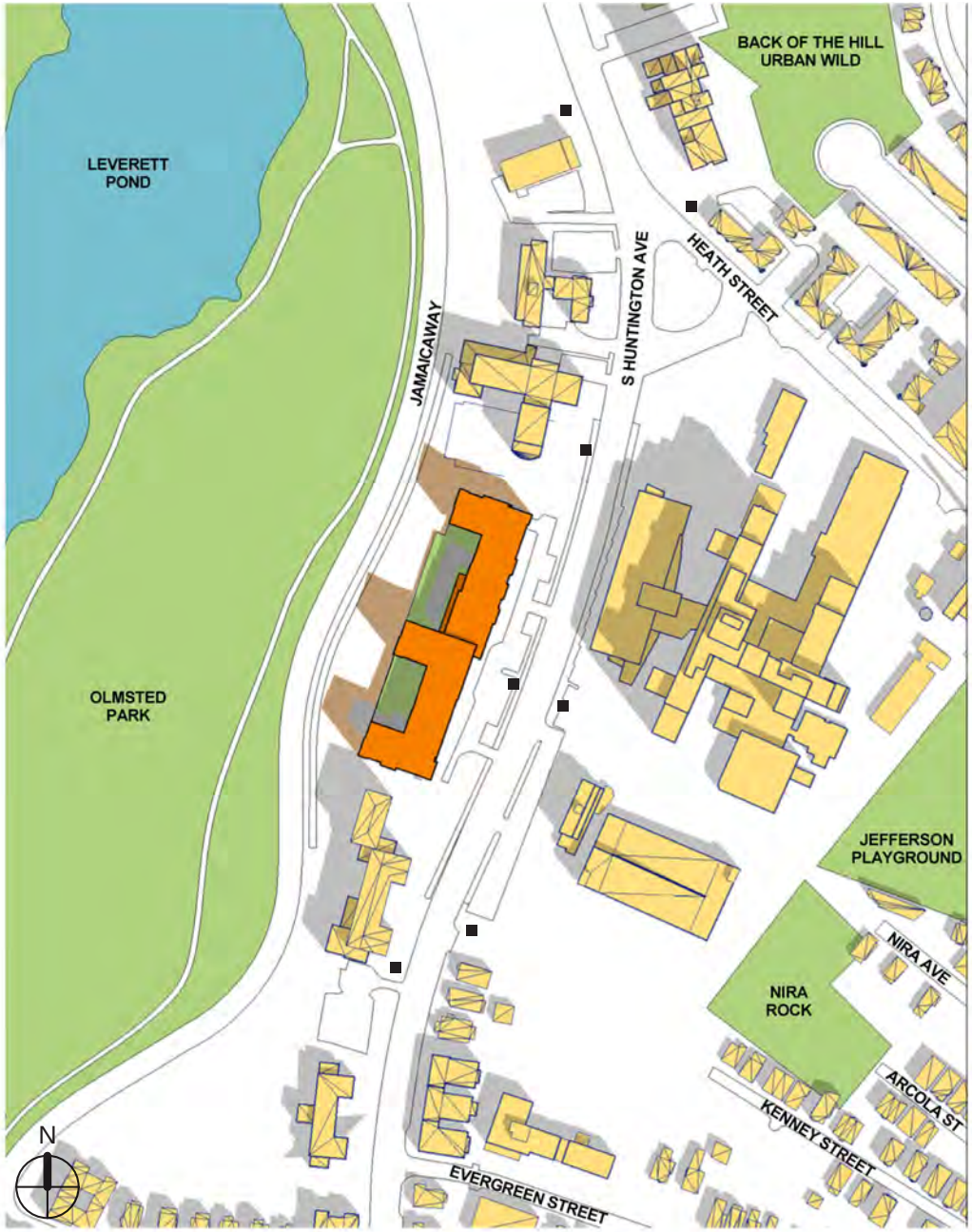
At 9:00 a.m. on the summer solstice, three fingers of new shadow from the Project will extend westward over the wooded area on the western side of the Project site (see Figure 3-4). This new shadow will not reach the Jamaicaway.

At 12:00 noon, the Project will cast minimal new shadow over strips of land at the extreme southern end of each elevated terrace (see Figure 3-5). A small band of new shadow will also fall just north of the Project site.

At 3:00 p.m., new shadows cast to the east will cover a portion of the parking lot and access way but will not reach South Huntington Avenue (see Figure 3-6).

At 6:00 p.m., shadows will extend eastward from the Project, covering the parking lot, access driveway, and a stretch of South Huntington Avenue and its sidewalks (see Figure 3-7). However, a significant portion of this area is already covered by existing shadow. New shadow is also cast onto the bus stop on the eastern side of South Huntington Avenue.

No new shadows reach the Jamaicaway or Olmsted Park during the summer solstice time periods studied.



161 SOUTH HUNTINGTON BOSTON, MASSACHUSETTS

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Figure 3-1
Shadow Analysis, March 21 - 10 AM

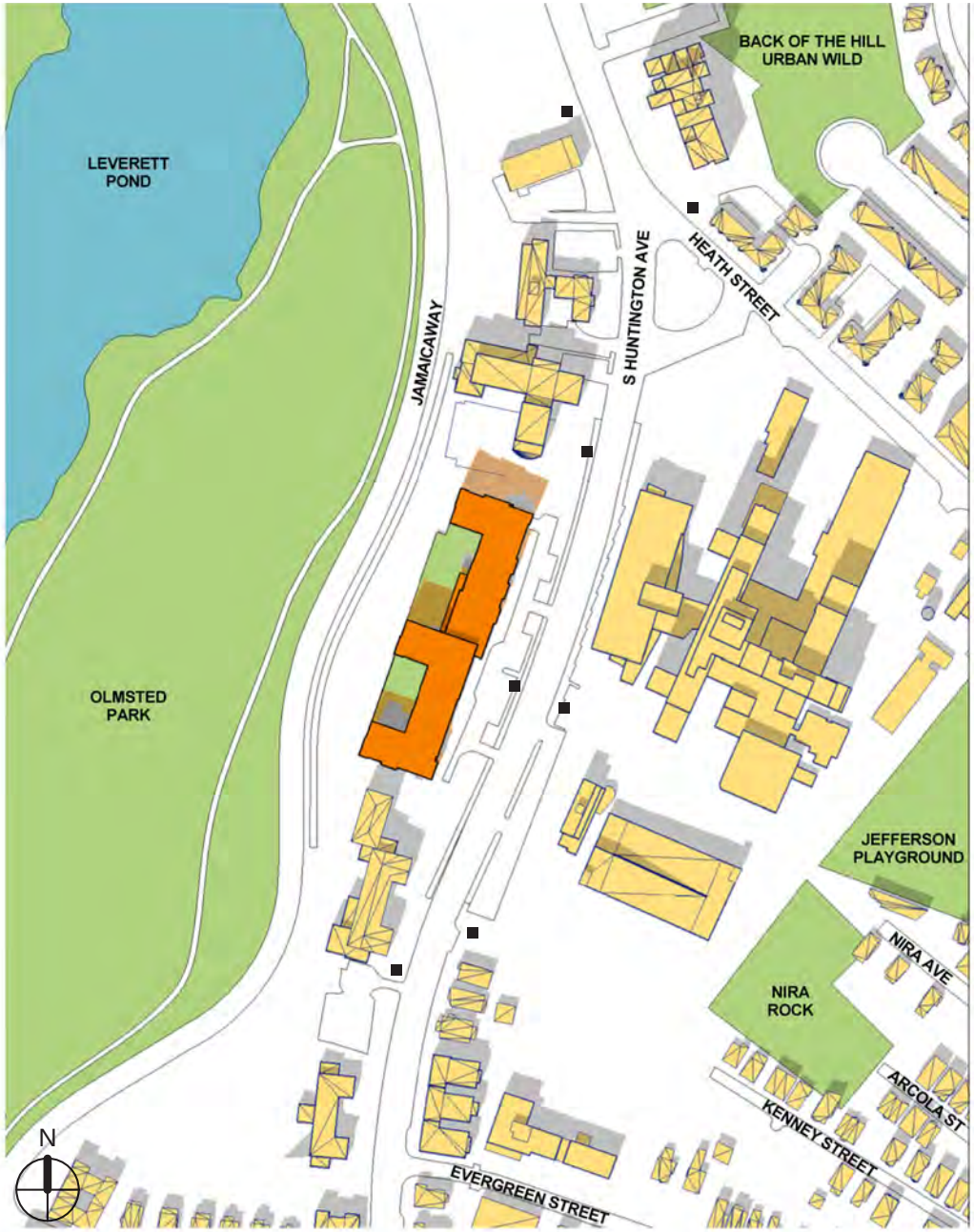

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Figure 3-2
Shadow Analysis, March 21 - 1 PM

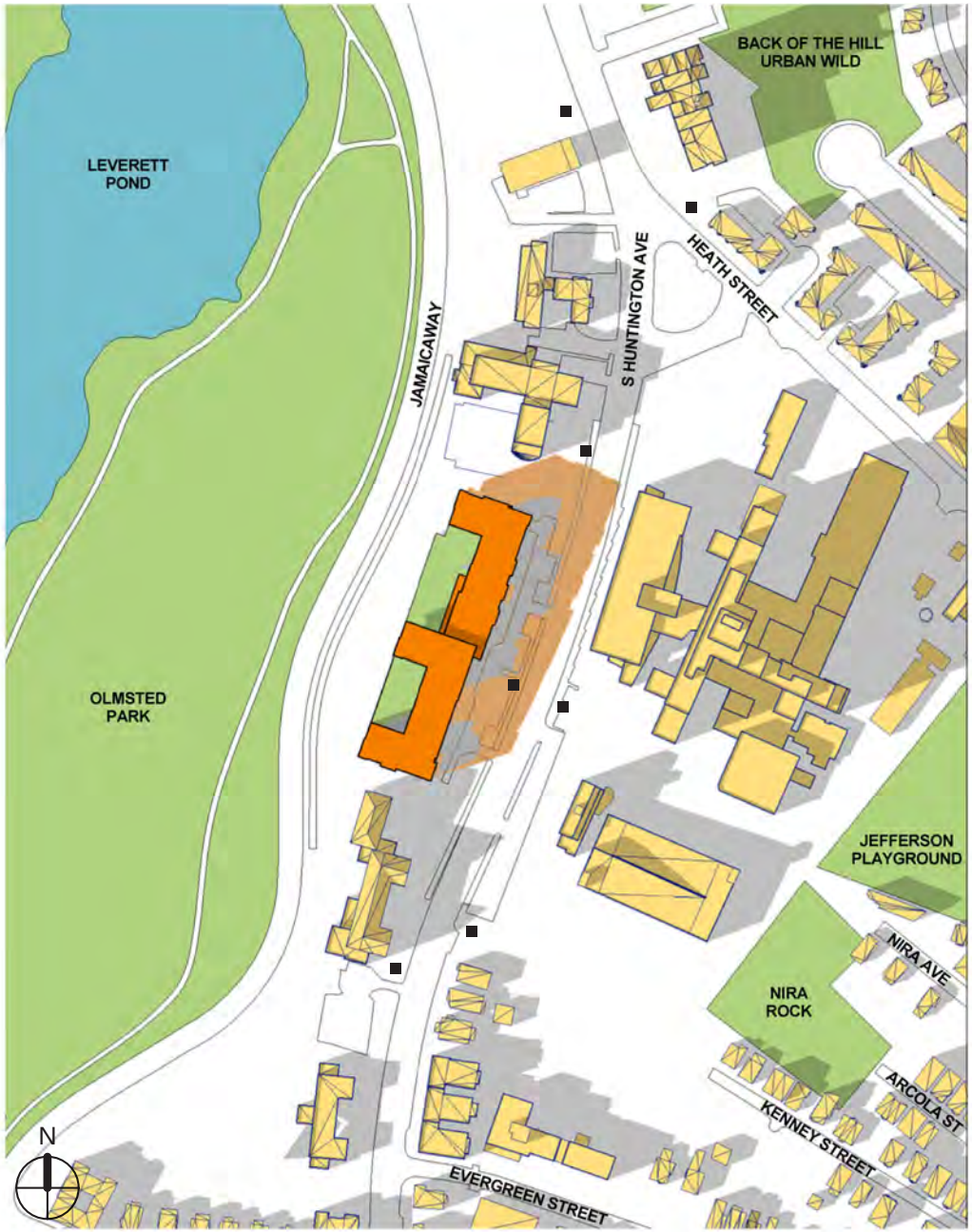

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Figure 3-3
Shadow Analysis, March 21 - 4 PM

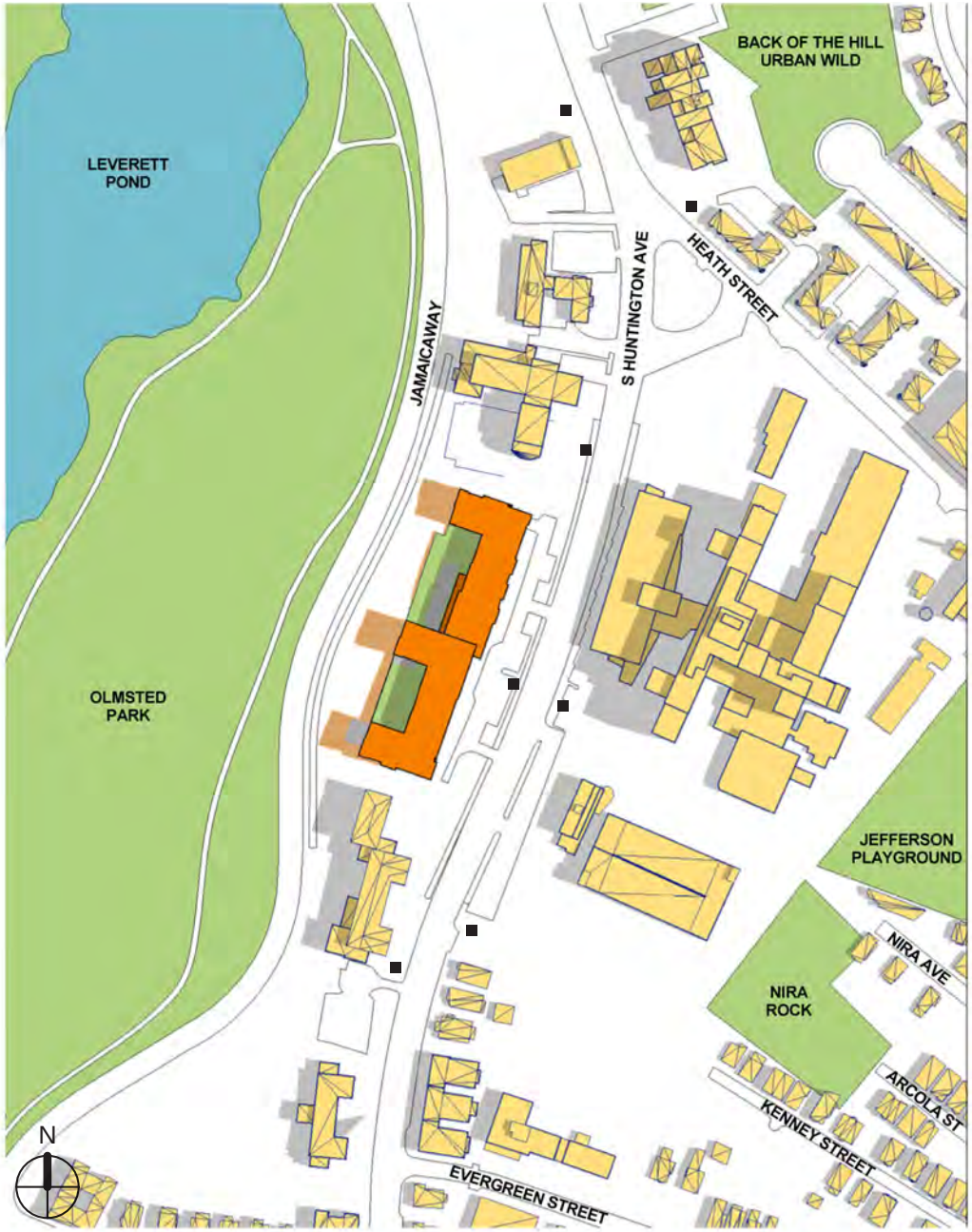

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Figure 3-4
Shadow Analysis, June 21 - 9 AM

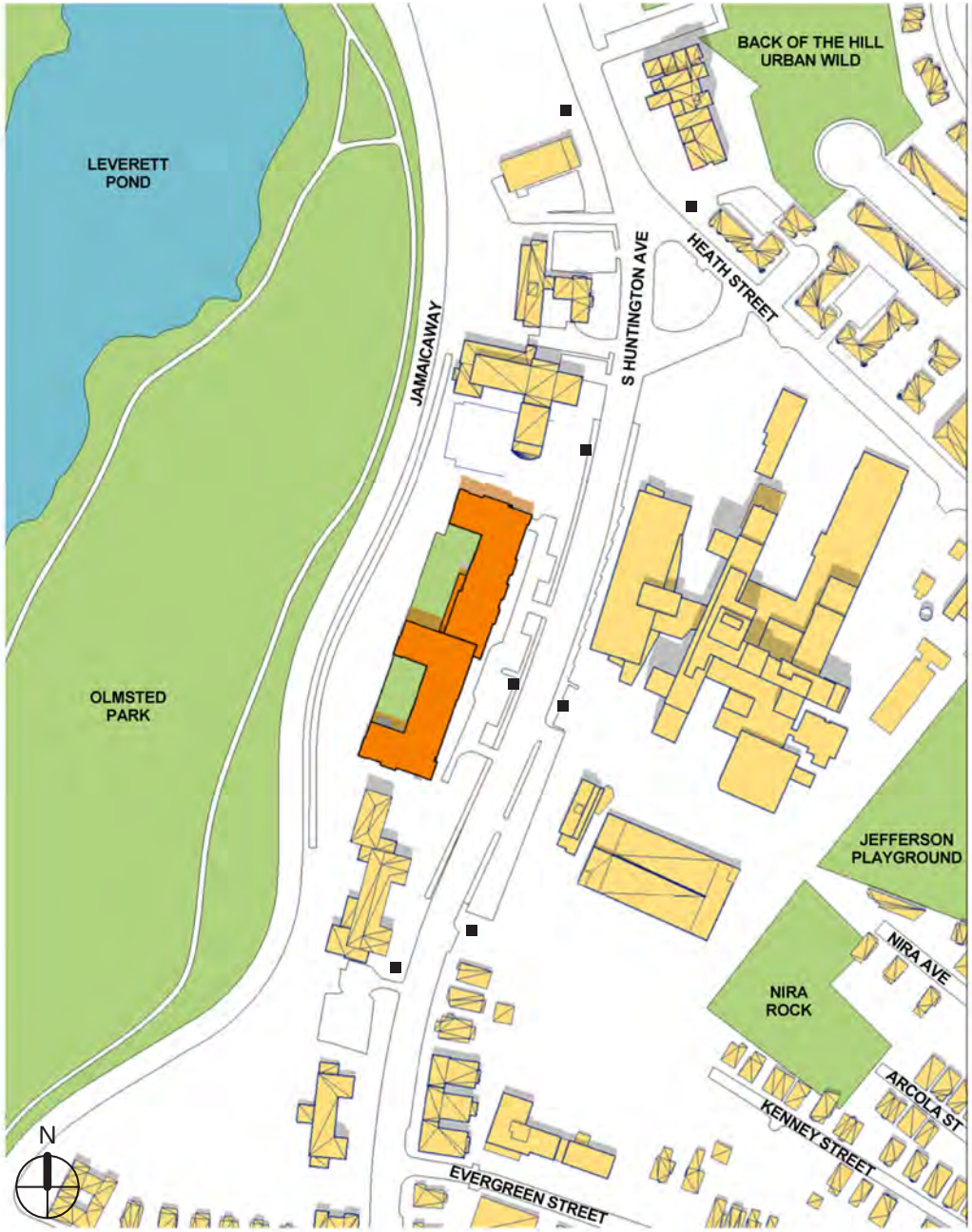

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Figure 3-5
Shadow Analysis, June 21 - 12 PM

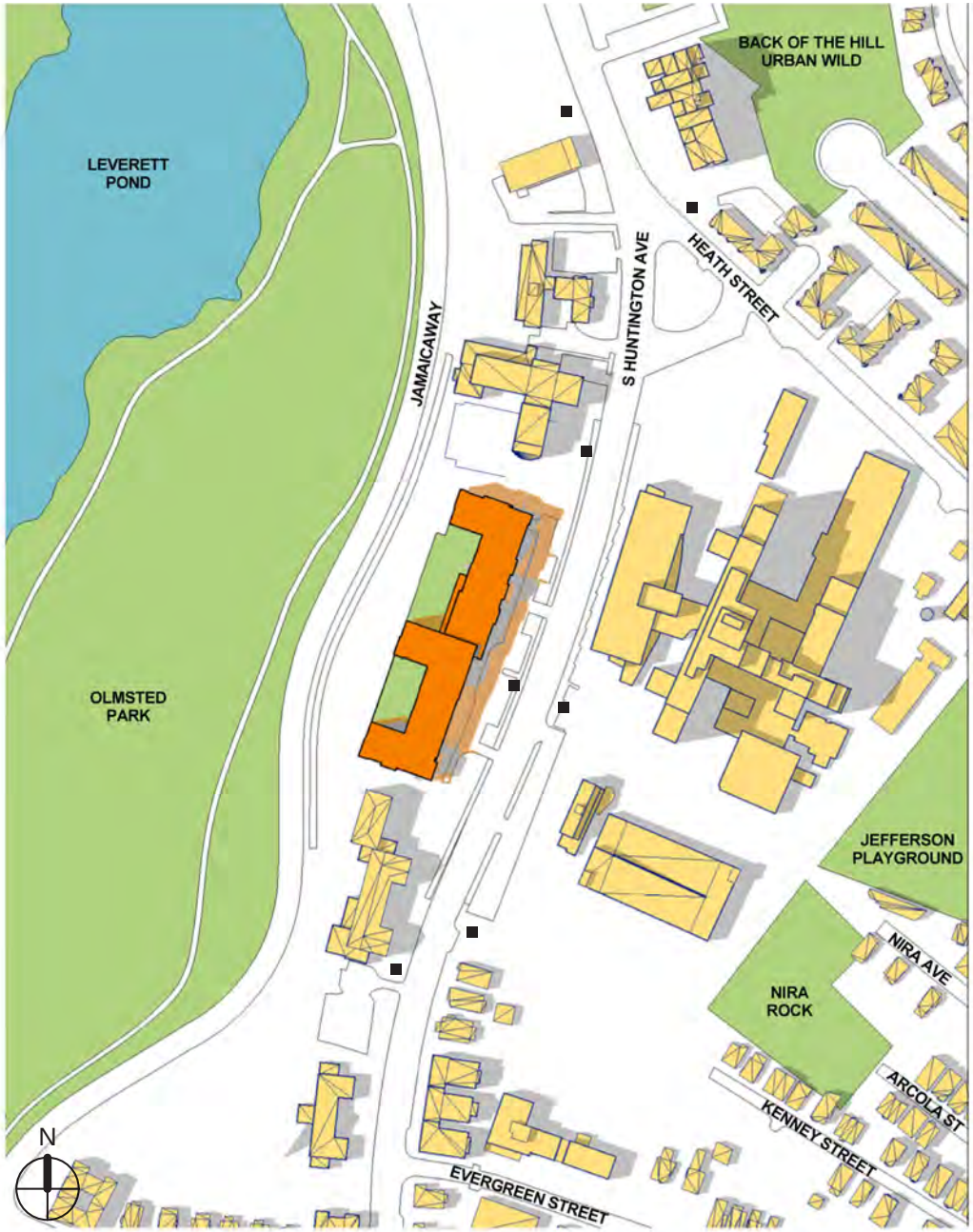

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Figure 3-6
Shadow Analysis, June 21 - 3 PM

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Figure 3-7
Shadow Analysis, June 21 - 6 PM

3.2.3 Autumnal Equinox (September 21)

At 9:00 a.m., new shadows extending northwest will just reach the Jamaicaway (see Figure 3-8). These new shadows will also cover a portion of the wooded space on the western side of the Project.

At 12:00 noon, new shadows will extend north of the Project, covering portions of the elevated terraces. (see Figure 3-9).

At 3:00 p.m., shadows will extend to the east and northeast, and the Project will cast new shadow across the parking lot and accessway (see Figure 3-10). No new shadow will reach South Huntington Avenue. The Project will result in minor new shadow on the southeastern corner of each of the two elevated terraces.

At 6:00 p.m., shadows will extend eastward. Given the low angle of the sun, existing shadow is extensive at this hour. New shadow will be cast on a small portion of South Huntington Avenue and its sidewalks. (see Figure 3-11).

No new shadows reach the Jamaicaway or Olmsted Park during the autumnal equinox time periods studied.

3.2.4 Winter Solstice (December 21)

The winter solstice creates the least favorable conditions for sunlight in New England. The sun angle during the winter is lower than in any other season, causing the shadows in urban areas to elongate and be cast onto large portions of the surrounding area.

At 9:00 a.m., the Project will extend existing shadow to the northwest across portions of Jamaicaway and onto Olmsted Park (see Figure 3-12).

At 12:00 noon, shadows will extend to the north. New shadow from the Project will cover a portion of the wooded are on the west side of the Project site (see Figure 3-13). New shadow will also extend over the area between the building and the existing building to the north of the site. The existing shadow on the two elevated terraces will be extended.

At 3:00 p.m., the Project will cast new shadow to the northeast across South Huntington Avenue and onto a bus stop on the eastern side of the street (see Figure 3-14). The existing shadow on the proposed parking lot and accessway will be extended.

3.2.5 Conclusions

In order to provide a conservative shadow analysis, these studies did not take into consideration shadows cast by existing trees, which in this case is significant due to the density of the large and mature stand of trees being maintained along the Jamaicaway. The Project will not cast new shadow onto Olmsted Park except during winter mornings. New

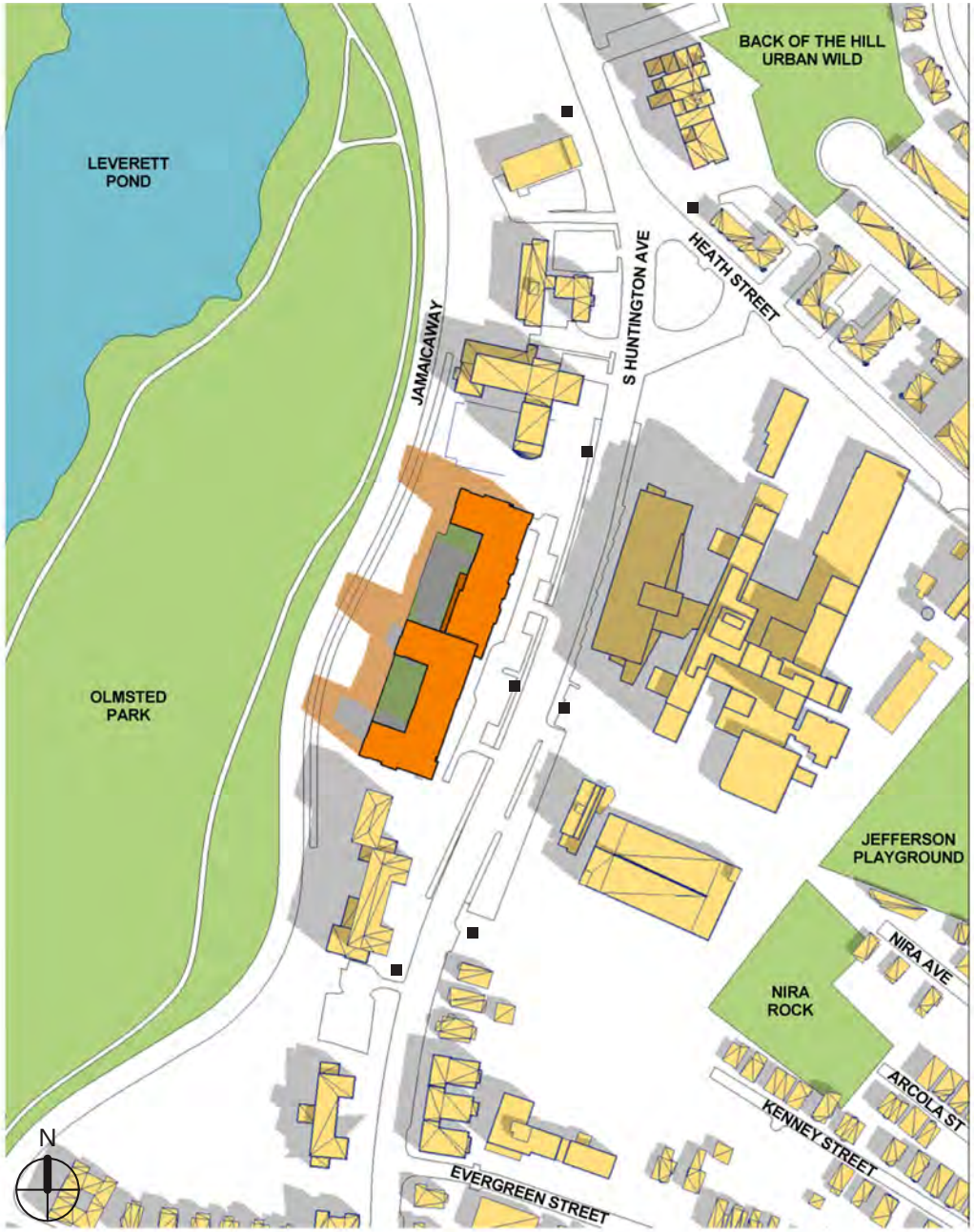

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Figure 3-8
Shadow Analysis, September 21 - 9 AM

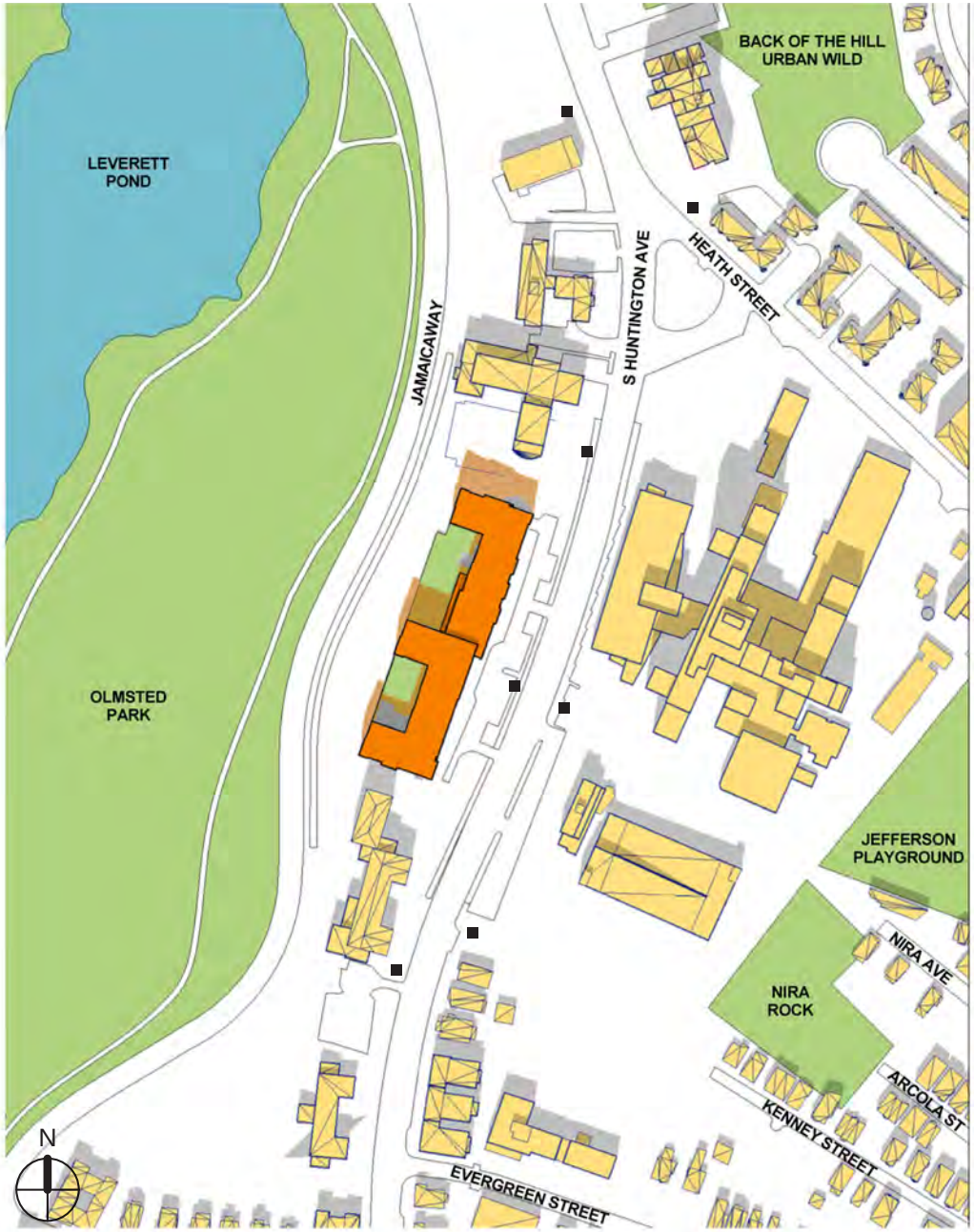

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Figure 3-9
Shadow Analysis, September 21 - 12 PM

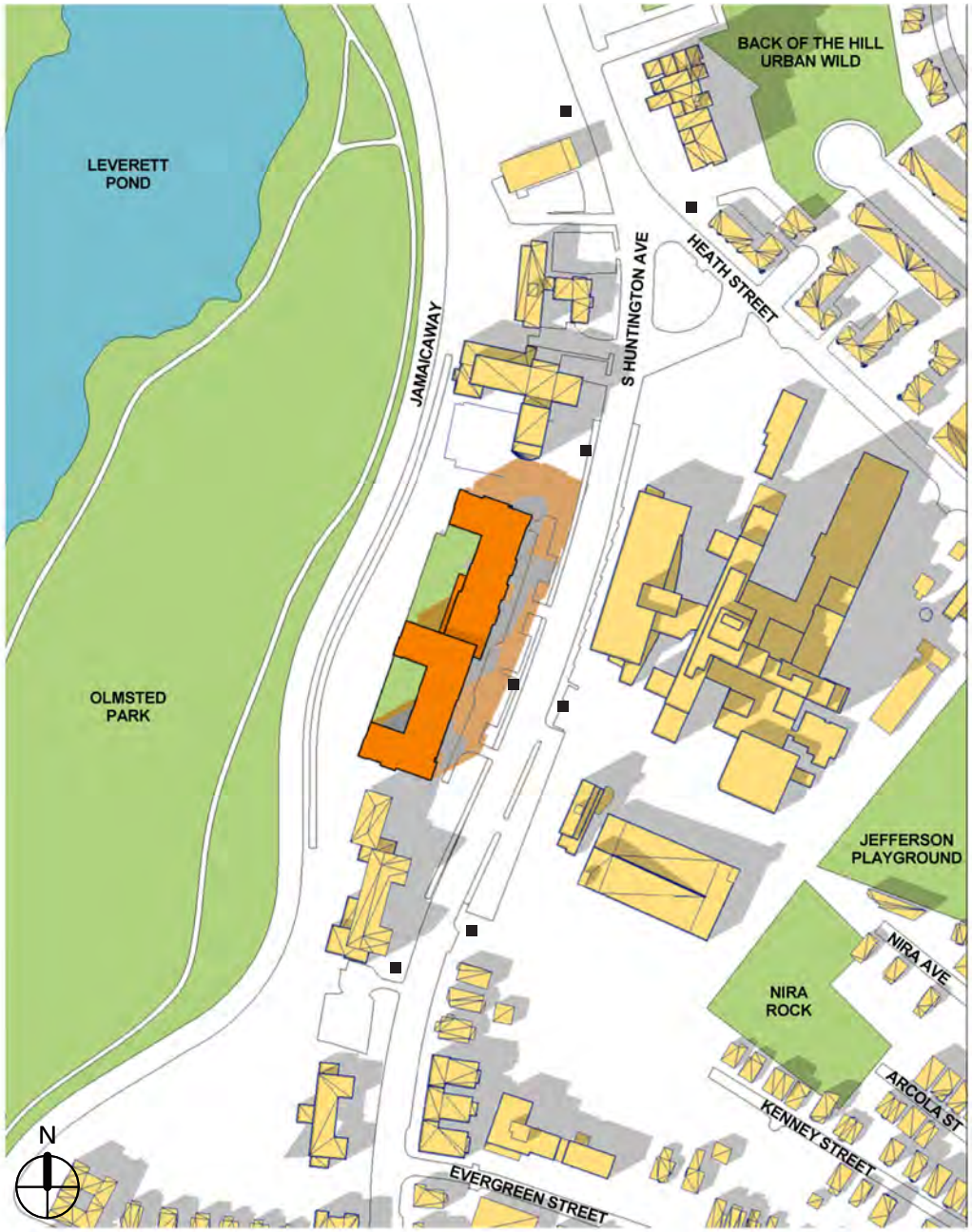

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Figure 3-10
Shadow Analysis, September 21 - 3 PM

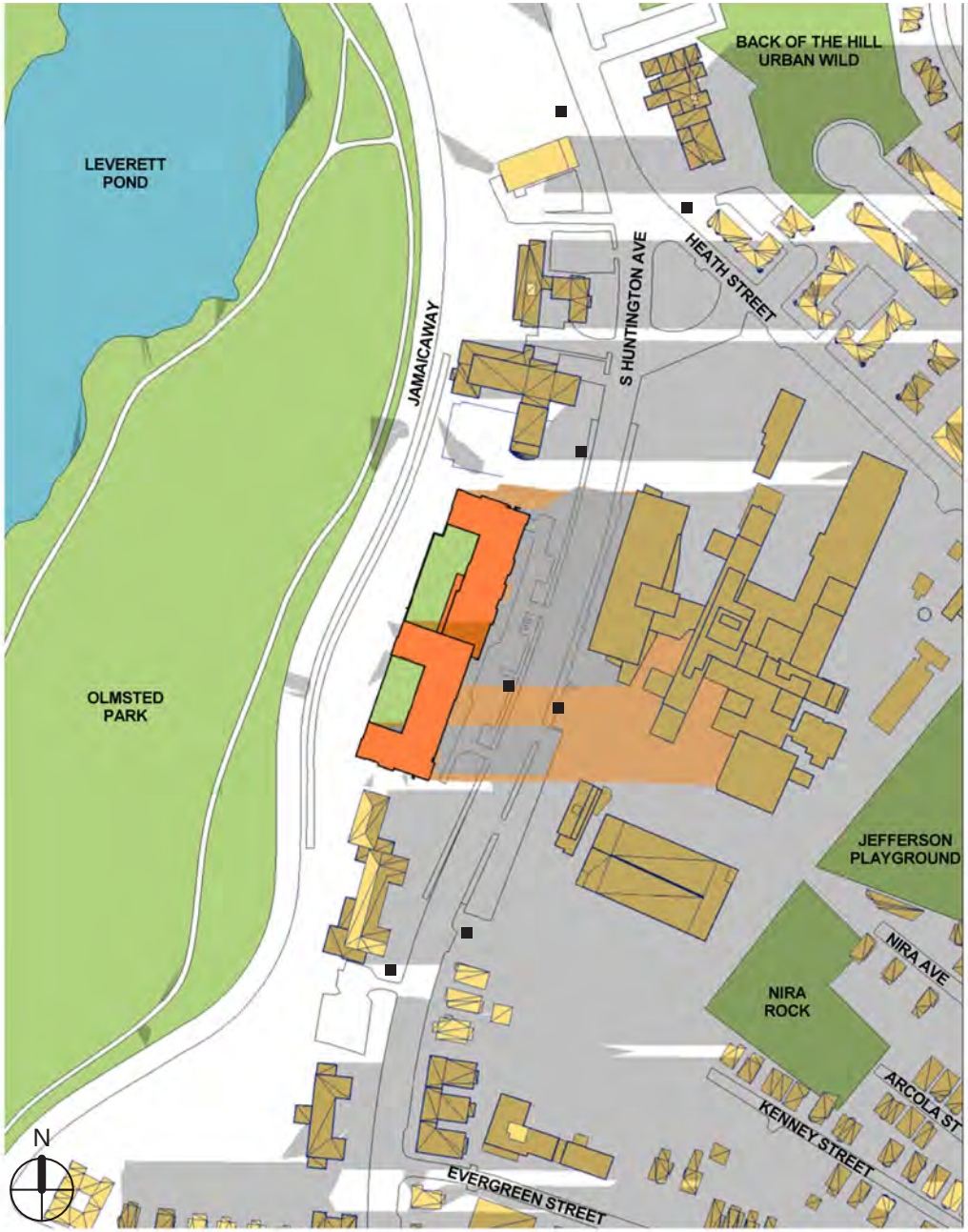

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Figure 3-11
Shadow Analysis, September 21 - 6 PM

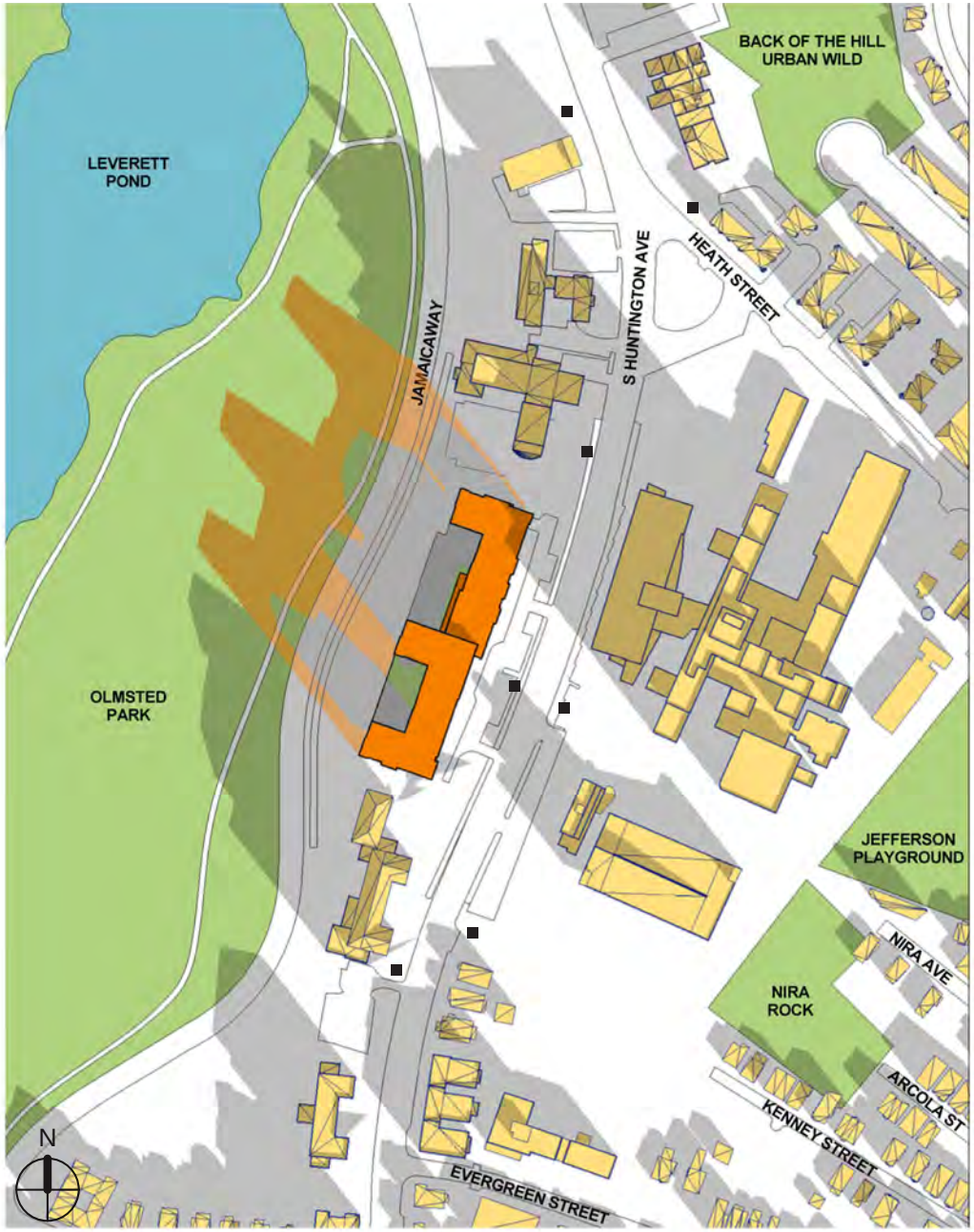

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Figure 3-12
Shadow Analysis, December 21 - 9 AM

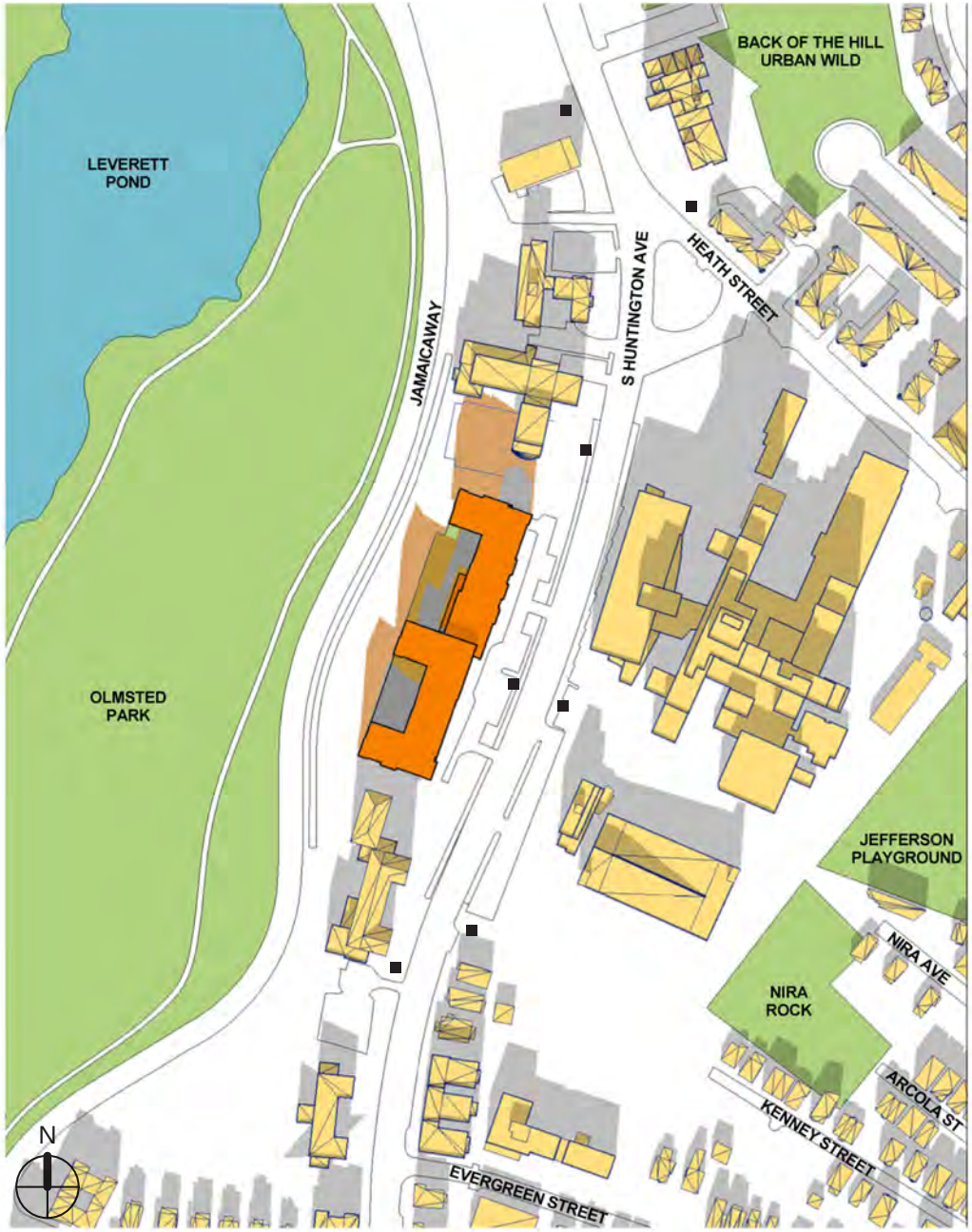

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Figure 3-13
Shadow Analysis, December 21 - 12 PM

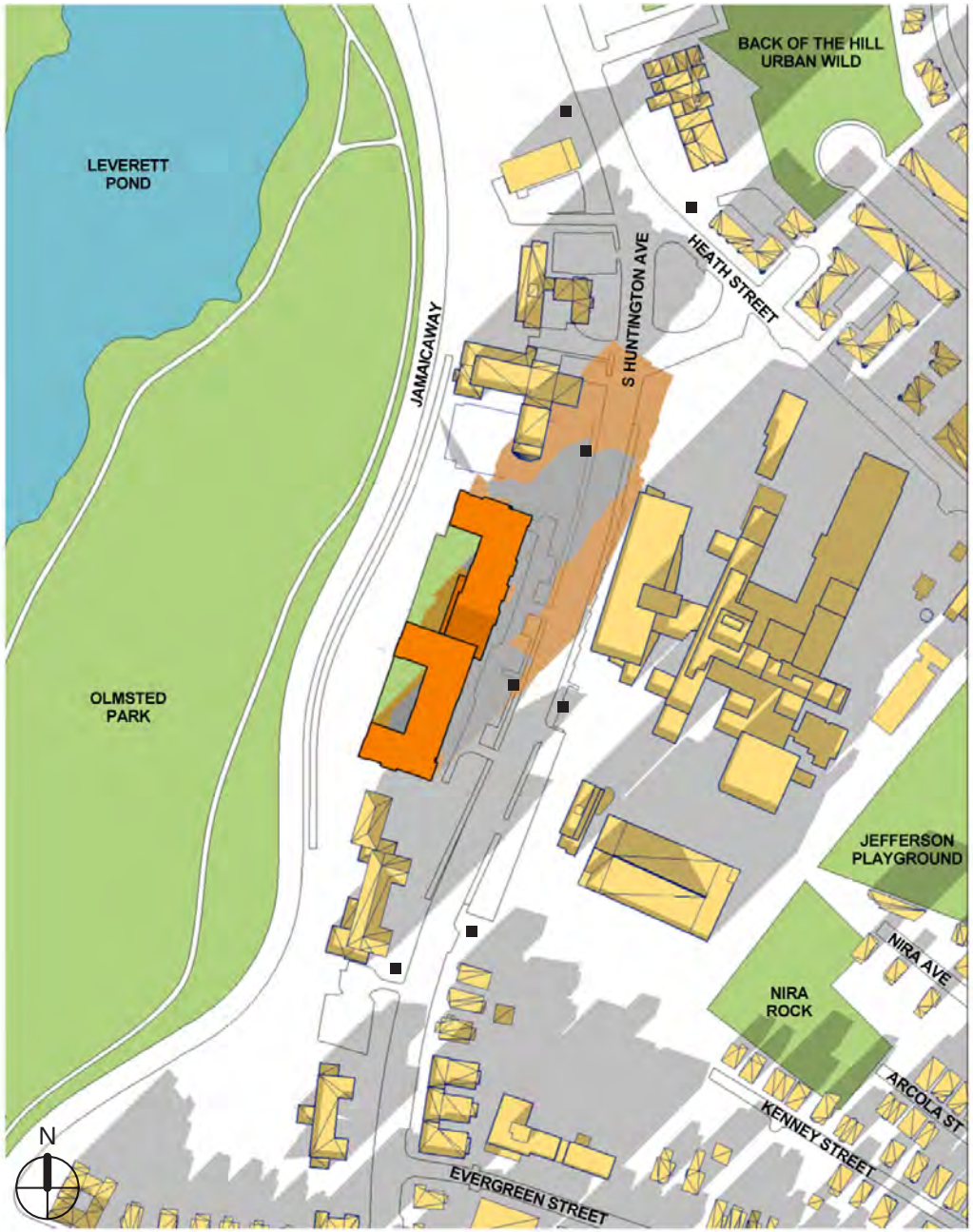

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Figure 3-14
Shadow Analysis, December 21 - 3 PM

shadows resulting from the Project will generally be limited to the Project's wooded area located between the Project and Jamaicaway, space between the Project and the existing building to the north, the proposed parking lot, and a portion of South Huntington Avenue. New shadow will be cast onto two bus stops only during one time period each.

3.3 Daylight

The new building is setback from both South Huntington Avenue and the Jamaicaway which minimizes any potential daylight impacts. The massing of the new building is also designed as an inverted "E" with one-story plinths breaking the massing and minimizing daylight obstruction when viewed from the Jamaicaway. In addition, due to the modest height of the new building, daylight impacts are expected to be minimal.

3.4 Solar Glare

The Project does not include the use of reflective glass or other reflective materials on the building facades that would result in adverse impacts from reflected solar glare from the Project.

3.5 Air Quality

3.5.1 Introduction

An air quality analysis was conducted to determine the impact of pollutant emissions from mobile source emissions generated by the Project. A microscale analysis is typically performed to evaluate the potential air quality impacts of carbon monoxide (CO) due to traffic flow around the Project area.

The impacts were added to monitored background values and compared to the Federal National Ambient Air Quality Standards (NAAQS). The standards were developed by EPA to protect human health against adverse health effects with a margin of safety.

The modeling methodology was developed in accordance with the latest Massachusetts Department of Environmental Protection (MassDEP) modeling policies and Federal modeling guidelines.[1] The air quality analysis results show that CO concentrations at the receptors studied are well under NAAQS thresholds.

Modeling assumptions and backup data for results presented in this section are provided in the Appendix C.

[1] 40 CFR 51 Appendix W, Guideline on Air Quality Models, 70 FR 68228, Nov. 9, 2005

Additionally, small stationary sources such as boilers and emergency generators may require registration under MassDEP's Environmental Results Program (ERP) if they meet specified criteria. Any impacts from these small sources would be evaluated under the ERP program and would be expected to meet all applicable emissions and air quality standards.

3.5.2 Microscale Analysis

A microscale analysis is used to determine the effect on air quality of the increase in traffic generated by the Project. The Proponent is required to analyze local effects of the potential increase in traffic on ambient air quality near specific intersections. This microscale analysis is required for the Project at intersections where 1) Project traffic would impact intersections or roadway links currently operating at Level of Service (LOS) D, E, or F or would cause LOS to decline to D, E, or F; 2) Project traffic would increase traffic volumes on nearby roadways by 10% or more (unless the increase in traffic volume is less than 100 vehicles per hour); or, 3) the Project will generate 3,000 or more new average daily trips on roadways providing access to a single location.[2] The microscale analysis involves modeling of carbon monoxide emissions from vehicles idling at and traveling through signalized intersections. Predicted ambient concentrations of CO for the Build and No-Build cases are compared with federal and state ambient air quality standards for CO.

The microscale analysis typically examines breathing-level (1.8 meter) CO impacts due to traffic queues in the immediate vicinity of a Project. CO is used in microscale studies to indicate roadway pollutant levels since it is the most abundant pollutant emitted by motor vehicles and can result in so-called "hot spot" (high concentration) locations around congested intersections. NAAQS have been established by the EPA for CO to protect the public health (known as primary standards). These standards do not allow ambient CO concentrations to exceed 35 parts per million (ppm) for a one-hour averaging period and 9 ppm for an eight-hour averaging period, more than once per year at any location. The widespread use of CO catalysts on late-model vehicles has reduced the occurrences of CO hotspots. Air quality modeling techniques (computer simulation programs) are typically used to predict CO levels for both existing and future conditions to evaluate compliance of the roadways with the standards. The analysis followed the procedure outlined in U.S. EPA's intersection modeling guidance.[3]

The microscale analysis has been conducted using the latest versions of EPA MOBILE6.2 and CAL3QHC to estimate CO concentrations at sidewalk receptor locations.

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[2] BRA, Development Review Guidelines, 2006.

[3] U.S. EPA, Guideline for Modeling Carbon Monoxide from Roadway Intersections; EPA-454/R-92-005, November 1992.

Baseline (2012) and future year (2017) emission factor data calculated from the MOBILE6.2 model, along with traffic data, were input into the CAL3QHC program to determine CO concentrations due to traffic flowing through the selected intersections.

Existing background values of CO at the nearest monitor location in Kenmore Square were obtained from the MassDEP. CAL3QHC and AERMOD results were then added to background CO values of 1.9 ppm (one-hour) and 1.5 ppm (eight-hour), as provided by the MassDEP, to determine total air quality impacts due to the Project. This value was compared to the NAAQS for CO of 35 ppm (one-hour) and 9 ppm (eight-hour).

3.5.2.1 Intersection Selection

An analysis of the five intersections from the traffic study was conducted (see Section 2, Transportation). Microscale modeling was performed for the one intersection that met the criteria for microscale analyses:

- the intersection of South Huntington Avenue and Bynner Street.

The traffic volumes and LOS calculations provided in Section 2.0 (Transportation), form the basis of evaluating the traffic data versus the microscale thresholds. To summarize, this intersection is currently at a LOS D and will continue to operate at a LOS D with the Project.

3.5.2.2 Emissions Calculations (MOBILE6.2)

The EPA MOBILE6.2 computer program was used to estimate motor vehicle emission factors on the roadway network. Emission factors calculated by the MOBILE6.2 model are based on motor vehicle operations typical of daily periods. The Commonwealth's statewide annual Inspection and Maintenance (I&M) program was included, as well as the state specific vehicle age registration distribution. The input files for MOBILE6.2 for the existing (2012) and build year (2017) are provided by MassDEP. As is typical, minor edits to the files were necessary to allow the program to output emission factors for the various speeds used in the analysis.

The current version of MOBILE6.2 does not explicitly calculate idle emissions. However, idle emissions can be obtained from a vehicle speed of 2.5 mph (the lowest speed MOBILE6 will model). The resulting emission rate given in (grams/mile) is then multiplied by 2.5 mph to estimate idle emissions (in grams/hour). Moving emissions are calculated based on actual speeds at which free-flowing vehicles travel through the intersections. A speed of 30 mph is used for all free-flow traffic. Speeds of 10 and 15 mph were used for right (and U-turns, if necessary) and left turns, respectively.

Winter CO emission factors are typically higher than summer. Therefore winter vehicular emission factors were conservatively used in the microscale analysis.

3.5.2.3 Receptors and Meteorology Inputs

Sets of up to 150 receptors were placed in the vicinity of each of the modeled intersections. Receptors extended approximately 500 feet on the sidewalks along the roadways approaching the intersection. The roadway links and receptor locations of the modeled intersections are presented in Figure 3-15.

For the CAL3QHC model, limited meteorological inputs are required. Following EPA guidance[4], a wind speed of one m/s, stability class D (4), and a mixing height of 1,000 meters was used. To account for the intersection geometry, wind directions from 0° to 350°, every 10°, were selected. A surface roughness length of 175 cm was selected.[5]

3.5.2.4 Impact Calculations (CAL3QHC)

The CAL3QHC model predicts one-hour concentrations using queue-links at intersections, worst-case meteorological conditions, and traffic input data. The one-hour concentrations were scaled by a factor of 0.7 to estimate eight-hour concentrations.[6] The CAL3QHC methodology was based on EPA CO modeling guidance. Signal timings were provided directly from the traffic modeling runs. The CAL3QHC input parameters are also described in Appendix C.

3.5.2.5 Background Concentrations

To estimate background pollutant levels representative of the area, the most recent air quality monitor data reported by the MassDEP in their Annual Air Quality Reports, was obtained for 2008 to 2010. MassDEP guidance specifies the use of the latest three years of available monitoring data from within 10 km of the Project site.

The closest monitor is located at Kenmore Square, in Boston with others at One City Square in Charlestown, and 174 North Street in Boston. A summary of the background air quality concentrations are presented in Table 3-1. Observed concentrations are currently in compliance with applicable NAAQS.

Background CO concentrations were determined from the closest available monitoring stations to the proposed Project. For use in the microscale analysis, background concentrations of CO in ppm were required. The corresponding maximum background concentrations in ppm were 1.9 ppm for one-hour and 1.5 ppm for eight-hour CO.

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[4] U.S. EPA, *Guideline for Modeling Carbon Monoxide from Roadway Intersections.* EPA-454/R-92-005, November 1992.

[5] U.S. EPA, *User's Guide for CAL3QHC Version 2: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections*. EPA –454/R-92-006 (Revised), September 1995

[6] U.S. EPA, Screening Procedures for Estimating the Air Quality Impact of Stationary Sources; EPA-454/R-92-019, October 1992

Figure 3-15

Link and Receptor Locations for CAL3QHC modeling of Intersection 1: the intersection of S. Huntington Avenue and Bynner Street

Table 3-1 Observed Ambient Air Quality Concentrations and Selected Background Levels

Pollutant	Averaging Time	2008	2009	2010	Background Concentration ($\mu g/m^3$)	NAAQS	Location
SO_2 [4]	1 HOUR	75.4	65	69.94	75.4	195	KEN
	3 HOUR	62.4	49.4	N/A	62.4	365	KEN
	24 HOUR	46.8	23.4	21.84	46.8	1,300	KEN
	ANNUAL	10.4	6.5	5.824	10.4	80	KEN
PM-10	24 HOUR	53	69	40	69	150	CTY
	ANNUAL	23	20.6	15.5	23	50	CTY
PM-2.5	24 HOUR [1]	26	19.1	21.9	22.33	35	NTH
	ANNUAL [2]	11.14	8.98	9.31	9.81	15	NTH
NO_2	1 HOUR [3]	133.48	114.68	119.38	133.48	188	KEN
	ANNUAL	41.36	37.788	35.908	41.36	100	KEN
CO	1 HOUR	1938	1596	2166	2166	40,000	KEN
	8 HOUR	1482	1254	1710	1710	10,000	KEN

From 2008-2010 MassDEP Annual Data Summaries

KEN = Kenmore Sq. Boston; CTY = 1 City Sq. Boston, NTH = 174 North St. Boston

[1] Average of the 98th percentile 24-hour values.

[2] Average of the annual values.

[3] Maximum annual one-hour concentrations (EPA "first tier" method).

[4] The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.

The 2010 three-hour value is not reported in the 2010 Annual Data Summary

3.5.3 Results

3.5.3.1 Microscale Analysis

The results of the maximum one-hour predicted CO concentrations from CAL3QHC are provided in Tables 3-2 through 3-4 for the 2012 and 2017 scenarios. Eight-hour average concentrations are calculated by multiplying the maximum one-hour concentrations by a factor of 0.7.[7]

The results of the one-hour and eight-hour maximum modeled CO ground-level concentrations from CAL3QHC were added to EPA supplied background levels for comparison to the NAAQS. These values represent the highest potential concentrations at the intersection as they are predicted during the simultaneous occurrence of "defined" worst case meteorology. The highest one-hour traffic-related concentration predicted in the

[7] U.S. EPA, Screening Procedures for Estimating the Air Quality Impact of Stationary Sources; EPA-454/R-92-019, October 1992

area of the Project, for the modeled conditions (1.1 ppm) plus background (1.9 ppm), is 3.0 ppm for the existing morning peak hour case. The highest eight-hour traffic-related concentration predicted in the area of the Project for the modeled conditions (0.8 ppm) plus background (1.5 ppm), is 2.3 ppm, again for the existing morning peak case. Both concentrations are well below the one-hour NAAQS of 35 ppm and the eight-hour NAAQS of 9 ppm.

It would be expected that any other mitigation measures implemented to improve traffic flow at any of the modeled intersections would result in further improved air quality conditions.

3.5.4 Conclusions

Using conservative estimates, the CO concentrations at the nearest receptors for impacts from the intersection, plus monitored background values, are well under the CO NAAQS thresholds for the Existing, No Build and Build conditions. CO concentrations under existing conditions are typically higher than future years due to ongoing improvements in vehicle emission rates. The increase in traffic volumes attributed to build conditions in this case is not of a significant magnitude to overtake the reduction in per-vehicle emission rates.

Table 3-2 Summary of Microscale Modeling Analysis (Existing 2012)

Intersection	Peak	CAL3QHC Modeled CO Impacts (PPM)	Monitored Background Concentration (PPM)	Total CO Impacts (PPM)	NAAQS (PPM)
One Hour					
S. Huntington Avenue & Bynner Street	AM	1.1	1.9	3.0	35
	PM	0.8	1.9	2.7	35
Eight Hour					
Huntington Avenue & Bynner Street	AM	0.8	1.5	2.3	9
	PM	0.6	1.5	0.6	9
Notes: CAL3QHC Eight Hour Impacts Conservatively Obtained by Multiplying One Hour Impacts By a Screen Factor of 0.7.					

Table 3-3 Summary of Microscale Modeling Analysis (No-Build 2017)

Intersection	Peak	CAL3QHC Modeled CO Impacts (PPM)	Monitored Background Concentration (PPM)	Total CO Impacts (PPM)	NAAQS (PPM)
One Hour					
S. Huntington Avenue & Bynner Street	AM	0.8	1.9	2.7	35
	PM	0.8	1.9	2.7	35
Eight Hour					
Huntington Avenue & Bynner Street	AM	0.6	1.5	2.1	9
	PM	0.6	1.5	2.1	9
Notes: CAL3QHC Eight Hour Impacts Conservatively Obtained by Multiplying One Hour Impacts By a Screen Factor of 0.7.					

Table 3-4 Summary of Microscale Modeling Analysis (Build 2017)

Intersection	Peak	CAL3QHC Modeled CO Impacts (PPM)	Monitored Background Concentration (PPM)	Total CO Impacts (PPM)	NAAQS (PPM)
One Hour					
S. Huntington Avenue & Bynner Street	AM	0.8	1.9	2.7	35
	PM	0.8	1.9	2.7	35
Eight Hour					
Huntington Avenue & Bynner Street	AM	0.6	1.5	2.1	9
	PM	0.6	1.5	2.1	9
Notes: CAL3QHC Eight Hour Impacts Conservatively Obtained by Multiplying One Hour Impacts By a Screen Factor of 0.7.					

3.6 Water Quality / Stormwater

The Project proposes a stormwater management program that will improve the quality of stormwater runoff and promote recharge. Practices to control pollution during construction will be implemented. A stormwater management system will be installed to treat and infiltrate stormwater supplemented with a long-term operation and maintenance plan.

Stormwater pollution prevention measures will include good housekeeping such as properly storing materials, spill prevention and response plans, and proper storage and disposal of solid wastes. Erosion and sediment controls will be used during construction up

until such point that the site is stabilized. Controls may include hay bales, silt fence, and catch basin filters. The Contractor will also be responsible for controlling dust through the use of a stabilized construction entrance, street sweeping, and watering if necessary.

The stormwater management system will reduce the pollutant load to the municipal storm drain system. Deep sump catch basins and a water quality inlet will remove a portion of the total suspended solids inherent in surface parking runoff. Rooftop runoff will be directed to a subsurface infiltration system with overflows being directed to the municipal storm drain system.

The Project will result in a decrease in peak discharge rates and volumes of runoff as well as improve groundwater recharge. This is accomplished primarily by the installation of a stormwater infiltration system.

3.7 Flood Hazard Zone / Wetlands

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) indicates the FEMA Flood Zone Designations for the Project site (City of Boston, Community Panel Number 25025C0078G). The map for the Project site shows the Project is located outside of any designated flood zones. The Project site does not contain any wetlands.

3.8 Geotechnical / Groundwater

This section describes existing site conditions, subsurface soil and groundwater conditions, and planned foundation construction methodology for the development which will include demolition of existing buildings and construction of an approximately 190,000 gross square foot, four - five story residential complex with one level of basement parking level below the first floor.

3.8.1 Existing Site Conditions

The existing site is currently occupied by four buildings, ranging from one to four stories above ground, which was formerly the Jamaica Plain campus of the Home for Little Wanderers. The Project site is bounded by South Huntington Avenue to the east, the Jamaicaway to the west, the Sherrill House at 135 South Huntington Avenue, a five to six story skilled nursing facility to the north, and the Goddard House at 201 South Huntington Avenue, a six to seven story skilled nursing and rehabilitation center to the south Site grades vary by as much as 40 ft across the property from a low point of about El. 50 Boston City Base (BCB) Datum at the northwest corner of the site to a high of about El. 90 at the southeast corner of the site.

3.8.2 Subsurface Soil and Bedrock Conditions

Site and subsurface conditions at the Project site are based on review of available topographic and test boring information. A subsurface exploration program was completed at the property in 2008 which consisted of nine test borings spaced throughout the property, to depths of up to 25 ft below site grades at the locations drilled. Subsurface conditions at the site consist of miscellaneous granular fill soils overlying dense glacial soils over bedrock. Bedrock consisting of Roxbury Conglomerate underlies the glacial deposits at El. 85 +/- to greater than El. 60 +/, corresponding to depths between existing ground surface and greater than 20 ft below existing site grades. Bedrock outcrops are visible at some locations across the site, indicating abrupt changes in depth to bedrock surface over short distances.

3.8.3 Groundwater

Groundwater in soil was not encountered in test borings to a depth of 22 ft below existing site grades, corresponding to approximately Elevation 65 to El. 38 BCB. The Project site is located outside the limits of the Groundwater Conservation Overlay District (GCOD). Accordingly, the Project is not required to comply with the specific requirements of Article 32. Groundwater management practices will be employed during construction to control surface water runoff and seepage during foundation excavation and construction.

It is not expected that temporary or permanent site dewatering will be required for construction.

3.8.4 Proposed Foundation Construction

Development of the Project site will require demolition of the four existing buildings prior to excavation for foundations and below-grade walls. The Building is anticipated to be supported on conventional shallow footing foundations bearing in competent glacially deposited soils and/or bedrock. Due to the variable depth to top of bedrock across the site, removal of bedrock may be required to achieve design subgrade within portions of the new building footprint. Removal of bedrock will be required in limited areas and is expected to be completed with conventional earth moving equipment and by hoe ramming. Removal of bedrock will be conducted to limit adverse off site impacts to adjacent structures and utilities.

The type and design of both the temporary earth support system and the permanent foundation wall system will provide for adequate support of the structures and utilities and be compatible with the subsurface conditions. As part of the design phase, the design team will prepare designs and specifications as well as review contractor's submittals for conformance to the Project contract documents

Although a temporary earth support system has not been selected, it will likely consist of soldier pile and lagging installed adjacent to the west perimeter foundation wall of the proposed building. The temporary earth support system would be installed using low vibration techniques and be located approximately 60 to 70 ft from adjacent, offsite buildings and utilities. Given the method for installation and distance of the proposed temporary earth support system from adjacent structures, impacts are anticipated to be minimal beyond the limits of the site.

3.8.5 Existing Hazardous Waste Conditions

A Phase I Environmental Site Assessment (Phase I ESA), using methods consistent with ASTM E1527-05, was conducted in March 2012. The site was not identified within the Massachusetts Department of Environmental Protection Waste Site/Reportable Release database. No Recognized Environmental Conditions were identified during the 2012 Phase I Environmental Site Assessment.

Characterization of the soil and groundwater at the Project site has not been conducted to date. Evaluation of site environmental conditions will be conducted at the appropriate stage of the design process to further evaluate site environmental conditions. If required, management of soil and groundwater will be in accordance with applicable local, state, and federal laws and regulations. Characterization of environmental quality of excess material to be excavated and generated for offsite transport will be undertaken prior to removing material from the property.

3.9 Solid and Hazardous Waste

3.9.1 Solid Waste Generation during Operation

The Project will generate solid waste typical of other residential projects. Solid waste generated by the Project will be approximately 968 tons per year, based on the amount of amenity space proposed at a generation rate of 5.5 tons per 1,000 square feet per year and the amount of residential space proposed at a generation rate of 4 lbs per bedroom per day as shown in Table 3-5.

Table 3-5 Solid Waste Generation

Unit Type	Program	Number of Bedrooms	Generation Rate	Solid Waste (tons per year)
Studio / One Bedroom Units	159 units	159 bedrooms	4 lbs/bedroom/day	636
Two Bedroom Units	37 units	74 bedrooms	4 lbs/bedroom/day	296
Ground Floor Amenity Uses	6,500 sf	N/A	5.5 tons/1,000 sf/year	36
Total Solid Waste Generation				**968**

Solid waste will include wastepaper, cardboard, glass, and bottles. A portion of the waste will be recycled as described below. The remainder of the waste will be compacted and removed by a waste hauler contracted by building management. With the exception of "household hazardous wastes" typical of residential uses (for example, cleaning fluids and paint), the residential and ground floor uses will not generate hazardous waste. Separate containers will be provided for the disposal of materials such as turpentine and paints.

Recycling

Recycling by residents will be encouraged and coordinated. To encourage recycling, the proponent will implement a recycling program throughout the Project. The Project will include space for recycling on the ground floor, and the loading/receiving area will include space for the storage and pick-up of recyclable materials. Recyclable materials are expected to continue to include newspaper, cardboard, cans, and bottles. The residential recycling program will be conducted in accordance with the City of Boston's recycling regulations.

The Project will be provided with a trash chute with access from each floor. The chute will terminate on the ground floor and will feature a diverter that will allow the sender to select whether the contents will be sent to the trash bin or the recycling bin. A private trash collector will pick-up trash and recyclables as needed.

3.9.2 Solid Waste Generation during Construction

Solid waste generated by construction will consist primarily of demolition debris related to the selective interior demolition of the existing building and packaging and scrap materials (such as corrugated cardboard, glass, aluminum, scrap metal, and cable/wire) associated with new construction. It is estimated that approximately 475 tons of solid waste will be generated during construction.

Construction waste material from demolition and new construction will be recycled when possible (see below). For those materials that cannot be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per DEP's Regulations for Solid Waste Facilities, 310 CMR 16.00. This requirement will be specified in the disposal contract. If any asbestos containing materials are identified, they will be treated as a special waste in accordance with Massachusetts DEP guidelines and addressed and disposed of accordingly.

Recycling during Construction

The proponent will take an active role with regard to the reprocessing and recycling of construction waste. An evaluation of the potential for recycling will occur before the construction commences. Construction will be conducted so that some materials that may be recycled are segregated from those materials not recyclable to enable disposal at an approved solid waste facility. A comprehensive recycling program will be included in the

final Construction Management Plan. The Proponent will also coordinate with the Boston Materials Resource Center and direct materials to them where possible to reduce the amount of surplus building material that is sent to landfills. Materials that cannot be reused or recycled will be transported in covered trucks by a contract hauler to a licensed facility, per the MassDEP regulations for Solid Waste Facilities, 310 CMR 16.00.

3.10 Noise

The primary operational noise caused by the Project will be the result of mechanical equipment, which will be all new, state of the art mechanical equipment to meet the City's new Stretch Code energy requirements. The Project will include a high efficiency air cooled chiller designed for quiet operation which will be located on the roof. The chiller will incorporate an acoustic screen enclosure that will modulate noise as well as visual impacts. Given the urban location and proximity to South Huntington Avenue and the Veterans Administration Hospital directly across the street, existing condition sound levels are moderately high. Therefore, it is anticipated that noise levels from the Project will be less than or similar to noise levels of the existing buildings, and impacts are anticipated to be minimal based on information provided by the architect's acoustical consultant. The Project is anticipated to meet the requirements of the City of Boston's zoning district noise standards.

3.11 Construction Impacts

A Construction Management Plan ("CMP") in compliance with the City's Construction Management Program will be submitted to the Boston Transportation Department ("BTD") once final plans are developed and the construction schedule is determined. The construction contractor will be required to comply with the details and conditions of the approved CMP.

Proper pre-planning with the City and neighborhood will be essential to the successful construction of the Project. Construction methodologies, which ensure public safety and protect nearby residences, will be employed. Techniques such as barricades, walkways, and signage will be used. The CMP will include routing plans for trucking and deliveries, plans for the protection of existing utilities, and control of noise and dust.

During the construction phase of the Project, the developer will provide the name, telephone number and address of a contact person to communicate with on issues related to the construction.

The proponent intends to follow the guidelines of the City of Boston and the Massachusetts DEP, which direct the evaluation and mitigation of construction impacts. As part of this process, the proponent and its construction team will evaluate the mitigation methods employed by the Commonwealth's Clean Air Construction Initiative.

3.11.1 Construction schedule

Construction of the Project is estimated to last approximately 18 months, with initial site work expected to begin by the end 2012. There will be a one-month site mobilization period.

The City of Boston allows construction work from 7:00 AM to 6:00 PM Monday through Friday. Construction outside of those hours requires a permit. Typical construction hours for the Project will be in compliance with the City's regulations with no work anticipated on the weekends. In the event that weekend work is necessary, the proponent will obtain required City approvals.

The construction contractor will be responsible for coordinating construction activities during all phases of construction with City of Boston agencies in order to minimize potential scheduling and construction conflicts with other ongoing construction Projects in the area.

3.11.2 Demolition

The three buildings currently located on the site will be demolished. The demolition debris will be disposed of at a properly licensed solid waste disposal facility. Concrete, brick, and asphalt will be separated for crushing and possible re-use on site. During demolition, provisions will be made for the use of water spray to control the generation of dust. An Asbestos and Hazardous Material Evaluation was conducted in 2009, and additional asbestos investigations in 2010. Several types of common asbestos containing (ACM) and hazardous materials were identified to be present in various building materials. The identified ACM, lead, and hazardous materials were in generally good condition. Prior to conducting demolition activities, Massachusetts-licensed abatement contractors will be retained to remove the ACM and other materials

3.11.3 Construction Staging / Public Safety / Access

Construction truck access to the Project site will be outlined in the CMP to be filed with BTD in accordance with the City's transportation maintenance plan requirements. Staging for the Project is anticipated to start by the end of 2012.

The construction staging plan will be designed to isolate the construction while providing safe access for pedestrians and vehicles during normal day-to-day activity and emergencies. The staging areas will be secured by chain-link fencing to protect pedestrians from entering these areas.

Although specific construction and staging details have not been finalized, the proponent will work with the construction contractor and the City of Boston to ensure that staging areas will be located to minimize impact to pedestrian and vehicular flow. Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic. In addition,

public safety for pedestrians on abutting sidewalks will also include covered pedestrian walkways when appropriate and, as required, the suspension of the use of certain sidewalks during the most hazardous periods of overhead construction activity. If required by the Boston Transportation Department and the Boston Police Department, police details will be provided to facilitate traffic flow. The Project will include debris nets on various levels of the building elevations to protect the public and the abutters. All construction procedures will be designed to meet all OSHA safety standards for specific site construction activities.

A process to protect existing trees (to remain) will be implemented to prevent damage from the construction operation.

Examples of the protection measures are described below:

- Fencing to prevent material staging;
- Signage/training to inform and educate workers of the area that we are protecting; and
- Hay bales/filter fabric to ring area to be protected.

3.11.4 Construction Air Quality

During the construction period of the Project, temporary affects on ambient air quality adjacent to the construction site may occur. Impacts associated with construction activities may generate fugitive dust which may result in localized increases in particulate levels. The Project does not involve any significant excavation. Therefore, air quality impacts associated with fugitive dust is anticipated to be minimal. The Proponent will explore participation in the DEP Diesel Retrofit Program.

The construction contract will provide for a number of strictly enforced measures to be utilized by contractors to reduce potential emissions and minimize impacts. These are expected to include:

- Using wetting agents on area of exposed soil on a scheduled basis;
- Using covered trucks;
- Minimizing spoils on the construction site;
- Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;
- Minimizing storage of debris on-site;
- Periodic Street and sidewalk cleaning with water to minimize dust accumulations; and

- Wheel washing station for trucks at exit gates.

3.11.5 Construction Noise

During operations, neither the Project's mechanical equipment nor traffic noise associated with the Project is expected to result in a perceptible change in noise levels. Intermittent increases in noise levels will occur in the short-term during construction. Construction work will comply with the requirements of the City of Boston noise ordinance. Every reasonable effort will be made to minimize the noise impact of construction activities. Mitigation measures are expected to include:

Mitigation measures are expected to include:

- Instituting a proactive program to ensure compliance with the City of Boston noise limitation policy;
- Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on continuously running equipment; such as air compressors and welding generators;
- Replacing specific construction operations and techniques by less noisy ones where feasible;
- Selecting the quietest of alternative items of equipment where feasible;
- Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;
- Turning off idling equipment; and
- Locating noisy equipment at locations that protect sensitive locations by shielding or distance.
- Monitoring noise levels with calibrated sound equipment to ensure compliance.

3.11.6 Construction Period Transportation Issues

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

The number of workers required during the construction period will vary, depending on the phase of construction. The number of workers on-site will average between 75 to 150 workers per day. Because the construction workers will arrive and depart prior to peak traffic periods, the construction trips are not expected to impact local traffic conditions.

To reduce vehicle trips to and from the construction site, all workers will be strongly encouraged to use public transportation. Space on-site will be made available for workers' supplies and tools so they do not have to be brought to the site each day.

Specific delivery truck access routes will be established in consultation with the BTD through its approval of the CMP required for the Project. Construction contracts will include clauses restricting truck travel to primary roads. Enforcement of truck routes will be accomplished through clauses in the subcontractors' agreements.

3.11.7 Protection of Utilities

Protection of BWSC water, sewer, and drain lines will begin before commencement of site work. The proponent will request that the locations of all existing water, sewer, and drainage lines by marked by BWSC. Excavation in the area of existing water, sewer and drain lines will proceed with caution. Hand excavation will take place when excavation in the immediate area of pipe walls is required. BWSC will require additional protection measures if new pipes are to cross existing pipes.

The BWSC will require the proponent to submit a General Service Application and a site plan for review prior to construction. The site plan must include existing water mains, sanitary sewers, storm drains, and proposed service connections.

3.11.8 Generation and Disposal of Construction Debris

The proponent will take an active role with regard to the reprocessing and recycling of construction waste.

The disposal contract will include specific requirements that will ensure that construction procedures allow for the sufficient space for the necessary segregation, reprocessing, reuse and recycling of materials. For those materials that cannot be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per MassDEP's Regulations for Solid Waste Facilities, 310 CMR 16.00. This requirement will be specific in the disposal contract. Construction will be conducted so that materials that may be recycled are segregated from those materials not recyclable to enable disposal at an approved solid waste facility. The Proponent will also coordinate with the Boston Materials Resource Center and direct materials to them where possible to reduce the amount of surplus building material that is sent to landfills. Materials that cannot be reused or recycled will be transported in covered trucks by a contract hauler to a licensed facility, per the MassDEP regulations for Solid Waste Facilities, 310 CMR 16.00.

Removal of any hazardous materials will be treated as special waste in accordance with Massachusetts DEP guidelines and addressed and disposed of accordingly. Lead and asbestos will be removed in accordance with applicable regulations.

3.11.9 Rodent Control

A rodent extermination certificate will be filed with the building permit application to the City. Rodent inspection monitoring and treatment will be carried out before, during, and at the completion of all construction work for the Project, in compliance with the City's requirements. Rodent extermination prior to work start-up will consist of treatment of areas throughout the Project site. During the construction process, regular service visits will be made.

3.12 Wildlife Habitat

The Project is a developed site in an established, dense urban neighborhood. As such, the Project will not have impacts on wildlife habitats.

3.13 Sustainable Design

3.13.1 Article 37 Boston Zoning Code

To comply with Article 37, the Proponent intends to measure the results of their sustainability initiatives using the framework of the LEED (Leadership in Energy and Environmental Design) rating system. The building will seek LEED Certification through the USGBC at a minimum of a Certified level, exceeding the requirements of Article 37 of the Boston Zoning Code. As a new construction residential apartment building, the Project at 161 South Huntington Avenue is categorized as a LEED V3 NC 2009 (New Construction) Project. The LEED rating system tracks the sustainable features of the Project by achieving points in the following categories: Sustainable Sites; Water Efficiency; Energy and Atmosphere; Materials and Resources; Indoor Environmental Quality; and Innovation in Design. Presently, 45 points have been targeted, not including any of the potential Boston Zoning Code Article 37 points. The checklist, included in Appendix D, will be updated regularly as the design develops and engineering assumptions are substantiated.

3.13.1.1 Sustainable Sites

1. Construction Activity Pollution Prevention (SS prerequisite 1). A management plan will be created and implemented to reduce pollution from construction activity.

2. Site Selection (SS credit 1). The Project site is currently completely developed and is located in a dense urban area. This development does not violate any of the established LEED criteria.

3. Development Density and Community Connectivity (SS credit 2). The development is in a dense urban area with existing infrastructure and basic services.

4. Alternative Transportation – Public Transportation Access (SS credits; 4.1, 4.2, 4.3, & 4.4). The Project is sited near several heavily served mass transit stops. The site's adjacency to basic services in the community and the development density of its urban context enable the Project to satisfy both available approaches to the Development Density and Community Connectivity credit. The Project also achieves all of the Alternative Transportation credits through its access to public transportation; by providing covered bicycle storage facilities for more than 15% of the building occupants; by providing preferred parking for low-emitting and fuel efficient vehicles; and by providing the number of parking spaces that meet, but do not exceed, the local zoning requirement. Zipcars will also be available on site.

5. Stormwater Design - Quantity Control (SS credit 6.1). The intent is to reduce volume of stormwater runoff by 25%.

6. Heat Island Effect – Non-Roof (SS credit 7.1). The intent is to reduce heat islands by placing 95% of parking under cover in a garage below the building.

7. Heat Island Effect – Roof (SS credit 7.2). The intent is to reduce heat islands by designing and installing a roof with an appropriate Solar Reflectance Index (SRI).

3.13.1.2 Water Efficiency

Conservation of water preserves a natural resource while reducing the amount of energy and chemicals used for sewage treatment.

1. Water Efficient Landscaping (WE credit 1.1). The intent is to limit the use of potable water with strategies such as using adaptive plants, efficient irrigation systems and climate base controllers.

2. Water Use Reduction (WE credit 3.1). The intent is to reduce potable water 30% from baseline by incorporating water conservation strategies that include low flow plumbing fixtures for water closets and faucets.

3.13.1.3 Energy and Atmosphere

The building is designed to optimize energy efficiency and will comply with the Stretch Energy Code, whereby energy use is reduced from the baseline energy conservation code by 20%. The prescriptive approach will be employed to demonstrate Stretch Energy Code compliance.

1. Fundamental Commissioning of the Building Energy Systems (EA prereq. 1). The intent is to verify that the building's related systems are installed and perform as intended, via means of a commissioning process.

2. Minimum Energy Performance (EA prereq. 2). The intent is to clarify the minimum level of energy efficiency for the building and related systems.

3. Fundamental Refrigerant Management (EA prereq. 3). The intent is to reduce ozone depletion through thoughtful use of appropriate refrigerants.

4. Optimize Energy Performance (EA credit 1). The intent is to reduce the environmental impacts associated with energy use, via means of increased energy performance.

5. Enhanced Commissioning (EA credit 3). The intent is to verify that the building's related systems are installed and perform as intended, via means of an enhanced third party commissioning process.

6. Enhanced Refrigerant Management (EA credit 4). The intent is to reduce ozone depletion through thoughtful evaluation and use of appropriate refrigerants.

3.13.1.4 Materials and Resources

The materials that are used in the construction of buildings have a profound impact on the amount of virgin materials that are harvested and also the amount of waste products that are generated. Recycling diverts material waste products from landfills and reduces the demand for virgin materials. In addition, the extraction, processing, and transportation of materials to project sites consume energy and contribute to carbon dioxide emissions. Additionally, the use of locally extracted and processed materials stimulates the local economy.

1. Storage and Collection of Recyclables (MR prereq. 1). The intent is to reduce the amount of building waste that is taken to landfills, by supporting occupant recycling efforts.

2. Construction Waste Management (MR credit 2.1 and 2.2). The intent is to divert construction and demolition debris from landfills through the use of a construction waste management plan.

3. Recycled Content (MR credit 4.1). The intent is to reduce the impacts from use of virgin materials, by using building materials with recycled content, where appropriate.

4. Regional Material (MR credit 5). The intent is to specify 10% of material by costs sourced within 500 miles of the site.

3.13.1.5 Indoor Environmental Quality

Safeguarding the comfort and well-being of the occupants is a fundamental obligation. The quality of indoor air, and specifically the reduction of airborne pollutants, is known to minimize occurrences of asthma, allergies, and other health ailments. Irritating off gassing, caused by the presence of volatile organic compounds (VOCs) in interior finishes, can be avoided by using products that release fewer and less harmful chemical compounds.

1. Minimum Indoor Air Quality (EQ prereq. 1). The intent is to establish minimum indoor air quality performance.

2. Environmental Tobacco Smoke Control (EQ prereq. 2). The intent is to minimize the exposure of building occupants, indoor surfaces and ventilation air distribution systems to Environmental Tobacco Smoke (ETS).

3. Construction IAQ Management Plan (EQ credit 3.1). The intent is to reduce indoor air quality problems resulting from the construction process, through the means of a Construction IAQ Management Plan.

4. Low Emitting Materials – (EQ credit 4.1, 4.2 and 4.3). The intent is to reduce the quantity of indoor air contaminants through thoughtful use of adhesives and sealants, paints, and carpet with low VOC content.

5. Indoor Chemical and Pollutant Source Control (EQ credit 5). The intent is to minimize the exposure of building occupants to potentially hazardous particulates and chemical pollutants.

6. Controllability of Systems – Lighting (EQ credit 6.1). The intent is to enhance the indoor environmental quality by providing access to lighting systems controls for 90% of building occupants.

7. Controllability of Systems – Thermal Comfort (EQ credit 6.2). The intent is to enhance the indoor environmental quality by providing access to thermal systems controls.

8. Daylight and Views – (EQ credits 8.1 and 8.2). The intent is to provide a connection between the indoor and outdoor spaces through the incorporation of daylight and views.

3.13.1.6 Innovation in Design

The Project anticipates that several points will be achieved in the Innovation & Design category. One point is expected for exemplary performance on the Development Density credit. Additional credits will be pursued for the Green Housekeeping program and the Green Education and Outreach program.

1. Exemplary Performance – Public Transportation Access (ID credit 1.1). The Project is sited near several heavily served mass transit stops.

2. Exemplary Performance Heat Island Effect – Non-Roof (ID credit 1.2). The Project will reduce heat islands by placing 95% of parking under cover.

3. Exemplary Performance Construction Waste Management – (ID credit 1.3). The goal is to divert construction and demolition debris from landfills through the use of a construction waste management plan.

4. Innovation in Design – Green Housekeeping (ID credit 1.4). The intent is to engage in a green housekeeping policy wherein all cleaners used in common areas shall comply with Green Seal standards.

5. Innovation in Design – LEED AP (ID credit 2). The goal is to support and encourage the design integration of LEED through the input of LEED Accredited Professionals.

3.13.1.7 Regional Priority

The Project anticipates that several points will be achieved in the Regional Priority category.

1. Regional Priority – LEED AP (SS7.1) Heat Island, non-roof

2. Regional Priority – LEED AP (SS7.2) Heat Island, roof

3. Regional Priority – LEED AP (SS6.1) Stormwater design

Section 4.0

Site Design and Urban Design

4.0 SITE DESIGN AND URBAN DESIGN

4.1 Existing Conditions

The existing Home for Little Wanderers buildings are comprised of three distinct structures including the 1914 Home for Little Wanderers building and its associated 1950s additions, the late 1980s residential building and the 1990 gymnasium structure.

The buildings are constructed using various materials and situated in a random fashion on the site with varying amounts of height and setback to South Huntington Avenue. Double loaded parking lots supporting 53 cars separate the buildings from the sidewalk. These setbacks are atypical for commercial properties in the area, which typically have consistent setbacks from the street.

4.2 Urban Design Objectives

Key Design Goals

The urban design approach for the Project includes responding to the unique site conditions between South Huntington Avenue and the Jamaicaway. The building has been designed to respond to this mid-block in-fill location by acknowledging the massing, height, and materials of the adjacent structures as shown in Figure 4-1. Urban design goals include:

- Enhancing the South Huntington Avenue urban condition by creating an active street front;
- Using massing and material differentiation to reduce the scale of the Project;
- Improving the Project Site's relationship to its surroundings; and
- Creating a pleasing urban presence by negotiating the vastly differing conditions on each side of the Project Site.

Proposed Development

By locating the buildings closer to South Huntington Avenue consistent with the neighboring structures, the Project aims to contribute to an active urban experience in a more significant way than the existing structures. The buildings extend to approximately 50 feet off South Huntington Avenue, while the opposite side facing the Emerald Necklace pulls away from the existing stand of mature trees and the Jamaicaway. The building retains some parking in the front for visitors, but reduces the number to 16 spaces. The balance of the parking will be provided below the building and out of public view in a partially below grade garage.

East Aerial

West Aerial

The existing deteriorating iron fence along South Huntington's sidewalk edge will be reintroduced in a more contemporary manner, incorporating landscape treatment on both sides of the fence, with modulated heights following the site slope. The development will enhance pedestrian access by providing new sidewalks, fencing, and lighting and will offer an active streetscape with multiple pedestrian entry points.

Pedestrians and cars will enter the Project site from South Huntington Avenue at locations similar to existing conditions, with the main lobby entrance prominently situated near the center of the building facing along the street. The lobby will visually flow from front to back and provide a direct view and access through the building and onto the Emerald Necklace. The residential amenity areas adjacent to the lobby also take advantage of the long tree lined views looking towards the Jamaicaway.

The Project's massing and design will help tie the neighborhood's varied building stock and uses together by respecting the fabric of the neighborhood. The design of the new building centers on simple volumes which are broken down in scale through the modulation of façade depth, bay windows, building heights, and varying materials of masonry, metal panel, and glass. The building generally aligns with adjacent parcels to provide definition to South Huntington Avenue, and is designed to maintain and enhance the existing scale of the built street wall. The design acknowledges the sloped site by stepping the building and is organized into two major elements of four story and five stories. The building will meet the sky with simply articulated cornices capping major architectural elements. Figures 4-2 through 4-6 include elevations of the proposed Project.

The building will seek LEED Certification through the USGBC at a minimum of a Certified level, exceeding the requirements of Article 37 of the Boston Zoning Code. The redevelopment of this site will promote public safety, encourage walking and transit usage and improve safety and the pedestrian environment.

South Huntington Elevation

Jamaicaway Elevation

South Elevation

North Elevation

Entry Elevation

Figure 4-6
Perspective: South Huntington Ave Looking North

Section 5.0

Historic and Archaeological Resources

5.0 HISTORIC AND ARCHAEOLOGICAL RESOURCES

5.1 Introduction

This section of the Expanded PNF identifies and describes existing buildings on the Project site, significant historic resources within the vicinity of the Project, and assesses potential Project related impacts to historic and archaeological resources.

5.2 Buildings on the Project Site

5.2.1 The New England Home for Little Wanderers

Constructed in 1914, the New England Home for Little Wanderers building is a Georgian Revival style red brick, three story structure set on a raised basement level. The 11 bay main block features a symmetrical façade with a center entrance; three story, side, projecting pavilions flank the main block. Designed by the Boston architecture firm Brainerd and Leeds, the building displays a cast stone balustrade at the roof line, bracketed cast stone hoods over the front and side entrances, splayed window lintels with keystones on the second and third floors and cast stone window surrounds on the first floor. The building is further detailed with a decorative iron fire escape that spans across the façade at the second floor level and is supported with iron scroll brackets.

The top floors of the side pavilions feature loggia-like forms with paired columns separating late 20th century one-over-one replacement windows in openings once occupied by multi-light casement windows. On the remainder of the building, original six-over-one and nine-over-one sash have also been replaced with late 20th century one-over-one replacement windows.

The west elevation consists of the seven bay main block and projecting three bay side pavilions. The main block features a cast stone balustrade at the roof line and a frieze between the first and second floors inscribed "THE NEW ENGLAND HOME FOR LITTLE WANDERERS." In the late 1950s, a single story addition was added to the raised basement level of the west elevation. The addition spans the full width of the main block and the three bays of the north pavilion. The addition altered a central classical cast stone entablature entry framed with engaged columns.

Also in the late 1950s, a two story addition was added to the south elevation of the southern pavilion. The two additions, both designed by The Architectural Collaborative, feature large plate glass windows, red brick, bands of concrete and flat roofs.

Founded by 10 Boston area businessmen and incorporated under a Massachusetts Legislative Act in March 1865, The Baldwin Place for Little Wanderers, as the institution was originally known, was established with an original goal of caring for children who had been orphaned and left homeless. Originally, the Home occupied the Baldwin Place

Baptist Church, located off North Street in Boston's North End. The Home provided a residence for homeless children of every age. In its early years, the Home housed a large number of orphans of Civil War soldiers from across New England. In addition to orphans, the Home provided for children with only one living parent. During its first 12 years of operation, the Home provided for 4,288 children, including 960 which were five years old or younger. The Home also offered a day care service for working poor mothers. During the 1870s, the Home provided day care services for approximately 70 children annually ranging in age from a few weeks to four years old.

In 1888, in response to growth and demand for additional space, the Home built a new building at 200 West Newton Street. The Home's continued growth in the early 20th century lead to the construction of the South Huntington Avenue building in 1914. The present building was constructed on land formerly associated with the George E. Nickerson estate. In the late 1890s, South Huntington Avenue was extended beyond Heath Street. Following the extension of South Huntington Avenue, the Nickerson estate was subdivided and developed with institutional buildings. In addition to the Home's 1914 building, other developments constructed on the former Nickerson estate included the 1907 Vincent Memorial Hospital at 125 South Huntington Avenue and the 1926 Home for Aged Women at 201-205 South Huntington Avenue.

The site is defined on its east and west boundary by an iron fence in varying degrees of deterioration. On the east side of the property, the iron picket fence runs along the back of the South Huntington Avenue sidewalk. There are two pairs of brick piers at the original two entrance drives. While the northern entrance drive remains in continued use, the southern entrance is no longer used as the drive has been relocated further south. Infill sections of fencing fill the original south entrance. The new south entrance was created with the removal of original sections of the iron pickets.

The fence on the west side of the property follows the curve of the sidewalk along the Jamaicaway. While deteriorated in condition, the original fence retains its original two pairs of brick piers at the two pedestrian gates located at the northern and southern limits of the property.

5.2.2 Modern Residential Building and Gymnasium

Additional buildings constructed on the Project site by the Home include a 1987, red brick, three story residential dormitory building near the southern limits of the site. The residential building was constructed into the natural sloping topography of the site, such that the South Huntington Avenue side (east elevation) is a single story in height, whereas the Jamaicaway side (west elevation) is three stories in height.

A metal clad gymnasium building, constructed by the Home in 1991, is located near the northern limits of the site. The gable roof structure is set on a raised concrete block foundation and features bands of windows set beneath the overhanging roof line.

Throughout the 20th century the Home expanded services offered at its South Huntington Avenue property and at other sites that it operates, including opening branch offices in Maine and Western Massachusetts, acting as a pioneer in bringing child welfare services to other parts of New England. During World War II, the Home worked with the U.S. Committee for Care of European Children to shelter and place over 250 young refugees.

Today, the Home is the nation's oldest and one of New England's largest nonprofit child and family service agencies. Currently, the Home and its staff of approximately 600 provide services to more than 7,000 people through 13 locations in communities including Boston, Walpole, Waltham, and Plymouth. In Boston, the Home has become the largest provider of mental health services in the Boston's public school system and operates 15 other Boston-based programs that offer community-based services in homes, hospitals and clinics.

In addition to its other locations, the Home provides services at its 166-acre Longview Farm campus in Walpole, Massachusetts, which it has occupied since the 1940s. Currently, the Home is in the process of constructing a $19 million project at its Walpole property that will include a new, state-of-the-art, two-story special education school and four new residences. While the services currently offered at the South Huntington Avenue site will relocate to Walpole in late 2012, the Home will continue to maintain its administrative headquarters in Boston and the majority of its overall programming will continue to be run within the city at other locations.

The Home for Little Wanderers 1914 building is included in the Massachusetts Historical Commission's *Inventory of Historic and Archaeological Assets of the Commonwealth.* When the inventory form was prepared for the building in 1985, staff of the Boston Landmarks Commission (BLC) applied its rating system for the purposes of establishing significance for consideration for landmark designation. BLC staff assigned the building a rating of "IV" (out of a possible I, II, III, IV, or V). Only buildings with a rating of I, II, or III are considered eligible for landmark designation.

In recent years, the BLC has revised it rating system from the previous numerical system to a system based on the criteria for listing in the National Register of Historic Places. Currently, the building is not listed in the National Register of Historic Places. While the Home, as an institution, has historical significance as the nation's oldest and one of New England's largest nonprofit child and family service agencies, physical alterations and additions to the property have compromised its architectural integrity and setting. Alterations including the two 1950s additions, the construction of the 1987 residential building and 1991 gymnasium, the replacement of the building's original multi-light casement and double hung sash, and replacement of original doors have compromised the building's overall architectural integrity and setting. Appendix A contains photographs of the existing buildings on the Project site.

5.3 Historic Resources in the Project's Vicinity

5.3.1 Olmsted Park and the Jamaicaway, Olmsted Park System/Emerald Necklace

Olmsted Park and the Emerald Necklace were designed by Frederick Law Olmsted as part of the Boston's linear park system. Olmsted Park contains a chain of picturesque fresh-water ponds, alternating with attractive natural groves and meadows. Included in the plans for Olmsted Park was the creation of Leverett Pond from a swamp near Brookline Village. Originally named Leverett Park, the park's name was changed in 1900 by the Boston Parks Commissioners to honor Olmsted and his work.

Olmsted Park has three major ponds, a watercourse connecting them, six historic pedestrian bridges and attractive walkways and stone walls sheltered from the busy city by the densely wooded areas. The park has the second largest historic forest in the Emerald Necklace System with 17 acres of forest cover.

Land for the park construction was purchased between 1881 and 1894 from private property owners. Seven "Natural History" ponds were created between Ward's and Willow ponds in 1893 for Natural History Society educational programs. They were filled in during the last years of the 19th century.

The Jamaicaway forms the eastern boundary of the Olmsted Park. Also designed by Frederick Law Olmsted as part of the Boston Park System, the Jamaicaway originally served as a tree lined carriageway connecting Boston to Jamaica Plain, then a streetcar suburb. Today, the Jamaicaway is a heavily traveled, four lane, curvilinear undivided roadway lined with mature tree plantings.

Both Olmsted Park and the Jamaicaway are listed in the National Register of Historic Places as part of the National Register designation for the Olmsted Park System/Emerald Necklace. Figure 5-1 identifies the proximity of the Project site to the State and National Register listed Olmsted Park and Jamaicaway. With the exception of Olmsted Park and the Jamaicaway, no other State or National Register listed properties are located within a quarter mile radius of the Project site.

5.4 Project Impacts to Historic Resources

5.4.1 Demolition of the New England Home for Little Wanderers

Development of the Project requires the demolition of the 1914 New England Home for Little Wanderers building. As discussed above, while the 1914 building is included in MHC's Inventory, it is not listed in the State or National Registers of Historic Places. While the Home, as an institution, has significance as the nation's oldest and one of New England's largest nonprofit child and family service agencies, physical alterations and additions to the 1914 building and the site have compromised the building's overall architectural integrity and setting.

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Figure 5-1
Historic Resources

The two other buildings on the Project site proposed for demolition, the 1987 residential building and 1991 gymnasium, lack historic or architectural significance.

5.4.2 Design and Visual Impacts

As discussed in greater detail in Chapter 4, Site Design and Urban Design, the design concept for the Project starts with the placement of the new building in a manner that respects and protects the stand of mature trees along the Jamaicaway. Also, by locating the building closer to South Huntington Avenue consistent with the neighboring structures, the Project aims to contribute to an active urban experience. The new building will be placed approximately 50 feet off South Huntington Avenue, consistent with the setback of other buildings along the South Huntington Avenue corridor, while the opposite side facing the Emerald Necklace pulls away from the existing stand of mature trees and the Jamaicaway.

The iron fence along the South Huntington Avenue sidewalk will be replaced with a contemporary interpretation of the original feature. As envisioned, the new fence will feature modulated heights following the natural slope of the site and incorporate landscape treatments on both sides.

The original iron picket fence, and associated brick piers, along the Jamaicaway will be retained and repaired, thereby preserving an important feature which contributes to the natural setting of the Jamaicaway and the greater Boston Park System.

5.4.3 Shadow Impacts

As discussed in greater detail in Chapter 3, the Project will result in some new shadow. The shadow impact analysis considered net new shadow created by the Project during 14 time periods. In order to provide a conservative shadow analysis, these studies did not take into consideration shadows cast by existing trees, which are significant due to the density of the large and mature stand of trees being maintained on the Project site. The Project will not cast new shadow onto Olmsted Park except during winter mornings when shadows are among their greatest. New shadows resulting from the Project will generally be limited to the Project's wooded area located between the Project and Jamaicaway, space between the Project and the existing building to the north, the proposed parking lot, and a portion of South Huntington Avenue.

All new shadows will be limited to isolated areas and last a short duration and will not have any material impact on the integrity of Olmsted Park or the Jamaicaway.

5.5 Archaeological Resources

The Proposed Project Site consists of a previously developed urban parcel. Due to previous development activities and disturbances, including construction of the existing buildings and parking areas, as well site grading activities, it is not anticipated that the site contains significant archaeological resources.

5.6 Boston Landmarks Commission Review

Constructed in 1914, the Home for Little Wanderers building is greater than 50 years old and therefore subject to review by the Boston Landmarks Commission (BLC) in accordance with Article 85 of the Boston Zoning Code. An Article 85 application for the proposed demolition of the buildings on the site will be submitted to the BLC at the appropriate time. The Proponent is committed to working collaboratively with the BLC and the community throughout the Article 85 review process.

Section 6.0

Infrastructure Systems

6.0 INFRASTRUCTURE SYSTEMS

6.1 Introduction

The existing infrastructure surrounding the site of 161 South Huntington Avenue appears of adequate capacity to service the needs of the Project. The following sections describe the existing sewer, water, and drainage systems surrounding the site and explain how these systems will service the development. The analysis also discusses any anticipated Project-related impacts on the utilities and identifies mitigation measures to address these potential impacts.

The Project is moving into the Design Development phase where a detailed infrastructure analysis will be performed. The Project's team will coordinate with the appropriate utilities to address the capacity of the area utilities to provide services for the new building. A Boston Water and Sewer Commission (BWSC) Site Plan and General Service Application is required for the proposed new water, sanitary sewer, and storm drain connections. In addition, a Storm Water Pollution Prevention Plan will be submitted specifying best management measures for protecting the BWSC and the Department of Conservation and Recreation's (DCR) drainage systems during construction.

A Drainage Discharge Permit Application will be submitted to the BWSC for any required construction dewatering. The appropriate approvals from the Massachusetts Department of Environmental Protection (MassDEP), Massachusetts Department of Conservation and Recreation (DCR) and the U.S. Environmental Protection Agency (EPA) will also be sought.

6.2 Wastewater

6.2.1 Existing Sanitary Sewer System

The BWSC owns, operates, and maintains the sanitary sewer system located in South Huntington Avenue to the east of the Project site (See Figure 6-1). There is an existing 10-inch clay pipe (sanitary sewer) located in South Huntington Avenue. This sanitary sewer line flows in a northerly direction and eventually discharges into a 24-inch by 31-inch combined sewer in Huntington Avenue. Three of the existing buildings (main building, south addition, and gymnasium) have a sanitary sewer service tied into this pipe.

The DCR owns, operates, and maintains the sanitary sewer system located within the Jamaicaway to the west of the Project site. One existing building (residence building) has a 6-inch clay sanitary sewer service tied into this system. This service exits the westerly-side of the building where ties into an on-site sewer system consisting of two sewer manholes connected by 8-inch clay pipes. This system ties into the DCR-owned sanitary sewer system in the Jamaicaway near the northwest corner of the Project site.

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Figure 6-1

BWSC Sewer System

Based on the existing building uses and water account records, the total existing sewer flow from on-site buildings is estimated at 7,203 gallons per day (gpd).

6.2.2 Project-Generated Sanitary Sewer Flow

The Project will generate an estimated 26,118 gallons per day (gpd) based on design sewer flows provided in 314 CMR 7.00-Sewer System Extension and Connection Permit Program as summarized in Table 6-1. This is a net increase of 18,915 gpd over the estimated flows from the existing buildings.

Table 6-1 Projected Sanitary Sewer Flows

Use	Quantity	Unit Flow Rate	Estimated Maximum Daily Flow (gpd)
Residential Units	233 bed	110 gpd/bedroom	25,630 gpd
Amenity Space	6,500 sf	75 gpd/1,000 sf	488 gpd
Total			**26,118 gpd**

6.2.3 Sanitary Sewer Connection

The building's sanitary sewer service is proposed to tie into the existing BWSC 10-inch sanitary sewer main in South Huntington Avenue. It is anticipated that the building will require two 8-inch sanitary services. Also a 4-inch garage waste line is proposed and will be routed through and oil and sand trap prior to tying into the sanitary sewer system.All existing building services will be cut and capped at the main if the wyes are not reused.

The flow full capacity of the 10-inch sanitary sewer adjacent to the site is 3.39 cfs (2.19 MGD). The projected maximum daily sewer flow for the Project is 0.027 MGD, which is about 1% of this line's capacity.

The Proponent will submit a Site Plan to the BWSC for review and approval. Based on the proposed estimated sanitary flow, a Compliance Certification will be required. This Certification will be submitted to BWSC for review and approval prior to submitting to the Massachusetts Department of Environmental Protection ("MassDEP").

6.2.4 Effluent quality

The Project is not expected to generate industrial wastes. Flows from the floor drains in the parking structure will be treated through an oil and grease separator before discharging to the municipal system.

6.2.5 Sewer system mitigation

To help conserve water and reduce the amount of wastewater generated by the Project, the Proponent will investigate the use of water conservation devices such as low-flow toilets and flow-restricting faucets.

6.3 Water system

6.3.1 Existing Water Service

The water distribution system in the vicinity of the Project site is owned and maintained by BWSC (see Figure 6-2). There is one cement-lined ductile iron (CLDI) distribution line located in South Huntington Avenue. The distribution line begins as an 8-inch CLDI off the southeast corner of the Project site and increases to a 12-inch CLDI near the VA Boston Healthcare System's facility. Both are part of the Southern High service network and were installed in 1979.

According to BWSC records, the existing buildings have two existing water services; a 4-inch service near the northerly portion of the main building and a 4-inch service to the residence building located at the southeast corner of the Project site. These services are connected to the 12-inch (Southern High) water main in South Huntington Avenue.

There is a fire hydrant located on South Huntington Avenue in front of the main building and it appears this hydrant will provide sufficient coverage for the Project. The Proponent will confirm this with BWSC and the Boston Fire Department (BFD) during the detailed design phase.

6.3.2 Anticipated Water Consumption

The maximum daily water demand is estimated to be 28,730 gpd based on the sewage flow estimate and an added factor for system losses including the average requirements for the Project's cooling system. More detailed water use and meter sizing calculations will be submitted to BWSC as part of the Site Plan approval process.

6.3.3 Proposed Water Service

A new 6-inch domestic water and a dedicated 6-inch fire protection service for the Project are expected to tie into the 12-inch water main (Southern High) on South Huntington Avenue with a tapping sleeve and valve. Water meters will be of a type approved by BWSC and tied into the BWSC's Automatic Meter Reading system.

Given the combination of urban planting conditions and the constriction of available planting space along South Huntington Avenue, irrigation is anticipated to be used to create the desired gardens and inviting landscape that is proposed. In addition, for all landscapes above structure, such as the elevated terraces, irrigation will also be required.

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Figure 6-2

BWSC Water System

The Proponent will provide BWSC an estimate of the water usage. Also, methods to reduce water usage will be investigated including soil moisture indicators and the use of water efficient landscaping.

It is anticipated that the existing water services will be abandoned and cut and capped at the main with the valve box, frame and cover removed. Fire protection service removal will be coordinated with BWSC, BFD, and Inspectional Services Department. A Termination Verification Approval Form for Demolition will be submitted for approval by

BWSC prior to demolition of the existing structures. The Contractor will obtain a Hydrant Meter Permit from BWSC if hydrant use is required during construction.

6.3.4 Water Supply Conservation and Mitigation Measures

The Proponent is investigating the use of low consumption plumbing fixtures. It is expected that low-flow water closets and showers will be used. Lavatories are expected to have aerated faucets to reduce water usage.

6.4 Storm Drainage System

6.4.1 Existing Storm Drainage System

BWSC owns and maintains two 12-inch storm drains in South Huntington Avenue off the easterly side of the site. DCR owns and maintains a storm drain system in Jamaicaway off the westerly side of the site.

The existing Project site consists of a mixture of impervious surfaces (rooftops and paved parking lots), grass lawns, and wooded areas. Currently, only a small portion of the Project site directs stormwater runoff to the BWSC owned system in South Huntington Avenue. The landscaped area abutting South Huntington Avenue on the easterly side of the Project site drains overland where it is collected by catch basins on South Huntington Avenue.

The current, on-site storm drain system generally collects runoff from the existing paved parking areas and building rooftops. This system then quickly conveys the runoff to the DCR owned storm drain system in Jamaicaway. This system provides minimal water quality improvement and little opportunity for infiltrating runoff collected from impervious areas prior to discharging to DCR's storm drain system in the Jamaicaway.

Runoff from the parking area in the southeast corner of the Project site drains overland and discharges into a swale located along the southern edge of the property. This swale runs in a westerly direction and ultimately discharges to the DCR storm drain system in Jamaicaway.

Runoff from the paved parking and lawn areas to the south and east of the main building drain overland and are captured by catch basins. These catch basins tie into the on-site storm drain system and eventually discharge into the Jamaicaway storm drain system.

The runoff from the paved parking area in the northeast portion of the Project site drains overland and is captured by an apparent leaching basin. This leaching basin appears to have minimal capacity before it overflows onto the property abutting the Project to the north.

Rooftop runoff from the four existing buildings is conveyed by building service pipes to the on-site stormwater conveyance (pipe) system, ultimately discharging to the DCR's storm drain system in the Jamaicaway.

The lawn and wooded areas located on the western portion of the Project site drain in a westerly direction towards Jamaicaway. Ultimately the runoff from these areas is captured by catch basins in Jamaicaway and enters the municipal system.

6.4.2 Proposed Storm Water System

The Project will improve both the quality and quantity of stormwater runoff. Quality will be improved through the installation of deep sump catch basins, water quality inlet, on-site infiltration system, and stabilization of the on-site swale. Quantity of runoff will be reduced by the proposed stormwater infiltration system.

Runoff from the surface parking area on the eastern portion of the site is expected to be collected by deep sump catch basins. Flows to the catch basins will be routed through a water quality inlet (e.g. particle separator) before being piped downstream and tie into the existing on-site system located in the northwest corner of the Project site.

The building will occupy a large portion of the site. Runoff from the rooftop will be collected and sent to the proposed infiltration system. Runoff from most rainfall events will be infiltrated into the ground. The infiltration system is expected to have an overflow structure in case the system gets inundated by larger storm events. The overflow structure will be tied to the existing on-site system located in the northwest corner of the Project site.

The storm drain system will be designed in accordance with BWSC's design standards and the BWSC "Requirements for Site Plans." A Site Plan will be submitted for BWSC approval and a General Service Application will be completed prior to any off-site drain work. Any drain connections terminated as a result of construction will be cut and capped at the storm drain in the street in accordance with BWSC standards. In addition, coordination and approval from DCR for the proposed storm drain improvements that will affect their system will occur during the detailed design phase.

Erosion and sediment controls will be used during construction to protect adjacent properties, the municipal storm drain system and the on-site storm drain system. A pollution prevention plan will be prepared for use during construction including during demolition activity. An operation and maintenance plan will be developed to support the long-term functionality of the proposed stormwater management system.

6.5 Electrical Service

NSTAR owns and maintains the electrical transmission system located in South Huntington Street. The actual size and location of the building services will be coordinated with NSTAR during the detailed design phase.

The Proponent is investigating energy conservation measures, including high efficiency lighting.

The street lighting system adjacent to the site consists of shoebox luminaires in good condition. Construction may require the removal and storage of one or more street lights, which will be reinstalled during the appropriate stage of construction. Work on the City's street lighting system will be approved by the Public Works Department, Street Lighting Section.

6.6 Telecommunications Systems

Verizon maintains infrastructure in South Huntington Avenue and offers telephone and high-speed internet services in the area.

6.7 Gas Systems

National Grid owns and maintains a gas main in South Huntington Avenue. The Project is expected to use natural gas for heating and domestic hot water. The actual size and location of the building services will be coordinated with National Grid during the detailed design phase.

6.8 Steam Systems

Veolia Energy does not have steam structures adjacent to the Project site.

6.9 Utility Protection during Construction

The Contractor will notify utility companies and call "Dig Safe" prior to excavation. During construction, infrastructure will be protected using sheeting and shoring, temporary relocations, and construction staging as required. The Construction Contractor will be required to coordinate all protection measures, temporary supports, and temporary shutdowns of all utilities with the appropriate utility owners and/or agencies. The Construction Contractor will also be required to provide adequate notification to the utility

owner prior to any work commencing on their utility. Also, in the event a utility cannot be maintained in service during switch over to a temporary or permanent system, the Construction Contractor will be required to coordinate the shutdown with the utility owners and Project abutters to minimize impacts and inconveniences.

Section 7.0

Coordination with other Governmental Agencies/Public Review Process

7.0 COORDINATION WITH OTHER GOVERNMENTAL AGENCIES / PUBLIC REVIEW PROCESS

7.1 Community Outreach

The Proponent is committed to effective community outreach and will engage the community to ensure public input on the Project. The Proponent has met with local elected officials including Representative Sanchez, City Councilor O'Malley and Councilor Ross. In addition, meetings were held with institutional abutters and neighbors to the property including, but not limited to Mount Pleasant Home, Goddard House, and Sherrill House. The Proponent also met with the Executive Director of the Emerald Necklace Conservancy and members of her staff.

The Proponent looks forward to initiating an active public discussion in Jamaica Plain, which will include, among others, meetings with the Zoning Committee of the Jamaica Plain Neighborhood Council. In addition, a 12 member IAG was appointed by Mayor Menino in March of this year. The Project has held an initial meeting with the group and looks forward to continuing to meet.

7.2 Architectural Access Board Requirements

The Project will comply with the requirements of the Architectural Access Board and will be designed to comply with the standards of the Americans with Disabilities Act.

7.3 Massachusetts Environmental Policy Act (MEPA)

The Project is not anticipated to be subject to environmental impact review by the Massachusetts Environmental Policy Act ("MEPA") Office of the Massachusetts Executive Office of Environmental Affairs.

7.4 Other Permits and Approvals

Boston Civic Design Commission

The Project will comply with Article 28 of the Boston Zoning Code. The PNF will be submitted to the Boston Civic Design Commission as part of the Article 80 process.

Boston Landmarks Commission

Constructed in 1914, the Home for Little Wanderers building is greater than 50 years old and therefore subject to review by the Boston Landmarks Commission (BLC) in accordance with Article 85 of the Boston Zoning Code. An Article 85 application for the proposed demolition of the buildings on the site will be submitted to the BLC at the appropriate time. The Proponent is committed to working collaboratively with the BLC and the community throughout the Article 85 review process.

Project Certification

Project Certification

This form has been submitted to the Boston Redevelopment Authority as required by the Boston Zoning Code, Article 80.

Signature of Proponent's Representative
Curtis R. Kemeny
BRG 161 South Huntington LLC
c/o Boston Residential Group, LLC
101 Huntington Avenue, 25th Floor
Boston, MA 02199
(617) 424-0775

Curtis R Kemeny

Date
3/21/12

Signature of Preparer
Elizabeth Grob
Epsilon Associates, Inc.
3 Clock Tower Place, Suite 250
Maynard, MA 01754
(978) 897-7100

Elizabeth Grob

Date
3/21/12

Appendix A

Existing Conditions Photos

1. Home for Little Wanderers, 1914 Building (east elevation)

2. Home for Little Wanderers, 1914 Building (east elevation)

3. Home for Little Wanderers, 1914 Building (east elevation)

4. Home for Little Wanderers, 1914 Building (south and east elevations)

5. 1950s addition to south pavilion (south and east elevations)

6. 1950s addition to south pavilion (north elevation)

7 1914 Building and 1950s addition (west elevation)

8. 1914 Building and 1950s addition (west elevation)

9. 1987 Residential Building (north elevation)

10. 1987 Residential Building (north and west elevations)

11. 1991 Gymnasium (south and east elevations)

12. 1991 Gymnasium (west and south elevations)

13. Iron picket fence on South Huntington Avenue

14. Iron picket fence on the Jamaicaway

Appendix B

Transportation

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Grade (%)	0%		0%			0%	
Storage Length (ft)	0	0		0	0		
Storage Lanes	0	0		0	0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)			50			50	
Trailing Detector (ft)			0			0	
Turning Speed (mph)	15	9		9	15		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							
Frt							
Flt Protected							
Satd. Flow (prot)	0	0	1583	0	0	1660	
Flt Permitted							
Satd. Flow (perm)	0	0	1583	0	0	1660	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)							
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	
Link Speed (mph)	30		30			30	
Link Distance (ft)	129		126			366	
Travel Time (s)	2.9		2.9			8.3	
Volume (vph)	0	0	935	0	0	366	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.81	0.92	0.92	0.87	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	2%	8%	2%	2%	3%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)	0%		0%			0%	
Adj. Flow (vph)	0	0	1154	0	0	421	
Lane Group Flow (vph)	0	0	1154	0	0	421	
Turn Type							
Protected Phases			1			1	2
Permitted Phases							
Detector Phases			1			1	
Minimum Initial (s)			40.0			40.0	4.0
Minimum Split (s)			44.0			44.0	24.0
Total Split (s)	0.0	0.0	44.0	0.0	0.0	44.0	24.0
Total Split (%)	0.0%	0.0%	64.7%	0.0%	0.0%	64.7%	35%
Maximum Green (s)			40.0			40.0	19.0
Yellow Time (s)			3.0			3.0	2.0
All-Red Time (s)			1.0			1.0	3.0
Lead/Lag			Lead			Lead	Lag
Lead-Lag Optimize?			Yes			Yes	Yes
Vehicle Extension (s)			2.0			2.0	2.0
Minimum Gap (s)			2.0			2.0	2.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2
Time Before Reduce (s)			0.0			0.0	0.0
Time To Reduce (s)			0.0			0.0	0.0
Recall Mode			Max			Max	None
Walk Time (s)							10.0
Flash Dont Walk (s)							9.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)			114.4			114.4	
Actuated g/C Ratio			0.95			0.95	
v/c Ratio			0.76			0.27	
Control Delay			8.6			1.7	
Queue Delay			0.0			0.0	
Total Delay			8.6			1.7	
LOS			A			A	
Approach Delay			8.6			1.7	
Approach LOS			A			A	
Queue Length 50th (ft)			0			0	
Queue Length 95th (ft)			717			118	
Internal Link Dist (ft)	49		46			286	
Turn Bay Length (ft)							
Base Capacity (vph)			1509			1583	
Starvation Cap Reductn			0			0	
Spillback Cap Reductn			0			0	
Storage Cap Reductn			0			0	
Reduced v/c Ratio			0.76			0.27	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 68			
Actuated Cycle Length: 120			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 58.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 725: Veterans Hospital Crosswalk & South Hungtington

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	9	9	9	12	12	12	12	12	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	25		0	0		25
Storage Lanes	0		0	0		0	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.974			0.915			0.996				0.850
Flt Protected		0.968			0.995		0.950				0.997	
Satd. Flow (prot)	0	1485	0	0	1360	0	1577	1624	0	0	1496	1535
Flt Permitted		0.599			0.957		0.463				0.508	
Satd. Flow (perm)	0	919	0	0	1308	0	769	1624	0	0	762	1535
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			95			2				37
Headway Factor	1.25	1.25	1.25	1.30	1.30	1.30	1.14	1.14	1.14	1.14	1.14	1.05
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1345			1507			1530			2337	
Travel Time (s)		30.6			34.3			34.8			53.1	
Volume (vph)	177	45	58	12	46	82	61	663	11	9	229	73
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.82	0.87	0.91	0.60	0.88	0.66	0.90	0.94	0.55	0.45	0.82	0.87
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	0%	0%	2%	4%	3%	5%	0%	0%	15%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	216	52	64	20	52	124	68	705	20	20	279	84
Lane Group Flow (vph)	0	332	0	0	196	0	68	725	0	0	299	84
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		1
Detector Phases	3	3		3	3		1	1		1	1	1
Minimum Initial (s)	8.0	8.0		8.0	8.0		35.0	35.0		35.0	35.0	35.0
Minimum Split (s)	12.0	12.0		12.0	12.0		39.0	39.0		39.0	39.0	39.0
Total Split (s)	29.0	29.0	0.0	29.0	29.0	0.0	39.0	39.0	0.0	39.0	39.0	39.0
Total Split (%)	32.2%	32.2%	0.0%	32.2%	32.2%	0.0%	43.3%	43.3%	0.0%	43.3%	43.3%	43.3%
Maximum Green (s)	25.0	25.0		25.0	25.0		35.0	35.0		35.0	35.0	35.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lead/Lag							Lead	Lead		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0

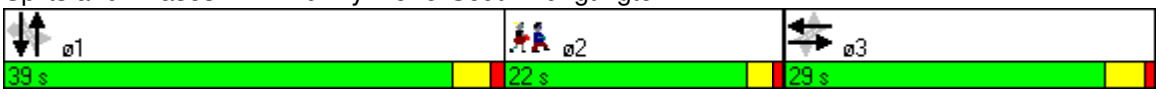
Lane Group	ø2
Lane Configurations	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phases	
Minimum Initial (s)	8.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	24%
Maximum Green (s)	19.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.0
Minimum Gap (s)	2.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		25.3			25.3		35.4	35.4			35.4	35.4
Actuated g/C Ratio		0.35			0.35		0.49	0.49			0.49	0.49
v/c Ratio		1.01			0.38		0.18	0.91			0.80	0.11
Control Delay		78.4			13.1		14.3	36.4			36.7	8.4
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		78.4			13.1		14.3	36.4			36.7	8.4
LOS		E			B		B	D			D	A
Approach Delay		78.4			13.1			34.5			30.5	
Approach LOS		E			B			C			C	
Queue Length 50th (ft)		127			28		14	245			93	9
Queue Length 95th (ft)		#379			103		57	#699			#288	44
Internal Link Dist (ft)		1265			1427			1450			2257	
Turn Bay Length (ft)							25					25
Base Capacity (vph)		330			520		377	798			374	772
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		1.01			0.38		0.18	0.91			0.80	0.11

Intersection Summary

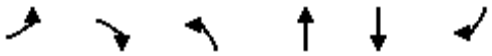
Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 72.2
Natural Cycle: 130
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 39.7 Intersection LOS: D
Intersection Capacity Utilization 92.8% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1419: Bynner & South Hungtington



Lane Group	ø2
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	8.0
Flash Dont Walk (s)	10.0
Pedestrian Calls (#/hr)	16
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	1	0	6	929	366	11
Peak Hour Factor	0.92	0.92	0.92	0.87	0.81	0.92
Hourly flow rate (vph)	1	0	7	1068	452	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				366		
pX, platoon unblocked	0.13					
vC, conflicting volume	1539	458	464			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	5065	458	464			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	100	99			
cM capacity (veh/h)	0	607	1108			

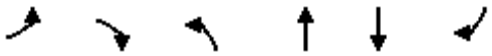
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	1	1074	464
Volume Left	1	7	0
Volume Right	0	0	12
cSH	0	1108	1700
Volume to Capacity	13.17	0.01	0.27
Queue Length 95th (ft)	Err	0	0
Control Delay (s)	Err	0.2	0.0
Lane LOS	F	A	
Approach Delay (s)	Err	0.2	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	7.2		
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	8	17	918	67	62	304
Peak Hour Factor	0.92	0.92	0.87	0.92	0.92	0.81
Hourly flow rate (vph)	9	18	1055	73	67	375
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						126
pX, platoon unblocked	0.97					
vC, conflicting volume	1602	1092			1128	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1622	1092			1128	
tC, single (s)	6.5	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	91	93			89	
cM capacity (veh/h)	92	263			627	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	1128	443
Volume Left	9	0	67
Volume Right	18	73	0
cSH	165	1700	627
Volume to Capacity	0.16	0.66	0.11
Queue Length 95th (ft)	14	0	9
Control Delay (s)	31.1	0.0	3.1
Lane LOS	D		A
Approach Delay (s)	31.1	0.0	3.1
Approach LOS	D		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	1	0	2	984	311	1
Peak Hour Factor	0.92	0.92	0.92	0.87	0.81	0.92
Hourly flow rate (vph)	1	0	2	1131	384	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)					350	
pX, platoon unblocked	1.00	1.00	1.00			
vC, conflicting volume	1520	384	385			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1522	383	383			
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)	131	667	1183			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	1	1133	385
Volume Left	1	2	0
Volume Right	0	0	1
cSH	131	1183	1700
Volume to Capacity	0.01	0.00	0.23
Queue Length 95th (ft)	1	0	0
Control Delay (s)	32.7	0.1	0.0
Lane LOS	D	A	
Approach Delay (s)	32.7	0.1	0.0
Approach LOS	D		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

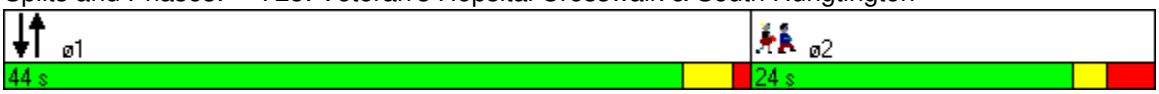
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Grade (%)	0%		0%			0%	
Storage Length (ft)	0	0		0	0		
Storage Lanes	0	0		0	0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)			50			50	
Trailing Detector (ft)			0			0	
Turning Speed (mph)	15	9		9	15		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							
Frt							
Flt Protected							
Satd. Flow (prot)	0	0	1644	0	0	1660	
Flt Permitted							
Satd. Flow (perm)	0	0	1644	0	0	1660	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)							
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	
Link Speed (mph)	30		30			30	
Link Distance (ft)	103		162			230	
Travel Time (s)	2.3		3.7			5.2	
Volume (vph)	0	0	403	0	0	580	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.85	0.92	0.92	0.94	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	2%	4%	2%	2%	3%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)	0%		0%			0%	
Adj. Flow (vph)	0	0	474	0	0	617	
Lane Group Flow (vph)	0	0	474	0	0	617	
Turn Type							
Protected Phases			1			1	2
Permitted Phases							
Detector Phases			1			1	
Minimum Initial (s)			40.0			40.0	4.0
Minimum Split (s)			44.0			44.0	24.0
Total Split (s)	0.0	0.0	44.0	0.0	0.0	44.0	24.0
Total Split (%)	0.0%	0.0%	64.7%	0.0%	0.0%	64.7%	35%
Maximum Green (s)			40.0			40.0	19.0
Yellow Time (s)			3.0			3.0	2.0
All-Red Time (s)			1.0			1.0	3.0
Lead/Lag			Lead			Lead	Lag
Lead-Lag Optimize?			Yes			Yes	Yes
Vehicle Extension (s)			2.0			2.0	2.0
Minimum Gap (s)			2.0			2.0	2.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2
Time Before Reduce (s)			0.0			0.0	0.0
Time To Reduce (s)			0.0			0.0	0.0
Recall Mode			Max			Max	None
Walk Time (s)							10.0
Flash Dont Walk (s)							9.0
Pedestrian Calls (#/hr)							13
Act Effct Green (s)			114.4			114.4	
Actuated g/C Ratio			0.95			0.95	
v/c Ratio			0.30			0.39	
Control Delay			1.9			2.3	
Queue Delay			0.0			0.0	
Total Delay			1.9			2.3	
LOS			A			A	
Approach Delay			1.9			2.3	
Approach LOS			A			A	
Queue Length 50th (ft)			0			0	
Queue Length 95th (ft)			133			213	
Internal Link Dist (ft)	23		82			150	
Turn Bay Length (ft)							
Base Capacity (vph)			1567			1583	
Starvation Cap Reductn			0			0	
Spillback Cap Reductn			0			0	
Storage Cap Reductn			0			0	
Reduced v/c Ratio			0.30			0.39	

Intersection Summary

Area Type: CBD
Cycle Length: 68
Actuated Cycle Length: 120
Natural Cycle: 70
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.39
Intersection Signal Delay: 2.1 Intersection LOS: A
Intersection Capacity Utilization 37.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 725: Veteran's Hopsital Crosswalk & South Hungtington



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	9	9	9	12	12	12	12	12	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	25		0	0		25
Storage Lanes	0		0	0		0	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.942			0.984			0.987				0.850
Flt Protected		0.988			0.989		0.950				0.993	
Satd. Flow (prot)	0	1474	0	0	1378	0	1624	1600	0	0	1629	1491
Flt Permitted		0.907			0.907		0.221				0.773	
Satd. Flow (perm)	0	1353	0	0	1264	0	378	1600	0	0	1268	1491
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			7			6				67
Headway Factor	1.25	1.25	1.25	1.30	1.30	1.30	1.14	1.14	1.14	1.14	1.14	1.05
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1247			1507			1530			1764	
Travel Time (s)		28.3			34.3			34.8			40.1	
Volume (vph)	41	70	80	14	52	9	47	315	20	30	401	252
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.73	0.92	0.80	0.58	0.76	0.75	0.59	0.93	0.63	0.39	0.90	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	1%	21%	2%	22%	0%	6%	0%	0%	5%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	56	76	100	24	68	12	80	339	32	77	446	268
Lane Group Flow (vph)	0	232	0	0	104	0	80	371	0	0	523	268
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		1
Detector Phases	3	3		3	3		1	1		1	1	1
Minimum Initial (s)	8.0	8.0		8.0	8.0		35.0	35.0		35.0	35.0	35.0
Minimum Split (s)	12.0	12.0		12.0	12.0		39.0	39.0		39.0	39.0	39.0
Total Split (s)	29.0	29.0	0.0	29.0	29.0	0.0	39.0	39.0	0.0	39.0	39.0	39.0
Total Split (%)	32.2%	32.2%	0.0%	32.2%	32.2%	0.0%	43.3%	43.3%	0.0%	43.3%	43.3%	43.3%
Maximum Green (s)	25.0	25.0		25.0	25.0		35.0	35.0		35.0	35.0	35.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lead/Lag							Lead	Lead		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0

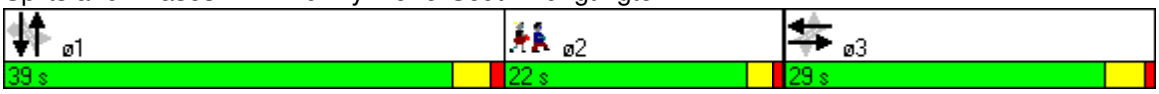
Lane Group	ø2
Lane Configurations	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phases	
Minimum Initial (s)	8.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	24%
Maximum Green (s)	19.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.0
Minimum Gap (s)	2.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		13.4			13.4		36.5	36.5			36.5	36.5
Actuated g/C Ratio		0.22			0.22		0.60	0.60			0.60	0.60
v/c Ratio		0.71			0.37		0.36	0.39			0.69	0.29
Control Delay		31.0			24.1		18.9	11.8			20.1	8.7
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		31.0			24.1		18.9	11.8			20.1	8.7
LOS		C			C		B	B			C	A
Approach Delay		31.0			24.1			13.0			16.2	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)		57			27		10	47			88	23
Queue Length 95th (ft)		169			71		48	255			#524	147
Internal Link Dist (ft)		1167			1427			1450			1684	
Turn Bay Length (ft)							25					25
Base Capacity (vph)		500			446		225	956			756	916
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		0.46			0.23		0.36	0.39			0.69	0.29

Intersection Summary

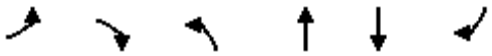
Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 61.3
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 18.0 Intersection LOS: B
Intersection Capacity Utilization 75.0% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1419: Bynner & South Hungtington



Lane Group	ø2
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	8.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	4
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	7	4	5	398	577	3
Peak Hour Factor	0.92	0.92	0.92	0.85	0.94	0.92
Hourly flow rate (vph)	8	4	5	468	614	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				230		
pX, platoon unblocked	0.96					
vC, conflicting volume	1095	615	617			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1098	615	617			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	99	99			
cM capacity (veh/h)	228	495	973			

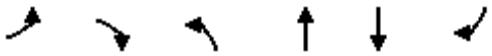
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	12	474	617
Volume Left	8	5	0
Volume Right	4	0	3
cSH	283	973	1700
Volume to Capacity	0.04	0.01	0.36
Queue Length 95th (ft)	3	0	0
Control Delay (s)	18.3	0.2	0.0
Lane LOS	C	A	
Approach Delay (s)	18.3	0.2	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	22	22	381	27	19	561
Peak Hour Factor	0.92	0.92	0.85	0.92	0.92	0.94
Hourly flow rate (vph)	24	24	448	29	21	597
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						162
pX, platoon unblocked	0.94					
vC, conflicting volume	1101	463			478	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1108	463			478	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	96			98	
cM capacity (veh/h)	216	603			1069	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	48	478	617
Volume Left	24	0	21
Volume Right	24	29	0
cSH	318	1700	1069
Volume to Capacity	0.15	0.28	0.02
Queue Length 95th (ft)	13	0	1
Control Delay (s)	18.3	0.0	0.5
Lane LOS	C		A
Approach Delay (s)	18.3	0.0	0.5
Approach LOS	C		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	9	2	406	583	0
Peak Hour Factor	0.92	0.92	0.92	0.85	0.94	0.92
Hourly flow rate (vph)	2	10	2	478	620	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)					282	
pX, platoon unblocked	0.94	0.94	0.94			
vC, conflicting volume	1102	620	620			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1108	597	597			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	99	98	100			
cM capacity (veh/h)	220	459	933			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	12	480	620
Volume Left	2	2	0
Volume Right	10	0	0
cSH	383	933	1700
Volume to Capacity	0.03	0.00	0.36
Queue Length 95th (ft)	2	0	0
Control Delay (s)	14.7	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	14.7	0.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Grade (%)	0%		0%			0%	
Storage Length (ft)	0	0		0	0		
Storage Lanes	0	0		0	0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)			50			50	
Trailing Detector (ft)			0			0	
Turning Speed (mph)	15	9		9	15		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							
Frt							
Flt Protected							
Satd. Flow (prot)	0	0	1583	0	0	1660	
Flt Permitted							
Satd. Flow (perm)	0	0	1583	0	0	1660	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)							
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	
Link Speed (mph)	30		30			30	
Link Distance (ft)	129		126			366	
Travel Time (s)	2.9		2.9			8.3	
Volume (vph)	0	0	959	0	0	375	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.81	0.92	0.92	0.87	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	2%	8%	2%	2%	3%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)	0%		0%			0%	
Adj. Flow (vph)	0	0	1184	0	0	431	
Lane Group Flow (vph)	0	0	1184	0	0	431	
Turn Type							
Protected Phases			1			1	2
Permitted Phases							
Detector Phases			1			1	
Minimum Initial (s)			40.0			40.0	4.0
Minimum Split (s)			44.0			44.0	24.0
Total Split (s)	0.0	0.0	44.0	0.0	0.0	44.0	24.0
Total Split (%)	0.0%	0.0%	64.7%	0.0%	0.0%	64.7%	35%
Maximum Green (s)			40.0			40.0	19.0
Yellow Time (s)			3.0			3.0	2.0
All-Red Time (s)			1.0			1.0	3.0
Lead/Lag			Lead			Lead	Lag
Lead-Lag Optimize?			Yes			Yes	Yes
Vehicle Extension (s)			2.0			2.0	2.0
Minimum Gap (s)			2.0			2.0	2.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2
Time Before Reduce (s)			0.0			0.0	0.0
Time To Reduce (s)			0.0			0.0	0.0
Recall Mode			Max			Max	None
Walk Time (s)							10.0
Flash Dont Walk (s)							9.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)			114.4			114.4	
Actuated g/C Ratio			0.95			0.95	
v/c Ratio			0.78			0.27	
Control Delay			9.2			1.8	
Queue Delay			0.0			0.0	
Total Delay			9.2			1.8	
LOS			A			A	
Approach Delay			9.2			1.8	
Approach LOS			A			A	
Queue Length 50th (ft)			0			0	
Queue Length 95th (ft)			787			122	
Internal Link Dist (ft)	49		46			286	
Turn Bay Length (ft)							
Base Capacity (vph)			1509			1583	
Starvation Cap Reductn			0			0	
Spillback Cap Reductn			0			0	
Storage Cap Reductn			0			0	
Reduced v/c Ratio			0.78			0.27	

Intersection Summary

Area Type: CBD
Cycle Length: 68
Actuated Cycle Length: 120
Natural Cycle: 110
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 7.2 Intersection LOS: A
Intersection Capacity Utilization 59.4% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 725: Veterans Hospital Crosswalk & South Hungtington

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	9	9	9	12	12	12	12	12	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	25		0	0		25
Storage Lanes	0		0	0		0	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.974			0.914			0.996				0.850
Flt Protected		0.968			0.995		0.950				0.997	
Satd. Flow (prot)	0	1485	0	0	1358	0	1577	1624	0	0	1495	1535
Flt Permitted		0.592			0.957		0.454				0.468	
Satd. Flow (perm)	0	908	0	0	1306	0	754	1624	0	0	702	1535
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			96			2				37
Headway Factor	1.25	1.25	1.25	1.30	1.30	1.30	1.14	1.14	1.14	1.14	1.14	1.05
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1345			1507			1530			2337	
Travel Time (s)		30.6			34.3			34.8			53.1	
Volume (vph)	181	46	59	12	47	84	63	680	11	9	235	75
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.82	0.87	0.91	0.60	0.88	0.66	0.90	0.94	0.55	0.45	0.82	0.87
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	0%	0%	2%	4%	3%	5%	0%	0%	15%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	221	53	65	20	53	127	70	723	20	20	287	86
Lane Group Flow (vph)	0	339	0	0	200	0	70	743	0	0	307	86
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		1
Detector Phases	3	3		3	3		1	1		1	1	1
Minimum Initial (s)	8.0	8.0		8.0	8.0		35.0	35.0		35.0	35.0	35.0
Minimum Split (s)	12.0	12.0		12.0	12.0		39.0	39.0		39.0	39.0	39.0
Total Split (s)	29.0	29.0	0.0	29.0	29.0	0.0	39.0	39.0	0.0	39.0	39.0	39.0
Total Split (%)	32.2%	32.2%	0.0%	32.2%	32.2%	0.0%	43.3%	43.3%	0.0%	43.3%	43.3%	43.3%
Maximum Green (s)	25.0	25.0		25.0	25.0		35.0	35.0		35.0	35.0	35.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lead/Lag							Lead	Lead		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0

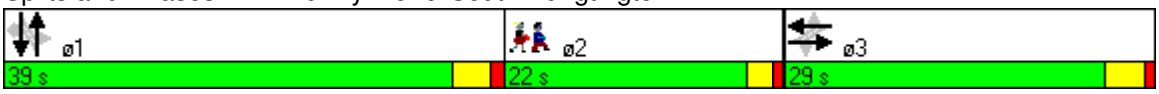
Lane Group	ø2
Lane Configurations	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phases	
Minimum Initial (s)	8.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	24%
Maximum Green (s)	19.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.0
Minimum Gap (s)	2.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		25.3			25.3		35.4	35.4			35.4	35.4
Actuated g/C Ratio		0.35			0.35		0.49	0.49			0.49	0.49
v/c Ratio		1.04			0.38		0.19	0.93			0.89	0.11
Control Delay		87.2			13.2		14.5	39.6			49.6	8.5
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		87.2			13.2		14.5	39.6			49.6	8.5
LOS		F			B		B	D			D	A
Approach Delay		87.2			13.2			37.5			40.7	
Approach LOS		F			B			D			D	
Queue Length 50th (ft)		133			29		15	256			102	10
Queue Length 95th (ft)		#390			105		58	#722			#312	44
Internal Link Dist (ft)		1265			1427			1450			2257	
Turn Bay Length (ft)							25					25
Base Capacity (vph)		326			520		370	798			344	772
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		1.04			0.38		0.19	0.93			0.89	0.11

Intersection Summary

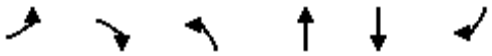
Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 72.2
Natural Cycle: 150
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 45.1 Intersection LOS: D
Intersection Capacity Utilization 95.2% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1419: Bynner & South Hungtington



Lane Group	ø2
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	8.0
Flash Dont Walk (s)	10.0
Pedestrian Calls (#/hr)	16
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	1	0	6	952	375	11
Peak Hour Factor	0.92	0.92	0.92	0.87	0.81	0.92
Hourly flow rate (vph)	1	0	7	1094	463	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				366		
pX, platoon unblocked	0.13					
vC, conflicting volume	1576	469	475			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	5367	469	475			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	100	99			
cM capacity (veh/h)	0	598	1098			

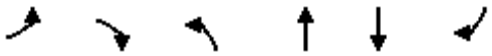
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	1	1101	475
Volume Left	1	7	0
Volume Right	0	0	12
cSH	0	1098	1700
Volume to Capacity	21.39	0.01	0.28
Queue Length 95th (ft)	Err	0	0
Control Delay (s)	Err	0.2	0.0
Lane LOS	F	A	
Approach Delay (s)	Err	0.2	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	8	17	941	69	64	312
Peak Hour Factor	0.92	0.92	0.87	0.92	0.92	0.81
Hourly flow rate (vph)	9	18	1082	75	70	385
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						126
pX, platoon unblocked	0.97					
vC, conflicting volume	1643	1119			1157	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1666	1119			1157	
tC, single (s)	6.5	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	90	93			89	
cM capacity (veh/h)	86	254			611	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	1157	455
Volume Left	9	0	70
Volume Right	18	75	0
cSH	156	1700	611
Volume to Capacity	0.17	0.68	0.11
Queue Length 95th (ft)	15	0	10
Control Delay (s)	32.9	0.0	3.2
Lane LOS	D		A
Approach Delay (s)	32.9	0.0	3.2
Approach LOS	D		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	1	0	2	1009	319	1
Peak Hour Factor	0.92	0.92	0.92	0.87	0.81	0.92
Hourly flow rate (vph)	1	0	2	1160	394	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)					350	
pX, platoon unblocked	1.00	1.00	1.00			
vC, conflicting volume	1558	394	395			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1561	392	392			
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)	124	658	1172			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	1	1162	395
Volume Left	1	2	0
Volume Right	0	0	1
cSH	124	1172	1700
Volume to Capacity	0.01	0.00	0.23
Queue Length 95th (ft)	1	0	0
Control Delay (s)	34.3	0.1	0.0
Lane LOS	D	A	
Approach Delay (s)	34.3	0.1	0.0
Approach LOS	D		

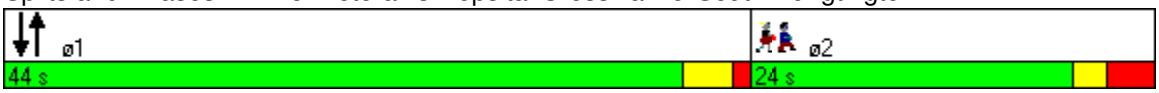
Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		70.8%	ICU Level of Service C
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)			50			50	
Trailing Detector (ft)			0			0	
Turning Speed (mph)	15	9		9	15		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt							
Flt Protected							
Satd. Flow (prot)	0	0	1644	0	0	1660	
Flt Permitted							
Satd. Flow (perm)	0	0	1644	0	0	1660	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)							
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	
Link Speed (mph)	30		30			30	
Link Distance (ft)	103		162			230	
Travel Time (s)	2.3		3.7			5.2	
Volume (vph)	0	0	413	0	0	595	
Peak Hour Factor	0.92	0.92	0.85	0.92	0.92	0.94	
Heavy Vehicles (%)	2%	2%	4%	2%	2%	3%	
Adj. Flow (vph)	0	0	486	0	0	633	
Lane Group Flow (vph)	0	0	486	0	0	633	
Turn Type							
Protected Phases			1			1	2
Permitted Phases							
Detector Phases			1			1	
Minimum Initial (s)			40.0			40.0	4.0
Minimum Split (s)			44.0			44.0	24.0
Total Split (s)	0.0	0.0	44.0	0.0	0.0	44.0	24.0
Total Split (%)	0.0%	0.0%	64.7%	0.0%	0.0%	64.7%	35%
Maximum Green (s)			40.0			40.0	19.0
Yellow Time (s)			3.0			3.0	2.0
All-Red Time (s)			1.0			1.0	3.0
Lead/Lag			Lead			Lead	Lag
Lead-Lag Optimize?			Yes			Yes	Yes
Vehicle Extension (s)			2.0			2.0	2.0
Recall Mode			Max			Max	None
Walk Time (s)							10.0
Flash Dont Walk (s)							9.0
Pedestrian Calls (#/hr)							13
Act Effct Green (s)			114.4			114.4	
Actuated g/C Ratio			0.95			0.95	
v/c Ratio			0.31			0.40	
Control Delay			1.9			2.4	
Queue Delay			0.0			0.0	
Total Delay			1.9			2.4	
LOS			A			A	
Approach Delay			1.9			2.4	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2
Approach LOS			A			A	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 68			
Actuated Cycle Length: 120			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 2.2		Intersection LOS: A	
Intersection Capacity Utilization 38.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 725: Veteran's Hopsital Crosswalk & South Hungtington



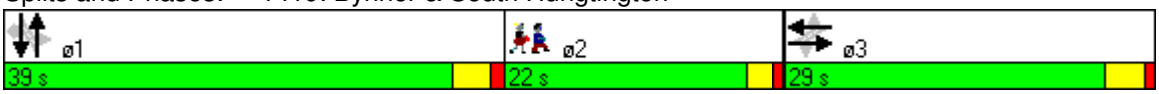
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	9	9	9	12	12	12	12	12	14
Storage Length (ft)	0		0	0		0	25		0	0		25
Storage Lanes	0		0	0		0	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.942			0.985			0.987				0.850
Flt Protected		0.988			0.989		0.950				0.993	
Satd. Flow (prot)	0	1474	0	0	1381	0	1624	1600	0	0	1629	1491
Flt Permitted		0.904			0.911		0.208				0.755	
Satd. Flow (perm)	0	1349	0	0	1272	0	356	1600	0	0	1238	1491
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			7			6				67
Headway Factor	1.25	1.25	1.25	1.30	1.30	1.30	1.14	1.14	1.14	1.14	1.14	1.05
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1247			1507			1530			1764	
Travel Time (s)		28.3			34.3			34.8			40.1	
Volume (vph)	42	72	82	14	53	9	48	323	21	31	411	258
Peak Hour Factor	0.73	0.92	0.80	0.58	0.76	0.75	0.59	0.93	0.63	0.39	0.90	0.94
Heavy Vehicles (%)	0%	1%	1%	21%	2%	22%	0%	6%	0%	0%	5%	4%
Adj. Flow (vph)	58	78	102	24	70	12	81	347	33	79	457	274
Lane Group Flow (vph)	0	238	0	0	106	0	81	380	0	0	536	274
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		1
Detector Phases	3	3		3	3		1	1		1	1	1
Minimum Initial (s)	8.0	8.0		8.0	8.0		35.0	35.0		35.0	35.0	35.0
Minimum Split (s)	12.0	12.0		12.0	12.0		39.0	39.0		39.0	39.0	39.0
Total Split (s)	29.0	29.0	0.0	29.0	29.0	0.0	39.0	39.0	0.0	39.0	39.0	39.0
Total Split (%)	32.2%	32.2%	0.0%	32.2%	32.2%	0.0%	43.3%	43.3%	0.0%	43.3%	43.3%	43.3%
Maximum Green (s)	25.0	25.0		25.0	25.0		35.0	35.0		35.0	35.0	35.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lead/Lag							Lead	Lead		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		13.6			13.6		36.5	36.5			36.5	36.5
Actuated g/C Ratio		0.22			0.22		0.59	0.59			0.59	0.59
v/c Ratio		0.72			0.37		0.38	0.40			0.73	0.30
Control Delay		31.8			24.0		20.7	12.0			21.7	8.8
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0

Lane Group	ø2
Lane Configurations	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phases	
Minimum Initial (s)	8.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	24%
Maximum Green (s)	19.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.0
Recall Mode	None
Walk Time (s)	8.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	4
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		31.8			24.0		20.7	12.0			21.7	8.8
LOS		C			C		C	B			C	A
Approach Delay		31.8			24.0			13.5			17.4	
Approach LOS		C			C			B			B	

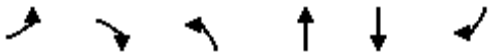
Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 61.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 18.8		Intersection LOS: B	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1419: Bynner & South Hungtington



Lane Group	ø2
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	7	4	5	408	592	3
Peak Hour Factor	0.92	0.92	0.92	0.85	0.94	0.92
Hourly flow rate (vph)	8	4	5	480	630	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				230		
pX, platoon unblocked	0.96					
vC, conflicting volume	1122	631	633			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1127	631	633			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	99	99			
cM capacity (veh/h)	218	484	960			

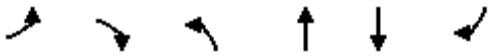
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	12	485	633
Volume Left	8	5	0
Volume Right	4	0	3
cSH	273	960	1700
Volume to Capacity	0.04	0.01	0.37
Queue Length 95th (ft)	3	0	0
Control Delay (s)	18.8	0.2	0.0
Lane LOS	C	A	
Approach Delay (s)	18.8	0.2	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	23	23	391	28	19	575
Peak Hour Factor	0.92	0.92	0.85	0.92	0.92	0.94
Hourly flow rate (vph)	25	25	460	30	21	612
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						162
pX, platoon unblocked	0.94					
vC, conflicting volume	1128	475			490	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1137	475			490	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	96			98	
cM capacity (veh/h)	206	594			1057	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	50	490	632
Volume Left	25	0	21
Volume Right	25	30	0
cSH	306	1700	1057
Volume to Capacity	0.16	0.29	0.02
Queue Length 95th (ft)	14	0	1
Control Delay (s)	19.0	0.0	0.5
Lane LOS	C		A
Approach Delay (s)	19.0	0.0	0.5
Approach LOS	C		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	9	2	416	598	0
Peak Hour Factor	0.92	0.92	0.92	0.85	0.94	0.92
Hourly flow rate (vph)	2	10	2	489	636	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)					282	
pX, platoon unblocked	0.94	0.94	0.94			
vC, conflicting volume	1130	636	636			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1138	613	613			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	99	98	100			
cM capacity (veh/h)	211	448	917			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	12	492	636
Volume Left	2	2	0
Volume Right	10	0	0
cSH	372	917	1700
Volume to Capacity	0.03	0.00	0.37
Queue Length 95th (ft)	2	0	0
Control Delay (s)	15.0	0.1	0.0
Lane LOS	C	A	
Approach Delay (s)	15.0	0.1	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Grade (%)	0%		0%			0%	
Storage Length (ft)	0	0		0	0		
Storage Lanes	0	0		0	0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)			50			50	
Trailing Detector (ft)			0			0	
Turning Speed (mph)	15	9		9	15		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							
Frt							
Flt Protected							
Satd. Flow (prot)	0	0	1583	0	0	1660	
Flt Permitted							
Satd. Flow (perm)	0	0	1583	0	0	1660	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)							
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	
Link Speed (mph)	30		30			30	
Link Distance (ft)	129		126			366	
Travel Time (s)	2.9		2.9			8.3	
Volume (vph)	0	0	955	0	0	374	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.81	0.92	0.92	0.87	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	2%	8%	2%	2%	3%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)	0%		0%			0%	
Adj. Flow (vph)	0	0	1179	0	0	430	
Lane Group Flow (vph)	0	0	1179	0	0	430	
Turn Type							
Protected Phases			1			1	2
Permitted Phases							
Detector Phases			1			1	
Minimum Initial (s)			40.0			40.0	4.0
Minimum Split (s)			44.0			44.0	24.0
Total Split (s)	0.0	0.0	44.0	0.0	0.0	44.0	24.0
Total Split (%)	0.0%	0.0%	64.7%	0.0%	0.0%	64.7%	35%
Maximum Green (s)			40.0			40.0	19.0
Yellow Time (s)			3.0			3.0	2.0
All-Red Time (s)			1.0			1.0	3.0
Lead/Lag			Lead			Lead	Lag
Lead-Lag Optimize?			Yes			Yes	Yes
Vehicle Extension (s)			2.0			2.0	2.0
Minimum Gap (s)			2.0			2.0	2.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2
Time Before Reduce (s)			0.0			0.0	0.0
Time To Reduce (s)			0.0			0.0	0.0
Recall Mode			Max			Max	None
Walk Time (s)							10.0
Flash Dont Walk (s)							9.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)			114.4			114.4	
Actuated g/C Ratio			0.95			0.95	
v/c Ratio			0.78			0.27	
Control Delay			9.1			1.8	
Queue Delay			0.0			0.0	
Total Delay			9.1			1.8	
LOS			A			A	
Approach Delay			9.1			1.8	
Approach LOS			A			A	
Queue Length 50th (ft)			0			0	
Queue Length 95th (ft)			773			121	
Internal Link Dist (ft)	49		46			286	
Turn Bay Length (ft)							
Base Capacity (vph)			1509			1583	
Starvation Cap Reductn			0			0	
Spillback Cap Reductn			0			0	
Storage Cap Reductn			0			0	
Reduced v/c Ratio			0.78			0.27	

Intersection Summary

Area Type: CBD
Cycle Length: 68
Actuated Cycle Length: 120
Natural Cycle: 100
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 7.1 Intersection LOS: A
Intersection Capacity Utilization 59.2% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 725: Veterans Hospital Crosswalk & South Hungtington

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	9	9	9	12	12	12	12	12	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	25		0	0		25
Storage Lanes	0		0	0		0	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.974			0.915			0.996				0.850
Flt Protected		0.968			0.995		0.950				0.997	
Satd. Flow (prot)	0	1485	0	0	1359	0	1577	1624	0	0	1495	1535
Flt Permitted		0.594			0.957		0.454				0.475	
Satd. Flow (perm)	0	912	0	0	1308	0	754	1624	0	0	712	1535
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			96			2				37
Headway Factor	1.25	1.25	1.25	1.30	1.30	1.30	1.14	1.14	1.14	1.14	1.14	1.05
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1345			1507			1530			2337	
Travel Time (s)		30.6			34.3			34.8			53.1	
Volume (vph)	180	46	59	12	47	83	63	677	11	9	235	75
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.82	0.87	0.91	0.60	0.88	0.66	0.90	0.94	0.55	0.45	0.82	0.87
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	0%	0%	2%	4%	3%	5%	0%	0%	15%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	220	53	65	20	53	126	70	720	20	20	287	86
Lane Group Flow (vph)	0	338	0	0	199	0	70	740	0	0	307	86
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		1
Detector Phases	3	3		3	3		1	1		1	1	1
Minimum Initial (s)	8.0	8.0		8.0	8.0		35.0	35.0		35.0	35.0	35.0
Minimum Split (s)	12.0	12.0		12.0	12.0		39.0	39.0		39.0	39.0	39.0
Total Split (s)	29.0	29.0	0.0	29.0	29.0	0.0	39.0	39.0	0.0	39.0	39.0	39.0
Total Split (%)	32.2%	32.2%	0.0%	32.2%	32.2%	0.0%	43.3%	43.3%	0.0%	43.3%	43.3%	43.3%
Maximum Green (s)	25.0	25.0		25.0	25.0		35.0	35.0		35.0	35.0	35.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lead/Lag							Lead	Lead		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0

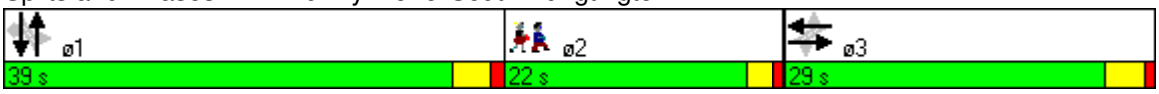
Lane Group	ø2
Lane Configurations	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phases	
Minimum Initial (s)	8.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	24%
Maximum Green (s)	19.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.0
Minimum Gap (s)	2.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		25.3			25.3		35.4	35.4			35.4	35.4
Actuated g/C Ratio		0.35			0.35		0.49	0.49			0.49	0.49
v/c Ratio		1.03			0.38		0.19	0.93			0.88	0.11
Control Delay		84.6			13.1		14.5	39.0			47.4	8.5
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		84.6			13.1		14.5	39.0			47.4	8.5
LOS		F			B		B	D			D	A
Approach Delay		84.6			13.1			36.9			38.9	
Approach LOS		F			B			D			D	
Queue Length 50th (ft)		132			29		15	254			101	10
Queue Length 95th (ft)		#387			105		58	#719			#310	44
Internal Link Dist (ft)		1265			1427			1450			2257	
Turn Bay Length (ft)							25					25
Base Capacity (vph)		328			521		370	798			349	772
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		1.03			0.38		0.19	0.93			0.88	0.11

Intersection Summary

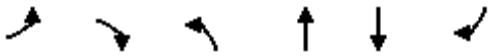
Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 72.2
Natural Cycle: 150
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 43.9 Intersection LOS: D
Intersection Capacity Utilization 95.1% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1419: Bynner & South Hungtington



Lane Group	ø2
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	8.0
Flash Dont Walk (s)	10.0
Pedestrian Calls (#/hr)	16
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	15	0	3	951	374	4
Peak Hour Factor	0.92	0.92	0.92	0.87	0.81	0.92
Hourly flow rate (vph)	16	0	3	1093	462	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				366		
pX, platoon unblocked	0.13					
vC, conflicting volume	1564	464	466			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	5266	464	466			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	100	100			
cM capacity (veh/h)	0	602	1106			

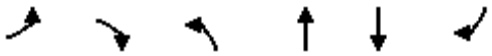
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	16	1096	466
Volume Left	16	3	0
Volume Right	0	0	4
cSH	0	1106	1700
Volume to Capacity	271.96	0.00	0.27
Queue Length 95th (ft)	Err	0	0
Control Delay (s)	Err	0.1	0.0
Lane LOS	F	A	
Approach Delay (s)	Err	0.1	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	103.3		
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	8	17	938	69	64	311
Peak Hour Factor	0.92	0.92	0.87	0.92	0.92	0.81
Hourly flow rate (vph)	9	18	1078	75	70	384
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						126
pX, platoon unblocked	0.97					
vC, conflicting volume	1639	1116			1153	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1661	1116			1153	
tC, single (s)	6.5	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	90	93			89	
cM capacity (veh/h)	86	255			613	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	1153	454
Volume Left	9	0	70
Volume Right	18	75	0
cSH	157	1700	613
Volume to Capacity	0.17	0.68	0.11
Queue Length 95th (ft)	15	0	10
Control Delay (s)	32.7	0.0	3.2
Lane LOS	D		A
Approach Delay (s)	32.7	0.0	3.2
Approach LOS	D		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	0	0	1006	319	0
Peak Hour Factor	0.92	0.92	0.92	0.87	0.81	0.92
Hourly flow rate (vph)	0	0	0	1156	394	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)					350	
pX, platoon unblocked	1.00	1.00	1.00			
vC, conflicting volume	1550	394	394			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1553	391	391			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	126	659	1173			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	1156	394
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.68	0.23
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Grade (%)	0%		0%			0%	
Storage Length (ft)	0	0		0	0		
Storage Lanes	0	0		0	0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)			50			50	
Trailing Detector (ft)			0			0	
Turning Speed (mph)	15	9		9	15		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							
Frt							
Flt Protected							
Satd. Flow (prot)	0	0	1644	0	0	1660	
Flt Permitted							
Satd. Flow (perm)	0	0	1644	0	0	1660	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)							
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	
Link Speed (mph)	30		30			30	
Link Distance (ft)	103		162			230	
Travel Time (s)	2.3		3.7			5.2	
Volume (vph)	0	0	418	0	0	593	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.85	0.92	0.92	0.94	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	2%	4%	2%	2%	3%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)	0%		0%			0%	
Adj. Flow (vph)	0	0	492	0	0	631	
Lane Group Flow (vph)	0	0	492	0	0	631	
Turn Type							
Protected Phases			1			1	2
Permitted Phases							
Detector Phases			1			1	
Minimum Initial (s)			40.0			40.0	4.0
Minimum Split (s)			44.0			44.0	24.0
Total Split (s)	0.0	0.0	44.0	0.0	0.0	44.0	24.0
Total Split (%)	0.0%	0.0%	64.7%	0.0%	0.0%	64.7%	35%
Maximum Green (s)			40.0			40.0	19.0
Yellow Time (s)			3.0			3.0	2.0
All-Red Time (s)			1.0			1.0	3.0
Lead/Lag			Lead			Lead	Lag
Lead-Lag Optimize?			Yes			Yes	Yes
Vehicle Extension (s)			2.0			2.0	2.0
Minimum Gap (s)			2.0			2.0	2.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2
Time Before Reduce (s)			0.0			0.0	0.0
Time To Reduce (s)			0.0			0.0	0.0
Recall Mode			Max			Max	None
Walk Time (s)							10.0
Flash Dont Walk (s)							9.0
Pedestrian Calls (#/hr)							13
Act Effct Green (s)			114.4			114.4	
Actuated g/C Ratio			0.95			0.95	
v/c Ratio			0.31			0.40	
Control Delay			1.9			2.4	
Queue Delay			0.0			0.0	
Total Delay			1.9			2.4	
LOS			A			A	
Approach Delay			1.9			2.4	
Approach LOS			A			A	
Queue Length 50th (ft)			0			0	
Queue Length 95th (ft)			140			220	
Internal Link Dist (ft)	23		82			150	
Turn Bay Length (ft)							
Base Capacity (vph)			1567			1583	
Starvation Cap Reductn			0			0	
Spillback Cap Reductn			0			0	
Storage Cap Reductn			0			0	
Reduced v/c Ratio			0.31			0.40	

Intersection Summary

Area Type: CBD
Cycle Length: 68
Actuated Cycle Length: 120
Natural Cycle: 70
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 2.2 Intersection LOS: A
Intersection Capacity Utilization 38.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 725: Veteran's Hopsital Crosswalk & South Hungtington

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	9	9	9	12	12	12	12	12	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	25		0	0		25
Storage Lanes	0		0	0		0	1		0	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.942			0.985			0.987				0.850
Flt Protected		0.988			0.989		0.950				0.993	
Satd. Flow (prot)	0	1474	0	0	1381	0	1624	1600	0	0	1629	1491
Flt Permitted		0.904			0.911		0.213				0.747	
Satd. Flow (perm)	0	1349	0	0	1272	0	364	1600	0	0	1225	1491
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			7			6				67
Headway Factor	1.25	1.25	1.25	1.30	1.30	1.30	1.14	1.14	1.14	1.14	1.14	1.05
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1247			1507			1530			1764	
Travel Time (s)		28.3			34.3			34.8			40.1	
Volume (vph)	42	72	82	14	53	9	48	327	21	31	407	256
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.73	0.92	0.80	0.58	0.76	0.75	0.59	0.93	0.63	0.39	0.90	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	1%	21%	2%	22%	0%	6%	0%	0%	5%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	58	78	102	24	70	12	81	352	33	79	452	272
Lane Group Flow (vph)	0	238	0	0	106	0	81	385	0	0	531	272
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		1
Detector Phases	3	3		3	3		1	1		1	1	1
Minimum Initial (s)	8.0	8.0		8.0	8.0		35.0	35.0		35.0	35.0	35.0
Minimum Split (s)	12.0	12.0		12.0	12.0		39.0	39.0		39.0	39.0	39.0
Total Split (s)	29.0	29.0	0.0	29.0	29.0	0.0	39.0	39.0	0.0	39.0	39.0	39.0
Total Split (%)	32.2%	32.2%	0.0%	32.2%	32.2%	0.0%	43.3%	43.3%	0.0%	43.3%	43.3%	43.3%
Maximum Green (s)	25.0	25.0		25.0	25.0		35.0	35.0		35.0	35.0	35.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lead/Lag							Lead	Lead		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Minimum Gap (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0

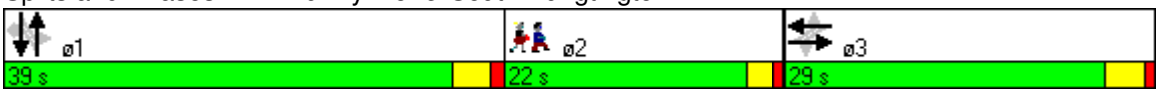
Lane Group	ø2
Lane Configurations	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phases	
Minimum Initial (s)	8.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	24%
Maximum Green (s)	19.0
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.0
Minimum Gap (s)	2.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		Max	Max		Max	Max	Max
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		13.6			13.6		36.5	36.5			36.5	36.5
Actuated g/C Ratio		0.22			0.22		0.59	0.59			0.59	0.59
v/c Ratio		0.72			0.37		0.38	0.40			0.73	0.30
Control Delay		31.8			24.0		20.1	12.0			21.8	8.8
Queue Delay		0.0			0.0		0.0	0.0			0.0	0.0
Total Delay		31.8			24.0		20.1	12.0			21.8	8.8
LOS		C			C		C	B			C	A
Approach Delay		31.8			24.0			13.4			17.4	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)		59			28		11	50			94	24
Queue Length 95th (ft)		175			72		49	267			#545	151
Internal Link Dist (ft)		1167			1427			1450			1684	
Turn Bay Length (ft)							25					25
Base Capacity (vph)		499			449		216	953			728	913
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		0.48			0.24		0.38	0.40			0.73	0.30

Intersection Summary

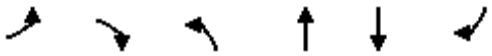
Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 61.5
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 18.8 Intersection LOS: B
Intersection Capacity Utilization 76.3% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1419: Bynner & South Hungtington



Lane Group	ø2
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	8.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	4
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	5	2	12	406	591	5
Peak Hour Factor	0.92	0.92	0.92	0.85	0.94	0.92
Hourly flow rate (vph)	5	2	13	478	629	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				230		
pX, platoon unblocked	0.96					
vC, conflicting volume	1135	631	634			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1141	631	634			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	99			
cM capacity (veh/h)	212	484	959			

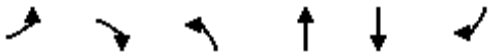
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	491	634
Volume Left	5	13	0
Volume Right	2	0	5
cSH	253	959	1700
Volume to Capacity	0.03	0.01	0.37
Queue Length 95th (ft)	2	1	0
Control Delay (s)	19.7	0.4	0.0
Lane LOS	C	A	
Approach Delay (s)	19.7	0.4	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	23	23	396	28	19	573
Peak Hour Factor	0.92	0.92	0.85	0.92	0.92	0.94
Hourly flow rate (vph)	25	25	466	30	21	610
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						162
pX, platoon unblocked	0.94					
vC, conflicting volume	1132	481			496	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1141	481			496	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	96			98	
cM capacity (veh/h)	205	589			1052	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	50	496	630
Volume Left	25	0	21
Volume Right	25	30	0
cSH	305	1700	1052
Volume to Capacity	0.16	0.29	0.02
Queue Length 95th (ft)	14	0	2
Control Delay (s)	19.1	0.0	0.5
Lane LOS	C		A
Approach Delay (s)	19.1	0.0	0.5
Approach LOS	C		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	5	0	423	596	0
Peak Hour Factor	0.92	0.92	0.92	0.85	0.94	0.92
Hourly flow rate (vph)	0	5	0	498	634	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)					282	
pX, platoon unblocked	0.94	0.94	0.94			
vC, conflicting volume	1132	634	634			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1140	611	611			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	211	449	919			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	5	498	634
Volume Left	0	0	0
Volume Right	5	0	0
cSH	449	1700	1700
Volume to Capacity	0.01	0.29	0.37
Queue Length 95th (ft)	1	0	0
Control Delay (s)	13.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.1	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

Traffic Count Data

N/S: South Huntington Avenue
E/W: Hospital Driveway/ Driveways (N/S)
City, State: Jamaica Plain, MA
Client: HSH/ J. SanClemente

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

File Name : 122790 A
Site Code : 2011196
Start Date : 2/2/2012
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	South Huntington Avenue From North				Hospital Entrance From East				South Huntington Avenue From South				Driveways North/South From West						
Start Time	Right (N)	Right (S)	Thru	Left	Right	Thru (N)	Thru (S)	Left	Right	Thru	Left (N)	Left (S)	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	Int. Total
07:00 AM	0	0	84	9	3	0	0	7	14	143	0	0	0	0	0	0	0	0	260
07:15 AM	0	1	81	15	6	0	0	3	10	205	0	1	0	1	0	0	0	0	323
07:30 AM	1	0	113	8	3	0	0	0	5	201	0	0	0	0	0	0	1	1	333
07:45 AM	2	0	106	20	7	0	0	3	24	224	2	0	0	0	0	0	0	0	388
Total	3	1	384	52	19	0	0	13	53	773	2	1	0	1	0	0	1	1	1304
08:00 AM	3	1	68	11	3	0	0	3	16	270	1	0	0	0	0	0	0	0	376
08:15 AM	5	0	79	23	4	0	0	2	22	240	3	2	0	0	0	0	0	0	380
08:30 AM	1	0	61	20	4	0	0	2	13	223	2	0	0	2	0	0	0	4	332
08:45 AM	1	0	58	18	2	0	0	1	14	202	1	0	0	1	0	0	0	0	298
Total	10	1	266	72	13	0	0	8	65	935	7	2	0	3	0	0	0	4	1386
Grand Total	13	2	650	124	32	0	0	21	118	1708	9	3	0	4	0	0	1	5	2690
Apprch %	1.6	0.3	82.4	15.7	60.4	0	0	39.6	6.4	92.9	0.5	0.2	0	40	0	0	10	50	
Total %	0.5	0.1	24.2	4.6	1.2	0	0	0.8	4.4	63.5	0.3	0.1	0	0.1	0	0	0	0.2	
Cars	13	2	593	124	32	0	0	19	114	1648	9	3	0	4	0	0	1	3	2565
% Cars	100	100	91.2	100	100	0	0	90.5	96.6	96.5	100	100	0	100	0	0	100	60	95.4
Heavy Vehicles	0	0	57	0	0	0	0	2	4	60	0	0	0	0	0	0	0	2	125
% Heavy Vehicles	0	0	8.8	0	0	0	0	9.5	3.4	3.5	0	0	0	0	0	0	0	40	4.6

	South Huntington Avenue From North					Hospital Entrance From East					South Huntington Avenue From South					Driveways North/South From West							
Start Time	Right (N)	Right (S)	Thru	Left	App. Total	Right	Thru (N)	Thru (S)	Left	App. Total	Right	Thru	Left (N)	Left (S)	App. Total	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																							
Peak Hour for Entire Intersection Begins at 07:30 AM																							
07:30 AM	1	0	**113**	8	122	3	0	0	0	3	5	201	0	0	206	0	0	0	0	**1**	**1**	**2**	333
07:45 AM	2	0	106	20	**128**	**7**	0	0	**3**	**10**	**24**	224	2	0	250	0	0	0	0	0	0	0	**388**
08:00 AM	3	**1**	68	11	83	3	0	0	3	6	16	**270**	1	0	**287**	0	0	0	0	0	0	0	376
08:15 AM	**5**	0	79	**23**	107	4	0	0	2	6	22	240	**3**	**2**	267	0	0	0	0	0	0	0	380
Total Volume	11	1	366	62	440	17	0	0	8	25	67	935	6	2	1010	0	0	0	0	1	1	2	1477
% App. Total	2.5	0.2	83.2	14.1		68	0	0	32		6.6	92.6	0.6	0.2		0	0	0	0	50	50		
PHF	.550	.250	.810	.674	.859	.607	.000	.000	.667	.625	.698	.866	.500	.250	.880	.000	.000	.000	.000	.250	.250	.250	.952
Cars	11	1	338	62	412	17	0	0	7	24	64	911	6	2	983	0	0	0	0	1	0	1	1420
% Cars	100	100	92.3	100	93.6	100	0	0	87.5	96.0	95.5	97.4	100	100	97.3	0	0	0	0	100	0	50.0	96.1
Heavy Vehicles	0	0	28	0	28	0	0	0	1	1	3	24	0	0	27	0	0	0	0	0	1	1	57
% Heavy Vehicles	0	0	7.7	0	6.4	0	0	0	12.5	4.0	4.5	2.6	0	0	2.7	0	0	0	0	0	100	50.0	3.9

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: South Huntington Avenue
E/W: Hospital Driveway/ Driveways (N/S)
City, State: Jamaica Plain, MA
Client: HSH/ J. SanClemente

File Name : 122790 A
Site Code : 2011196
Start Date : 2/2/2012
Page No : 1

Groups Printed- Cars

	South Huntington Avenue From North				Hospital Entrance From East				South Huntington Avenue From South				Driveways North/South From West						
Start Time	Right (N)	Right (S)	Thru	Left	Right	Thru (N)	Thru (S)	Left	Right	Thru	Left (N)	Left (S)	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	Int. Total
07:00 AM	0	0	77	9	3	0	0	6	14	132	0	0	0	0	0	0	0	0	241
07:15 AM	0	1	70	15	6	0	0	3	9	198	0	1	0	1	0	0	0	0	304
07:30 AM	1	0	110	8	3	0	0	0	3	194	0	0	0	0	0	0	1	0	320
07:45 AM	2	0	96	20	7	0	0	2	24	221	2	0	0	0	0	0	0	0	374
Total	3	1	353	52	19	0	0	11	50	745	2	1	0	1	0	0	1	0	1239
08:00 AM	3	1	61	11	3	0	0	3	16	264	1	0	0	0	0	0	0	0	363
08:15 AM	5	0	71	23	4	0	0	2	21	232	3	2	0	0	0	0	0	0	363
08:30 AM	1	0	56	20	4	0	0	2	13	215	2	0	0	2	0	0	0	3	318
08:45 AM	1	0	52	18	2	0	0	1	14	192	1	0	0	1	0	0	0	0	282
Total	10	1	240	72	13	0	0	8	64	903	7	2	0	3	0	0	0	3	1326
Grand Total	13	2	593	124	32	0	0	19	114	1648	9	3	0	4	0	0	1	3	2565
Apprch %	1.8	0.3	81	16.9	62.7	0	0	37.3	6.4	92.9	0.5	0.2	0	50	0	0	12.5	37.5	
Total %	0.5	0.1	23.1	4.8	1.2	0	0	0.7	4.4	64.2	0.4	0.1	0	0.2	0	0	0	0.1	

	South Huntington Avenue From North					Hospital Entrance From East					South Huntington Avenue From South					Driveways North/South From West							
Start Time	Right (N)	Right (S)	Thru	Left	App. Total	Right	Thru (N)	Thru (S)	Left	App. Total	Right	Thru	Left (N)	Left (S)	App. Total	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																							
Peak Hour for Entire Intersection Begins at 07:30 AM																							
07:30 AM	1	0	**110**	8	**119**	3	0	0	0	3	3	194	0	0	197	0	0	0	0	**1**	0	**1**	320
07:45 AM	2	0	96	20	118	**7**	0	0	2	**9**	**24**	221	2	0	247	0	0	0	0	0	0	0	**374**
08:00 AM	3	**1**	61	11	76	3	0	0	**3**	6	16	**264**	1	0	**281**	0	0	0	0	0	0	0	363
08:15 AM	**5**	0	71	**23**	99	4	0	0	2	6	21	232	**3**	**2**	258	0	0	0	0	0	0	0	363
Total Volume	11	1	338	62	412	17	0	0	7	24	64	911	6	2	983	0	0	0	0	1	0	1	1420
% App. Total	2.7	0.2	82	15		70.8	0	0	29.2		6.5	92.7	0.6	0.2		0	0	0	0	100	0		
PHF	.550	.250	.768	.674	.866	.607	.000	.000	.583	.667	.667	.863	.500	.250	.875	.000	.000	.000	.000	.250	.000	.250	.949

PRECISION
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N/S: South Huntington Avenue
E/W: Hospital Driveway/ Driveways (N/S)
City, State: Jamaica Plain, MA
Client: HSH/ J. SanClemente

File Name : 122790 A
Site Code : 2011196
Start Date : 2/2/2012
Page No : 1

Groups Printed- Heavy Vehicles

	South Huntington Avenue From North				Hospital Entrance From East				South Huntington Avenue From South				Driveways North/South From West						
Start Time	Right (N)	Right (S)	Thru	Left	Right	Thru (N)	Thru (S)	Left	Right	Thru	Left (N)	Left (S)	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	Int. Total
07:00 AM	0	0	7	0	0	0	0	1	0	11	0	0	0	0	0	0	0	0	19
07:15 AM	0	0	11	0	0	0	0	0	1	7	0	0	0	0	0	0	0	0	19
07:30 AM	0	0	3	0	0	0	0	0	2	7	0	0	0	0	0	0	0	1	13
07:45 AM	0	0	10	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	14
Total	0	0	31	0	0	0	0	2	3	28	0	0	0	0	0	0	0	1	65
08:00 AM	0	0	7	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	13
08:15 AM	0	0	8	0	0	0	0	0	1	8	0	0	0	0	0	0	0	0	17
08:30 AM	0	0	5	0	0	0	0	0	0	8	0	0	0	0	0	0	0	1	14
08:45 AM	0	0	6	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	16
Total	0	0	26	0	0	0	0	0	1	32	0	0	0	0	0	0	0	1	60
Grand Total	0	0	57	0	0	0	0	2	4	60	0	0	0	0	0	0	0	2	125
Apprch %	0	0	100	0	0	0	0	100	6.2	93.8	0	0	0	0	0	0	0	100	
Total %	0	0	45.6	0	0	0	0	1.6	3.2	48	0	0	0	0	0	0	0	1.6	

	South Huntington Avenue From North					Hospital Entrance From East					South Huntington Avenue From South					Driveways North/South From West							
Start Time	Right (N)	Right (S)	Thru	Left	App. Total	Right	Thru (N)	Thru (S)	Left	App. Total	Right	Thru	Left (N)	Left (S)	App. Total	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																							
Peak Hour for Entire Intersection Begins at 07:00 AM																							
07:00 AM	0	0	7	0	7	0	0	0	**1**	**1**	0	**11**	0	0	**11**	0	0	0	0	0	0	0	**19**
07:15 AM	0	0	**11**	0	**11**	0	0	0	0	0	1	7	0	0	8	0	0	0	0	0	0	0	19
07:30 AM	0	0	3	0	3	0	0	0	0	0	**2**	7	0	0	9	0	0	0	0	0	**1**	**1**	13
07:45 AM	0	0	10	0	10	0	0	0	1	1	0	3	0	0	3	0	0	0	0	0	0	0	14
Total Volume	0	0	31	0	31	0	0	0	2	2	3	28	0	0	31	0	0	0	0	0	1	1	65
% App. Total	0	0	100	0		0	0	0	100		9.7	90.3	0	0		0	0	0	0	0	100		
PHF	.000	.000	.705	.000	.705	.000	.000	.000	.500	.500	.375	.636	.000	.000	.705	.000	.000	.000	.000	.000	.250	.250	.855

PRECISION
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City, State: Jamaica Plain, MA
Client: HSH/ J. SanClemente

File Name : 122790 A
Site Code : 2011196
Start Date : 2/2/2012
Page No : 1

Groups Printed- Peds and Bicycles

	South Huntington Avenue From North					Hospital Entrance From East					South Huntington Avenue From South					Driveways North/South From West							
Start Time	Right (N)	Right (S)	Thru	Left	Peds	Right	Thru (N)	Thru (S)	Left	Peds	Right	Thru	Left (N)	Left (S)	Peds (Crosswalk)	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	3	0	5	0	0	2	0	0	0	0	0	0	1	11
07:15 AM	0	0	0	0	0	0	0	0	0	10	0	7	0	0	10	0	0	0	0	0	0	0	27
07:30 AM	0	0	0	0	0	0	0	0	0	12	0	5	0	0	8	0	0	0	0	0	0	1	26
07:45 AM	0	0	1	0	0	0	0	0	0	7	0	13	0	0	14	0	0	0	0	0	0	7	42
Total	0	0	1	0	0	0	0	0	0	32	0	30	0	0	34	0	0	0	0	0	0	9	106
08:00 AM	0	0	1	1	0	0	0	0	0	20	0	8	0	0	24	0	0	0	0	0	0	6	60
08:15 AM	0	0	0	0	0	0	0	0	0	11	0	8	0	0	11	0	0	0	0	0	0	8	38
08:30 AM	0	0	0	1	0	0	0	0	0	16	0	4	0	0	3	0	0	0	0	0	0	5	29
08:45 AM	0	0	0	0	0	0	0	0	0	14	0	4	0	0	5	0	0	0	0	0	0	3	26
Total	0	0	1	2	0	0	0	0	0	61	0	24	0	0	43	0	0	0	0	0	0	22	153
Grand Total	0	0	2	2	0	0	0	0	0	93	0	54	0	0	77	0	0	0	0	0	0	31	259
Apprch %	0	0	50	50	0	0	0	0	0	100	0	41.2	0	0	58.8	0	0	0	0	0	0	100	
Total %	0	0	0.8	0.8	0	0	0	0	0	35.9	0	20.8	0	0	29.7	0	0	0	0	0	0	12	

	South Huntington Avenue From North						Hospital Entrance From East						South Huntington Avenue From South						Driveways North/South From West								
Start Time	Right (N)	Right (S)	Thru	Left	Peds	App. Total	Right	Thru (N)	Thru (S)	Left	Peds	App. Total	Right	Thru	Left (N)	Left (S)	Peds (Cross walk)	App. Total	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																											
Peak Hour for Entire Intersection Begins at 07:45 AM																											
07:45 AM	0	0	**1**	0	0	1	0	0	0	0	7	7	0	**13**	0	0	14	27	0	0	0	0	0	0	7	7	42
08:00 AM	0	0	1	**1**	0	**2**	0	0	0	0	**20**	**20**	0	8	0	0	**24**	**32**	0	0	0	0	0	0	6	6	**60**
08:15 AM	0	0	0	0	0	0	0	0	0	0	11	11	0	8	0	0	11	19	0	0	0	0	0	0	**8**	**8**	38
08:30 AM	0	0	0	1	0	1	0	0	0	0	16	16	0	4	0	0	3	7	0	0	0	0	0	0	5	5	29
Total Volume	0	0	2	2	0	4	0	0	0	0	54	54	0	33	0	0	52	85	0	0	0	0	0	0	26	26	169
% App. Total	0	0	50	50	0		0	0	0	0	100		0	38.8	0	0	61.2		0	0	0	0	0	0	100		
PHF	.000	.000	.500	.500	.000	.500	.000	.000	.000	.000	.675	.675	.000	.635	.000	.000	.542	.664	.000	.000	.000	.000	.000	.000	.813	.813	.704

N/S: South Huntington Avenue
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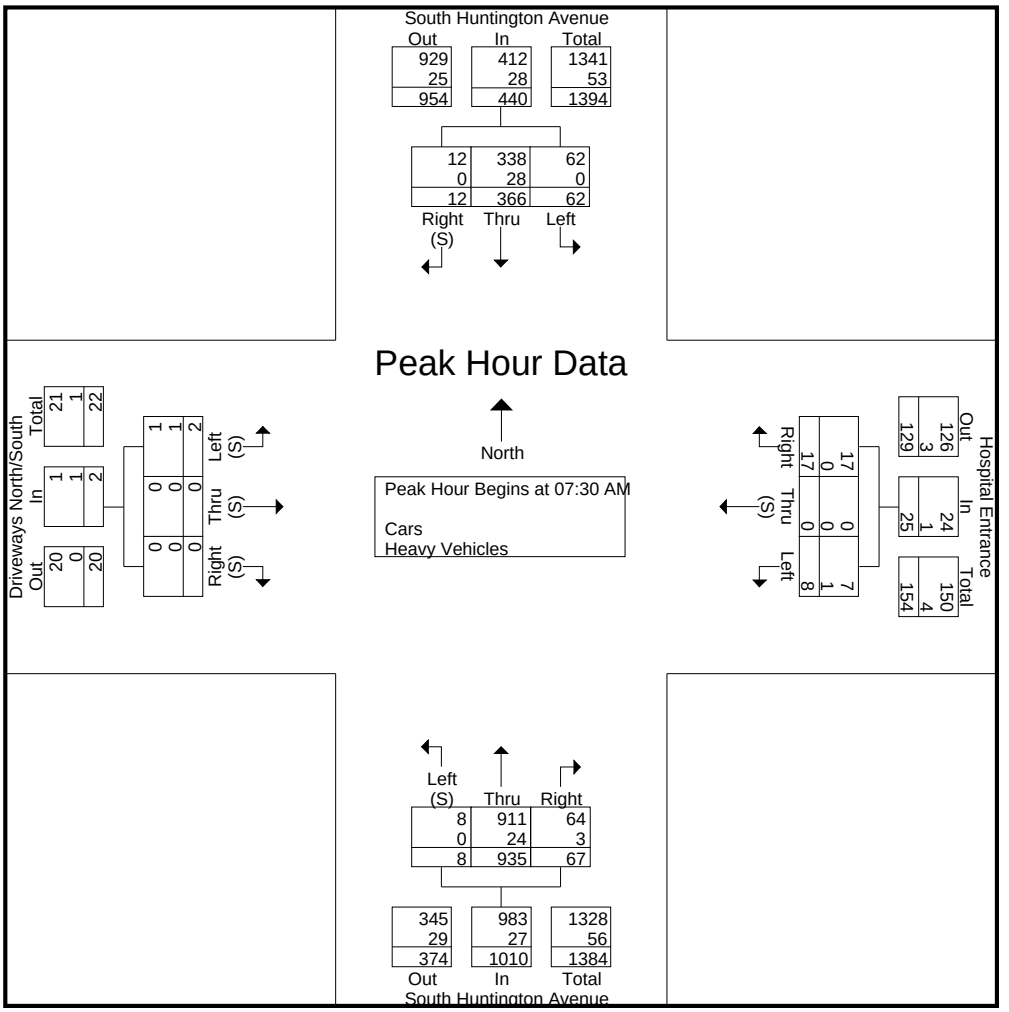
	South Huntington Avenue From North					Hospital Entrance From East					South Huntington Avenue From South					Driveways North/South From West							
Start Time	Right (N)	Right (S)	Thru	Left	App. Total	Right	Thru (N)	Thru (S)	Left	App. Total	Right	Thru	Left (N)	Left (S)	App. Total	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																							
Peak Hour for Entire Intersection Begins at 07:30 AM																							
07:30 AM	1	0	**113**	8	122	3	0	0	0	3	5	201	0	0	206	0	0	0	0	**1**	**1**	**2**	333
07:45 AM	2	0	106	20	**128**	**7**	0	0	**3**	**10**	**24**	224	2	0	250	0	0	0	0	0	0	0	**388**
08:00 AM	3	**1**	68	11	83	3	0	0	3	6	16	**270**	1	0	**287**	0	0	0	0	0	0	0	376
08:15 AM	**5**	0	79	**23**	107	4	0	0	2	6	22	240	**3**	**2**	267	0	0	0	0	0	0	0	380
Total Volume	11	1	366	62	440	17	0	0	8	25	67	935	6	2	1010	0	0	0	0	1	1	2	1477
% App. Total	2.5	0.2	83.2	14.1		68	0	0	32		6.6	92.6	0.6	0.2		0	0	0	0	50	50		
PHF	.550	.250	.810	.674	.859	.607	.000	.000	.667	.625	.698	.866	.500	.250	.880	.000	.000	.000	.000	.250	.250	.250	.952
Cars	11	1	338	62	412	17	0	0	7	24	64	911	6	2	983	0	0	0	0	1	0	1	1420
% Cars	100	100	92.3	100	93.6	100	0	0	87.5	96.0	95.5	97.4	100	100	97.3	0	0	0	0	100	0	50.0	96.1
Heavy Vehicles	0	0	28	0	28	0	0	0	1	1	3	24	0	0	27	0	0	0	0	0	1	1	57
% Heavy Vehicles	0	0	7.7	0	6.4	0	0	0	12.5	4.0	4.5	2.6	0	0	2.7	0	0	0	0	0	100	50.0	3.9



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City, State: Jamaica Plain, MA
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File Name : 122790 AA
Site Code : 2011196
Start Date : 2/2/2012
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	South Huntington Avenue From North				Hospital Entrance From East				South Huntington Avenue From South				Driveways North/South From West						
Start Time	Right (N)	Right (S)	Thru	Left	Right	Thru (N)	Thru (S)	Left	Right	Thru	Left (N)	Left (S)	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	Int. Total
04:00 PM	0	0	154	4	6	0	0	3	8	102	2	1	4	4	0	0	1	1	290
04:15 PM	2	0	147	7	5	0	0	6	5	90	0	1	0	1	0	0	4	0	268
04:30 PM	1	0	149	4	9	0	0	7	7	118	1	0	0	1	0	0	2	0	299
04:45 PM	0	0	130	4	2	0	0	6	7	93	2	0	0	3	0	0	0	1	248
Total	3	0	580	19	22	0	0	22	27	403	5	2	4	9	0	0	7	2	1105
05:00 PM	1	0	109	3	2	0	0	6	6	86	2	0	0	4	0	0	2	3	224
05:15 PM	0	0	134	6	1	0	0	2	4	85	0	1	1	2	0	0	0	1	237
05:30 PM	0	0	150	1	3	0	0	4	5	93	0	2	1	0	0	0	0	0	259
05:45 PM	0	1	122	0	2	0	0	0	2	78	0	0	3	1	0	0	2	1	212
Total	1	1	515	10	8	0	0	12	17	342	2	3	5	7	0	0	4	5	932
Grand Total	4	1	1095	29	30	0	0	34	44	745	7	5	9	16	0	0	11	7	2037
Apprch %	0.4	0.1	97	2.6	46.9	0	0	53.1	5.5	93	0.9	0.6	20.9	37.2	0	0	25.6	16.3	
Total %	0.2	0	53.8	1.4	1.5	0	0	1.7	2.2	36.6	0.3	0.2	0.4	0.8	0	0	0.5	0.3	
Cars	4	1	1063	27	30	0	0	34	40	718	7	5	9	15	0	0	11	7	1971
% Cars	100	100	97.1	93.1	100	0	0	100	90.9	96.4	100	100	100	93.8	0	0	100	100	96.8
Heavy Vehicles	0	0	32	2	0	0	0	0	4	27	0	0	0	1	0	0	0	0	66
% Heavy Vehicles	0	0	2.9	6.9	0	0	0	0	9.1	3.6	0	0	0	6.2	0	0	0	0	3.2

	South Huntington Avenue From North					Hospital Entrance From East					South Huntington Avenue From South					Driveways North/South From West							
Start Time	Right (N)	Right (S)	Thru	Left	App. Total	Right	Thru (N)	Thru (S)	Left	App. Total	Right	Thru	Left (N)	Left (S)	App. Total	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																							
Peak Hour for Entire Intersection Begins at 04:00 PM																							
04:00 PM	0	0	**154**	4	**158**	6	0	0	3	9	**8**	102	**2**	**1**	113	**4**	**4**	0	0	1	**1**	**10**	290
04:15 PM	**2**	0	147	**7**	156	5	0	0	6	11	5	90	0	1	96	0	1	0	0	**4**	0	5	268
04:30 PM	1	0	149	4	154	**9**	0	0	**7**	**16**	7	**118**	1	0	**126**	0	1	0	0	2	0	3	**299**
04:45 PM	0	0	130	4	134	2	0	0	6	8	7	93	2	0	102	0	3	0	0	0	1	4	248
Total Volume	3	0	580	19	602	22	0	0	22	44	27	403	5	2	437	4	9	0	0	7	2	22	1105
% App. Total	0.5	0	96.3	3.2		50	0	0	50		6.2	92.2	1.1	0.5		18.2	40.9	0	0	31.8	9.1		
PHF	.375	.000	.942	.679	.953	.611	.000	.000	.786	.688	.844	.854	.625	.500	.867	.250	.563	.000	.000	.438	.500	.550	.924
Cars	3	0	564	18	585	22	0	0	22	44	25	387	5	2	419	4	8	0	0	7	2	21	1069
% Cars	100	0	97.2	94.7	97.2	100	0	0	100	100	92.6	96.0	100	100	95.9	100	88.9	0	0	100	100	95.5	96.7
Heavy Vehicles	0	0	16	1	17	0	0	0	0	0	2	16	0	0	18	0	1	0	0	0	0	1	36
% Heavy Vehicles	0	0	2.8	5.3	2.8	0	0	0	0	0	7.4	4.0	0	0	4.1	0	11.1	0	0	0	0	4.5	3.3

PRECISION
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N/S: South Huntington Avenue
E/W: Hospital Driveway/ Driveways (N/S)
City, State: Jamaica Plain, MA
Client: HSH/ J. SanClemente

File Name : 122790 AA
Site Code : 2011196
Start Date : 2/2/2012
Page No : 1

Groups Printed- Cars

	South Huntington Avenue From North				Hospital Entrance From East				South Huntington Avenue From South				Driveways North/South From West						
Start Time	Right (N)	Right (S)	Thru	Left	Right	Thru (N)	Thru (S)	Left	Right	Thru	Left (N)	Left (S)	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	Int. Total
04:00 PM	0	0	151	3	6	0	0	3	7	100	2	1	4	3	0	0	1	1	282
04:15 PM	2	0	143	7	5	0	0	6	4	82	0	1	0	1	0	0	4	0	255
04:30 PM	1	0	145	4	9	0	0	7	7	115	1	0	0	1	0	0	2	0	292
04:45 PM	0	0	125	4	2	0	0	6	7	90	2	0	0	3	0	0	0	1	240
Total	3	0	564	18	22	0	0	22	25	387	5	2	4	8	0	0	7	2	1069
05:00 PM	1	0	107	3	2	0	0	6	6	85	2	0	0	4	0	0	2	3	221
05:15 PM	0	0	128	5	1	0	0	2	3	81	0	1	1	2	0	0	0	1	225
05:30 PM	0	0	147	1	3	0	0	4	4	90	0	2	1	0	0	0	0	0	252
05:45 PM	0	1	117	0	2	0	0	0	2	75	0	0	3	1	0	0	2	1	204
Total	1	1	499	9	8	0	0	12	15	331	2	3	5	7	0	0	4	5	902
Grand Total	4	1	1063	27	30	0	0	34	40	718	7	5	9	15	0	0	11	7	1971
Apprch %	0.4	0.1	97.1	2.5	46.9	0	0	53.1	5.2	93.2	0.9	0.6	21.4	35.7	0	0	26.2	16.7	
Total %	0.2	0.1	53.9	1.4	1.5	0	0	1.7	2	36.4	0.4	0.3	0.5	0.8	0	0	0.6	0.4	

	South Huntington Avenue From North					Hospital Entrance From East					South Huntington Avenue From South					Driveways North/South From West							
Start Time	Right (N)	Right (S)	Thru	Left	App. Total	Right	Thru (N)	Thru (S)	Left	App. Total	Right	Thru	Left (N)	Left (S)	App. Total	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																							
Peak Hour for Entire Intersection Begins at 04:00 PM																							
04:00 PM	0	0	**151**	3	**154**	6	0	0	3	9	**7**	100	**2**	**1**	110	**4**	**3**	0	0	1	**1**	**9**	282
04:15 PM	**2**	0	143	**7**	152	5	0	0	6	11	4	82	0	1	87	0	1	0	0	**4**	0	5	255
04:30 PM	1	0	145	4	150	**9**	0	0	**7**	**16**	7	**115**	1	0	**123**	0	1	0	0	2	0	3	**292**
04:45 PM	0	0	125	4	129	2	0	0	6	8	7	90	2	0	99	0	3	0	0	0	1	4	240
Total Volume	3	0	564	18	585	22	0	0	22	44	25	387	5	2	419	4	8	0	0	7	2	21	1069
% App. Total	0.5	0	96.4	3.1		50	0	0	50		6	92.4	1.2	0.5		19	38.1	0	0	33.3	9.5		
PHF	.375	.000	.934	.643	.950	.611	.000	.000	.786	.688	.893	.841	.625	.500	.852	.250	.667	.000	.000	.438	.500	.583	.915

N/S: South Huntington Avenue
E/W: Hospital Driveway/ Driveways (N/S)
City, State: Jamaica Plain, MA
Client: HSH/ J. SanClemente

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File Name : 122790 AA
Site Code : 2011196
Start Date : 2/2/2012
Page No : 1

Groups Printed- Heavy Vehicles

	South Huntington Avenue From North				Hospital Entrance From East				South Huntington Avenue From South				Driveways North/South From West						
Start Time	Right (N)	Right (S)	Thru	Left	Right	Thru (N)	Thru (S)	Left	Right	Thru	Left (N)	Left (S)	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	Int. Total
04:00 PM	0	0	3	1	0	0	0	0	1	2	0	0	0	1	0	0	0	0	8
04:15 PM	0	0	4	0	0	0	0	0	1	8	0	0	0	0	0	0	0	0	13
04:30 PM	0	0	4	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	7
04:45 PM	0	0	5	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	8
Total	0	0	16	1	0	0	0	0	2	16	0	0	0	1	0	0	0	0	36
05:00 PM	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3
05:15 PM	0	0	6	1	0	0	0	0	1	4	0	0	0	0	0	0	0	0	12
05:30 PM	0	0	3	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	7
05:45 PM	0	0	5	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	8
Total	0	0	16	1	0	0	0	0	2	11	0	0	0	0	0	0	0	0	30
Grand Total	0	0	32	2	0	0	0	0	4	27	0	0	0	1	0	0	0	0	66
Apprch %	0	0	94.1	5.9	0	0	0	0	12.9	87.1	0	0	0	100	0	0	0	0	
Total %	0	0	48.5	3	0	0	0	0	6.1	40.9	0	0	0	1.5	0	0	0	0	

	South Huntington Avenue From North					Hospital Entrance From East					South Huntington Avenue From South					Driveways North/South From West							
Start Time	Right (N)	Right (S)	Thru	Left	App. Total	Right	Thru (N)	Thru (S)	Left	App. Total	Right	Thru	Left (N)	Left (S)	App. Total	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																							
Peak Hour for Entire Intersection Begins at 04:00 PM																							
04:00 PM	0	0	3	**1**	4	0	0	0	0	0	**1**	2	0	0	3	0	**1**	0	0	0	0	**1**	8
04:15 PM	0	0	4	0	4	0	0	0	0	0	1	**8**	0	0	**9**	0	0	0	0	0	0	0	**13**
04:30 PM	0	0	4	0	4	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	7
04:45 PM	0	0	**5**	0	**5**	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	8
Total Volume	0	0	16	1	17	0	0	0	0	0	2	16	0	0	18	0	1	0	0	0	0	1	36
% App. Total	0	0	94.1	5.9		0	0	0	0		11.1	88.9	0	0		0	100	0	0	0	0		
PHF	.000	.000	.800	.250	.850	.000	.000	.000	.000	.000	.500	.500	.000	.000	.500	.000	.250	.000	.000	.000	.000	.250	.692

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N/S: South Huntington Avenue
E/W: Hospital Driveway/ Driveways (N/S)
City, State: Jamaica Plain, MA
Client: HSH/ J. SanClemente

File Name : 122790 AA
Site Code : 2011196
Start Date : 2/2/2012
Page No : 1

Groups Printed- Peds and Bicycles

	South Huntington Avenue From North					Hospital Entrance From East					South Huntington Avenue From South					Driveways North/South From West							
Start Time	Right (N)	Right (S)	Thru	Left	Peds	Right	Thru (N)	Thru (S)	Left	Peds	Right	Thru	Left (N)	Left (S)	Peds (Crosswalk)	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	Peds	Int. Total
04:00 PM	0	0	3	0	0	0	0	0	1	18	0	0	0	0	6	0	0	0	0	0	0	13	41
04:15 PM	0	0	1	0	0	0	0	0	0	5	0	1	0	0	9	0	0	0	0	0	0	6	22
04:30 PM	0	0	7	0	0	0	0	0	0	18	0	2	0	0	11	0	0	0	0	0	0	13	51
04:45 PM	1	0	5	0	0	0	0	0	0	8	0	0	0	0	8	0	0	0	0	0	0	8	30
Total	1	0	16	0	0	0	0	0	1	49	0	3	0	0	34	0	0	0	0	0	0	40	144
05:00 PM	0	0	4	0	0	0	0	0	0	14	0	3	0	0	7	0	0	0	0	0	0	18	46
05:15 PM	0	0	4	0	0	0	0	0	0	11	0	5	0	0	4	0	0	0	0	0	0	11	35
05:30 PM	0	0	6	0	0	1	0	0	0	26	0	0	0	0	10	0	0	0	0	0	0	15	58
05:45 PM	0	0	11	0	0	0	0	0	0	11	0	5	0	0	4	0	0	0	0	0	0	6	37
Total	0	0	25	0	0	1	0	0	0	62	0	13	0	0	25	0	0	0	0	0	0	50	176
Grand Total	1	0	41	0	0	1	0	0	1	111	0	16	0	0	59	0	0	0	0	0	0	90	320
Apprch %	2.4	0	97.6	0	0	0.9	0	0	0.9	98.2	0	21.3	0	0	78.7	0	0	0	0	0	0	100	
Total %	0.3	0	12.8	0	0	0.3	0	0	0.3	34.7	0	5	0	0	18.4	0	0	0	0	0	0	28.1	

	South Huntington Avenue From North						Hospital Entrance From East						South Huntington Avenue From South						Driveways North/South From West								
Start Time	Right (N)	Right (S)	Thru	Left	Peds	App. Total	Right	Thru (N)	Thru (S)	Left	Peds	App. Total	Right	Thru	Left (N)	Left (S)	Peds (Cross walk)	App. Total	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																											
Peak Hour for Entire Intersection Begins at 05:00 PM																											
05:00 PM	0	0	4	0	0	4	0	0	0	0	14	14	0	3	0	0	7	**10**	0	0	0	0	0	0	**18**	**18**	46
05:15 PM	0	0	4	0	0	4	0	0	0	0	11	11	0	**5**	0	0	4	9	0	0	0	0	0	0	11	11	35
05:30 PM	0	0	6	0	0	6	**1**	0	0	0	**26**	**27**	0	0	0	0	**10**	10	0	0	0	0	0	0	15	15	**58**
05:45 PM	0	0	**11**	0	0	**11**	0	0	0	0	11	11	0	5	0	0	4	9	0	0	0	0	0	0	6	6	37
Total Volume	0	0	25	0	0	25	1	0	0	0	62	63	0	13	0	0	25	38	0	0	0	0	0	0	50	50	176
% App. Total	0	0	100	0	0		1.6	0	0	0	98.4		0	34.2	0	0	65.8		0	0	0	0	0	0	100		
PHF	.000	.000	.568	.000	.000	.568	.250	.000	.000	.000	.596	.583	.000	.650	.000	.000	.625	.950	.000	.000	.000	.000	.000	.000	.694	.694	.759

N/S: South Huntington Avenue
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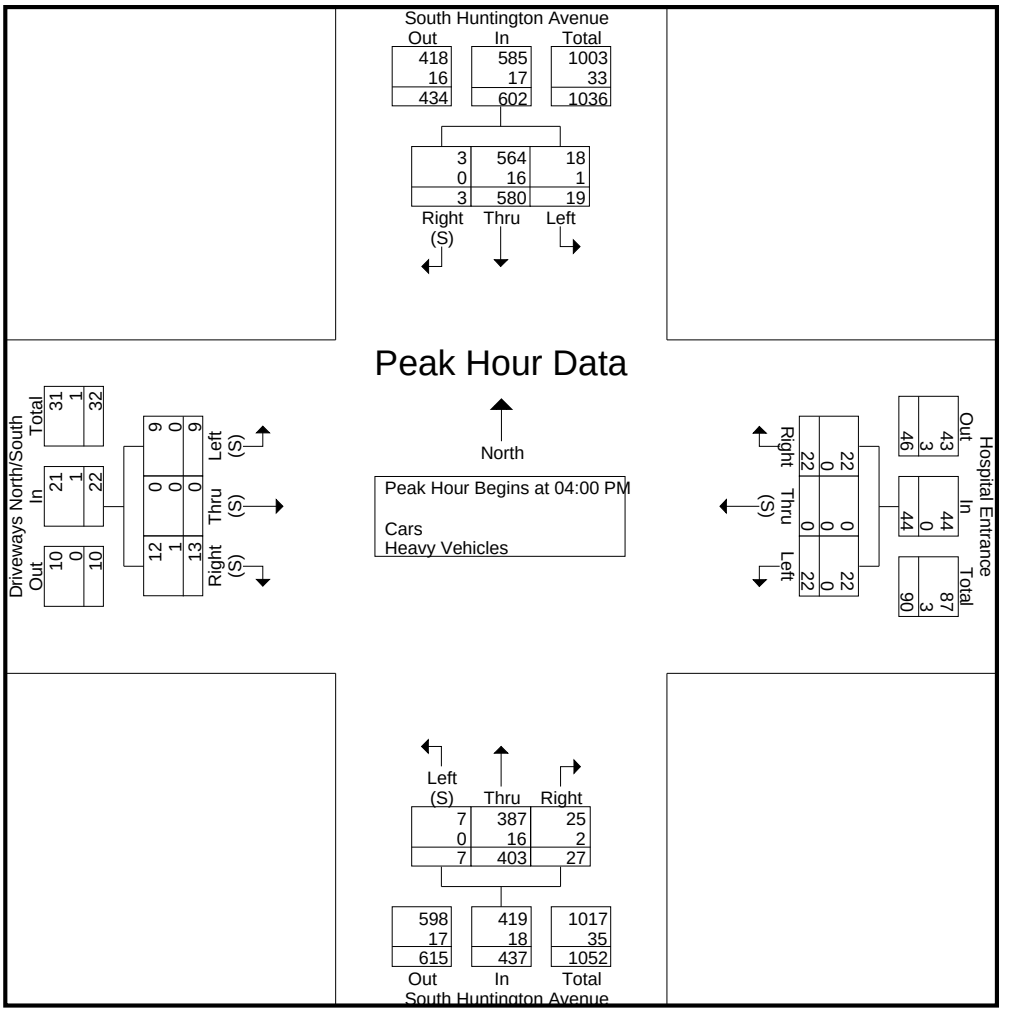
	South Huntington Avenue From North					Hospital Entrance From East					South Huntington Avenue From South					Driveways North/South From West							
Start Time	Right (N)	Right (S)	Thru	Left	App. Total	Right	Thru (N)	Thru (S)	Left	App. Total	Right	Thru	Left (N)	Left (S)	App. Total	Right (N)	Right (S)	Thru (N)	Thru (S)	Left (N)	Left (S)	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																							
Peak Hour for Entire Intersection Begins at 04:00 PM																							
04:00 PM	0	0	**154**	4	**158**	6	0	0	3	9	**8**	102	**2**	**1**	113	**4**	**4**	0	0	1	**1**	**10**	290
04:15 PM	**2**	0	147	**7**	156	5	0	0	6	11	5	90	0	1	96	0	1	0	0	**4**	0	5	268
04:30 PM	1	0	149	4	154	**9**	0	0	**7**	**16**	7	**118**	1	0	**126**	0	1	0	0	2	0	3	**299**
04:45 PM	0	0	130	4	134	2	0	0	6	8	7	93	2	0	102	0	3	0	0	0	1	4	248
Total Volume	3	0	580	19	602	22	0	0	22	44	27	403	5	2	437	4	9	0	0	7	2	22	1105
% App. Total	0.5	0	96.3	3.2		50	0	0	50		6.2	92.2	1.1	0.5		18.2	40.9	0	0	31.8	9.1		
PHF	.375	.000	.942	.679	.953	.611	.000	.000	.786	.688	.844	.854	.625	.500	.867	.250	.563	.000	.000	.438	.500	.550	.924
Cars	3	0	564	18	585	22	0	0	22	44	25	387	5	2	419	4	8	0	0	7	2	21	1069
% Cars	100	0	97.2	94.7	97.2	100	0	0	100	100	92.6	96.0	100	100	95.9	100	88.9	0	0	100	100	95.5	96.7
Heavy Vehicles	0	0	16	1	17	0	0	0	0	0	2	16	0	0	18	0	1	0	0	0	0	1	36
% Heavy Vehicles	0	0	2.8	5.3	2.8	0	0	0	0	0	7.4	4.0	0	0	4.1	0	11.1	0	0	0	0	4.5	3.3



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N/S: South Huntington Avenue
E/W: Bynner Street
City, State: Jamaica Plain, MA
Client: HSH/ J. SanClemente

File Name : 112790 B
Site Code : 2011196
Start Date : 2/2/2012
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	South Huntington Avenue From North			Bynner Street From East			South Huntington Avenue From South			Bynner Street From West			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00 AM	7	53	2	11	10	3	4	174	9	8	12	34	327
07:15 AM	17	46	5	36	11	3	3	178	9	8	5	51	372
07:30 AM	21	53	1	31	13	2	0	176	12	15	9	54	387
07:45 AM	17	70	5	17	11	2	3	163	17	16	13	40	374
Total	62	222	13	95	45	10	10	691	47	47	39	179	1460
08:00 AM	14	51	0	15	13	3	3	174	15	11	10	41	350
08:15 AM	21	55	3	19	9	5	5	150	17	16	13	42	355
08:30 AM	12	59	2	17	5	1	6	160	10	11	16	48	347
08:45 AM	8	52	2	40	8	1	9	157	10	7	16	58	368
Total	55	217	7	91	35	10	23	641	52	45	55	189	1420
Grand Total	117	439	20	186	80	20	33	1332	99	92	94	368	2880
Apprch %	20.3	76.2	3.5	65	28	7	2.3	91	6.8	16.6	17	66.4	
Total %	4.1	15.2	0.7	6.5	2.8	0.7	1.1	46.2	3.4	3.2	3.3	12.8	
Cars	114	370	19	177	79	20	33	1252	96	92	94	364	2710
% Cars	97.4	84.3	95	95.2	98.8	100	100	94	97	100	100	98.9	94.1
Heavy Vehicles	3	69	1	9	1	0	0	80	3	0	0	4	170
% Heavy Vehicles	2.6	15.7	5	4.8	1.2	0	0	6	3	0	0	1.1	5.9

	South Huntington Avenue From North				Bynner Street From East				South Huntington Avenue From South				Bynner Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	17	46	**5**	68	**36**	11	**3**	**50**	**3**	**178**	9	190	8	5	51	64	372
07:30 AM	**21**	53	1	75	31	**13**	2	46	0	176	12	188	15	9	**54**	**78**	**387**
07:45 AM	17	**70**	5	**92**	17	11	2	30	3	163	**17**	183	**16**	**13**	40	69	374
08:00 AM	14	51	0	65	15	13	3	31	3	174	15	**192**	11	10	41	62	350
Total Volume	69	220	11	300	99	48	10	157	9	691	53	753	50	37	186	273	1483
% App. Total	23	73.3	3.7		63.1	30.6	6.4		1.2	91.8	7		18.3	13.6	68.1		
PHF	.821	.786	.550	.815	.688	.923	.833	.785	.750	.971	.779	.980	.781	.712	.861	.875	.958
Cars	68	187	10	265	97	48	10	155	9	662	51	722	50	37	184	271	1413
% Cars	98.6	85.0	90.9	88.3	98.0	100	100	98.7	100	95.8	96.2	95.9	100	100	98.9	99.3	95.3
Heavy Vehicles	1	33	1	35	2	0	0	2	0	29	2	31	0	0	2	2	70
% Heavy Vehicles	1.4	15.0	9.1	11.7	2.0	0	0	1.3	0	4.2	3.8	4.1	0	0	1.1	0.7	4.7

N/S: South Huntington Avenue
E/W: Bynner Street
City, State: Jamaica Plain, MA
Client: HSH/ J. SanClemente

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File Name : 112790 B
Site Code : 2011196
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Groups Printed- Cars

	South Huntington Avenue From North			Bynner Street From East			South Huntington Avenue From South			Bynner Street From West			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00 AM	6	41	2	11	10	3	4	161	9	8	12	34	301
07:15 AM	17	36	4	36	11	3	3	169	8	8	5	51	351
07:30 AM	20	49	1	30	13	2	0	169	11	15	9	54	373
07:45 AM	17	61	5	17	11	2	3	159	17	16	13	39	360
Total	60	187	12	94	45	10	10	658	45	47	39	178	1385
08:00 AM	14	41	0	14	13	3	3	165	15	11	10	40	329
08:15 AM	21	44	3	18	8	5	5	139	16	16	13	41	329
08:30 AM	11	54	2	16	5	1	6	149	10	11	16	48	329
08:45 AM	8	44	2	35	8	1	9	141	10	7	16	57	338
Total	54	183	7	83	34	10	23	594	51	45	55	186	1325
Grand Total	114	370	19	177	79	20	33	1252	96	92	94	364	2710
Apprch %	22.7	73.6	3.8	64.1	28.6	7.2	2.4	90.7	7	16.7	17.1	66.2	
Total %	4.2	13.7	0.7	6.5	2.9	0.7	1.2	46.2	3.5	3.4	3.5	13.4	

	South Huntington Avenue From North				Bynner Street From East				South Huntington Avenue From South				Bynner Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	17	36	4	57	**36**	11	**3**	**50**	**3**	**169**	8	180	8	5	51	64	351
07:30 AM	**20**	49	1	70	30	**13**	2	45	0	169	11	180	15	9	**54**	**78**	**373**
07:45 AM	17	**61**	**5**	**83**	17	11	2	30	3	159	**17**	179	**16**	**13**	39	68	360
08:00 AM	14	41	0	55	14	13	3	30	3	165	15	**183**	11	10	40	61	329
Total Volume	68	187	10	265	97	48	10	155	9	662	51	722	50	37	184	271	1413
% App. Total	25.7	70.6	3.8		62.6	31	6.5		1.2	91.7	7.1		18.5	13.7	67.9		
PHF	.850	.766	.500	.798	.674	.923	.833	.775	.750	.979	.750	.986	.781	.712	.852	.869	.947

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Groups Printed- Heavy Vehicles

	South Huntington Avenue From North			Bynner Street From East			South Huntington Avenue From South			Bynner Street From West			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00 AM	1	12	0	0	0	0	0	13	0	0	0	0	26
07:15 AM	0	10	1	0	0	0	0	9	1	0	0	0	21
07:30 AM	1	4	0	1	0	0	0	7	1	0	0	0	14
07:45 AM	0	9	0	0	0	0	0	4	0	0	0	1	14
Total	2	35	1	1	0	0	0	33	2	0	0	1	75
08:00 AM	0	10	0	1	0	0	0	9	0	0	0	1	21
08:15 AM	0	11	0	1	1	0	0	11	1	0	0	1	26
08:30 AM	1	5	0	1	0	0	0	11	0	0	0	0	18
08:45 AM	0	8	0	5	0	0	0	16	0	0	0	1	30
Total	1	34	0	8	1	0	0	47	1	0	0	3	95
Grand Total	3	69	1	9	1	0	0	80	3	0	0	4	170
Apprch %	4.1	94.5	1.4	90	10	0	0	96.4	3.6	0	0	100	
Total %	1.8	40.6	0.6	5.3	0.6	0	0	47.1	1.8	0	0	2.4	

	South Huntington Avenue From North				Bynner Street From East				South Huntington Avenue From South				Bynner Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	10	0	10	1	0	0	1	0	9	0	9	0	0	**1**	**1**	21
08:15 AM	0	**11**	0	**11**	1	**1**	0	2	0	11	**1**	12	0	0	1	1	26
08:30 AM	**1**	5	0	6	1	0	0	1	0	11	0	11	0	0	0	0	18
08:45 AM	0	8	0	8	**5**	0	0	**5**	0	**16**	0	**16**	0	0	1	1	**30**
Total Volume	1	34	0	35	8	1	0	9	0	47	1	48	0	0	3	3	95
% App. Total	2.9	97.1	0		88.9	11.1	0		0	97.9	2.1		0	0	100		
PHF	.250	.773	.000	.795	.400	.250	.000	.450	.000	.734	.250	.750	.000	.000	.750	.750	.792

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Groups Printed- Peds and Bicycles

	South Huntington Avenue From North				Bynner Street From East				South Huntington Avenue From South				Bynner Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	4	0	0	0	1	0	4	0	1	0	0	0	0	10
07:15 AM	0	1	0	3	0	0	0	2	1	4	0	2	0	0	0	2	15
07:30 AM	0	0	0	11	1	0	0	8	0	5	0	8	0	0	0	3	36
07:45 AM	0	1	0	4	0	1	0	6	0	8	0	11	0	0	1	9	41
Total	0	2	0	22	1	1	0	17	1	21	0	22	0	0	1	14	102
08:00 AM	0	1	0	3	0	0	0	3	0	6	0	6	0	0	0	2	21
08:15 AM	0	0	0	8	0	0	0	8	0	4	0	13	0	0	0	9	42
08:30 AM	0	0	0	3	0	0	0	1	0	4	0	8	0	0	0	6	22
08:45 AM	0	1	0	1	1	1	0	8	0	5	0	9	0	0	1	1	28
Total	0	2	0	15	1	1	0	20	0	19	0	36	0	0	1	18	113
Grand Total	0	4	0	37	2	2	0	37	1	40	0	58	0	0	2	32	215
Apprch %	0	9.8	0	90.2	4.9	4.9	0	90.2	1	40.4	0	58.6	0	0	5.9	94.1	
Total %	0	1.9	0	17.2	0.9	0.9	0	17.2	0.5	18.6	0	27	0	0	0.9	14.9	

	South Huntington Avenue From North					Bynner Street From East					South Huntington Avenue From South					Bynner Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	**11**	**11**	**1**	0	0	**8**	**9**	0	5	0	8	13	0	0	0	3	3	36
07:45 AM	0	**1**	0	4	5	0	**1**	0	6	7	0	**8**	0	11	**19**	0	0	**1**	**9**	**10**	41
08:00 AM	0	1	0	3	4	0	0	0	3	3	0	6	0	6	12	0	0	0	2	2	21
08:15 AM	0	0	0	8	8	0	0	0	8	8	0	4	0	**13**	17	0	0	0	9	9	**42**
Total Volume	0	2	0	26	28	1	1	0	25	27	0	23	0	38	61	0	0	1	23	24	140
% App. Total	0	7.1	0	92.9		3.7	3.7	0	92.6		0	37.7	0	62.3		0	0	4.2	95.8		
PHF	.000	.500	.000	.591	.636	.250	.250	.000	.781	.750	.000	.719	.000	.731	.803	.000	.000	.250	.639	.600	.833

N/S: South Huntington Avenue
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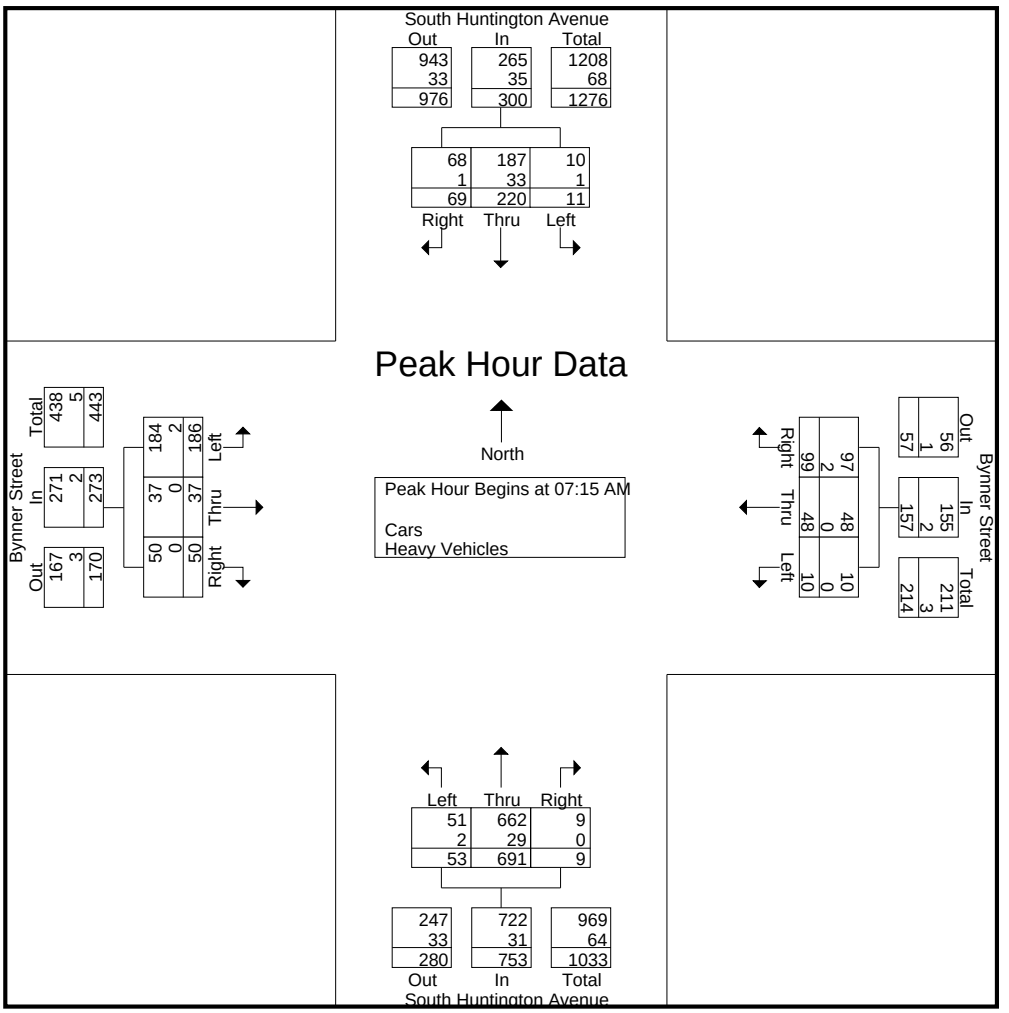
	South Huntington Avenue From North				Bynner Street From East				South Huntington Avenue From South				Bynner Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	17	46	**5**	68	**36**	11	**3**	**50**	**3**	**178**	9	190	8	5	51	64	372
07:30 AM	**21**	53	1	75	31	**13**	2	46	0	176	12	188	15	9	**54**	**78**	**387**
07:45 AM	17	**70**	5	**92**	17	11	2	30	3	163	**17**	183	**16**	**13**	40	69	374
08:00 AM	14	51	0	65	15	13	3	31	3	174	15	**192**	11	10	41	62	350
Total Volume	69	220	11	300	99	48	10	157	9	691	53	753	50	37	186	273	1483
% App. Total	23	73.3	3.7		63.1	30.6	6.4		1.2	91.8	7		18.3	13.6	68.1		
PHF	.821	.786	.550	.815	.688	.923	.833	.785	.750	.971	.779	.980	.781	.712	.861	.875	.958
Cars	68	187	10	265	97	48	10	155	9	662	51	722	50	37	184	271	1413
% Cars	98.6	85.0	90.9	88.3	98.0	100	100	98.7	100	95.8	96.2	95.9	100	100	98.9	99.3	95.3
Heavy Vehicles	1	33	1	35	2	0	0	2	0	29	2	31	0	0	2	2	70
% Heavy Vehicles	1.4	15.0	9.1	11.7	2.0	0	0	1.3	0	4.2	3.8	4.1	0	0	1.1	0.7	4.7



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N/S: South Huntington Avenue
E/W: Bynner Street
City, State: Jamaica Plain, MA
Client: HSH/ J. SanClemente

File Name : 112790 BB
Site Code : 2011196
Start Date : 2/2/2012
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Groups Printed- Cars - Heavy Vehicles

	South Huntington Avenue From North			Bynner Street From East			South Huntington Avenue From South			Bynner Street From West			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
04:00 PM	67	111	6	2	15	1	5	73	9	20	19	10	338
04:15 PM	59	104	2	3	10	5	5	76	20	21	19	8	332
04:30 PM	67	102	19	2	10	6	2	85	4	14	19	14	344
04:45 PM	59	84	3	2	17	2	8	81	14	25	13	9	317
Total	252	401	30	9	52	14	20	315	47	80	70	41	1331
05:00 PM	49	78	4	3	17	1	2	68	11	22	18	11	284
05:15 PM	48	74	3	3	23	6	4	83	16	30	29	11	330
05:30 PM	50	86	5	2	15	5	8	75	15	31	25	5	322
05:45 PM	38	80	12	5	22	7	4	70	7	25	25	9	304
Total	185	318	24	13	77	19	18	296	49	108	97	36	1240
Grand Total	437	719	54	22	129	33	38	611	96	188	167	77	2571
Apprch %	36.1	59.4	4.5	12	70.1	17.9	5.1	82	12.9	43.5	38.7	17.8	
Total %	17	28	2.1	0.9	5	1.3	1.5	23.8	3.7	7.3	6.5	3	
Cars	422	684	54	20	127	30	38	575	96	187	166	76	2475
% Cars	96.6	95.1	100	90.9	98.4	90.9	100	94.1	100	99.5	99.4	98.7	96.3
Heavy Vehicles	15	35	0	2	2	3	0	36	0	1	1	1	96
% Heavy Vehicles	3.4	4.9	0	9.1	1.6	9.1	0	5.9	0	0.5	0.6	1.3	3.7

	South Huntington Avenue From North				Bynner Street From East				South Huntington Avenue From South				Bynner Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**67**	**111**	6	184	2	15	1	18	5	73	9	87	20	**19**	10	**49**	338
04:15 PM	59	104	2	165	**3**	10	5	18	5	76	**20**	101	21	19	8	48	332
04:30 PM	67	102	**19**	**188**	2	10	**6**	18	2	**85**	4	91	14	19	**14**	47	**344**
04:45 PM	59	84	3	146	2	**17**	2	**21**	**8**	81	14	**103**	**25**	13	9	47	317
Total Volume	252	401	30	683	9	52	14	75	20	315	47	382	80	70	41	191	1331
% App. Total	36.9	58.7	4.4		12	69.3	18.7		5.2	82.5	12.3		41.9	36.6	21.5		
PHF	.940	.903	.395	.908	.750	.765	.583	.893	.625	.926	.588	.927	.800	.921	.732	.974	.967
Cars	243	381	30	654	7	51	11	69	20	296	47	363	79	69	41	189	1275
% Cars	96.4	95.0	100	95.8	77.8	98.1	78.6	92.0	100	94.0	100	95.0	98.8	98.6	100	99.0	95.8
Heavy Vehicles	9	20	0	29	2	1	3	6	0	19	0	19	1	1	0	2	56
% Heavy Vehicles	3.6	5.0	0	4.2	22.2	1.9	21.4	8.0	0	6.0	0	5.0	1.3	1.4	0	1.0	4.2

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File Name : 112790 BB
Site Code : 2011196
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Groups Printed- Cars

	South Huntington Avenue From North			Bynner Street From East			South Huntington Avenue From South			Bynner Street From West			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
04:00 PM	66	106	6	2	15	1	5	70	9	20	18	10	328
04:15 PM	59	97	2	1	10	3	5	68	20	20	19	8	312
04:30 PM	63	98	19	2	10	5	2	82	4	14	19	14	332
04:45 PM	55	80	3	2	16	2	8	76	14	25	13	9	303
Total	243	381	30	7	51	11	20	296	47	79	69	41	1275
05:00 PM	48	75	4	3	17	1	2	66	11	22	18	11	278
05:15 PM	47	72	3	3	23	6	4	77	16	30	29	10	320
05:30 PM	47	80	5	2	14	5	8	69	15	31	25	5	306
05:45 PM	37	76	12	5	22	7	4	67	7	25	25	9	296
Total	179	303	24	13	76	19	18	279	49	108	97	35	1200
Grand Total	422	684	54	20	127	30	38	575	96	187	166	76	2475
Apprch %	36.4	59	4.7	11.3	71.8	16.9	5.4	81.1	13.5	43.6	38.7	17.7	
Total %	17.1	27.6	2.2	0.8	5.1	1.2	1.5	23.2	3.9	7.6	6.7	3.1	

	South Huntington Avenue From North				Bynner Street From East				South Huntington Avenue From South				Bynner Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**66**	**106**	6	178	**2**	15	1	18	5	70	9	84	20	18	10	**48**	328
04:15 PM	59	97	2	158	1	10	3	14	5	68	**20**	93	20	**19**	8	47	312
04:30 PM	63	98	**19**	**180**	2	10	**5**	17	2	**82**	4	88	14	19	**14**	47	**332**
04:45 PM	55	80	3	138	2	**16**	2	**20**	**8**	76	14	**98**	**25**	13	9	47	303
Total Volume	243	381	30	654	7	51	11	69	20	296	47	363	79	69	41	189	1275
% App. Total	37.2	58.3	4.6		10.1	73.9	15.9		5.5	81.5	12.9		41.8	36.5	21.7		
PHF	.920	.899	.395	.908	.875	.797	.550	.863	.625	.902	.588	.926	.790	.908	.732	.984	.960

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Groups Printed- Heavy Vehicles

	South Huntington Avenue From North			Bynner Street From East			South Huntington Avenue From South			Bynner Street From West			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
04:00 PM	1	5	0	0	0	0	0	3	0	0	1	0	10
04:15 PM	0	7	0	2	0	2	0	8	0	1	0	0	20
04:30 PM	4	4	0	0	0	1	0	3	0	0	0	0	12
04:45 PM	4	4	0	0	1	0	0	5	0	0	0	0	14
Total	9	20	0	2	1	3	0	19	0	1	1	0	56
05:00 PM	1	3	0	0	0	0	0	2	0	0	0	0	6
05:15 PM	1	2	0	0	0	0	0	6	0	0	0	1	10
05:30 PM	3	6	0	0	1	0	0	6	0	0	0	0	16
05:45 PM	1	4	0	0	0	0	0	3	0	0	0	0	8
Total	6	15	0	0	1	0	0	17	0	0	0	1	40
Grand Total	15	35	0	2	2	3	0	36	0	1	1	1	96
Apprch %	30	70	0	28.6	28.6	42.9	0	100	0	33.3	33.3	33.3	
Total %	15.6	36.5	0	2.1	2.1	3.1	0	37.5	0	1	1	1	

	South Huntington Avenue From North				Bynner Street From East				South Huntington Avenue From South				Bynner Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	1	5	0	6	0	0	0	0	0	3	0	3	0	**1**	0	**1**	10
04:15 PM	0	**7**	0	7	**2**	0	**2**	**4**	0	**8**	0	**8**	**1**	0	0	1	**20**
04:30 PM	**4**	4	0	**8**	0	0	1	1	0	3	0	3	0	0	0	0	12
04:45 PM	4	4	0	8	0	**1**	0	1	0	5	0	5	0	0	0	0	14
Total Volume	9	20	0	29	2	1	3	6	0	19	0	19	1	1	0	2	56
% App. Total	31	69	0		33.3	16.7	50		0	100	0		50	50	0		
PHF	.563	.714	.000	.906	.250	.250	.375	.375	.000	.594	.000	.594	.250	.250	.000	.500	.700

N/S: South Huntington Avenue
E/W: Bynner Street
City, State: Jamaica Plain, MA
Client: HSH/ J. SanClemente

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
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File Name : 112790 BB
Site Code : 2011196
Start Date : 2/2/2012
Page No : 1

Groups Printed- Peds and Bicycles

	South Huntington Avenue From North				Bynner Street From East				South Huntington Avenue From South				Bynner Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	4	0	3	0	0	0	5	0	0	0	5	0	0	0	4	21
04:15 PM	0	1	0	13	0	0	0	6	0	1	0	1	0	0	0	8	30
04:30 PM	1	4	0	3	0	0	0	5	0	1	0	3	0	1	0	8	26
04:45 PM	0	3	0	6	0	0	0	5	0	0	0	2	0	0	0	7	23
Total	1	12	0	25	0	0	0	21	0	2	0	11	0	1	0	27	100
05:00 PM	0	2	1	10	1	0	0	6	0	1	0	4	0	0	0	7	32
05:15 PM	0	2	1	2	0	2	0	4	0	6	0	7	0	0	0	4	28
05:30 PM	0	3	0	8	0	0	0	7	0	2	0	7	0	1	0	3	31
05:45 PM	0	8	2	9	0	0	1	8	0	4	0	2	0	0	0	4	38
Total	0	15	4	29	1	2	1	25	0	13	0	20	0	1	0	18	129
Grand Total	1	27	4	54	1	2	1	46	0	15	0	31	0	2	0	45	229
Apprch %	1.2	31.4	4.7	62.8	2	4	2	92	0	32.6	0	67.4	0	4.3	0	95.7	
Total %	0.4	11.8	1.7	23.6	0.4	0.9	0.4	20.1	0	6.6	0	13.5	0	0.9	0	19.7	

	South Huntington Avenue From North					Bynner Street From East					South Huntington Avenue From South					Bynner Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	2	1	**10**	13	**1**	0	0	6	7	0	1	0	4	5	0	0	0	**7**	**7**	32
05:15 PM	0	2	1	2	5	0	**2**	0	4	6	0	**6**	0	**7**	**13**	0	0	0	4	4	28
05:30 PM	0	3	0	8	11	0	0	0	7	7	0	2	0	7	9	0	**1**	0	3	4	31
05:45 PM	0	**8**	**2**	9	**19**	0	0	**1**	**8**	**9**	0	4	0	2	6	0	0	0	4	4	**38**
Total Volume	0	15	4	29	48	1	2	1	25	29	0	13	0	20	33	0	1	0	18	19	129
% App. Total	0	31.2	8.3	60.4		3.4	6.9	3.4	86.2		0	39.4	0	60.6		0	5.3	0	94.7		
PHF	.000	.469	.500	.725	.632	.250	.250	.250	.781	.806	.000	.542	.000	.714	.635	.000	.250	.000	.643	.679	.849

N/S: South Huntington Avenue
E/W: Bynner Street
City, State: Jamaica Plain, MA
Client: HSH/ J. SanClemente

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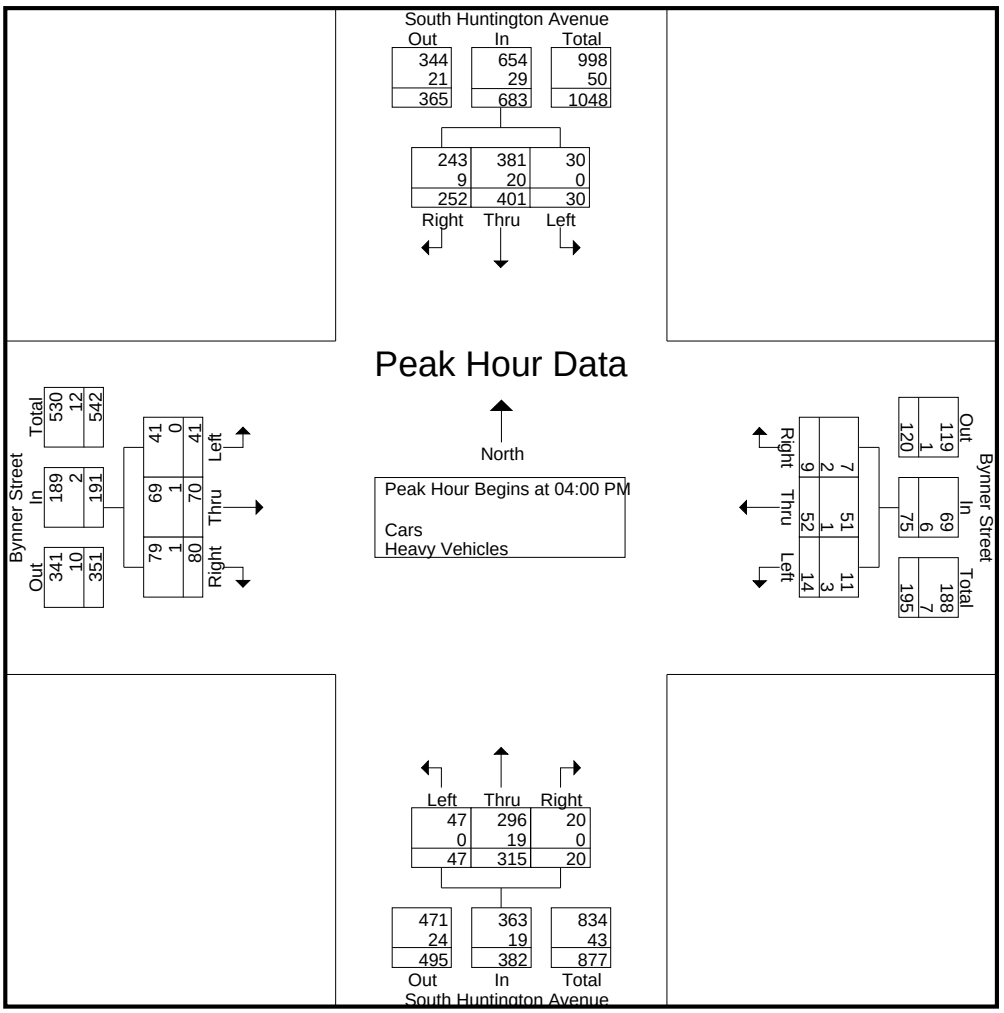
	South Huntington Avenue From North				Bynner Street From East				South Huntington Avenue From South				Bynner Street From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**67**	**111**	6	184	2	15	1	18	5	73	9	87	20	**19**	10	**49**	338
04:15 PM	59	104	2	165	**3**	10	5	18	5	76	**20**	101	21	19	8	48	332
04:30 PM	67	102	**19**	**188**	2	10	**6**	18	2	**85**	4	91	14	19	**14**	47	**344**
04:45 PM	59	84	3	146	2	**17**	2	**21**	**8**	81	14	**103**	**25**	13	9	47	317
Total Volume	252	401	30	683	9	52	14	75	20	315	47	382	80	70	41	191	1331
% App. Total	36.9	58.7	4.4		12	69.3	18.7		5.2	82.5	12.3		41.9	36.6	21.5		
PHF	.940	.903	.395	.908	.750	.765	.583	.893	.625	.926	.588	.927	.800	.921	.732	.974	.967
Cars	243	381	30	654	7	51	11	69	20	296	47	363	79	69	41	189	1275
% Cars	96.4	95.0	100	95.8	77.8	98.1	78.6	92.0	100	94.0	100	95.0	98.8	98.6	100	99.0	95.8
Heavy Vehicles	9	20	0	29	2	1	3	6	0	19	0	19	1	1	0	2	56
% Heavy Vehicles	3.6	5.0	0	4.2	22.2	1.9	21.4	8.0	0	6.0	0	5.0	1.3	1.4	0	1.0	4.2



161 South Huntington Avenue

Detailed Trip Generation Estimation - Proposed Project

Howard/Stein-Hudson Associates
February 29, 2012

USE THIS *Use Rate because there are fewer than 20 data points, there are multiple erratic points and the y-intercept is not close to 0

Component	Size	Category	Trip Rates (Trips/unit)	Directional Split	Unadjusted Vehicle Trips Rate*	Unadjusted Vehicle Trips Equation	National vehicle occupancy rate[1]	**Converted to Person trips**	Capture Rate	Person Trips less Capture Rate	Transit Share[2]	**Transit Trips**	Walk/Bike/ Other Share[2]	**Walk/ Bike/ Other Trips**	Vehicle Share[2]	Vehicle Person Trips	Local vehicle occupancy rate[3]	**Total Adjusted Vehicle Trips**
Daily Trip Generation																		
***Residential*[4]**	200	Total	4.95	100%		990	1.13	**1,119**	0%	1,119	16%	**179**	38%	**425**	46%	515	1.1	**468**
	units	In	2.48	50%		495	1.13	**559**	0%	559	16%	**89**	38%	**212**	46%	257	1.1	**234**
		Out	2.47	50%		495	1.13	**559**	0%	559	16%	**89**	38%	**212**	46%	257	1.1	**234**
AM Peak-hour Trip Generation																		
***Residential*[4]**	200	Total	0.35	100%	60	69	1.13	**68**	0%	68		**13**		**29**		25	1.1	**23**
	units	In	0.11	31%	19	21	1.13	**21**	0%	21	22%	**5**	39%	**8**	39%	8	1.1	**7**
		Out	0.24	69%	41	48	1.13	**46**	0%	46	18%	**8**	45%	**21**	37%	17	1.1	**15**
PM Peak-hour Trip Generation																		
***Residential*[4]**	200	Total	0.43	100%	78	85	1.13	**88**	0%	88		**17**		**37**		33	1.1	**30**
	units	In	0.25	58%	45	49	1.13	**51**	0%	51	18%	**9**	45%	**23**	37%	19	1.1	**17**
		Out	0.18	42%	33	36	1.13	**37**	0%	37	22%	**8**	39%	**14**	39%	14	1.1	**12**

Notes:

1. National vehicle occupancy rates based on the 2009 National Household Travel Survey.
2. Mode shares based on BTD data for Area 13
3. Local vehicle occupancy rates based on 2000 Census and 2009 National Household Travel Survey.
4. ITE Trip Generation, 8th Edition, LUC 222 (High-Rise Apartment), fitted curve equation - the daily rate for LUC 223 (Mid-Rise Apartment) is not available.
5. ITE Trip Generation, 8th Edition, LUC 223 (Mid-Rise Apartment), Average Rate

Appendix C

Air Quality Analysis

AIR QUALITY APPENDIX

Introduction

This Air Quality Appendix provides modeling assumptions and backup for results presented in Section 3.5 of the report. Included within this documentation is a brief description of the methodology employed along with pertinent calculations and data used in the emissions and dispersion calculations supporting the microscale air quality analyses.

Motor Vehicle Emissions

The EPA MOBILE6.2 computer program generated motor vehicle emissions used in the mobile source CAL3QHC modeling. The model input parameters were provided by MassDEP. Emission rates were derived for 2012 and 2017 for speed limits of 2.5, 10, 15, and 30 mph for use in the microscale analyses.

CAL3QHC

For the intersections studied, the CAL3QHC model was applied to calculate CO concentrations at sensitive receptor locations using emission rates derived in MOBILE6.2. The intersection's queue links and free flow links were input to the model along with sensitive receptors at all locations nearby each intersection. The meteorological assumptions input into the model were a 1.0 meter per second wind speed, Pasquill-Gifford Class D stability combined with a mixing height of 1000 meters. For each direction, the full range of wind directions at 10 degree intervals was examined. In addition, a surface roughness (z_0) of 175 cm was used for the intersection. Idle emission rates for queue links were based on 2.5 mph emission rates derived in MOBILE6.2 and converted from grams per mile to grams per hour. Emission rates for speeds of 10, 15, and 30 mph were used for right turn, left turn, and free flow links, respectively.

BRG Home for Little Wanderers, 161 South Huntington Ave.
Calculation of Microscale Modeling Emission Rates
Summary of MOBILE6.2 Output

Carbon Monoxide Only

Queues	Idle
Free Flow	30 mph
Right Turns	10 mph
Left Turns	15 mph

Summer	**2012**	**2017**	**Units**
Idle	32.245	27.355	g/hr
2.5 mph	12.898	10.942	g/mile
10 mph	5.783	4.952	g/mile
15 mph	4.897	4.185	g/mile
30 mph	4.017	3.397	g/mile

Winter	**2012**	**2017**	**Units**
Idle	50.753	43.320	g/hr
2.5 mph	20.301	17.328	g/mile
10 mph	10.920	9.468	g/mile
15 mph	9.803	8.531	g/mile
30 mph	8.727	7.636	g/mile

Due to excessive size AERMOD, CAL3QHC, and MOBILE6.2 input and output files are available on digital media upon request.

Appendix D

LEED Workplan

ADD Inc ARCHITECTURE + DESIGN

LEED for New Construction v3 WORKPLAN
161 S Huntington, Boston, MA 02130
February 7, 2012

	Credits and Description	Points Available	Points Attained: YES	MAYBE YES	MAYBE NO	NO	PHASE: DESIGN/ CONSTRUCTION	Responsibility: Primary	Secondary	Notes and Requirements
	SUSTAINABLE SITES (SS)									
	Prerequisites:									
	1.0 Construction Activity Pollution Prevention		X				C	GC/ Civil	GC	Create erosion and sedimentation control plan that conforms with EPA (or local) standards. GC to document via pictures and written log of compliance with control plan
	Credits:									
1	**Site Selection**	1	1				D	Architect	Civil	Site is previously developed
2	**Development Density & Community Connectivity**	5	5				D	Architect		Site is within 10 basic services & residential zones
3	**Brownfield Redevelopment**	1		1			D	Geotechnical	Architect	EPA Phase II Site Assessment. Also, achieved through MA Voluntary Cleanup Program (the Massachusetts Contingency Plan). Soil Precharacterization Report & RAM Plan will serve as the documentation.
4	**Alternative Transportation**									
	4.1 Public Transportation Access	6	6				D	Architect		Site meets requirement: 1/2 mile from commuter rail or 1/4 mile from bus stop.
	4.2 Bicycle Storage and Changing Rooms	1	1				D	Landscape/ Architect	Owner	BTD requirements for bike storage are more than what is required for LEED.
	4.3 Low-Emission & Fuel Efficient Vehicles	3	3				D	Architect	Owner	Provide preferred parking for fuel-efficient vehicles (hybrids, civic, corolla, etc) for 5% of parking capacity. "Preferred" is either closest to the entrance or provided at a 20% discounted price. What about providing car sharing services, like zipcar parking?
	4.4 Parking Capacity	2	2				D	Architect	Owner	Parking is under the BTD Zoning requirements. Zoning: 1-1.5 spaces per residential unit
5	**Site Development**									
	5.1 Protect or Restore Habitat	1		1			C	Landscape	Architect	
	5.2 Maximize Open Space	1		1			D	Landscape	Architect	Our project falls under CASE 3, no requirements for open space. We need to provide vegetated open space & pedestrian-oriented hardscape equal to 20% of the site area (as long as 25% of the open space is vegetated).
6	**Stormwater Design**									
	6.1 Quantity Control	1	1				D	Civil	Arch/ Landscape	Reduce volume of stormwater runoff by 25%. This will depend on stormwater retention req'ments from the State.
	6.2 Quality Control	1		1			D	Civil	Arch/ Landscape	Capture and treat 90% of stormwater to remove "suspended solids" pollutants. This will depend on stormwater retention and treatment req'ments from the State.
7	**Heat Island Effect**									
	7.1 Non-Roof	1	1				C	Landscape	Civil/ Architect	50% of site hardscape must consist of paving materials with a Solar Reflectance Index of at least 29, be shaded or open grid paving.
	7.2 Roof	1	1				D	Architect		75% of roof must have Solar Reflectance Index of at least 78 (white roof) OR install green roof for 50% of roof area. SRI values are referenced in the spec.
8	**Light Pollution Reduction**	1				1	D	Lighting Cons/Mech	Architect	Exterior lighting must comply with ASHRAE lighting power densities and overrides and shielding for interior lighting. Consider Lighting Fixtures inside bedrooms and common spaces.
	Total Sustainable Sites Points	26	21	4	0	1				
	WATER EFFICIENCY (WE)									
	Prerequisites:									
	1.0 Water Use Reduction						D			
	20% Reduction (from baseline water use)		X					Mechanical	Architect	Typically using high efficiency faucets and toilets can achieve 20% reduction. Calculations only have to include toilets, sinks and showers.
	Credits:									
1	**Water Efficient Landscaping**									
	1.1 Reduce by 50%	2		2			D	Landscape	Architect	Reduce potable water consumption for irrigation by 50%. Strategies include drip irrigation systems, planting native species, using recycled rainwater.
	1.2 No Potable Water Use or No Irrigation	2		2			D	Landscape	Architect	Use no potable water for irrigation excluding for temporary plant establishment.
2	Innovative Wastewater Technologies	2				2	D	Mech/Civil	Architect	Reduce potable water for building sewage by 50% with FLUSH fixtures only and water re-use (recycled rainwater, graywater, etc.) for building sewage conveyance.
3	**Water Use Reduction**									
	3.1- 30% Reduction (from baseline water use)	2	2				D	Mechanical	Architect	
	3.2- 35% Reduction (from baseline water use)	1		1			D	Mechanical	Architect	
	3.3 - 40% Reduction (from baseline water use)	1				1	D	Mechanical	Architect	Reduce potable water with low flush and flow fixtures and water re-use strategies.
	Total Water Efficiency Points	10	2	5	0	3				

LEED for New Construction v3 WORKPLAN
161 S Huntington, Boston, MA 02130
February 7, 2012

	Credits and Description	Points Available	Points Attained: YES	MAYBE YES	MAYBE NO	NO	PHASE: DESIGN/ CONSTRUCTION	Responsibility: Primary	Secondary	Notes and Requirements
	ENERGY AND ATMOSPHERE (EA)									
	Prerequisites:									
	1.0 Fundamental Commissioning of the Building Energy Systems		X				C	Owner/CxA	Architect	These building systems must be commissioned: HVAC&R, lighting controls, domestic hot water and renewable energy systems. Commissioning authority must be independent of the design team, but may be an employee of a design team firm.
	2.0 Minimum Energy Performance (ASHRAE 90.1-2007)		X				D	Mechanical	Architect	Minimum level of energy efficiency: 10% better than ASHRAE; whole bldg. computer energy model simulation
	3.0 Fundamental Refrigerant Management		X				D	Mechanical		Requires zero use of CFC-based refrigerants in HVAC&R systems.
	Credits:									
1	**Optimize Energy Performance**						D	Mechanical	Architect	Option 1: Whole bldg. computer energy simulation model
	Exceed ASHRAE 90.1 by 12% New bldg / 8% Exist bldg	1	1							
	Exceed ASHRAE 90.1 by 14% New bldg / 10% Exist bldg	1	1							
	Exceed ASHRAE 90.1 by 16% New bldg / 12% Exist bldg	1		1						
	Exceed ASHRAE 90.1 by 18% New bldg / 14% Exist bldg	1		1						
	Exceed ASHRAE 90.1 by 20% New bldg / 16% Exist bldg	1		1						
	Exceed ASHRAE 90.1 by 22% New bldg / 18% Exist bldg	1		1						
	Exceed ASHRAE 90.1 by 24% New bldg / 20% Exist bldg	1		1						
	Exceed ASHRAE 90.1 by 26% New bldg / 22% Exist bldg	1				1				
	Exceed ASHRAE 90.1 by 28% New bldg / 24% Exist bldg	1				1				
	Exceed ASHRAE 90.1 by 30% New bldg / 26% Exist bldg	1				1				
	Exceed ASHRAE 90.1 by 32% New bldg / 28% Exist bldg	1				1				
	Exceed ASHRAE 90.1 by 34% New bldg / 30% Exist bldg	1				1				
	Exceed ASHRAE 90.1 by 36% New bldg / 32% Exist bldg	1				1				
	Exceed ASHRAE 90.1 by 38% New bldg / 34% Exist bldg	1				1				
	Exceed ASHRAE 90.1 by 40% New bldg / 36% Exist bldg	1				1				
	Exceed ASHRAE 90.1 by 42% New bldg / 38% Exist bldg	1				1				
	Exceed ASHRAE 90.1 by 44% New bldg / 40% Exist bldg	1				1				
	Exceed ASHRAE 90.1 by 46% New bldg / 42% Exist bldg	1				1				
	Exceed ASHRAE 90.1 by 48% New bldg / 44% Exist bldg	1				1				
2	**On-Site Renewable Energy**						D	Mechanical	Architect	Install on-site renewable energy systems such as solar, wind, geothermal. Several funding programs for PV are available in Mass.
	1% of energy from on-site renewable energy systems	1				1				
	3% of energy from on-site renewable energy systems	1				1				
	5% of energy from on-site renewable energy systems	1				1				
	7% of energy from on-site renewable energy systems	1				1				
	9% of energy from on-site renewable energy systems	1				1				
	11% of energy from on-site renewable energy systems	1				1				
	13% of energy from on-site renewable energy systems	1				1				
3	**Enhanced Commissioning**	2		2			C	Owner/ CxA	Mech/Arch	Perform more advanced commissioning of building systems. Commissioning Authority must be a third-party independent of the design team.
4	**Enhanced Refrigerant Management**	2		2			D	Mechanical		Select refrigerants for HVAC&R systems that meet a threshold for minimizing contribution to ozone depletion and global warming.
5	**Measurement & Verification**	3		3			C	Owner	Mech/Arch	Develop and implement a measurement and verification plan for building and energy performance for at least one year of occupancy. Requires installation of metering equipment.
6	**Green Power**	2		2			C	Owner	Architect	Provide 35% of the building's electricity from renewable sources by engaging in a 2-year contract to purchase green power. **Cost for REC's is currently approx. $1.1.8/MWh**
	Total Energy and Atmosphere Points	**35**	**2**	**14**	**0**	**19**				
	MATERIALS & RESOURCES (MR)									
	Prerequisites:									
	1.0 Storage & Collection of Recyclables		X				D	Owner	Architect	Provide an area for storage of recyclables AND have in place a program to recycle at a minimum, paper, corrugated cardboard, glass, plastics and metals.
	Credits:									
1.1	**Building Reuse**						C	Architect		No building on site to be reused.
	Maintain 55% of Existing Walls, Floors, Roof	1				1				
	Maintain 75% of Existing Walls, Floors, Roof	1				1				
	Maintain 95% of Existing Walls, Floors, Roof	1				1				
1.2	**Building Reuse - Maintain 50% of Interior Non-Structural Elements**	1				1	C			
2	**Construction Waste Management**						C	GC	Architect	Requires that contractor track all construction waste and recycle 50% for 1 point and 75% for 2 points. Does not include soil and land debris.
	50% Recycled or Salvaged	1	1							
	75% Recycled or Salvaged	1	1							
3	**Materials Reuse**						C	Architect		Requires use of salvaged, refurbished or reused materials.
	5% (by cost) salvaged, refurbished or reused material	1				1				
	10% (by cost) salvaged, refurbished or reused material	1				1				
4	**Recycled Content**						C	Architect	GC	Specify materials with high recycled content. Typical examples include steel, drywall, carpet, ceiling tile, particleboard.
	10% by cost (post-consumer + 1/2 pre-consumer)	1	1							
	20% by cost (post-consumer + 1/2 pre-consumer)	1		1						
5	**Regional Materials**						C	Architect	GC	Specify materials extracted, processed and manufactured within 500 miles. Typical examples in our region include precast concrete, stone, wood products.
	10% (by cost) Extracted, Processed & Manufactured Regionally	1	1							
	20% (by cost) Extracted, Processed & Manufactured Regionally	1		1						
6	**Rapidly Renewable Materials**	1		1			C	Architect	GC	Specify rapidly renewable materials for 2.5% of total materials cost. Typical examples include linoleum flooring, bamboo, cork, strawboard core cabinetry.
7	**Certified Wood**	1		1			C	Architect	GC	Specify 50% of ALL wood-based materials as certified by the Forest Stewardship Council. Includes framing, blocking, sub-flooring and finish materials. Furniture may be excluded if desired.
	Sub Total Materials and Resources Issues	**14**	**4**	**4**	**0**	**6**				

LEED for New Construction v3 WORKPLAN
161 S Huntington, Boston, MA 02130
February 7, 2012

	Credits and Description	Points Available	Points Attained: YES	MAYBE YES	MAYBE NO	NO	PHASE: DESIGN/ CONSTRUCTION	Responsibility: Primary	Secondary	Notes and Requirements
	INDOOR ENVIRONMENTAL QUALITY (IEQ)									
	Prerequisites:									
	1.0 Minimum IAQ Performance (ASHRAE 62.1-2007)		X				D	Mechanical		Meet minimum requirements of ASHRAE 62.1-2007 for ventilation.
	2.0 Environmental Tobacco Smoke (ETS) Control		X				D	Architect	Owner	Prohibit smoking in the building, locate outdoor smoking areas 25' from entries, intakes and windows. Post no smoking signs at entries.
	Credits:									
1	**Outdoor Air Delivery Monitoring**	1				1	D	Mechanical	Arch	Install CO2 sensors in densely occupied spaces and monitor outdoor airflow in non-densely occupied spaces.
2	**Increased Ventilation**	1			1		D	Mechanical	Architect	Increase ventilation rates by at least 30% over ASHRAE 62.1-2007 and use CIBSE AM10 for natural ventilation.
3	**Construction IAQ Management Plan**									
	3.1 During Construction (SMACNA 2008)	1	1				C	GC	Mechanical	Contractor develops and implements an IAQ management plan during construction.
	3.2 Before Occupancy	1		1			C	GC	Mechanical	Post construction and prior to occupancy, conduct either building flush-out or air quality testing. Furniture should be installed, but not required.
4	**Low-Emitting Materials**									
	4.1 Adhesives & Sealants (VOC limits)	1	1				C	Architect	GC	Specify all adhesives and sealants used on the interior of the building to meet VOC limits.
	4.2 Paints & Coatings (VOC limits)	1	1				C	Architect	GC	Specify all paints and coatings (including primers, wood finishes, sealers, stains, etc) used on the interior of the building to meet VOC limits.
	4.3 Flooring Systems (CRI Green Label program and VOC limits)	1	1				C	Architect	GC	Specify all carpets (including cushions and adhesives) as certified by the Carpet and Rug Institute Green Label program.
	4.4 Composite Wood & Agrifiber Products (no added urea-formaldehyde resins)	1	1				C	Architect	GC	Specify all composite wood and agrifiber products (including particleboard, mdf, plywood) used on the interior of the building to contain no urea-formaldehyde resins.
5	**Indoor Chemical & Pollutant Source Control**	1	1				D	Architect	Mechanical	Install permanent walk-off mats at all main entries, exhaust all janitors closets and laundry room separately, and provide air filters in HVAC equipment with a MERV rating of 13 or better. Filter requirement may pose an energy and cost penalty.
6	**Controllability of Systems**									
	6.1 Lighting (individual controls for 90% of occupants)	1	1				D	Mech/ Lighting Cons.	Architect	Provide individual lighting controls for 90% of building occupants and provide controllability for each shared space.
	6.2 Thermal Comfort (individual controls for 50% of occupants)	1	1				D	Mechanical	Architect	Provide individual thermal comfort controls for 50% of occupants and provide controllability for each shared space. To comply: operable windows must be 4% of room SF and/or thermostats in lounge/workrooms and quiet study areas, and other shared spaces
7	**Thermal Comfort**									
	7.1 Design (ASHRAE 55-2004)	1		1			D	Mechanical	Architect	Design HVAC systems to meet ASHRAE 55-2004. Includes some humidity control requirements.
	7.2 Verification (implement thermal comfort survey and corrections)	1				1	D	Owner	Arch/Mech	Implement a thermal comfort survey of occupants within 6-18 months after occupancy, and develop a plan for corrective action if 20% are dissatisfied. Requires humidification control.
8	**Daylight and Views**									
	8.1 Daylight 75% of Regularly Occupied Areas	1			1		D	Lighting Consultant	Architect	computer simulation or prescriptive path or measurement or combo of all for 75% of regularly occupied spaces
	8.2 Views for 90% of Regularly Occupied Areas (direct line of sight via vision glazing)	1	1				D	Architect		Provide a direct line of sight to the outdoors through vision glazing for 90% of all regularly occupied areas. Should be achievable.
	Total Indoor Environment Quality Points	15	9	2	2	1				
	INNOVATION & DESIGN PROCESS (ID)									
1	**Innovation in Design**									Innovation credits are awarded by exceeding the requirements of certain LEED credits or by implementing innovative green strategies.
	1.1 Innovation credit	1	1				D/C	Owner	Architect	SS4.1 Exemplary Performance
	1.2 Innovation credit	1	1				D/C	Owner	Architect	SS7.1 Exemplary Performance
	1.3 Innovation credit	1	1				D/C	Owner	Architect	Energy Star Appliances
	1.4 Innovation credit	1		1			D/C	Owner	Architect	Green Housekeeping and Cleaning program; an Education Program
	1.5 Innovation credit	1		1			D/C	Owner	Architect	
2	**LEED Accredited Professional**	1	1				C	Architect	(or other)	One principal member of the project team shall be a LEED AP.
	Total Innovation & Design Process Points	6	4	2	0	0				
	REGIONAL PRIORITY CREDITS (RP)									For the Zip Code 02130: The regional priority credits are SS3, SS6.1, SS7.1, SS7.2, EA2 (1%), MR1.1 (75%)
	1.1 Regional Priority: Specific Credit	1	1				D	Owner	Architect	SS6.1, Stormwater Design, Quantity Control
	1.2 Regional Priority: Specific Credit	1	1				C	Owner	Architect	SS7.1, Heat Island, Non-roof
	1.3 Regional Priority: Specific Credit	1	1				D	Owner	Architect	SS7.2, Heat Island, Roof
	1.4 Regional Priority: Specific Credit	1		1			D	Owner	Architect	SS3, Brownfield Redevelopment
	Total Regional Priority Points	4	3	1	0	0				
	Grand Total LEED Points	110	45	32	2	30				

LEED CERTIFICATION LEVELS	PTS
Certified	40 to 49
Silver	50 to 59
Gold	60 to 79
Platinum	80 to 110