Goddard House

Renovation and Redevelopment

Expanded Project Notification Form

Submitted to
Boston Redevelopment Authority
One City Hall, 9th Floor
Boston, MA 02201

Proponent
Eden Properties LLC
1385 Cambridge Street
Cambridge, MA 02139

Samuels & Associates, Inc.
333 Newbury Street
Boston, MA 02115

In association with
Prellwitz Chilinski Associates, Inc.
Goulston & Storrs
Keith LeBlanc Landscape Architecture
McPhail Associates, LLC

Prepared by
vhb
99 High Street
Boston, MA 02110

November 2, 2015

November 2, 2015

Ref: 13187.00

Brian Golden, Director
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Re: Expanded Project Notification Form
Goddard House Renovation and Redevelopment
201-205 South Huntington Avenue, Jamaica Plain

Dear Director Golden:

Eden Properties LLC in partnership with Samuels & Associates, Inc. is pleased to submit an Expanded Project Notification Form for a residential project known as *Goddard House Renovation and Redevelopment* (the "Project") to be located in the Jamaica Plain neighborhood at 201-205 South Huntington Avenue on an approximately 2.0 acre parcel. The Project consists of the rehabilitation, expansion and adaptive re-use of an existing five-to-eight-story building and the construction of a new free-standing, multi-family residential building to create a total of 167 dwelling units, associated parking for bicycles and automobiles and open space improvements. At approximately 163,000 total square feet, the Project is subject to Large Project Review under Article 80B of the City of Boston Zoning Code. The Project is designed to be consistent with the guidelines set forth in the South Huntington Avenue Framework for Future Development Review.

We look forward to working with you and your staff in your review of the Project. If you have any questions or would like any additional information, please do not hesitate to contact me at 617-607-2972.

Sincerely,

Stephanie Kruel

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Boston, Massachusetts

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General Information and Project Description

Eden Properties LLC in partnership with Samuels & Associates, Inc. (the "Proponent") submits this Expanded Project Notification Form ("EPNF") to the Boston Redevelopment Authority (the "BRA") to initiate the Article 80B, Large Project Review process under the Boston Zoning Code (the "Zoning Code") for construction of a residential development at 201-205 South Huntington Avenue in Jamaica Plain (the "Project Site") consisting of the rehabilitation, expansion and conversion to residential use of a former nursing home and rehabilitation center, commonly known as Goddard House, and the construction of a new free-standing, multi-family residential building on a surface parking lot at the Project Site's southern end fronting on South Huntington Avenue. The Goddard House Renovation and Redevelopment will include a total of approximately 167 dwelling units, including approximately 110 dwelling units in the renovated Goddard House building, and approximately 57 dwelling units in the new building, covered and secure bike storage for approximately 170 bicycles, on-site bike repair stations, as well as approximately 83 parking spaces and open space improvements (the "Project").

Goddard House – a handsome 1920s brick structure designed by renowned Boston architects Shepley Bulfinch – sits on a two-acre hillside site along South Huntington Avenue and overlooking the Jamaicaway, historic Olmsted Park, and Leverett Pond. With adjacency to the vibrant and culturally diverse Jamaica Plain and Mission Hill communities, its access to transit and walkable services, the location is well-suited to add new apartments that can help meet the city's overwhelming demand for housing on an underutilized site.

Designed to be consistent with the development guidelines set forth in the South Huntington Avenue Framework for Future Development Review adopted by the Boston Redevelopment Authority in 2013, the Project preserves a historic resource (Goddard House) – defined in the Framework as an exceptional public benefit. Through an adaptive re-use of the property into two (2) mid-rise multi-family residential buildings, the Project creatively preserves the historic character of the Goddard House while overcoming the significant physical, programmatic, and financial challenges to re-using the existing building while maintaining views of the park through the Site.

The following chapter provides an overview of the existing site conditions, describes the Project and its public benefits, and identifies governmental permits and approvals that are anticipated to be required for the Project. This chapter also describes how the Project is consistent with applicable plans and policies.

1.1 Site Context and Existing Conditions

The Site consists of approximately 2.0 acres (87,187 square feet) at 201-205 South Huntington Avenue. Refer to Figures 1.1 and 1.2 for site location and context maps. The Site fronts South Huntington Avenue, while the Jamaicaway runs along the western (rear) edge of the Site. A new residential development on the Site of the former Home for Little Wanderers lies immediately to the north at 161 South Huntington Avenue, and the Mount Pleasant Home, an independent living facility, lies immediately to the south at 301 South Huntington Avenue. Across the street is the VA Hospital Parking Garage, three multi-family buildings, and a condominium building. The Project Site is well situated between iconic Olmstead Park, thriving Hyde Square and JP's Centre Street, and the Mission Hill business district. In close proximity to public transit, including the MBTA Green Line (Heath Street Station on the E line) and bus routes, providing convenient access to major job centers such as the Longwood Medical and Academic Area and Downtown Boston, with a Bike Score of 93, a Transit Score of 88, and a Walk Score of 84[1], the location lends itself to urban living without heavy reliance on personal automobiles.

Figure 1.3 shows the existing conditions and immediate surroundings of the Site. The Project Site is highly constrained, presenting many challenges to development. It exhibits extreme variations in grade, with a change in site elevation of 38 feet between South Huntington Avenue and the Jamaicaway. The lot is also an irregular shape, resembling a modified hourglass.

The Project Site includes the existing Goddard House as well as a surface parking lot. The Goddard House was built in 1926, with a major addition completed in 1931. The building was operated as the Home for Aged Women under several names (Association for Aged and Indigent Females, the Association for the Relief of Aged and Indigent Females, Winchester House), until it became known as the Goddard House Assisted Living Center in 1980. Operations ceased in 2012, and the building has remained vacant for the past approximately three years. The adaptive re-use of the building to multi-family housing is extremely challenging as a result of its narrow depth. The Project also faces a significant structural deficiency based on current codes that results from removing the interior walls of the corridor and rooms to reprogram the building for residential use. See Figure 1.4 for existing conditions photos.

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[1] From www.walkscore.com: A Bike Score of 93 indicates a mostly flat area with excellent bike lanes. A Transit Score of 88 indicates excellent transit, where transit is convenient for most trips. A Walk Score of 84 indicates a very walkable area where most errands can be accomplished on foot.

1.2 Project Description

The Project includes the renovation and expansion of the Goddard House as well as construction of a new residential building (the "New Structure"). The Project will include a total of approximately 167 dwelling units, including approximately 110 dwelling units in the renovated Goddard House building, and approximately 57 dwelling units in the new building. The Project also includes indoor and outdoor bicycle parking (approximately 180 spaces total) and a combination of covered and surface vehicle parking (approximately 83 spaces total). Open space improvements will include a landscape buffer in front of the building with new street trees to improve the pedestrian realm. See Figure 1.5 for a site plan of the Proposed Project.

1.2.1 Building Program

The building program outlined below includes the existing Goddard House with proposed additions as well as the new structure.

TABLE 1.1 PROPOSED DEVELOPMENT PROGRAM (ALL FIGURES APPROXIMATE)

	Goddard House	New Structure	Total
Land Area	--		87,187 SF
Gross Square Footage	114,004	49,000	163,004 SF
Residential Units	110	57	167
Accessible units	--		9
Parking (0.5/unit)	--		83
Indoor Bicycle Parking	--		170
Outdoor Bicycle Parking	--		10

1.2.2 Schedule

The Project is anticipated to start construction in summer 2016.

1.2.3 Summary of Public Benefits

Project-related public benefits include the preservation and adaptive re-use of Goddard House (which has been vacant for three years), urban design and public realm improvements, new affordable housing units, a series of transportation benefits, landscaping improvements, and environmental/sustainability benefits as summarized below.

Renovation of the Goddard House

The proposed Project will retain the vacant 1926 building, while expanding the available space to create a modern residential community. The distinctive visual presence of the Goddard House will be maintained through thoughtful siting, use of complementary materials, and architectural designs that ensure the original Goddard House remains the tallest building element on the property. Preservation of Goddard House –a neighborhood historic resource-

is defined as an "Exceptional Public Benefit" under the South Huntington Avenue Framework for Development Corridor Guidelines.

Urban Design and Public Realm Improvements

Despite the building's prominent location and design, visibility of the Goddard House property from the Jamaicaway is limited due to the area's topography, development patterns, and predominance of mature trees. The Jamaicaway is lined on both sides with mature trees, which obstruct the view of the rear of the property from Olmsted Park. The slight curvature of South Huntington Avenue limits views toward the Project Site to approximately a block in each direction.

Nevertheless, urban design considerations remain at the forefront of the proposed Project. The proposed new building will be visually and physically separated from the existing Goddard House, allowing views of the park from South Huntington, while additions have been limited to the rear of the building and in front of the northwest wing. Both the new building and the addition have been designed with flat roofs that do not exceed the height of Goddard House's dormer-lined hipped roof. The new construction materials incorporate neutral colors that are intended to complement rather than compete with the existing building's red brick. A landscape buffer with new street trees will improve the pedestrian realm.

Transportation Benefits

The Project's location in a transit-rich environment minimizes impacts to the existing roadway network. Transportation benefits include:

- Improving the pedestrian realm by removing former catenary posts along the Site frontage on South Huntington;
- Reconstructing the existing South Huntington Avenue mid-block crossing at the Site including new accessible pedestrian ramps;
- Providing key bike accommodations including covered and secure bike storage, bike repair stations, and loaner bikes making it easy for residents to use bicycles as a preferred mode of transportation;
- Providing bike racks for the general public; and
- Implementing a Transportation Demand Management (TDM) plan to discourage single-occupancy vehicle trips and auto ownership.

It is anticipated that vehicle ownership by Project residents will be low based on the following demographic and vehicle ownership trends, transit oriented location, walkable access to services and amenities, and access to major job centers by transit. According to the American Community Survey, City of Boston five year average 2009-2013:

- Approximately half of Boston renter's own zero (0) cars and renters are 3.5 times less likely to own a car than homeowners.
- Boston household composition is small – Approximately 70 percent of all Boston households are comprised of either one or two people with the majority of those being one-person households. And over half of one-person households don't own a car.

- Half of Bostonians don't drive to work.

Environmental/Sustainability Benefits

Sustainability is integrated throughout the Project as it revitalizes an underutilized urban site, uses land efficiently by concentrating housing near public transportation and major regional employment centers such as the Longwood Medical and Academic Area and Downtown Boston, and encourages walking, bicycling, and lower vehicular use.

In accordance with Article 37 of the Boston Zoning Code the Proponent intends to incorporate state-of-the-art sustainable features so that the Project could achieve "LEED Silver Certifiable" status.

Any on-site hazardous materials, including asbestos containing materials (ACM) that may be encountered during demolition of the existing on-site buildings will be handled in accordance with federal, state, and local regulations.

Affordable Housing

Fifteen percent of the market rate units in the Project will be set aside for moderate and middle income households consistent with the City of Boston Inclusionary Development Policy.

1.3 Regulatory Context

The Project has been designed to be consistent with the BRA's Framework for Future Development Review (the "Framework"), adopted by the BRA Board in 2013 to establish a unified set of guidelines for the review of new projects in the South Huntington Avenue Corridor. In addition to Large Project Review, the Project is expected to require a number of design reviews and discretionary approvals, as shown in Table 1.2 below.

1.3.1 Anticipated Permits/Approvals

Table 1.2 presents a preliminary list of permits and approvals from governmental agencies that are expected to be required for the Project, based on Project information currently available. It is possible that only some of these permits or actions will ultimately be required, or that additional permits or actions may be needed.

1.3.2 Local Planning and Regulatory Controls

Article 80 – Large Project Review

The Project exceeds the threshold of 50,000 square feet of development, which requires Large Project Review by the BRA pursuant to Article 80B of the Zoning Code. The Proponent has commenced Large Project Review with the filing of a Letter of Intent with the BRA on June 5, 2015, that indicated the Proponent's intent to file an EPNF in connection with the Project. A copy of this letter is provided in Appendix A.

TABLE 1.2 ANTICIPATED PROJECT PERMITS AND APPROVALS

Agency/Department	Permit/Approval/Action
Federal	
Environmental Protection Agency	National Pollutant Discharge Elimination System (NPDES) Construction General Permit
Commonwealth of Massachusetts	
Department of Environmental Protection	Notice of Construction/Demolition Notice of Asbestos Removal (if required)
Massachusetts Water Resources Authority	Construction Dewatering Permit (if required)
City of Boston	
Boston Redevelopment Authority	Article 80 Large Project Review Article 37 Green Building Review Certificate of Compliance
Boston Zoning Board of Appeal	Conditional Use Permit for new construction within the Greenbelt Protection Overlay District
Boston Civic Design Commission	Schematic Design Review
Boston Transportation Department	Construction Management Plan Transportation Access Plan Agreement
Boston Landmarks Commission	Article 85 Demolition Delay (if required)
Boston Parks and Recreation Commission	Approval under Sections 7-4.10 and 7-4.11 of the City of Boston Code of Ordinances
Boston Water and Sewer Commission	Water and Sewer Connection Permits Construction Dewatering Discharge Permit General Service Application Site Plan Review
Boston Public Works Department/ Public Improvement Commission	Approval of improvements within public streets or sidewalks, including curb cut permits and approval of temporary construction encroachments (if required)
Boston Committee on Licenses	Parking Garage Permit Flammable Storage License
Boston Fire Department	Permits for Demolition, Construction, Garage Flammables and Fire Alarm
Boston Inspectional Services Department	Demolition Permit Building Permit Certificate(s) of Occupancy

In accordance with Section 80B-5.2 of the Zoning Code, this EPNF presents details about the Project and provides an analysis of transportation, urban design, historic resources, environmental protection, infrastructure, and other components of the proposed Project in order to inform city agencies and neighborhood residents about the Project, its potential impacts and mitigation proposed to address those potential impacts. Based on the comprehensive approach provided in this EPNF to addressing potential impacts—one similar in scope to the level of information normally presented in a Draft Project Impact Report (DPIR)—the Proponent intends to request that the BRA, after reviewing public and agency

comments on this EPNF and any further responses to comments made by the Proponent, issue a Scoping Determination Waiving Further Review pursuant to Section 80B-5.3(d) of the Zoning Code.

City of Boston Zoning

According to City of Boston Assessing Department records, the Project Site comprises approximately 87,187 square feet (2.0 acres), with approximately 437 feet of frontage on South Huntington Avenue, a Boston public way, and approximately 470 feet of frontage on the Jamaicaway, a parkway under the jurisdiction of the Commonwealth's Department of Conservation and Recreation. The Project Site is located entirely within the Veterans Administration Hospital Neighborhood Institutional Subdistrict ("NI Subdistrict") of the Jamaica Plain Neighborhood District, governed by Article 55 of the Boston Zoning Code ("Zoning Code"). The Project Site is also located partially within the Jamaicaway Greenbelt Protection Overlay District, which extends 500 feet from the centerline of the Jamaicaway along the western portions of the Project Site and is governed by Article 29 of the Boston Zoning Code.

South Huntington Avenue Framework for Future Development Review

The Project Site also forms part of the South Huntington Avenue Corridor, which runs the length of South Huntington Avenue from Huntington Avenue to its intersection with Perkins Street, and is the subject of the BRA's Framework for Future Development Review. Adopted by the BRA Board on May 16, 2013, the Framework establishes a unified set of guidelines for the review of new projects in the South Huntington Avenue Corridor. The Framework divides South Huntington Avenue into three precincts, grouped by land use similarity. The Project Site is located in Precinct 2, which begins approximately at Heath Street and extends to the Project Site's boundary with Mount Pleasant Home (301 South Huntington Avenue). Although the Project Site is located entirely within Precinct 2, it is situated in a so-called "transitional zone" between Precincts 2 and 3, and shares many land use, topographical, streetscape and other similarities with properties located in Precinct 3.

The Framework is intended to "serve as a guide for the BRA in administering the Article 80 Large Project Review process, and also as the basis for the City to consider zoning variances that may be required to implement specific development projects." The Project has been designed to be consistent with the guidelines set forth in the Framework. The BRA has initiated a re-zoning process that would adopt the Framework as zoning for the Project Site.

Uses

The Project will include multifamily residential use, accessory services for apartment residents, and accessory off-street parking, some spaces of which will be located in a covered garage. Residential uses and accessory parking are allowed by right in the NI Subdistrict; accessory services for apartment residents is a conditional use. The Project's proposed uses are consistent with the Framework.

Dimensional Requirements

Table 1.3 evaluates the Project's conformance with the Framework's bulk and dimensional guidelines and their current zoning equivalents. In addition to regulating floor area ratio, maximum building height, and minimum front and rear yards, all of which are also regulated by current zoning, the Framework also imposes a maximum development footprint (a lot coverage ratio). Unlike current zoning, the Framework does not specify a minimum lot size, minimum side yard, or maximum number of dwellings units per acre. In response to the BRA's ongoing re-zoning efforts for the South Huntington Avenue Corridor, the Project has been designed to be consistent with the dimensional guidelines recommended by the Framework, including recommended FAR, building height, lot size, development footprint, and yard setback regulations. Therefore, assuming that new zoning is adopted that implements the dimensional guidelines recommended by the Framework, the Project is unlikely to require dimensional zoning relief. In addition, the project design assumes that the Parks and Recreation Commission will grant relief for those portions of the Project that exceed a height of 70 feet within 100 feet of the Jamaicaway, as regulated by Section 4.7-10 of the City of Boston Code of Ordinances.

TABLE 1.3 DIMENSIONAL REGULATIONS

Dimensional Requirements	Current Zoning (NI)	South Huntington Framework	Proposed Project
Maximum Floor Area Ratio	1.0	2.0	1.87
Maximum Building Height	45 feet	6 stories	6 stories
Minimum Residential Lot Size	1 acre	None	2.0 acres
Maximum Dwelling Units per Acre	4.5	None	83.5
Maximum Development Footprint	None	60%	≤ 60%
Minimum Front Yard	20 feet	30 feet	30 feet
Minimum Side Yard	10 feet	None	10 feet
Minimum Rear Yard	20 feet	45 feet	45 feet

Source: City of Boston Zoning Code

Off-Street Parking and Loading

Pursuant to Section 55-40 of the Zoning Code, off-street parking and loading requirements will be determined by the BRA during Large Project Review. The Project's approximately 167 dwelling units will be served by approximately 83 off-street parking spaces, including approximately 15 surface parking spaces adjacent to the Goddard House and 17 spaces beneath the Goddard House northwest addition, and approximately 51 spaces in a covered garage at the base of the new building. The Project's proposed parking program of approximately 0.5 parking spaces per dwelling unit is consistent with the Framework's parking guidelines, which recommend that all new residential projects in the South Huntington Avenue Corridor satisfy the Boston Transportation Department's maximum parking ratios for the neighborhood by providing no more than 0.75 - 1.25 spaces per dwelling unit for projects located within a 10-minute walk of an MBTA station (the Project Site is located within a 10-

minute walk of the Heath Street Green Line station). The Project's parking program is also consistent with other recently approved multi-family residential projects in the South Huntington Avenue Corridor.

Greenbelt Protection Overlay District (GPOD)

The Project Site is located within the Jamaicaway GPOD, governed by Article 29 and Section 55-27 of the Zoning Code. In the GPOD, a Conditional Use Permit from the Board of Appeal is required for any project involving, among other things, new construction with a total gross floor area in excess of 5,000 square feet. The Project will involve new construction of more than 5,000 square feet of gross floor area; therefore, a Conditional Use Permit from the Board of Appeal will likely be required.

Inclusionary Housing

The City of Boston's Inclusionary Development Policy ("IDP"), which implements the Mayor's Executive Order dated February 29, 2000, as subsequently amended, establishes as City policy that any residential project of ten (10) or more housing units and requiring zoning relief must set aside at least 15 percent of its market rate units as affordable to moderate income and middle income households, or create such units off-site or make an in-lieu dollar contribution to an affordable housing fund. The Project will create affordable housing in accordance with the IDP.

Green Buildings

Because the Project is subject to Large Project Review, it is also subject to the requirements of Article 37 of the Zoning Code (Green Buildings). Pursuant to Section 37-4 of the Zoning Code, all proposed projects subject to Large Project Review must be certifiable under the U.S. Green Council's Leadership in Energy and Environmental Design (LEED) building rating system most appropriate for the Project, though actual LEED certification is not required. The Proposed Project will be designed so as to be eligible for LEED silver certification under the LEED building rating system most appropriate for its class.

Development Impact Project

Projects involving any new construction, enlargement or substantial rehabilitation of over 100,000 square feet of Development Impact Project uses and requiring zoning relief are subject to housing and jobs exactions (or "linkage" payments) pursuant to Section 80B-7 of the Zoning Code. Multi-family dwellings and accessory parking are not Development Impact Project uses. Because the Project will not include any Development Impact Project uses no linkage payments will be required.

Massachusetts Environmental Policy Act

The Project is not subject to environmental review by the Secretary of the Executive Office of Energy and Environmental Affairs, as the Project will not exceed any of the MEPA review thresholds set forth in 301 CMR 11.03.

1.4 Agency Coordination and Community Outreach

Over a period of several months, the Development Team has conducted 17 meetings with residents, neighborhood groups, community leaders, abutters, elected officials, City of Boston officials, and other stakeholders to seek input and feedback as they developed the redevelopment plan. In addition to the individual and group discussions with stakeholders, the Development Team has made formal presentations to:

- Jamaica Plain Neighborhood Council Zoning Committee
- Jamaica Plain Neighborhood Council Housing & Development Committee
- Jamaica Pond Association
- Boston Preservation Alliance
- Emerald Necklace Conservancy

The input and feedback made clear that the Project needs to strike a delicate balance of saving the building, providing view corridors through the Site, maximizing affordability, remaining consistent with the BRA's South Huntington Avenue Framework for Future Development Guidelines, and engaging the community throughout the process.

1.5 Development Team

Proponent	Eden Properties LLC 1385 Cambridge St. Cambridge, MA 02139 (617) 603-5695 *Contact:* Noah Maslan Samuels & Associates 333 Newbury Street Boston, MA 02115 (617) 247-3434 *Contact:* Peter Sougarides
Architect	Prellwitz Chilinski Architects 221 Hampshire St Cambridge, MA 02139 (617) 547-8120 *Contact:* David Chilinski, AIA
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Legal Counsel	Goulston & Storrs 400 Atlantic Ave Boston, MA 02110 (617) 574-6597 *Contact:* Matthew J. Kiefer, Esq. Kristofer D. Machado, Esq.
Civil Engineering, Transportation, Permitting, & Historic Consultant	VHB 99 High Street, 10th Floor Boston, MA 02210 617-728-7777 *Contact:* Ellen Donohoe, P.E. Project Manager Stephanie Kruel, Senior Environment Planner
Geotechnical Engineer & Environmental Engineer	McPhail Associates 2269 Massachusetts Avenue Cambridge, MA 02140 617-868-1420 *Contact:* Jonathan Patch, P.E.
Mechanical Engineering Professional	Wozny/Barbar & Associates 1090 Washington Street Hanover, MA 02339 *Contact:* Zbigniew Wozny

1.6 Legal Information

1.6.1 Legal Judgments or Actions Pending Concerning the Proposed Project

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

1.6.2 History of Tax Arrears on Property Owned in Boston by the Proponent

The Proponent does not own any real estate within the City of Boston on which real estate tax payments are in arrears.

1.6.3 Site Control/Public Easements

The Project Site is currently owned by Home For Aged Women, Inc. The Proponent has entered into an agreement to purchase the Project Site from its current owner, and has received the property owner's authorization to seek public approvals for the Project. The Project Site is not subject to any public easements.

2

Urban Design

This chapter describes the existing urban context of the Project Site, and discusses the planning principles and design goals for the Project. This section describes the proposed conditions urban design characteristics (i.e., height and massing) and public realm improvements, including proposed landscaping. Supporting graphics include building floorplans, building elevations, building sections and view perspectives. Refer to Figure 1.5 for the proposed conditions site plan.

2.1 Neighborhood Context

The existing Goddard House is an elegant building that was built in 1926 as a nursing home for aged women and sits on a two-acre property along South Huntington Avenue. The immediate neighborhood has seen changes over the years with older buildings being replaced with new construction for multifamily housing projects, senior living, hotel and lodging for patients and families at the VA hospital and nearby medical facilities. The Boston Redevelopment Authority issued a South Huntington Corridor Study after incorporating community feedback and concerns about current conditions and potential development-related changes in the future along South Huntington Avenue. The Project Site at 201-205 South Huntington Avenue is in a transitional zone between Precincts 2 and 3, and follows the guidelines set under Precinct 2 in the South Huntington Corridor Study. Precinct 2 is generally characterized by institutional uses on large lots, while Precinct 3 is primarily multi-family residential dwellings.

2.2 Planning Principles and Design Goals

The following planning principles were developed to guide the development:

- Preserve Goddard House and revitalize the existing building to work for proposed residential use with minimal change to its character.
- Enhance the pedestrian experience along South Huntington Avenue by improving the existing sidewalk, landscaping and accessibility.
- Meet the City of Boston Complete Street Guidelines.

- Provide a view corridor from South Huntington Avenue to the Jamaicaway.
- Meet the goals set in the Emerald Necklace Masterplan.
- Comply with the Massachusetts Stretch Energy Code[1]. Maintain a sustainable approach to both building envelopes including energy efficient windows and wall construction, mechanical systems, daylighting, water efficiency and construction related management. Participate in utility rebate programs.
- Screen new proposed parking from public view.
- Enhance the existing landscaping on the Site along both South Huntington Avenue and the Jamaicaway.

2.3 Design Concept and Development

The Site for the proposed development is approximately 87,189 square feet total with a significant change in elevation of over 38 feet between South Huntington Avenue and the Jamaicaway. The existing Goddard House has three basement levels and is approximately 82,104 square feet. The Site offers a few challenges including the shape of the Site and the steep slope. The existing Goddard House offers challenges such as a narrow building width and the lack of lateral/seismic load strength to meet current codes.

The challenge to the existing building structure presented a unique opportunity to stabilize and reinforce Goddard House by creating two new smaller additions. Also, the new additions added depth to the narrow proportion for a more efficient building with double loaded corridors. The program for Goddard House includes 110 units with a diverse mix including studios, 1 bedroom, 2 bedroom and 3 bedroom units. Resident amenities include a terrace, fitness room, resident lounge, tenant storage and bike storage rooms. A portion of the basement floor has high ceilings and offers an opportunity to have an additional resident amenity geared toward indoor active recreation.

The new building program includes 57 units with a diverse mix including studios, 1 bedroom and 2 bedroom units. Resident amenities include terrace, fitness room and resident lounge, tenant storage and bike storage rooms.

2.3.1 Height and Massing

The massing and height of the proposed Project meets the FAR and height guidelines for Precinct 2. The development footprint of the Project is proposed at 54 percent, less than the maximum allowable of 60 percent. The new building is located in the footprint of the existing surface parking lot. The lower and upper floors of the new building are setback to maintain 45 foot and 100 foot setbacks from the Jamaicaway at different elevations. The massing of the

[1] The Stretch Energy Code is available to municipalities that seek building energy conservation provisions more progressive than the baseline energy conservation requirements of the Massachusetts State Building Code. The City of Boston adopted this code in 2010.

two additions to Goddard House meet the setback requirements prescribed in the guidelines. The height of both additions fall below the roofline of Goddard House to ensure the historic building's continued prominence on the Site. The additions are 4 stories tall, and the new building height varies from four to six stories.

2.3.2 Character and Exterior Materials

The existing Goddard House has a large brick façade with uniform window patterns and wall portions of limestone panels. The copper cornice has elaborate detailing and the sloped roof with dormers has slate shingles. The design intent of two new additions to Goddard House is to compliment and contrast the existing building by using more glazing in their façades in a simple pattern, and cladding the envelope with a copper colored exterior metal. For the new building, the design intent is to use a combination of materials including the metal cladding similar to the Goddard additions, terracotta panels and fiber cement siding.

Landscaping options provide access to and egress from both buildings for residents to the Jamaicaway. Stairs and ramps to the Jamaicaway are designed to maintain distance from the existing tree line along the Jamaicaway.

2.4 Public Realm

The following principles were developed to guide the design of the public realm:

- Improve the existing streetscape by adding new street lights and trees in accordance with the Boston Complete Streets Guidelines.
- Remove the existing abandoned trolley poles.
- Provide new accessible curb cuts.
- Continue the streetscape improvements that are being planned at the adjacent residential development at 161 South Huntington Avenue.

2.4.1 Site Landscaping

The landscape plan will enhance the presence of the historic Goddard House and the proposed residential development within the South Huntington Avenue neighborhood. It will also create a revitalized landscape at Goddard House that will provide a unified transition between the urban development along South Huntington Avenue and the naturalized landscape along the Jamaicaway. See Figure 2.4 for details.

The landscape plan will enhance the presence of the historic Goddard House and the proposed residential development within the South Huntington Avenue neighborhood. The proposed landscape plan consists of four concepts, the first being the preservation and enhancement of the traditional landscape associated with the original 1926 façade facing South Huntington Avenue. The symmetry of the building and the pair of trees that frame the entrance along the building's central axis will be preserved and reinforced with new plantings

and restored fences, piers and walls. An existing concrete block retaining wall will be replaced with a new brick wall to match the brick on the building.

Second, the naturalized areas behind the proposed buildings facing the Jamaicaway will be preserved by limiting disturbance behind the building. The existing canopy trees within 35 to 45 feet of the Jamaicaway will be preserved. This naturalized area will be augmented with the introduction of understory shrubs near the building. New stairs, sited to avoid disturbance to existing trees, provide access to the Jamaicaway at the north and south ends of the Site.

Third, the landscape found to the north and south sides of the building along South Huntington Avenue will reflect the naturalized character found along the Jamaicaway-side of the Site. This will be accomplished with the introduction of new canopy trees and large shrubs that will bracket the central historic Goddard House façade. New, more formal hedges that relate to the sidewalk provide relief to these naturalized areas.

Finally, a visual connection to the Jamaicaway from South Huntington Avenue will be preserved between the new and existing buildings. This view will be framed and enhanced by the introduction of flowering understory trees and shrubs.

The Proponent retained the Bartlett Inventory Solutions Team from Bartlett Tree Experts to conduct a study to survey the location, species, and condition of all trees on the Project Site (Figures 2.5a-b). The following tree plan was developed after careful consideration of the results:

- The site plan proposes to preserve a 35-45' wide swath of existing vegetation along the Jamaicaway. This swath includes a stand of 26 trees (predominantly Oaks).
- The building addition at the north end of the Site requires the removal of four Pine trees. The addition at the west side of the property requires the removal of an invasive Norway maple.
- The new building and parking area at the south end of the Site requires removing a stand of trees that have colonized the steep bank associated with the existing parking lot. This stand is predominantly comprised of fast-growing invasive and pioneer species such as Norway Maple, Tree of Heaven, Box Elder and Hackberry. The trees within this stand have overall poor structure due to species characteristics and are accentuated by poor growing conditions and high levels of competition.

3

Transportation and Parking

This chapter provides a detailed and comprehensive evaluation of the existing and proposed transportation conditions, and identifies traffic impacts as a result of the Project. The analysis captures in detail the operational characteristics of the Project, and provides a basis for determining to what extent, if any, Project-related traffic is likely to affect the wider transportation network.

3.1 Project Overview

The proposed Goddard House Renovation and Redevelopment Project will redevelop the former 87,187 SF Goddard House Assisted Living Property at 201-205 South Huntington Avenue. The Project is boarded by the Olmsted Place apartments (currently under construction) to the north, 301 South Huntington to the south, Jamaicaway to the west and South Huntington Avenue to the east. The Site has three unsignalized driveways, currently closed by chain link fence, along South Huntington Avenue. There are two surface parking areas on-site totaling 42 parking spaces.

The Proponent proposes to redevelop the approximately 2.0-acre Site with two residential buildings, totaling 167 units with 83 parking spaces. The existing Goddard House will be redeveloped into a 110-unit residential building with two new additions. A new 57-unit residential building will be built to the south of the Goddard House on the existing surface parking lot.

A summary of the proposed uses for the Project are provided in Table 3.1.

TABLE 3.1 PROJECT DEVELOPMENT PROGRAM

Land Use	Size
Residential	167 units
Parking	83 spaces

3.2 Key Findings and Benefits

Many key developments, including the proposed Project, are reenergizing the South Huntington Avenue corridor. This Project provides many benefits consistent with *South Huntington Avenue Framework for Future Development Review* (May 2013) which establishes guidelines for future development of the South Huntington Avenue corridor.

Overall, the traffic generated by the Project will have a negligible impact on the study area intersections. A detailed level of service analysis was conducted and is discussed later in the chapter.

The following are key findings and benefits related to transportation:

- Project generated trips will have a negligible impact to the study area intersections;
- The Project will improve the pedestrian realm by providing a landscape buffer in front of building with new street trees and removing obsolete catenary posts along the site frontage;
- The Project will provide safe on-site bicycle accommodations for cyclists including covered and secure bike storage and bike repair stations on site;
- Bicycle parking will be provided at a rate of one space per unit with additional spaces at-grade for the public and visitors;
- The Project will encourage alternative modes of transportation through a comprehensive Transportation Demand Management (TDM) plan; and
- The Project includes reconstruction of an existing South Huntington Street mid-block crossing at the site including new pedestrian ramps.

3.3 Study Methodology

The analysis presented in this Expanded Project Notification Form (EPNF) provides a detailed description of the Project's transportation characteristics and evaluates any impacts to the transportation infrastructure. The transportation analysis presented in this chapter conforms to the Boston Transportation Department (BTD) Transportation Access Plans Guidelines.

The transportation analysis includes the projection of Project-related trips based on Institute of Transportation Engineers (ITE) trip generation rates and the application of local travel characteristics established through the *Access Boston 2000-2010* initiative. Synchro 8 software was used to facilitate the evaluation of traffic operations based on Highway Capacity Manual[1] (HCM) methodologies.

[1] Highway Capacity Manual; Transportation Research Board; Washington D.C.; 2000.

3.3.1 Traffic Study Area

Based on a review of traffic studies prepared for other nearby development projects and familiarity with the surrounding area, vehicular traffic associated with the Project is expected to be widely dispersed throughout the nearby street network. After consultation with BTD, the following seven intersections, as shown in Figure 3.1, were included in the study area for the analysis:

- South Huntington Avenue at Huntington Avenue (signalized)
- South Huntington Avenue at Heath Street (unsignalized)
- South Huntington Avenue at North Site Driveway (unsignalized)
- South Huntington Avenue at Middle Site Driveway (unsignalized)
- South Huntington Avenue at South Site Driveway (unsignalized)
- South Huntington Avenue at Bynner Street (signalized)
- South Huntington Avenue at Perkins Street (signalized)

3.3.2 Analysis Conditions

The transportation analysis considers the following primary analysis scenarios:

- **2015 Existing Condition** – based on traffic data collection conducted within the study area in June 2015.
- **2020 No-Build Condition** – future conditions for a five-year time horizon as expected to occur if the Project was not constructed.
- **2020 Build Condition** – future conditions for a five-year time horizon assuming construction and full occupancy of the Project.

3.4 Existing Transportation Conditions

This section describes existing transportation conditions, including an overview of roadway conditions, transit, pedestrian and bicycle facilities, and general site conditions.

3.4.1 Roadways

South Huntington Avenue connects to Huntington Avenue (Route 9) to the north of the Site, providing access to the Town of Brookline, the City of Newton and I-95 to the west and downtown Boston to the east. South Huntington Avenue south of the Site culminates at the intersection with Centre Street providing access to Jamaica Plain and Roslindale to the south and Route 28 to the north. South Huntington Avenue provides unregulated curbside parking adjacent to the Site and along the majority of the corridor.

3.4.2 Study Area Intersections

The study area consists of seven study intersections previously shown in Figure 3.1 and which are described below. Traffic operations and level of service (LOS) analysis are presented later in this chapter.

- **South Huntington Avenue at Huntington Avenue** – The intersection of South Huntington Avenue at Huntington Avenue is a signalized intersection north of the Project Site. Huntington Avenue runs east/west and South Huntington Avenue runs north/south. The Huntington Avenue eastbound approach provides two through lanes and one right turn lane with no on-street parking. The Huntington Avenue westbound approach operates with one through lane and one left turn lane with two-hour on-street parking near the intersection. The westbound left turn lane shares the lane with the Massachusetts Bay Transportation Authority (MBTA) Green Line "E" branch train. The South Huntington Avenue northbound approach provides one left turn lane and one right turn lane. The South Huntington Avenue northbound left turn lane shares the lane with the MBTA Green Line "E" branch train. A Green Line stop and a bus stop are provided on the South Huntington Avenue northbound approach. The Green Line stop blocks northbound traffic during loading and unloading while the bus has a designated turnout. Crosswalks and bicycle priority shared lanes are provided at all approaches.

- **South Huntington Avenue at Heath Street** – The intersection of South Huntington Avenue and Heath Street is an unsignalized intersection north of the Project Site. South Huntington Avenue runs north/south and Heath Street runs east/west. South Huntington Avenue southbound approach provides two free-flowing lanes, one through lane and one left turn lane. The southbound left turn lane shares the lane with the MBTA Green Line "E" branch train. The South Huntington Avenue northbound approach provides a free-flowing through lane and a channelized right turn lane. No parking is provided on this approach. A bus stop is provided on the South Huntington Avenue northbound approach that blocks the right turn lane during loading and unloading. Heath Street westbound approach provides one left/right turn lane and provides a bus stop on the north side of the street. The westbound approach shares the lane with the MBTA Green Line "E" branch train. The South Huntington Avenue approaches provide separated bicycle lanes and crosswalks are provided on the Heath Street westbound and South Huntington northbound approaches.

- **South Huntington Avenue at Bynner Street** – The intersection of South Huntington Avenue and Bynner Street is a signalized intersection south of the Project Site. South Huntington Avenue runs north/south and Bynner Street runs east/west. South Huntington Avenue northbound and southbound approaches each provide one general-purpose lane. Bus stops with designated turnouts are provided at the South Huntington approaches. Bynner Street eastbound and westbound approaches each provide one general-purpose lane with on-street parking. Bicycle lanes are provided along the South Huntington Avenue approaches and crosswalks are provides at all approaches.

- **South Huntington Avenue at Perkins Street** – The intersection of South Huntington Avenue and Perkins Street is a signalized intersection south of the Project Site. South Huntington Avenue runs north/south and Perkins Street runs east/west. South Huntington Avenue northbound and southbound approaches each provide one general-purpose lane with on-street parking and designated bicycle lanes. Perkins Street eastbound provides one general-purpose lane with on-street parking while the westbound provides one general-purpose lane with no on-street parking. Crosswalks are provided on all approaches.

- **South Huntington Avenue at Site Driveways (North, Middle and South)** – South Huntington Avenue runs north/south and the Site driveways run east/west. South Huntington Avenue provides one travel lane and one bike lane in each direction with parking allowed on both sides of the street. The north driveway is a one way entrance, the middle driveway is a one way exit and the south driveway is a two way entrance/exit. The north driveway loops to the south and connects to the middle driveway. The south driveway does not connect to the north and middle driveways. Currently the driveways are closed by chain link fence. A crosswalk is provided across South Huntington Avenue at the south driveway.

3.4.3 Data Collection

To properly assess the traffic conditions of the surrounding street network, manual turning movement counts (TMCs) were collected at the study area intersections. TMCs were collected on Thursday, June 18, 2015 during a typical weekday morning peak period (7:00 AM – 9:00 AM) and evening peak period (4:00 PM – 6:00 PM) with the exception of South Huntington Avenue at Huntington Avenue during the morning peak period, which was collected Tuesday June 23, 2015. Existing traffic volume counts were compared to other available existing counts in the area and it was determined that no seasonal adjustments were needed.

The TMCs were used to establish the study area network peak hour volumes for the 2015 Existing Condition analysis. The weekday morning peak hour was determined to be 7:15 AM to 8:15 AM and the weekday evening peak hour from 4:15 PM to 5:15 PM. Existing peak hour traffic volumes are shown in Figure 3.2. The raw count data are included in Appendix B.

3.4.4 Public Transportation

The Project Site is easily accessible by a variety of public transit options that provide numerous connections to most other MBTA public transit services, allowing the Site to be reached by bus and subway from many locations within the City of Boston and the surrounding suburbs.

The MBTA currently provides local bus and Green Line – E Branch service within less than a five (5) minute walk (less than a 1/4 mile) of the Project Site. Figure 3.3 illustrates existing MBTA services and Table 3.2 provides a summary of the bus and rail services. A detailed description of each service is also provided.

TABLE 3.2 MBTA SERVICES

Service	Origin / Destination	Peak-hour Frequency (minutes)	Closest Stop (distance in miles)
Bus Route 14	Roslindale Square / Heath Street Station	38-45	Heath Street (0.2 miles)
Bus Route 39	Forest Hills Station / Back Bay Station	6-10	South Huntington @ VA Hospital (<0.1 miles)
Bus Route 41	Centre & Eliot Streets / JFK/UMass Station	22-30	Centre Street @ Sheridan Street (0.4 miles)
Bus Route 60	Chestnut Hill / Kenmore Station	24-30	High Street @ Highland Road (0.4 miles)
Bus Route 65	Brighton Center – Kenmore Station	11-20	678 Brookline Avenue at Pearl Street (0.5 miles)
Bus Route 66	Harvard Square / Dudley Station	9-10	Huntington Avenue @ Riverway (0.5 miles)
Green Line – "E" Branch	Lechmere / Heath Street	6	Heath Street (0.2 miles)
Green Line – "D" Branch	Park Street / Riverside	7	Brookline Village (0.5 miles)

Source: MBTA

Route #14 – Roslindale Square – Heath Street Station – This route connects Heath Street Station in Jamaica Plain to Roslindale Square in Roslindale via Heath Street, Blue Hill Avenue, American Legion Highway and Cummins Highway with stops at Dudley Square and Jackson Square. The closest stop to the Project Site is Heath Street Station approximately a quarter-mile away. During the weekday, Route 14 operates from 6:00 AM to 8:00 PM with 38-45 minute headways during the peak hours. On Saturdays, the bus operates from 6:45 AM to 7:40 PM. There is no service on Sundays.

Route #39 – Forest Hills Station – Back Bay Station – This route connects Forest Hills Station in West Roxbury to Back Bay Station in downtown Boston via Huntington Avenue, South Huntington Avenue and Centre Street. The closest stop to the Project Site is South Huntington Avenue at VA Hospital approximately 500 feet north of the Site. During the weekday, Route 39 operates from 4:42 AM to 1:24 AM with 6-10 minute headways during the peak hours. Over the weekend, the bus operates from 4:37 AM to 1:23 AM on Saturdays and 5:45 AM to 1:20 AM on Sundays. Route 39 offers late night service on Friday and Saturday nights until 2:45 AM with the extension of the MBTA Late Night Service through 2016.

Route #41 – Centre & Eliot Streets – JFK/UMass Station – This route connects Centre Street and Elliot Streets in Jamaica Plain to JFK/UMass Station in Dorchester via Centre Street, Dudley Street and Columbia Road with stops at Jackson Square and Dudley Square. The closest stop to the Project Site is Centre Street at Sheridan Street approximately half-a-mile away. During the weekday, Route 41 operates from 4:58 AM to 9:25 PM with 22-30 minute headways during

the peak hours. During the weekend, the bus operates from 7:00 AM to 8:12 PM on Saturdays and 10:00 AM to 6:45 PM on Sundays.

Route #60 – Chestnut Hill – Kenmore Station – This route connects Chestnut Hill to Kenmore Station in the Fenway via Boylston Street and Brookline Avenue with stops at Brookline Village. The closest stop to the Project Site is High Street at Highland Road approximately half-a-mile away. During the weekday, Route 60 operates from 4:55 AM to 12:18 AM with 24-30 minute headways during the peak hours. During the weekend, the bus operates from 4:55 AM to 1:01 AM on Saturdays and 6:00 AM to 9:51 PM on Sundays.

Route #65 – Brighton Center – Kenmore Station – This route connect Brighton Center to Kenmore Station in Fenway via Washington Street and Brookline Avenue with stops along the Green Line B, C and D lines. The closest stop to the Project Site is 678 Brookline Avenue opposite Pearl Street approximately half-a-mile away. During the weekday, Route 65 operates from 6:17 AM to 8:57 PM with 11-20 minute headways during the peak hours. On Saturdays, the bus operates from 6:45 AM to 6:39 PM and no service is provided on Sundays.

Route #66 – Harvard Square - Dudley Station – This route connects Harvard Square in Cambridge to Dudley Station in Roxbury via Harvard Street, Huntington Avenue and Tremont Street with stops along all branches of the Green Line and at Roxbury Crossing. The closest stop to the Project Site is Huntington Avenue at Riverway approximately half-a-mile away. During the weekday, Route 66 operates from 4:45 AM to 1:34 AM with 9-10 minute headways during the peak hours. Over the weekend, the bus operates from 4:40 AM to 1:36 AM on Saturdays and from 5:50 AM to 1:34 AM on Sundays. Route 66 offers late night service on Friday and Saturday nights until 2:49 AM with the extension of the MBTA Late Night Service through 2016.

Green Line E Branch – Heath Street – Lechmere – The E Branch of the Green Line travels from Lechmere in East Cambridge to Heath Street in Jamaica Plain with 6 minute headways during the peak hours. The line operates from 5:01 AM to 12:53 AM on weekdays, 5:01 AM to 2:04 AM on Saturdays and from 5:35 AM to 12:47 AM on Sundays. Under the MBTA Late Night Service Program, the Green Line E Branch has extended service until 2:04 AM on Fridays. The closest stop to the Project Site is Heath Street, approximately a quarter-mile away. The Green Line E Branch connects to the Orange Line and the Red Line at Park Street and other Green Line branches at Copley Station.

Green Line D Branch – Riverside – Park Street – The D Branch of the Green Line travels from Park Street Station in downtown Boston to Riverside Station in Newton with 7 minute headways during the peak hours. The line operates from 4:56 AM to 12:49 AM on weekdays, 4:55 AM to 1:49 AM on Saturdays, and from 5:25 AM to 12:45 AM on Sundays. Under the MBTA Late Night Service Program, the Green Line D Branch has extended service to 1:49 AM on Fridays. The closest stop to the Project Site is Brookline Village, approximately half-a-mile away. The Green Line D Branch connects to the Orange Line and Red Line at Park Street and to other Green Line branches at Kenmore Station and Copley Square.

3.4.5 Pedestrian Environment and Accessibility

The study area is pedestrian friendly with sidewalks and crosswalks provided at all study area intersections. South Huntington Avenue between Huntington Avenue and Heath Street provides a more urban pedestrian feel with residential buildings and ground floor retail while south of Heath Street there is a campus atmosphere with the VA Boston Healthcare Campus along the east side of South Huntington Avenue. Two mid-block crossings are provided along South Huntington Avenue in the study area between Heath Street and Bynner Street. The first mid-block crossing is a signalized crossing adjacent to the MBTA bus drop off for the VA Hospital and the new Olmsted Place apartment building to the north of the Project Site. The second mid-block crossing is an unsignalized crossing adjacent to the existing middle driveway at the Site and the entrance to the VA Hospital parking garage which does not include ADA compliant ramps. In efforts to make the South Huntington Avenue corridor more pedestrian friendly, the Project proposes to improve the mid-block crossing in front of the Site and make it ADA compliant.

Pedestrian volumes at the study area intersections were collected in conjunction with the TMCs on June 18th and 23rd, 2015. Figure 3.4 presents the 2015 Existing Condition Pedestrian Volumes. The highest obwerved pedestrian volumes in the study area were at the intersection of South Huntington Avenue and Huntington Avenue due to the higher density of retail and residential land uses in the area.

3.4.6 Bicycles

Bicycle volumes, shown in Figure 3.5, at the study area intersections were collected simultaneously with the TMCs and pedestrian volume counts on June 18th and 23rd, 2015.

Within the immediate study area, there are no bicycle parking accommodations. Shared bicycle lanes are provided along South Huntington Avenue from Huntington Avenue to Heath Street and bicycle lanes are provided from Heath Street to Perkins Street.

The closest Hubway Station is at Hyde Square on the corner of Centre Street and Barbara Street, approximately one-half mile from the Project Site. This station provides 15 docking positions.

3.4.7 Existing Parking

The Site currently provides 42 surface parking spaces. Unregulated on-street parking is available on South Huntington Avenue and surrounding streets. Figure 3.6 shows the current on-street parking regulations within a quarter-mile radius of the Site. The closest ZipCar location is approximately three-quarters of a mile south of the Site at the JP Oil Parking lot located on 10 Lochstead Avenue. This ZipCar location provides nine cars.

The demand for parking in the City of Boston can vary for each neighborhood and on a monthly basis depending on the academic year and holiday. In order to understand the

existing usage of the on-street parking surrounding the Project Site, an occupancy study was conducted on Wednesday July 22, 2015 and Thursday July 23, 2015 and updated on Thursday October 15, 2015. The results of the July inventory is included in the Appendix. The October analysis is presented below.

Due to the construction at 161 South Huntington Avenue and by National Grid there were some spaces that were not available during the inventories. These spaces have not been included in the overall supply for the neighborhood.

Two specific time periods captured the availability of parking in the area:

- **12:00 PM** captured on-street parking availability after the morning peak period; and
- **8:00 PM** captured on-street parking availability after the evening peak period and into the overnight hours.

The results of the October occupancy study, which included a slightly higher neighborhood parking demand compared to July, are illustrated in Figures 3.7.a and 3.7.b and summarized in Table 3.3.

TABLE 3.3 ON-STREET PARKING UTILIZATION

Location	Total Number of Spaces	Number of Spaces Available	
		12:00 PM	8:00 PM
South Huntington Avenue between Heath Street and Bynner Street (west side of the street)	48*	6	24
South Huntington Avenue between Heath Street and Bynner Street (east side of the street)	39*	7	19
Evergreen Street between South Huntington Avenue and Day Street (both sides of the street)	70	15	18
Bynner Street between Jamaicaway and Day Street (both sides of the street)	73	10	19
South Huntington Avenue between Bynner Street and Perkins Street (both sides of the street)	52	8	28
Castleton Street between Jamaicaway and South Huntington Avenue (both sides of the street)	63	27	18
Heath Street between South Huntington Avenue and Estey Street (both sides of the street)	24	0	6
Day Street between Nira Avenue and Bynner Street (east side of the street)	31	17	6
Kenney Street (north side of the street)	19	2	5
Acrola Street (north side of the street)	15	6	4
Nira Avenue (both sides of the street)	39	20	19
Total Spaces	473	118	166

Source: VHB October 2015, *Note: Approximately eight (8) spaces were not included due to construction activity.

The results of this parking occupancy study show that there is on-street parking available during the daytime and into the overnight hours (8:00 PM) on streets surrounding the Project

Site. During the day there were 118 nearby spaces available and overnight there were 166 nearby spaces available. On South Huntington Avenue in the immediate vicinity of the Project Site, spaces are mostly occupied during the day since employees from the nearby businesses are allowed to park with no restrictions. Generally more spaces become available after typical business hours.

The July study (see Appendix B) indicated that there was slightly more on-street parking availability compared to the month of October. In July there were 143 nearby spaces available during the daytime. Overnight, at 8:00 PM, there were 177 spaces available.

3.5 Future Transportation Conditions

To assess future transportation conditions, the analysis considered the following two future scenarios for a five-year time horizon (2020) from the time of the existing conditions described earlier:

- **2020 No-Build Condition** – assumes no changes to the Project Site, but with background growth associated with other planned projects and general regional growth, along with any planned roadway/ infrastructure improvements; and
- **2020 Build Condition** – assuming the same background growth and any planned infrastructure improvements, but including the redevelopment of the Project Site.

3.5.1 No-Build Condition

The 2020 No-Build Condition was developed to evaluate future transportation conditions in the traffic study without consideration of the Project. In accordance with BTD guidelines, this future analysis year represents a five-year horizon (2020) from Existing Conditions (2015). The No-Build Condition provides insight to future traffic conditions resulting from regional growth as well as traffic generated by specific projects that are expected to affect the local roadway network.

Background Growth

A background growth rate of one-half (0.5) percent per year was applied to the existing traffic volumes to account for population growth and projects that cannot be specifically identified. This background growth rate is consistent with other traffic studies in the area which indicate that traffic volumes in Boston area not substantially increasing. In addition to the background growth rate, traffic projections for several specific projects were incorporated in the development of No-Build Condition. These include the following development projects:

- **105A South Huntington** is a residential building with 195 units and ground floor retail support by 176 parking spaces. The project has been approved by the Boston Redevelopment Authority (BRA) and is scheduled to be complete in late 2015 or early 2016.
- **161 South Huntington** is a 196 unit residential building with ground floor retail and 156 parking spaces. This project is currently under construction and is scheduled to be completed in the summer of 2015.

- **Blessed Sacrament Camps Redevelopment** is a mixed-use development with 118 residential units, 150 parking spaces, 11,000 SF of retail space, and 2,000 SF of community space. This project is currently under construction.
- **Jackson Square Redevelopment** includes the redevelopment of 9.1 acres of land in Jackson Square in Jamaica Plain/Roxbury. The project includes 270 apartment units, 159 condominiums, 9,000 SF of office space, 30,800 SF of indoor recreation space, 67,700 SF of retail space, and a 19,800 SF Youth and Family Center. The project spans over three phases and includes 500 new off-street parking spaces and 128 new on-street parking spaces.

Figure 3.8 presents the 2020 No-Build Condition traffic volumes accounting for background growth for the weekday morning and evening peak hours.

3.5.2 Build Condition

The 2020 Build Condition includes 167 apartments supported by 83 surface parking spaces in two buildings. The Project will maintain the three existing Site driveways. The north driveway is a one-way entrance providing access to the surface parking adjacent to the Goddard House Addition and the surface parking in front of the Goddard House. The middle driveway provides one-way egress from the north driveway. The south driveway is an existing driveway that will provide two-way travel to the surface parking at the new structure. Figure 3.9 illustrates the proposed site plan for the Project.

Loading and Service

The proposed Project will include a loading dock and compactor in the surface parking lot adjacent to the new structure, accessed via the south driveway. The loading and parking will be in the back of the building, consistent with the South Huntington Avenue Framework for Future Development Review guidelines.

Project Generated Trips

To assess the traffic impacts of the Project, trip estimates were based on standard rates from the ITE Trip Generation Handbook[2]. Trip generation for the proposed residential building was estimated based on ITE Land Use Code 200 as shown in Table 3.4 below.

TABLE 3.4 TRIP GENERATION LAND USE CODES

Lane Use	ITE Land Use Code (LUC)	Independent Variable
Residential	200 – Apartments	Dwelling Units

Source: ITE Trip Generation Handbook

To account for alternative modes of transportation, mode shares for the area, based on BTD guidelines, were applied to the unadjusted ITE trip results. Mode shares are presented in Table 3.5 below.

▼

[2] Trip Generation; Ninth Edition; Institute of Transportation Engineers; Washington, D.C.; 2012.

TABLE 3.5 RESIDENTIAL MODE SPLIT

Mode	Residential
Daily	
Automobile	46%
Public Transit	16%
Walk/Bike/Other	38%
AM/PM Peak	
Automobile	37%
Public Transit	18%
Walk/Bike/Other	45%

Source: BTD Zone 5 Mode Split

Vehicle Occupancy Rates (VOR) were also applied to the ITE trip generation to convert the ITE estimated unadjusted vehicle trips to person trips. A VOR of 1.13 persons per vehicle for residential land use was used based on the 2009 National Household Travel Survey. After the VOR is applied to the ITE unadjusted vehicle trips to produce person trips, these trips were split into modes based on the mode splits shown above in Table 3.5. The VOR was again applied to the vehicle trips to produce adjusted vehicle trips.

The Project Generated Trips, as show in Table 3.6, are the estimated trips that will be generated by the Project.

TABLE 3.6 PROJECT GENERATED TRIPS

Time Period/ Direction	Public Transportation	Walk/Bike/Other	Vehicle
Daily			
Enter	100	238	255
Exit	100	238	255
Total	200	476	510
AM Peak			
Enter	3	9	6
Exit	14	35	25
Total	17	44	31
PM Peak			
Enter	14	34	25
Exit	7	18	13
Total	21	52	38

Source: Trip Generation, 9th Edition, Institute of Transportation Engineers, Washington D.C. (2012).
Notes: Land Use Code (LUC) 220 – Apartment. The base trip generation estimates were subsequently categorized into transit, walk, bike or vehicular trips following BTD's guidelines for Zone 5.

Automobile Trip Distribution

Trip distribution was based on BTD's guidelines for Zone 5 (where the Project Site is located). These guidelines, based on 2000 census data, provide information on where area residents

work and were area employees live. Using these data, Project vehicle trips were then assigned to the roadway network. A summary of the regional trip distribution results is presented in Table 3.7 and shown graphically in Figure 3.10.

TABLE 3.7 TRIP DISTRIBUTION

Corridor	In/Out
Huntington Avenue (to/from West)	9.7%
Huntington Avenue (to/from East)	17.4%
Heath Street (to/from East)	8.2%
South Huntington Avenue (to/from South)	6.3%
Bynner Street (to/from West)	44.5%
Perkins Street (to/from West)	5.7%
Perkins Street (to/from East)	8.2%
Total	100%

Source: BTD Zone 5 Trip Distribution

The Project generated vehicle trips were added to the No-Build Condition traffic networks using the local trip distribution patterns described above. The Project Generated Trips are shown in Figure 3.11 and the resulting 2020 Build Condition networks are shown in Figure 3.12 for the weekday morning and evening peak hours.

3.6 Transportation Demand Management

Consistent with the goals established though the *South Huntington Avenue Framework for Future Development Review* and the City's goals to reduce auto-dependency, the Project will include a series of Transportation Demand Management (TDM) measures to encourage alternative modes of transportation and discourage vehicle trips.

The Proponent is considering the following measures:

- The Proponent will designate a Transportation Coordinator to oversee parking and loading operations as well as promote the use of alternative transportation measures and carpooling.
- Four (4) spaces within the parking garage will provide electric car charging stations.
- The Proponent will provide transit information such as maps and schedules to new residents in an orientation package and provide this information in the residential lobby.
- The Proponent will provide residents (upon each new lease) with a one month MBTA Transit Pass.
- The Proponent will charge tenants market rates for parking.
- There will be covered and secure bicycle storage for 170 spaces and 10 public outdoor bicycle spaces.
- The Proponent will provide loaner bicycles for visitors of the residents.
- The Proponent will provide an on-site bicycle repair station (one for each building).
- The Proponent will reconstruct the South Huntington mid-block crossing at the Site including providing new pedestrian ramps.

3.7 Parking

The proposed Project will include 83 parking spaces (0.5 spaces/unit) in two parking lots tucked beneath different sections of the buildings and one at-grade surface parking area that currently exists located in front of the Goddard House. The parking will be accessed via two existing driveways (north and south driveways) on South Huntington Avenue. These spaces will be dedicated to residents of the building. Four electronic charging stations will be provided on site.

The BTD, as outlined in their 2000 guidelines, recommends a maximum parking ratio of 0.75-1.25 spaces per unit for new residential developments. The Project proposes to have a lower ratio of 0.5 spaces per residential unit. It is the goal of both the City and Project to not overbuild parking. Current market trends suggest that new residents in the Boston area are choosing car-sharing services such as Uber and ZipCar over owning a personal vehicle, reducing the demand for resident parking.

3.8 Traffic Operations Analysis

Consistent with BTD guidelines, Synchro 8 software was used to model level of service (LOS) operations at the study area intersections. LOS is a qualitative measure of control delay at an intersection providing an index to the operational qualities of a roadway or intersection.

LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. LOS D is considered acceptable. LOS E indicates vehicles experience significant delay while LOS F suggests unacceptable delay for the average vehicle. LOS thresholds differ for signalized and unsignalized intersections. Longer delays at signalized intersections than at unsignalized intersections are perceived as acceptable.

Table 3.8 below presents the level of service delay threshold criteria as defined in the 2000 Highway Capacity Manual (HCM).

TABLE 3.8 LEVEL OF SERVICE CRITERIA

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

Source: 2000 Highway Capacity Manual (HCM)

Adjustments were made to the Synchro model to include characteristics of the study area such as heavy vehicles, bus operations, parking activity, and pedestrian crossings. The capacity analysis results are summarized in the following sections.

Signalized Capacity Analysis

The LOS results of the signalized capacity analyses are summarized in Tables 3.9 through 3.10 for the Existing, No-Build, and Build condition peak hours. Detailed Synchro results are presented in the Appendix B. After the Tables, the detailed results have been interpreted and summarized in the report text.

TABLE 3.9 SIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS) SUMMARY – MORNING PEAK HOUR

	2015 Existing Condition					2020 No-Build Condition					2020 Build Condition				
				Vehicle Queues					Vehicle Queues					Vehicle Queues	
Location	v/c[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	v/c	Delay	LOS	50th	95th	v/c	Delay	LOS	50th	95th
S. Huntington Ave at Huntington Ave	**0.83**	**>80.0**	**F**			**0.89**	**>80.0**	**F**			**0.89**	**>80.0**	**F**		
Huntington Ave EB Thru	>1.00	>80.0	F	217	#383	>1.00	>80.0	F	~305	#394	>1.00	>80.0	F	~305	#394
Huntington Ave EB Right	0.57	29.6	C	128	97	0.62	31.1	C	154	106	0.62	30.9	C	154	106
Huntington Ave WB Left	0.30	29.0	C	72	#177	0.32	29.1	C	72	#219	0.32	29.3	C	73	#223
Huntington Ave WB Thru	0.77	31.1	C	242	#673	0.83	37.0	D	269	#726	0.83	37.6	D	270	#728
S. Huntington Ave NB Left	0.84	54.7	D	263	339	0.86	53.9	D	289	367	0.86	53.6	D	290	369
S. Huntington Ave NB Right	0.23	8.0	A	45	127	0.25	7.0	A	36	139	0.25	7.0	A	37	142
S. Huntington Ave at Bynner St	**0.97**	**45.3**	**D**			**>1.00**	**59.9**	**E**			**>1.00**	**60.4**	**E**		
Bynner St EB Left/Thru/Right	>1.00	75.2	E	136	#422	>1.00	>80.0	F	~162	#469	>1.00	>80.0	F	~176	#472
Bynner St WB Left/Thru/Right	0.44	20.9	C	62	125	0.52	21.8	C	76	149	0.52	21.8	C	76	149
S. Huntington Ave NB Left/Thru/Right	0.99	51.3	D	249	#730	>1.00	59.9	E	265	#762	>1.00	60.3	E	266	#764
S. Huntington Ave SB Left/Thru/Right	0.29	13.8	B	44	130	0.32	14.1	B	46	137	0.33	14.2	B	48	141
S. Huntington Ave at Perkins St	**0.99**	**72.2**	**E**			**>1.00**	**>80.0**	**F**			**>1.00**	**>80.0**	**F**		
Perkins St EB Left/Thru/Right	>1.00	>80.0	F	~222	#554	>1.00	>80.0	F	~218	#599	>1.00	>80.0	F	~219	#600
Perkins St WB Left/Thru/Right	0.65	36.7	D	115	#240	0.68	37.8	D	120	#263	0.68	38.0	D	121	#263
S. Huntington Ave NB Left/Thru/Right	0.85	43.9	D	214	#534	0.87	47.0	D	224	#558	0.88	47.2	D	224	#558
S. Huntington Ave SB Left/Thru/Right	0.49	28.2	C	83	207	0.54	29.7	C	88	221	0.56	30.5	C	91	227

1 volume to capacity ratio
2 delay in seconds
3 level of service
4 50th percentile queue
5 95th percentile queue
~ Volume exceeds capacity, queue is theoretically infinite
# 95th percentile volume exceeds capacity, queue may be longer
m Volume for 95th percentile queue is metered by upstream signal

TABLE 3.10 SIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS) SUMMARY – EVENING PEAK HOUR

	2015 Existing Condition					2020 No-Build Condition					2020 Build Condition				
				Vehicle Queues					Vehicle Queues					Vehicle Queues	
Location	v/c[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	v/c	Delay	LOS	50th	95th	v/c	Delay	LOS	50th	95th
S. Huntington Ave at Huntington Ave	**0.96**	**>80.0**	**F**			**>1.00**	**>80.0**	**F**			**>1.00**	**>80.0**	**F**		
Huntington Ave EB Thru	>1.00	>80.0	F	~325	#422	>1.00	>80.0	F	~337	#434	>1.00	>80.0	F	~337	#434
Huntington Ave EB Right	0.95	62.2	E	309	288	0.99	69.1	E	324	#404	0.99	68.4	E	325	#408
Huntington Ave WB Left	0.34	32.1	C	81	#259	0.42	34.8	C	101	#299	0.43	35.1	D	104	#309
Huntington Ave WB Thru	0.90	47.0	D	314	#842	0.97	64.0	E	366	#868	0.98	65.9	E	368	#868
S. Huntington Ave NB Left	0.87	53.9	D	308	407	0.89	54.2	D	325	#460	0.88	53.4	D	325	#464
S. Huntington Ave NB Right	0.19	7.8	A	31	113	0.21	7.9	A	34	123	0.21	7.9	A	35	125
S. Huntington Ave at Bynner St	**0.58**	**17.0**	**B**			**0.62**	**18.5**	**B**			**0.63**	**19.3**	**B**		
Bynner St EB Left/Thru/Right	0.79	33.9	C	99	235	0.81	34.1	C	113	#287	0.82	34.4	C	120	#309
Bynner St WB Left/Thru/Right	0.39	22.3	C	37	96	0.44	22.2	C	48	120	0.42	21.8	C	48	119
S. Huntington Ave NB Left/Thru/Right	0.47	12.4	B	65	271	0.53	14.4	B	82	297	0.55	15.4	B	91	302
S. Huntington Ave SB Left/Thru/Right	0.49	12.7	B	70	282	0.54	14.5	B	84	300	0.55	15.5	B	93	303
S. Huntington Ave at Perkins St	**0.74**	**35.5**	**D**			**0.81**	**41.4**	**D**			**0.86**	**46.7**	**D**		
Perkins St EB Left/Thru/Right	0.77	31.8	C	138	#333	0.80	33.6	C	148	#392	0.88	44.9	D	157	#473
Perkins St WB Left/Thru/Right	0.83	51.4	D	135	#317	0.84	50.7	D	151	#361	0.80	46.1	D	152	#364
S. Huntington Ave NB Left/Thru/Right	0.74	35.8	D	143	#375	0.86	49.2	D	166	#423	0.91	57.0	E	169	#432
S. Huntington Ave SB Left/Thru/Right	0.68	31.9	C	146	#386	0.80	41.3	D	167	#439	0.85	47.2	D	172	#454

1 volume to capacity ratio
2 delay in seconds
3 level of service
4 50th percentile queue
5 95th percentile queue
~ Volume exceeds capacity, queue is theoretically infinite
# 95th percentile volume exceeds capacity, queue may be longer
m Volume for 95th percentile queue is metered by upstream signal

South Huntington Avenue at Huntington Avenue operates at LOS F during all analysis conditions in the morning and evening peak hours due to high traffic volumes on Huntington Avenue and an exclusive walk phase which stops all traffic for a period of time. In the morning peak hour, Huntington Avenue eastbound operates at a LOS F while all other approaches operate at acceptable LOS. During the evening peak hour, westbound Huntington Avenue experiences long queues as traffic operates with one outbound thru lane toward Route 9. With the addition of Project-generated trips, the overall intersection delay will only increase by 0.4 seconds in the morning peak hour and 0.1 seconds in the evening peak hour.

South Huntington Avenue at Bynner Street operates at LOS D in the morning peak hour and degrades to LOS E in the No-Build Condition due to the increase in volume on the Bynner Street eastbound approach. During the evening peak hour, the intersection operates at LOS B for all three scenarios. With the addition of Project-generated trips, the overall intersection delay will only increase by 0.5 seconds in the morning peak hour and 0.8 seconds in the evening peak hour

South Huntington Avenue at Perkins Street operates at LOS E in the morning peak and degrades to LOS F in the No-Build Condition due to the increase in volume on the Perkins Street eastbound approach. During the evening peak hour, the intersection operates at LOS D for all three scenarios. With the addition of project generated trips, the overall intersection delay will only increase by 0.5 seconds in the morning peak hour and 5.3 seconds in the evening peak hour.

The results of the LOS analysis indicate that the addition of Project trips will have a negligible effect on the future traffic operations at these three study area intersections.

Unsignalized Capacity Analysis

The LOS results of the unsignalized capacity analyses are summarized in Table 3.11 for the Existing, No-Build, and Build condition peak hours. Detailed Synchro results are presented in the Appendix B.

TABLE 3.11 UNSIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS) SUMMARY

Location	Critical Side Street Movement	Peak Period	2015 Existing Condition				2020 No-Build Condition				2020 Build Condition			
			v/c[1]	Delay[2]	LOS[3]	95th[4] Queue	v/c	Delay	LOS	95th Queue	v/c	Delay	LOS	95th Queue
S. Huntington Ave at Heath St	Heath St WB Left	Weekday AM	>1.00	>50.0	F	193	>1.00	>50.0	F	237	>1.00	>50.0	F	241
		Weekday PM	>1.00	>50.0	F	483	>1.00	>50.0	F	567	>1.00	>50.0	F	578
S. Huntington Ave at Site Driveway (Middle)	Site Driveway EB	Weekday AM	-	-	-	-	-	-	-	-	0.04	18.4	C	3
		Weekday PM	-	-	-	-	-	-	-	-	0.02	18.4	C	2
S. Huntington Ave at Site Driveway (South)	Site Driveway EB	Weekday AM	-	-	-	-	-	-	-	-	0.07	20.1	C	5
		Weekday PM	-	-	-	-	-	-	-	-	0.03	16.8	C	2

1 volume to capacity ratio
2 delay in seconds
3 level of service
4 95th percentile queue
- not analyzed under condition

The intersection of South Huntington Avenue at Heath Street operates at LOS F during both the morning and evening peak hours under all analysis conditions due to the high volume of vehicles turning left from Heath Street onto South Huntington Avenue. The traffic model does not perceive enough gaps in South Huntington Avenue traffic for Heath Street traffic. Traffic at this intersection operates more aggressively than the traffic model allows suggesting shorter observed delays than reported. Driver acceptance of small gaps in traffic was observed as is typical in an urban environment. It was also common to see vehicles taking a left from South Huntington Avenue with the right-of-way giving vehicles on Heath Street priority.

At the Project Site, only the middle and south driveways have exiting vehicles allowing the model to report delay. The Site driveways were analyzed under the Build Condition only, due to current fenced conditions, and were found to operate at a LOS C during both peak hours.

3.9 Construction

The Proponent will develop a detailed evaluation of potential short-term construction-related transportation impacts including construction vehicle traffic, parking supply and demand, and pedestrian access. Detailed Construction Management Plans (CMP) will be developed and submitted to the BTD for their approval. These plans will detail construction vehicle routing and staging.

Construction vehicles will be necessary to move construction materials to and from the Project Site. Every effort will be made to reduce the noise, control fugitive dust, and minimize other disturbances associated with construction traffic. Truck staging and lay-down areas for the Project will be carefully planned.

Contractors will be encouraged to devise access plans for their personnel that deemphasize auto use (such as seeking off-site parking, provide transit subsidies, on-site lockers, etc.).

Construction workers will also be encouraged to use public transportation to access the Project Site.

During the construction period, pedestrian activity adjacent to the Site may be impacted by sidewalk closures. A variety of measures will be considered and implemented to protect the safety of pedestrians. Temporary walkways, appropriate lighting, and new directional and informational signage to direct pedestrians around the construction site will be provided. After construction is complete, finished pedestrian sidewalks will be permanently reconstructed to meet ADA standards around the Site. Damage to sidewalks and adjacent roadway caused by construction activity will be repaired per City standards.

3.10 Conclusion

The Project will implement an aggressive TDM program to market the buildings to those without personal automobiles, which is supported by current demographic and vehicle ownership trends. The Project is expected to have limited impacts on the area's traffic operations. During the morning peak hour, the Project is expected to generate 31 vehicle trips (6 in and 25 out) and during the evening peak hour, it is expected to generate 38 vehicle trips (25 in and 13 out). The results of the analysis indicate that there will be no substantial changes in level of service in the study area from Project-related traffic.

Parking will be reserved for residents of the building who will be charged market rate. Parking will be divided into three surface lots, one lot underneath the Goddard House Addition with 17 spaces, one underneath the new structure with 51 spaces and a surface lot in front of the main entrance with 15 spaces. Secure, covered bicycle parking will be provided in at a rate of one (1) space per unit with associated bike repair stations on-site. Additional bicycle storage will be provided at grade for visitors.

To improve the pedestrian realm, new landscaping will be provided along the South Huntington Avenue frontage. Existing catenary poles will be removed, and the existing mid-block crossing will have pedestrian ramps installed to bring this crossing to ADA standards.

The Project embraces the City's plans for activating the South Huntington Avenue corridor and will help the City reach these goals by:

- Providing a landscape buffer in front of the building with new street trees to improve the pedestrian realm;
- Providing on-site covered and secure bike storage and other bicycle incentives for residents and bike racks for the general public; and
- Implementing a TDM plan to discourage single-occupancy vehicle trips and auto ownership.

4

Environmental Protection

This chapter presents information on the existing environmental conditions in the vicinity of the Project Site and the potential changes that may occur as a result of the Project. The goal of the Project is to better utilize the Project Site and build on/complement adjacent uses while avoiding or minimizing potential adverse environmental impacts to the Project area to the greatest extent feasible.

As discussed in more detail below, any Project-related impacts will be mitigated by the substantial community benefits the Project will bring to the neighborhood, including renovation of a historic structure, new housing, and an improved streetscape. The following sections identify impacts that have been avoided, minimized and/or mitigated through design and/or management while addressing local, state, and federal design requirements. Temporary construction-period impacts will be managed to minimize disruption to the surrounding neighborhood.

In accordance with Article 80 of the Boston Zoning Code, this expanded PNF considers the potential for the project impacts in the following Large Project Review Categories:

- Shadow
- Daylight
- Solar Glare
- Air Quality
- Flood Hazard
- Water Quality
- Noise
- Solid and Hazardous Waste
- Groundwater
- Geotechnical
- Construction
- Post-Construction Rodent Control
- Green Building/Sustainable Design
- Climate Change Preparedness and Resiliency

4.1 Key Findings and Benefits

- Shadow impacts are not significant and are similar to those from adjacent existing buildings.
- The Project has a limited impact on daylight, with a slight increase in skyplane obstruction at all viewpoints.
- The Project will include stormwater best management practices, improving the water quality and reducing the quantity of stormwater runoff compared to the existing condition.

- Air quality impacts from Project-related motor vehicle traffic will be minimized through the implementation of Transportation Demand Management activities.
- The Project does not impact any wetlands and is not vulnerable to flooding.
- The Project will be designed to adhere to state and local noise ordinances, and will not significantly increase sound levels over existing levels.
- Other than asbestos within the existing building, no hazardous waste materials have been found on the site.
- The Project is not expected to have adverse short or long-term impact on groundwater conditions.
- Some rock excavation is anticipated to be required within the eastern portion of the proposed new building, and some may be required for the proposed west addition to the Goddard House.
- All construction impacts will be mitigated to the extent practicable.
- The Project will pursue a minimum of silver level certifiability through the USGBC's LEED for Homes: Midrise rating system.

4.2 Shadow

This section describes the anticipated changes to shadows in the Project area as a result of the Project.

4.2.1 Summary of Key Findings

The shadow study impact analysis shows that shadow impacts from the Project are minor. Of these minor impacts, the new structures cast the longest shadows of the year for a short period of time on the Jamaicaway and Huntington Avenue during the winter solstice, when the sun is lowest in the sky.

4.2.2 Regulatory Context

The Proponent has completed a shadow study as part of this expanded PNF to ascertain the potential new shadow impacts resulting from the Project. The shadow impact study has been conducted in accordance with Section 80B-2 of the City of Boston Zoning Code with particular emphasis on sidewalks, public plazas, and other public open spaces as well as nearby buildings of historical importance.

4.2.3 Methodology

The following shadow study has been prepared using methodologies consistent with accepted practices for such studies completed under Article 80 review. The analysis provides a comparison of the No-Build and Build Conditions. This is accomplished by using a three-dimensional model of the Project area using data provided by the BRA, updated to include nearby foreseeable projects. The analysis is based on the BRA's 3D massing model for the Jamaica Plain neighborhood. The study was completed using standard sun altitude and

azimuth data for each study date estimated to occur at latitude and longitude 42.326086N, 71.111927W. Times were adjusted for daylight savings time as appropriate. The conditions were compared for the spring and fall equinoxes, and the summer and winter solstices at 9:00 AM, 12:00 Noon and 3:00 PM. Additional shadows were estimated for summer solstice at 6:00 PM.

4.2.4 Potential Effects

The results of the shadow studies are presented in Figures 4.1 a-d.

Vernal Equinox (March 21):

During the first time period, new shadow is cast to the west of the new building (toward the Jamaicaway) and to the north of the addition to the Goddard House that fronts on Huntington Avenue, the former extending over the public right of way. During the second period (noon), there is a small portion of new shadow that falls to the north of each building. During the third period (3:00 p.m.) all new shadows cast remain on the Project Site. During the fourth period (6:00 p.m.) the new building casts new shadow over South Huntington Avenue.

Summer Solstice (June 21)

During the first time period, new shadow is cast to the west of the new building (toward the Jamaicaway). During the second period (noon), there is a small portion of new shadow that falls to the north of each building. During the third period (3:00 p.m.) all new shadows cast remain on the Project Site. During the fourth period (6:00 p.m.) both the new building and the Goddard House addition cast shadows on Huntington Avenue.

Autumnal Equinox (September 21)

During the first time period, new shadow is cast to the west of the new building (toward the Jamaicaway) and to the north of the addition to the Goddard House that fronts on Huntington Avenue, the former extending over the public right of way. During the second period (noon), there is a small portion of new shadow that falls to the north of each building. During the third period (3:00 p.m.) the new building casts new shadow onto Huntington Avenue. During the fourth period (6:00 p.m.) the new building casts new shadow over South Huntington Avenue.

Winter Solstice (December 21)

During the first time period, new shadow is cast to the northwest of the new building and the Goddard House, casting new shadow on the Jamaicaway. During the second period (noon), there is a small portion of new shadow that falls to the north of each building. During the third period (3:00 p.m.) the new building and the Goddard House addition cast new shadow onto Huntington Avenue.

4.3 Daylight

The following section describes the anticipated effect on daylight coverage at the Project Site as a result of the Project. An analysis of the percentage of skydome obstructed under the Build and No-Build conditions is a requirement of the Article 80 Large Project Review as part of the Environmental Protection component (Section 80B-2(c) of the City of Boston Zoning Code). The daylight analysis was prepared using the BRA's Daylight Analysis Program (BRADA) and has been completed in accordance with the requirements of Article 80 of the City of Boston Zoning Code. The results of the analysis are presented in Figures 4.2 a-b.

4.3.1 Methodology

The Project was analyzed using the BRADA and by comparing the Existing/No-Build Condition and Build Condition. This section provides a description of the methodology used for the analysis.

BRADA Software

The BRADA program was developed in 1985 by the Massachusetts Institute of Technology to estimate the pedestrian's view of the skydome taking into account the massing and building materials used. The software approximates a pedestrian's view of a site based on input parameters such as: location of viewpoint, length and height of buildings and the relative reflectivity of the building facades. The model typically uses the midpoint of an adjacent right-of-way or sidewalk as the analysis viewpoint. Based on these data, the model calculates the perceived skydome obstruction and provides a graphic depicting the analysis conditions.

The model inputs used for the study presented in this EPNF were taken from a combination of the BRA City model, an existing conditions survey prepared by VHB, and schematic design plans prepared by Prellwitz Chilinski Architects. As described above, the BRADA software considers the relative reflectivity of building facades when calculating perceived daylight obstruction. Highly reflective materials are thought to reduce the perceived skydome obstruction when compared to non-reflective materials. For this daylight analysis, the building facades are considered non-reflective, resulting in a conservative estimate of daylight obstruction.

Viewpoints

The following viewpoints were used for this daylight analysis:

- Center of Huntington Avenue
- Center of Jamaciaway

4.3.2 Daylight Existing/No-Build Conditions

Existing buildings were analyzed to illustrate the existing skyplane impacts (15.2 percent obstruction along Huntington Avenue and 17.4 percent along the Jamaicaway) and are meant to serve as a reference of how much increased impact the proposed Project would have on the skyplane, however small in this case.

4.3.3 Daylight Build Conditions

Under the Build Condition, all viewpoints are expected to experience a slight increase in skyplane obstruction (16.8 percent obstruction along Huntington Avenue, up from 15.2 percent in the existing condition; 20.0 percent from the Jamaicaway, up from 17.4 percent in the existing condition) due to the additional massing of the proposed building on the southern portion of the Site and new proposed buildings in front of the existing building. This effect is to be expected and cannot be avoided when new building facades are placed in front of existing ones and an additional building is added.

4.4 Solar Glare

The impacts of solar glare on neighbors and adjacent roadways are not anticipated due to the proposed building design. The design does not include large areas of reflective glass or other materials that would result in solar impacts.

4.5 Air Quality

The 1990 Clean Air Act Amendments (CAAA) resulted in states being categorized as attainment and non-attainment areas, based upon the severity of their air quality problems. The proposed Project is located in an area that has been designated as a Carbon Monoxide Maintenance area. The U.S. Environmental Protection Agency (EPA) has established the NAAQS for carbon monoxide to protect the public health. The Commonwealth of Massachusetts has adopted the same standards as those set by the EPA, and HUD applies these NAAQS when evaluating impacts.

The predominant source of air pollution anticipated from the proposed Project is emissions from Project-related motor vehicle traffic, which directly emit carbon monoxide. Article 80 may require an evaluation of impacts on air quality from any significant stationary or mobile sources associated with the proposed Project. The Proponent is prepared to address this requirement if necessary with a microscale analysis in accordance with the protocol/modeling procedures typically required by the BRA to determine conformance with the National Ambient Air Quality Standards (NAAQS), however given the limited motor vehicle trip generation, it is anticipated that the Project will have a limited impact. Through the implementation of Transportation Demand Management as discussed in Chapter 3, impacts will be minimized to the extent feasible.

4.6 Water Quality

The Project will include stormwater best management practices, which will improve the water quality and reduce the quantity of stormwater runoff compared to the existing condition. The Project is intended to be consistent with both the 2008 DEP Stormwater Management Policy and Standards as they apply to redevelopment projects and local requirements from the

Boston Water and Sewer Commission (BWSC). The implementation of stormwater management practices is expected to reduce the rate and quantity of stormwater entering the BWSC system via the Charles River. Refer to the 'Stormwater Management/Drainage' section of Chapter 5, Infrastructure for more information.

4.6.1 Compliance with MassDEP Stormwater Management Policy

- ***Standard #1:*** *No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

  Compliance: The project design will not include any new untreated stormwater discharges, nor is erosion expected to be caused, to wetlands or waters of the Commonwealth as a result of stormwater discharges related to the Project.

  The Proponent is expected to incorporate subsurface infiltration or equivalent systems, stormwater treatment devices, and deep sump, hooded catch basins as potential stormwater control measures. It is the Proponent's intention to treat runoff through the options listed above or through mechanical treatment units prior to discharge into the public storm drain system.

- ***Standard #2:*** *Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.*

  Compliance: The proposed Project is expected to be designed to comply with this standard. The Project is also required to comply with stormwater standards established by the BWSC. On-site infiltration systems or equivalent systems are expected to be designed to achieve these results for the Project.

- ***Standard #3:*** *Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to the maximum extent practicable. The annual recharge from the post development site should approximate the annual recharge from the pre-development or existing site conditions, based on soil types.*

  Compliance: The Project is currently planning to incorporate the required subsurface infiltration systems to promote groundwater recharge to the maximum extent practicable. Further geotechnical explorations will be conducted.

- ***Standard #4:*** *For new development, stormwater management systems must be designed to remove 80% of the average annual load (post-development conditions) of Total Suspended Solids (TSS). It is presumed that this standard is met when: Suitable nonstructural practices for source control and pollution prevention are implemented; Stormwater management best management practices (BMPs) are sized to capture the prescribed runoff volume; and Stormwater management BMPs are maintained as designed.*

  Compliance: The proposed designs include BMPs intended to remove 80 percent of TSS as required by this standard, as well as the BWSC site design process. This is expected to be

accomplished by using deep sump, hooded catch basin, proprietary treatment devices, and infiltration or equivalent systems.

- ***Standard #5:*** *For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If, through source control and/or pollution prevention, all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L.c. 21, §§ 26-53 and the regulations promulgated there under at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.*

  Compliance: The majority of the Site will be occupied by buildings and paved driveways which are not associated with higher potential pollutant loads.

- ***Standard #6:*** *Stormwater discharge to critical areas must utilize certain stormwater management BMPs approved for critical areas. Critical areas are Outstanding Resource Waters (ORWs), shellfish beds, swimming beaches, cold-water fisheries and recharge areas for public water supplies.*

  Compliance: The proposed Project does not discharge to a critical area.

- ***Standard #7:*** *A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.*

  Compliance: The Project is considered a redevelopment project. The proposed Project will comply with the Stormwater Management Standards to the extent practicable and is anticipated to improve upon existing conditions.

- ***Standard #8:*** *Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.*

  Compliance: Sedimentation and erosion controls will be incorporated as part of the design of the Project and be employed by the contractor during construction. Erosion and sedimentation control plans will be submitted to the BWSC and the contractor will be required to implement the measures as part of the BWSC general services application process.

- ***Standard #9:*** *A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

Compliance: An O&M Plan will be developed during the design process of this Project.

- ***Standard #10:*** *All illicit discharges to the stormwater management system are prohibited.*

  Compliance: There are no currently known illicit discharges. All proposed discharges will be reviewed by the BWSC to ensure consistency with this standard.

4.7 Flood Hazards & Wetland Resources

The Proponent has considered the Project's vulnerability to flooding from construction and operational standpoints. The Project Site is not located within the limits of the effective FEMA-designated 100-year or 500-year flood zones from Leverett Pond. The entirety of the Project Site is greater than 450 feet from the 100-year and 500-year flood plains as shown on FEMA map number 25025C0078G, effective date September 25, 2009. The 100-year flood elevation in the nearest section of Leverett Pond is +10 NAVD88 which is equivalent to +16.46 feet Boston City Base (BCB). The site elevation ranges from approximately 50 to 80 feet BCB, which is significantly higher than the adjacent floodplain. Although an updated set of preliminary FEMA maps have been released for parts of coastal Suffolk County, the Site area is not located within an updated map unit. Refer to section 4.15 (Climate Change Preparedness and Resiliency) below for an assessment of the Project Site in terms of flooding in combination with projected sea level rise and extreme weather events.

No wetland resource areas have been located on the Site.

4.8 Noise

This section presents a qualitative noise evaluation of the proposed Project. The noise evaluation discusses sound levels under future conditions based upon mechanical equipment, motor vehicle traffic, building operations, and emergency/back-up generators.

4.8.1 Noise Impact Criteria

The City of Boston and the DEP have developed noise impact criteria that establish noise thresholds deemed to result in adverse impacts.

The City of Boston has established regulations evaluating sound levels from proposed developments. These regulations establish maximum allowable sound levels based upon the land use of the proposed development. If the proposed development is located in a residential/industrial zoning district, the maximum noise level affecting residential uses shall not exceed the Residential-Industrial Noise Standard. The Residential-Industrial land use noise standard is 65 dBA for Daytime conditions (7:00 AM to 6:00 PM) and 55 dBA for Nighttime conditions (6:00 PM to 7:00 AM). The Business land use noise standard is 65 dBA for both Daytime and Nighttime conditions. These criteria are applicable to building facility noise

sources, such as mechanical equipment, and do not apply to operation of any motor vehicle on any public way.

DEP has established a policy (DEP Policy 90-001) for implementing its noise regulations (310 CMR 7.10). This policy states that a source of sound will be considered in violation of the Department's noise regulation under the following conditions:

- If the source increases the broad band sound level by more than 10 dBA above ambient (normally defined as L90 or the noise level exceeded 90 percent of the time during the hours of noise source operations), or
- If the source produces a "pure tone" condition.

4.8.2 Project Impacts

The proposed Project will be designed to adhere to state and local noise ordinances. The primary noise sources will likely be the mechanical and HVAC equipment necessary to maintain environmental controls during normal building operation. The design of the building and location of equipment will ensure that the sound levels generated by the proposed Project meet both the City of Boston and DEP noise criteria and will have no adverse impact on the surrounding area. The following summarizes and evaluates each noise source and its potential sound level contribution to the surrounding area.

Mechanical Equipment

The Project will include some rooftop mechanical equipment. To the extent feasible, equipment will be located to take advantage of the buildings varied height and geometry which create a noise barrier blocking the rooftop mechanical noise from adjacent neighbors.

Building Operations

Residential trash will be stored within the trash rooms located in each building and be put in the designated outdoor trash storage area adjacent to the existing building for pickup.

4.8.3 Conclusion

The proposed Project will comply with the City of Boston and DEP noise criteria because it will not generate sound levels that:

- Exceed the applicable land use criteria, or
- Significantly increase sound levels over existing levels, or
- Generate "pure tone" conditions because of the characteristics of traffic noise are varied.

4.9 Solid and Hazardous Waste

Environmental due diligence investigations have been performed at the Site. The Site is currently in compliance with the Massachusetts Contingency Plan (MCP). Excess excavated soil

that may be generated during construction will be managed in accordance with Massachusetts Department of Environmental Protection (DEP) policy and the MCP. The Project Proponent will retain a Licensed Site Professional (LSP) to manage the environmental aspects of the Project, including proper management and/or disposal of soil encountered during construction. The LSP will also prepare required MCP regulatory compliance submittals, if required.

The environmental due diligence efforts for this property are being performed by McPhail Associates, LLC on behalf of the Project Proponent. As part of McPhail's due diligence work, subsurface exploration programs were implemented to assess soil quality at the property. The program included the advancement of soil borings and test pits, and collection of soil samples. Results of the subsurface explorations completed at this property did not indicate evidence of a condition requiring notification of the DEP pursuant to MCP regulatory requirements.

4.10 Groundwater

The Project Site is not located within the Groundwater Conservation Overlay District (GCOD) as outlined in Article 32 of the City of Boston Zoning Code. Further, groundwater was not observed within the recent subsurface explorations performed at the Site. Therefore, construction of the proposed development is not expected to have adverse short or long-term impact on groundwater conditions.

4.11 Geotechnical

Based on the results of subsurface explorations completed at the Site, existing ground surface is generally underlain by successive deposits of topsoil, fill and natural glacial outwash soils which are underlain by bedrock. Bedrock outcrops are present on the west side of the Project Site. Where encountered in the explorations, bedrock was typically present at depths ranging from about two to eight feet below ground surface. Groundwater was not observed within the recent subsurface explorations.

Foundation support for the proposed building will consist of conventional spread footings. The footings will bear directly on the glacial outwash or bedrock, and/or on compacted structural fill or lean concrete placed directly over the glacial outwash or bedrock to the bottom of footing.

Based on the subsurface conditions encountered during our subsurface exploration program and the limits of the proposed structures, rock excavation is anticipated to be required within the eastern portion of the proposed new building and may be required for the proposed west addition to the Goddard House. Rock removal operations for the proposed new building are anticipated to extend up to the southern site boundary and along South Huntington Avenue. In areas adjacent to existing streets or proposed structures where bedrock is encountered above final subgrade, the perimeter rock face will be pre-split prior to the production rock excavation.

An excavation of up to approximately 20 feet in depth is anticipated to be performed directly adjacent to South Huntington Avenue to construct the new building. An excavation support system along South Huntington Avenue will be required to retain adjacent soils and protect adjacent streets and utilities. Where required, the temporary excavation support system is likely to consist of a cantilevered and/or tied-back steel soldier pile and timber lagging wall. Installation of the temporary excavation support wall 5 feet from the exterior basement wall and the installation of tiebacks below South Huntington Avenue will require approval from the City of Boston Public Improvements Commission (PIC).

4.12 Construction

Construction impacts are temporary in nature and are typically related to air (dust), noise, and runoff. The following sections describe the potential temporary impacts due to construction activities and proposed mitigation measures to reduce these impacts. Construction is anticipated to commence in summer 2016.

4.12.1 Site Preparation and Construction Staging

The Proponent will continue to work and coordinate with the utility companies to confirm compliance. A plan to control construction-related impacts including erosion, sedimentation, and other pollutant sources during construction and any land disturbance activities shall be developed and implemented, however no dewatering is anticipated.

4.12.2 Construction Air Quality

Retrofitted diesel construction vehicles, or vehicles that use alternate fuels, will be used. The Project will implement an outdoor construction management plan that includes provisions for wheel washing, site vacuuming, and truck covers. The Commonwealth of Massachusetts anti-idling law will be enforced during the construction phase of the Project with the installation of on-site anti-idling signage.

The Project will comply with the requirements of the Clean Construction Equipment Initiative aimed at reducing air emissions from diesel-powered construction equipment. Oxidation catalysts and catalyzed particulate filters will be utilized on all construction vehicles and equipment to reduce air quality degradation caused by emissions from heavy-duty, diesel-powered construction equipment. All pre-2007 diesel construction vehicles working on the Project will be retrofitted using retrofit technologies approved by the United States Environmental Protection Agency (EPA). Additionally, ultra-low-sulfur diesel (ULSD) fuel (15 parts per million) will be used for all off-road diesel equipment.

4.12.3 Construction Noise

The construction activity associated with the Project may temporarily increase nearby sound levels due to the use of heavy machinery. Heavy machinery is expected to be used

intermittently throughout the Project's construction phases, typically during daytime periods. The construction phases that will generate the highest sound levels include the demolition of a small portion of the existing building, site excavation and grading, and construction of the foundations for the proposed buildings. The City of Boston Regulations for the Control of Noise considers construction sound levels to be an impact to residential land uses if the L10 is in excess of 75 dB(A) or the Lmax is in excess of 86 dB(A). A construction management program will be developed with the City of Boston to ensure that the City of Boston regulation related to construction noise is met.

The Project is subject to construction-hour restrictions and the residential sound limits established under the Regulations for the Control of Noise in the City of Boston. Residential and commercial neighbors will be provided with contact names and telephone numbers for comments/complaints regarding these and other construction-related issues.

4.12.4 Construction Traffic and Parking

Construction workers and construction trucks will be properly managed to minimize significant impacts on traffic conditions on surrounding streets during construction. The Project Site offers adequate space for on-site construction staging and parking. The Proponent will work with the BTD to develop a site-specific Construction Management Plan (CMP).

The following elements are typically addressed in the CMP:

- Designation of truck routes for deliveries
- Protection of pedestrian walkways
- Location and sizing of staging areas for on-site storage of construction materials
- Definition of worker parking parameters and measures to maximize their use of public transportation
- Identification of truck waiting areas
- Police officer traffic management
- Construction graphics program
- Interim traffic operation improvements
- Definition of street and sidewalk occupancies
- Definition of work hours

4.12.5 Construction Trip Generation and Worker Parking

The number of workers required during the construction will vary daily. Because the workforce will arrive and depart prior to peak commuter traffic periods, these trips are not expected to have a large impact on the area's transportation system. Workers will be encouraged to take public transport or park in area lots. The Proponent will work to reduce construction employee vehicle trips through TDM measures, such as:

- Provide secure, on-site storage so that workers do not have to transport tools and equipment each day;

- Post transit schedules in prominent area; and/or
- Hire local workers.

4.12.6 Construction Truck Routes and Volumes

The construction work is not anticipated to generate a high volume during peak hours. Police details will be assigned to all active gate locations to ensure that vehicles are not impacting traffic operations as necessary.

4.12.7 Construction Hazardous Materials and Solid Waste

All solid waste generated will be recycled off-site or disposed of in accordance with federal, state, and city regulations. The Construction Manager will implement a waste management plan that will seek to divert at least 75 percent and up to 95 percent of construction and demolition waste material removed from the Site from landfills through recycling and salvaging.

4.12.8 Rodent Control During Construction

The City of Boston has declared that the infestation of rodents in the city as a serious problem. In order to control this infestation, the City enforces the requirements established under the Massachusetts State Sanitary Code, Chapter 211, 105 CMR 410.550 and the State Building Code, Section 108.6. Policy Number 87-4 (City of Boston) established that preparation of a program for the extermination of rodents shall be required for issuance of permits for demolition, excavation, foundation, and basement rehabilitation. The Proponent will prepare and adhere to a rodent control program prior to demolition and on a regular basis throughout the duration of construction.

4.12.9 Public Safety During Construction

The entire perimeter of the construction site limits will be protected with a temporary construction fence. Vehicular gates will be provided for construction traffic on perimeter roads to allow safe entrance and exiting for construction vehicles and personnel. Additionally, signage will be posted on fencing and construction trailers to alert all personnel to the safety requirements.

Larger deliveries of construction materials may require the use of police details to assist in managing vehicular and pedestrian traffic. Coordination with the Boston Police Department will be essential in providing safe travel routes for pedestrians during peak construction periods.

4.13 Rodent Control Post-Construction

Trash and solid waste removal will be handled by the building maintenance staff. The Proponent will maintain a service contract with a professional pest control firm to address rodent/pest control during the operational phase of the Project. In addition, no open top dumpsters will be allowed as an additional precaution to deter infestation.

4.14 Sustainable Design/Green Building

This section provides an overview of the sustainable design elements proposed as part of the Project at this time of preliminary design to demonstrate that the Project will meet the requirements of Article 37 of the Boston Zoning Code relative to the City's Green Building policies and procedures (i.e., "LEED certifiable").

Both buildings will pursue a minimum of silver level certifiability through the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) for Homes: Midrise (LEED H Midrise) rating system. Implementation of LEED certifiability ensures that the project design includes the following sustainable principles:

- An integrated team, members of which will be in constant communication throughout the design and construction process;
- Environmentally friendly site design and consideration of landscaping that benefits both residents and the surrounding habitats;
- Efficient water use that minimizes waste and maximizes applicable technology;
- Energy efficiency through installation of high-efficiency equipment and a right-sized system design;
- Healthy materials and finishes throughout all interior spaces, reducing health effects on residents; and
- Effective ventilation and exhaust systems design to ensure continued health and air quality throughout the life of each building.

4.14.1 Approach to Sustainability/Compliance with Article 37

The following is a summary of the proposed compliance methodology for the LEED H Midrise rating system. Please refer to Appendix C for more detailed information on specific credit compliance pathways.

Innovation and Design

The Innovation and Design Process (ID) category of the LEED H Midrise rating system ensures integration of sustainable principles and integrated team practices throughout the design and construction phase and rewards projects for design and installation of sustainable methodology that is above and beyond the standard LEED credit requirements. The Project will also use the credits in this category to address and mitigate potential issues in building durability and resiliency.

To comply with the prerequisites in this category, the Project will employ an integrated design and construction team, including an energy expert and at least one LEED Accredited Professional. The team will participate in a sustainable design charrette prior to design development and will identify and address potential durability issues through the creation of a Durability Risk Evaluation and subsequent Durability Checklist. The latter will include design strategies to address the following durability concerns: exterior water and moistures, interior

water and moisture, air infiltration, interstitial condensation, pest control, heat loss, ultraviolet radiation, and natural disasters.

Location and Linkages

The Location and Linkages (LL) category is unique to the LEED H Midrise rating system and aims to reduce urban sprawl, rewarding development on and near existing infrastructure, public transportation, and developed land.

Since the Project is a redevelopment of an existing, urban infill parcel, construction requires no use of undeveloped land for its construction and the Site includes existing access to utility lines, public transportation, and accessible open space for active and passive recreation.

The site location also provides residents with walk-able access to numerous neighborhood amenities, including restaurants, grocery stores, pharmacies, schools, religious institutions, laundry services, communities centers, and indoor recreation facilities.

The site density is approximately 88 units/acre, which exceeds LEED minimums and provides increased housing availability for the surrounding community.

Sustainable Sites

The Sustainable Sites (SS) category addresses environmental issues related to site landscape and civil engineering, ensuring a seamless co-existence between the built environment and the natural environment.

The Project will install landscaping that includes only non-invasive plantings, maximizes drought-tolerant plantings, and minimizes the need for excessive irrigation, fertilizer, and ongoing maintenance. Additionally, both the Site hardscape and building roofing will seek to reduce heat island effects, increasing reflectivity of installed materials, where feasible and appropriate.

Stormwater collected onsite will be managed throughout construction and the life of the Project. During construction, the site design will implement a National Pollution Discharge Elimination System (NPDES) approved erosion and sediment control plan, including Best Management Practices (BMPs) which minimize stormwater run-off and wind erosion. Once construction is completed, the Site will retain and infiltrate all stormwater onsite, per city of Boston requirements.

The Project is located 0.3-mile from the Health Street Station on the MBTA Green Line, promoting use of public transportation throughout the city. The station provides consistent subway and rapid transit, surface bus service on all weekdays and weekends.

Provided bicycle storage on-site will promote resident biking by maximizing available secure, covered storage spaces. The Project is also located adjacent to the Jamaica Way walking path

and Olmstead Park, allowing residents to easily access three miles of continuous off-street bike paths, as well as dedicated bike lines on Huntington Avenue and Boston's Emerald Necklace.

Water Efficiency

The Water Efficiency (WE) category addresses environmental degradation related to overuse of potable water within residential buildings and site irrigation systems. Where necessary, the Site will utilize high-efficiency irrigation systems.

Inside the building, all residential units will utilize high-efficiency, low-flow fixtures for water closets, lavatory faucets, showers, and kitchen faucets. Additionally, since the Goddard House apartments are individually metered, all tenants will be directly responsible for their water usage, encouraging efficient tenant behavior.

Energy and Atmosphere

The Energy and Atmosphere (EA) category addresses ongoing energy usage and continued building performance. The Project will seek to exceed both the Massachusetts's Stretch Energy Code (Stretch Code) and the newly implemented International Energy Conservation Code (IECC) 2012, providing at least a 20 percent reduction in overall energy usage, annually.

To achieve these energy reduction goals, the Project will utilize high-efficiency heating, cooling, and ventilation equipment as well as high-efficiency domestic hot water equipment and distribution systems. Additionally, both building envelopes will include increased insulation, creating an effective thermal barrier subsequently reducing thermal losses to the exterior.

Finally, installed heating, ventilation, cooling, and domestic hot water systems will be commissioned by a third-party commissioning agent. Completed activities will include thorough review of the Project's Owner's Projects Requirements and Basis of Design documents, peer review of all construction documents, submittal review throughout construction, and pre-functional testing of all installed equipment, prior to final reporting.

Materials and Resources

The Materials and Resources (MR) category addresses all installed materials, including framing and interior finishes, as well as diversion of waste from landfills.

To minimize use of virgin materials, the new construction building at the Project Site will pursue panelization of exterior walls, flooring, and roof trusses.

The Project will also utilize non-tropical wood products and/or FSC-certification for necessary woods from tropical countries. Additionally, wood materials will be reviewed for reduction, or elimination, of added urea-formaldehyde resins.

All finish materials, including sealants, adhesives, paints, primers, coatings, etc. will be chosen for environmental benefits such as regionally sourced, low-Volatile Organic Compound (VOC) release and green certification for health benefits.

Installed cement materials will be sourced within 500-miles of the Project Site; paints, primers, adhesives, sealants will be reviewed for VOC compliance with the South Coast Air Quality Management District Rule #1113 and #1168; and, all flooring materials will include Green Label Plus certification (rugs) or FloorScore certification (resilient flooring), as applicable.

During demolition and construction on-site, all waste produced from construction-related activity will be tracked and diverted to minimize landfill disposal. The Project will seek to achieve minimum diversion rates of 50 percent during demolition and 75 percent during construction.

Indoor Environmental Quality

The Indoor Environmental Quality (IEQ) category addresses the exhaust and ventilation of all interior spaces within the building, ensuring a consistent healthy environment for building residents.

All Project apartment systems will be designed to meet, or exceed, the ASHRAE 62.2-2007 standard and all common spaces areas will meet the ASHRAE 62.1-2007 standard. Ductwork will be designed in accordance with the Air Conditioning Contractors of America (ACCA) Manual J Heating and Cooling Loads, and Manual D Duct Sizing, standards.

All installed combustion equipment will be directly vented to the exterior and each floor of the apartment, as well as all common spaces, will be equipped with combination smoke and carbon dioxide detectors. All installed mechanical equipment will include minimum MERV 8 filtration media to ensure that harmful particulates are filtered out of the air stream, prior to entry into the interior spaces.

During construction, all installed ductwork will be protected from contamination by dust and debris produced on-site. Protection will remain in-place from delivery on-site until final cleaning and occupancy.

Garage spaces below both buildings are open to the exterior, providing adequate ventilation of this space and ensuring continued safety of all users and residents. All buildings will enforce a no-smoking policy within the enclosure as well as within 25 feet of all entries, air intakes, or operable windows.

Finally, all residential units will be sealed for compartmentalization, per LEED H Mid-rise and the Massachusetts Multifamily High-Rise Utility Rebate (MassSave) program standards. Installed sealing materials will limit transfer of heated and cooled air, moisture, and smells both between units and between the interior and exterior. The maximum acceptable air leakage will be 7.0 Air Changes per Hour (ACH) when tested at 50 Pascals.

Awareness and Education

The Awareness and Education category helps the owner, building residents, and maintenance staff understand the unique requirements of all installed equipment and materials- especially those conditions and ongoing maintenance tasks related to sustainable and environmentally conscious development.

During the course of project design, the Sustainability Consultant and Owner will develop Operation and Maintenance handbooks to be given to occupants and staff on-site. Additionally, training sessions will be held with all leasing and maintenance staff at construction completion.

4.14.2 Sustainable Practices

In addition to LEED H Midrise implementation, the Project includes additional environmentally friendly design practices such as reuse of an existing building, pedestrian-friendly location, and installation of plantings and infrastructure appropriate to a sloped site.

4.15 Climate Change Preparedness and Resiliency

This section discusses the approach to preparing for anticipated changes in climate, in accordance with the BRA's Climate Change Preparedness Resiliency Guidelines. The required Climate Change Resiliency and Preparedness Checklist has been completed for the Project and is provided in Appendix C of this PNF.

4.15.1 Extreme Weather and Heat Events

Climate change will result in more extreme weather events including higher year round average temperatures, higher peak temperatures, and more periods of extended peak temperatures, as well as increased precipitation. This section examines how the Project may be affected by and will prepare for these phenomena.

Massachusetts' Climate Change Adaptation Report indicates that by the end of the century, under the high emissions scenario of the Intergovernmental Panel on Climate Change (IPCC), Massachusetts would experience a 5 to 10 degree increase in average ambient temperature, with several more days of extreme heat during the summer months. Days with temperatures greater than 90 degrees are predicted to increase from the 5 to 20 days annually that Massachusetts experiences today to between 30 to 60 days annually. Up to 28 days annually are predicted to reach above 100 degrees, compared to up to two days annually today (Frumhoff et al., 2006, 2007). Annual precipitation is expected to increase by 7 to 14 percent, with a slight decrease in the summer—a time when river flows are already low. Winter precipitation—mostly in the form of rain—is expected to increase by 12 to 30 percent. According to the Boston Water and Sewer Commission's Draft 25 Year Plan, annual precipitation may increase even more- by between four and seven inches by 2100.

These conditions will be considered as building design moves forward.

4.15.2 Sea Level Rise and Storms

Rising sea levels and more frequent extreme storms increase the probability of coastal and riverine flooding and enlarging of the 100 Year flood plain. This section explores how the Project may be affected by and will prepare for these phenomena.

The Proponent has evaluated the Project Site in terms of flooding in combination with projected sea level rise as outlined in CZM's 2013 report. This report indicated that sea level rise could potentially reach between 0.81 feet and 6.83 feet in the Boston area by the year 2100 under a range of emission scenarios established by the Intergovernmental Panel on Climate Change in their fourth comprehensive report.

The National Oceanic and Atmospheric Administration (NOAA) Coastal Inundation GIS layers, which utilize a "bathtub model" approach, were used to determine the potential extent of flooding at Leverett Pond based on different amounts of sea level rise. Evaluating up to six feet of sea level rise indicates that the top of bank of Leverett Pond will remain approximately 500 feet from the Project Site. Therefore, the Proponent does not believe the Project is prone to flooding due to sea level rise.

According to the Boston Water and Sewer Commission's *Draft 25 Year Plan,* the heaviest rainfall events have become heavier and more frequent over the past few decades, and since 1991 the amount of rain falling in very heavy precipitation events has been significantly above average. The annual rainfall is forecasted to increase by 4 to 7 inches from 1990 to 2100 with climate change. The 10-year, 24-hour design storm is forecasted to increase to as much as 6.65 inches with a peak hourly intensity of 2.11 inches per hour by the year 2100 with climate change. The impact this will have on waterbodies other than the Harbor and three major rivers has not been examined.

Given that the 100-year flood elevation in the nearest section of Leverett Pond is +10 NAVD (+16.46 feet BCB), and that the Site is approximately 34-65 feet higher in elevation than the floodplain, it is unlikely that water retention in the pond will cause flooding on the Project Site.

SOURCES FOR CLIMATE CHANGE INFORMATION

Boston Water and Sewer Commission, April 2015. *Draft 25 Year Plan*. Boston, Massachusetts.

Executive Office of Energy and Environmental Affairs (EOEEA) and the Adaptation Advisory Committee, September 2011. *Massachusetts Climate Change Adaptation Report.* Boston, MA.

Frumhoff P.C.; McCarthy J.J.; Melillo J. M.; Moser S.C., and Wuebbles D.J., 2006. *Climate Change in the U.S. Northeast: A report of the Northeast Climate Impacts Assessment*. Cambridge, MA: Union of Concerned Scientists.

Frumhoff P.C.; McCarthy J.J.; Melillo J.M.; Moser S.C., and Wuebbles D.J., 2007. *Confronting Climate Change in the U.S. Northeast: Science, Impacts, and Solutions*. Synthesis report of the Northeast Climate Impacts Assessment. Cambridge, MA: Union of Concerned Scientists.

Massachusetts Office of Coastal Zone Management (CZM), December 2013. *Sea Level Rise: Understanding and Applying Trends and Future Scenarios for Analysis and Planning*. Boston, MA.

5

Infrastructure

This chapter describes the existing infrastructure systems surrounding the Project Site, and discusses utility aspects of the Project and potential utility impacts. The following utilities are discussed: wastewater, water, stormwater management, natural gas, electricity, and telecommunications. Chapter 4, Environmental Protection, discusses energy conservation measures being considered as part of the Project.

The Project is expected to connect to existing city and utility company systems in the adjacent public streets. Based on coordination with the appropriate utilities and available utility drawings, it is expected that the increase in demand associated with the development and operation of the Project can be accommodated with existing infrastructure. Detailed design of the Project's utility systems will proceed in conjunction with the design of the building and interior mechanical systems.

The systems discussed herein include those owned or managed by the Boston Water and Sewer Commission (BWSC) and private utility companies. There will be further coordination among these entities and with the project engineers and architects as the project design develops and during the construction process for the Project. See Figure 5.1 for a site plan that shows the existing infrastructure at the Project Site.

5.1 Key Findings and Benefits

The key impact assessment findings related to infrastructure systems include:

- The existing city and utility infrastructure systems are expected to be adequately sized to accept the demand associated with the development and operation of the Project.
- Based on existing conditions plans and record utility information, on-site drainage is generally managed on site. Stormwater is expected to be reduced in all storm events through a reduction in the existing impervious area and/or the incorporation of on-site stormwater management systems. The redevelopment of this Site is therefore expected to reduce stormwater volume and improve stormwater quality.
- The Project Site is currently serviced by the BWSC for domestic and fire protection water and sanitary sewage conveyance.

- The Project is estimated to generate approximately 2,000 gallons per day (net new) of sanitary sewage and will require approximately 2,200 gallons of water per day (net new).

Key Project-related mitigation and/or benefits associated with the infrastructure systems include:

- Construction of the Project will incorporate on-site stormwater management and treatment systems that are expected to improve water quality, reduce runoff volume, and control peak rates of runoff in comparison to existing conditions.
- The Project will not result in the introduction of any increased peak flows, pollutants, or sediments that would potentially impact the local drainage systems.

5.2 Regulatory Framework

The following discusses the regulatory framework of utility connection reviews and standards. A complete list of the state and local permits anticipated associated with Project-related infrastructure is included in Chapter 1, General Information and Regulatory Context. For the Project:

- BWSC approval will be required for all water, sewer and stormwater systems.
- The Boston Fire Department will review the Project with respect to fire protection measures such as siamese connections, hydrants, and standpipes.
- Design of the site access, hydrant locations, and energy systems (gas and electric) will also be coordinated with the respective system owners.
- Where new utility connections are needed and existing connections are to be capped, the excavation will be authorized by the Boston Public Works Department (BPWD) through the street opening permit process, as required.

All improvements and connections to BWSC infrastructure will be reviewed by BWSC as part of the BWSC site plan review process. This process includes a comprehensive design review of the proposed service connections, assessment of system demands and capacity, and establishment of service accounts.

5.3 Stormwater Management/Drainage

5.3.1 Existing Drainage Conditions

On-site drainage generally flows toward the Charles River Basin, as shown on BWSC GIS system maps. The existing Site catch basins are collected by and discharge to infrastructure on site which appear to overflow to the Jamaicaway. Drainage infrastructure in the Jamaicaway is undocumented at this time; however, it appears that stormwater runoff from this area flows toward the Charles River Basin. South Huntington Avenue contains an existing, BWSC-owned 12-inch storm drainage main adjacent to the Project Site. This BWSC drain ultimately discharges to Storm Drain Outfall #194 in the Lower Charles River Basin. Refer to Appendix G for the existing on-site drainage facilities serving the Project.

5.3.2 Proposed Drainage Conditions

Construction of the Project will incorporate on-site stormwater management and treatment systems that are expected to improve water quality, reduce runoff volume, and control peak rates of runoff in comparison to existing conditions. The current design anticipates converting a portion of the area of existing surface parking to building with covered parking in some areas. A stormwater infiltration system, or equivalent system, will be designed to accommodate a volume of one (1) inch of stormwater over the Site's impervious area. One inch of infiltration capacity is a general requirement of the BWSC. Runoff peak rates and runoff volume are expected to be reduced for the 2-, 10-, and 25-year design storms for the post-development condition as compared to the pre-development condition, as required by the BWSC. Stormwater runoff from proposed and modified surface impervious areas will be treated by infrastructure such as deep sump, hooded catch basins, subsurface infiltration basins, and proprietary treatment devices to reduce the Total Suspended Solids (TSS) concentrations by at least 80 percent.

5.4 Sanitary Sewage

5.4.1 Existing Sewer System

The BWSC owns and maintains the sanitary sewer lines in the vicinity of the Project Site. BWSC record drawings show two (2) 10-inch sewer mains in South Huntington Avenue. The existing Site under its previous use as a nursing facility generated approximately 18,900 gallons per day of wastewater.

5.4.2 Proposed Sewage Flow and Connection

For the purposes of estimating the sewage flow rates, the overall gross square footage (including mechanical space) is assumed instead of the FAR square footage in order to present a conservative analysis. Generation rates from the Massachusetts State Environmental Code (Title 5) were used. Table 5.1 summarizes the existing and proposed sewer generation rates.

TABLE 5.1 EXISTING AND FUTURE SEWER GENERATION

Program Type	Units	Generation Rate	Sewer Generation (GPD)
Existing			
Housing for Elderly	126 Beds	150 GPD/Bed	18,900
TOTAL			18,900
Proposed			
Residential	190 Bedrooms	110 GPD/Bed	20,900
TOTAL			20,900
NET NEW			2,000

Note: Based on DEP 214 CMR 7.15 flow calculation factors

These calculations anticipate residential use only. Changes to the proposed building program will vary sanitary flow. Final flows will be determined as the project design moves forward.

In addition to the sanitary sewer flow, wastewater will also be generated from the below grade parking garage. The drainage for this type of parking is required to be drained into a Massachusetts Water Resources Authority (MWRA) oil and gas trap which generates effluent which is required to be sent to the sanitary sewer system.

5.5 Domestic Water and Fire Protection

5.5.1 Existing Water Supply System

The BWSC owns and maintains the water mains in the vicinity of the Project Site. BWSC record drawings show the streets surrounding the Site are serviced by southern high service pipes. Adjacent to the Site is an 8-inch ductile iron pipe installed in 1979 in South Huntington Avenue. The existing water infrastructure provides a high level of service to the area. Additionally, currently two fire hydrants are in close proximity to the Project Site.

5.5.2 Proposed Water Demand and Connection

Domestic water demand is based on estimated sewage generation with an added factor of 10 percent for consumption, system losses, and other use. Based upon standard sewage generation rates outlined in the DEP System Sewage Flow Design Criteria, 310 CMR 15.203, the Project will require approximately 2,200 gallons of water per day (net new). The Proponent will continue to consider and evaluate methods to conserve water as building design evolves.

New water connections will be designed in accordance with BWSC design standards and requirements. Water services to the new building will be metered in accordance with BWSC's Site Plan Requirements and Site Review Process. The review includes, but is not limited to, sizing of domestic water and fire protection services, calculation of meter sizing, backflow prevention design, and location of hydrants and Siamese connections conform to BWSC and Boston Fire Department (BFD) requirements. The Proponent will provide for the connection of the meter to the BWSC's automatic meter reading system. Fire protection connections on the

Project Site will also need approval of the BFD. The Proponent will request record hydrant flow test information from the BWSC to aid in the preliminary water design. In addition, the Proponent will request new hydrant flow tests on the main to which the Proponent intends on connecting.

5.6 Other Utilities

5.6.1 Natural Gas Service

The total estimated natural gas demand for the Project is approximately 12,000 cubic feet per hour. The Proponent will coordinate with National Grid (local gas provider) to determine whether their infrastructure can meet the demand estimated for this Project, and the best means of obtaining a system connection. National Grid record plans indicate a six (6) inch main in South Huntington Avenue adjacent to the Site, as well as an existing two (2) inch gas service extending to the building. As the building energy system design is developed, the Proponent will work with National Grid to ensure adequate capacity is available to serve the Project.

5.6.2 Electrical Service

The estimated electricity demand for the entire Project at this time, including the existing building to remain and the new building, is approximately 2,110,000 kilowatt-hours. The new building and the existing building to remain are expected to be powered with 120/208 volt, three phase, four wire service. Eversource owns and operates the electric facilities in the vicinity of the Project Site. Existing conditions plans indicate underground power facilities along South Huntington Avenue along the frontage of the Project Site including an Eversource transformer. The existing electrical service and connections will be expanded, modified and/or relocated as determined to be necessary in accordance with Eversource's standards.

5.6.3 Telephone and Telecommunications

Record survey information indicates that there are laterals serving the Site extending from a telephone and telecommunications manholes in South Huntington Avenue. As the project design progresses, the configuration of the proposed services will be developed with the resident utility companies to determine whether their infrastructure can be used to service this Project, and the best means of obtaining a system connection.

5.6.4 Protection of Utilities

Existing public and private infrastructure located within the public right-of-way will be protected during construction. The installation of proposed utilities within the public way will be in accordance with BWSC, Boston Public Works Department, the Dig-Safe Program, and governing utility company requirements. All necessary permits will be obtained before the commencement of work. Specific methods for constructing proposed utilities where they are near to, or connect with, existing water, sewer, and drain facilities will be reviewed by the BWSC as part of its Site Plan Review process.

6

Historic Resources

This chapter identifies properties that are either in the Inventory of Historic and Archaeological Assets of the Commonwealth or listed in the National or State Registers of Historic Places that are within the Project Site or are within close proximity. This chapter also describes any effects to these properties and proposed mitigation, if required, and Project-related benefits.

6.1 Key Findings and Benefits

The key findings and benefits that pertain to historic resources include:

- The Project Site contains one existing building, the 1926 Home for Aged Women. More recently known as Goddard House, the nursing home was one of several charity-focused institutional buildings developed along South Huntington Avenue during the early 20th century.
- Goddard House is a well-preserved example of the Georgian Revival style, designed by the firm of Coolidge, Shepley, Bulfinch, and Abbott. The largest exterior alteration was a 1931 addition by the original architectural firm, designed to mimic the original main block of the building. Subsequent additions have been relatively unobtrusive, maintaining the architectural integrity of the original design.
- The proposed Project will retain the existing but vacant 1926 building and 1931 addition, while expanding the available space to create a modern residential community.
- The proposed Project maintains the visual dominance of Goddard House on the site through thoughtful siting, use of complementary materials, and architectural designs that ensure the original Goddard House remains the tallest building element on the property.
- The utilization of the unobtrusive additions to provide structural support and stabilization necessary for the 1926 Goddard House Building with 1931 addition to meet current codes.
- There are several properties within a one-quarter mile radius that are in the Inventory of Historic and Archaeological Assets of the Commonwealth and the State Register. These properties include the National and State-Register listed Emerald Necklace/ Olmsted Park System, which is also a Boston Landmark, and the Pill Hill Historic District, which is both a National Register-listed district and a Brookline local historic district.

6.2 Historic Context

The Project Site is located on the north side of Jamaica Plain, adjacent to the Jamaicaway and Olmsted Park. One of the earliest "streetcar suburbs" of Boston, by the early 20th century Jamaica Plain boasted industrial development along Heath Street and residential development for a diverse population, including wealthy businessmen and their families as well as immigrant laborers. The area also benefited from some of the most well-known green spaces in the region, Olmsted Park and Arnold Arboretum, both major features of Boston's famed "Emerald Necklace."

The early 20th century also brought a corridor of institutional development to Jamaica Plain, concentrated along South Huntington Avenue, which was laid out during the 1890s, and leading south from what is now known as the Longwood Medical and Academic area (LMA). Social service organizations became especially prominent on South Huntington Avenue, which by 1915 was home to Vincent Memorial Hospital, the Boston Nursery for Blind Babies, the House of the Angel Guardian, the Trinity Church Home, and the New England Home for Little Wanderers, even as dense residential development pushed west from Day Street.

The 1915 Bromley Atlas map shows that several streets were planned between Day Street and South Huntington Avenue in this area, but these plans were never executed as South Huntington Avenue's institutions grew in size and number. By 1931, the Home for Aged Women and Mount Pleasant Home had joined the other service buildings between South Huntington Avenue and the Jamaicaway, and the Massachusetts Osteopathic Hospital had been constructed near the Evergreen Street intersection. This row of prominent brick buildings often employed the Classical Revival Style that was popular with institutional and municipal buildings of the time. Today, the institutional corridor generally remains intact, although several of the properties, such as the Veterans Administration hospital and the MSPCA Angell Animal Medical Center, have been developed more recently with buildings that are much larger in expanse and/or height than their early 20th century predecessors.

6.3 Historic Resources

The Project Site contains the 1926 Home for Aged Women. Designated districts within a one-quarter mile radius include local historic districts and National Register-listed districts, in addition to inventoried areas. There are also nearly two dozen individual inventoried resources in the quarter-mile radius, several of which are associated with one another as part of the same property or development.

6.3.1 On-Site Buildings

The Home for Aged Women, more recently known as Goddard House (BOS.7983), was constructed in 1926, after the organization outgrew its home in Beacon Hill. The charity was established in 1849, after a report by the City of Boston identified a need for appropriate living facilities for elderly women with little personal means. They first occupied three houses on

Charles Street, and in the 1860s had a new facility constructed on Revere Street. By the early 20th century the charity's clientele included more than 500 women, and the need for more space resulted in the purchase of the property on South Huntington Avenue from the Home for Little Wanderers in 1924.

The building was designed by the well-known Boston firm of Coolidge, Shepley, Bulfinch, and Abbott, the successors to H.H. Richardson, for an estimated cost of $425,000 (permit #8330, 2/5/1926). One of the firm's specialties at the time was grand Classical Revival buildings, constructed for some of the biggest institutions in Boston, and the firm's Georgian Revival design for the Home of Aged Women fits well into that pattern (Photos 1-15). The four-story brick building has an H-footprint, with a nine-bay main section flanked by two side pavilions. The slope of the site toward the rear of the property allows for a fully exposed concrete basement and sub-basement on the side and rear elevations. Each building section is capped by a hipped roof lined with small gabled dormers, and a balustrade surrounds the main section roof. Limestone details, including stringcourses, corner quoins, and arched window surrounds on the first story result in a symmetrical, orderly façade. A limestone entry portico with a wood fanlight over the door is supported by Ionic columns on the first story with a small balustrade balcony above; a highly ornamented, carved entablature rises another two stories above the cornice of the portico, capped by a broken arched pediment with a central cartouche (Photo 4).

Some of the grandeur of the street façade is echoed on the rear façade facing the Jamaicaway and Olmsted Park, including a second-story balustrade in the center, and fanlights over the first story windows, accompanied by a limestone plaque carved with the words "THE HOME FOR AGED WOMEN." Windows throughout the building vary somewhat, but generally consist of replacement 9/9 sash windows on the façade and 12/12 sash windows on the side and rear elevations, with applied muntins.

Appendages to the side pavilions exhibit the same stylistic elements as the main building. They include a wraparound one-story section on the south side with arched, fanlight windows and capped by a limestone balustrade (Photo 5). A full-height rectangular section connects this one-story appendage with the south pavilion, and features tripartite 9/9 sash windows separated by fluted pilasters. In 1931, an ell was added to the northwest corner of the building, also designed by Coolidge, Shepley, Bulfinch and Abbott, and largely resembling the central hipped main block of the original building (permit #3147, 8/14/1931, Photos 6, 7, and 9). Similar to the south side appendage, the 1931 addition has a full-height corner connection, featuring banded 12/12 sash windows separated by pilasters. This connection was added in the 1990s, along with an elevator shaft on the rear elevation (permit #1470, 9/30/1997). An iron fence with brick piers and gateposts lines the sidewalk in front of the building, with semi-circular driveways in front of the façade and northwest ell.

The first floor of the interior of the building exhibits Classical Revival decorative elements as well, including fanlights over the doors in the corridor of the main block, and large, open rooms at the end of the corridor featuring arched interior doors and windows that match the

size and shape of the exterior windows (Photos 10-12). The upper floors all exhibit a dormitory-style floor plan with a central corridor, which were renovated during the 1990s, with larger, open rooms at the end of the pavilions (Photos 13-14). There are metal staircases extant at each end of the main block (Photo 15), and an elevator shaft located near the central entrance.

6.3.2 Previously Recorded Resources

There are several properties that are in the National and State Registers of Historic Places and the Inventory of Historic and Archaeological Assets of the Commonwealth located in the vicinity of the Project Site. A radius of one-quarter mile was established to assess the potential effects of the Project on historic resources

There are two districts located within the one-quarter mile radius that are designated as both local historic districts and National Register districts. Also located within the radius are two inventoried areas and 21 individually inventoried properties.

TABLE 6.1 MASSACHUSETTS HISTORICAL COMMISSION INVENTORIED AND LISTED PROPERTIES

Resource Name	Location	MHC Inventory No.	Listed in State Register
Emerald Necklace Parks/ Olmsted Park System	Various, Boston and Brookline	BOS.JE (Local Landmark)/ BOS.IO and BKL.X (NR district, NR #71000086)	Y
Pill Hill Historic District	West of Pond Avenue, Brookline	BKL.V (Local Historic District)/ BKL.X (NR district, NR #77000187)	Y
7-87 Parkton Road	Parkton Road, Boston	BOS.JI	N
Cardinal O'Connell Minor Seminary/ MSPCA Hospital	350 South Huntington Avenue, Boston	BOS.YQ	N
House	203 Pond Avenue, Brookline	BKL.2244	N
House	44 Evergreen Street, Boston	BOS.13009	N
Smith, Jonathan House	33 Bynner Street, Boston	BOS.7734	N
Hyde House	47 Bynner Street, Boston	BOS.7735	N
Klous, Seman - Fussells Double House	51-55 Bynner Street, Boston	BOS.7736	N
Drew, Daniel W. House	86 Day Street, Boston	BOS.7776	N
Lewis, Mark - Kearny, Thomas F. Three-Family House	120 Day Street, Boston	BOS.7777	N
Lewis, Mark - Kearny, Thomas F. Three-Family House	122 Day Street, Boston	BOS.7778	N

Resource Name	Location	MHC Inventory No.	Listed in State Register
Haggerty, Daniel House	24 Evergreen Street, Boston	BOS.7807	N
Dakin, Sarah Stable	44R Evergreen Street, Boston	BOS.7808	N
Carter, Leroy House	11 Evergreen Street, Boston	BOS.7810	N
Blaisdell, Henry J. Double House	15-17 Evergreen Street, Boston	BOS.7811	N
Atwood, Isaac House	3 Evergreen Street, Boston	BOS.7812	N
Cassidy, J. Andrew - Ecker, Michael House	19 Evergreen Street, Boston	BOS.7813	N
Cassidy, J. Andrew - Ecker, Michael House	21 Evergreen Street, Boston	BOS.7814	N
Lingham, Charles T. House	29 Evergreen Street, Boston	BOS.7815	N
Jefferson Grammar School	240 Heath Street, Boston	BOS.7824	N
American Brewing Company	249A Heath Street, Boston	BOS.7827	N
Craig, Daniel House	12 Nira Avenue, Boston	BOS.7868	N
Vincent Memorial Hospital/ Longwood Hospital	125 South Huntington Avenue, Boston	BOS.7951	N
Curtis, Nelson House	363 South Huntington Avenue, Boston	BOS.7954	N

Note: Refer to Figures 6.1-6.3 for location and photos of these resources.

Emerald Necklace Parks/ Olmsted Park System (NR #71000086, BOS.JE, BOS.IO, BLK.X)

This multi-use park system was designed by Frederick Law Olmsted Sr. for the City of Boston in the 1870s. This network of parks, recreation and passive open spaces, and parkways extends from Boston Common in the city's downtown area to Franklin Park at the south end of Jamaica Plain. The portion of the park along the west side of the Jamaicaway, known as Olmsted Park, is located in both Boston and Brookline (Photos 24-25). It consists of a series of ponds linked by mostly wooded areas interspersed with open ballfields. A series of paved and unpaved trails, mostly located on the west side of the park, connect each space. The park system was listed in the National Register in 1971, and became a local landmark in Boston in 1989.

Pill Hill Historic District (NR #77000187, BKL.X, BKL.V)

This district, located on the west side of the Emerald Necklace's Olmsted Park, consists of a number of large high-style residences built for professionals during the late 19th century (Photo 26). The districts boasts works by well-known architects such as Peabody and Sterns, Kilham and Hopkins, William Ralph Emerson, Shaw and Hunnewell, and Arthur Little, and still retains its suburban setting and feel. It was listed in the National Register in 1977, and

designated as a local historic district (with a slightly larger boundary) in 1983. The house at 203 Pond Avenue (BKL.2244), also located within the one-quarter mile radius was not included in either district, but exhibits the same characteristics.

Institutional Buildings

Acquired by the Archdiocese of Boston in 1915 for its House of the Angel Guardian and seminary, the **Cardinal O'Connell Minor Seminary/ MSPCA Hospital (BOS.YQ)** complex currently consists of two brick buildings constructed in 1951 that occupy an eight-acre site on the southeast corner of South Huntington Avenue and Bynner Street (Photo 27). The property was acquired by the Massachusetts Society for the Prevention of Cruelty to Animals in 1973, continuing the concentration of institutional use along South Huntington Avenue.

When the **Vincent Memorial Hospital/ Longwood Hospital (BOS.7951)** was moved from the West End to its new building on South Huntington Avenue in 1907, its female staff specialized in the medical treatment of women and girls. The three-story, Collegiate Gothic brick building was designed by Charles Bruen Perkins, and features terracotta trim (Photo 28). The projecting central bay has a pointed Tudor arch door, a frieze carved with "VINCENT MEMORIAL HOSPITAL," a third-story balustrade, and a central parapet gable highlighted by pointed finials.

Located east of South Huntington Avenue on Heath Street, the **Jefferson Grammar School (BOS.7824)** shares several characteristics with its institutional neighbors. Designed by the firm of Shepley, Rutan and Coolidge in the Classical Revival style and constructed in 1903-1904, this three-story brick building features a projecting central bay with two-story metal columns and capped by a limestone roof pediment (Photo 29). The columns continue around the side elevations of the building, separating the windows on the second and third stories. Today, the school is used for apartments.

Industrial Buildings

Within the one-quarter mile radius is an early brewing complex, built for the **American Brewing Company (BOS.7827)** in 1891-1892. Constructed in the Queen Anne style and consisting of several attached brick buildings around a central courtyard, the complex is especially notable for its rounded façade at the corner of Heath Street and Estey Street, highlighted by a round corner tower with a conical metal-sheathed roof (Photo 30). A rusticated granite surround frames the corner entrance, while a similar rusticated arched entrance to the west leads to the courtyard. A metal roof parapet embossed with "ABC" is located above the courtyard entrance. Other details, including decorative spandrels and stringcourses, are of terracotta. Utilized as a warehouse during Prohibition, the complex was used as a brewery by the Haffenreffer Brewing Company after its repeal and into the 1950s.

Residential Buildings

The south and east portions of the one-quarter mile radius contain mostly residential development. These residences consist primarily of late 19th and early 20th century examples, especially row houses and three-deckers, with a few examples of extant older residences. These older extant dwellings have been a particular focus of inventory efforts, though notable concentrations of later development have been documented on inventory forms as well.

Parkton Road has a U-shaped layout, meeting Perkins Street at both ends. It is lined by three-deckers constructed between 1911 and 1929, several of which exhibit Colonial Revival details, with full-height three-sided bays (Photo 31). This distinctive development has been inventoried as the **7-87 Parkton Road area (BOS.JI).**

The earliest extant residential development in the one-quarter mile radius consists of a set of three c. 1820 Federal houses located at **33, 47, and 51-55 Bynner Street (BOS.7734, BOS.7735, and BOS.7736, respectively)**, near the corner of Day Street (Photo 32). Although highly altered, each retains its five-bay façade and hipped roof. Another highly altered but extant Federal house is found at **12 Nira Avenue (BOS.7868)**. Similar to the other early dwellings, the house retains a five-bay façade, but exhibits evidence of having been moved, as well as a two-story rear addition and a Greek Revival pediment gable facing the street (Photo 33).

Evergreen Street also has some earlier residential buildings, several of which have been inventoried. These buildings include a series of two- and 2 ½-story Second Empire houses constructed during the 1860s and 1870s: **3, 11, and 15-17 Evergreen Street (BOS.7812, BOS.7810, and BOS.7811**, respectively); **29 Evergreen Street (BOS.7815);** and **44 Evergreen Street (BOS.13009).** These houses have characteristic Mansard roofs and. while most have alterations including later additions and replacement materials, there are also examples of modest Italianate details such as bay windows and scroll brackets (Photo 34). Some enjoy deep setbacks from the street, with extant carriage houses at the rear of the property (such as **44R Evergreen Street, BOS.7808**). The street also has a number of later 19th century houses interspersed among the earlier examples, including the 1885 two-story hipped roof cottages at **19 and 21 Evergreen Street (BOS.7813 and BOS.7814)**, and more densely developed, narrow sidehall dwellings **(24 Evergreen Street, BOS.7807**) that are closer in size and scale to the three-deckers and rowhouses that characterize much of the residential development of this area (Photo 35).

Other examples of 1860s Italianate houses (Photo 36) are found at **363 South Huntington Avenue (BOS.7954)** and **86 Day Street (BOS.7776).** Further south on the street, at the south end of the quarter-mile radius, is a set of Queen Anne row houses at **120 and 122 Day Street (BOS.7777 and BOS.7778**; the, set also includes 124 Day Street just outside of the radius). These identical three-family houses feature bow fronts, heavy granite trim, corbelled brick detailing, and metal cornices (Photo 37).

6.4 Known Archaeological Resources

Review of MHC records indicated one previously-recorded prehistoric archaeological site within the one-quarter mile radius, inventoried as 19-SU-86. In addition, a small number of archaeological reports have been produced regarding the potential presence of archaeological resources within the Olmsted Park System, based on documentary research and testing.

6.5 Project Impacts to Historic Resources

Goddard House is a well-preserved example of the institutional development that characterized South Huntington Avenue in the early 20th century. Designed by a firm well-known for its Classical Revival designs, the Georgian Revival building joined several other examples of prominent brick hospitals and care homes that lined this corridor. Later additions and exterior alterations are indicative of an effort to complement the existing building form and decorative elements. In keeping with this tradition, the proposed Project will maintain the visual dominance of the existing 1926 building on the site, while expanding the available space for modern residential needs. Efforts to retain and integrate important historic assets of the property include carefully considered siting, use of complementary materials, designs that ensure Goddard House remains the tallest building on the property, and innovative utilization of the additions as a structural support system that allows for the reuse of the 1926 building and 1931 addition.

The proposed new building will be visually and physically separated from the existing Goddard House on the south side, and additions have been limited to the rear of the building and in front of the northwest ell, which is already recessed toward the rear of the property. Both the new building and the addition have been designed with flat roofs that do not exceed the height of Goddard House's characteristic, dormer-lined hipped roof. The materials of the new construction reflects neutral colors that are intended to complement rather than compete with the existing building's red brick.

Despite the building's prominent location and design, visibility of the Goddard House property is fairly limited due to the area's topography, development patterns, and predominance of mature trees (Photos 16-23). The Jamaicaway is lined on both sides with stands of tall, mature trees, which obstruct the view of the rear of the property from Olmsted Park and resources located in Brookline. The slight curvature of South Huntington Avenue limits views toward the Project Site to approximately a block in each direction; similarly, large-scale development along the east side of South Huntington Avenue impede visibility of the Project Site from recorded properties located on the east side of the one-quarter mile radius.

7

Project Certification

This expanded PNF has been submitted to the Boston Redevelopment Authority, as required by Article 80B of the Zoning Code, on the 2nd of November, 2015.

Proponents
Eden Properties LLC

Michael Samuels
Manager

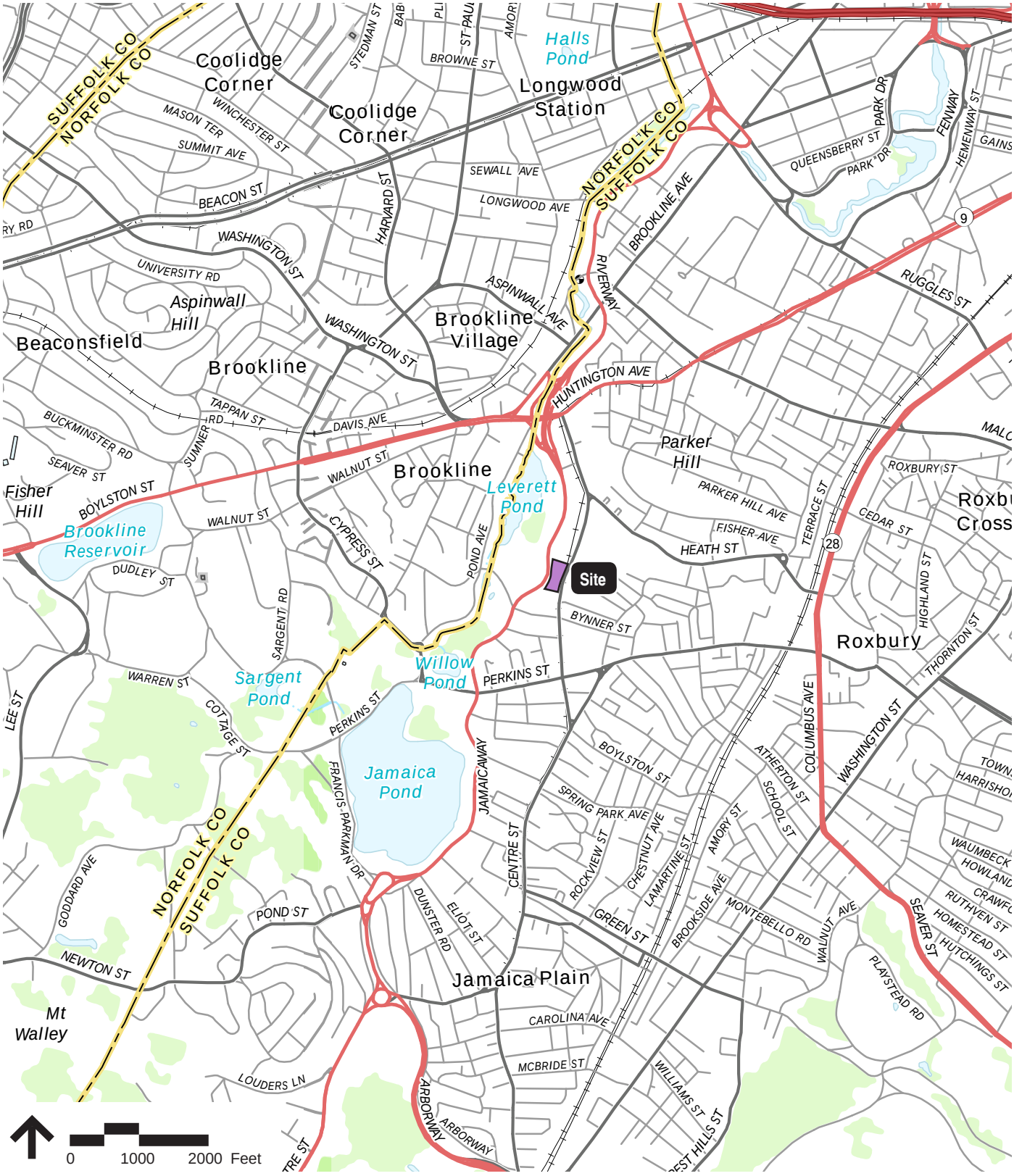
Samuels & Associates

Peter Sougarides
Executive Vice President, Development & Principal

Preparer
Vanasse Hangen Brustlin, Inc.

Stephanie Kruel, ENV SP
Senior Environmental Planner

FIGURES



Source: USGS Topo Grids Newton, South Boston

Figure 1.1

Locus Map

Goddard House Renovation and Redevelopment - Boston, MA

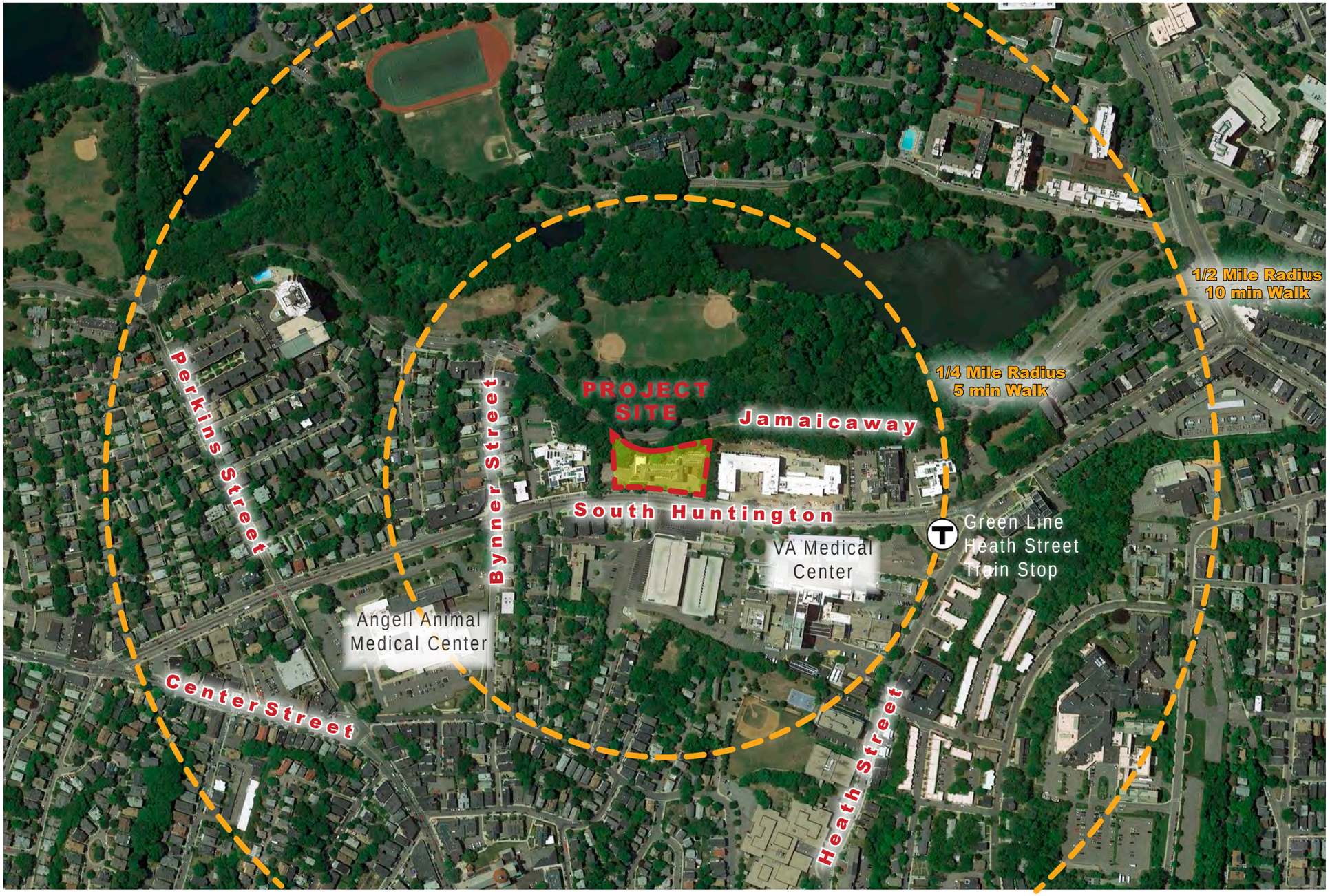


Figure 1.2
Site Context

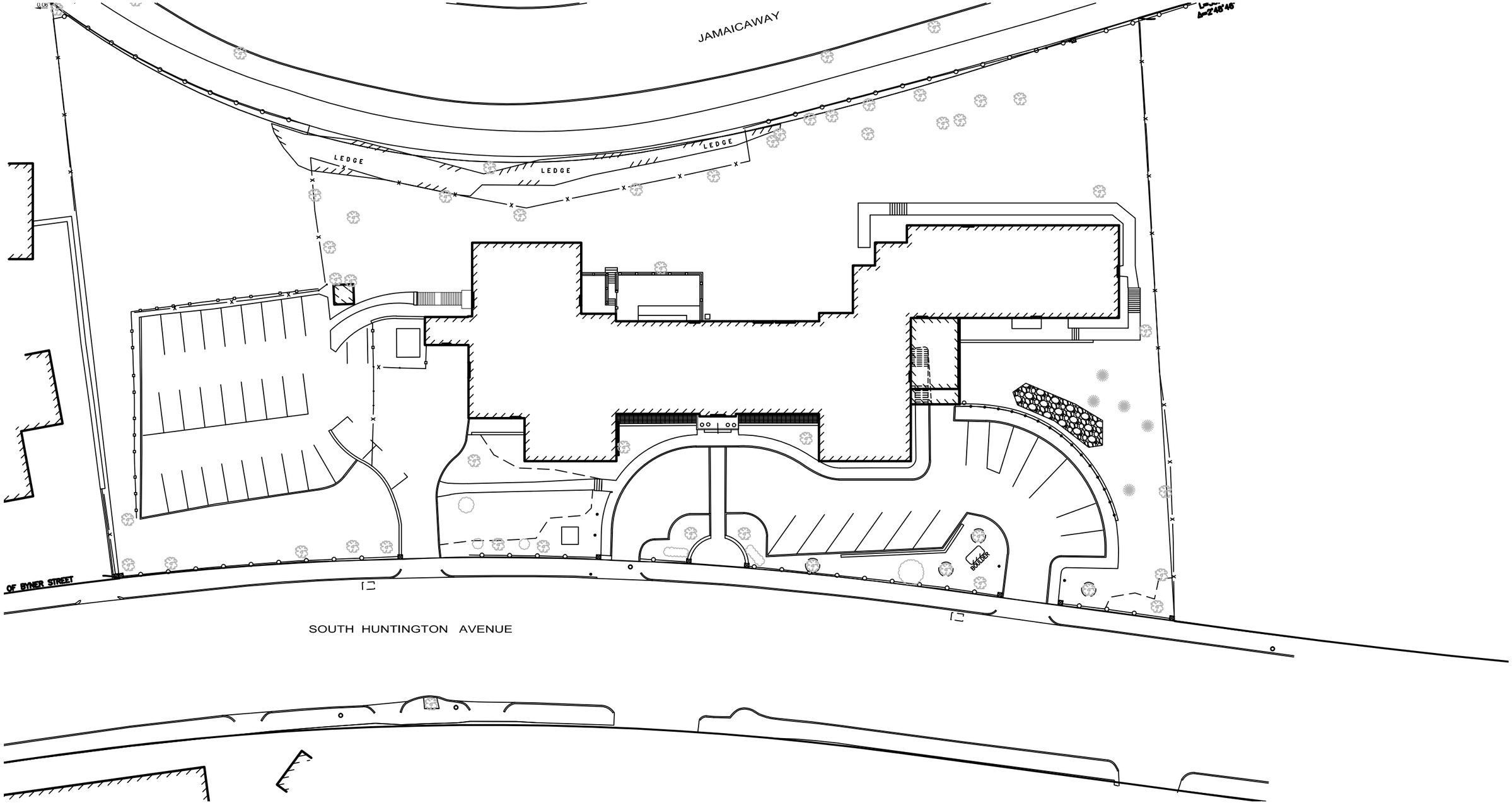


Figure 1.3
Existing Conditions

0 20 40 Feet

Source: PCA Architects

Goddard House Renovation and Redevelopment - Boston, MA

Existing View on Jamaicaway

Existing View on South Huntington Avenue

Existing View on South Huntington Avenue

Existing View on Jamaicaway

Figure 1.4
Existing Conditions Site Photographs

Source: PCA Architects

0 30 60 Feet

Figure 1.5
Ground Floor Site Plan

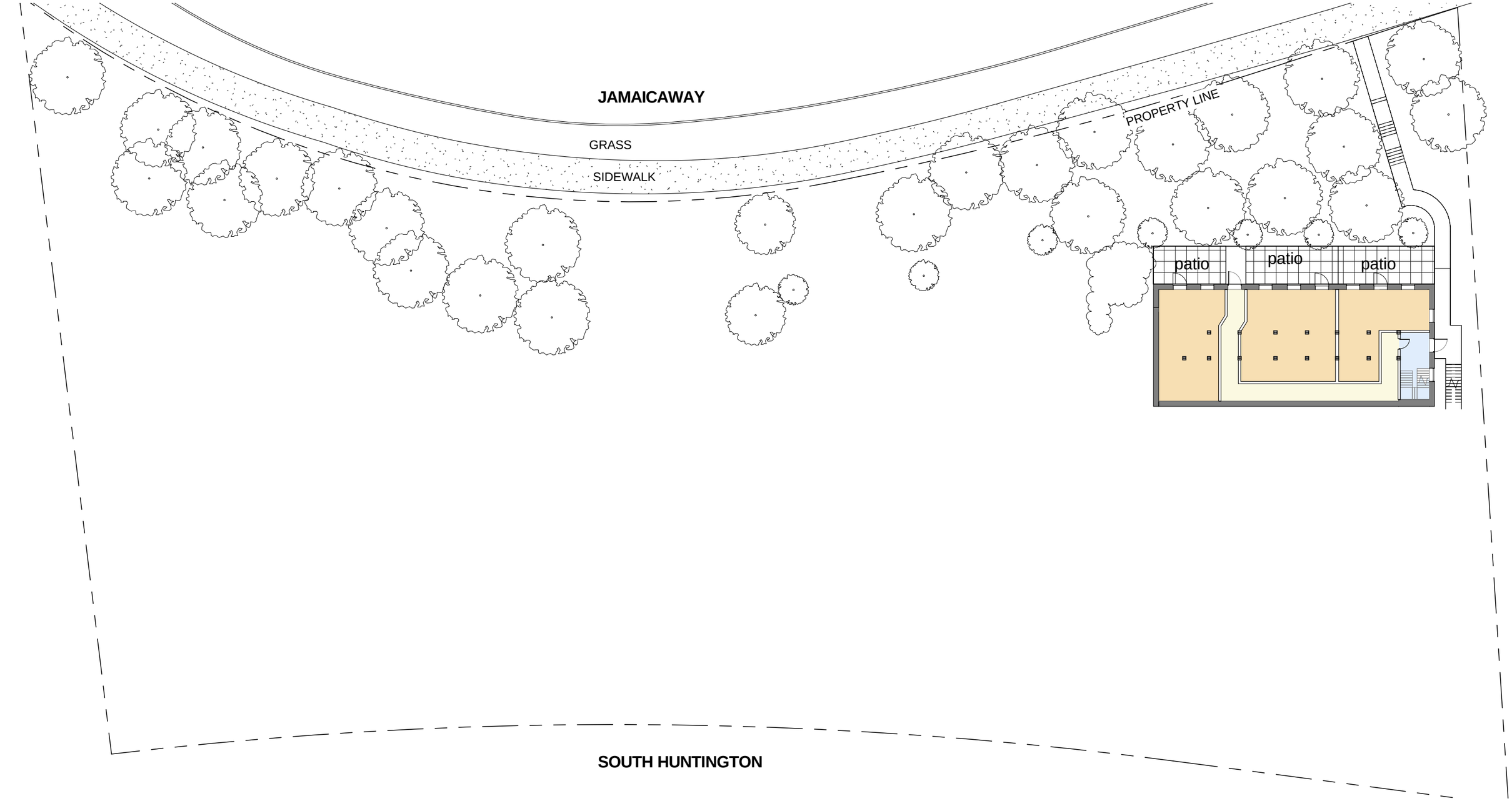


Figure 2.1a
Basement Level 3

JAMAICAWAY

GRASS

SIDEWALK

PROPERTY LINE

patio

patio

patio

patio

slope

slope

slope

RAMP UP

LOBBY

BIKE STORAGE

SOUTH HUNTINGTON

0 15 30 Feet

Figure 2.1b
Basement Level 2

Goddard House Renovation and Redevelopment - Boston, MA

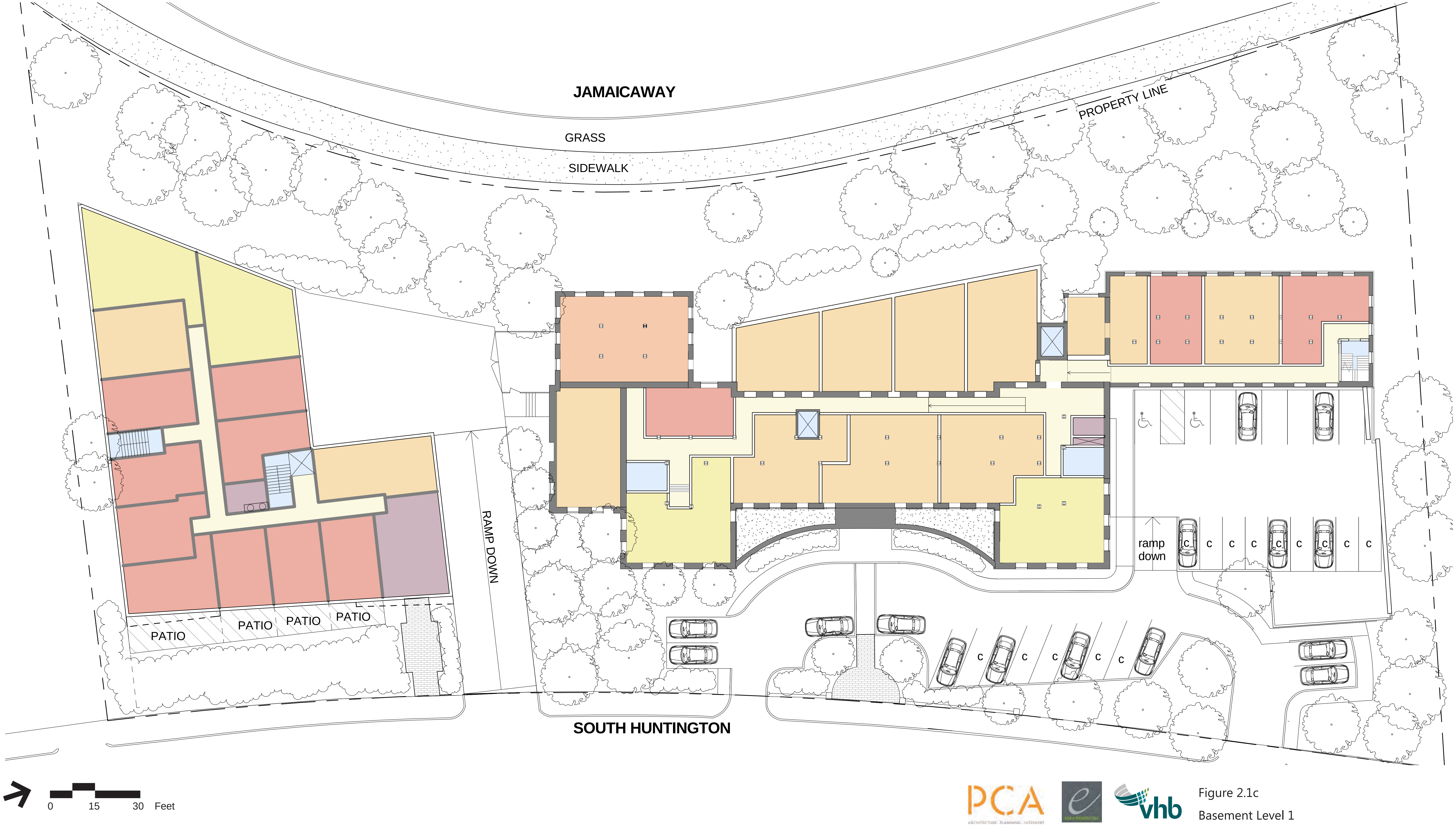


Figure 2.1c

Basement Level 1

Goddard House Renovation and Redevelopment - Boston, MA

0 15 30 Feet

Figure 2.1d
First Floor Plan

Goddard House Renovation and Redevelopment - Boston, MA

JAMAICAWAY

PROPERTY LINE

ROOF PATIO

FITNESS

SOUTH HUNTINGTON

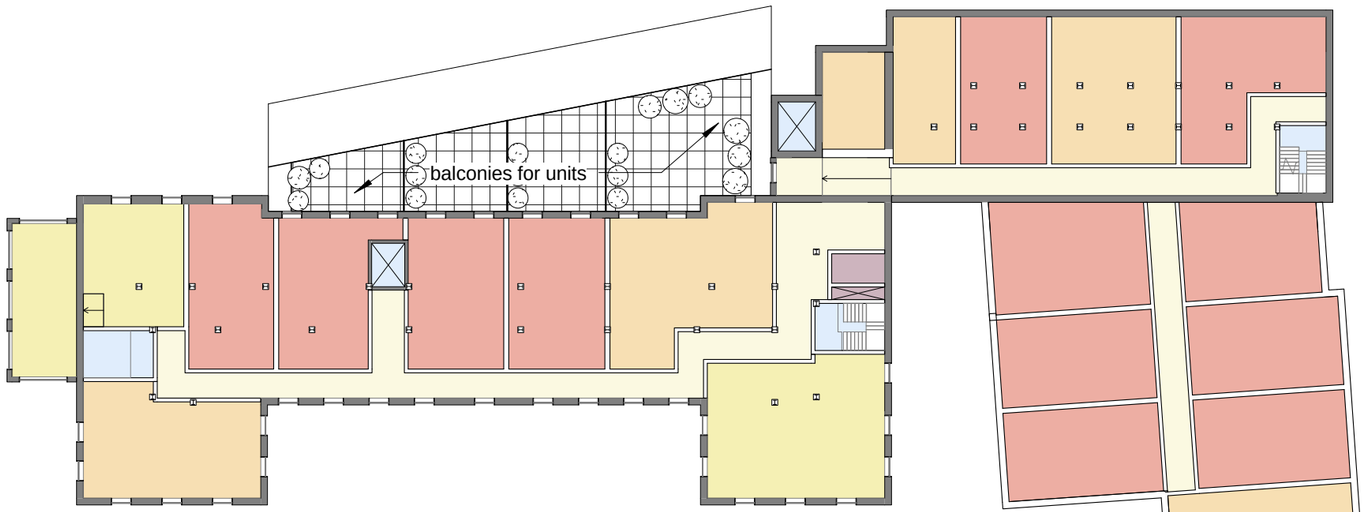
0 15 30 Feet

Figure 2.1e
Second Floor Plan

Goddard House Renovation and Redevelopment - Boston, MA

JAMAICAWAY

PROPERTY LINE



SOUTH HUNTINGTON

0 15 30 Feet

Figure 2.1f
Third Floor Plan

Goddard House Renovation and Redevelopment - Boston, MA

JAMAICAWAY

PROPERTY LINE

SOUTH HUNTINGTON

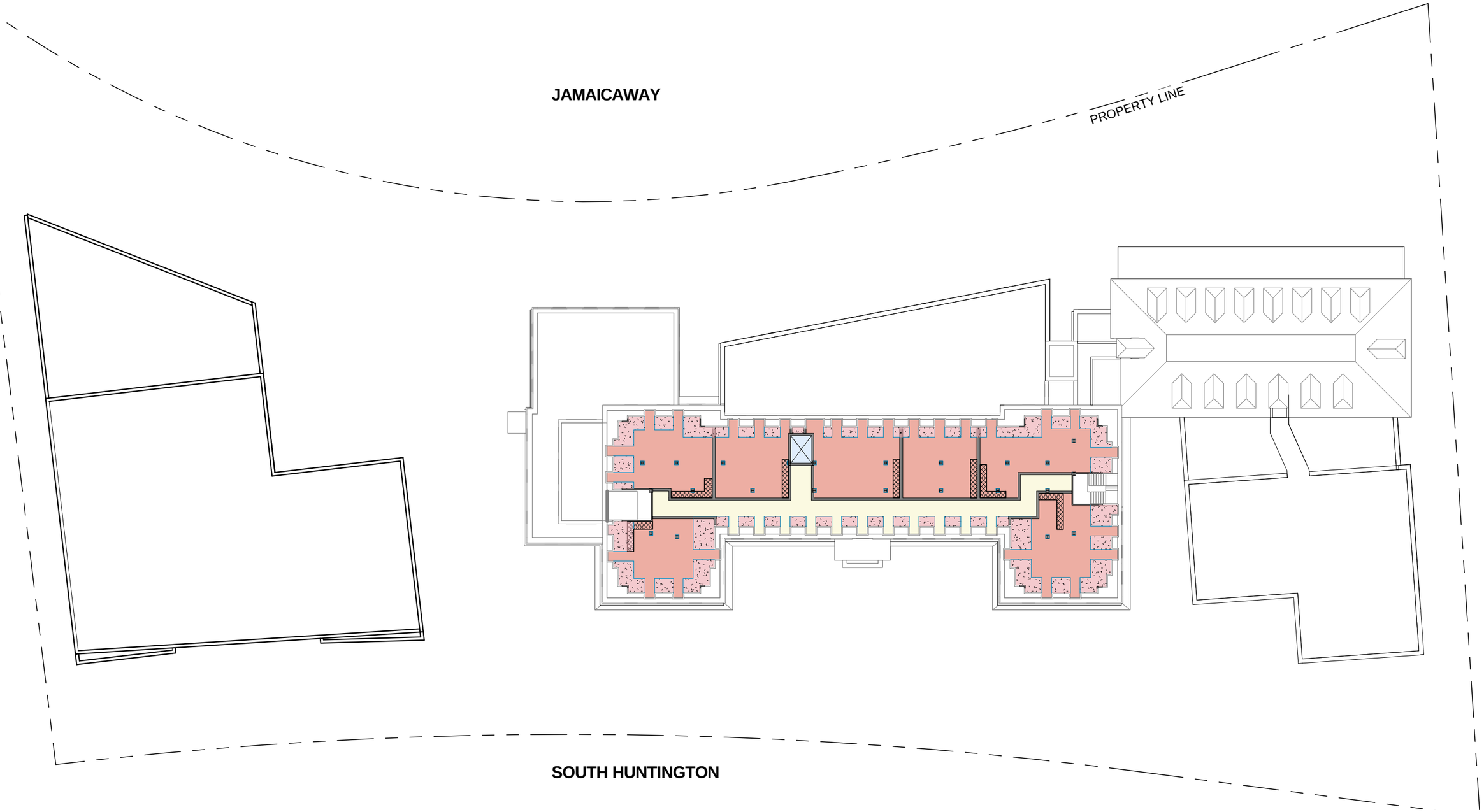
0 15 30 Feet

Figure 2.1g
Fourth Floor Plan

Goddard House Renovation and Redevelopment - Boston, MA

JAMAICAWAY

PROPERTY LINE



SOUTH HUNTINGTON

0 15 30 Feet

Figure 2.1h
Fifth Floor Plan

Goddard House Renovation and Redevelopment - Boston, MA

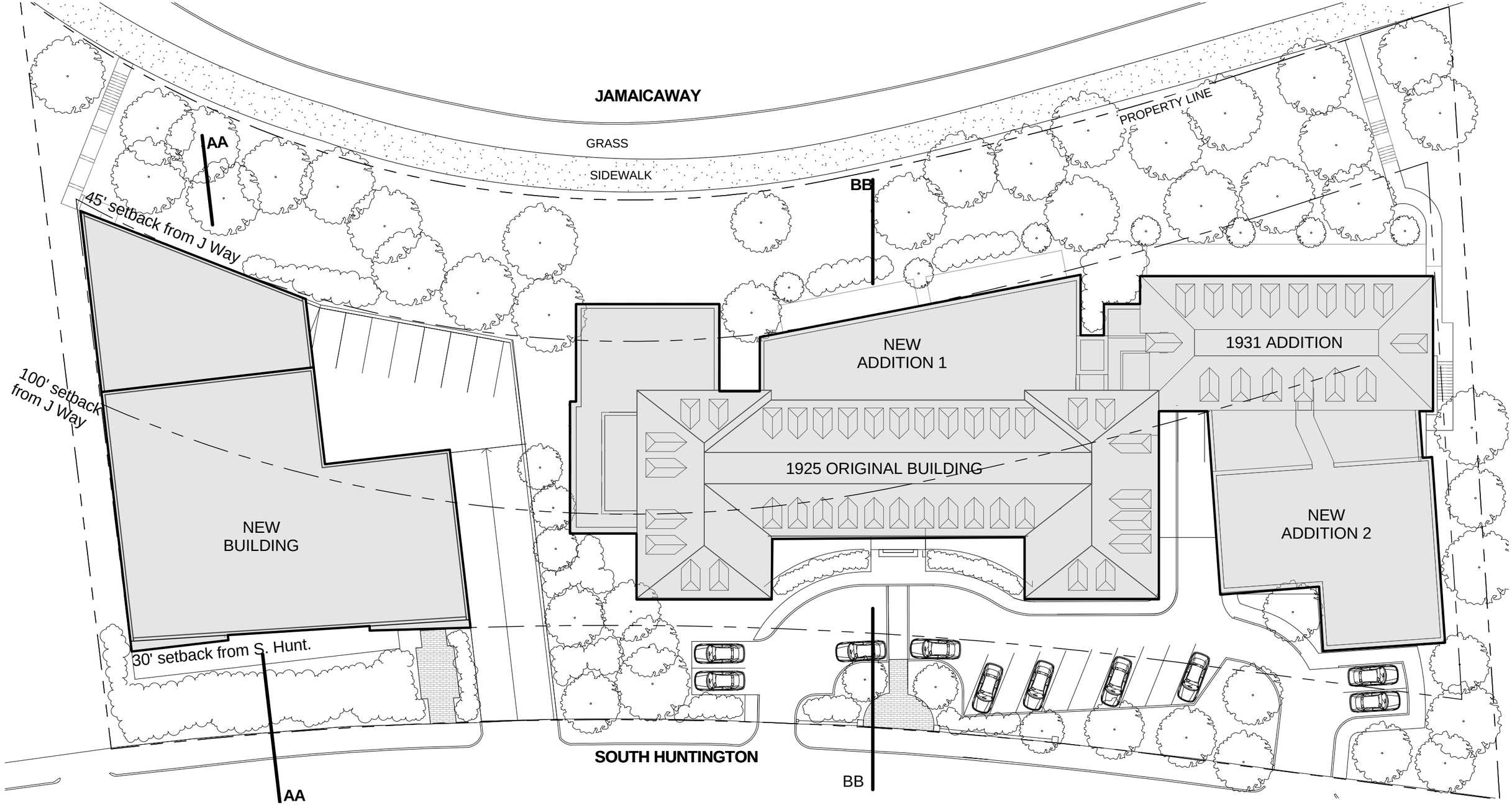


Figure 2.1i
Roof Plan

Rendered view at South Huntington Avenue addition

Rendered view at South Huntington Avenue new building

Figure 2.2a
Exterior Views

Actual View from Jamaicaway looking at new building

Rendered view from Jamaicaway looking at new building with transparent trees

Figure 2.2b
Exterior Views

Actual View from Jamaicaway at new addition

Rendered view from Jamicaway at new addition with transparent trees

Figure 2.2c
Exterior Views

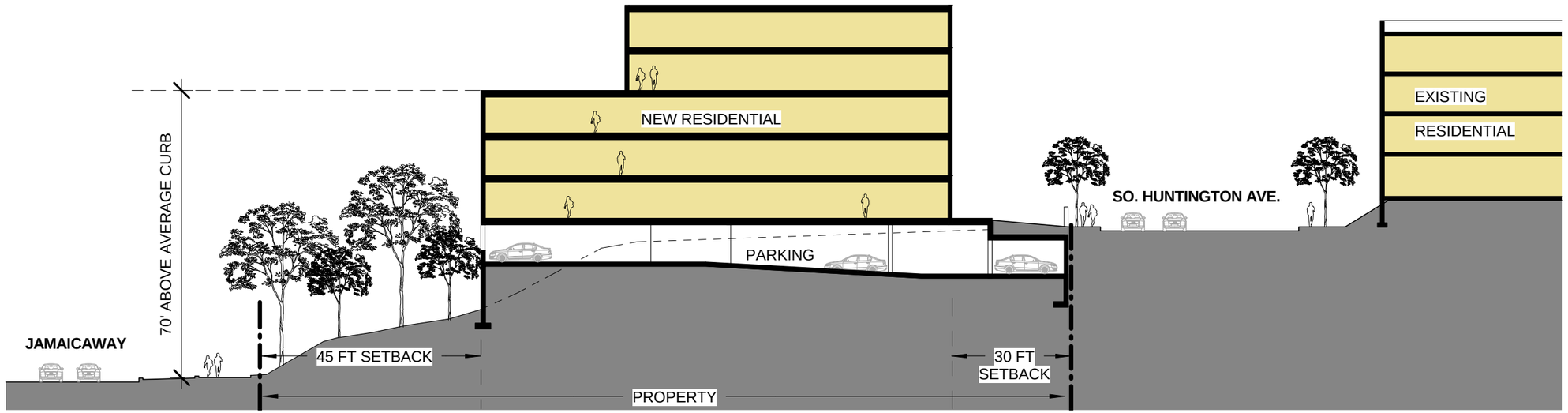
Rendered view of South Huntington Avenue elevation

Rendered view of Jamaicaway elevation

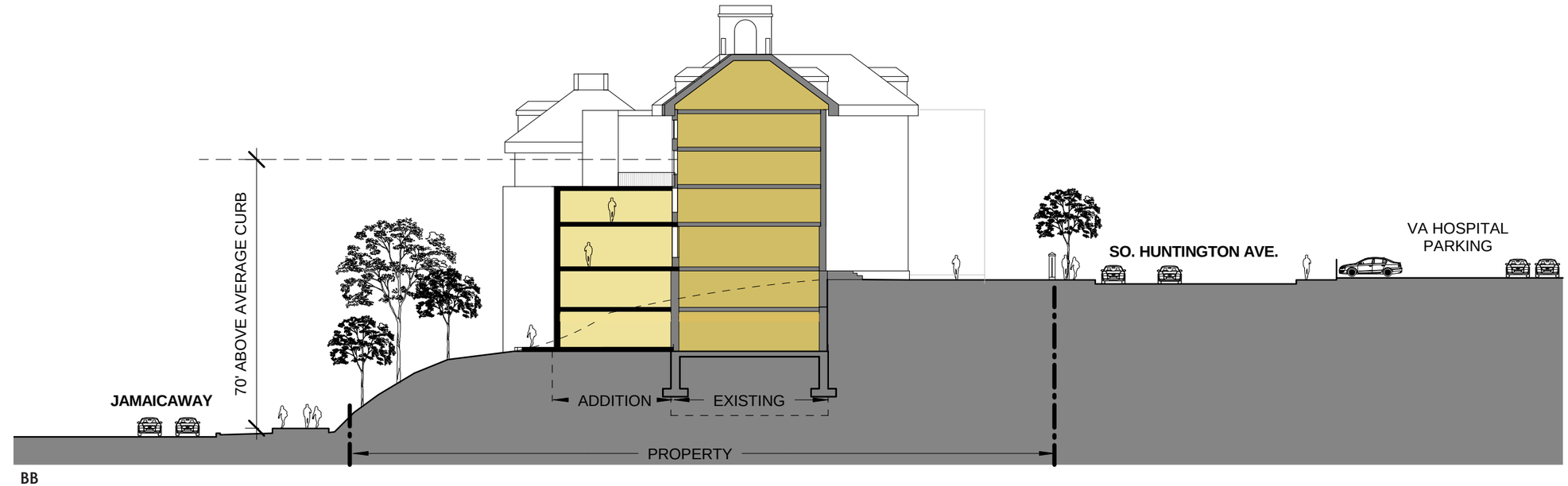
Figure 2.2d
Exterior Views

View of Goddard House looking south on South Huntington Avnuee

Figure 2.2e
Exterior Views



AA

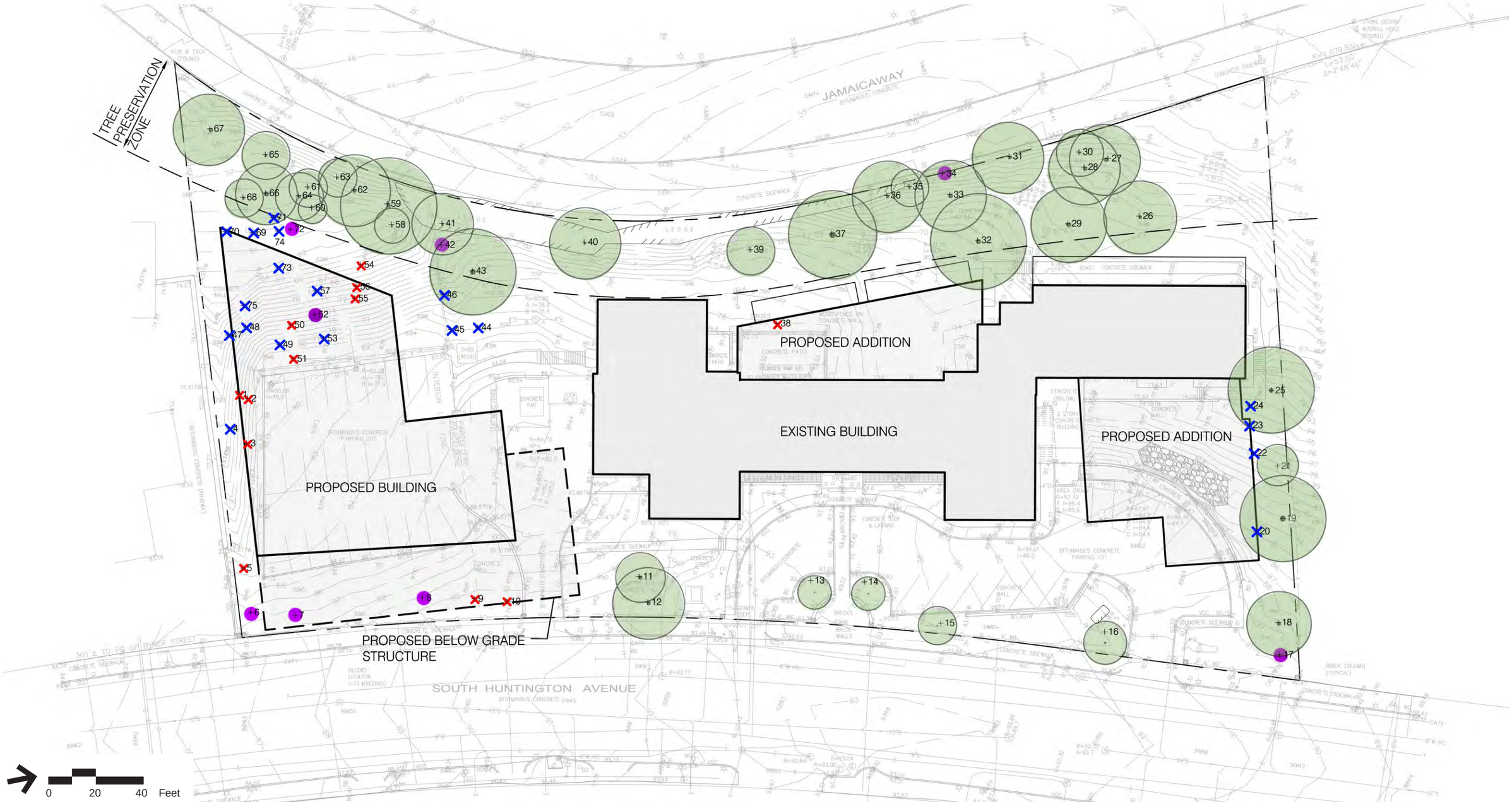


BB

0 15 30 Feet

Figure 2.3
Building Sections

Figure 2.4
Landscaping Plan



- Trees To Be Removed
- Trees To Be Removed- Invasive
- Dead Or Compromised Trees To Be Removed
- Trees To Remain
- +42 Tree Label - See Tree Inventory On Figure 2.5 b For Description

Figure 2.5a
Tree Overlay Plan

Goddard House Renovation and Redevelopment - Boston, MA

BARTLETT TREE SURVEY, 2015

ENTIRE INVENTORY

Table 16: ENTIRE INVENTORY

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Tree Care Priority	Estimated Value
1	Crimson King Maple	*Acer*	*platanoides* 'Crimson King'	11	Large	Semi-mature	Fair	3	$1,861.71
2	Crimson King Maple	*Acer*	*platanoides* 'Crimson King'	11	Large	Semi-mature	Fair	3	$1,861.71
3	Crimson King Maple	*Acer*	*platanoides* 'Crimson King'	7	Medium	Young	Fair	3	$753.91
4	Boxelder	*Acer*	*negundo*	14	Large	Mature	Fair	3	$3,015.66
5	Crimson King Maple	*Acer*	*platanoides* 'Crimson King'	10	Large	Semi-mature	Fair	3	$1,538.60
6	Crimson King Maple	*Acer*	*platanoides* 'Crimson King'	31	Large	Over-mature	Poor	1	$8,694.93
7	Crimson King Maple	*Acer*	*platanoides* 'Crimson King'	31	Large	Over-mature	Poor	1	$8,694.93
8	Crimson King Maple	*Acer*	*platanoides* 'Crimson King'	23	Medium	Mature	Poor	1	$4,883.52
9	Crimson King Maple	*Acer*	*platanoides* 'Crimson King'	9	Medium	Young	Good	3	$1,744.77
10	Crimson King Maple	*Acer*	*platanoides* 'Crimson King'	16	Large	Semi-mature	Fair	3	$3,938.82
11	Crimson King Maple	*Acer*	*platanoides* 'Crimson King'	21	Large	Mature	Fair	3	$6,785.23
12	Crimson King Maple	*Acer*	*platanoides*	20	Large	Mature	Poor	3	$3,692.64
13	Coffeetree-Kentucky	*Gymnocladus*	*dioicus*	8	Medium	Young	Good	3	$1,674.00
14	Coffeetree-Kentucky	*Gymnocladus*	*dioicus*	8	Medium	Young	Good	3	$1,674.00
15	Maple-Norway	*Acer*	*platanoides*	7	Small	Young	Fair	3	$700.06
16	Maple-Norway	*Acer*	*platanoides*	13	Medium	Semi-mature	Fair	3	$2,414.50
17	Maple-Norway	*Acer*	*platanoides*	23	Large	Mature	Poor	1	$4,534.69
18	Maple-Norway	*Acer*	*platanoides*	20	Large	Mature	Fair	3	$5,714.80
19	Maple-Norway	*Acer*	*platanoides*	29	Large	Mature	Good	3	$16,821.51
20	Pine-Eastern White	*Pinus*	*strobus*	9	Medium	Young	Good	3	$2,118.65
21	Pine-Eastern White	*Pinus*	*strobus*	7	Medium	Young	Good	3	$1,281.65
22	Pine-Eastern White	*Pinus*	*strobus*	6	Medium	Young	Good	3	$941.62

BARTLETT TREE SURVEY, 2015

Figure 2.5b.1

Tree Inventory

Goddard House Renovation and Redevelopment - Boston, MA

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Tree Care Priority	Estimated Value
23	Pine-Eastern White	*Pinus*	*strobus*	6	Medium	Young	Good	3	$941.62
24	Pine-Swiss Stone	*Pinus*	*cembra*	14	Large	Mature	Good	3	$5,126.62
25	Oak- Black	*Quercus*	*velutina*	24	Large	Mature	Good	3	$16,838.44
26	Maple-Sugar	*Acer*	*saccharum*	17	Large	Mature	Good	3	$7,559.14
27	Oak- Black	*Quercus*	*velutina*	23	Large	Mature	Good	3	$15,464.47
28	Oak- Black	*Quercus*	*velutina*	21	Large	Mature	Fair	3	$9,208.52
29	Oak- Black	*Quercus*	*velutina*	25	Large	Mature	Fair	3	$13,050.62
30	Cherry-Flowering	*Prunus*	*serrulata*	9	Large	Semi-mature	Fair	3	$1,335.28
31	Oak-Pin	*Quercus*	*palustris*	19	Large	Mature	Good	3	$9,442.39
32	Oak- Northern Red	*Quercus*	*rubra*	25	Large	Mature	Good	3	$18,270.88
33	Oak- Northern Red	*Quercus*	*rubra*	23	Large	Mature	Good	3	$15,464.47
34	Oak- Black	*Quercus*	*velutina*	9	Medium	Young	Dead	2	$0.00
35	Maple-Norway	*Acer*	*platanoides*	8	Medium	Young	Fair	3	$914.37
36	Maple-Norway	*Acer*	*platanoides*	13	Large	Semi-mature	Fair	3	$2,414.50
37	Oak-Swamp White	*Quercus*	*bicolor*	32	Large	Mature	Fair	3	$18,743.93
38	Maple-Norway	*Acer*	*platanoides*	21	Large	Mature	Fair	3	$6,300.57
39	Oak- Northern Red	*Quercus*	*rubra*	6	Medium	Young	Fair	3	$751.72
40	Oak- Northern Red	*Quercus*	*rubra*	11	Medium	Young	Fair	3	$2,526.60
41	Maple-Norway	*Acer*	*platanoides*	13	Large	Mature	Fair	3	$2,414.50
42	Maple-Norway	*Acer*	*platanoides*	14	Large	Mature	Dead	3	$0.00
43	Maple-Norway	*Acer*	*platanoides*	28	Large	Mature	Fair	3	$11,201.01
44	Oak- Northern Red	*Quercus*	*rubra*	25	Large	Mature	Fair	3	$13,050.62
45	Oak- Northern Red	*Quercus*	*rubra*	26	Large	Mature	Poor	3	$8,469.33
46	Hackberry	*Celtis*	*occidentalis*	13	Medium	Mature	Fair	3	$2,785.97
47	Boxelder	*Acer*	*negundo*	14	Large	Mature	Fair	3	$1,507.83

BARTLETT TREE SURVEY, 2015

Figure 2.5b.2

Tree Inventory

Goddard House Renovation and Redevelopment - Boston, MA

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Tree Care Priority	Estimated Value
48	Boxelder	*Acer*	*negundo*	13	Large	Mature	Fair	3	$1,300.12
49	Elm-American	*Ulmus*	*americana*	8	Medium	Young	Fair	3	$773.70
50	Tree of Heaven	*Ailanthus*	*altissima*	13	Large	Mature	Fair	3	$557.19
51	Tree of Heaven	*Ailanthus*	*altissima*	15	Large	Mature	Fair	3	$741.82
52	Tree of Heaven	*Ailanthus*	*altissima*	14	Large	Mature	Dead	3	$0.00
53	Boxelder	*Acer*	*negundo*	10	Medium	Mature	Fair	3	$769.30
54	Maple-Norway	*Acer*	*platanoides*	16	Large	Mature	Fair	3	$3,657.47
55	Maple-Norway	*Acer*	*platanoides*	9	Large	Young	Fair	3	$1,157.25
56	Maple-Norway	*Acer*	*platanoides*	9	Large	Young	Fair	3	$1,157.25
57	Sweetgum	*Liquidambar*	*styraciflua*	17	Large	Mature	Good	3	$6,669.83
58	Cherry-Flowering	*Prunus*	*serrulata*	10	Large	Young	Good	3	$2,307.90
59	Cherry-Flowering	*Prunus*	*serrulata*	21	Large	Mature	Fair	3	$7,269.88
60	Maple-Norway	*Acer*	*platanoides*	6	Large	Young	Fair	3	$514.33
61	Maple-Norway	*Acer*	*platanoides*	10	Large	Young	Fair	3	$1,428.70
62	Oak-Pin	*Quercus*	*palustris*	20	Large	Mature	Fair	3	$7,473.20
63	Oak-Pin	*Quercus*	*palustris*	12	Large	Young	Fair	3	$2,690.35
64	Oak-Pin	*Quercus*	*palustris*	18	Large	Mature	Fair	3	$6,053.29
65	Oak- Northern Red	*Quercus*	*rubra*	13	Large	Young	Fair	3	$3,528.89
66	Oak- Northern Red	*Quercus*	*rubra*	25	Large	Mature	Fair	3	$13,050.62
67	Oak- Northern Red	*Quercus*	*rubra*	21	Large	Mature	Fair	3	$9,208.52
68	Oak- Northern Red	*Quercus*	*rubra*	13	Large	Young	Fair	3	$3,528.89
69	Oak- Northern Red	*Quercus*	*rubra*	8	Large	Young	Fair	3	$1,336.38
70	Oak- Northern Red	*Quercus*	*rubra*	14	Large	Semi-mature	Fair	3	$4,092.68
71	Oak-Pin	*Quercus*	*palustris*	11	Large	Young	Fair	3	$2,260.64
72	Oak-Pin	*Quercus*	*palustris*	8	Large	Young	Dead	3	$0.00

BARTLETT TREE SURVEY, 2015

Figure 2.5b.3

Tree Inventory

Goddard House Renovation and Redevelopment - Boston, MA

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Condition Class	Tree Care Priority	Estimated Value
73	Oak-Pin	*Quercus*	*palustris*	13	Large	Mature	Fair	3	$3,157.43
74	Oak-Pin	*Quercus*	*palustris*	14	Large	Mature	Fair	3	$3,661.87
75	Oak-Pin	*Quercus*	*palustris*	17	Large	Mature	Fair	3	$5,399.39

Figure 2.5b.4

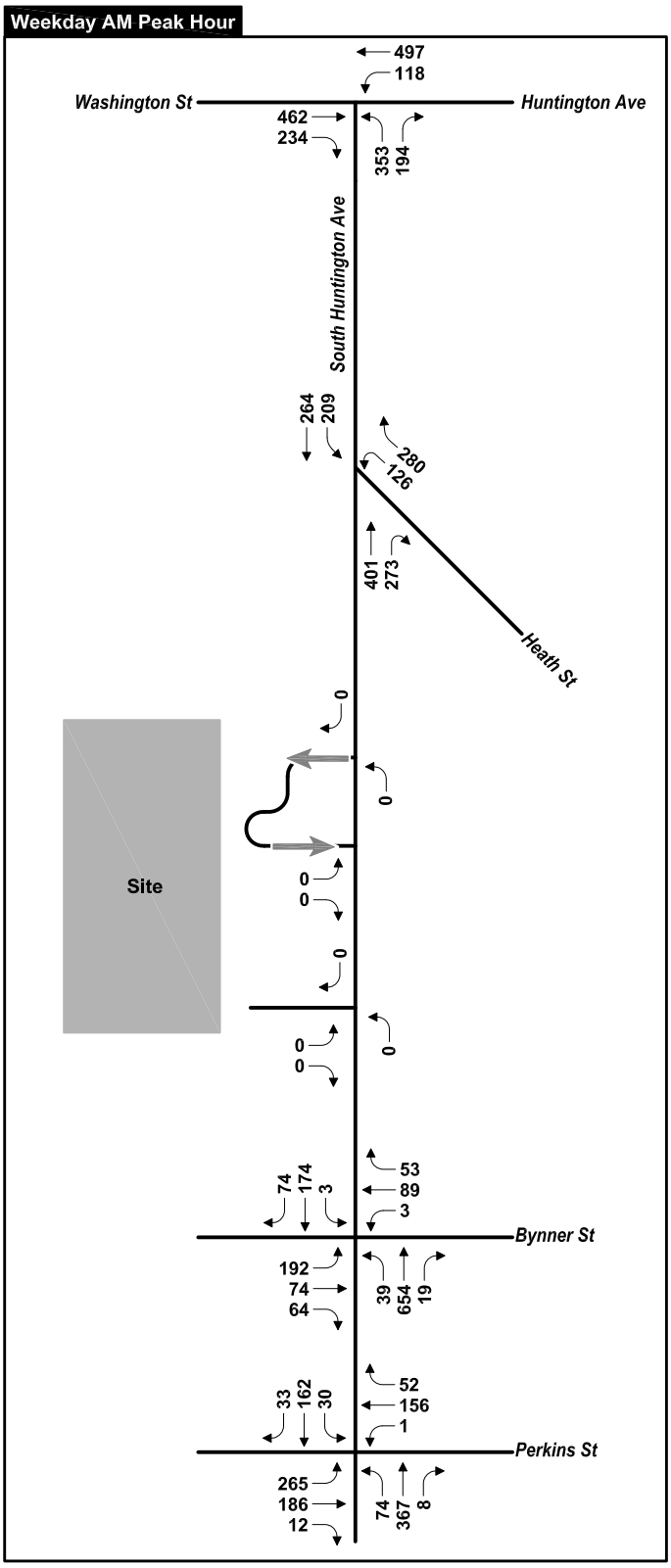
Tree Inventory

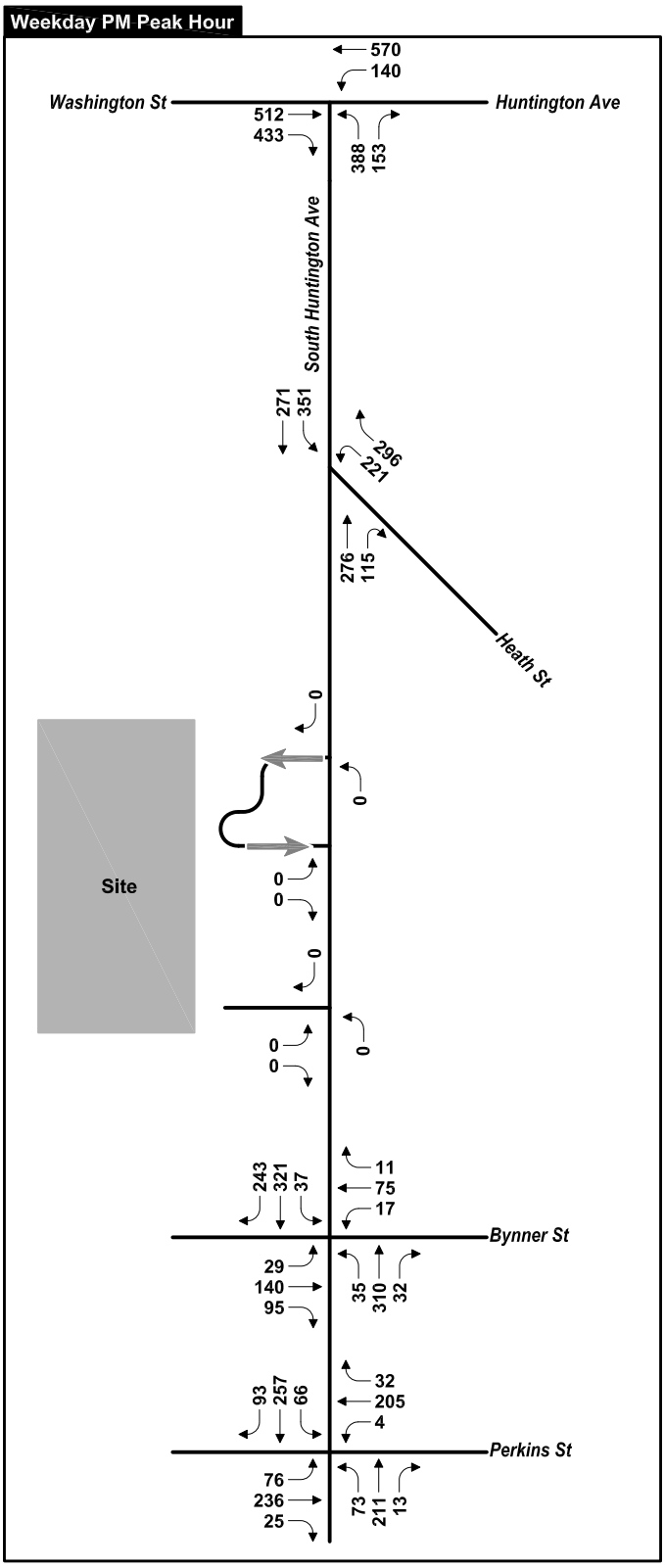
Goddard House Renovation and Redevelopment - Boston, MA

Source: Arcmap Online Bing Aerial

Figure 3.1
Study Area

Goddard House Renovation and Redevelopment - Boston, MA

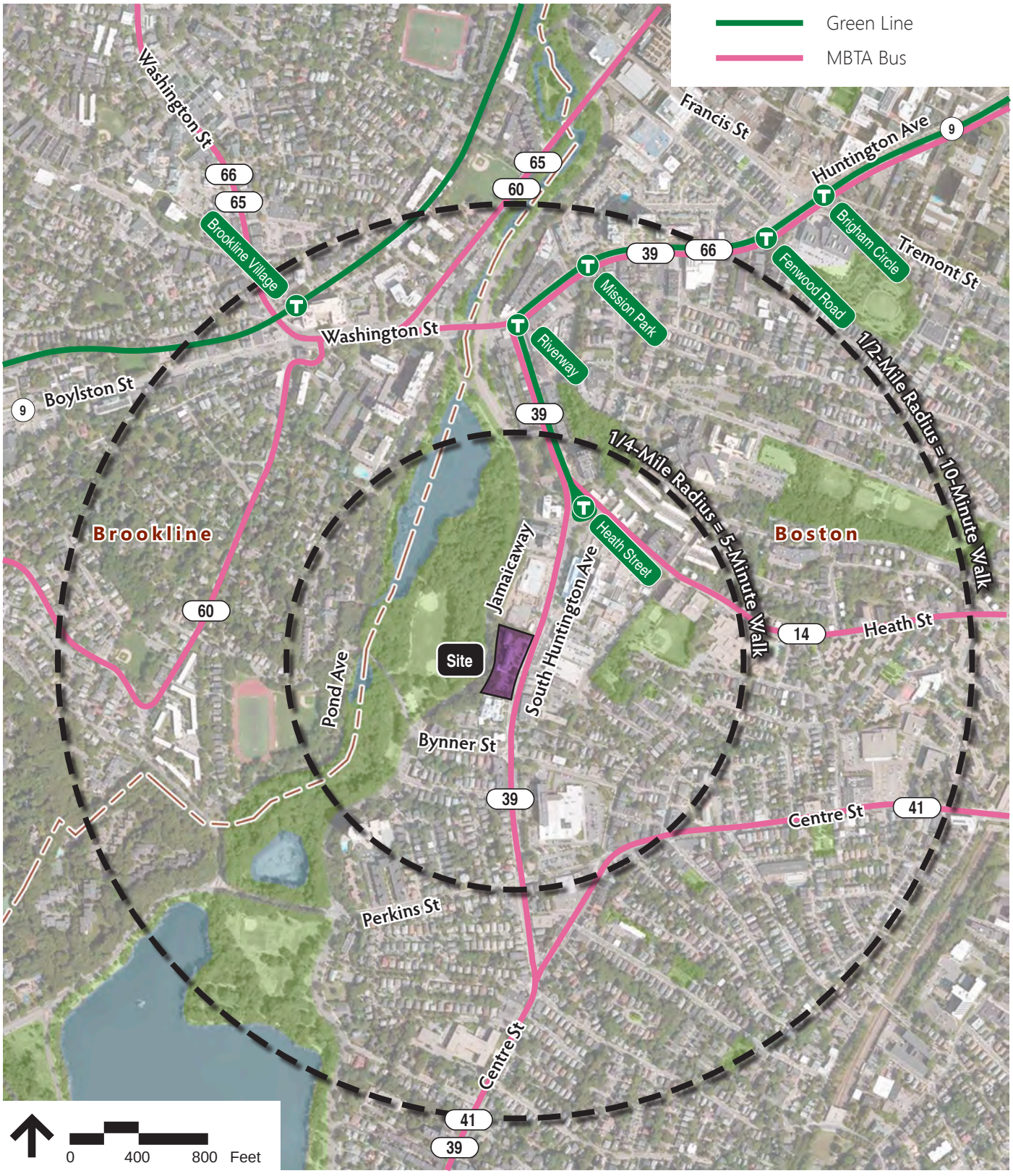




Not to Scale

Figure 3.2
2015 Existing Condition Traffic Volumes

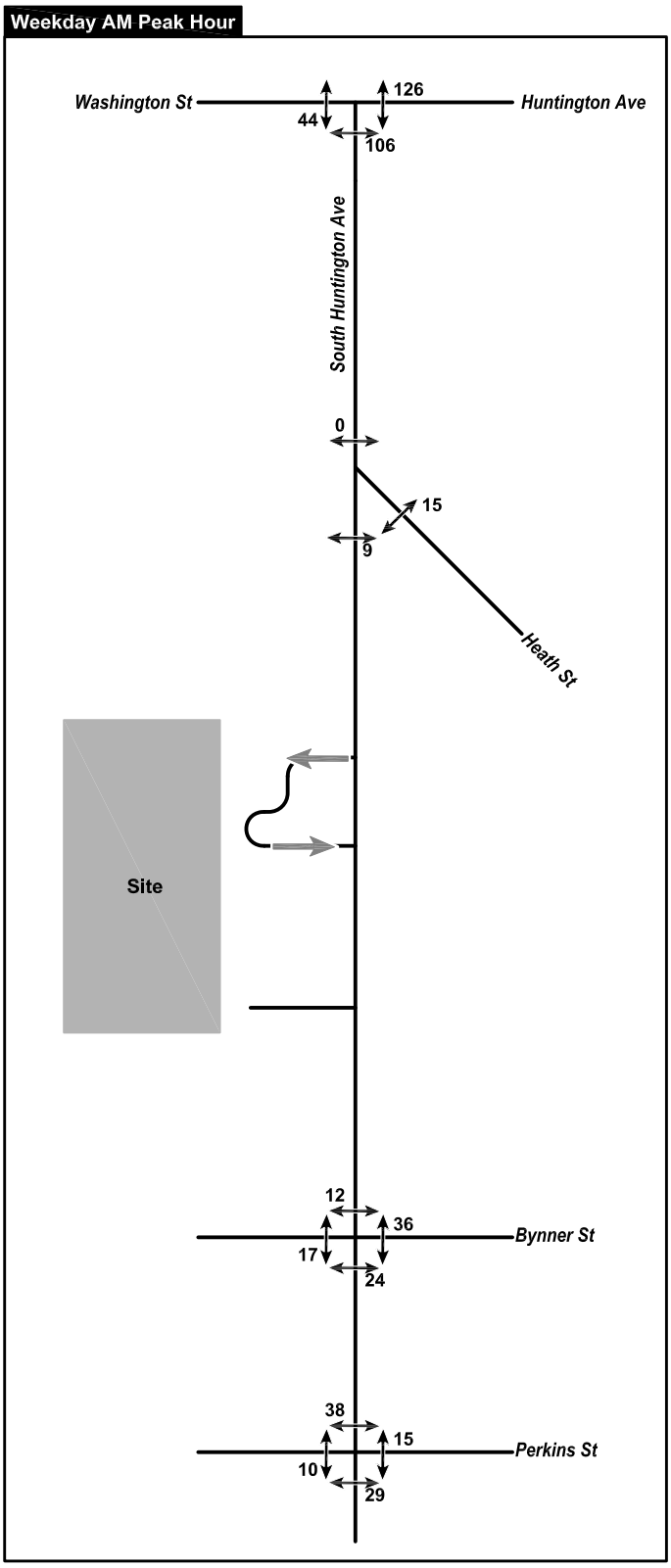
Goddard House Renovation and Redevelopment - Boston, MA

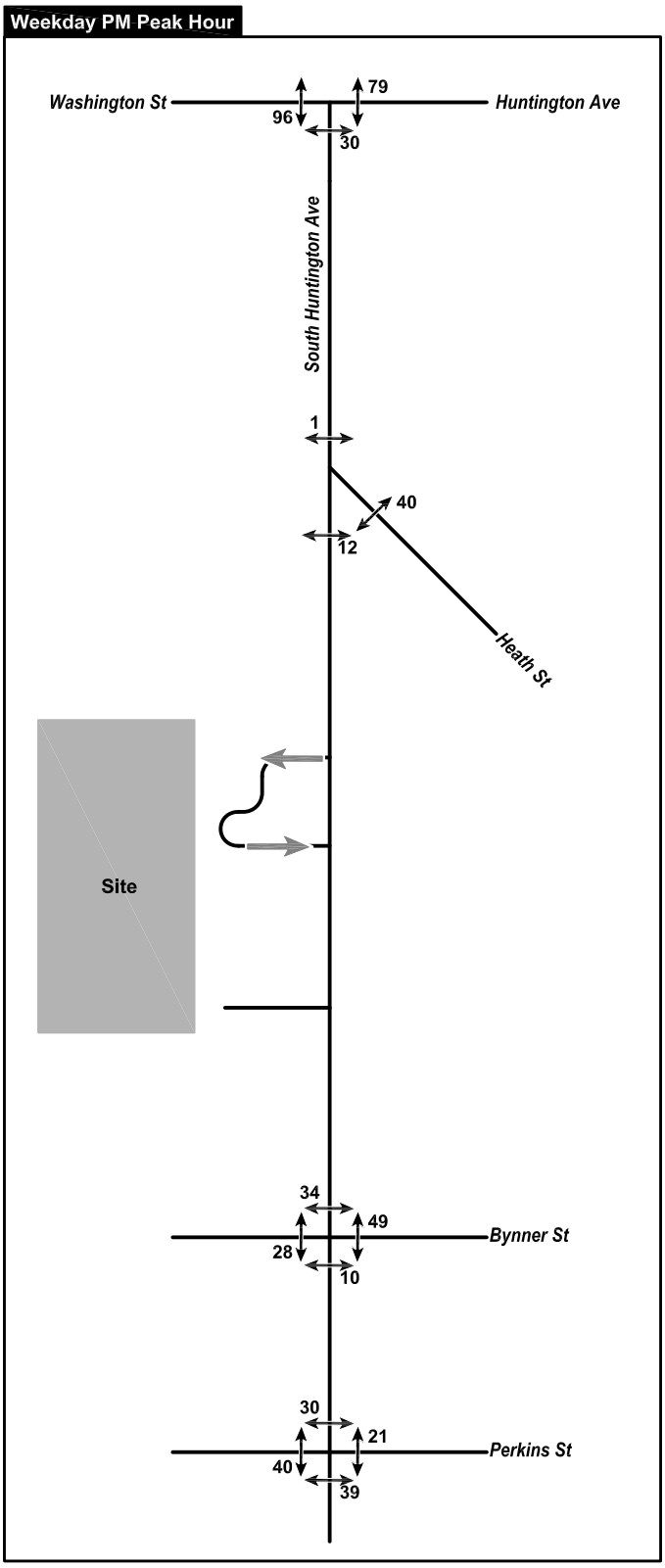


Source: MBTA

Figure 3.3
Public Transportation

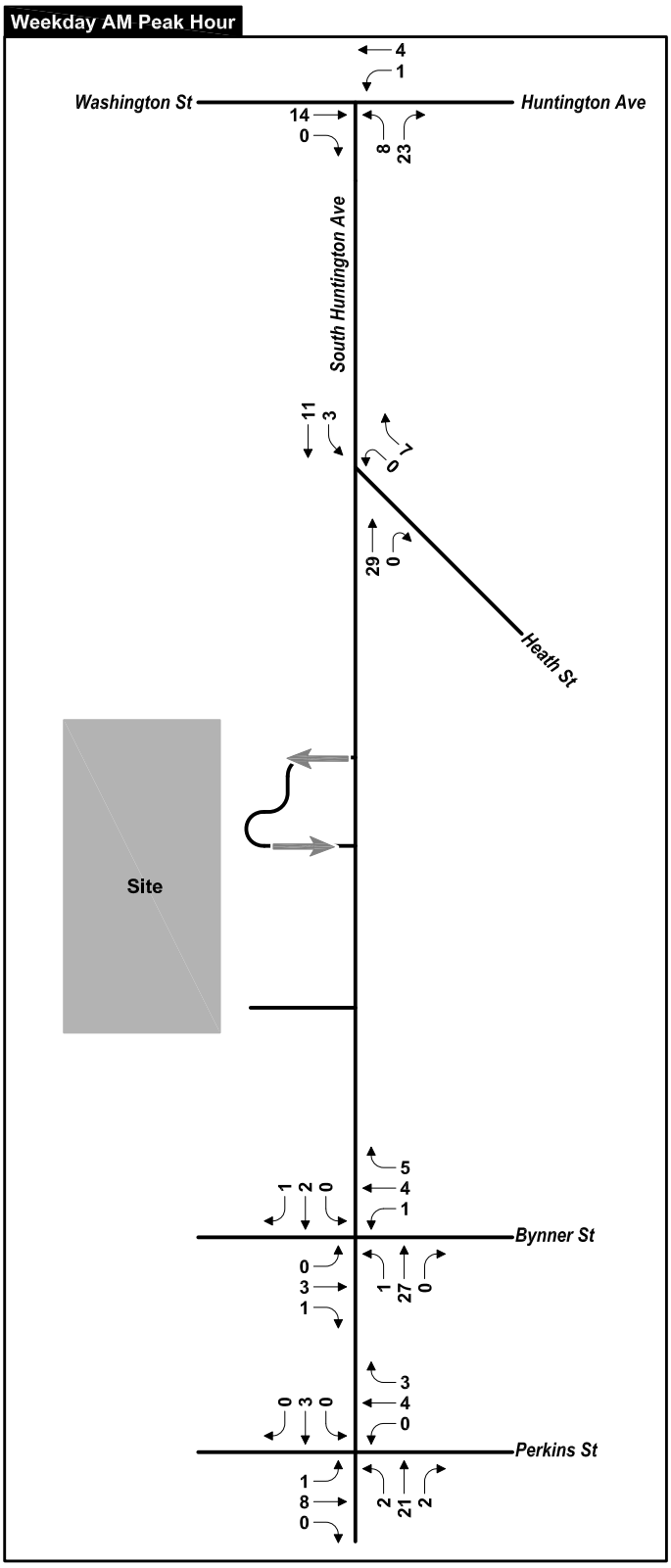
Goddard House Renovation and Redevelopment - Boston, MA

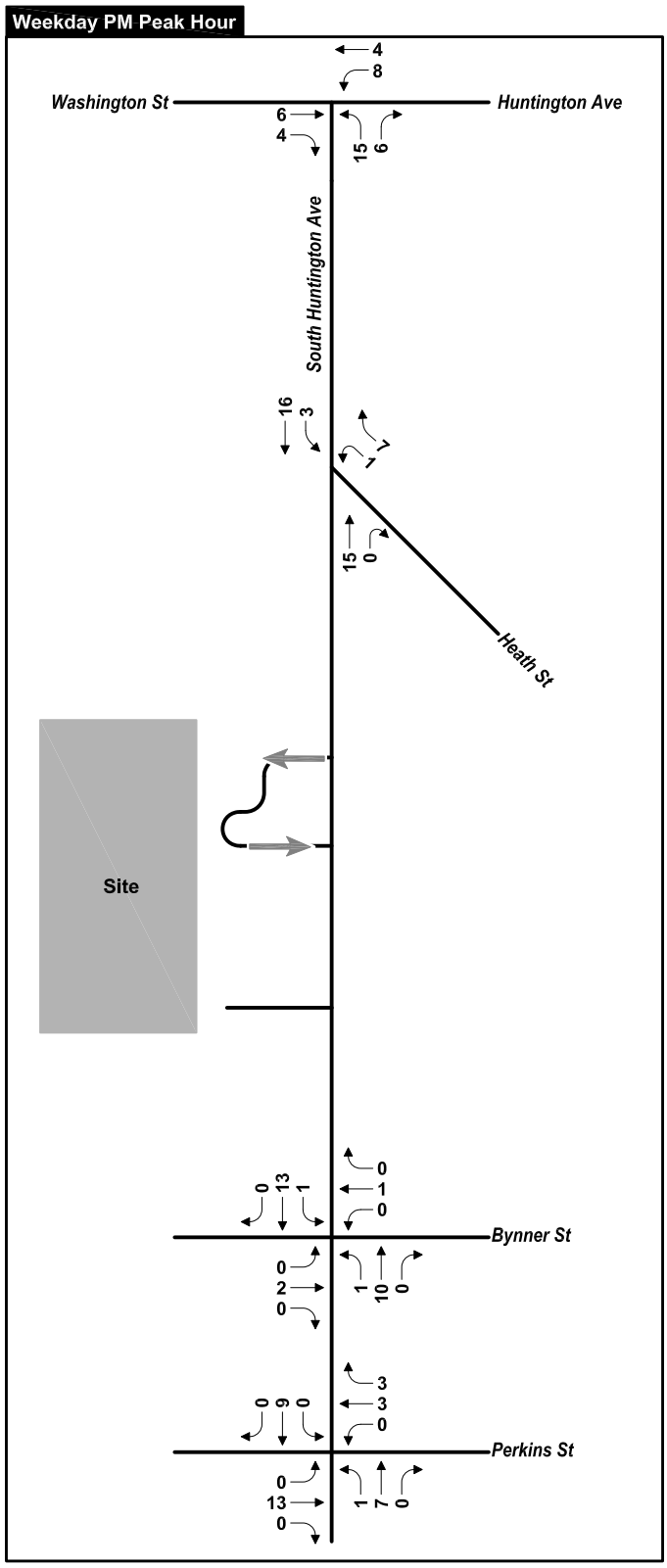




Not to Scale

Figure 3.4
2015 Existing Condition Pedestrian Volumes





Not to Scale

Figure 3.5
2015 Existing Condition Bicycle Volumes

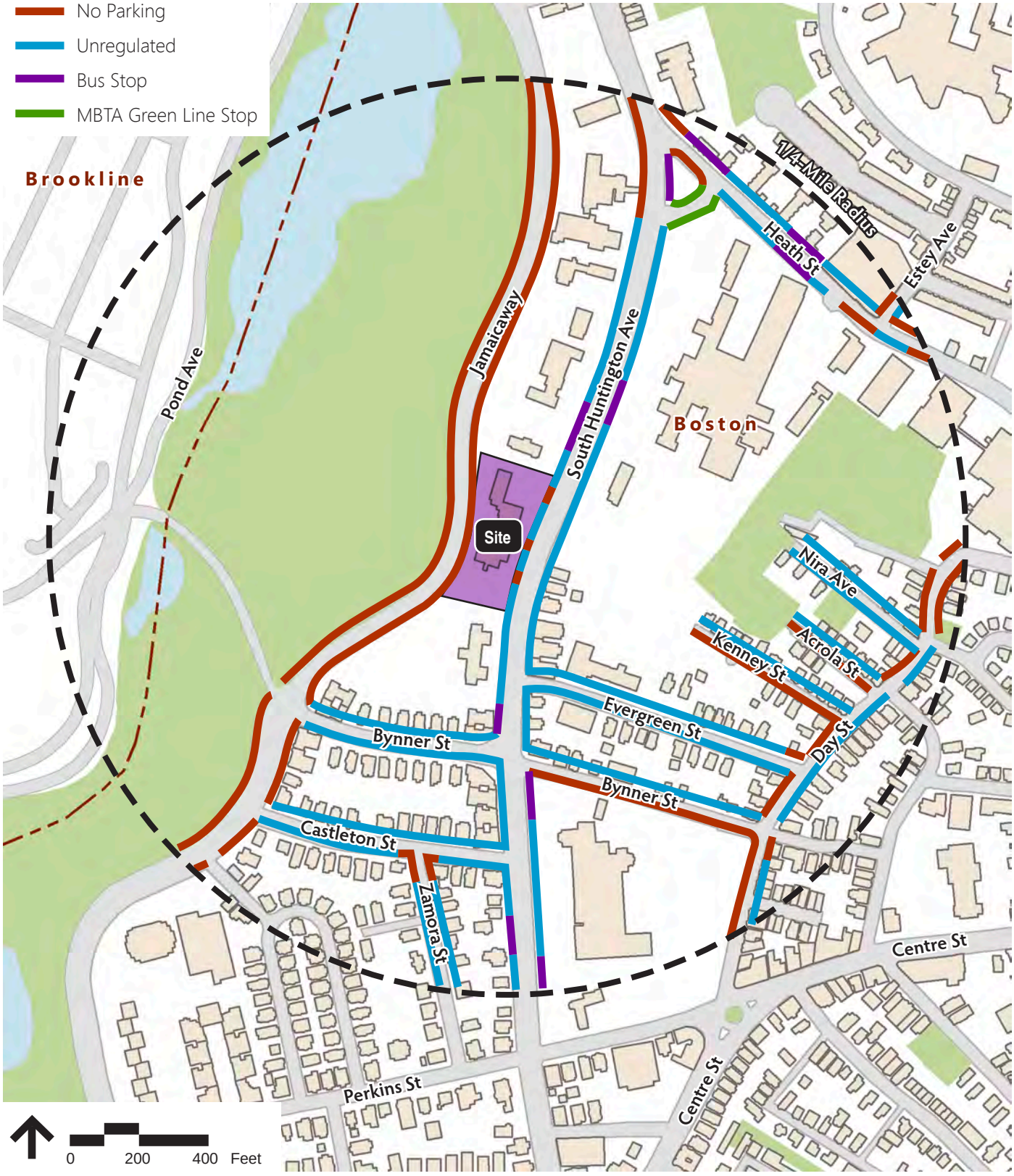


Figure 3.6

On-Street Parking Regulations

Goddard House Renovation and Redevelopment - Boston, MA

Parking Type	Total Spaces	Spaces Available
Unregulated	473	118

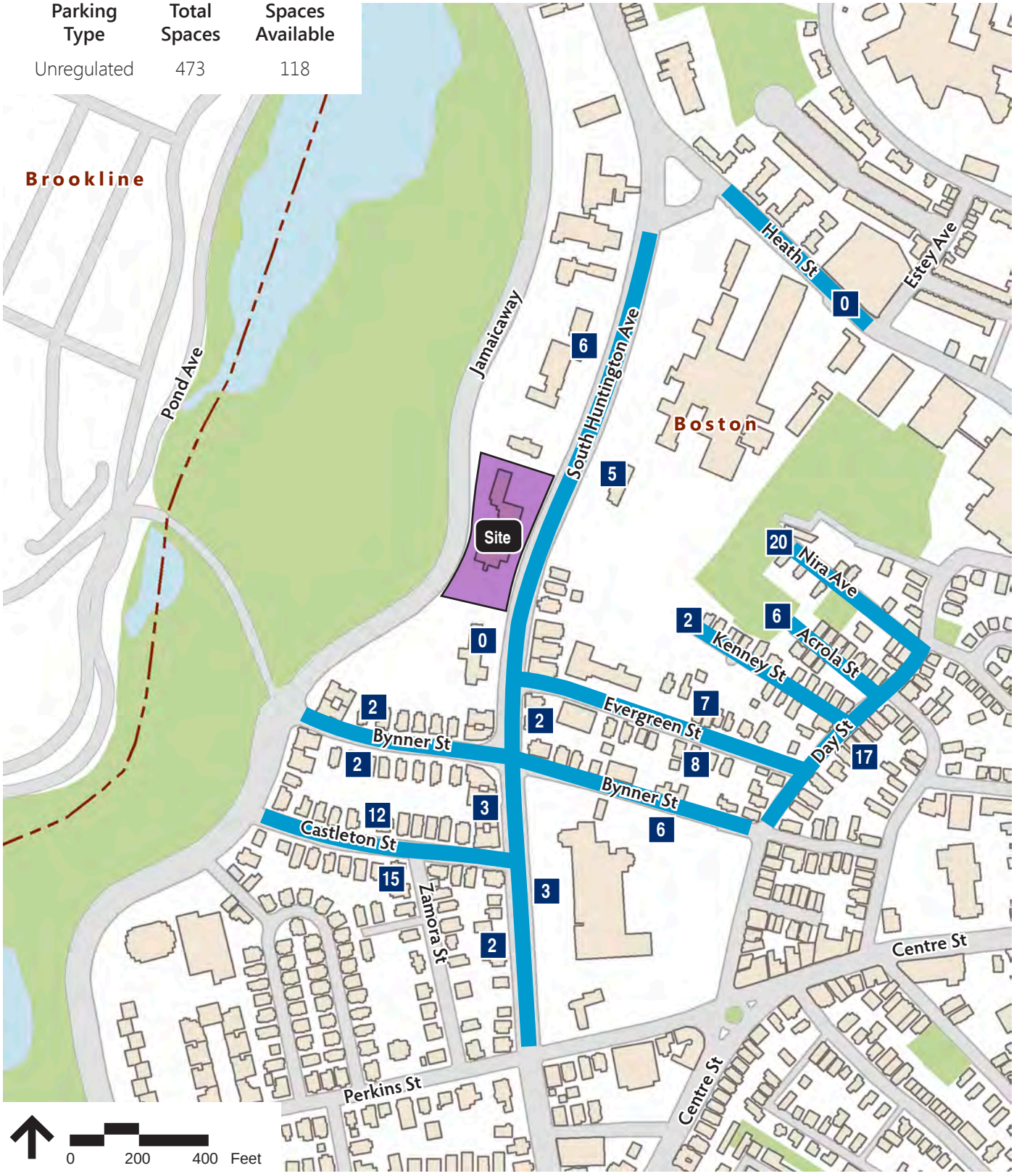


Figure 3.7a

Parking Utilization - Available Spaces

Thursday, October 15, 2015 - 12 PM

Goddard House Renovation and Redevelopment - Boston, MA

Parking Type	Total Spaces	Spaces Available
Unregulated	473	166

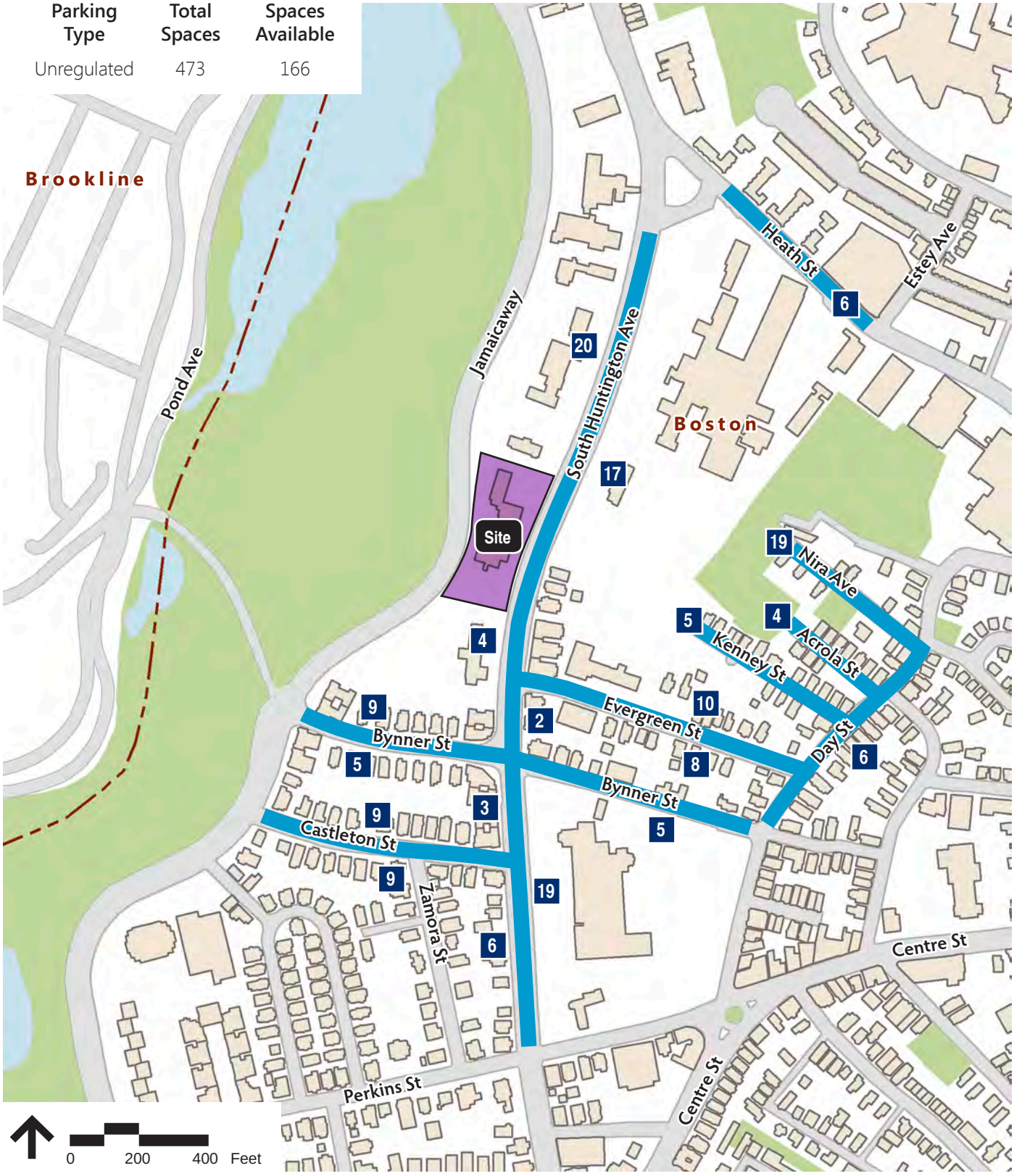
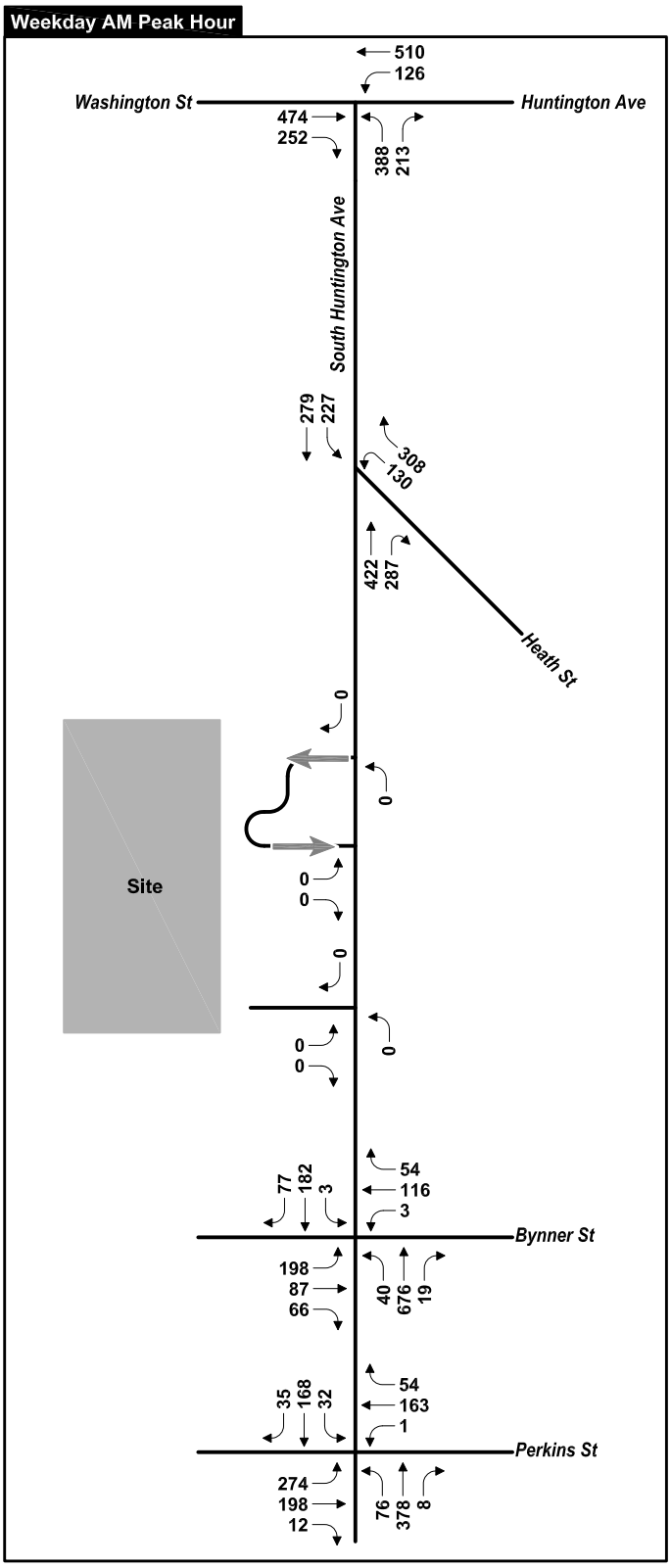


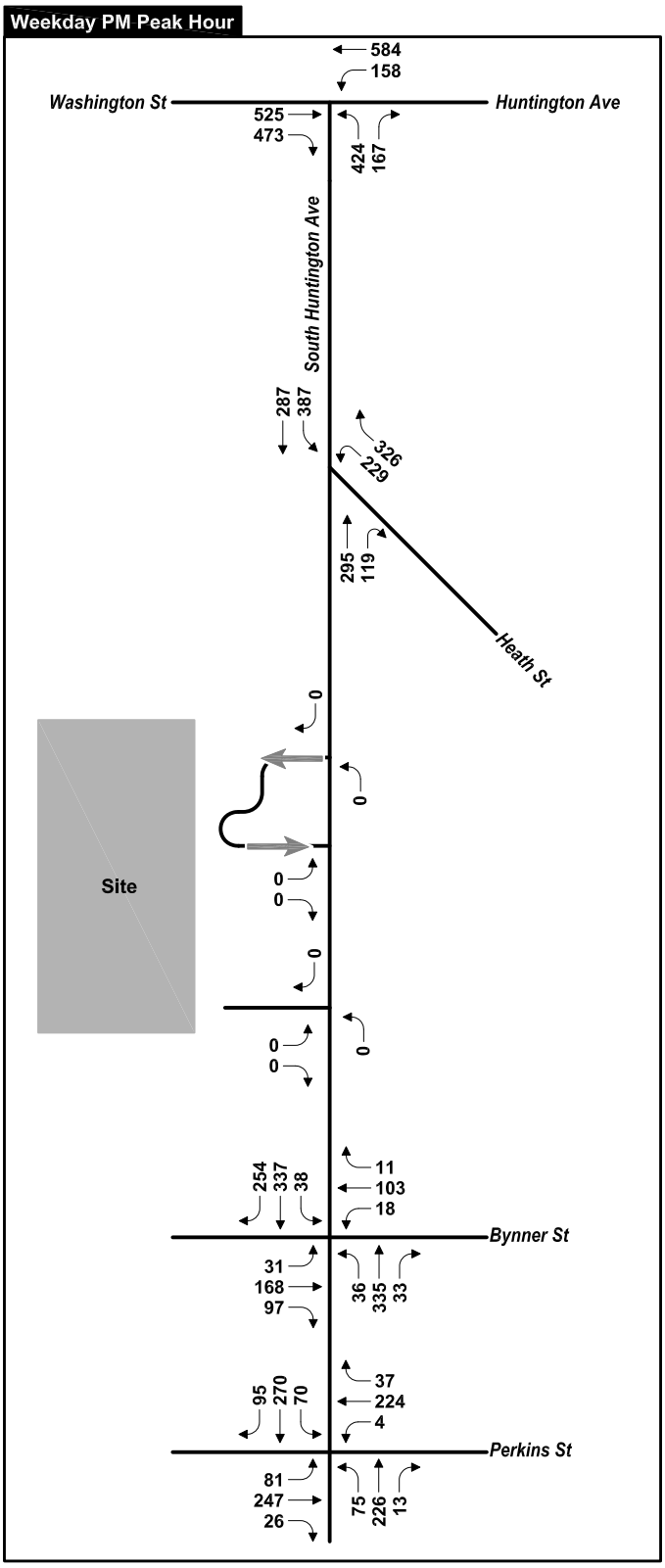
Figure 3.7b

Parking Utilization - Available Spaces

Thursday, October 15, 2015 - 8 PM

Goddard House Renovation and Redevelopment - Boston, MA





Not to Scale

Figure 3.8
2020 No-Build Condition Traffic Volumes

Goddard House Renovation and Redevelopment - Boston, MA

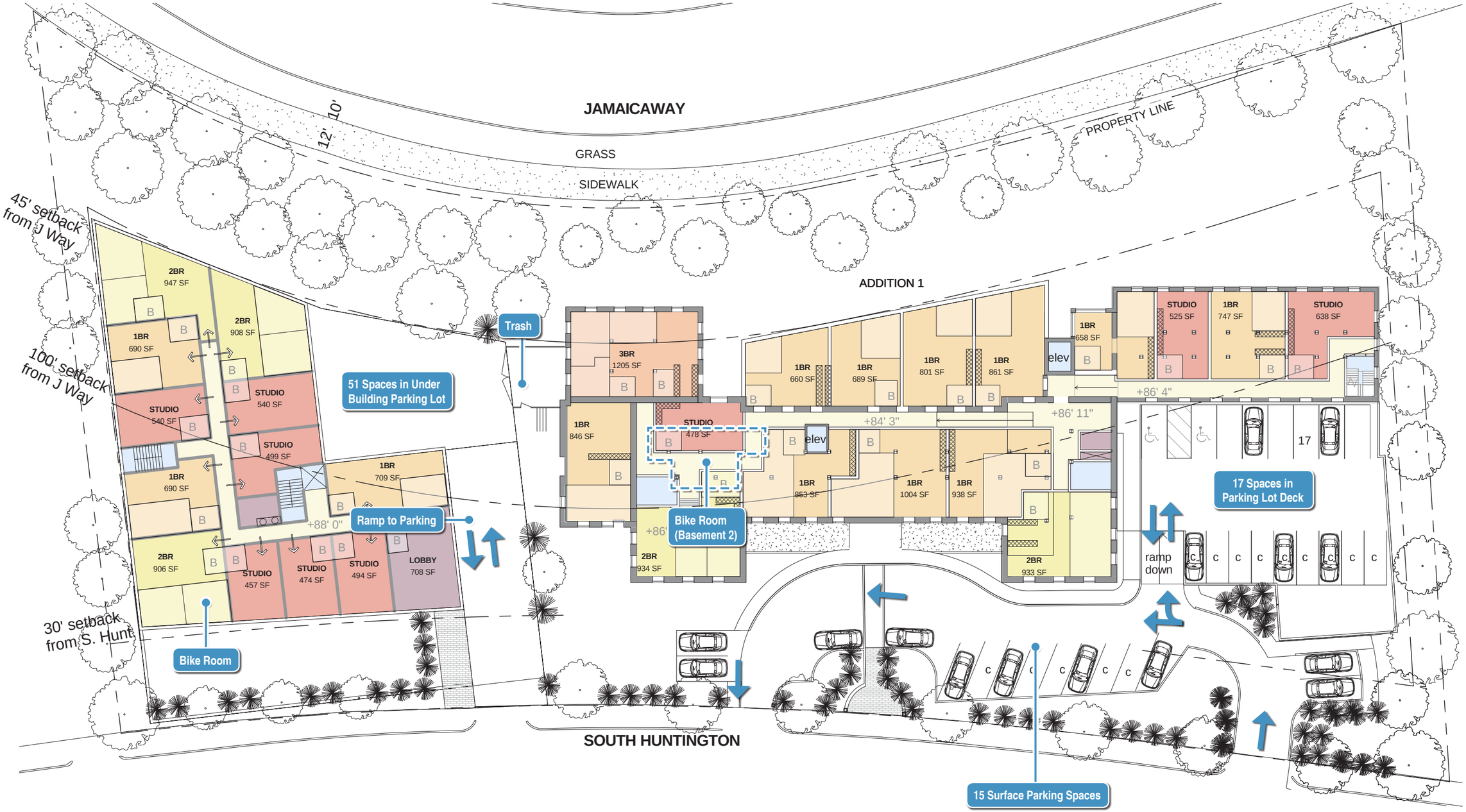


Figure 3.9
Proposed Site Plan

Source: PCA Archhitects

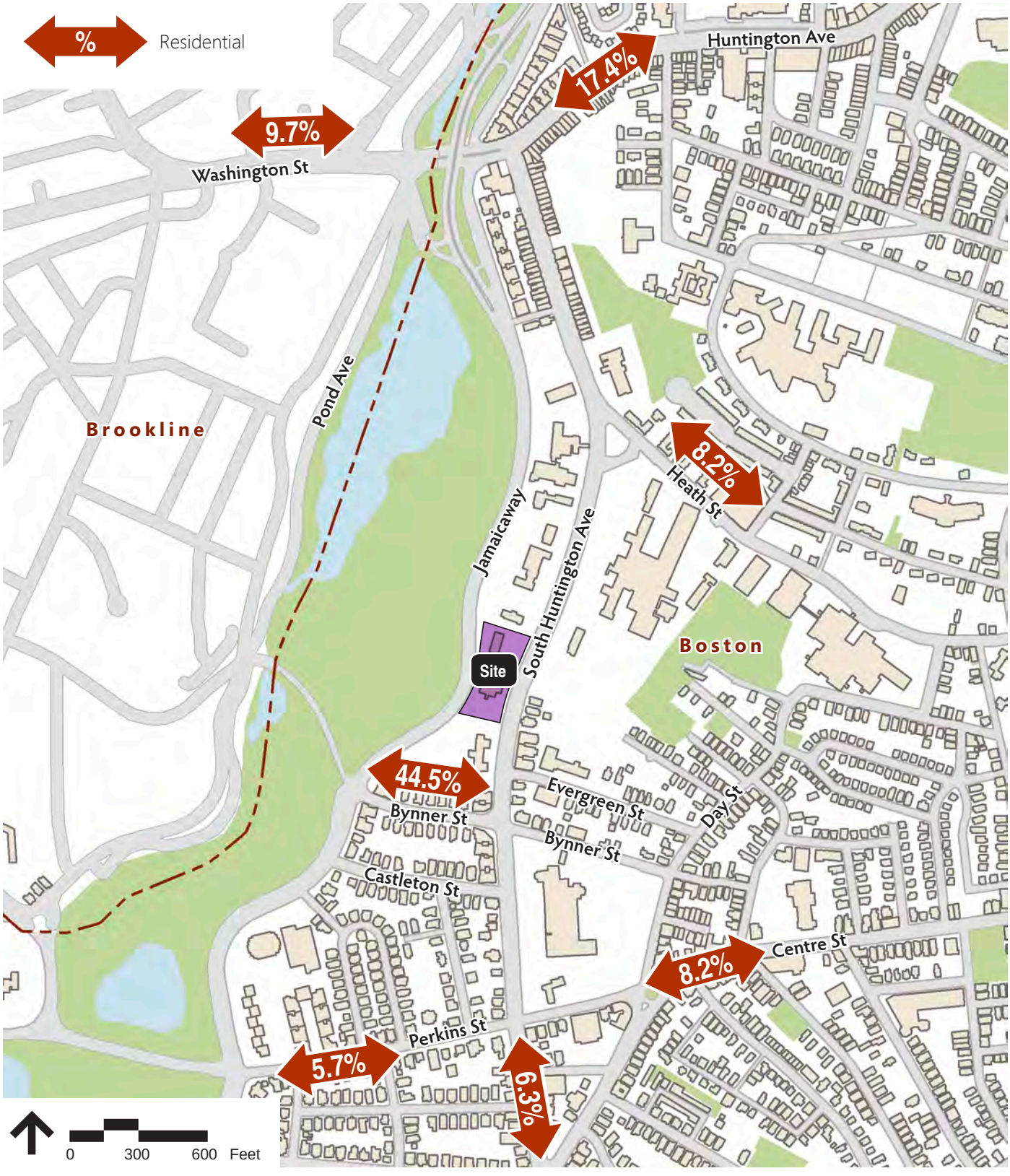
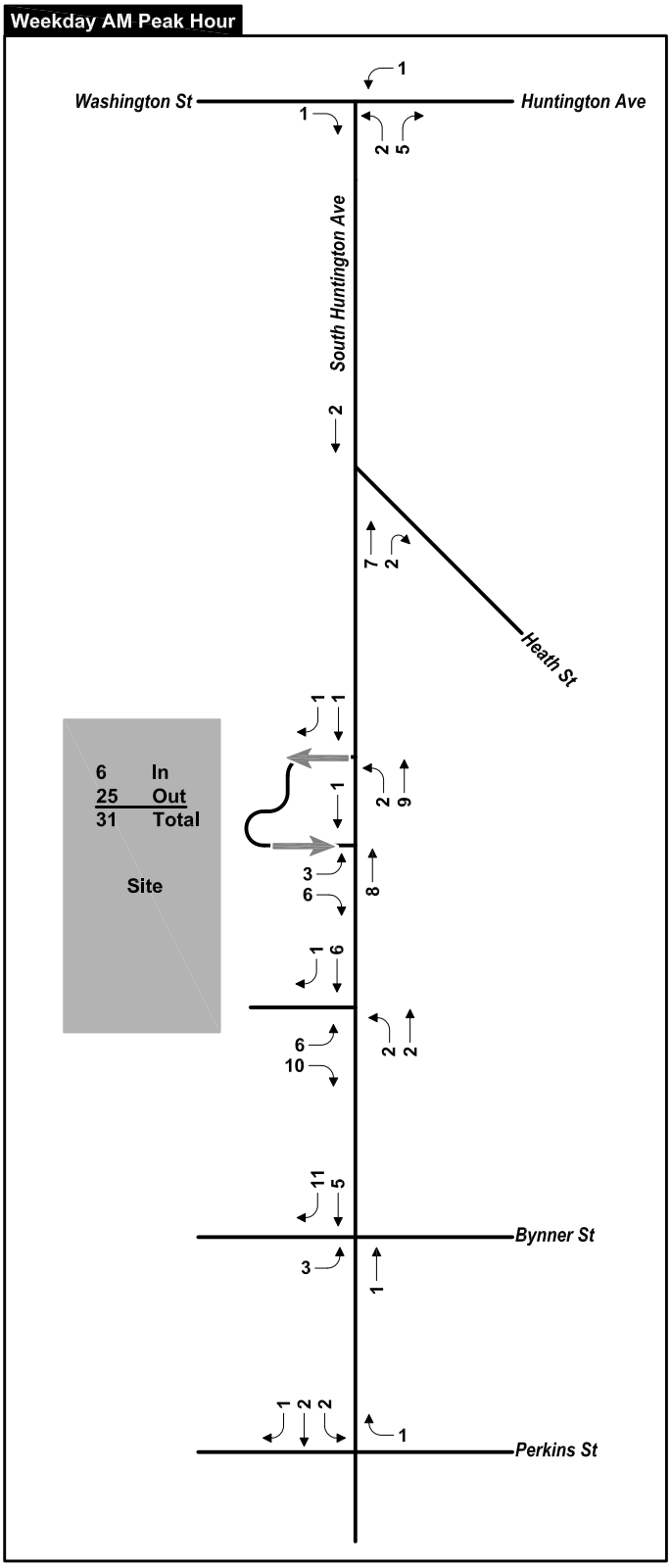
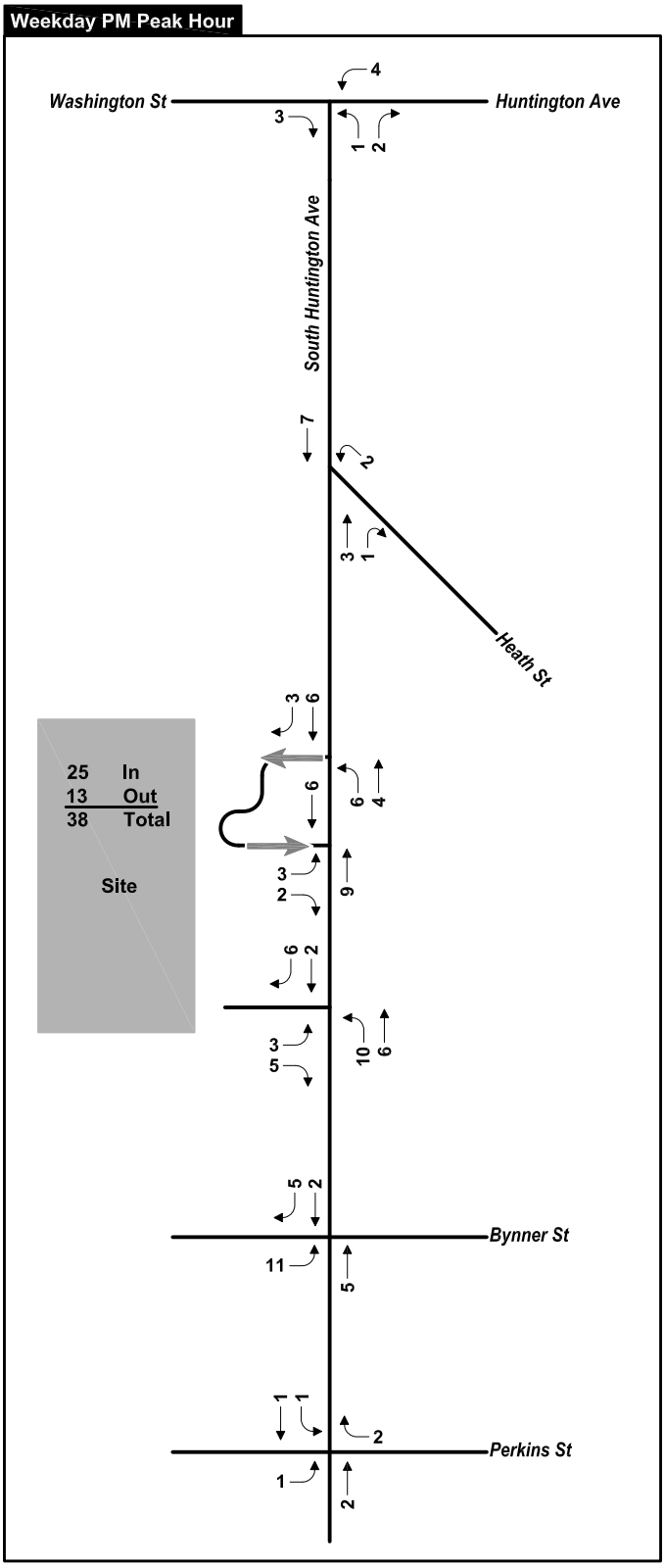


Figure 3.10

Regional Trip Distribution

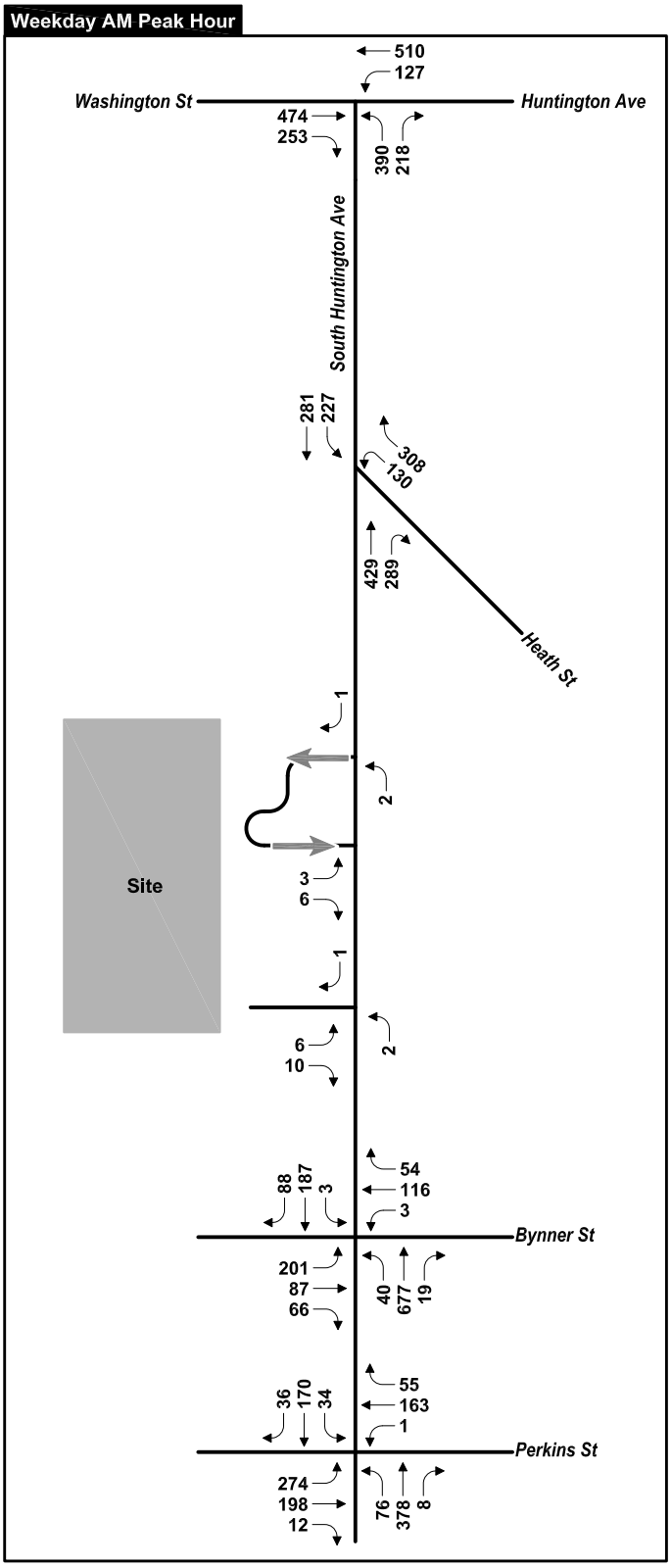
Goddard House Renovation and Redevelopment - Boston, MA

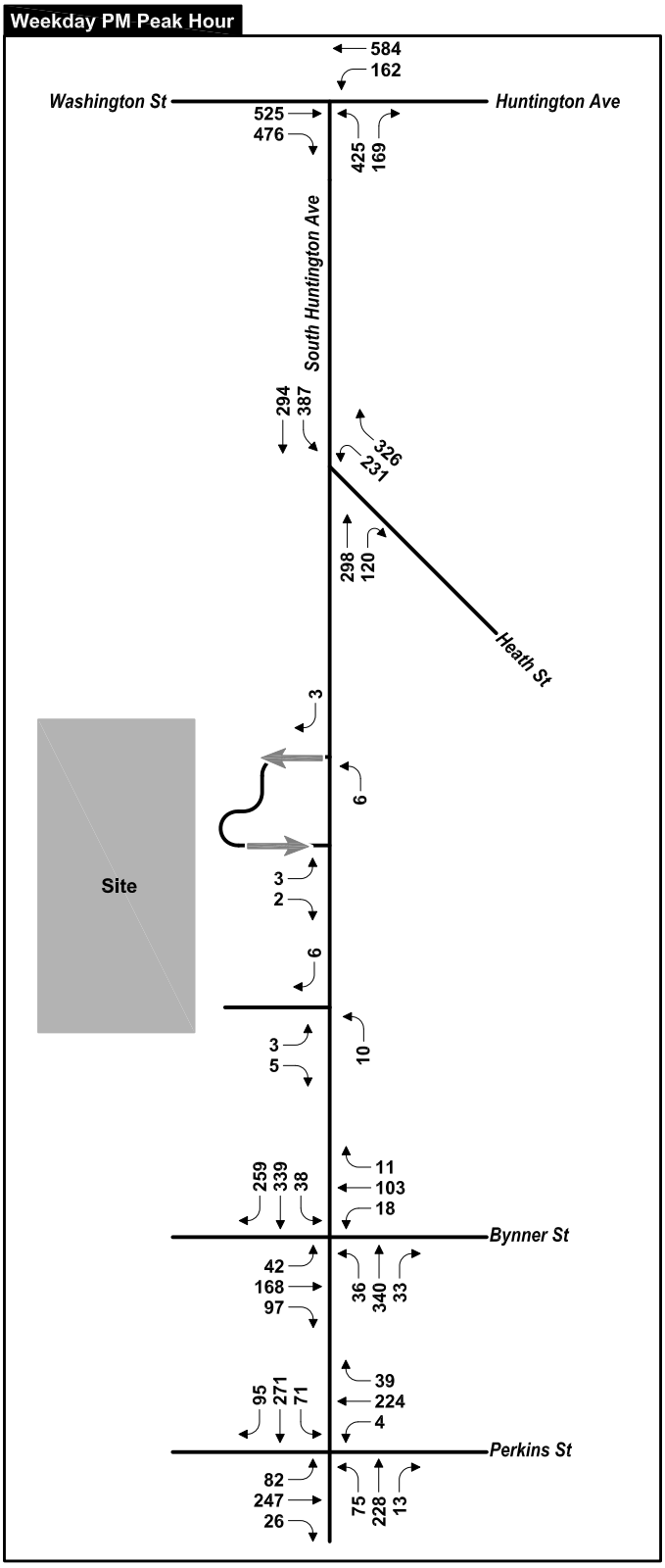




Not to Scale

Figure 3.1
Project Generated Trips



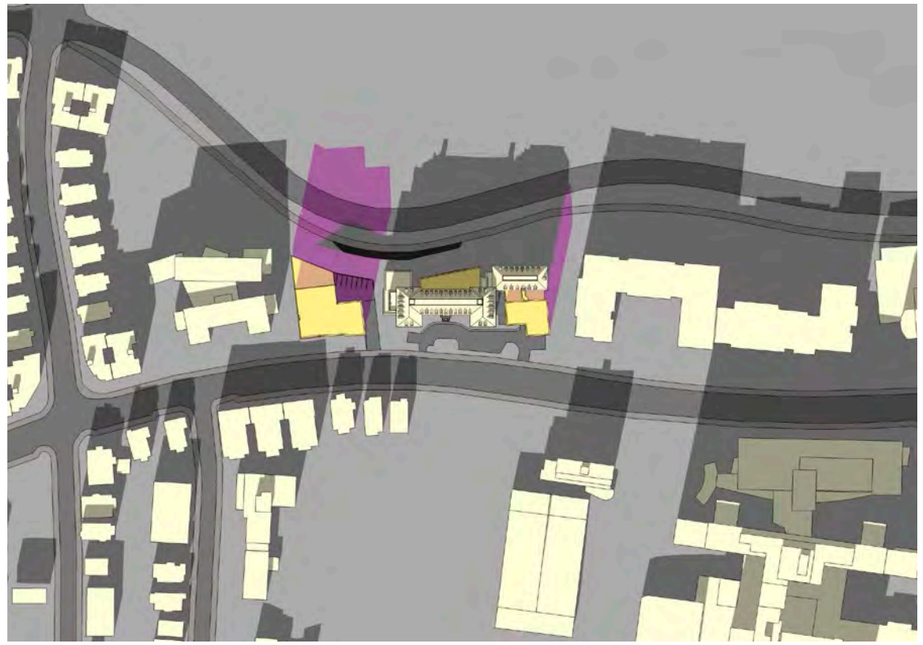


Not to Scale

Figure 3.12
2020 Build Condition Traffic Volumes

MARCH 21ST

EXISTING BUILDINGS
PROPOSED BUILDINGS
EXISTING SHADOWS
NEW SHADOWS



9 AM

12 PM

3 PM

6 PM

Figure 4.1a
Shadow Studies

9 AM

12 PM

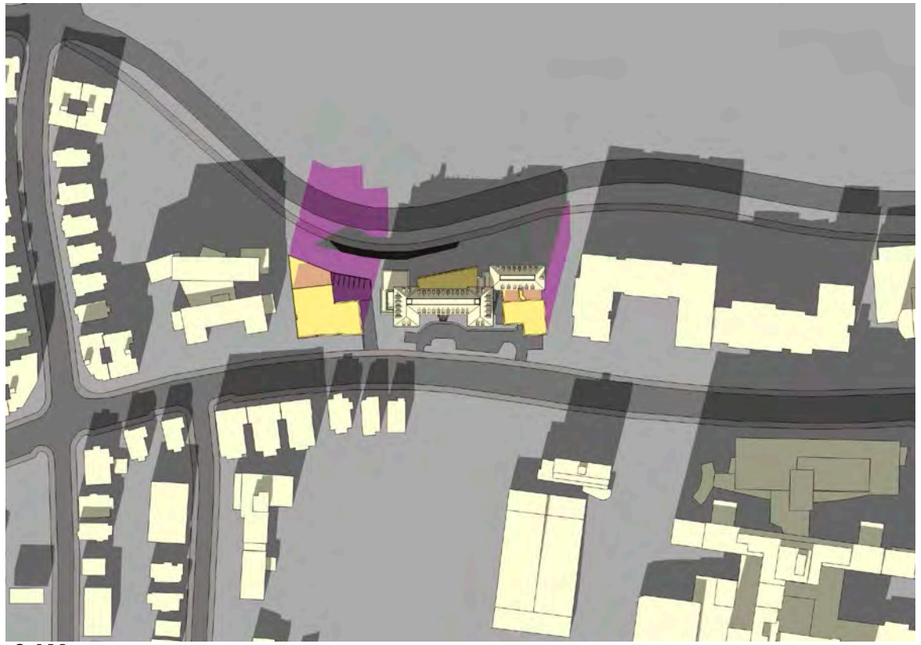
3 PM

6 PM

JUNE 21ST

- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- EXISTING SHADOWS
- NEW SHADOWS

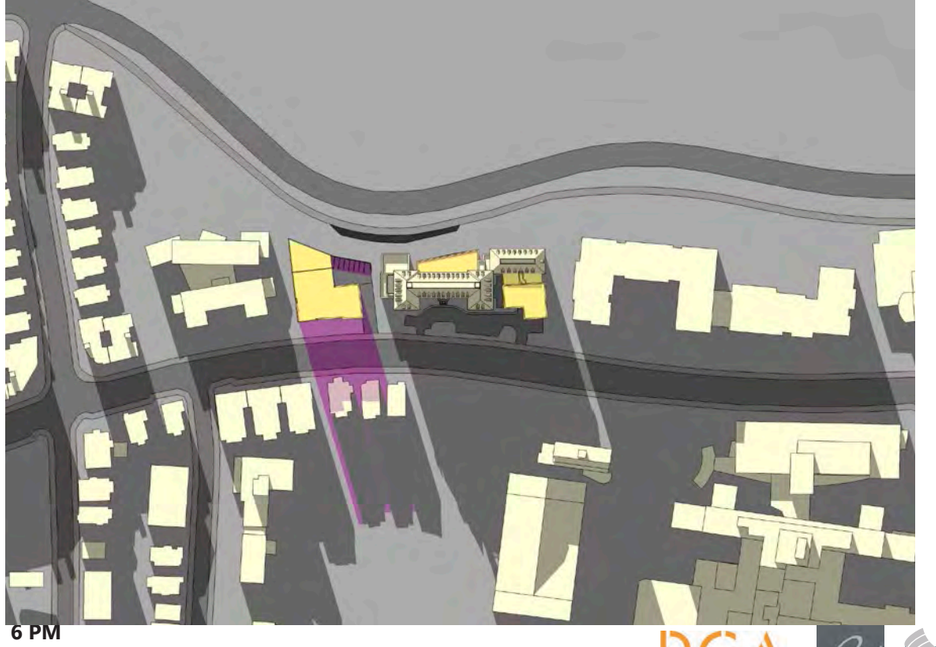
Figure 4.1b
Shadow Studies



9 AM

12 PM

3 PM

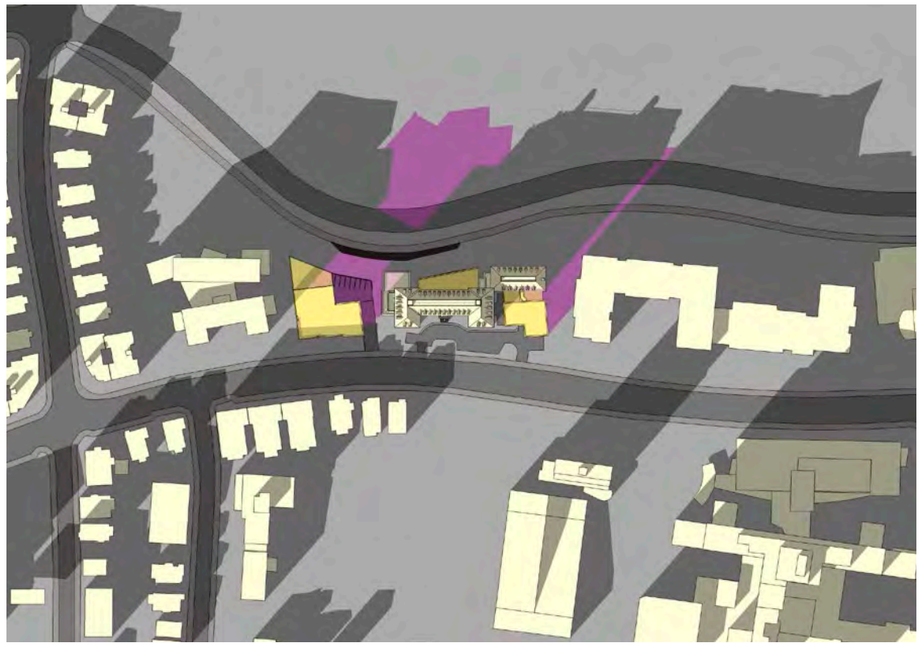


6 PM

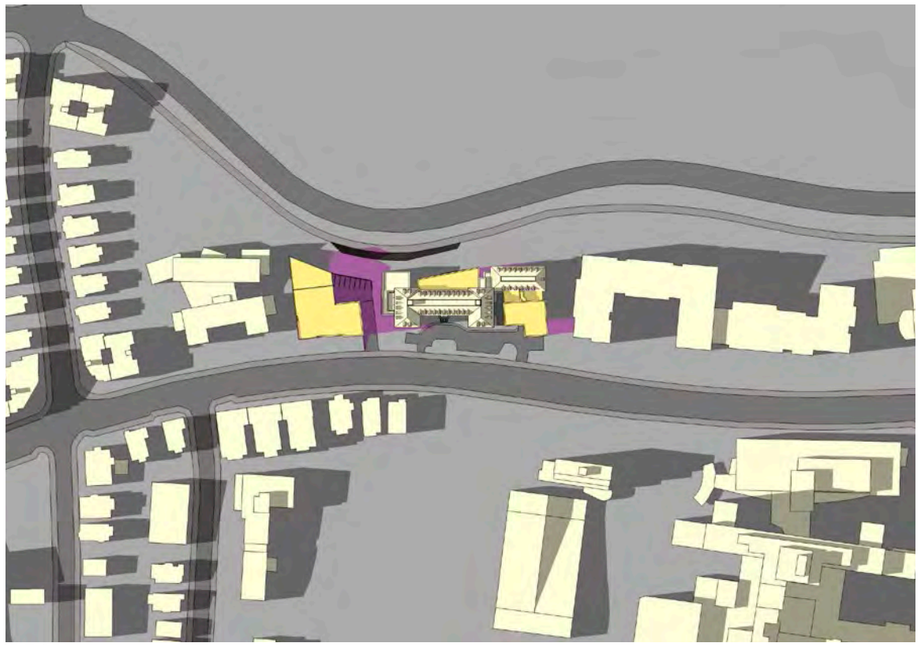
SEPT 21ST

- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- EXISTING SHADOWS
- NEW SHADOWS

Figure 4.1c
Shadow Studies



9 AM



12 PM

3 PM

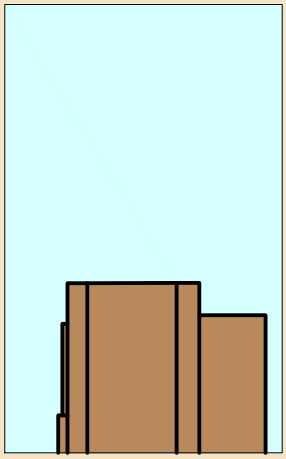
DEC 21ST

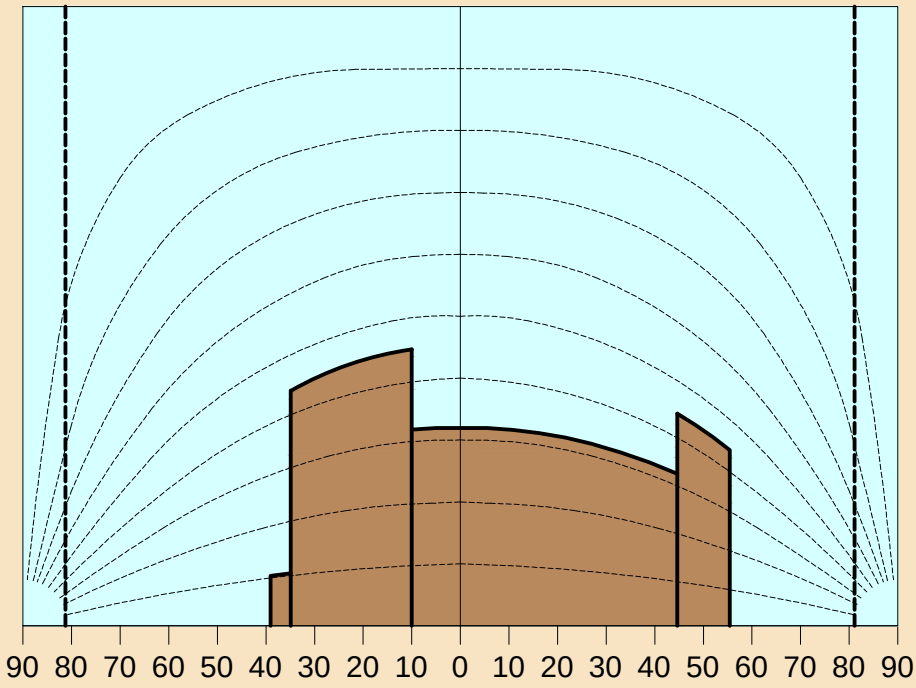
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- EXISTING SHADOWS
- NEW SHADOWS

Figure 4.1d
Shadow Studies

Existing

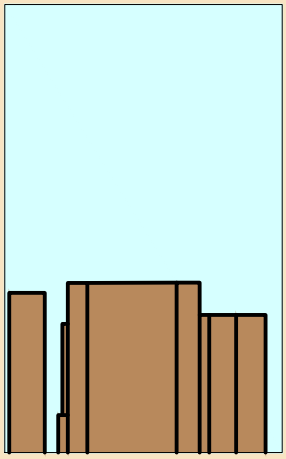
Obstruction of
Skyplane = 15.2%





Proposed

Obstruction of
Skyplane = 16.8.0%



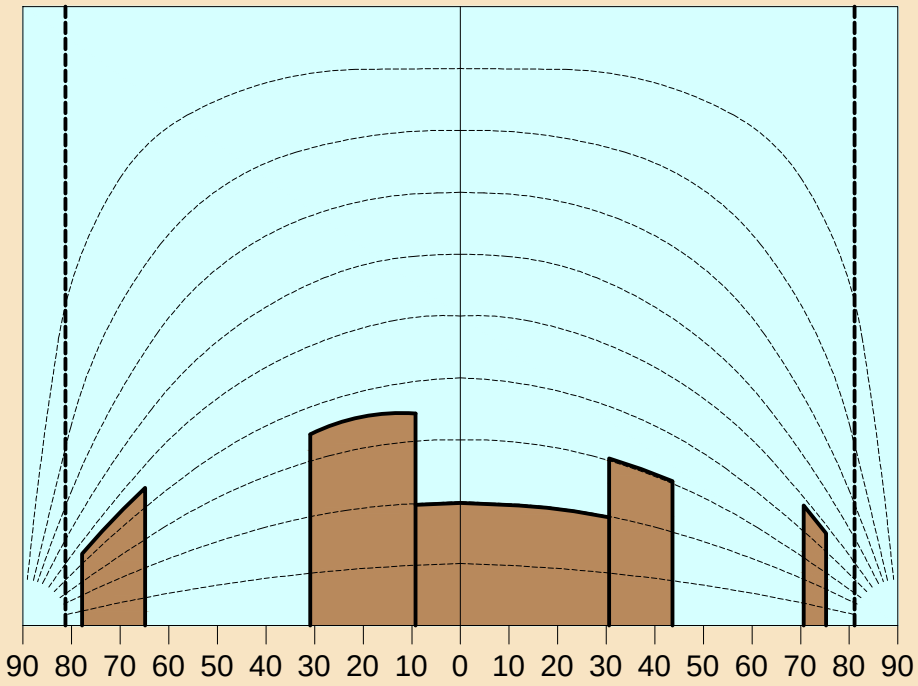


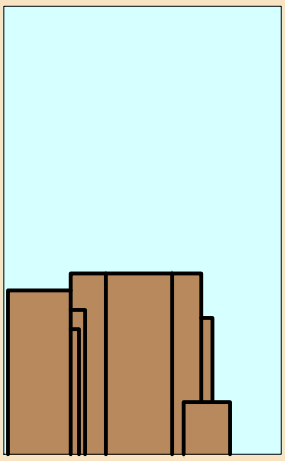
Figure 4.2a

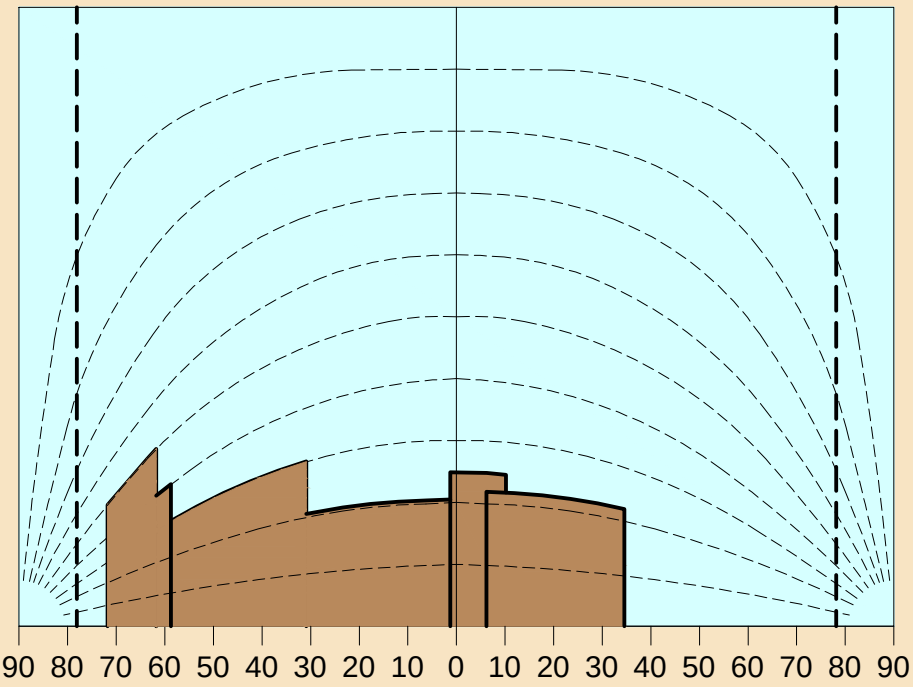
Daylight Analysis
Center of Huntington Avenue

Goddard House Renovation and Redevelopment - Boston, MA

Existing

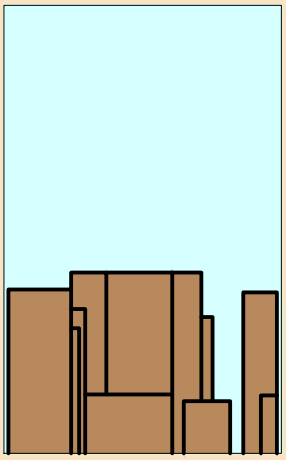
Obstruction of
Skyplane = 17.4%





Proposed

Obstruction of
Skyplane = 20.0%



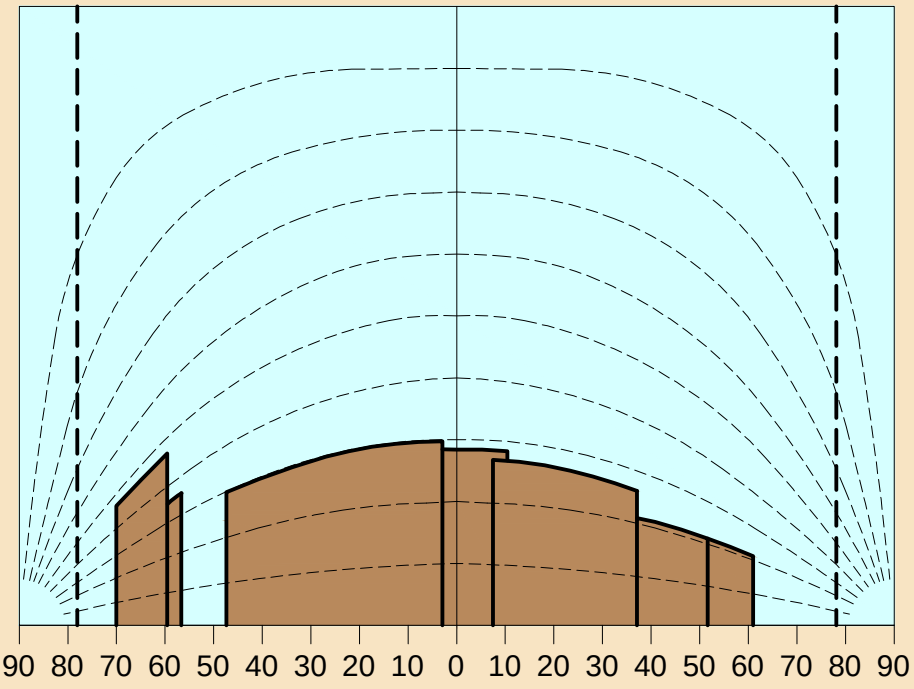
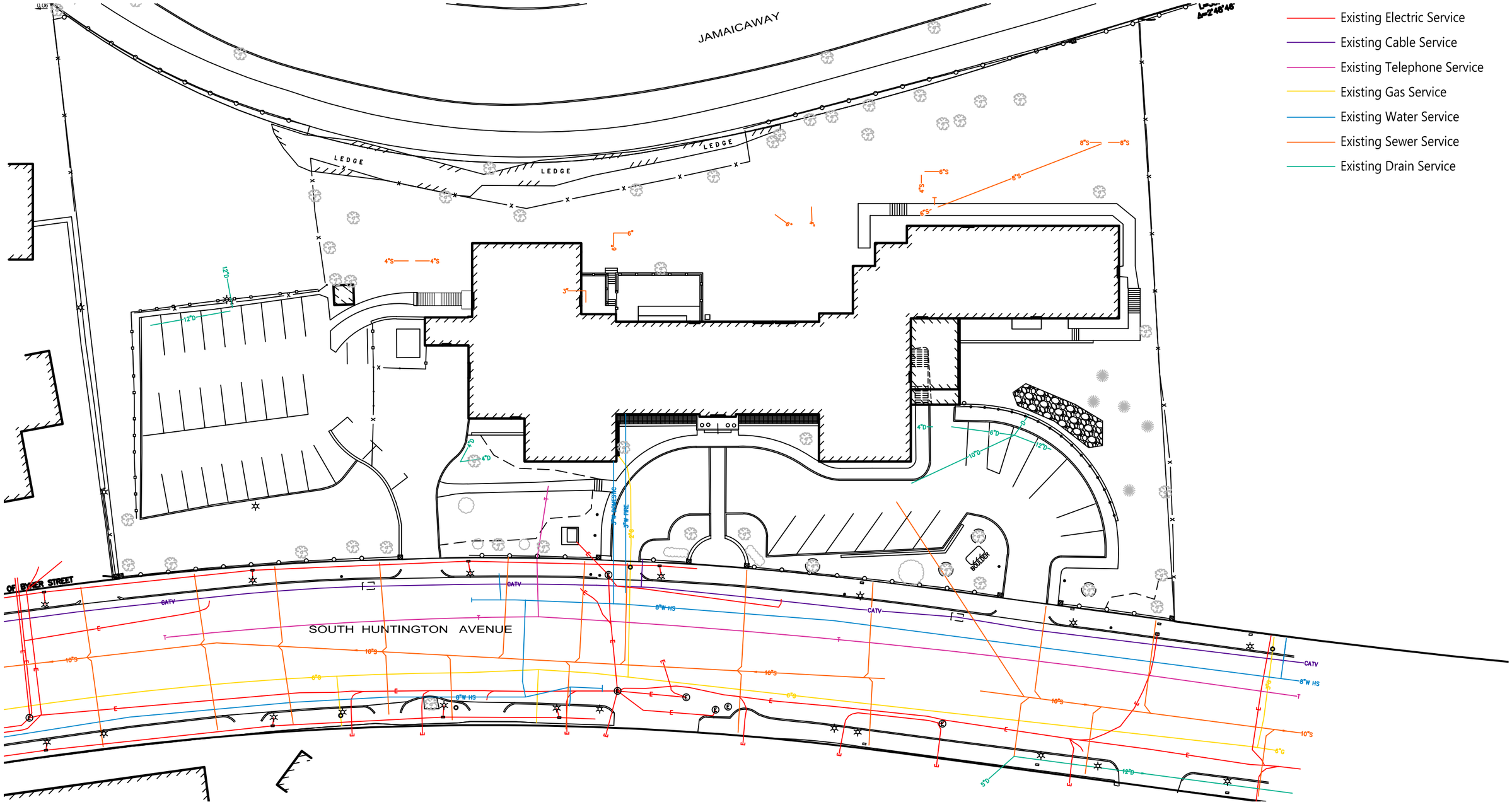


Figure 4.2b

Daylight Analysis
Center of Jamaciaway

Goddard House Renovation and Redevelopment - Boston, MA



Existing Electric Service
Existing Cable Service
Existing Telephone Service
Existing Gas Service
Existing Water Service
Existing Sewer Service
Existing Drain Service

Figure 5.1
Existing Utility Infrastructure

0 20 40 Feet

Source: PCA Architects

Goddard House Renovation and Redevelopment - Boston, MA

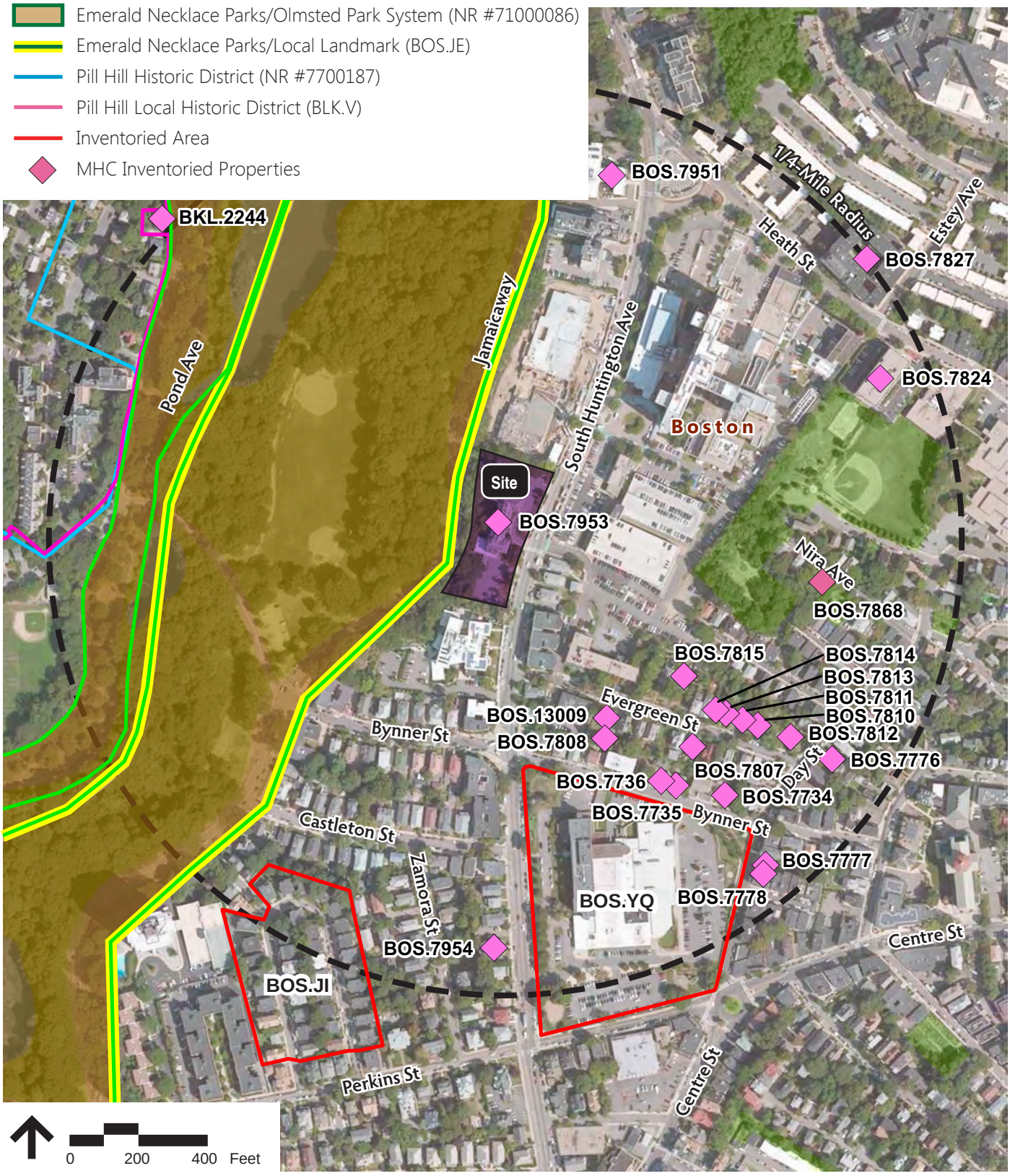


Figure 6.1

Historic Districts and Resources

Goddard House Renovation and Redevelopment - Boston, MA

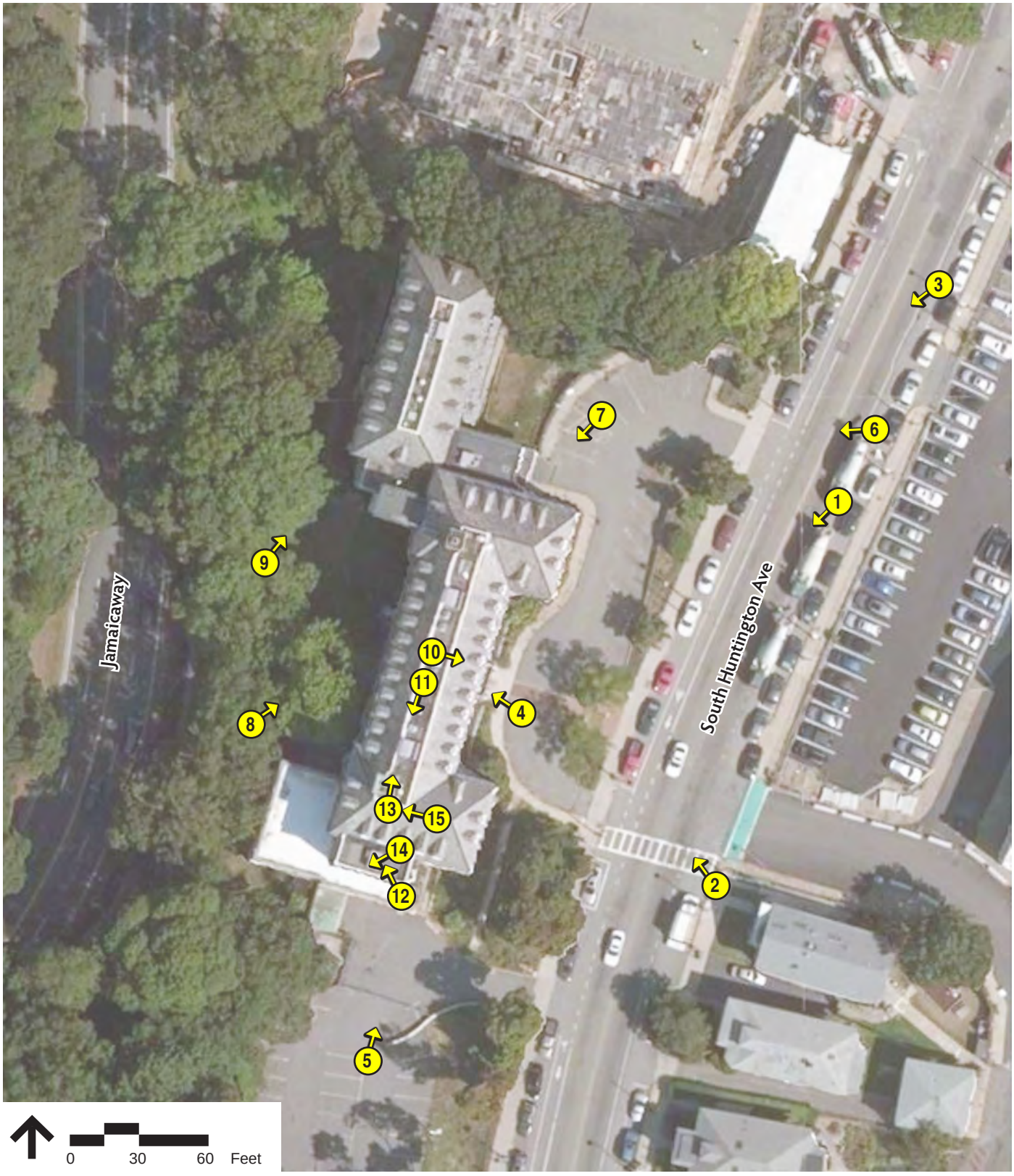


Figure 6.2a

Site Photos Key

Goddard House Renovation and Redevelopment - Boston, MA

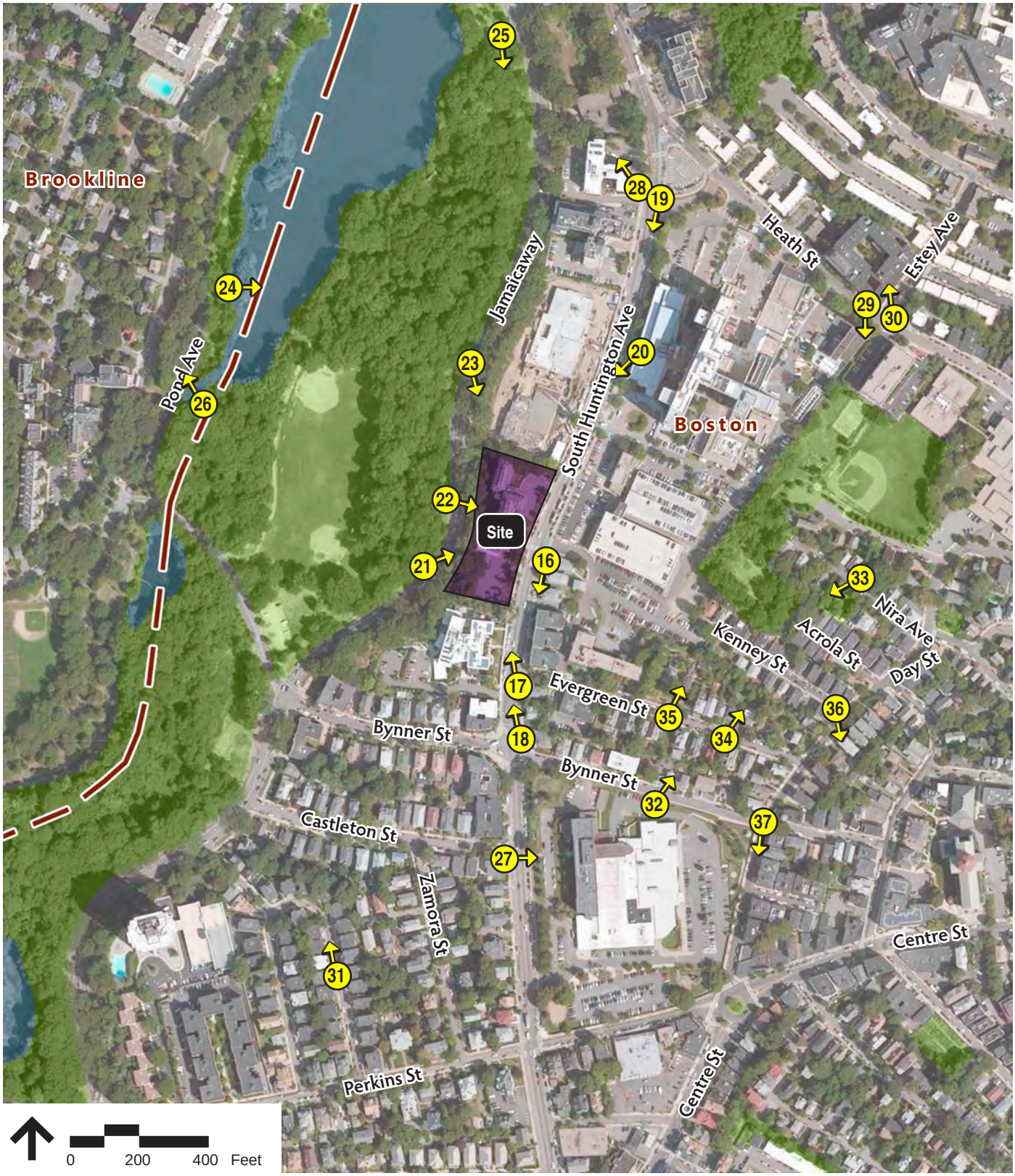


Figure 6.2b

Site Photos Key

Goddard House Renovation and Redevelopment - Boston, MA

1. View of Goddard House, east façade along South Huntington Avenue, facing SW.

2. View of Goddard House, east façade, facing NW.

3. View of Goddard House, east façade along South Huntington Avenue including NW addition, facing SW.

4. View of main entrance of Goddard House, facing NW.

5. View of south elevation of Goddard House, facing N.

6. View of east façade of 1931 NW addition to Goddard House, facing W.

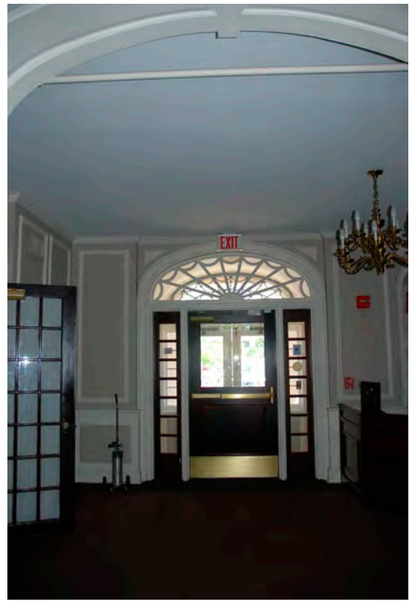
7. View of connection between Goddard House and 1931 addition, facing SW.

8. View of west (rear) elevation of Goddard House, facing NE.

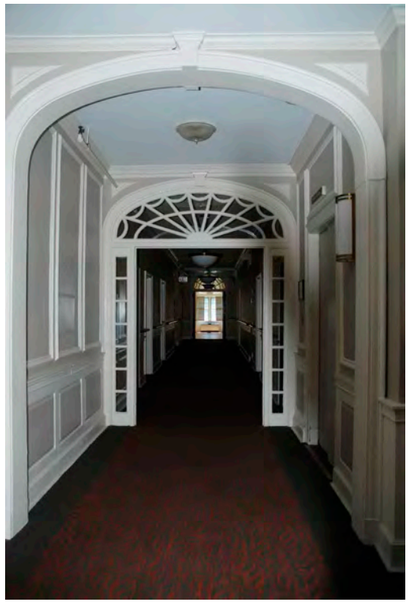
Figure 6.3a
Site Photos

Goddard House Renovation and Redevelopment - Boston, MA

9. View of west elevation of 1931 NW addition, facing NE.



10. View of Goddard House, interior of front entrance, facing SE.

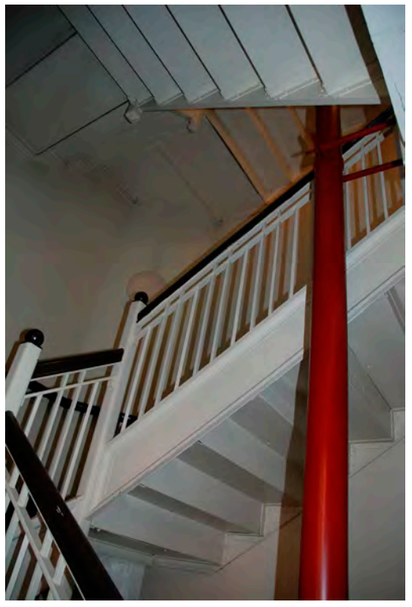


11. View of fi st-story corridor of Goddard House, facing SW.

12. Interior view of one-story south appendage of Goddard House, facing NW.

13. View of second-story corridor of Goddard House, facing NE.

14. View of second-story interior of Goddard House south appendage, facing SW.



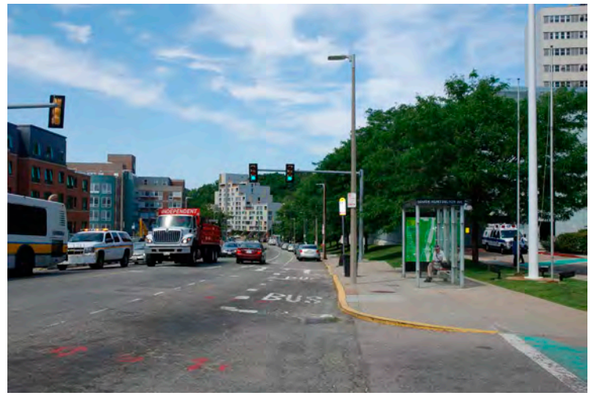
15. View of south staircase, Goddard House, facing W.

16. View of South Huntington Avenue streetscape south of Goddard House, facing S.

Figure 6.3b
Site Photos

17. View of Goddard House from intersection of South Huntington Avenue and Evergreen Street, facing N.

18. View along South Huntington Avenue from Bynner Street, Goddard House in background center, facing N.

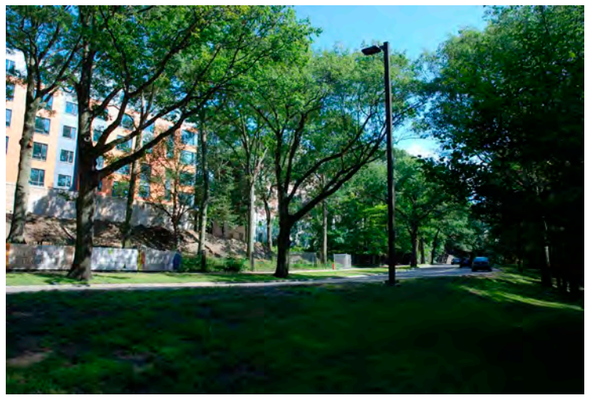


19. View along South Huntington Avenue toward Goddard House, from near Heath Street, facing SW.

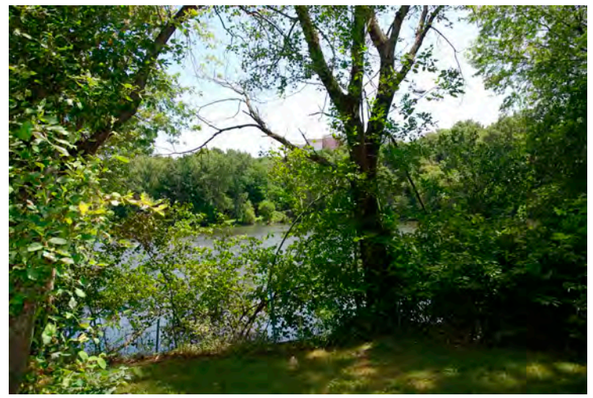
20. View along South Huntington Avenue, Goddard House in center, facing SW.

21. View of Goddard House from the Jamaicaway, facing NE.

22. View of Goddard House west elevation from the Jamaicaway, facing SE.



23. View along the Jamaicaway from the east side of Olmsted Park, Goddard House in center, facing S.



24. View of the west side of Olmsted Park in Brookline, looking E across Leverett Pond. VA Hospital in background.

25. View of the east side of Olmsted Park along the Jamaicaway, facing S along the pedestrian/bike path.

26. View of the Pill Hill Historic District along Pond Avenue, facing N.

27. View of the MSPCA Hospital main building (BOS.YQ) from South Huntington Avenue, facing E.

Figure 6.3c

Site Photos

Goddard House Renovation and Redevelopment - Boston, MA

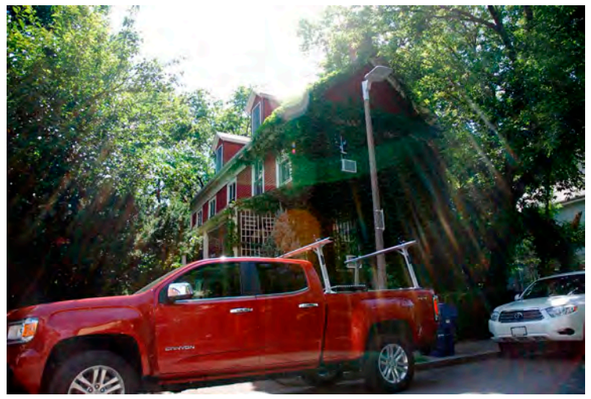
28. View of Vincent Memorial Hospital from South Huntington Avenue, facing NW.

29. View of Jefferson Grammar School (BOS.7824), Heath Street façade, facing S.

30. View of American Brewing Company building (BOS.7827) from the intersection of Heath Street and Estey Street, facing NW.

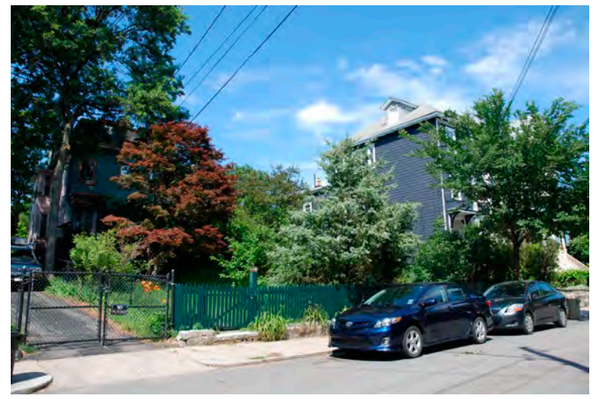
31. View of Parkton Road streetscape (BOS.JI), facing N.

32. View of 33 and 47 Bynner Street (BOS.7734 and BOS.7735), facing NE.



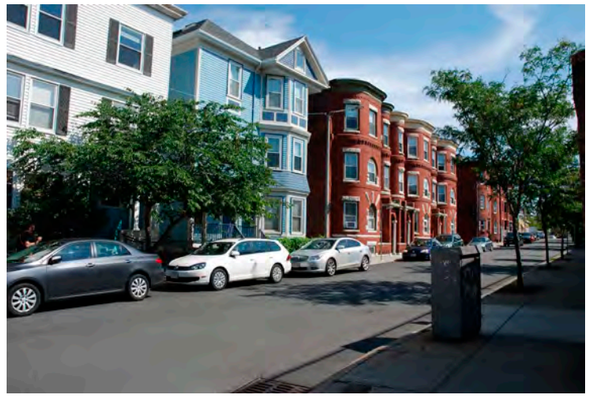
33. View of 12 Nira Avenue (BOS.7868), facing SW.

34. View of 15-17 Evergreen Street (BOS.7811), facing NE.



35. View along Evergreen Street showing both c. 1860s and late 19th century development, facing NE.

36.View along Day Street, 86 Day Street (BOS.7776) in center, facing S.



37. View of rowhouses at 120-124 Day Street (BOS.7777-7778), facing S.

Figure 6.3d
Site Photos

Goddard House Renovation and Redevelopment - Boston, MA

APPENDIX A: Letter of Intent

goulston&storrs
counsellors at law

Matthew J. Kiefer
mkiefer@goulstonstorrs.com
(617) 574-6597 Tel
(617) 574-7597 Fax

June 5, 2015

2015 JUN -5 A 10:52
BRA

BY HAND DELIVERY

Mr. Brian P. Golden, Director
Boston Redevelopment Authority
Boston City Hall, Ninth Floor
Boston, Massachusetts 02201

Re: Letter of Intent to File an Expanded Project Notification Form
201-205 South Huntington Avenue, Jamaica Plain, Boston, MA

Dear Director Golden:

On behalf of Eden Properties LLC in partnership with Samuels & Associates, Inc., and in accordance with the Executive Order relative to the provision of mitigation by development projects in Boston, we are pleased to submit this Letter of Intent to File an Expanded Project Notification Form initiating Large Project Review under Article 80B of the Boston Zoning Code (the "Code") for a multi-family residential development (the "Project") to be located at 201-205 South Huntington Avenue, an approximately two-acre parcel bounded by South Huntington Avenue and the Jamaicaway, located in Boston's Jamaica Plain neighborhood (the "Property").

The Project will involve the rehabilitation, expansion and adaptive re-use of an existing five-eight story building, commonly known as Goddard House, to residential use, and the construction of a new free-standing, multi-family residential building at the Property's southern end fronting on South Huntington Avenue. Collectively, the Project will include approximately 169 dwelling units, including approximately 108 dwelling units in the renovated Goddard House building, and approximately 61 dwelling units in the new building as well as associated parking and open space improvements. At approximately 169,000 total square feet, the Project is subject to Large Project Review under Article 80B of the Code. The Project has been designed to be consistent with the guidelines set forth in the South Huntington Avenue Framework for Future Development Review, which was adopted by the BRA on May 16, 2013.

We anticipate filing an Expanded Project Notification Form for the Project in August 2015. We look forward to working with your staff and with the Impact Advisory Group that the Mayor will appoint to advise the BRA with respect to appropriate mitigation efforts regarding this Project.

If you have any questions, please do not hesitate to contact me.

Very truly yours,

Matthew J. Kiefer

cc: Mr. Erico J. Lopez, Boston Redevelopment Authority
Mr. Phil Cohen, Boston Redevelopment Authority
Mr. Michael Samuels, Eden Properties LLC
Mr. Noah Maslan, Eden Properties LLC
Mr. Peter Sougarides, Samuels & Associates, Inc.
Mr. Steven B. Samuels, Samuels & Associates, Inc.

gsdocs.8244035.6

APPENDIX B: Transportation Supporting Documentation

Traffic Volume Count Data

Local Trip Distribution

Intersection Capacity Analyses

- **2015 Existing Condition**
- **2025 No-Build Condition**
- **2025 Build Condition**

Existing Parking Study – July 2015

Traffic Volume Count Data

Accurate Counts

978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

Groups Printed- Cars - Trucks

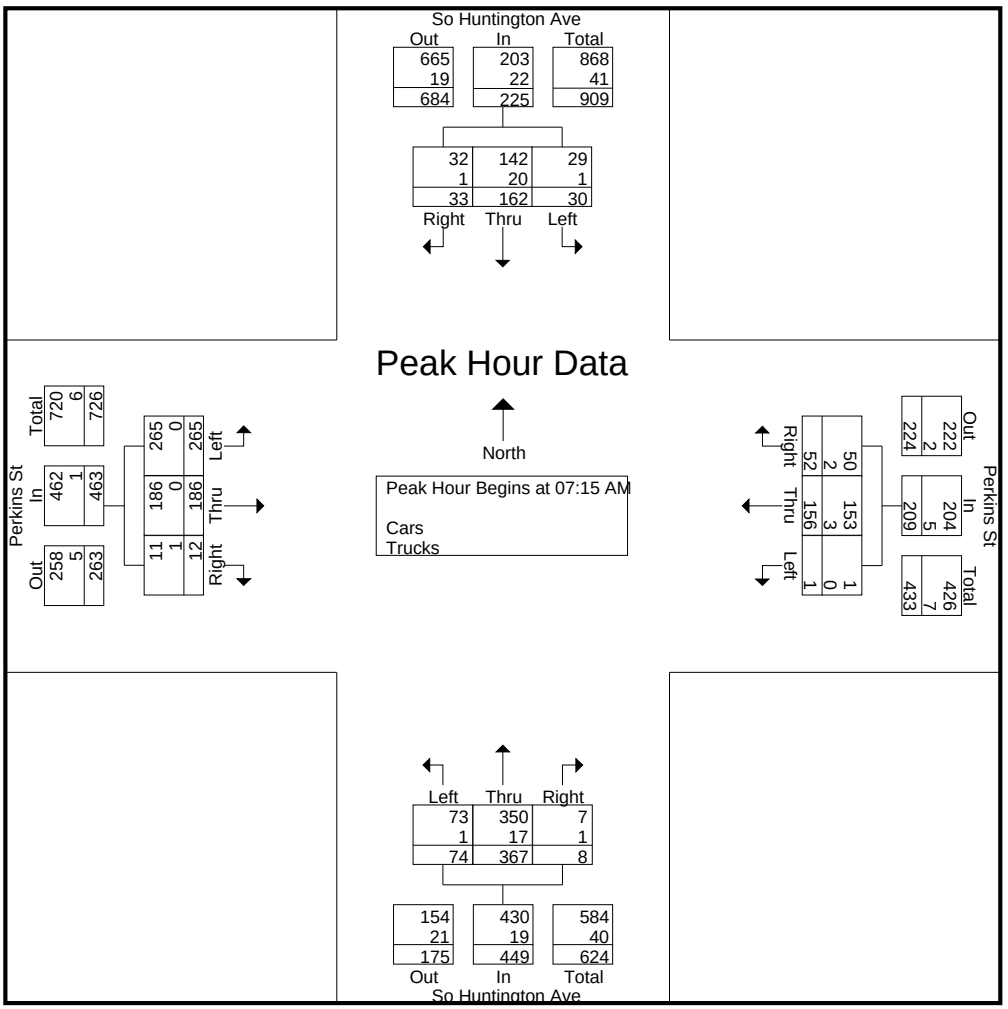
	So Huntington Ave From North			Perkins St From East			So Huntington Ave From South			Perkins St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	6	27	4	0	46	7	20	85	3	63	50	7	318
07:15 AM	4	47	8	1	48	13	15	99	2	63	36	5	341
07:30 AM	10	28	11	0	47	11	20	95	1	66	53	1	343
07:45 AM	6	47	8	0	33	18	16	96	4	70	41	1	340
Total	26	149	31	1	174	49	71	375	10	262	180	14	1342
08:00 AM	10	40	6	0	28	10	23	77	1	66	56	5	322
08:15 AM	5	36	5	0	44	8	19	78	4	50	71	10	330
08:30 AM	6	40	17	0	43	7	24	76	3	49	49	5	319
08:45 AM	4	29	9	1	30	12	24	80	5	65	59	5	323
Total	25	145	37	1	145	37	90	311	13	230	235	25	1294
Grand Total	51	294	68	2	319	86	161	686	23	492	415	39	2636
Apprch %	12.3	71.2	16.5	0.5	78.4	21.1	18.5	78.9	2.6	52	43.9	4.1	
Total %	1.9	11.2	2.6	0.1	12.1	3.3	6.1	26	0.9	18.7	15.7	1.5	
Cars	50	262	67	2	312	83	158	643	22	489	412	37	2537
% Cars	98	89.1	98.5	100	97.8	96.5	98.1	93.7	95.7	99.4	99.3	94.9	96.2
Trucks	1	32	1	0	7	3	3	43	1	3	3	2	99
% Trucks	2	10.9	1.5	0	2.2	3.5	1.9	6.3	4.3	0.6	0.7	5.1	3.8

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

	So Huntington Ave From North				Perkins St From East				So Huntington Ave From South				Perkins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	4	**47**	8	59	**1**	**48**	13	**62**	15	**99**	2	**116**	63	36	**5**	104	341
07:30 AM	**10**	28	**11**	49	0	47	11	58	20	95	1	116	66	53	1	120	**343**
07:45 AM	6	47	8	**61**	0	33	**18**	51	16	96	**4**	116	**70**	41	1	112	340
08:00 AM	10	40	6	56	0	28	10	38	**23**	77	1	101	66	**56**	5	**127**	322
Total Volume	30	162	33	225	1	156	52	209	74	367	8	449	265	186	12	463	1346
% App. Total	13.3	72	14.7		0.5	74.6	24.9		16.5	81.7	1.8		57.2	40.2	2.6		
PHF	.750	.862	.750	.922	.250	.813	.722	.843	.804	.927	.500	.968	.946	.830	.600	.911	.981
Cars	29	142	32	203	1	153	50	204	73	350	7	430	265	186	11	462	1299
% Cars	96.7	87.7	97.0	90.2	100	98.1	96.2	97.6	98.6	95.4	87.5	95.8	100	100	91.7	99.8	96.5
Trucks	1	20	1	22	0	3	2	5	1	17	1	19	0	0	1	1	47
% Trucks	3.3	12.3	3.0	9.8	0	1.9	3.8	2.4	1.4	4.6	12.5	4.2	0	0	8.3	0.2	3.5

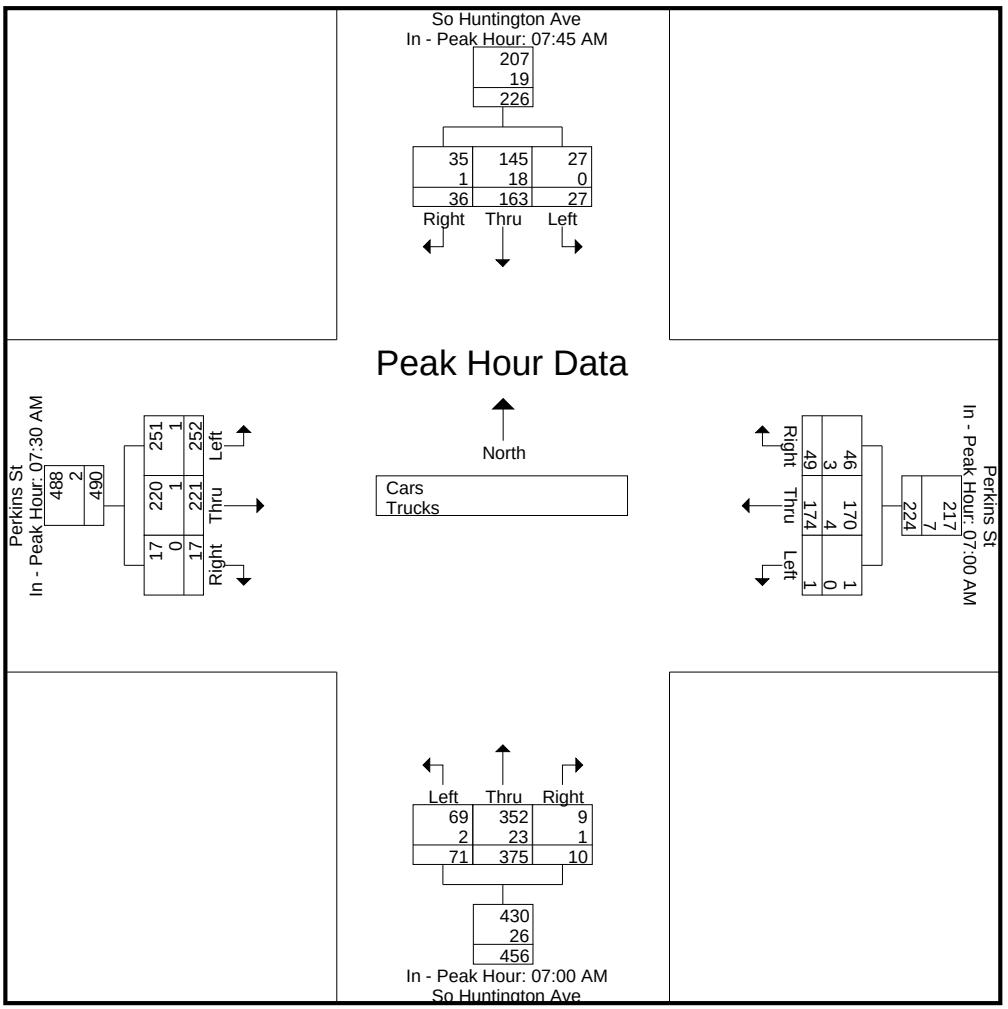


Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015
Page No : 3

	So Huntington Ave From North				Perkins St From East				So Huntington Ave From South				Perkins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:45 AM				07:00 AM				07:00 AM				07:30 AM				
+0 mins.	6	**47**	8	61	0	46	7	53	**20**	85	3	108	66	53	1	120	
+15 mins.	**10**	40	6	56	**1**	**48**	13	**62**	15	**99**	2	**116**	**70**	41	1	112	
+30 mins.	5	36	5	46	0	47	11	58	20	95	1	116	66	56	5	127	
+45 mins.	6	40	**17**	**63**	0	33	**18**	51	16	96	**4**	116	50	**71**	**10**	**131**	
Total Volume	27	163	36	226	1	174	49	224	71	375	10	456	252	221	17	490	
% App. Total	11.9	72.1	15.9		0.4	77.7	21.9		15.6	82.2	2.2		51.4	45.1	3.5		
PHF	.675	.867	.529	.897	.250	.906	.681	.903	.888	.947	.625	.983	.900	.778	.425	.935	
Cars	27	145	35	207	1	170	46	217	69	352	9	430	251	220	17	488	
% Cars	100	89	97.2	91.6	100	97.7	93.9	96.9	97.2	93.9	90	94.3	99.6	99.5	100	99.6	
Trucks	0	18	1	19	0	4	3	7	2	23	1	26	1	1	0	2	
% Trucks	0	11	2.8	8.4	0	2.3	6.1	3.1	2.8	6.1	10	5.7	0.4	0.5	0	0.4	



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

Groups Printed- Cars

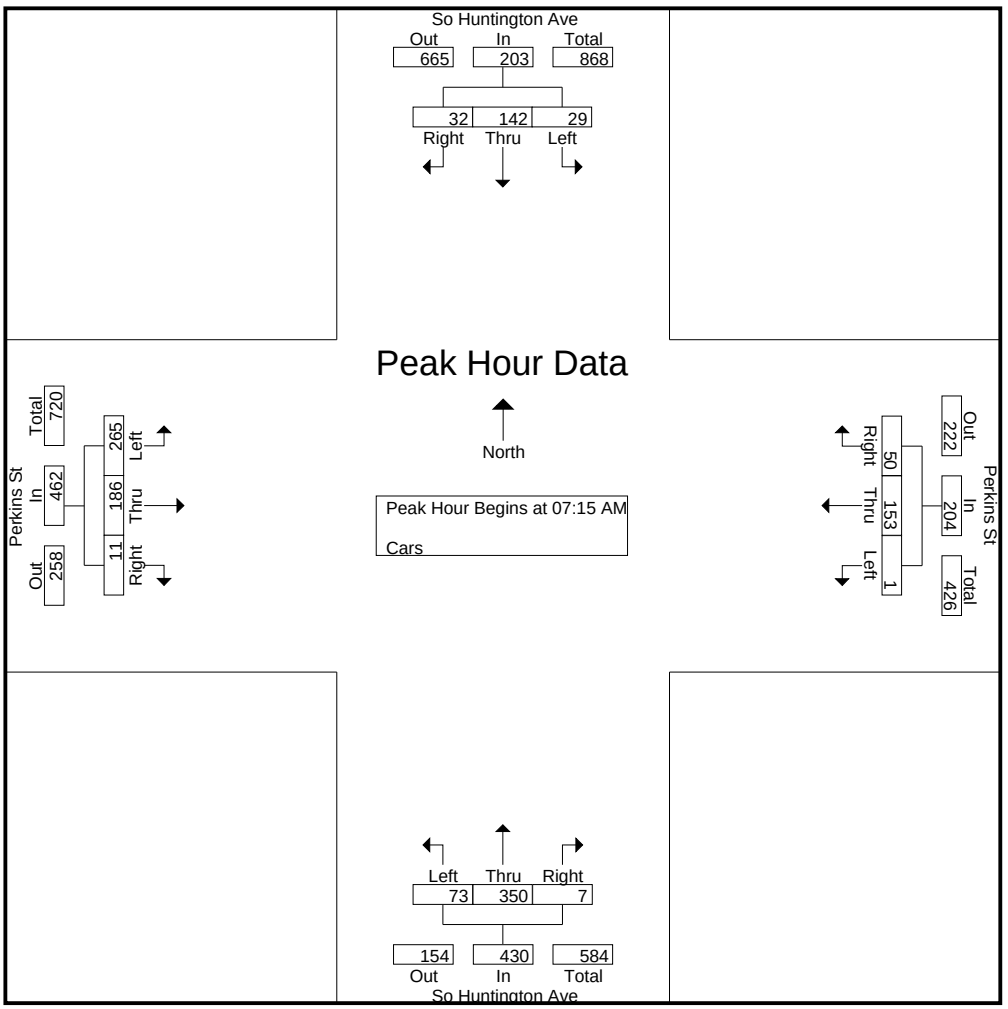
	So Huntington Ave From North			Perkins St From East			So Huntington Ave From South			Perkins St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	6	25	4	0	43	6	19	74	3	61	49	6	296
07:15 AM	3	41	8	1	47	13	15	91	2	63	36	4	324
07:30 AM	10	25	11	0	47	9	19	93	1	66	53	1	335
07:45 AM	6	40	8	0	33	18	16	94	3	70	41	1	330
Total	25	131	31	1	170	46	69	352	9	260	179	12	1285
08:00 AM	10	36	5	0	26	10	23	72	1	66	56	5	310
08:15 AM	5	32	5	0	44	8	19	75	4	49	70	10	321
08:30 AM	6	37	17	0	42	7	24	71	3	49	49	5	310
08:45 AM	4	26	9	1	30	12	23	73	5	65	58	5	311
Total	25	131	36	1	142	37	89	291	13	229	233	25	1252
Grand Total	50	262	67	2	312	83	158	643	22	489	412	37	2537
Apprch %	13.2	69.1	17.7	0.5	78.6	20.9	19.2	78.1	2.7	52.1	43.9	3.9	
Total %	2	10.3	2.6	0.1	12.3	3.3	6.2	25.3	0.9	19.3	16.2	1.5	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

	So Huntington Ave From North				Perkins St From East				So Huntington Ave From South				Perkins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	3	**41**	8	52	**1**	**47**	13	**61**	15	91	2	108	63	36	4	103	324
07:30 AM	**10**	25	**11**	46	0	47	9	56	19	93	1	**113**	66	53	1	120	**335**
07:45 AM	6	40	8	**54**	0	33	**18**	51	16	**94**	**3**	113	**70**	41	1	112	330
08:00 AM	10	36	5	51	0	26	10	36	**23**	72	1	96	66	**56**	**5**	**127**	310
Total Volume	29	142	32	203	1	153	50	204	73	350	7	430	265	186	11	462	1299
% App. Total	14.3	70	15.8		0.5	75	24.5		17	81.4	1.6		57.4	40.3	2.4		
PHF	.725	.866	.727	.940	.250	.814	.694	.836	.793	.931	.583	.951	.946	.830	.550	.909	.969



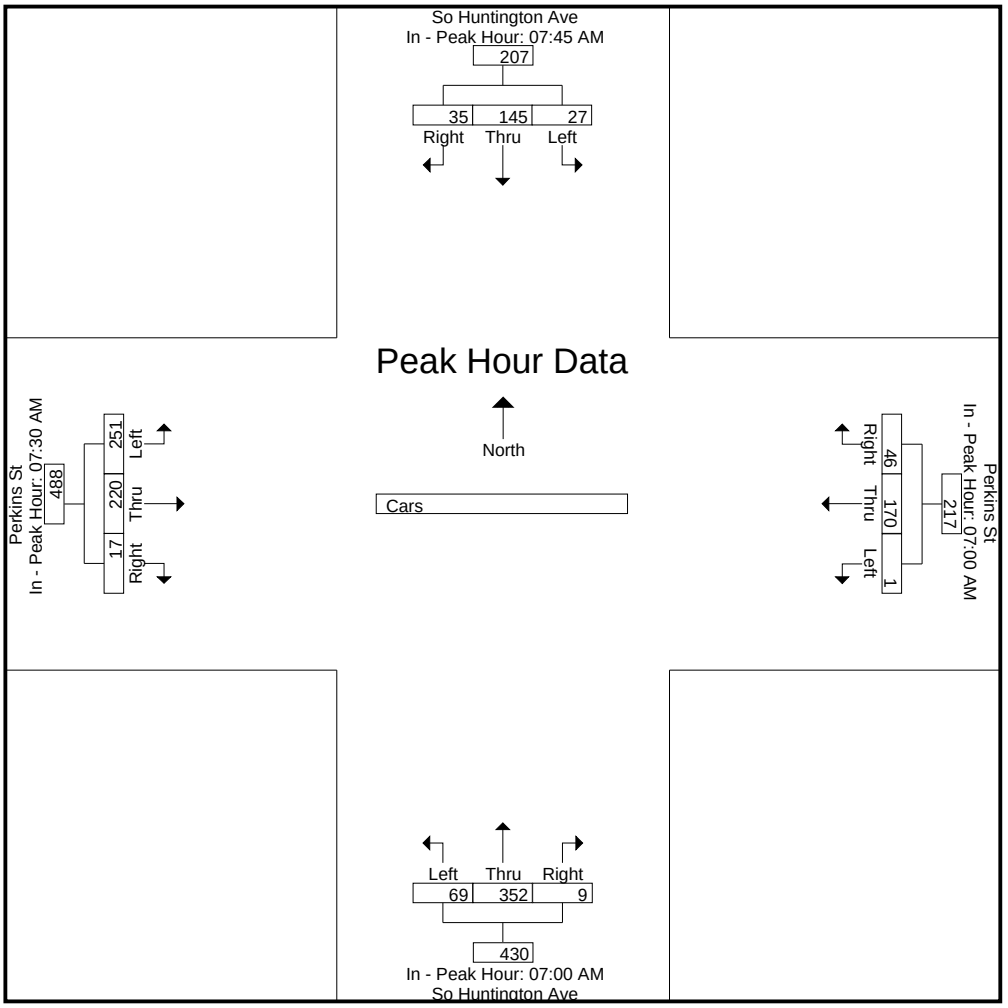
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:00 AM				07:00 AM				07:30 AM			
+0 mins.	6	**40**	8	54	0	43	6	49	**19**	74	**3**	96	66	53	1	120
+15 mins.	**10**	36	5	51	**1**	**47**	13	**61**	15	91	2	108	**70**	41	1	112
+30 mins.	5	32	5	42	0	47	9	56	19	93	1	**113**	66	56	5	127
+45 mins.	6	37	**17**	**60**	0	33	**18**	51	16	**94**	3	113	49	**70**	**10**	**129**
Total Volume	27	145	35	207	1	170	46	217	69	352	9	430	251	220	17	488
% App. Total	13	70	16.9		0.5	78.3	21.2		16	81.9	2.1		51.4	45.1	3.5	
PHF	.675	.906	.515	.863	.250	.904	.639	.889	.908	.936	.750	.951	.896	.786	.425	.946

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015
Page No : 6



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

Groups Printed- Trucks

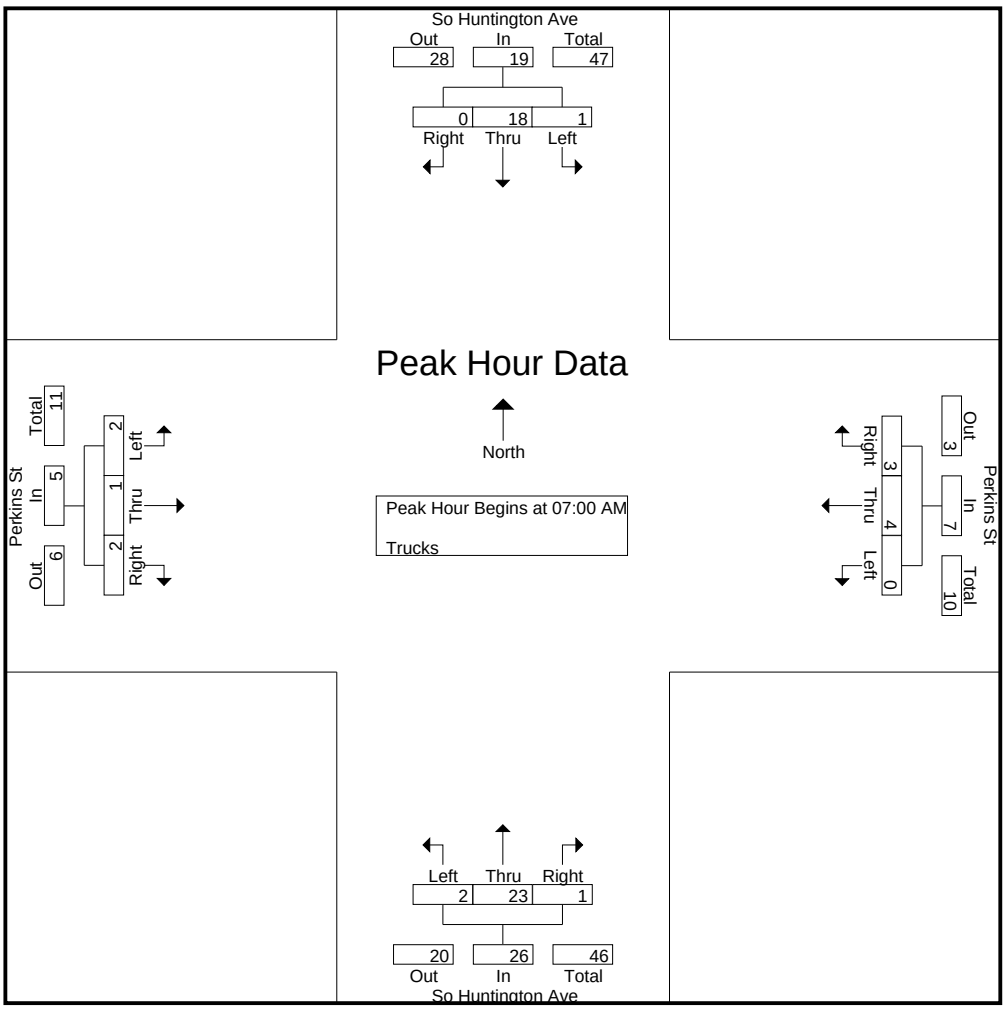
	So Huntington Ave From North			Perkins St From East			So Huntington Ave From South			Perkins St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	2	0	0	3	1	1	11	0	2	1	1	22
07:15 AM	1	6	0	0	1	0	0	8	0	0	0	1	17
07:30 AM	0	3	0	0	0	2	1	2	0	0	0	0	8
07:45 AM	0	7	0	0	0	0	0	2	1	0	0	0	10
Total	1	18	0	0	4	3	2	23	1	2	1	2	57
08:00 AM	0	4	1	0	2	0	0	5	0	0	0	0	12
08:15 AM	0	4	0	0	0	0	0	3	0	1	1	0	9
08:30 AM	0	3	0	0	1	0	0	5	0	0	0	0	9
08:45 AM	0	3	0	0	0	0	1	7	0	0	1	0	12
Total	0	14	1	0	3	0	1	20	0	1	2	0	42
Grand Total	1	32	1	0	7	3	3	43	1	3	3	2	99
Apprch %	2.9	94.1	2.9	0	70	30	6.4	91.5	2.1	37.5	37.5	25	
Total %	1	32.3	1	0	7.1	3	3	43.4	1	3	3	2	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

	So Huntington Ave From North				Perkins St From East				So Huntington Ave From South				Perkins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	2	0	2	0	**3**	1	**4**	**1**	**11**	0	**12**	**2**	**1**	**1**	**4**	**22**
07:15 AM	**1**	6	0	**7**	0	1	0	1	0	8	0	8	0	0	1	1	17
07:30 AM	0	3	0	3	0	0	**2**	2	1	2	0	3	0	0	0	0	8
07:45 AM	0	**7**	0	7	0	0	0	0	0	2	**1**	3	0	0	0	0	10
Total Volume	1	18	0	19	0	4	3	7	2	23	1	26	2	1	2	5	57
% App. Total	5.3	94.7	0		0	57.1	42.9		7.7	88.5	3.8		40	20	40		
PHF	.250	.643	.000	.679	.000	.333	.375	.438	.500	.523	.250	.542	.250	.250	.500	.313	.648



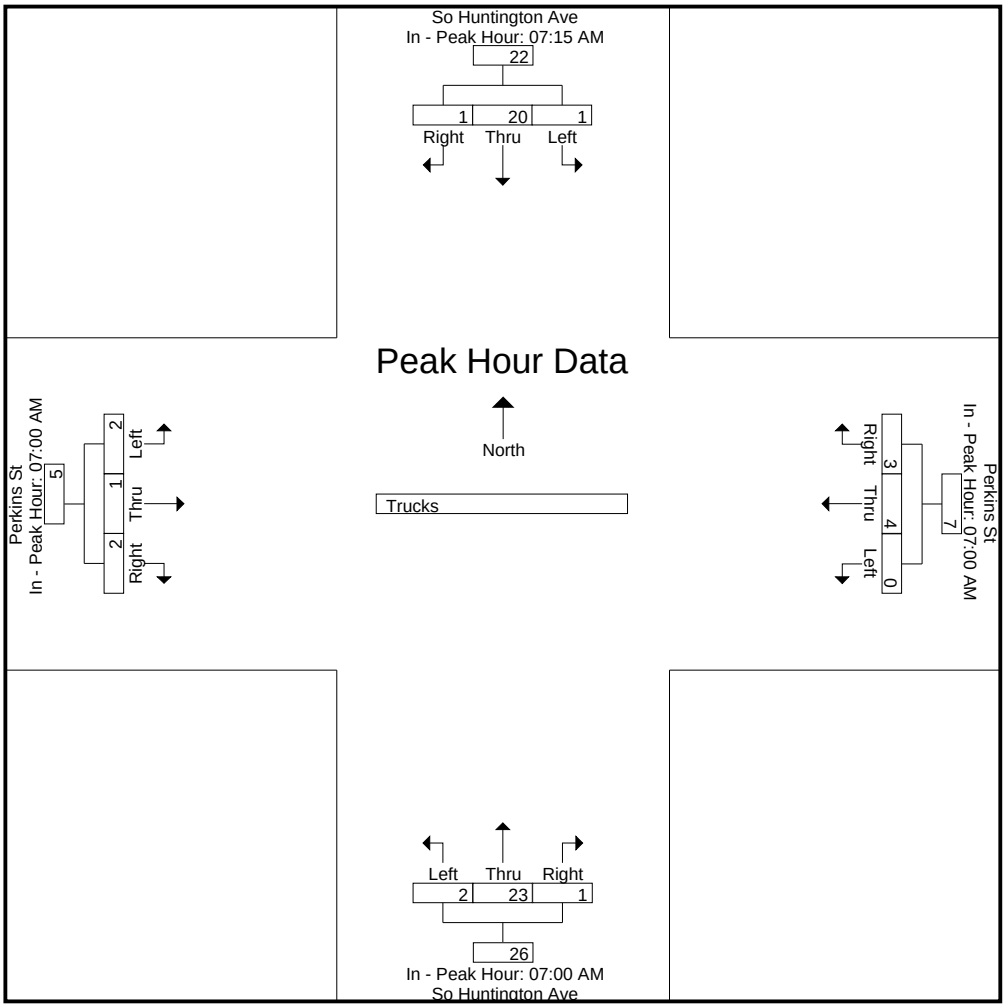
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	**1**	6	0	**7**	0	**3**	1	**4**	**1**	**11**	0	**12**	**2**	**1**	**1**	**4**
+15 mins.	0	3	0	3	0	1	0	1	0	8	0	8	0	0	1	1
+30 mins.	0	**7**	0	7	0	0	**2**	2	1	2	0	3	0	0	0	0
+45 mins.	0	4	**1**	5	0	0	0	0	0	2	**1**	3	0	0	0	0
Total Volume	1	20	1	22	0	4	3	7	2	23	1	26	2	1	2	5
% App. Total	4.5	90.9	4.5		0	57.1	42.9		7.7	88.5	3.8		40	20	40	
PHF	.250	.714	.250	.786	.000	.333	.375	.438	.500	.523	.250	.542	.250	.250	.500	.313

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015
Page No : 9



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

Groups Printed- Bikes Peds

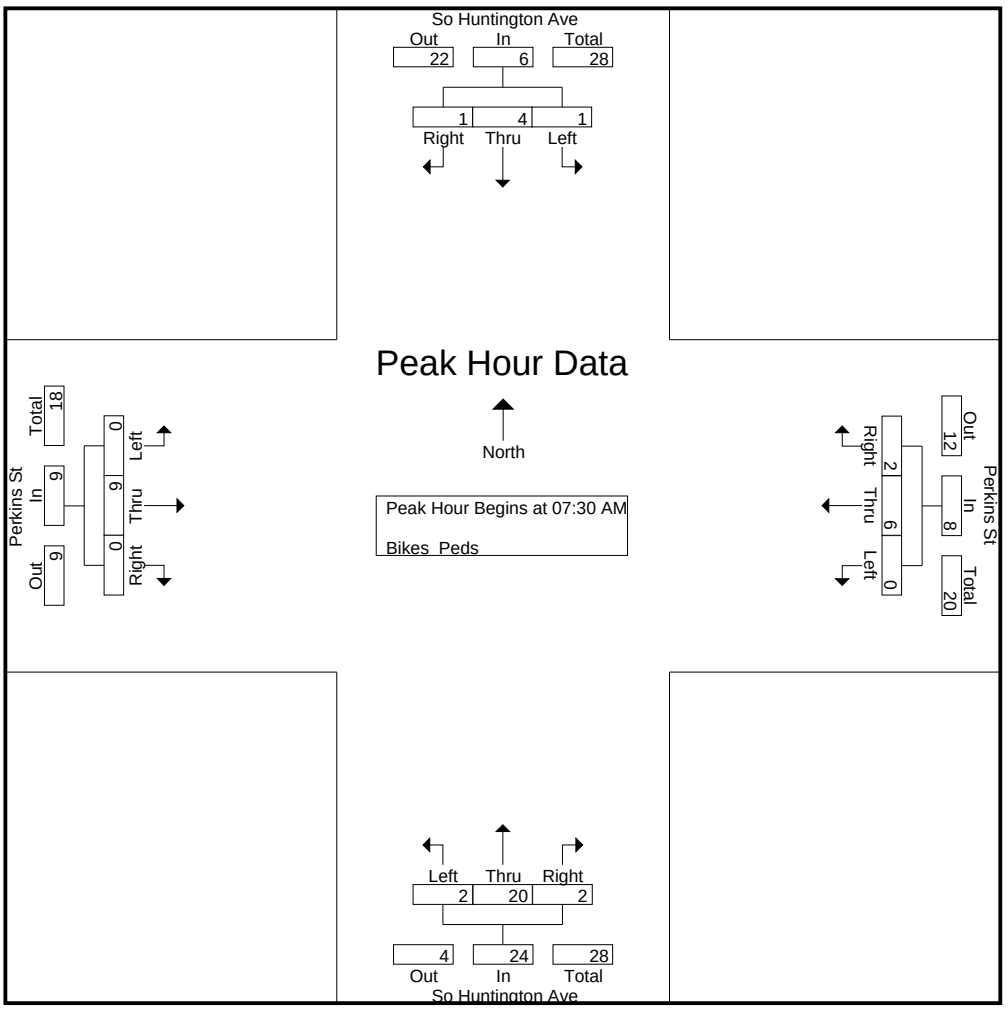
	So Huntington Ave From North				Perkins St From East				So Huntington Ave From South				Perkins St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	6	0	0	0	3	0	1	1	5	1	4	0	1	15	7	22
07:15 AM	0	0	0	16	0	1	1	1	0	3	0	7	1	0	0	2	26	6	32
07:30 AM	0	0	0	4	0	2	1	5	0	5	0	6	0	5	0	3	18	13	31
07:45 AM	0	2	0	3	0	0	1	6	1	5	1	8	0	3	0	0	17	13	30
Total	0	2	0	29	0	3	3	15	1	14	2	26	2	12	0	6	76	39	115
08:00 AM	0	1	0	15	0	1	0	3	1	8	1	8	0	0	0	5	31	12	43
08:15 AM	1	1	1	13	0	3	0	2	0	2	0	9	0	1	0	5	29	9	38
08:30 AM	0	1	0	23	0	1	1	3	1	5	1	14	0	1	0	1	41	11	52
08:45 AM	1	0	0	23	0	1	1	5	0	7	0	6	1	0	0	3	37	11	48
Total	2	3	1	74	0	6	2	13	2	22	2	37	1	2	0	14	138	43	181
Grand Total	2	5	1	103	0	9	5	28	3	36	4	63	3	14	0	20	214	82	296
Apprch %	25	62.5	12.5		0	64.3	35.7		7	83.7	9.3		17.6	82.4	0				
Total %	2.4	6.1	1.2		0	11	6.1		3.7	43.9	4.9		3.7	17.1	0		72.3	27.7	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

	So Huntington Ave From North				Perkins St From East				So Huntington Ave From South				Perkins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	0	0	2	**1**	**3**	0	5	0	5	0	**5**	0	**5**	**13**
07:45 AM	0	**2**	0	2	0	0	1	1	**1**	5	**1**	7	0	3	0	3	13
08:00 AM	0	1	0	1	0	1	0	1	1	**8**	1	**10**	0	0	0	0	12
08:15 AM	**1**	1	**1**	**3**	0	**3**	0	3	0	2	0	2	0	1	0	1	9
Total Volume	1	4	1	6	0	6	2	8	2	20	2	24	0	9	0	9	47
% App. Total	16.7	66.7	16.7		0	75	25		8.3	83.3	8.3		0	100	0		
PHF	.250	.500	.250	.500	.000	.500	.500	.667	.500	.625	.500	.600	.000	.450	.000	.450	.904



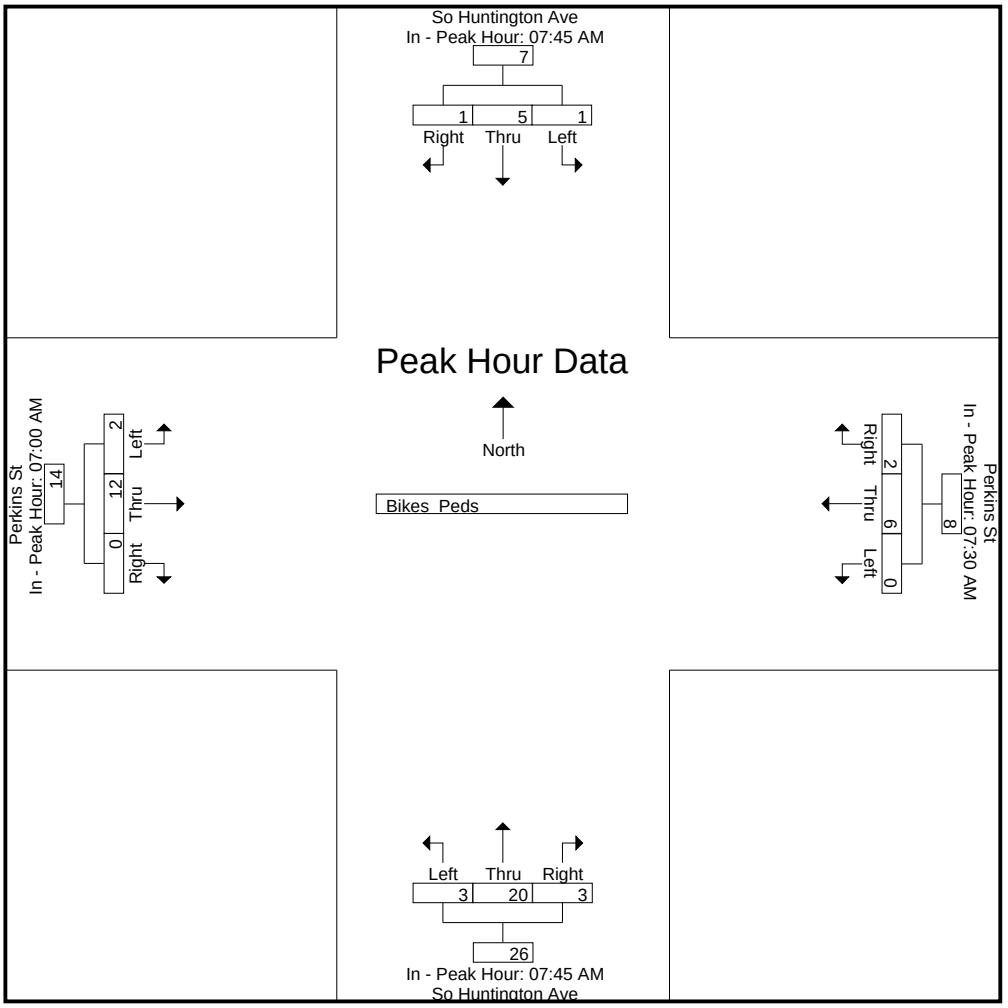
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:30 AM				07:45 AM				07:00 AM			
+0 mins.	0	**2**	0	2	0	2	**1**	**3**	**1**	5	**1**	7	**1**	4	0	**5**
+15 mins.	0	1	0	1	0	0	1	1	1	**8**	1	**10**	1	0	0	1
+30 mins.	**1**	1	**1**	**3**	0	1	0	1	0	2	0	2	0	**5**	0	5
+45 mins.	0	1	0	1	0	**3**	0	3	1	5	1	7	0	3	0	3
Total Volume	1	5	1	7	0	6	2	8	3	20	3	26	2	12	0	14
% App. Total	14.3	71.4	14.3		0	75	25		11.5	76.9	11.5		14.3	85.7	0	
PHF	.250	.625	.250	.583	.000	.500	.500	.667	.750	.625	.750	.650	.500	.600	.000	.700

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015
Page No : 12



Accurate Counts

978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

Groups Printed- Cars - Trucks

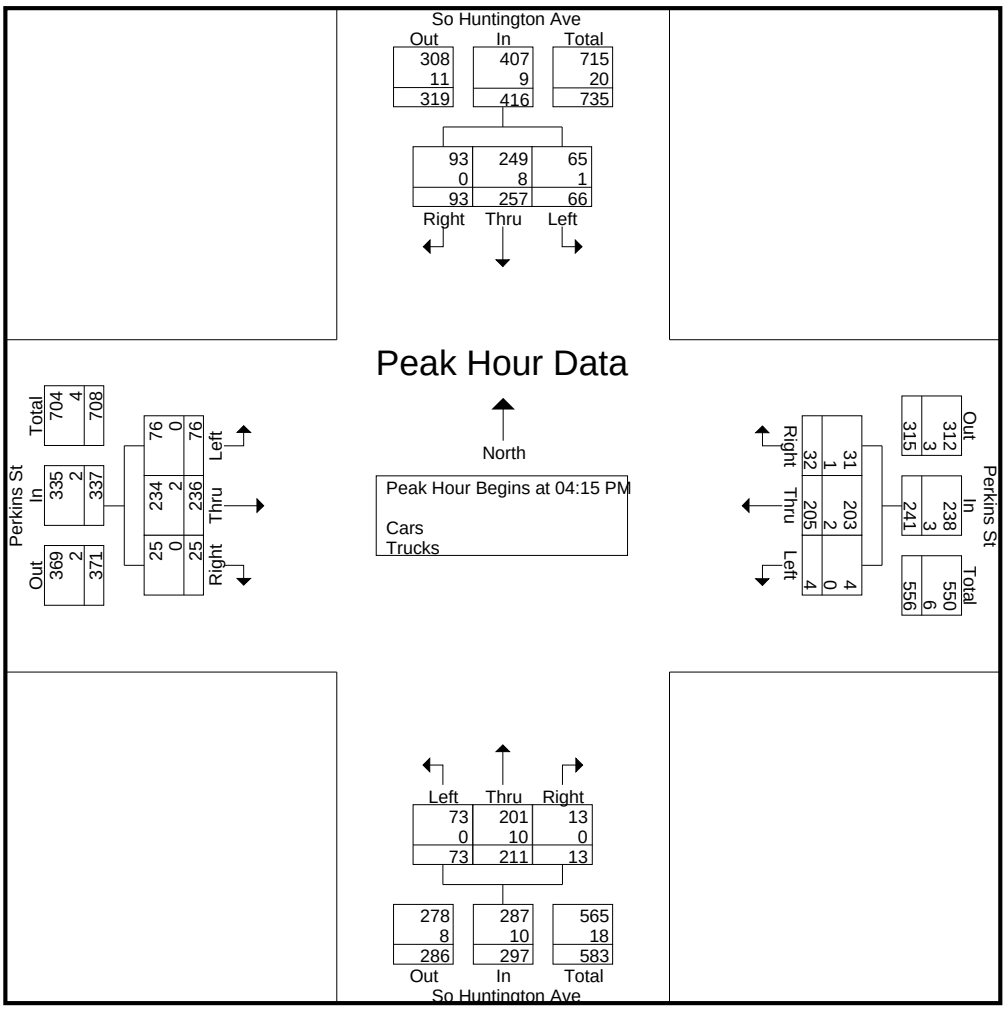
	So Huntington Ave From North			Perkins St From East			So Huntington Ave From South			Perkins St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	21	63	18	0	56	5	13	34	5	19	64	12	310
04:15 PM	15	75	21	0	59	6	21	59	5	17	61	10	349
04:30 PM	15	64	24	3	58	8	14	48	2	19	60	3	318
04:45 PM	20	66	20	1	45	10	20	52	2	17	46	6	305
Total	71	268	83	4	218	29	68	193	14	72	231	31	1282
05:00 PM	16	52	28	0	43	8	18	52	4	23	69	6	319
05:15 PM	23	71	20	1	43	5	24	55	10	22	43	10	327
05:30 PM	14	61	27	0	42	7	22	49	4	21	61	12	320
05:45 PM	17	47	16	2	47	8	19	38	6	20	64	5	289
Total	70	231	91	3	175	28	83	194	24	86	237	33	1255
Grand Total	141	499	174	7	393	57	151	387	38	158	468	64	2537
Apprch %	17.3	61.3	21.4	1.5	86	12.5	26.2	67.2	6.6	22.9	67.8	9.3	
Total %	5.6	19.7	6.9	0.3	15.5	2.2	6	15.3	1.5	6.2	18.4	2.5	
Cars	140	478	174	7	388	55	151	368	37	157	465	64	2484
% Cars	99.3	95.8	100	100	98.7	96.5	100	95.1	97.4	99.4	99.4	100	97.9
Trucks	1	21	0	0	5	2	0	19	1	1	3	0	53
% Trucks	0.7	4.2	0	0	1.3	3.5	0	4.9	2.6	0.6	0.6	0	2.1

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

	So Huntington Ave From North				Perkins St From East				So Huntington Ave From South				Perkins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 04:15 PM																	
04:15 PM	15	**75**	21	**111**	0	**59**	6	65	**21**	**59**	**5**	**85**	17	61	**10**	88	**349**
04:30 PM	15	64	24	103	**3**	58	8	**69**	14	48	2	64	19	60	3	82	318
04:45 PM	**20**	66	20	106	1	45	**10**	56	20	52	2	74	17	46	6	69	305
05:00 PM	16	52	**28**	96	0	43	8	51	18	52	4	74	**23**	**69**	6	**98**	319
Total Volume	66	257	93	416	4	205	32	241	73	211	13	297	76	236	25	337	1291
% App. Total	15.9	61.8	22.4		1.7	85.1	13.3		24.6	71	4.4		22.6	70	7.4		
PHF	.825	.857	.830	.937	.333	.869	.800	.873	.869	.894	.650	.874	.826	.855	.625	.860	.925
Cars	65	249	93	407	4	203	31	238	73	201	13	287	76	234	25	335	1267
% Cars	98.5	96.9	100	97.8	100	99.0	96.9	98.8	100	95.3	100	96.6	100	99.2	100	99.4	98.1
Trucks	1	8	0	9	0	2	1	3	0	10	0	10	0	2	0	2	24
% Trucks	1.5	3.1	0	2.2	0	1.0	3.1	1.2	0	4.7	0	3.4	0	0.8	0	0.6	1.9

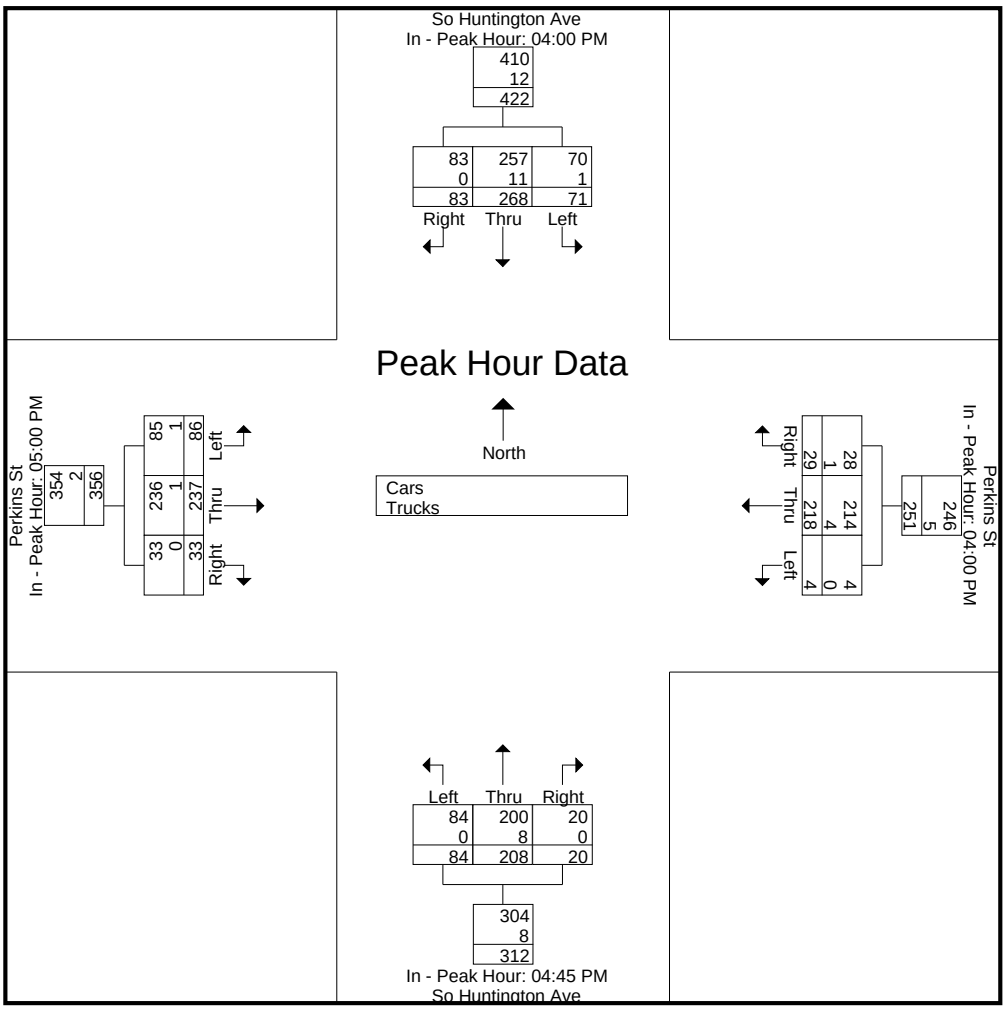


Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

	So Huntington Ave From North				Perkins St From East				So Huntington Ave From South				Perkins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:00 PM				04:00 PM				04:45 PM				05:00 PM				
+0 mins.	**21**	63	18	102	0	56	5	61	20	52	2	74	**23**	**69**	6	**98**	
+15 mins.	15	**75**	21	**111**	0	**59**	6	65	18	52	4	74	22	43	10	75	
+30 mins.	15	64	**24**	103	**3**	58	8	**69**	**24**	**55**	**10**	**89**	21	61	**12**	94	
+45 mins.	20	66	20	106	1	45	**10**	56	22	49	4	75	20	64	5	89	
Total Volume	71	268	83	422	4	218	29	251	84	208	20	312	86	237	33	356	
% App. Total	16.8	63.5	19.7		1.6	86.9	11.6		26.9	66.7	6.4		24.2	66.6	9.3		
PHF	.845	.893	.865	.950	.333	.924	.725	.909	.875	.945	.500	.876	.935	.859	.688	.908	
Cars	70	257	83	410	4	214	28	246	84	200	20	304	85	236	33	354	
% Cars	98.6	95.9	100	97.2	100	98.2	96.6	98	100	96.2	100	97.4	98.8	99.6	100	99.4	
Trucks	1	11	0	12	0	4	1	5	0	8	0	8	1	1	0	2	
% Trucks	1.4	4.1	0	2.8	0	1.8	3.4	2	0	3.8	0	2.6	1.2	0.4	0	0.6	



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

Groups Printed- Cars

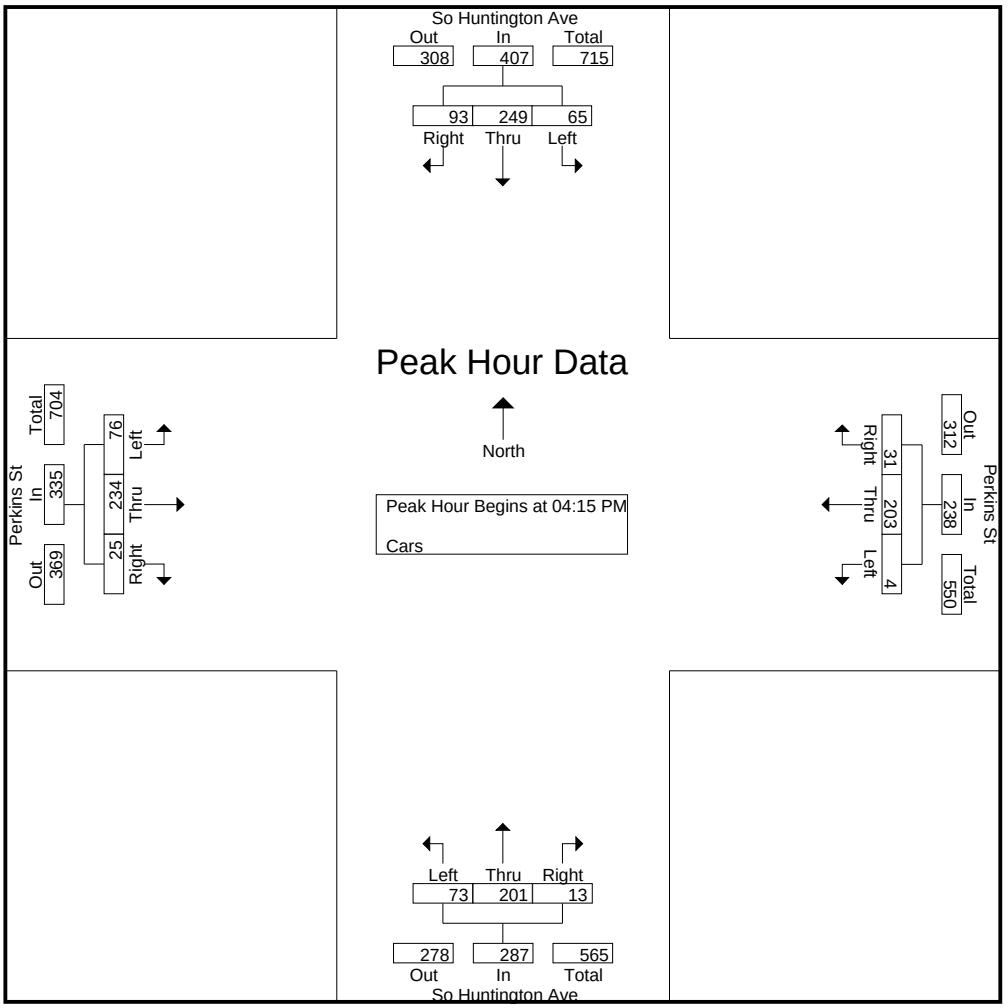
	So Huntington Ave From North			Perkins St From East			So Huntington Ave From South			Perkins St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	21	59	18	0	54	5	13	32	4	19	64	12	301
04:15 PM	15	74	21	0	59	6	21	57	5	17	61	10	346
04:30 PM	15	61	24	3	57	8	14	45	2	19	59	3	310
04:45 PM	19	63	20	1	44	9	20	50	2	17	45	6	296
Total	70	257	83	4	214	28	68	184	13	72	229	31	1253
05:00 PM	16	51	28	0	43	8	18	49	4	23	69	6	315
05:15 PM	23	68	20	1	43	4	24	55	10	22	43	10	323
05:30 PM	14	57	27	0	42	7	22	46	4	21	61	12	313
05:45 PM	17	45	16	2	46	8	19	34	6	19	63	5	280
Total	70	221	91	3	174	27	83	184	24	85	236	33	1231
Grand Total	140	478	174	7	388	55	151	368	37	157	465	64	2484
Apprch %	17.7	60.4	22	1.6	86.2	12.2	27.2	66.2	6.7	22.9	67.8	9.3	
Total %	5.6	19.2	7	0.3	15.6	2.2	6.1	14.8	1.5	6.3	18.7	2.6	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

	So Huntington Ave From North				Perkins St From East				So Huntington Ave From South				Perkins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 04:15 PM																	
04:15 PM	15	**74**	21	**110**	0	**59**	6	65	**21**	**57**	**5**	**83**	17	61	**10**	88	**346**
04:30 PM	15	61	24	100	**3**	57	8	**68**	14	45	2	61	19	59	3	81	310
04:45 PM	**19**	63	20	102	1	44	**9**	54	20	50	2	72	17	45	6	68	296
05:00 PM	16	51	**28**	95	0	43	8	51	18	49	4	71	**23**	**69**	6	**98**	315
Total Volume	65	249	93	407	4	203	31	238	73	201	13	287	76	234	25	335	1267
% App. Total	16	61.2	22.9		1.7	85.3	13		25.4	70	4.5		22.7	69.9	7.5		
PHF	.855	.841	.830	.925	.333	.860	.861	.875	.869	.882	.650	.864	.826	.848	.625	.855	.915



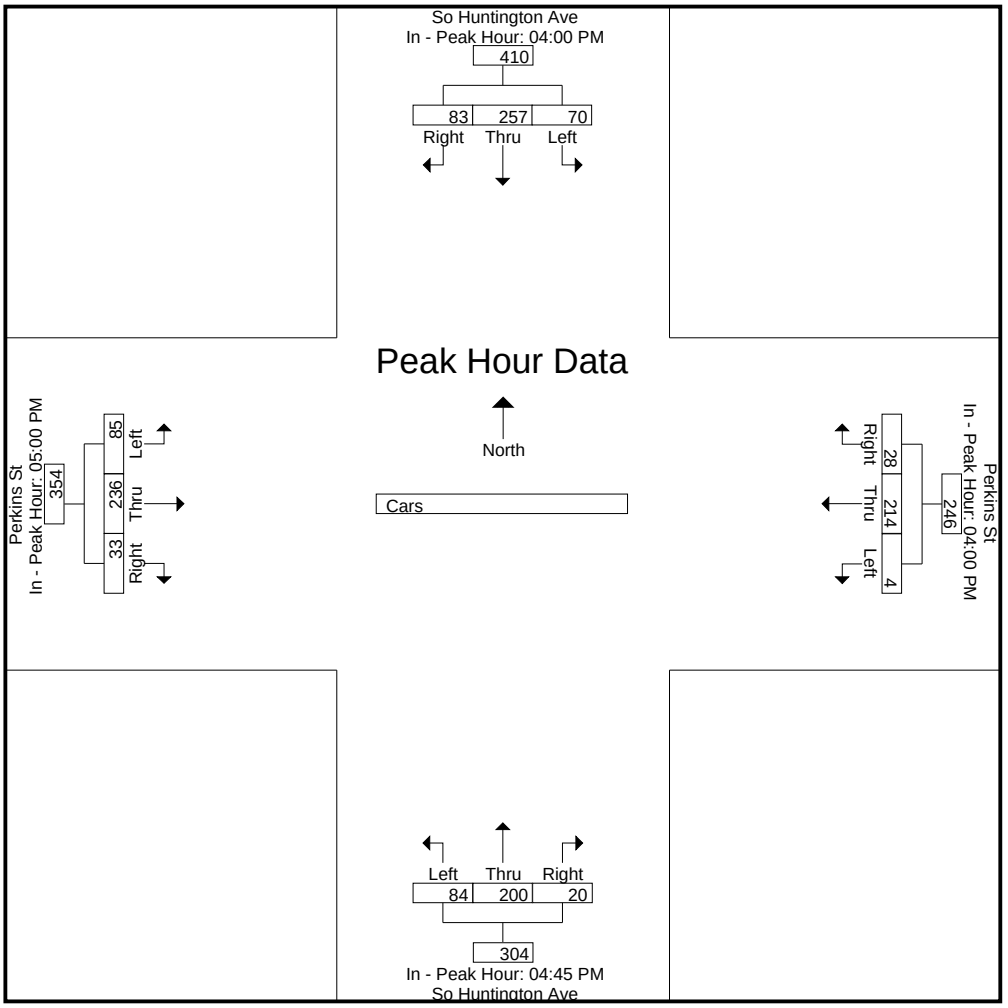
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:45 PM				05:00 PM			
+0 mins.	**21**	59	18	98	0	54	5	59	20	50	2	72	**23**	**69**	6	**98**
+15 mins.	15	**74**	21	**110**	0	**59**	6	65	18	49	4	71	22	43	10	75
+30 mins.	15	61	**24**	100	**3**	57	8	**68**	**24**	**55**	**10**	**89**	21	61	**12**	94
+45 mins.	19	63	20	102	1	44	**9**	54	22	46	4	72	19	63	5	87
Total Volume	70	257	83	410	4	214	28	246	84	200	20	304	85	236	33	354
% App. Total	17.1	62.7	20.2		1.6	87	11.4		27.6	65.8	6.6		24	66.7	9.3	
PHF	.833	.868	.865	.932	.333	.907	.778	.904	.875	.909	.500	.854	.924	.855	.688	.903

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015
Page No : 6



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

Groups Printed- Trucks

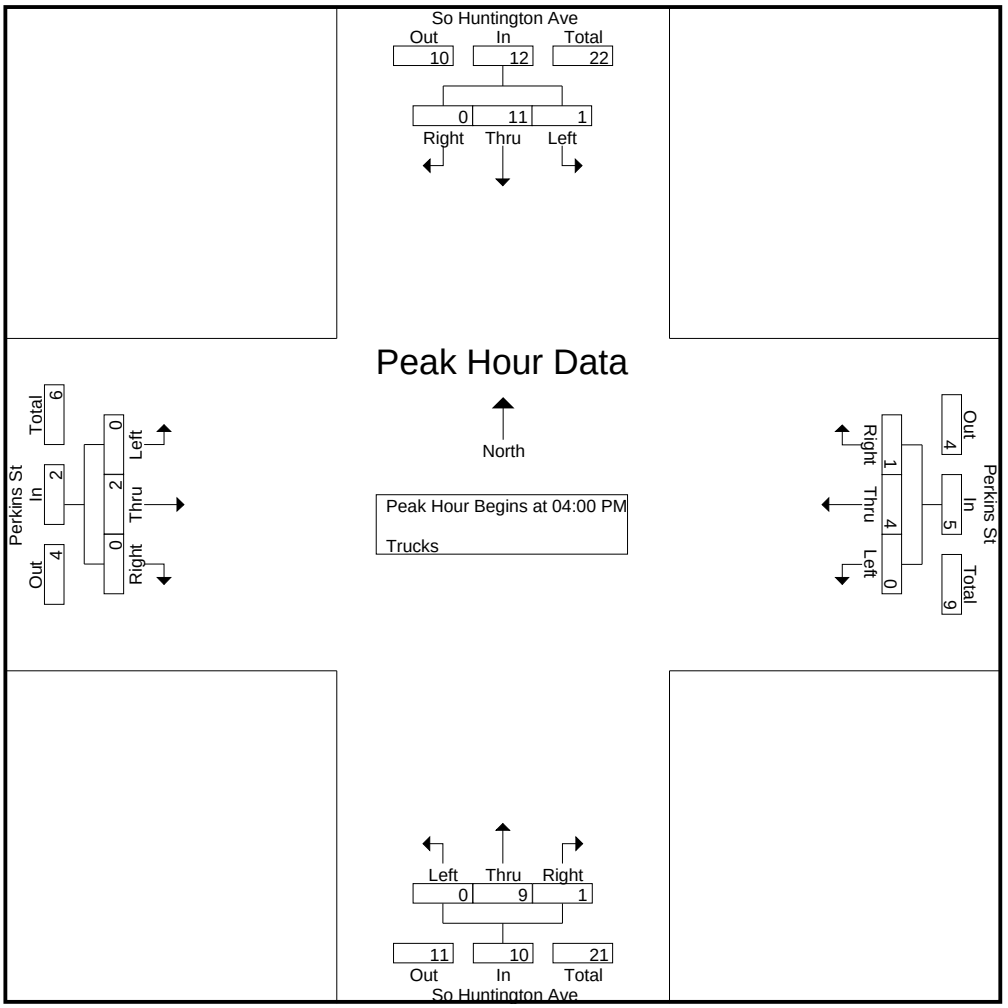
	So Huntington Ave From North			Perkins St From East			So Huntington Ave From South			Perkins St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	4	0	0	2	0	0	2	1	0	0	0	9
04:15 PM	0	1	0	0	0	0	0	2	0	0	0	0	3
04:30 PM	0	3	0	0	1	0	0	3	0	0	1	0	8
04:45 PM	1	3	0	0	1	1	0	2	0	0	1	0	9
Total	1	11	0	0	4	1	0	9	1	0	2	0	29
05:00 PM	0	1	0	0	0	0	0	3	0	0	0	0	4
05:15 PM	0	3	0	0	0	1	0	0	0	0	0	0	4
05:30 PM	0	4	0	0	0	0	0	3	0	0	0	0	7
05:45 PM	0	2	0	0	1	0	0	4	0	1	1	0	9
Total	0	10	0	0	1	1	0	10	0	1	1	0	24
Grand Total	1	21	0	0	5	2	0	19	1	1	3	0	53
Apprch %	4.5	95.5	0	0	71.4	28.6	0	95	5	25	75	0	
Total %	1.9	39.6	0	0	9.4	3.8	0	35.8	1.9	1.9	5.7	0	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015
Page No : 8

	So Huntington Ave From North				Perkins St From East				So Huntington Ave From South				Perkins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	**4**	0	**4**	0	**2**	0	**2**	0	2	**1**	**3**	0	0	0	0	**9**
04:15 PM	0	1	0	1	0	0	0	0	0	2	0	2	0	0	0	0	3
04:30 PM	0	3	0	3	0	1	0	1	0	**3**	0	3	0	**1**	0	**1**	8
04:45 PM	**1**	3	0	4	0	1	**1**	2	0	2	0	2	0	1	0	1	9
Total Volume	1	11	0	12	0	4	1	5	0	9	1	10	0	2	0	2	29
% App. Total	8.3	91.7	0		0	80	20		0	90	10		0	100	0		
PHF	.250	.688	.000	.750	.000	.500	.250	.625	.000	.750	.250	.833	.000	.500	.000	.500	.806



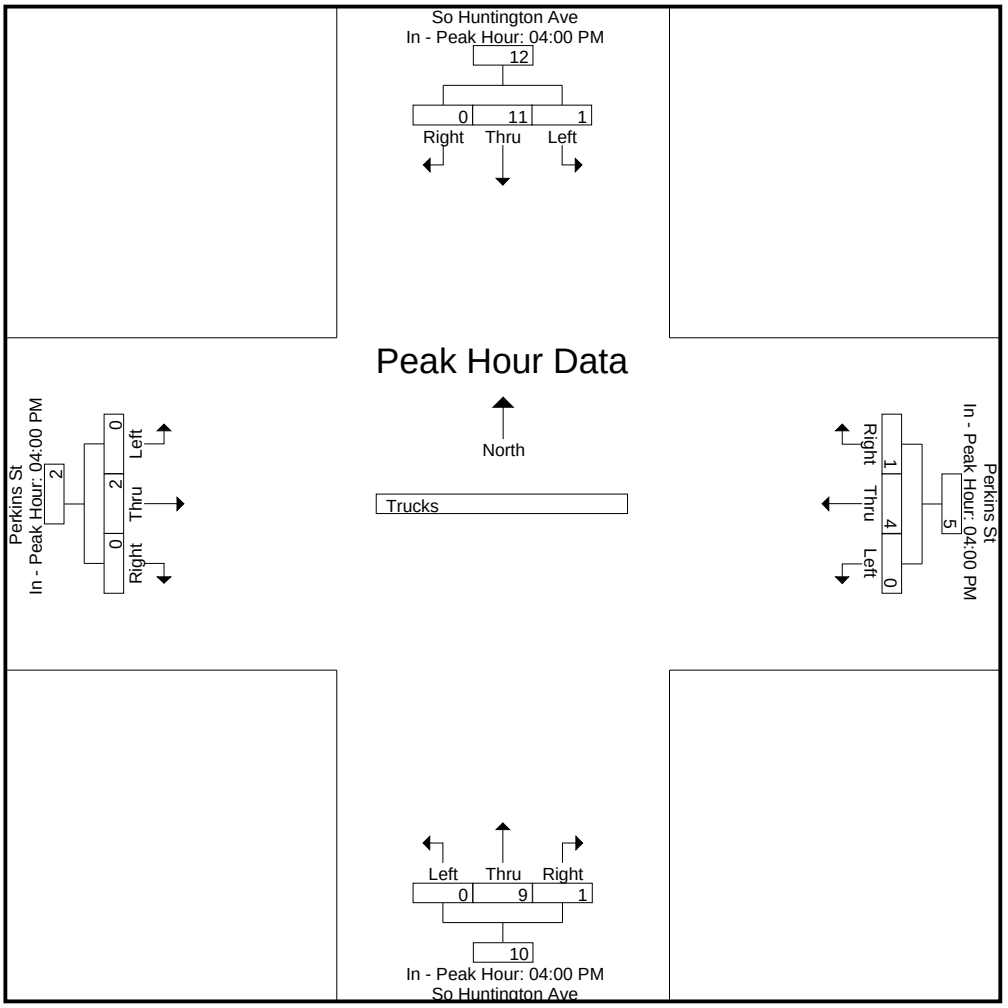
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	**4**	0	**4**	0	**2**	0	**2**	0	2	**1**	**3**	0	0	0	0
+15 mins.	0	1	0	1	0	0	0	0	0	2	0	2	0	0	0	0
+30 mins.	0	3	0	3	0	1	0	1	0	**3**	0	3	0	**1**	0	**1**
+45 mins.	**1**	3	0	4	0	1	**1**	2	0	2	0	2	0	1	0	1
Total Volume	1	11	0	12	0	4	1	5	0	9	1	10	0	2	0	2
% App. Total	8.3	91.7	0		0	80	20		0	90	10		0	100	0	
PHF	.250	.688	.000	.750	.000	.500	.250	.625	.000	.750	.250	.833	.000	.500	.000	.500

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015
Page No : 9



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

Groups Printed- Bikes Peds

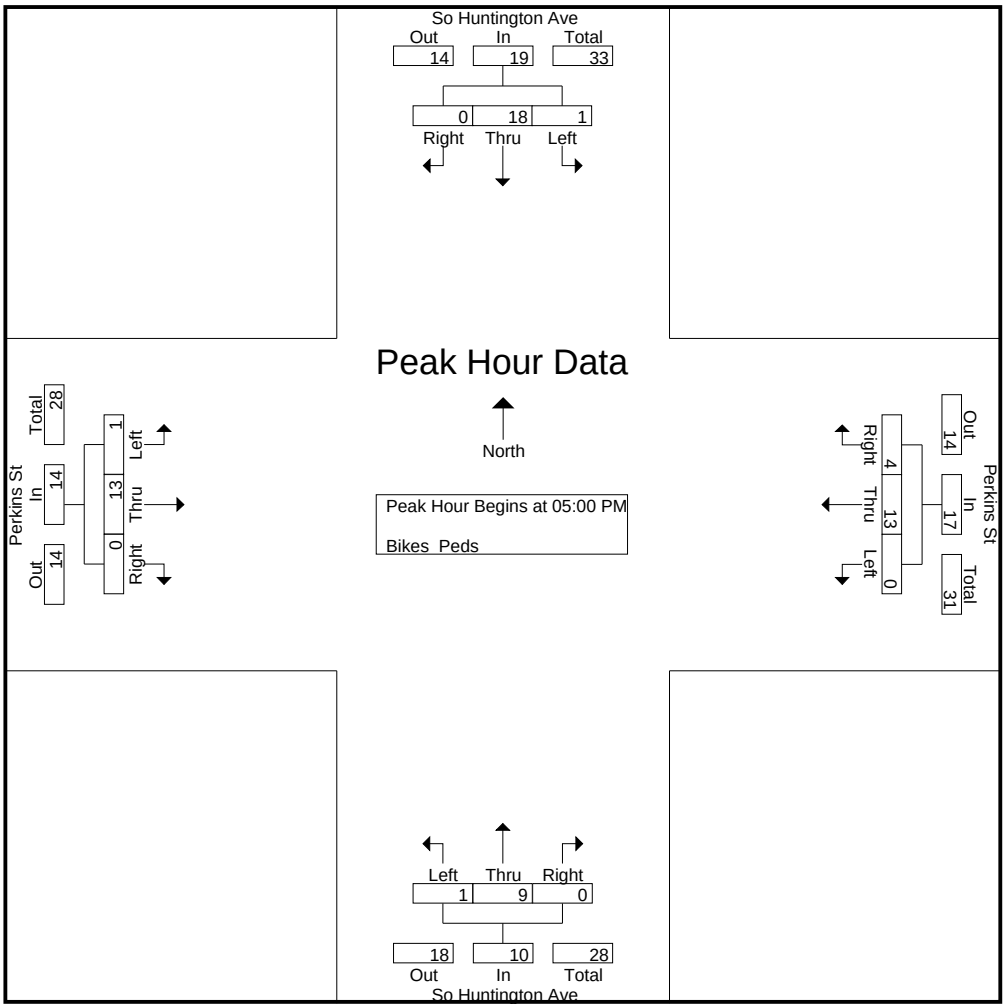
	So Huntington Ave From North				Perkins St From East				So Huntington Ave From South				Perkins St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	3	1	8	0	0	0	7	0	1	0	4	0	7	0	13	32	12	44
04:15 PM	0	5	0	3	0	0	0	6	1	3	0	3	0	1	0	1	13	10	23
04:30 PM	0	0	0	11	0	1	2	6	0	2	0	7	0	3	0	6	30	8	38
04:45 PM	0	2	0	10	0	2	0	4	0	1	0	9	0	5	0	17	40	10	50
Total	0	10	1	32	0	3	2	23	1	7	0	23	0	16	0	37	115	40	155
05:00 PM	0	2	0	6	0	0	1	5	0	1	0	20	0	4	0	16	47	8	55
05:15 PM	0	5	0	9	0	1	0	6	0	4	0	21	0	4	0	7	43	14	57
05:30 PM	1	6	0	18	0	4	0	9	1	3	0	19	0	4	0	15	61	19	80
05:45 PM	0	5	0	12	0	8	3	9	0	1	0	8	1	1	0	19	48	19	67
Total	1	18	0	45	0	13	4	29	1	9	0	68	1	13	0	57	199	60	259
Grand Total	1	28	1	77	0	16	6	52	2	16	0	91	1	29	0	94	314	100	414
Apprch %	3.3	93.3	3.3		0	72.7	27.3		11.1	88.9	0		3.3	96.7	0				
Total %	1	28	1		0	16	6		2	16	0		1	29	0		75.8	24.2	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015

	So Huntington Ave From North				Perkins St From East				So Huntington Ave From South				Perkins St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	0	2	0	0	1	1	0	1	0	1	0	**4**	0	**4**	8
05:15 PM	0	5	0	5	0	1	0	1	0	**4**	0	**4**	0	4	0	4	14
05:30 PM	**1**	**6**	0	**7**	0	4	0	4	**1**	3	0	4	0	4	0	4	**19**
05:45 PM	0	5	0	5	0	**8**	**3**	**11**	0	1	0	1	**1**	1	0	2	19
Total Volume	1	18	0	19	0	13	4	17	1	9	0	10	1	13	0	14	60
% App. Total	5.3	94.7	0		0	76.5	23.5		10	90	0		7.1	92.9	0		
PHF	.250	.750	.000	.679	.000	.406	.333	.386	.250	.563	.000	.625	.250	.813	.000	.875	.789



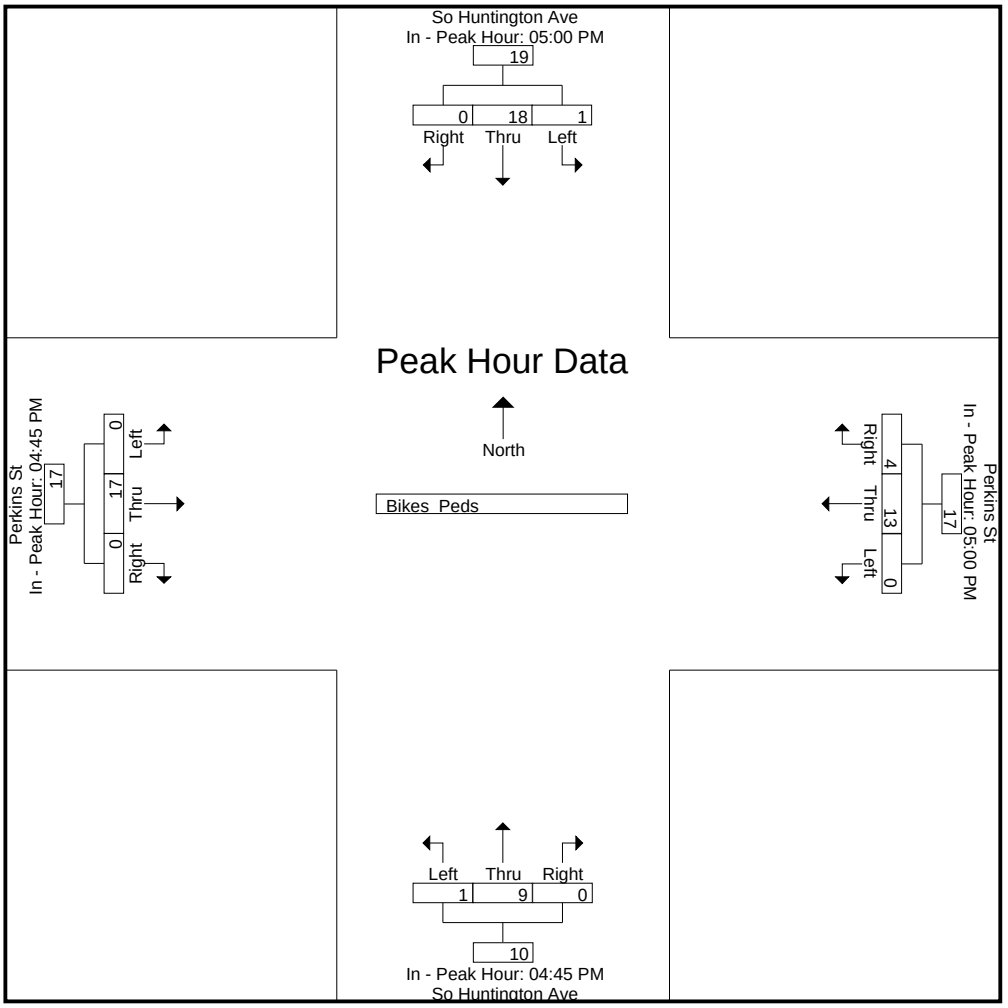
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:45 PM				04:45 PM			
+0 mins.	0	2	0	2	0	0	1	1	0	1	0	1	0	**5**	0	**5**
+15 mins.	0	5	0	5	0	1	0	1	0	1	0	1	0	4	0	4
+30 mins.	**1**	**6**	0	**7**	0	4	0	4	0	**4**	0	**4**	0	4	0	4
+45 mins.	0	5	0	5	0	**8**	**3**	**11**	**1**	3	0	4	0	4	0	4
Total Volume	1	18	0	19	0	13	4	17	1	9	0	10	0	17	0	17
% App. Total	5.3	94.7	0		0	76.5	23.5		10	90	0		0	100	0	
PHF	.250	.750	.000	.679	.000	.406	.333	.386	.250	.563	.000	.625	.000	.850	.000	.850

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Perkins Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870001
Site Code : 16870001
Start Date : 6/18/2015
Page No : 12



Accurate Counts

978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015

Groups Printed- Cars - Trucks

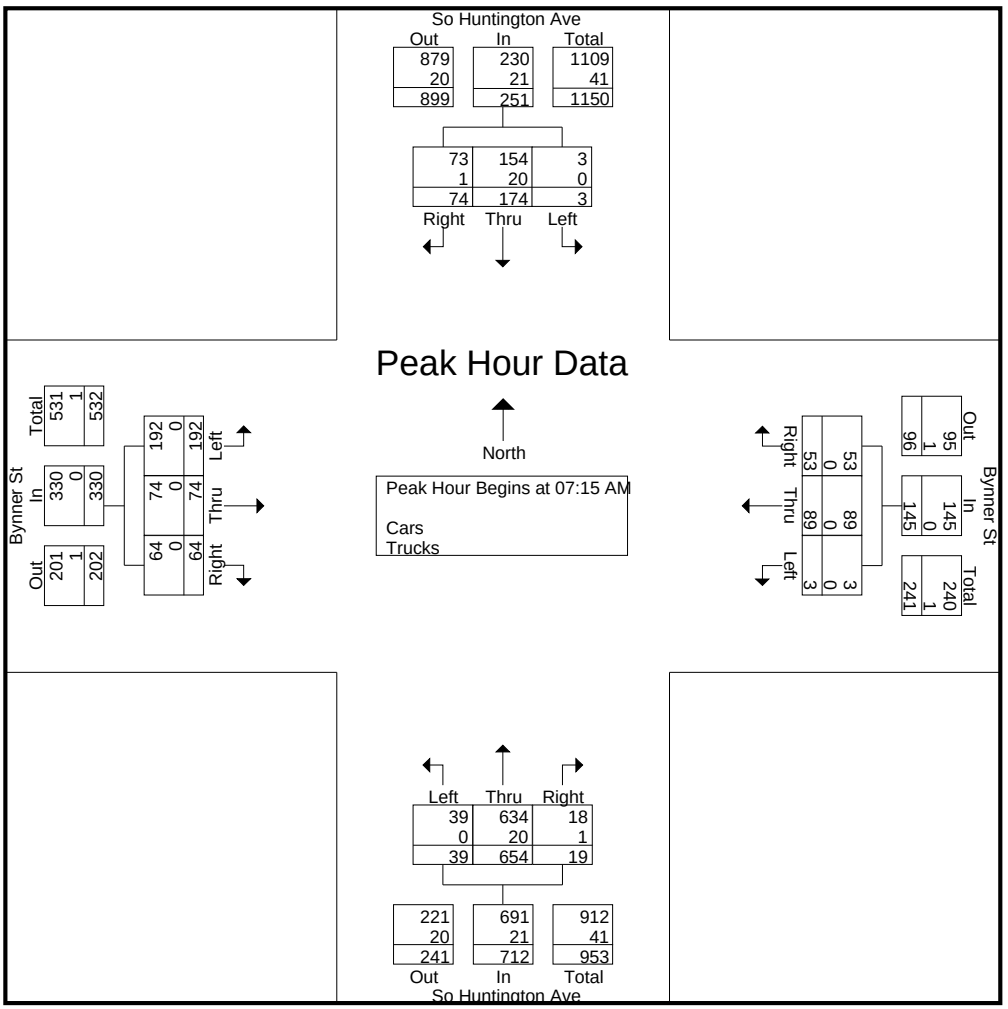
	So Huntington Ave From North			Bynner St From East			So Huntington Ave From South			Bynner St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	25	22	0	16	10	13	144	8	45	14	17	315
07:15 AM	0	35	11	1	19	9	8	178	5	35	15	15	331
07:30 AM	0	44	21	0	31	21	13	152	6	46	18	24	376
07:45 AM	1	49	24	1	24	11	11	167	5	56	19	16	384
Total	2	153	78	2	90	51	45	641	24	182	66	72	1406
08:00 AM	2	46	18	1	15	12	7	157	3	55	22	9	347
08:15 AM	3	41	14	2	15	11	9	135	6	41	25	9	311
08:30 AM	3	37	19	0	13	3	11	132	3	50	27	14	312
08:45 AM	2	31	11	0	10	9	4	161	6	28	24	15	301
Total	10	155	62	3	53	35	31	585	18	174	98	47	1271
Grand Total	12	308	140	5	143	86	76	1226	42	356	164	119	2677
Apprch %	2.6	67	30.4	2.1	61.1	36.8	5.7	91.2	3.1	55.7	25.7	18.6	
Total %	0.4	11.5	5.2	0.2	5.3	3.2	2.8	45.8	1.6	13.3	6.1	4.4	
Cars	11	274	138	5	142	86	76	1179	41	355	164	119	2590
% Cars	91.7	89	98.6	100	99.3	100	100	96.2	97.6	99.7	100	100	96.8
Trucks	1	34	2	0	1	0	0	47	1	1	0	0	87
% Trucks	8.3	11	1.4	0	0.7	0	0	3.8	2.4	0.3	0	0	3.2

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015

	So Huntington Ave From North				Bynner St From East				So Huntington Ave From South				Bynner St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	0	35	11	46	**1**	19	9	29	8	**178**	5	**191**	35	15	15	65	331
07:30 AM	0	44	21	65	0	**31**	**21**	**52**	**13**	152	**6**	171	46	18	**24**	88	376
07:45 AM	1	**49**	**24**	**74**	1	24	11	36	11	167	5	183	**56**	19	16	**91**	**384**
08:00 AM	**2**	46	18	66	1	15	12	28	7	157	3	167	55	**22**	9	86	347
Total Volume	3	174	74	251	3	89	53	145	39	654	19	712	192	74	64	330	1438
% App. Total	1.2	69.3	29.5		2.1	61.4	36.6		5.5	91.9	2.7		58.2	22.4	19.4		
PHF	.375	.888	.771	.848	.750	.718	.631	.697	.750	.919	.792	.932	.857	.841	.667	.907	.936
Cars	3	154	73	230	3	89	53	145	39	634	18	691	192	74	64	330	1396
% Cars	100	88.5	98.6	91.6	100	100	100	100	100	96.9	94.7	97.1	100	100	100	100	97.1
Trucks	0	20	1	21	0	0	0	0	0	20	1	21	0	0	0	0	42
% Trucks	0	11.5	1.4	8.4	0	0	0	0	0	3.1	5.3	2.9	0	0	0	0	2.9



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

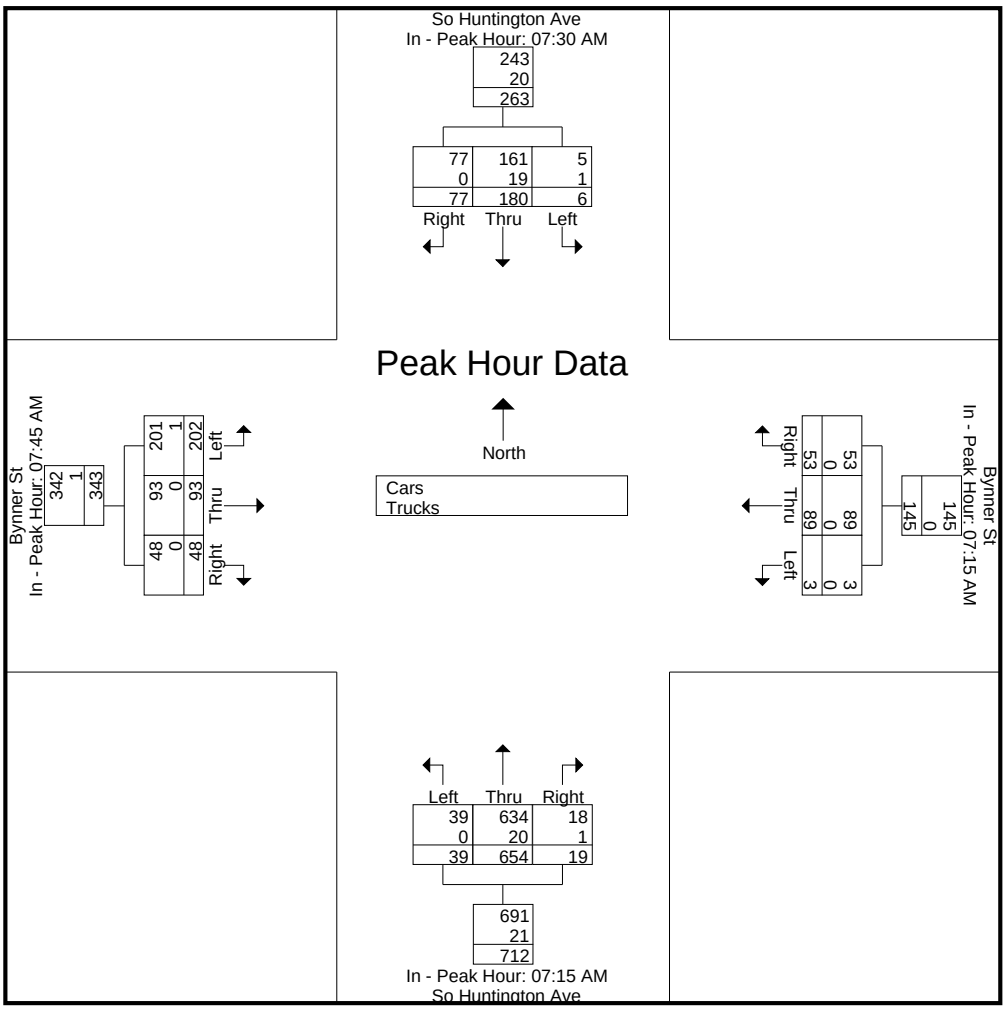
File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015
Page No : 3

	So Huntington Ave From North				Bynner St From East				So Huntington Ave From South				Bynner St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:15 AM				07:45 AM			
+0 mins.	0	44	21	65	**1**	19	9	29	8	**178**	5	**191**	**56**	19	**16**	**91**
+15 mins.	1	**49**	**24**	**74**	0	**31**	**21**	**52**	**13**	152	**6**	171	55	22	9	86
+30 mins.	2	46	18	66	1	24	11	36	11	167	5	183	41	25	9	75
+45 mins.	**3**	41	14	58	1	15	12	28	7	157	3	167	50	**27**	14	91
Total Volume	6	180	77	263	3	89	53	145	39	654	19	712	202	93	48	343
% App. Total	2.3	68.4	29.3		2.1	61.4	36.6		5.5	91.9	2.7		58.9	27.1	14	
PHF	.500	.918	.802	.889	.750	.718	.631	.697	.750	.919	.792	.932	.902	.861	.750	.942
Cars	5	161	77	243	3	89	53	145	39	634	18	691	201	93	48	342
% Cars	83.3	89.4	100	92.4	100	100	100	100	100	96.9	94.7	97.1	99.5	100	100	99.7
Trucks	1	19	0	20	0	0	0	0	0	20	1	21	1	0	0	1
% Trucks	16.7	10.6	0	7.6	0	0	0	0	0	3.1	5.3	2.9	0.5	0	0	0.3



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015

Groups Printed- Cars

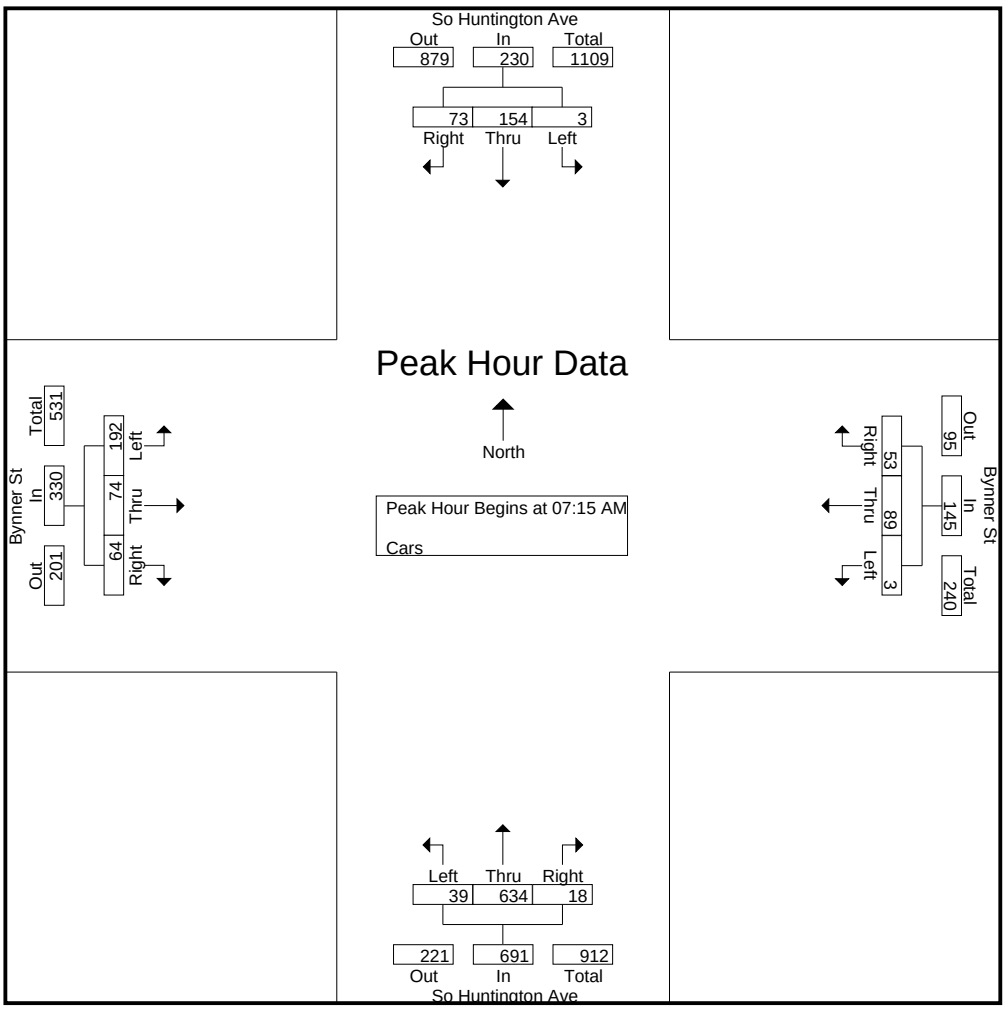
	So Huntington Ave From North			Bynner St From East			So Huntington Ave From South			Bynner St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	21	22	0	16	10	13	132	8	45	14	17	299
07:15 AM	0	30	10	1	19	9	8	168	5	35	15	15	315
07:30 AM	0	39	21	0	31	21	13	149	5	46	18	24	367
07:45 AM	1	44	24	1	24	11	11	165	5	56	19	16	377
Total	2	134	77	2	90	51	45	614	23	182	66	72	1358
08:00 AM	2	41	18	1	15	12	7	152	3	55	22	9	337
08:15 AM	2	37	14	2	14	11	9	131	6	41	25	9	301
08:30 AM	3	34	18	0	13	3	11	128	3	49	27	14	303
08:45 AM	2	28	11	0	10	9	4	154	6	28	24	15	291
Total	9	140	61	3	52	35	31	565	18	173	98	47	1232
Grand Total	11	274	138	5	142	86	76	1179	41	355	164	119	2590
Apprch %	2.6	64.8	32.6	2.1	60.9	36.9	5.9	91	3.2	55.6	25.7	18.7	
Total %	0.4	10.6	5.3	0.2	5.5	3.3	2.9	45.5	1.6	13.7	6.3	4.6	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015

	So Huntington Ave From North				Bynner St From East				So Huntington Ave From South				Bynner St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	0	30	10	40	**1**	19	9	29	8	**168**	**5**	**181**	35	15	15	65	315
07:30 AM	0	39	21	60	0	**31**	**21**	**52**	**13**	149	5	167	46	18	**24**	88	367
07:45 AM	1	**44**	**24**	**69**	1	24	11	36	11	165	5	181	**56**	19	16	**91**	**377**
08:00 AM	**2**	41	18	61	1	15	12	28	7	152	3	162	55	**22**	9	86	337
Total Volume	3	154	73	230	3	89	53	145	39	634	18	691	192	74	64	330	1396
% App. Total	1.3	67	31.7		2.1	61.4	36.6		5.6	91.8	2.6		58.2	22.4	19.4		
PHF	.375	.875	.760	.833	.750	.718	.631	.697	.750	.943	.900	.954	.857	.841	.667	.907	.926



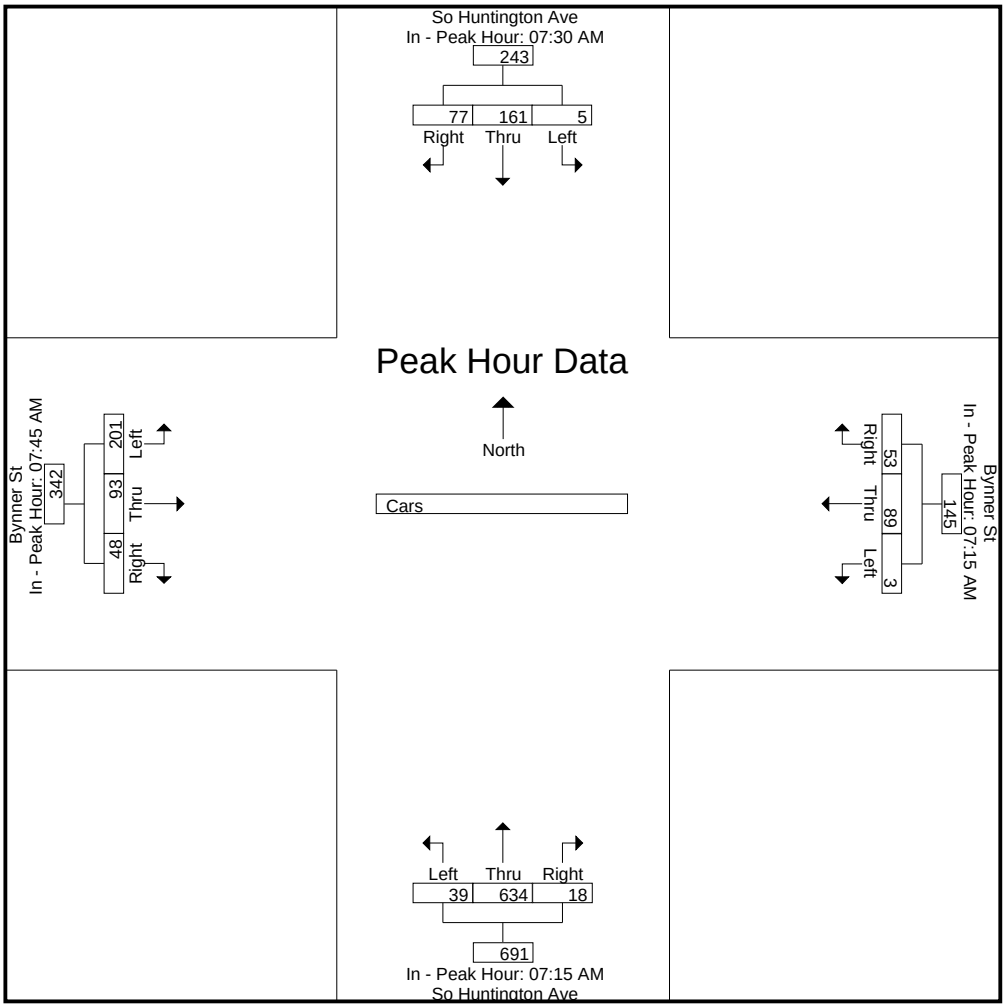
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:15 AM				07:45 AM			
+0 mins.	0	39	21	60	**1**	19	9	29	8	**168**	**5**	**181**	**56**	19	**16**	**91**
+15 mins.	1	**44**	**24**	**69**	0	**31**	**21**	**52**	**13**	149	5	167	55	22	9	86
+30 mins.	**2**	41	18	61	1	24	11	36	11	165	5	181	41	25	9	75
+45 mins.	2	37	14	53	1	15	12	28	7	152	3	162	49	**27**	14	90
Total Volume	5	161	77	243	3	89	53	145	39	634	18	691	201	93	48	342
% App. Total	2.1	66.3	31.7		2.1	61.4	36.6		5.6	91.8	2.6		58.8	27.2	14	
PHF	.625	.915	.802	.880	.750	.718	.631	.697	.750	.943	.900	.954	.897	.861	.750	.940

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015
Page No : 6



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015

Groups Printed- Trucks

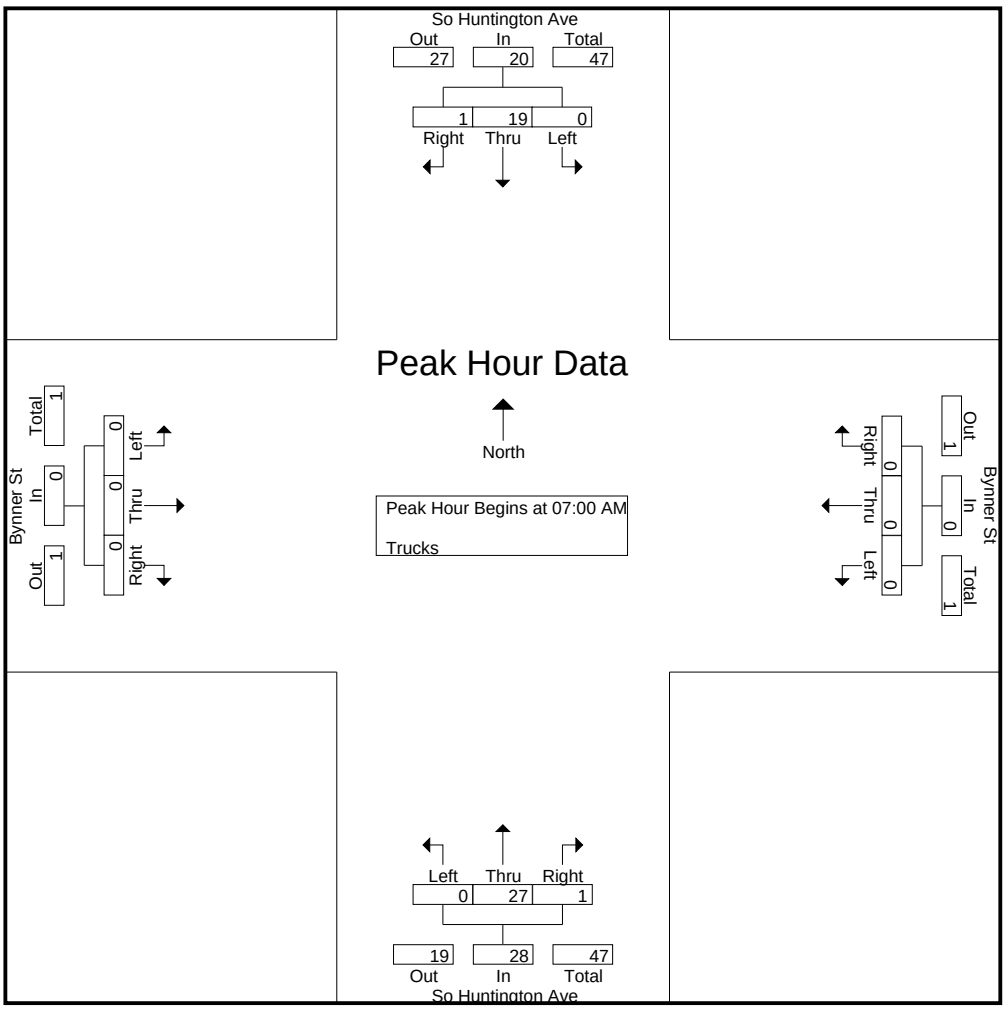
	So Huntington Ave From North			Bynner St From East			So Huntington Ave From South			Bynner St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	4	0	0	0	0	0	12	0	0	0	0	16
07:15 AM	0	5	1	0	0	0	0	10	0	0	0	0	16
07:30 AM	0	5	0	0	0	0	0	3	1	0	0	0	9
07:45 AM	0	5	0	0	0	0	0	2	0	0	0	0	7
Total	0	19	1	0	0	0	0	27	1	0	0	0	48
08:00 AM	0	5	0	0	0	0	0	5	0	0	0	0	10
08:15 AM	1	4	0	0	1	0	0	4	0	0	0	0	10
08:30 AM	0	3	1	0	0	0	0	4	0	1	0	0	9
08:45 AM	0	3	0	0	0	0	0	7	0	0	0	0	10
Total	1	15	1	0	1	0	0	20	0	1	0	0	39
Grand Total	1	34	2	0	1	0	0	47	1	1	0	0	87
Apprch %	2.7	91.9	5.4	0	100	0	0	97.9	2.1	100	0	0	
Total %	1.1	39.1	2.3	0	1.1	0	0	54	1.1	1.1	0	0	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015

	So Huntington Ave From North				Bynner St From East				So Huntington Ave From South				Bynner St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	4	0	4	0	0	0	0	0	**12**	0	**12**	0	0	0	0	**16**
07:15 AM	0	**5**	**1**	**6**	0	0	0	0	0	10	0	10	0	0	0	0	16
07:30 AM	0	5	0	5	0	0	0	0	0	3	**1**	4	0	0	0	0	9
07:45 AM	0	5	0	5	0	0	0	0	0	2	0	2	0	0	0	0	7
Total Volume	0	19	1	20	0	0	0	0	0	27	1	28	0	0	0	0	48
% App. Total	0	95	5		0	0	0		0	96.4	3.6		0	0	0		
PHF	.000	.950	.250	.833	.000	.000	.000	.000	.000	.563	.250	.583	.000	.000	.000	.000	.750



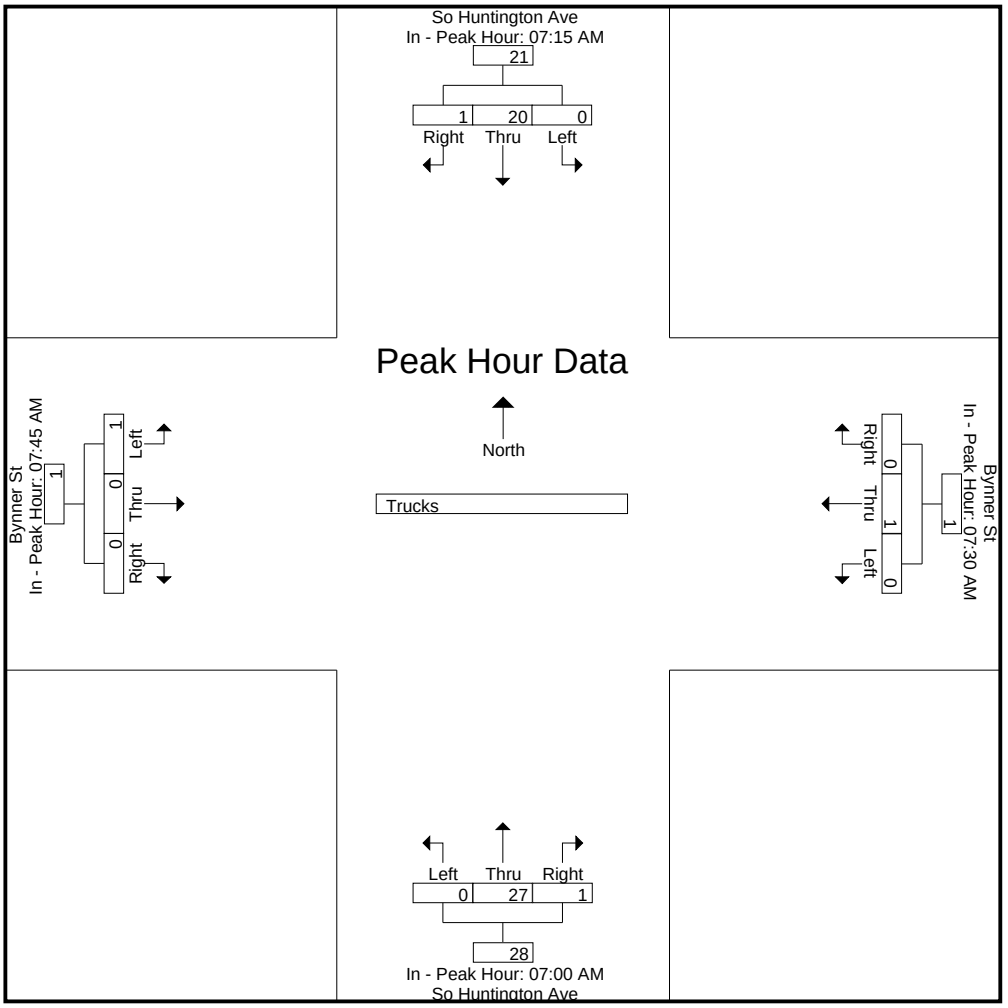
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:30 AM				07:00 AM				07:45 AM			
+0 mins.	0	**5**	**1**	**6**	0	0	0	0	0	**12**	0	**12**	0	0	0	0
+15 mins.	0	5	0	5	0	0	0	0	0	10	0	10	0	0	0	0
+30 mins.	0	5	0	5	0	0	0	0	0	3	**1**	4	0	0	0	0
+45 mins.	0	5	0	5	0	**1**	0	**1**	0	2	0	2	**1**	0	0	**1**
Total Volume	0	20	1	21	0	1	0	1	0	27	1	28	1	0	0	1
% App. Total	0	95.2	4.8		0	100	0		0	96.4	3.6		100	0	0	
PHF	.000	1.000	.250	.875	.000	.250	.000	.250	.000	.563	.250	.583	.250	.000	.000	.250

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015
Page No : 9



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015

Groups Printed- Bikes Peds

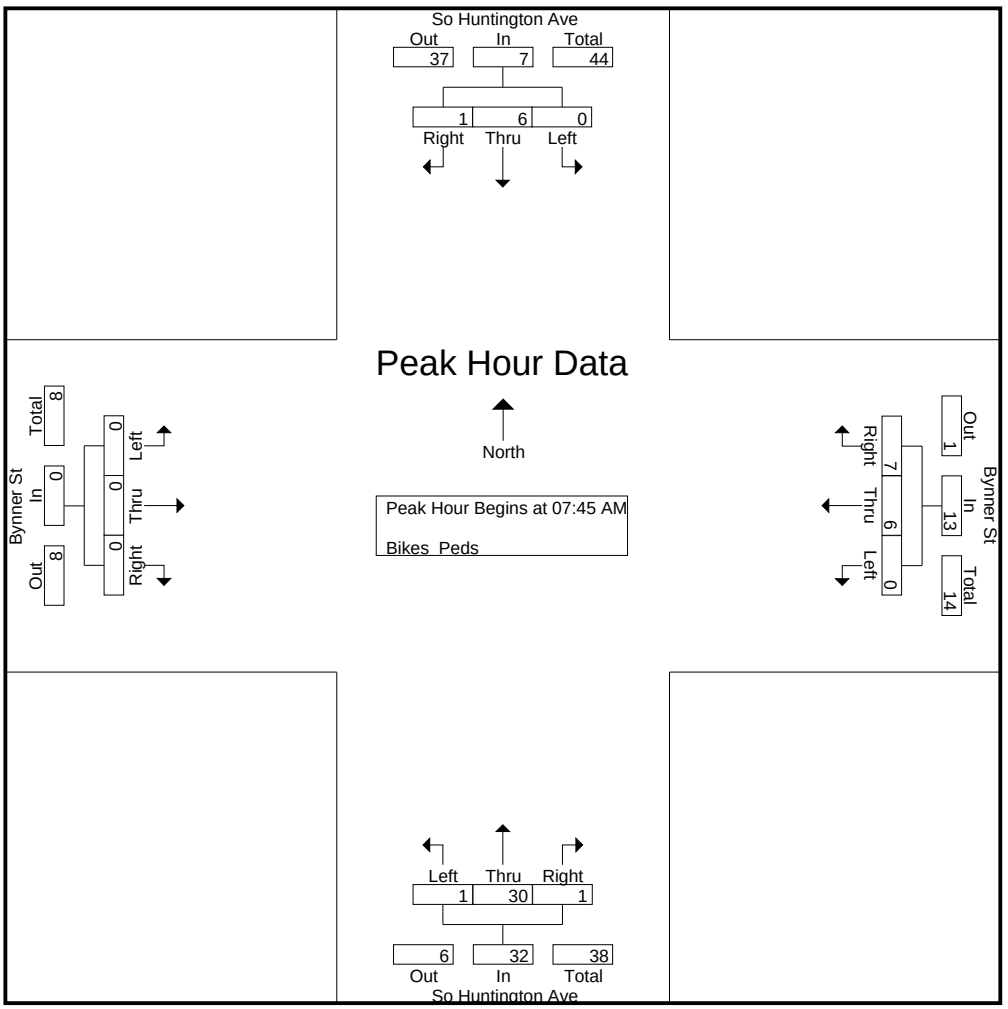
	So Huntington Ave From North				Bynner St From East				So Huntington Ave From South				Bynner St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	1	1	0	2	0	0	0	4	0	1	0	5	0	0	0	0	11	3	14
07:15 AM	0	0	0	4	1	0	2	9	0	5	0	7	0	1	1	1	21	10	31
07:30 AM	0	0	0	3	0	1	2	9	0	4	0	5	0	2	0	4	21	9	30
07:45 AM	0	2	1	3	0	2	0	5	0	7	0	6	0	0	0	5	19	12	31
Total	1	3	1	12	1	3	4	27	0	17	0	23	0	3	1	10	72	34	106
08:00 AM	0	0	0	2	0	1	1	13	1	11	0	6	0	0	0	7	28	14	42
08:15 AM	0	1	0	6	0	0	3	9	0	2	1	8	0	0	0	10	33	7	40
08:30 AM	0	3	0	2	0	3	3	4	0	10	0	5	0	0	0	4	15	19	34
08:45 AM	0	1	0	6	0	2	1	6	0	8	0	3	0	0	0	13	28	12	40
Total	0	5	0	16	0	6	8	32	1	31	1	22	0	0	0	34	104	52	156
Grand Total	1	8	1	28	1	9	12	59	1	48	1	45	0	3	1	44	176	86	262
Apprch %	10	80	10		4.5	40.9	54.5		2	96	2		0	75	25				
Total %	1.2	9.3	1.2		1.2	10.5	14		1.2	55.8	1.2		0	3.5	1.2		67.2	32.8	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015

	So Huntington Ave From North				Bynner St From East				So Huntington Ave From South				Bynner St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	2	**1**	**3**	0	2	0	2	0	7	0	7	0	0	0	0	12
08:00 AM	0	0	0	0	0	1	1	2	**1**	**11**	0	**12**	0	0	0	0	14
08:15 AM	0	1	0	1	0	0	**3**	3	0	2	**1**	3	0	0	0	0	7
08:30 AM	0	**3**	0	3	0	**3**	3	**6**	0	10	0	10	0	0	0	0	**19**
Total Volume	0	6	1	7	0	6	7	13	1	30	1	32	0	0	0	0	52
% App. Total	0	85.7	14.3		0	46.2	53.8		3.1	93.8	3.1		0	0	0		
PHF	.000	.500	.250	.583	.000	.500	.583	.542	.250	.682	.250	.667	.000	.000	.000	.000	.684



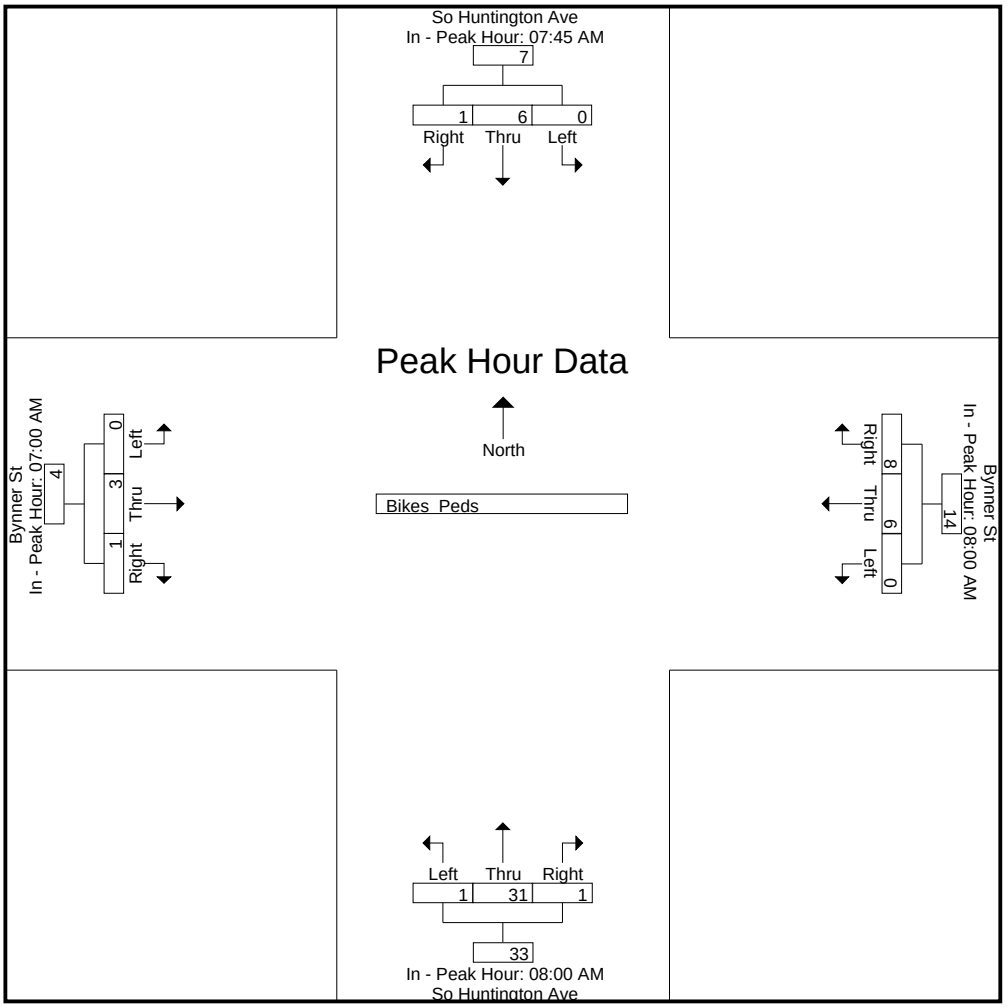
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				08:00 AM				08:00 AM				07:00 AM			
+0 mins.	0	2	**1**	**3**	0	1	1	2	**1**	**11**	0	**12**	0	0	0	0
+15 mins.	0	0	0	0	0	0	**3**	3	0	2	**1**	3	0	1	**1**	**2**
+30 mins.	0	1	0	1	0	**3**	3	**6**	0	10	0	10	0	**2**	0	2
+45 mins.	0	**3**	0	3	0	2	1	3	0	8	0	8	0	0	0	0
Total Volume	0	6	1	7	0	6	8	14	1	31	1	33	0	3	1	4
% App. Total	0	85.7	14.3		0	42.9	57.1		3	93.9	3		0	75	25	
PHF	.000	.500	.250	.583	.000	.500	.667	.583	.250	.705	.250	.688	.000	.375	.250	.500

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015
Page No : 12



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015

Groups Printed- Cars - Trucks

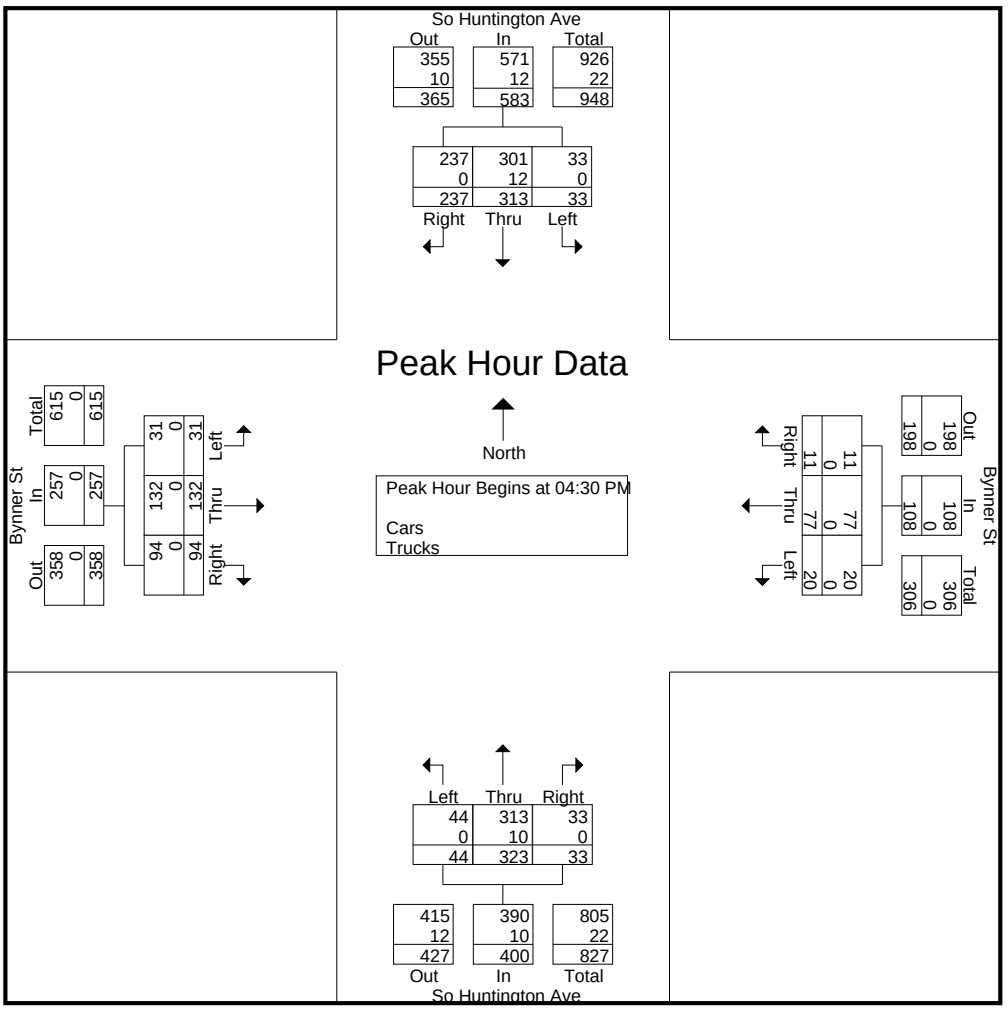
	So Huntington Ave From North			Bynner St From East			So Huntington Ave From South			Bynner St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	4	84	58	2	20	3	10	49	7	10	35	20	302
04:15 PM	7	79	53	3	25	4	5	73	5	8	33	23	318
04:30 PM	12	77	75	5	15	4	10	78	10	8	37	23	354
04:45 PM	4	66	58	5	18	2	7	74	9	8	41	30	322
Total	27	306	244	15	78	13	32	274	31	34	146	96	1296
05:00 PM	14	99	57	4	17	1	13	85	8	5	29	19	351
05:15 PM	3	71	47	6	27	4	14	86	6	10	25	22	321
05:30 PM	4	75	60	9	23	6	14	64	6	15	34	22	332
05:45 PM	4	60	68	4	17	2	10	79	5	22	34	24	329
Total	25	305	232	23	84	13	51	314	25	52	122	87	1333
Grand Total	52	611	476	38	162	26	83	588	56	86	268	183	2629
Apprch %	4.6	53.6	41.8	16.8	71.7	11.5	11.4	80.9	7.7	16	49.9	34.1	
Total %	2	23.2	18.1	1.4	6.2	1	3.2	22.4	2.1	3.3	10.2	7	
Cars	52	589	476	38	162	26	83	566	56	86	268	183	2585
% Cars	100	96.4	100	100	100	100	100	96.3	100	100	100	100	98.3
Trucks	0	22	0	0	0	0	0	22	0	0	0	0	44
% Trucks	0	3.6	0	0	0	0	0	3.7	0	0	0	0	1.7

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015

	So Huntington Ave From North				Bynner St From East				So Huntington Ave From South				Bynner St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 04:30 PM																	
04:30 PM	12	77	**75**	164	5	15	**4**	24	10	78	**10**	98	8	37	23	68	**354**
04:45 PM	4	66	58	128	5	18	2	25	7	74	9	90	8	**41**	**30**	**79**	322
05:00 PM	**14**	**99**	57	**170**	4	17	1	22	13	85	8	**106**	5	29	19	53	351
05:15 PM	3	71	47	121	**6**	**27**	4	**37**	**14**	**86**	6	106	**10**	25	22	57	321
Total Volume	33	313	237	583	20	77	11	108	44	323	33	400	31	132	94	257	1348
% App. Total	5.7	53.7	40.7		18.5	71.3	10.2		11	80.8	8.2		12.1	51.4	36.6		
PHF	.589	.790	.790	.857	.833	.713	.688	.730	.786	.939	.825	.943	.775	.805	.783	.813	.952
Cars	33	301	237	571	20	77	11	108	44	313	33	390	31	132	94	257	1326
% Cars	100	96.2	100	97.9	100	100	100	100	100	96.9	100	97.5	100	100	100	100	98.4
Trucks	0	12	0	12	0	0	0	0	0	10	0	10	0	0	0	0	22
% Trucks	0	3.8	0	2.1	0	0	0	0	0	3.1	0	2.5	0	0	0	0	1.6

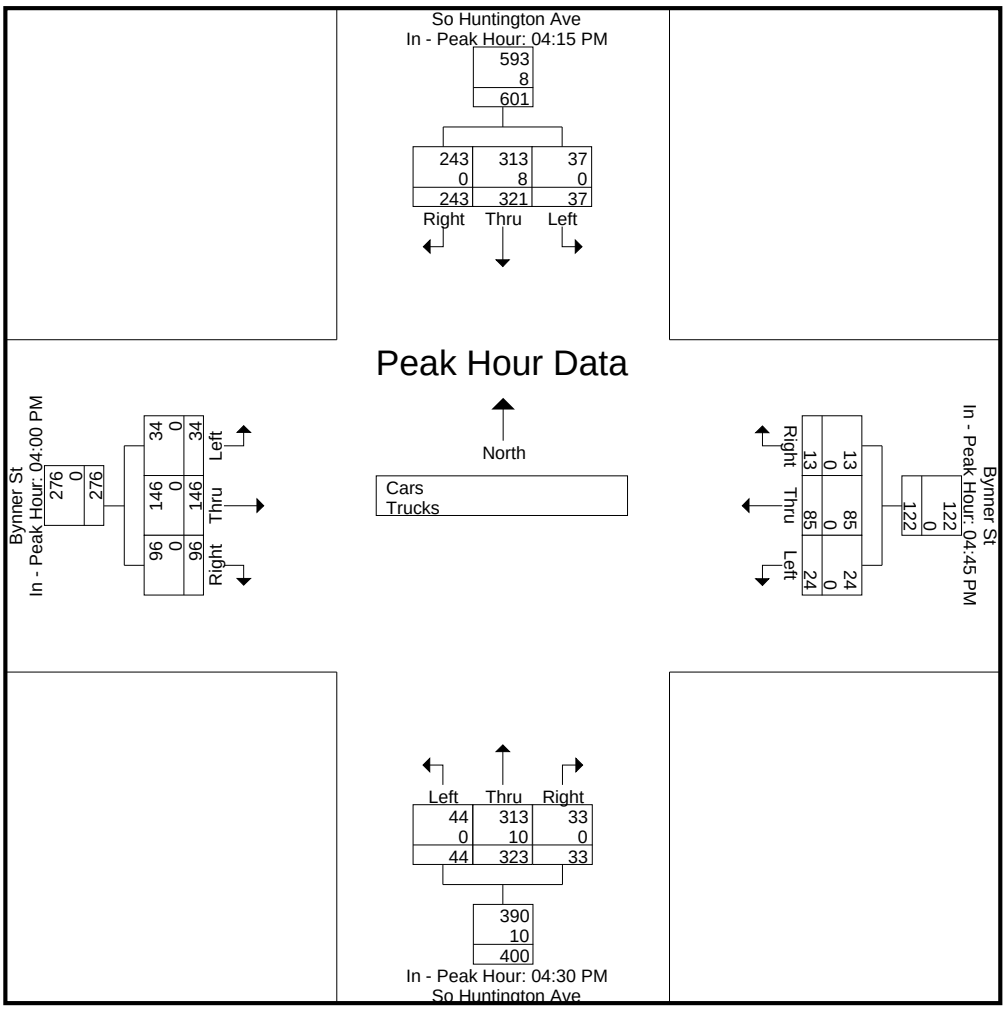


Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015

	So Huntington Ave From North				Bynner St From East				So Huntington Ave From South				Bynner St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:15 PM				04:45 PM				04:30 PM				04:00 PM				
+0 mins.	7	79	53	139	5	18	2	25	10	78	**10**	98	**10**	35	20	65	
+15 mins.	12	77	**75**	164	4	17	1	22	7	74	9	90	8	33	23	64	
+30 mins.	4	66	58	128	6	**27**	4	37	13	85	8	**106**	8	37	23	68	
+45 mins.	**14**	**99**	57	**170**	**9**	23	**6**	**38**	**14**	**86**	6	106	8	**41**	**30**	**79**	
Total Volume	37	321	243	601	24	85	13	122	44	323	33	400	34	146	96	276	
% App. Total	6.2	53.4	40.4		19.7	69.7	10.7		11	80.8	8.2		12.3	52.9	34.8		
PHF	.661	.811	.810	.884	.667	.787	.542	.803	.786	.939	.825	.943	.850	.890	.800	.873	
Cars	37	313	243	593	24	85	13	122	44	313	33	390	34	146	96	276	
% Cars	100	97.5	100	98.7	100	100	100	100	100	96.9	100	97.5	100	100	100	100	
Trucks	0	8	0	8	0	0	0	0	0	10	0	10	0	0	0	0	
% Trucks	0	2.5	0	1.3	0	0	0	0	0	3.1	0	2.5	0	0	0	0	



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015

Groups Printed- Cars

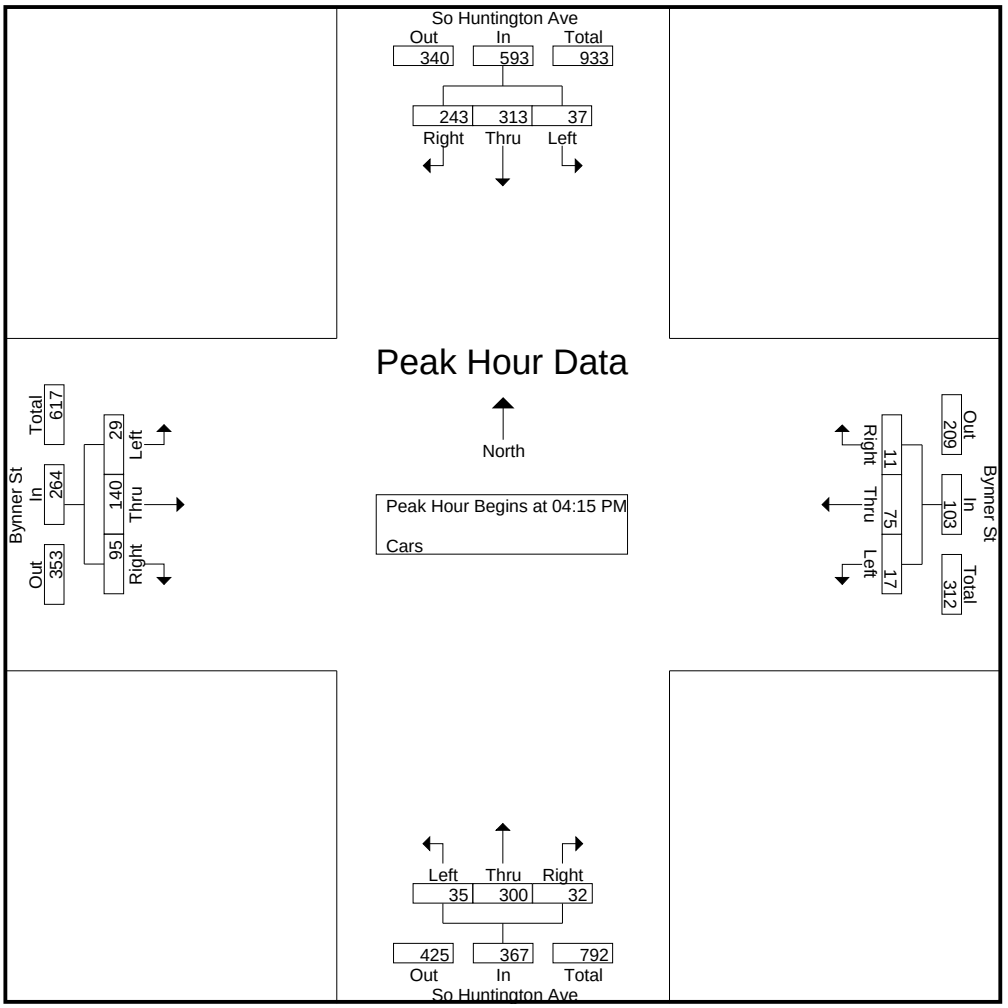
	So Huntington Ave From North			Bynner St From East			So Huntington Ave From South			Bynner St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	4	82	58	2	20	3	10	46	7	10	35	20	297
04:15 PM	7	78	53	3	25	4	5	72	5	8	33	23	316
04:30 PM	12	74	75	5	15	4	10	75	10	8	37	23	348
04:45 PM	4	63	58	5	18	2	7	71	9	8	41	30	316
Total	27	297	244	15	78	13	32	264	31	34	146	96	1277
05:00 PM	14	98	57	4	17	1	13	82	8	5	29	19	347
05:15 PM	3	66	47	6	27	4	14	85	6	10	25	22	315
05:30 PM	4	73	60	9	23	6	14	61	6	15	34	22	327
05:45 PM	4	55	68	4	17	2	10	74	5	22	34	24	319
Total	25	292	232	23	84	13	51	302	25	52	122	87	1308
Grand Total	52	589	476	38	162	26	83	566	56	86	268	183	2585
Apprch %	4.7	52.7	42.6	16.8	71.7	11.5	11.8	80.3	7.9	16	49.9	34.1	
Total %	2	22.8	18.4	1.5	6.3	1	3.2	21.9	2.2	3.3	10.4	7.1	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015
Page No : 5

	So Huntington Ave From North				Bynner St From East				So Huntington Ave From South				Bynner St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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 04:15 PM																	
04:15 PM	7	78	53	138	3	**25**	**4**	**32**	5	72	5	82	**8**	33	23	64	316
04:30 PM	12	74	**75**	161	**5**	15	4	24	10	75	**10**	95	8	37	23	68	**348**
04:45 PM	4	63	58	125	5	18	2	25	7	71	9	87	8	**41**	**30**	**79**	316
05:00 PM	**14**	**98**	57	**169**	4	17	1	22	**13**	**82**	8	**103**	5	29	19	53	347
Total Volume	37	313	243	593	17	75	11	103	35	300	32	367	29	140	95	264	1327
% App. Total	6.2	52.8	41		16.5	72.8	10.7		9.5	81.7	8.7		11	53	36		
PHF	.661	.798	.810	.877	.850	.750	.688	.805	.673	.915	.800	.891	.906	.854	.792	.835	.953



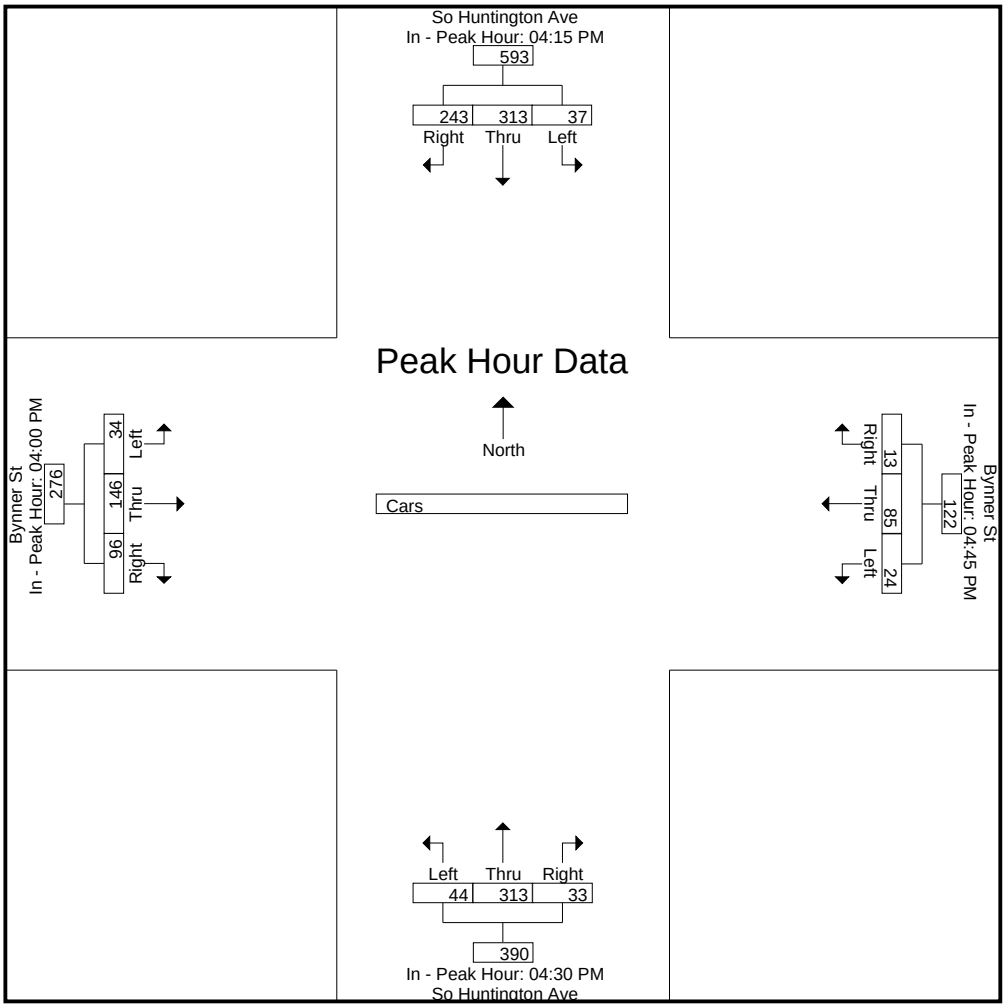
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:45 PM				04:30 PM				04:00 PM			
+0 mins.	7	78	53	138	5	18	2	25	10	75	**10**	95	**10**	35	20	65
+15 mins.	12	74	**75**	161	4	17	1	22	7	71	9	87	8	33	23	64
+30 mins.	4	63	58	125	6	**27**	4	37	13	82	8	103	8	37	23	68
+45 mins.	**14**	**98**	57	**169**	**9**	23	**6**	**38**	**14**	**85**	6	**105**	8	**41**	**30**	**79**
Total Volume	37	313	243	593	24	85	13	122	44	313	33	390	34	146	96	276
% App. Total	6.2	52.8	41		19.7	69.7	10.7		11.3	80.3	8.5		12.3	52.9	34.8	
PHF	.661	.798	.810	.877	.667	.787	.542	.803	.786	.921	.825	.929	.850	.890	.800	.873

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015
Page No : 6



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015

Groups Printed- Trucks

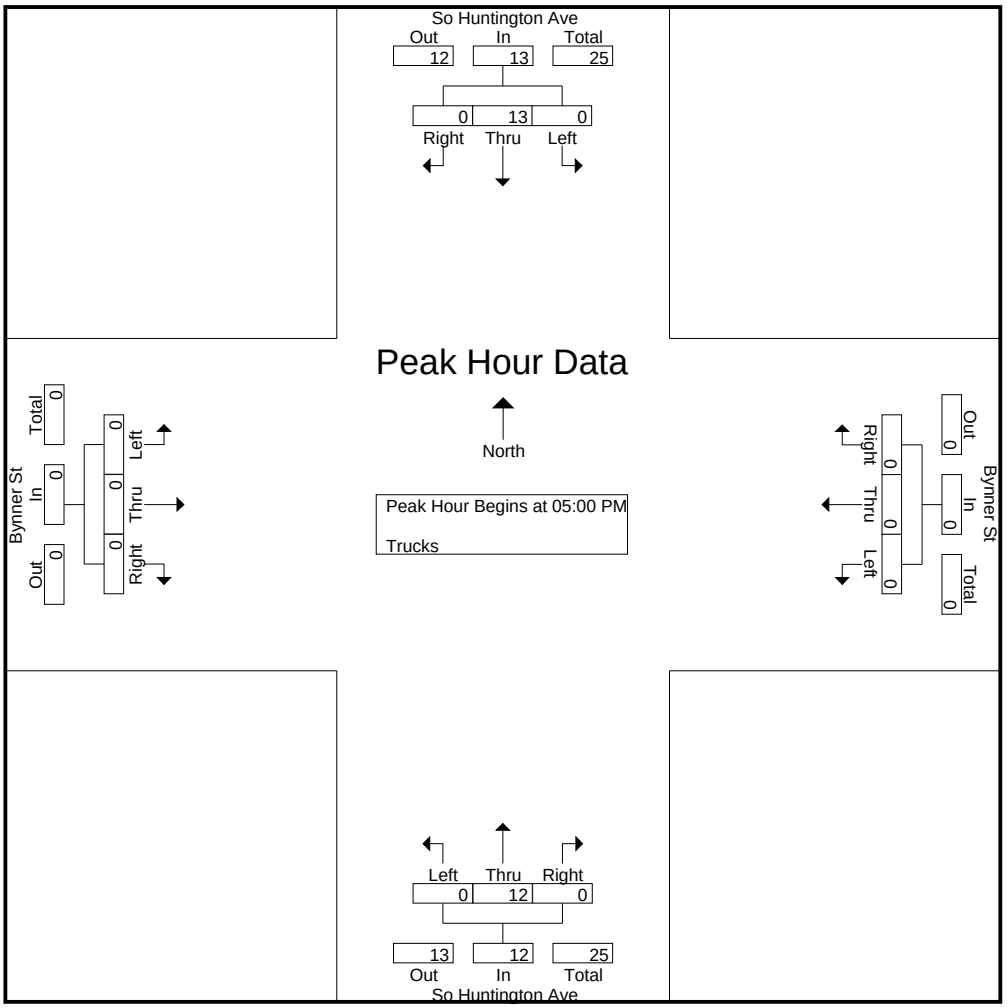
	So Huntington Ave From North			Bynner St From East			So Huntington Ave From South			Bynner St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	2	0	0	0	0	0	3	0	0	0	0	5
04:15 PM	0	1	0	0	0	0	0	1	0	0	0	0	2
04:30 PM	0	3	0	0	0	0	0	3	0	0	0	0	6
04:45 PM	0	3	0	0	0	0	0	3	0	0	0	0	6
Total	0	9	0	0	0	0	0	10	0	0	0	0	19
05:00 PM	0	1	0	0	0	0	0	3	0	0	0	0	4
05:15 PM	0	5	0	0	0	0	0	1	0	0	0	0	6
05:30 PM	0	2	0	0	0	0	0	3	0	0	0	0	5
05:45 PM	0	5	0	0	0	0	0	5	0	0	0	0	10
Total	0	13	0	0	0	0	0	12	0	0	0	0	25
Grand Total	0	22	0	0	0	0	0	22	0	0	0	0	44
Apprch %	0	100	0	0	0	0	0	100	0	0	0	0	
Total %	0	50	0	0	0	0	0	50	0	0	0	0	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015
Page No : 8

	So Huntington Ave From North				Bynner St From East				So Huntington Ave From South				Bynner St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	1	0	1	0	0	0	0	0	3	0	3	0	0	0	0	4
05:15 PM	0	**5**	0	**5**	0	0	0	0	0	1	0	1	0	0	0	0	6
05:30 PM	0	2	0	2	0	0	0	0	0	3	0	3	0	0	0	0	5
05:45 PM	0	5	0	5	0	0	0	0	0	**5**	0	**5**	0	0	0	0	**10**
Total Volume	0	13	0	13	0	0	0	0	0	12	0	12	0	0	0	0	25
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.650	.000	.650	.000	.000	.000	.000	.000	.600	.000	.600	.000	.000	.000	.000	.625



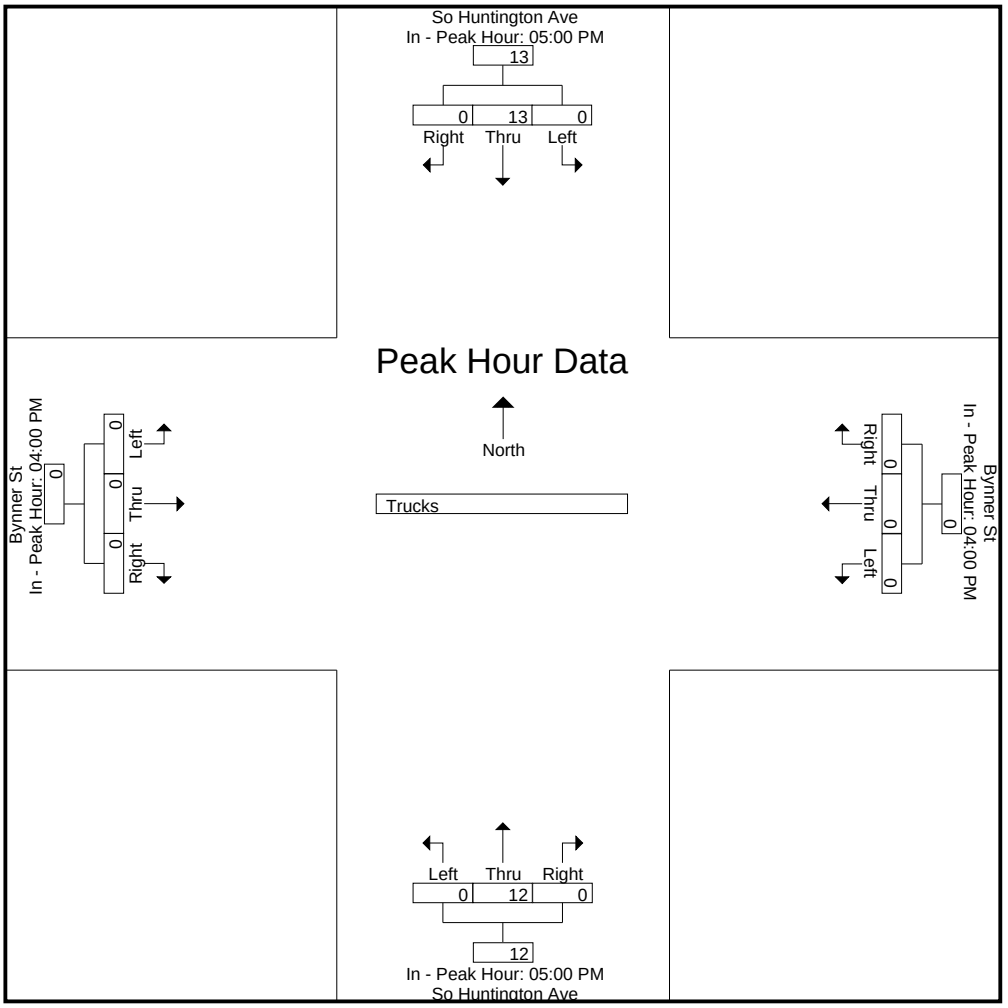
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				05:00 PM				04:00 PM			
+0 mins.	0	1	0	1	0	0	0	0	0	3	0	3	0	0	0	0
+15 mins.	0	**5**	0	**5**	0	0	0	0	0	1	0	1	0	0	0	0
+30 mins.	0	2	0	2	0	0	0	0	0	3	0	3	0	0	0	0
+45 mins.	0	5	0	5	0	0	0	0	0	**5**	0	**5**	0	0	0	0
Total Volume	0	13	0	13	0	0	0	0	0	12	0	12	0	0	0	0
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0	
PHF	.000	.650	.000	.650	.000	.000	.000	.000	.000	.600	.000	.600	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015
Page No : 9



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015

Groups Printed- Bikes Peds

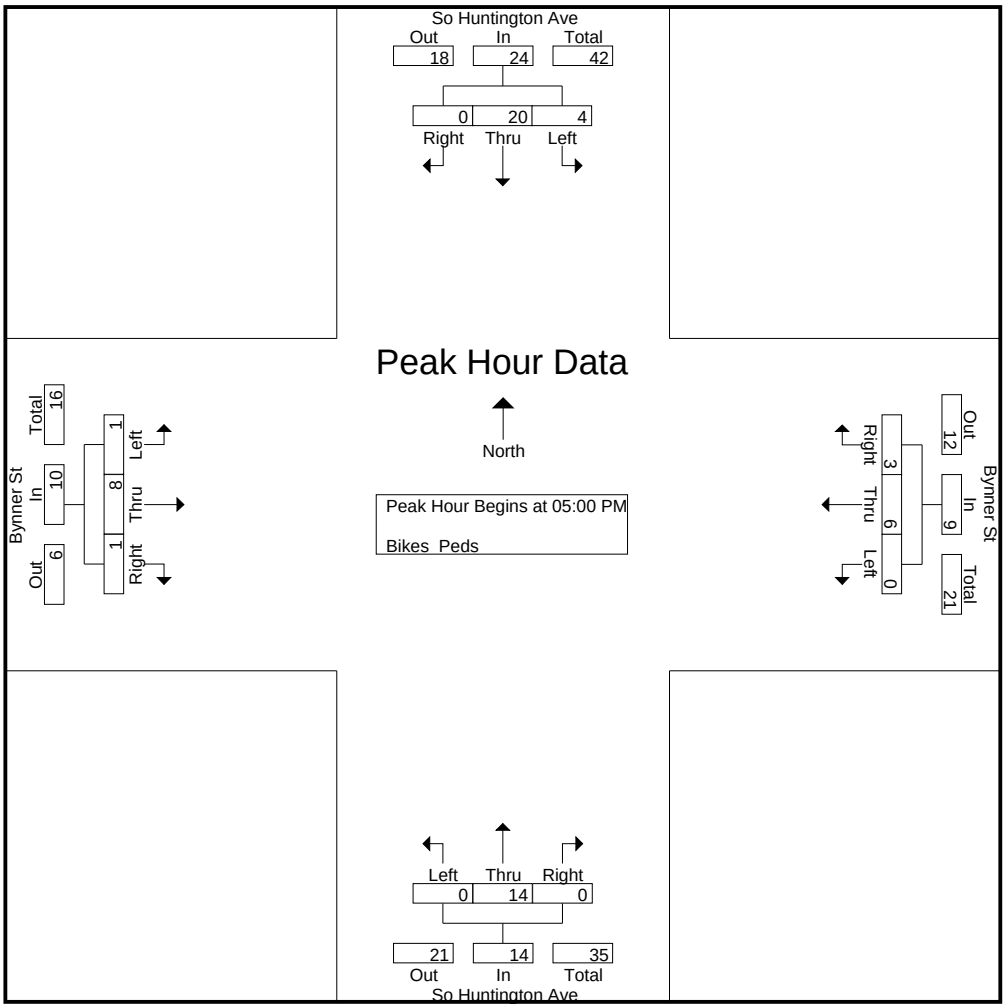
	So Huntington Ave From North				Bynner St From East				So Huntington Ave From South				Bynner St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	1	2	0	4	0	0	0	14	0	0	0	8	1	0	0	4	30	4	34
04:15 PM	0	4	0	7	0	0	0	7	0	3	0	0	0	1	0	6	20	8	28
04:30 PM	0	1	0	5	0	0	0	10	0	5	0	3	0	0	0	5	23	6	29
04:45 PM	1	5	0	15	0	0	0	28	1	0	0	3	0	1	0	8	54	8	62
Total	2	12	0	31	0	0	0	59	1	8	0	14	1	2	0	23	127	26	153
05:00 PM	0	3	0	7	0	1	0	4	0	2	0	4	0	0	0	9	24	6	30
05:15 PM	0	4	0	2	0	2	1	6	0	6	0	4	0	3	0	11	23	16	39
05:30 PM	4	8	0	12	0	3	0	11	0	4	0	3	1	2	1	7	33	23	56
05:45 PM	0	5	0	9	0	0	2	14	0	2	0	4	0	3	0	5	32	12	44
Total	4	20	0	30	0	6	3	35	0	14	0	15	1	8	1	32	112	57	169
Grand Total	6	32	0	61	0	6	3	94	1	22	0	29	2	10	1	55	239	83	322
Apprch %	15.8	84.2	0		0	66.7	33.3		4.3	95.7	0		15.4	76.9	7.7				
Total %	7.2	38.6	0		0	7.2	3.6		1.2	26.5	0		2.4	12	1.2		74.2	25.8	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015
Page No : 11

	So Huntington Ave From North				Bynner St From East				So Huntington Ave From South				Bynner St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	3	0	3	0	1	0	1	0	2	0	2	0	0	0	0	6
05:15 PM	0	4	0	4	0	2	1	**3**	0	**6**	0	**6**	0	**3**	0	3	16
05:30 PM	**4**	**8**	0	**12**	0	**3**	0	3	0	4	0	4	**1**	2	**1**	**4**	**23**
05:45 PM	0	5	0	5	0	0	**2**	2	0	2	0	2	0	3	0	3	12
Total Volume	4	20	0	24	0	6	3	9	0	14	0	14	1	8	1	10	57
% App. Total	16.7	83.3	0		0	66.7	33.3		0	100	0		10	80	10		
PHF	.250	.625	.000	.500	.000	.500	.375	.750	.000	.583	.000	.583	.250	.667	.250	.625	.620



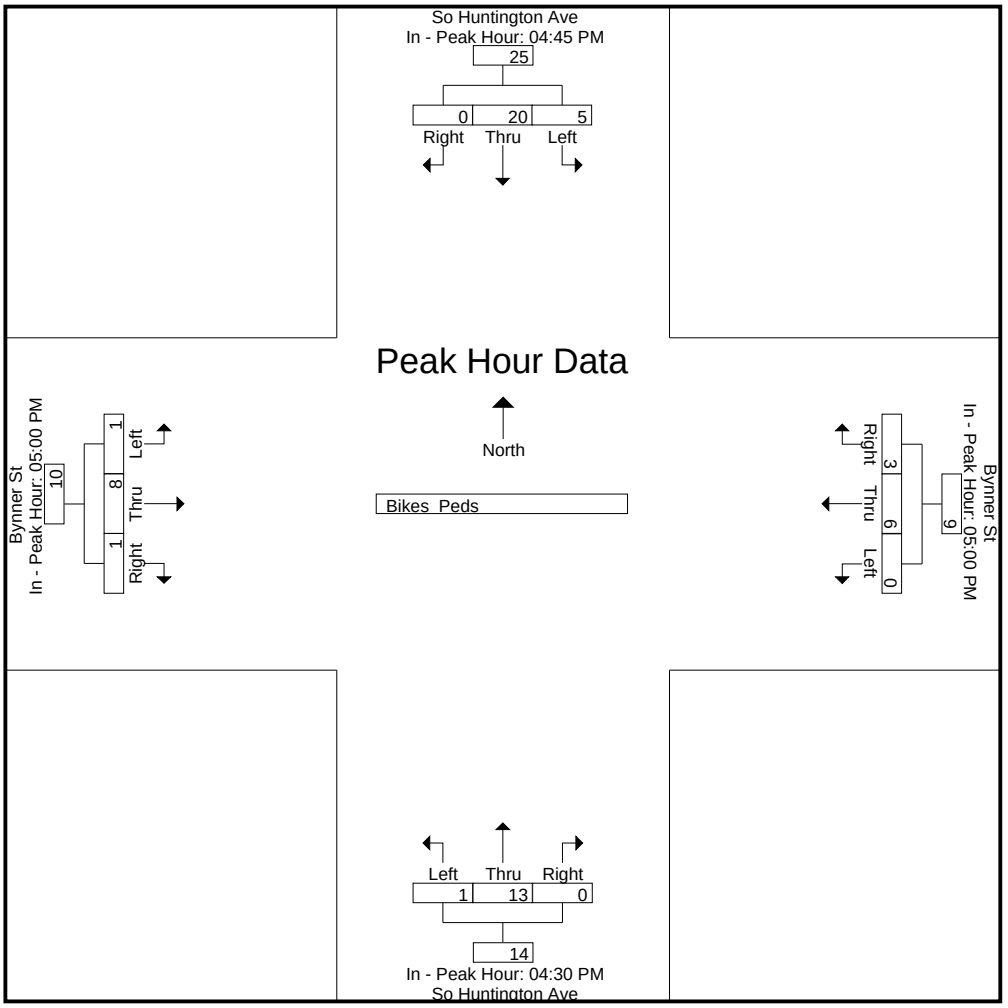
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				04:30 PM				05:00 PM			
+0 mins.	1	5	0	6	0	1	0	1	0	5	0	5	0	0	0	0
+15 mins.	0	3	0	3	0	2	1	**3**	**1**	0	0	1	0	**3**	0	3
+30 mins.	0	4	0	4	0	**3**	0	3	0	2	0	2	**1**	2	**1**	**4**
+45 mins.	**4**	**8**	0	**12**	0	0	**2**	2	0	**6**	0	**6**	0	3	0	3
Total Volume	5	20	0	25	0	6	3	9	1	13	0	14	1	8	1	10
% App. Total	20	80	0		0	66.7	33.3		7.1	92.9	0		10	80	10	
PHF	.313	.625	.000	.521	.000	.500	.375	.750	.250	.542	.000	.583	.250	.667	.250	.625

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Bynner Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870002
Site Code : 16870002
Start Date : 6/18/2015
Page No : 12



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015

Groups Printed- Cars - Trucks

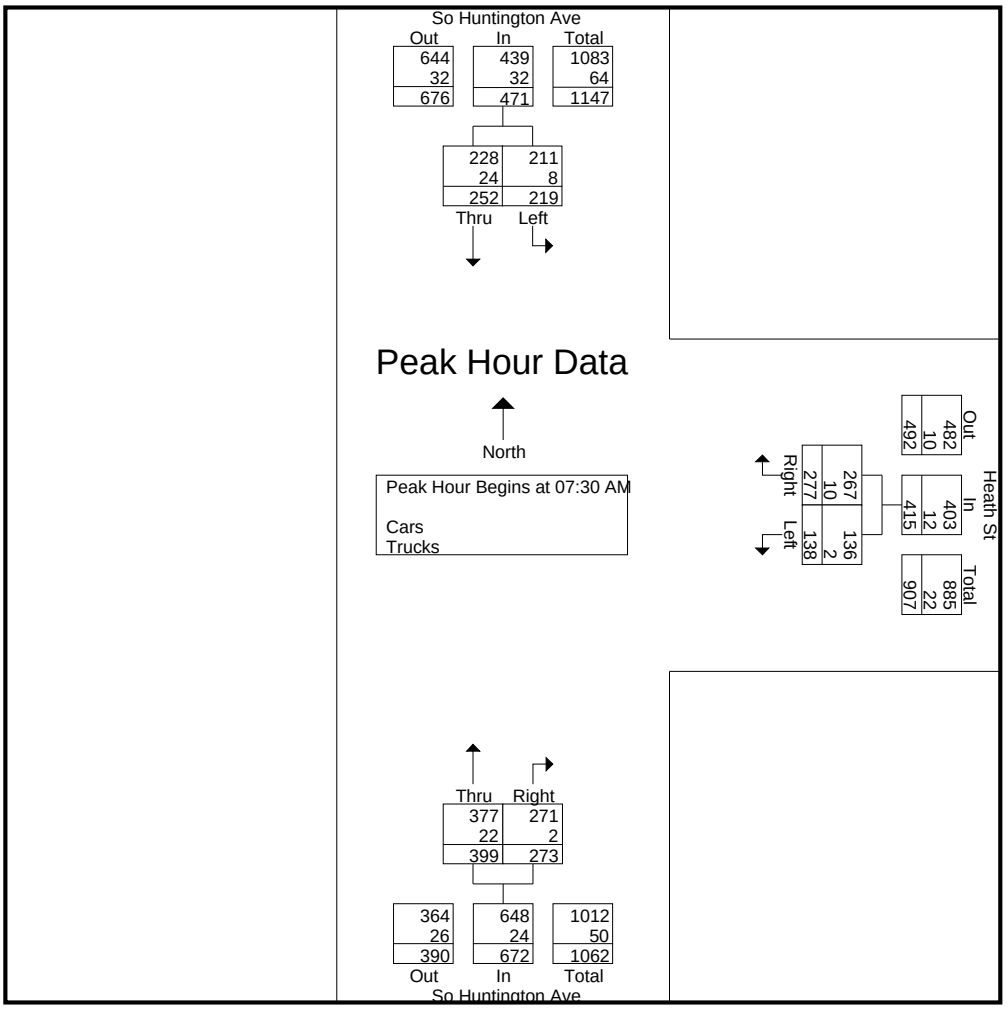
	So Huntington Ave From North		Heath St From East		So Huntington Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	44	51	30	74	109	43	351
07:15 AM	44	65	20	64	100	58	351
07:30 AM	48	62	32	77	107	63	389
07:45 AM	60	75	49	70	102	76	432
Total	196	253	131	285	418	240	1523
08:00 AM	57	62	25	69	92	76	381
08:15 AM	54	53	32	61	98	58	356
08:30 AM	49	39	30	55	83	72	328
08:45 AM	55	50	25	41	108	61	340
Total	215	204	112	226	381	267	1405
Grand Total	411	457	243	511	799	507	2928
Apprch %	47.4	52.6	32.2	67.8	61.2	38.8	
Total %	14	15.6	8.3	17.5	27.3	17.3	
Cars	395	419	237	491	745	501	2788
% Cars	96.1	91.7	97.5	96.1	93.2	98.8	95.2
Trucks	16	38	6	20	54	6	140
% Trucks	3.9	8.3	2.5	3.9	6.8	1.2	4.8

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015

	So Huntington Ave From North			Heath St From East			So Huntington Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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	48	62	110	32	**77**	109	**107**	63	170	389
07:45 AM	**60**	**75**	**135**	**49**	70	**119**	102	**76**	**178**	**432**
08:00 AM	57	62	119	25	69	94	92	76	168	381
08:15 AM	54	53	107	32	61	93	98	58	156	356
Total Volume	219	252	471	138	277	415	399	273	672	1558
% App. Total	46.5	53.5		33.3	66.7		59.4	40.6		
PHF	.913	.840	.872	.704	.899	.872	.932	.898	.944	.902
Cars	211	228	439	136	267	403	377	271	648	1490
% Cars	96.3	90.5	93.2	98.6	96.4	97.1	94.5	99.3	96.4	95.6
Trucks	8	24	32	2	10	12	22	2	24	68
% Trucks	3.7	9.5	6.8	1.4	3.6	2.9	5.5	0.7	3.6	4.4

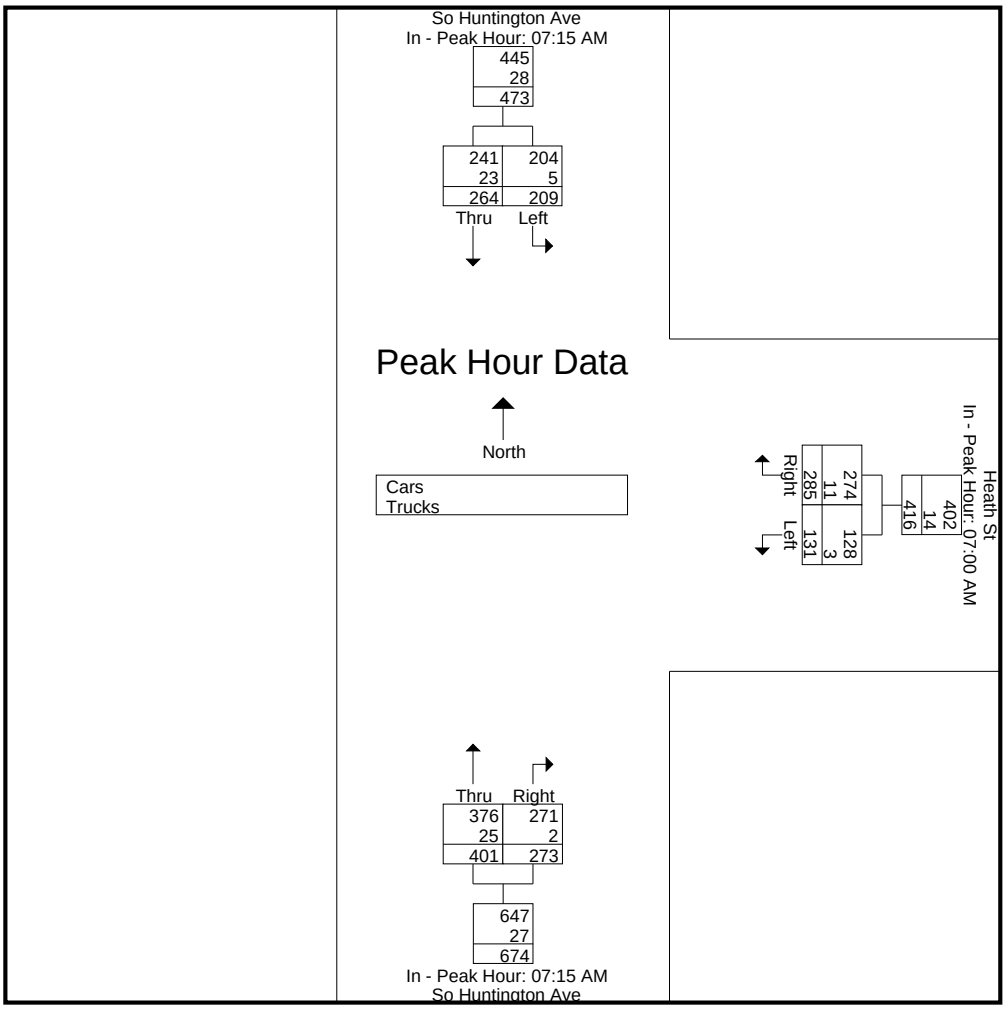


Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015

	So Huntington Ave From North			Heath St From East			So Huntington Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Each Approach Begins at:										
	07:15 AM			07:00 AM			07:15 AM			
+0 mins.	44	65	109	30	74	104	100	58	158	
+15 mins.	48	62	110	20	64	84	**107**	63	170	
+30 mins.	**60**	**75**	**135**	32	**77**	109	102	**76**	**178**	
+45 mins.	57	62	119	**49**	70	**119**	92	76	168	
Total Volume	209	264	473	131	285	416	401	273	674	
% App. Total	44.2	55.8		31.5	68.5		59.5	40.5		
PHF	.871	.880	.876	.668	.925	.874	.937	.898	.947	
Cars	204	241	445	128	274	402	376	271	647	
% Cars	97.6	91.3	94.1	97.7	96.1	96.6	93.8	99.3	96	
Trucks	5	23	28	3	11	14	25	2	27	
% Trucks	2.4	8.7	5.9	2.3	3.9	3.4	6.2	0.7	4	



Accurate Counts

978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015

Groups Printed- Cars

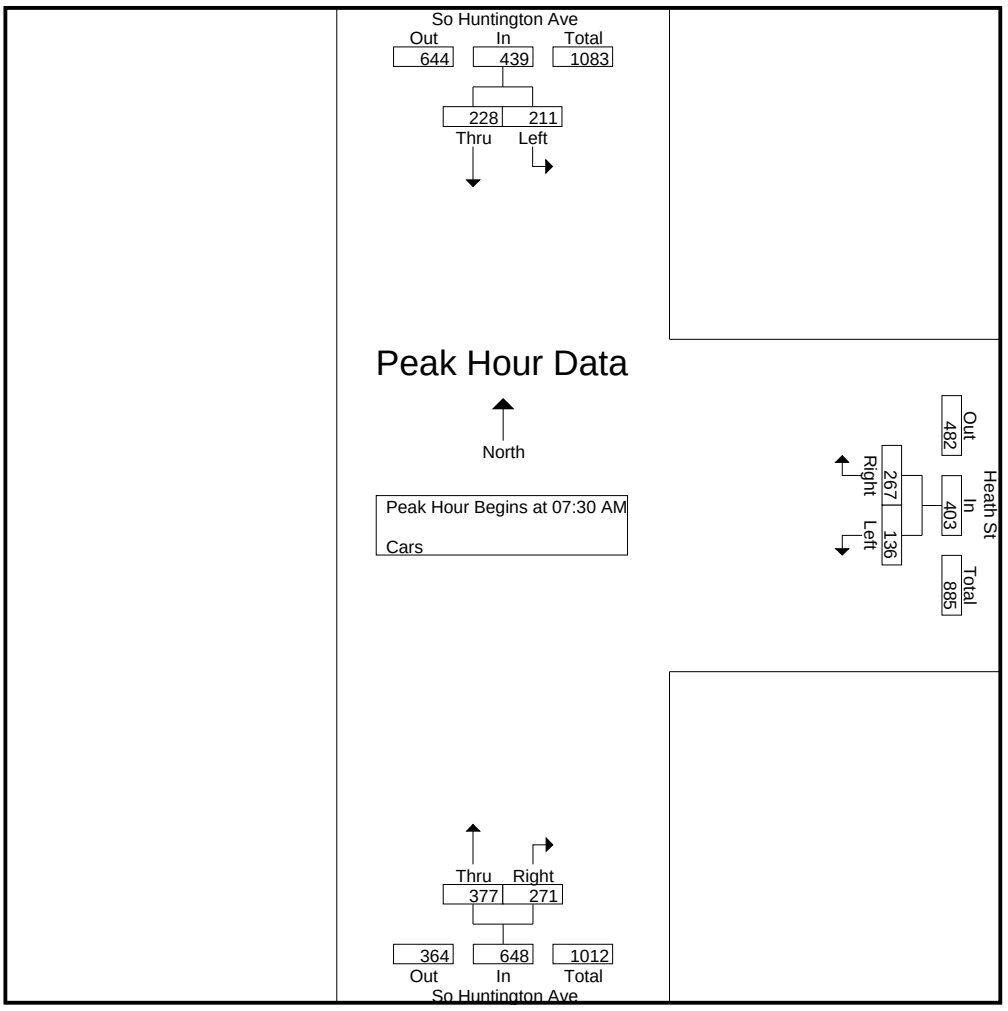
	So Huntington Ave From North		Heath St From East		So Huntington Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	41	48	28	70	98	42	327
07:15 AM	43	61	20	62	92	57	335
07:30 AM	48	55	31	76	101	63	374
07:45 AM	58	70	49	66	98	75	416
Total	190	234	128	274	389	237	1452
08:00 AM	55	55	24	66	85	76	361
08:15 AM	50	48	32	59	93	57	339
08:30 AM	45	35	30	52	79	70	311
08:45 AM	55	47	23	40	99	61	325
Total	205	185	109	217	356	264	1336
Grand Total	395	419	237	491	745	501	2788
Apprch %	48.5	51.5	32.6	67.4	59.8	40.2	
Total %	14.2	15	8.5	17.6	26.7	18	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015
Page No : 5

	So Huntington Ave From North			Heath St From East			So Huntington Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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	48	55	103	31	**76**	107	**101**	63	164	374
07:45 AM	**58**	**70**	**128**	**49**	66	**115**	98	75	**173**	**416**
08:00 AM	55	55	110	24	66	90	85	**76**	161	361
08:15 AM	50	48	98	32	59	91	93	57	150	339
Total Volume	211	228	439	136	267	403	377	271	648	1490
% App. Total	48.1	51.9		33.7	66.3		58.2	41.8		
PHF	.909	.814	.857	.694	.878	.876	.933	.891	.936	.895



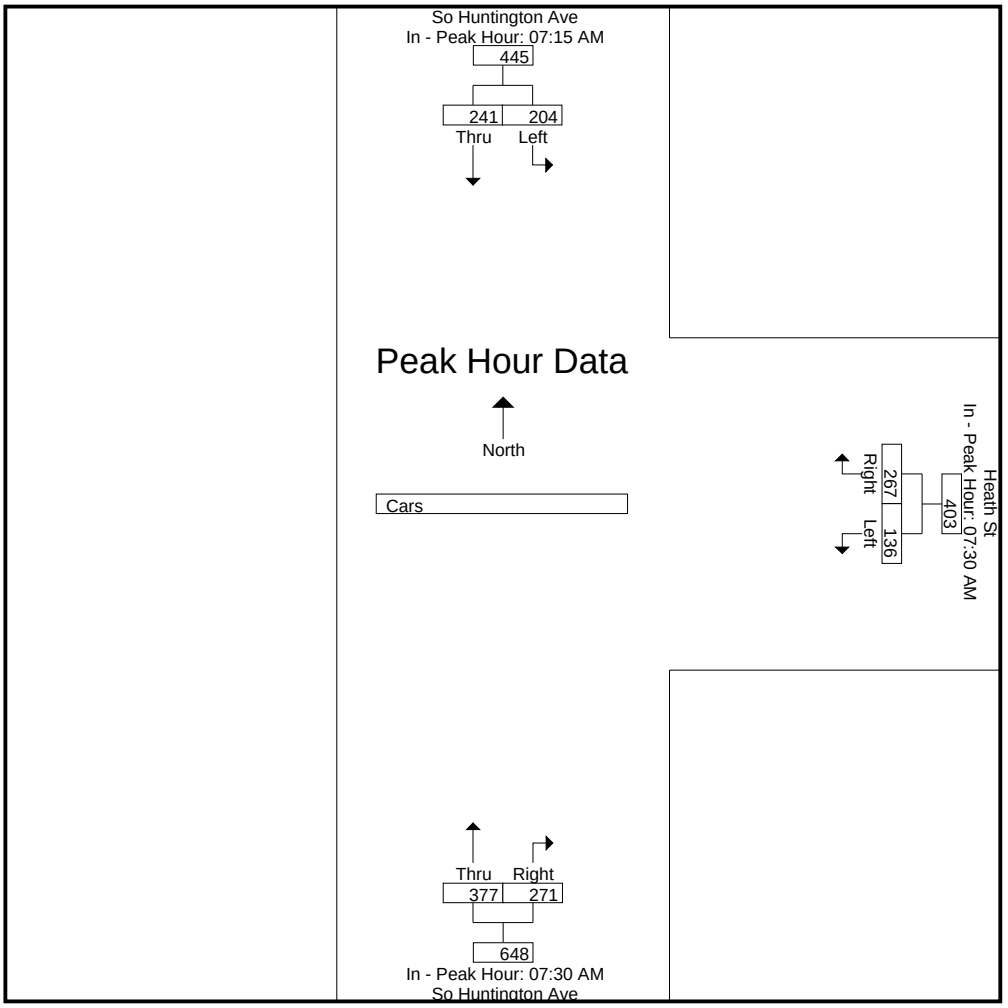
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:30 AM			07:30 AM		
+0 mins.	43	61	104	31	**76**	107	**101**	63	164
+15 mins.	48	55	103	**49**	66	**115**	98	75	**173**
+30 mins.	**58**	**70**	**128**	24	66	90	85	**76**	161
+45 mins.	55	55	110	32	59	91	93	57	150
Total Volume	204	241	445	136	267	403	377	271	648
% App. Total	45.8	54.2		33.7	66.3		58.2	41.8	
PHF	.879	.861	.869	.694	.878	.876	.933	.891	.936

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015
Page No : 6



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015

Groups Printed- Trucks

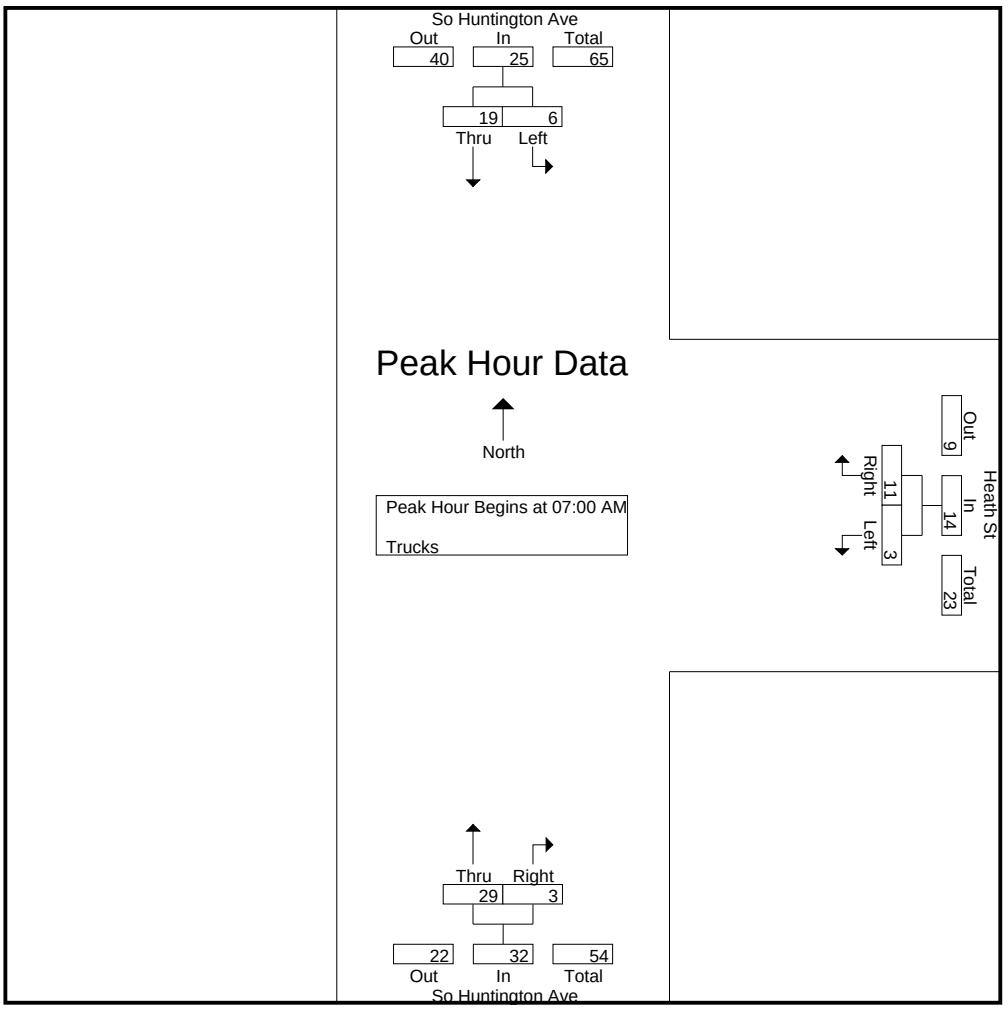
	So Huntington Ave From North		Heath St From East		So Huntington Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	3	3	2	4	11	1	24
07:15 AM	1	4	0	2	8	1	16
07:30 AM	0	7	1	1	6	0	15
07:45 AM	2	5	0	4	4	1	16
Total	6	19	3	11	29	3	71
08:00 AM	2	7	1	3	7	0	20
08:15 AM	4	5	0	2	5	1	17
08:30 AM	4	4	0	3	4	2	17
08:45 AM	0	3	2	1	9	0	15
Total	10	19	3	9	25	3	69
Grand Total	16	38	6	20	54	6	140
Apprch %	29.6	70.4	23.1	76.9	90	10	
Total %	11.4	27.1	4.3	14.3	38.6	4.3	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015
Page No : 8

	So Huntington Ave From North			Heath St From East			So Huntington Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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	**3**	3	6	**2**	**4**	**6**	**11**	**1**	**12**	**24**
07:15 AM	1	4	5	0	2	2	8	1	9	16
07:30 AM	0	**7**	**7**	1	1	2	6	0	6	15
07:45 AM	2	5	7	0	4	4	4	1	5	16
Total Volume	6	19	25	3	11	14	29	3	32	71
% App. Total	24	76		21.4	78.6		90.6	9.4		
PHF	.500	.679	.893	.375	.688	.583	.659	.750	.667	.740



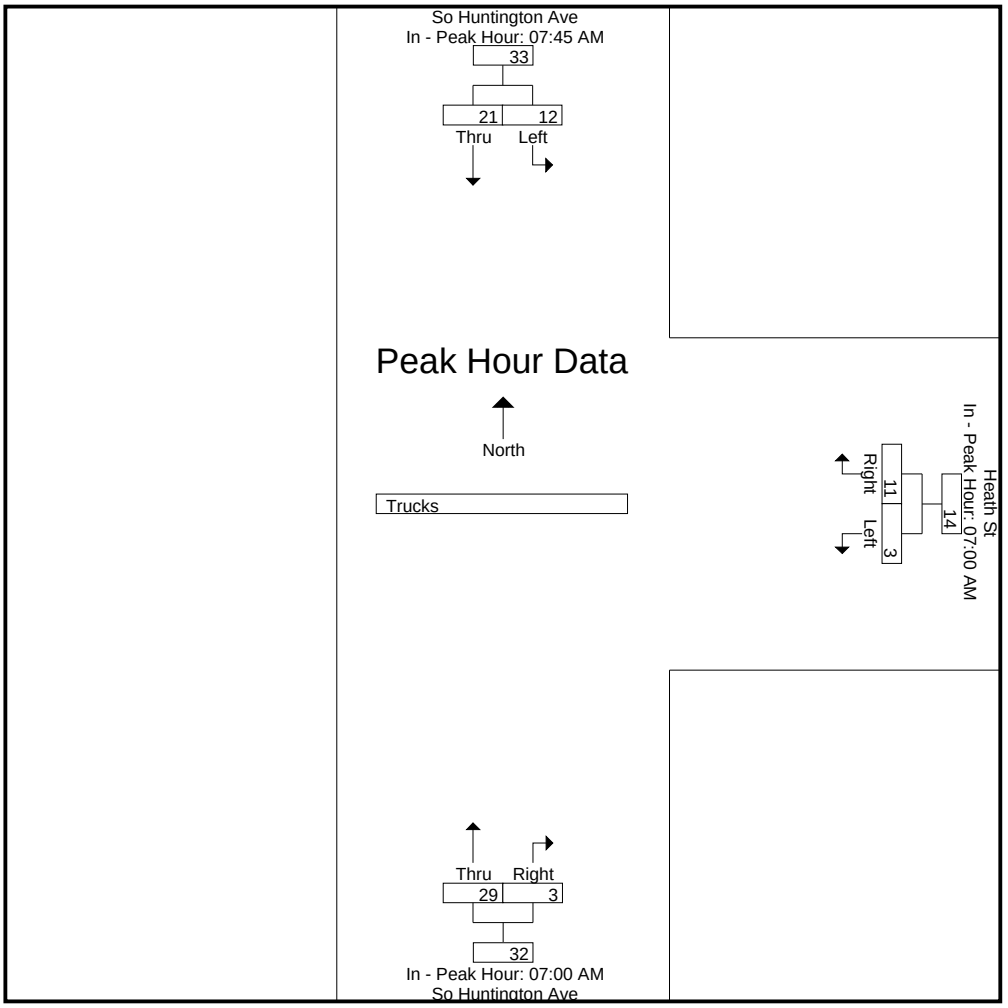
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:00 AM			07:00 AM		
+0 mins.	2	5	7	**2**	**4**	**6**	**11**	**1**	**12**
+15 mins.	2	**7**	**9**	0	2	2	8	1	9
+30 mins.	**4**	5	9	1	1	2	6	0	6
+45 mins.	4	4	8	0	4	4	4	1	5
Total Volume	12	21	33	3	11	14	29	3	32
% App. Total	36.4	63.6		21.4	78.6		90.6	9.4	
PHF	.750	.750	.917	.375	.688	.583	.659	.750	.667

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015
Page No : 9



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015

Groups Printed- Bikes Peds

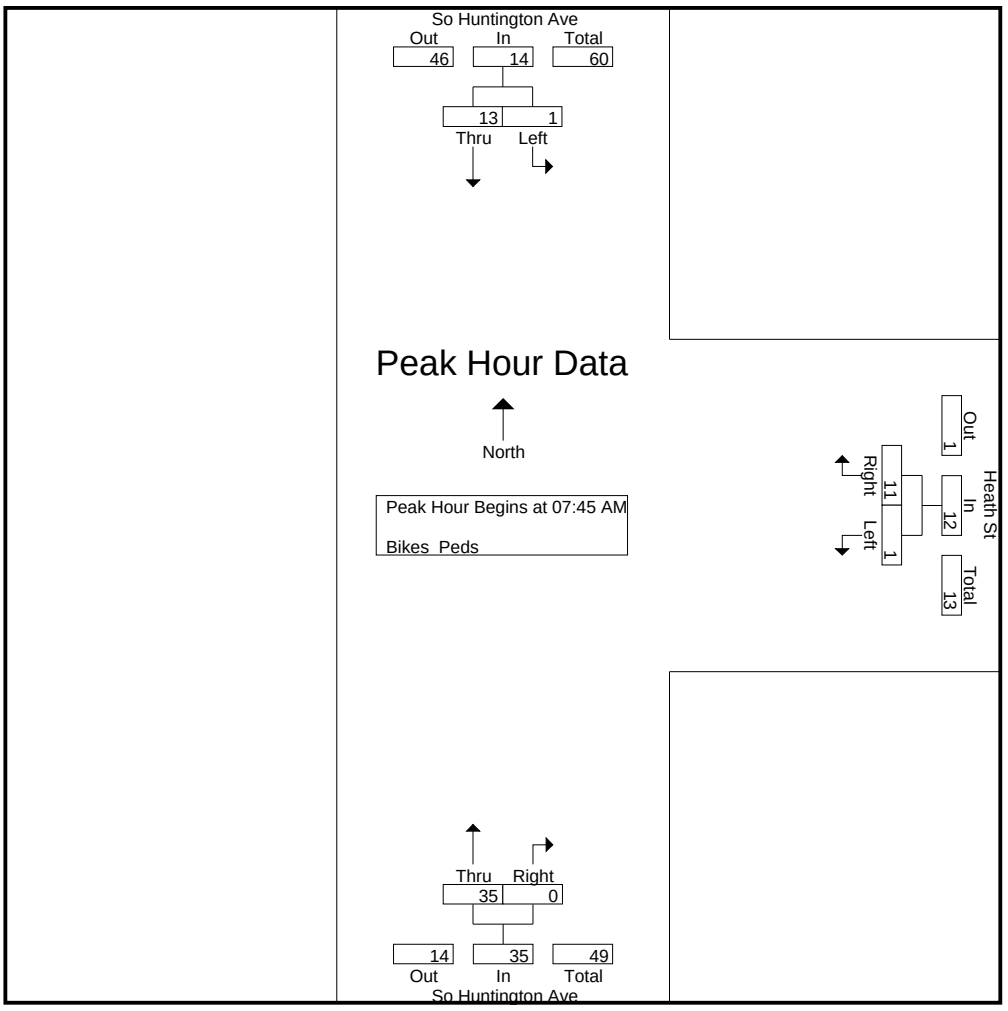
	So Huntington Ave From North			Heath St From East			So Huntington Ave From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	1	0	0	0	4	3	0	1	5	4	9
07:15 AM	1	0	0	0	1	3	4	0	2	5	6	11
07:30 AM	1	2	0	0	2	2	6	0	2	4	11	15
07:45 AM	1	5	0	0	3	3	12	0	1	4	21	25
Total	3	8	0	0	6	12	25	0	6	18	42	60
08:00 AM	0	4	0	0	1	7	7	0	4	11	12	23
08:15 AM	0	2	0	1	5	6	6	0	2	8	14	22
08:30 AM	0	2	0	0	2	2	10	0	1	3	14	17
08:45 AM	0	4	0	0	3	4	12	0	6	10	19	29
Total	0	12	0	1	11	19	35	0	13	32	59	91
Grand Total	3	20	0	1	17	31	60	0	19	50	101	151
Apprch %	13	87		5.6	94.4		100	0				
Total %	3	19.8		1	16.8		59.4	0		33.1	66.9	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015

	So Huntington Ave From North			Heath St From East			So Huntington Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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	**1**	**5**	**6**	0	3	3	**12**	0	**12**	**21**
08:00 AM	0	4	4	0	1	1	7	0	7	12
08:15 AM	0	2	2	**1**	**5**	**6**	6	0	6	14
08:30 AM	0	2	2	0	2	2	10	0	10	14
Total Volume	1	13	14	1	11	12	35	0	35	61
% App. Total	7.1	92.9		8.3	91.7		100	0		
PHF	.250	.650	.583	.250	.550	.500	.729	.000	.729	.726



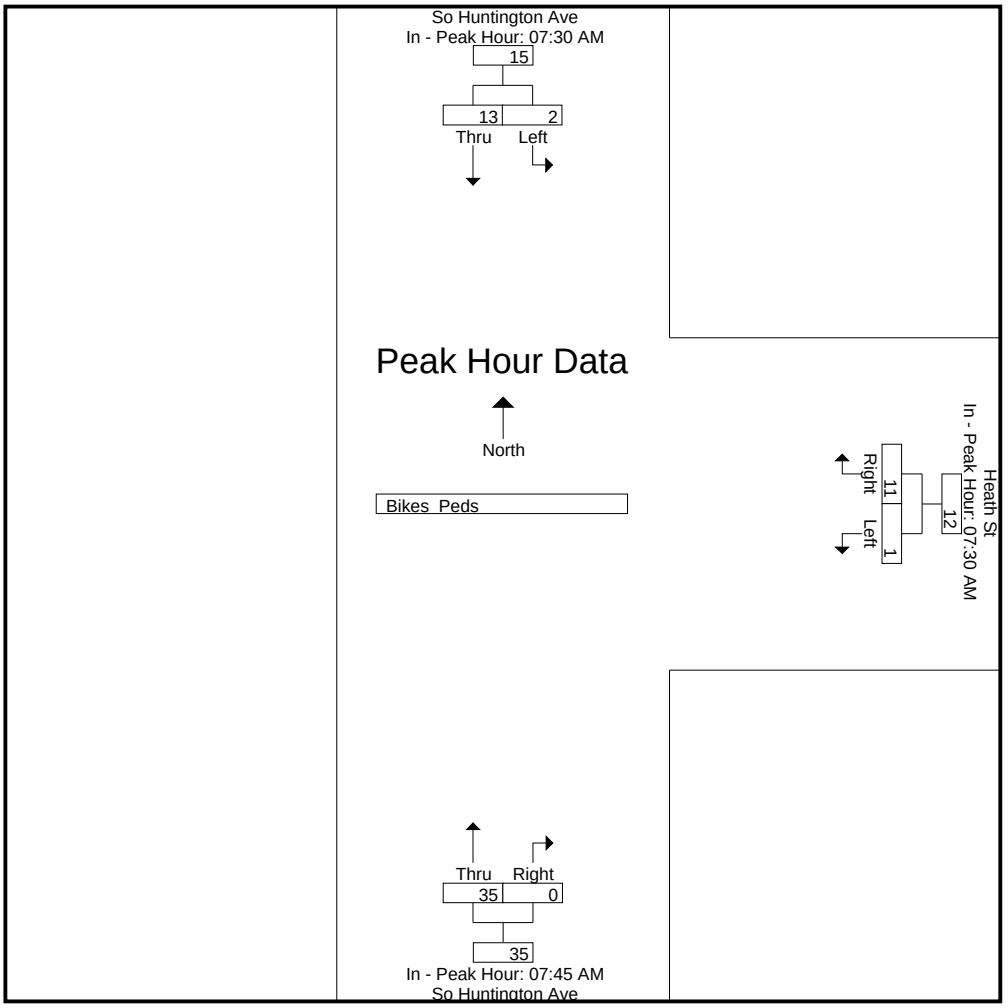
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:45 AM		
+0 mins.	**1**	2	3	0	2	2	**12**	0	**12**
+15 mins.	1	**5**	**6**	0	3	3	7	0	7
+30 mins.	0	4	4	0	1	1	6	0	6
+45 mins.	0	2	2	**1**	**5**	**6**	10	0	10
Total Volume	2	13	15	1	11	12	35	0	35
% App. Total	13.3	86.7		8.3	91.7		100	0	
PHF	.500	.650	.625	.250	.550	.500	.729	.000	.729

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015
Page No : 12



Accurate Counts

978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015

Groups Printed- Cars - Trucks

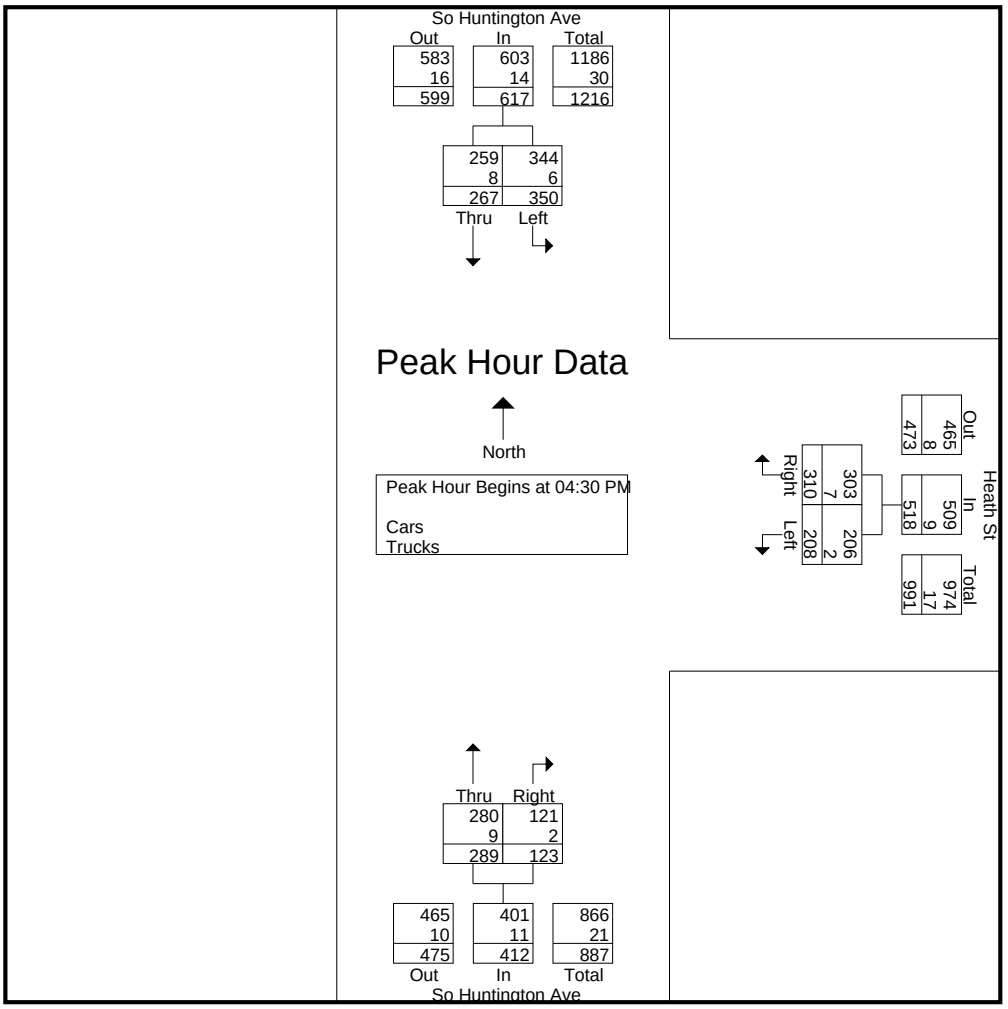
	So Huntington Ave From North		Heath St From East		So Huntington Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	85	68	63	66	63	23	368
04:15 PM	74	54	61	67	58	28	342
04:30 PM	77	62	57	65	95	38	394
04:45 PM	95	59	53	85	66	26	384
Total	331	243	234	283	282	115	1488
05:00 PM	105	96	50	79	57	23	410
05:15 PM	73	50	48	81	71	36	359
05:30 PM	78	70	49	46	53	41	337
05:45 PM	79	56	52	66	56	40	349
Total	335	272	199	272	237	140	1455
Grand Total	666	515	433	555	519	255	2943
Apprch %	56.4	43.6	43.8	56.2	67.1	32.9	
Total %	22.6	17.5	14.7	18.9	17.6	8.7	
Cars	655	492	427	543	500	251	2868
% Cars	98.3	95.5	98.6	97.8	96.3	98.4	97.5
Trucks	11	23	6	12	19	4	75
% Trucks	1.7	4.5	1.4	2.2	3.7	1.6	2.5

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015

	So Huntington Ave From North			Heath St From East			So Huntington Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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 04:30 PM										
04:30 PM	77	62	139	**57**	65	122	**95**	**38**	**133**	394
04:45 PM	95	59	154	53	**85**	**138**	66	26	92	384
05:00 PM	**105**	**96**	**201**	50	79	129	57	23	80	**410**
05:15 PM	73	50	123	48	81	129	71	36	107	359
Total Volume	350	267	617	208	310	518	289	123	412	1547
% App. Total	56.7	43.3		40.2	59.8		70.1	29.9		
PHF	.833	.695	.767	.912	.912	.938	.761	.809	.774	.943
Cars	344	259	603	206	303	509	280	121	401	1513
% Cars	98.3	97.0	97.7	99.0	97.7	98.3	96.9	98.4	97.3	97.8
Trucks	6	8	14	2	7	9	9	2	11	34
% Trucks	1.7	3.0	2.3	1.0	2.3	1.7	3.1	1.6	2.7	2.2

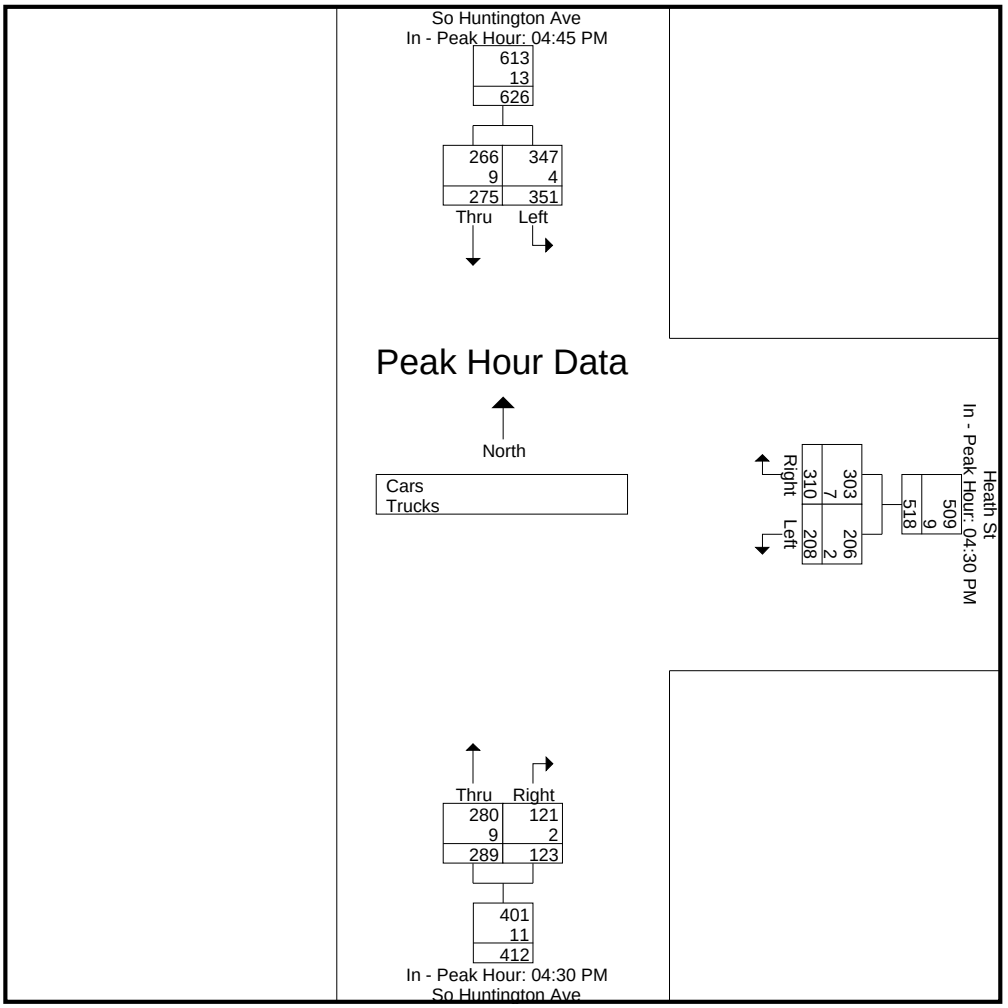


Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015
Page No : 3

	So Huntington Ave From North			Heath St From East			So Huntington Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Each Approach Begins at:										
	04:45 PM			04:30 PM			04:30 PM			
+0 mins.	95	59	154	**57**	65	122	**95**	**38**	**133**	
+15 mins.	**105**	**96**	**201**	53	**85**	**138**	66	26	92	
+30 mins.	73	50	123	50	79	129	57	23	80	
+45 mins.	78	70	148	48	81	129	71	36	107	
Total Volume	351	275	626	208	310	518	289	123	412	
% App. Total	56.1	43.9		40.2	59.8		70.1	29.9		
PHF	.836	.716	.779	.912	.912	.938	.761	.809	.774	
Cars	347	266	613	206	303	509	280	121	401	
% Cars	98.9	96.7	97.9	99	97.7	98.3	96.9	98.4	97.3	
Trucks	4	9	13	2	7	9	9	2	11	
% Trucks	1.1	3.3	2.1	1	2.3	1.7	3.1	1.6	2.7	



Accurate Counts

978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015

Groups Printed- Cars

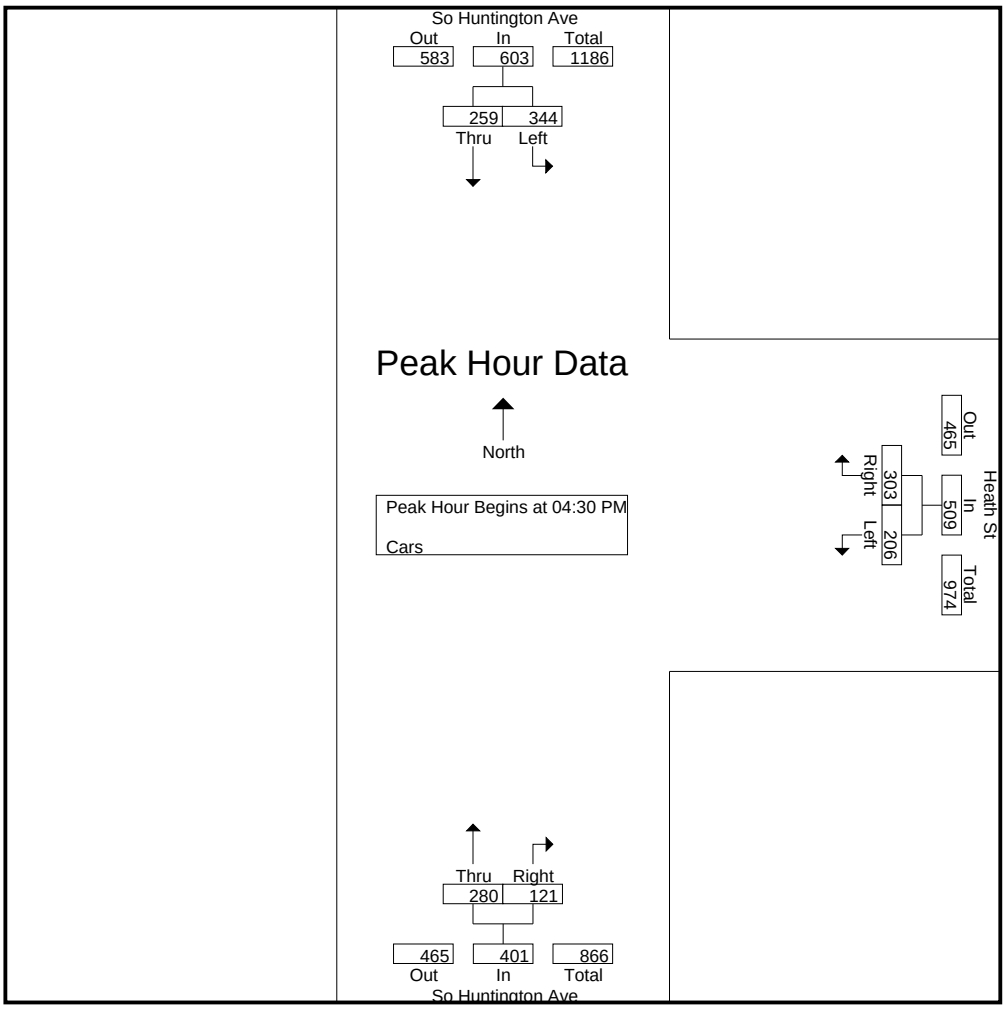
	So Huntington Ave From North		Heath St From East		So Huntington Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	82	64	60	64	61	23	354
04:15 PM	72	51	61	65	56	27	332
04:30 PM	75	61	57	62	91	37	383
04:45 PM	94	57	52	83	65	25	376
Total	323	233	230	274	273	112	1445
05:00 PM	104	95	50	78	54	23	404
05:15 PM	71	46	47	80	70	36	350
05:30 PM	78	68	48	46	51	41	332
05:45 PM	79	50	52	65	52	39	337
Total	332	259	197	269	227	139	1423
Grand Total	655	492	427	543	500	251	2868
Apprch %	57.1	42.9	44	56	66.6	33.4	
Total %	22.8	17.2	14.9	18.9	17.4	8.8	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015
Page No : 5

	So Huntington Ave From North			Heath St From East			So Huntington Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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 04:30 PM										
04:30 PM	75	61	136	**57**	62	119	**91**	**37**	**128**	383
04:45 PM	94	57	151	52	**83**	**135**	65	25	90	376
05:00 PM	**104**	**95**	**199**	50	78	128	54	23	77	**404**
05:15 PM	71	46	117	47	80	127	70	36	106	350
Total Volume	344	259	603	206	303	509	280	121	401	1513
% App. Total	57	43		40.5	59.5		69.8	30.2		
PHF	.827	.682	.758	.904	.913	.943	.769	.818	.783	.936



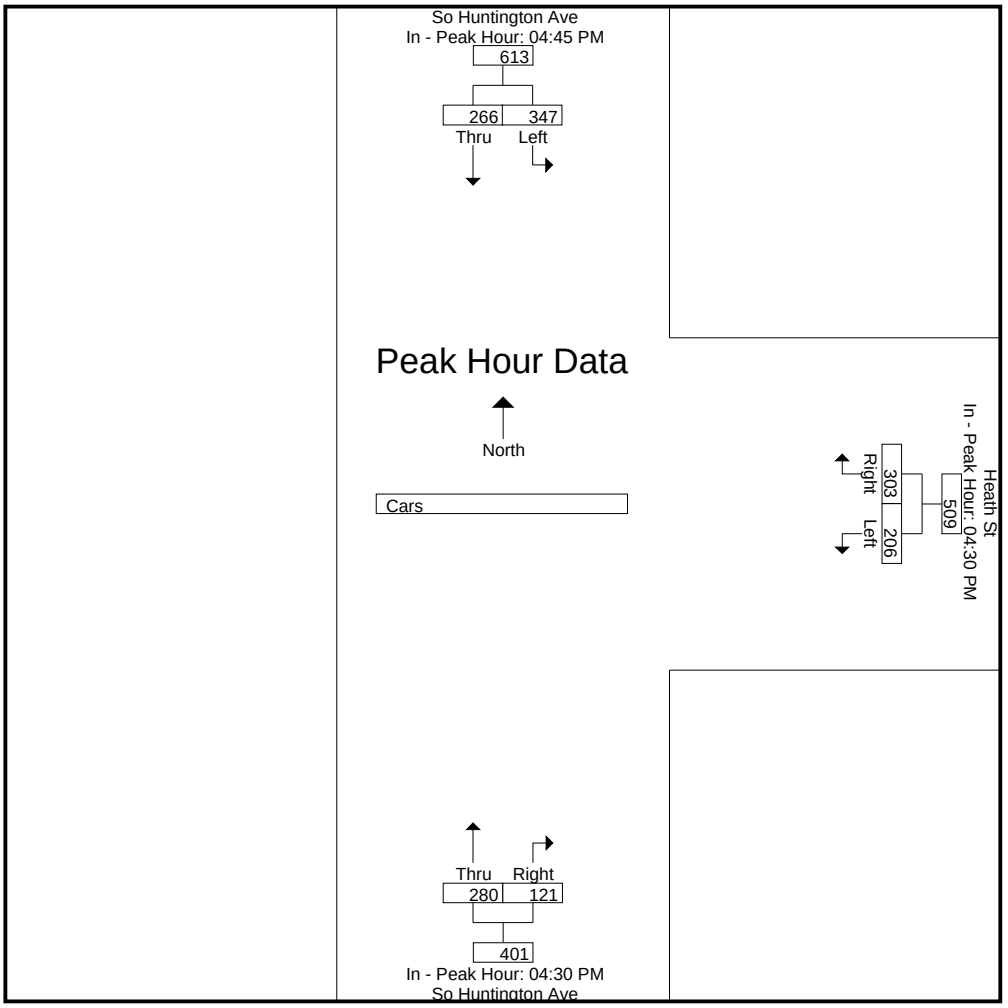
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:30 PM			04:30 PM		
+0 mins.	94	57	151	**57**	62	119	**91**	**37**	**128**
+15 mins.	**104**	**95**	**199**	52	**83**	**135**	65	25	90
+30 mins.	71	46	117	50	78	128	54	23	77
+45 mins.	78	68	146	47	80	127	70	36	106
Total Volume	347	266	613	206	303	509	280	121	401
% App. Total	56.6	43.4		40.5	59.5		69.8	30.2	
PHF	.834	.700	.770	.904	.913	.943	.769	.818	.783

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015
Page No : 6



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015

Groups Printed- Trucks

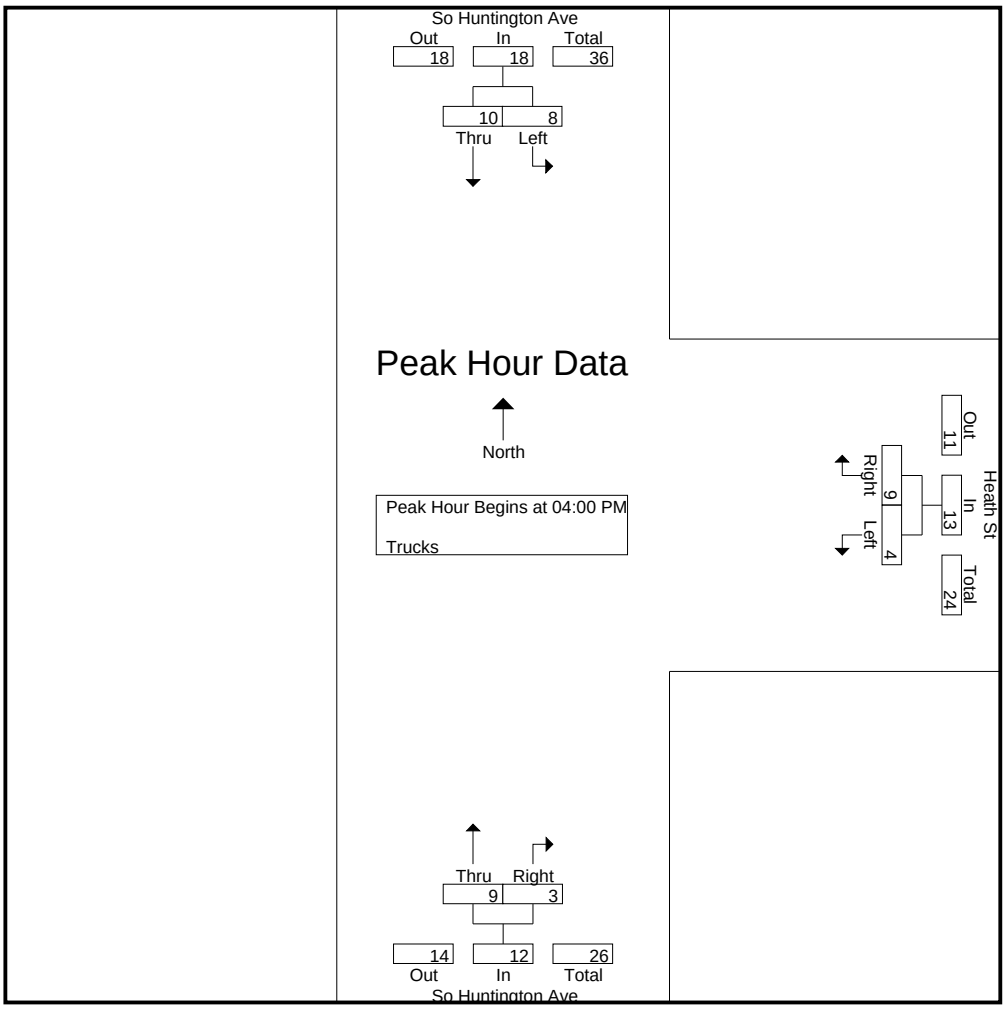
	So Huntington Ave From North		Heath St From East		So Huntington Ave From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	3	4	3	2	2	0	14
04:15 PM	2	3	0	2	2	1	10
04:30 PM	2	1	0	3	4	1	11
04:45 PM	1	2	1	2	1	1	8
Total	8	10	4	9	9	3	43
05:00 PM	1	1	0	1	3	0	6
05:15 PM	2	4	1	1	1	0	9
05:30 PM	0	2	1	0	2	0	5
05:45 PM	0	6	0	1	4	1	12
Total	3	13	2	3	10	1	32
Grand Total	11	23	6	12	19	4	75
Apprch %	32.4	67.6	33.3	66.7	82.6	17.4	
Total %	14.7	30.7	8	16	25.3	5.3	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015
Page No : 8

	So Huntington Ave From North			Heath St From East			So Huntington Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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	**3**	**4**	**7**	**3**	2	**5**	2	0	2	**14**
04:15 PM	2	3	5	0	2	2	2	**1**	3	10
04:30 PM	2	1	3	0	**3**	3	**4**	1	**5**	11
04:45 PM	1	2	3	1	2	3	1	1	2	8
Total Volume	8	10	18	4	9	13	9	3	12	43
% App. Total	44.4	55.6		30.8	69.2		75	25		
PHF	.667	.625	.643	.333	.750	.650	.563	.750	.600	.768



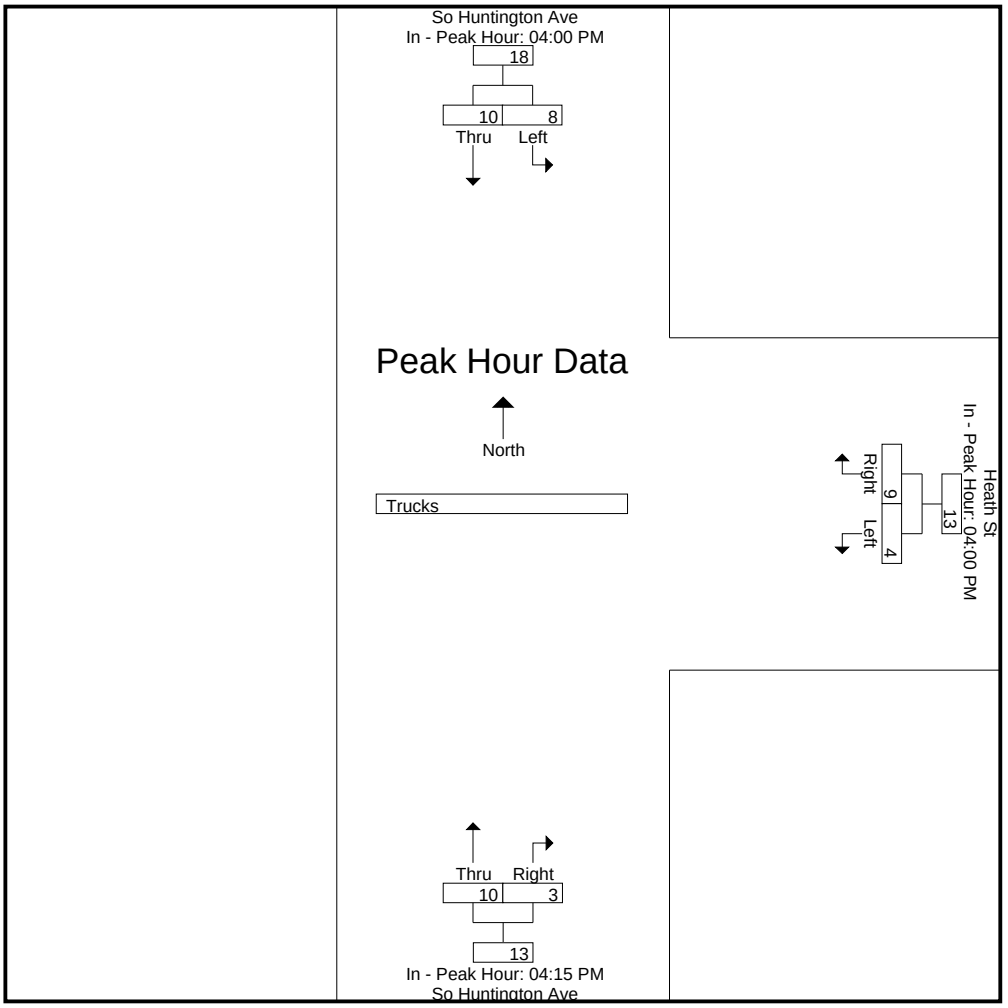
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:15 PM		
+0 mins.	**3**	**4**	**7**	**3**	2	**5**	2	**1**	3
+15 mins.	2	3	5	0	2	2	**4**	1	**5**
+30 mins.	2	1	3	0	**3**	3	1	1	2
+45 mins.	1	2	3	1	2	3	3	0	3
Total Volume	8	10	18	4	9	13	10	3	13
% App. Total	44.4	55.6		30.8	69.2		76.9	23.1	
PHF	.667	.625	.643	.333	.750	.650	.625	.750	.650

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015
Page No : 9



Accurate Counts

978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015

Groups Printed- Bikes Peds

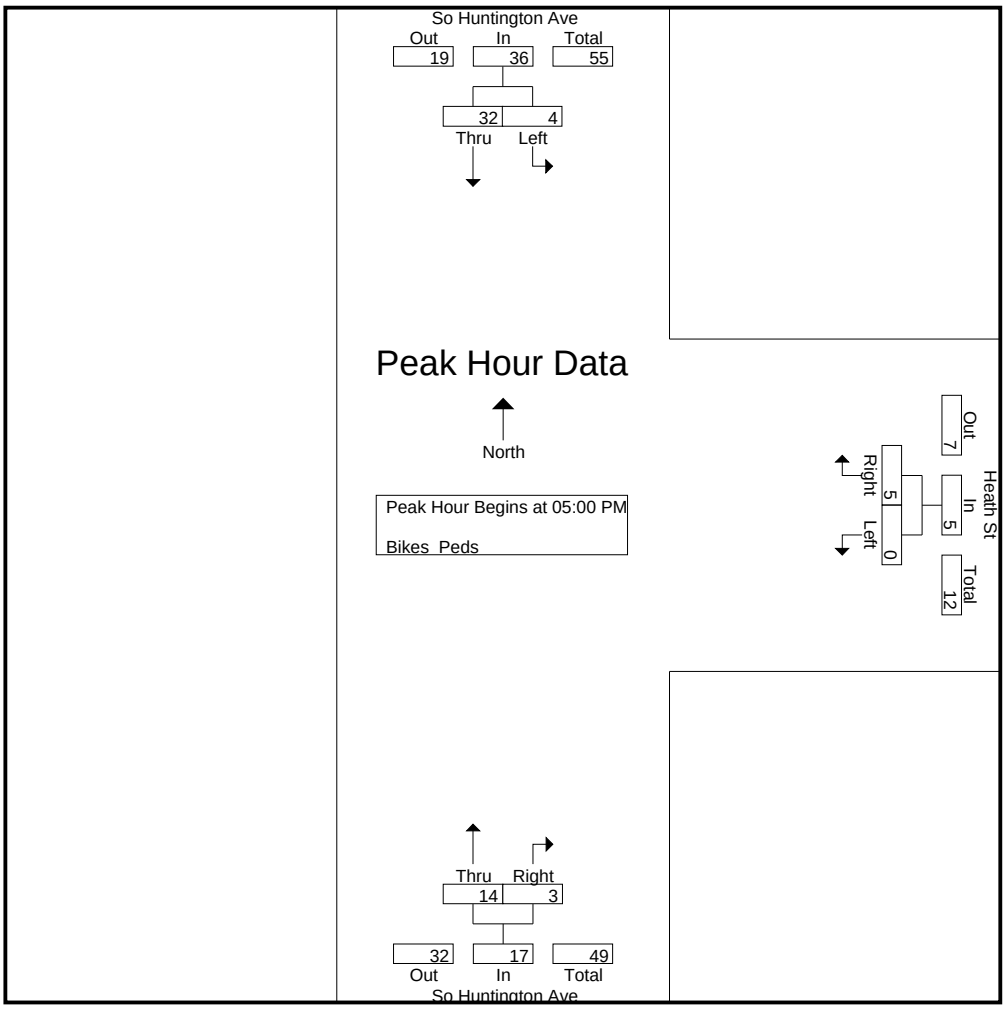
	So Huntington Ave From North			Heath St From East			So Huntington Ave From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	1	4	0	0	0	4	4	1	0	4	10	14
04:15 PM	1	6	0	1	1	6	6	0	1	7	15	22
04:30 PM	1	2	0	0	1	12	4	0	5	17	8	25
04:45 PM	0	5	1	0	2	14	2	0	2	17	9	26
Total	3	17	1	1	4	36	16	1	8	45	42	87
05:00 PM	1	3	0	0	3	8	3	0	4	12	10	22
05:15 PM	2	6	0	0	2	0	6	2	2	2	18	20
05:30 PM	1	14	0	0	0	6	3	0	2	8	18	26
05:45 PM	0	9	0	0	0	2	2	1	6	8	12	20
Total	4	32	0	0	5	16	14	3	14	30	58	88
Grand Total	7	49	1	1	9	52	30	4	22	75	100	175
Apprch %	12.5	87.5		10	90		88.2	11.8				
Total %	7	49		1	9		30	4		42.9	57.1	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015
Page No : 11

	So Huntington Ave From North			Heath St From East			So Huntington Ave From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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	1	3	4	0	**3**	**3**	3	0	3	10
05:15 PM	**2**	6	8	0	2	2	**6**	**2**	**8**	**18**
05:30 PM	1	**14**	**15**	0	0	0	3	0	3	18
05:45 PM	0	9	9	0	0	0	2	1	3	12
Total Volume	4	32	36	0	5	5	14	3	17	58
% App. Total	11.1	88.9		0	100		82.4	17.6		
PHF	.500	.571	.600	.000	.417	.417	.583	.375	.531	.806



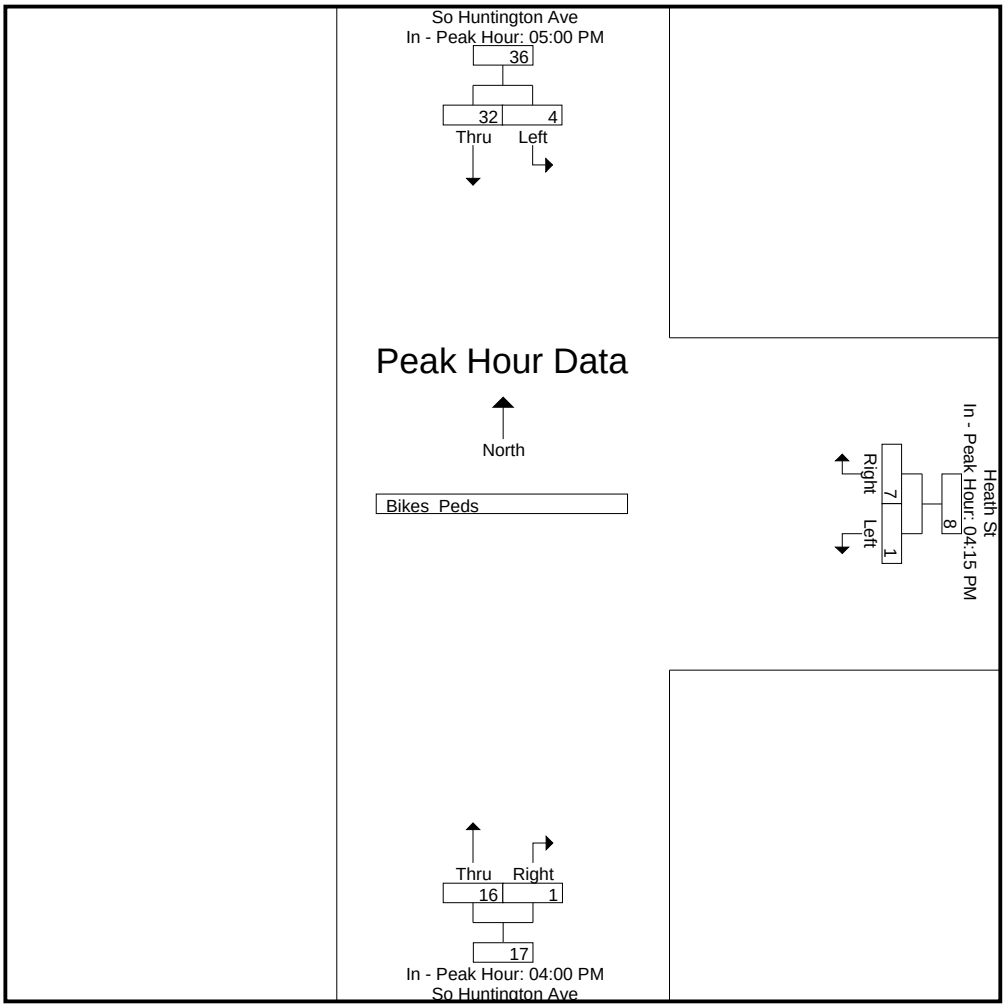
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			04:15 PM			04:00 PM		
+0 mins.	1	3	4	**1**	1	2	4	**1**	5
+15 mins.	**2**	6	8	0	1	1	**6**	0	**6**
+30 mins.	1	**14**	**15**	0	2	2	4	0	4
+45 mins.	0	9	9	0	**3**	**3**	2	0	2
Total Volume	4	32	36	1	7	8	16	1	17
% App. Total	11.1	88.9		12.5	87.5		94.1	5.9	
PHF	.500	.571	.600	.250	.583	.667	.667	.250	.708

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Heath Street
City/State : Boston, MA
Weather : Cloudy

File Name : 16870003
Site Code : 16870003
Start Date : 6/18/2015
Page No : 12



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687AM04
Site Code : 16870004
Start Date : 6/23/2015
Page No : 1

Groups Printed- Cars - Trucks

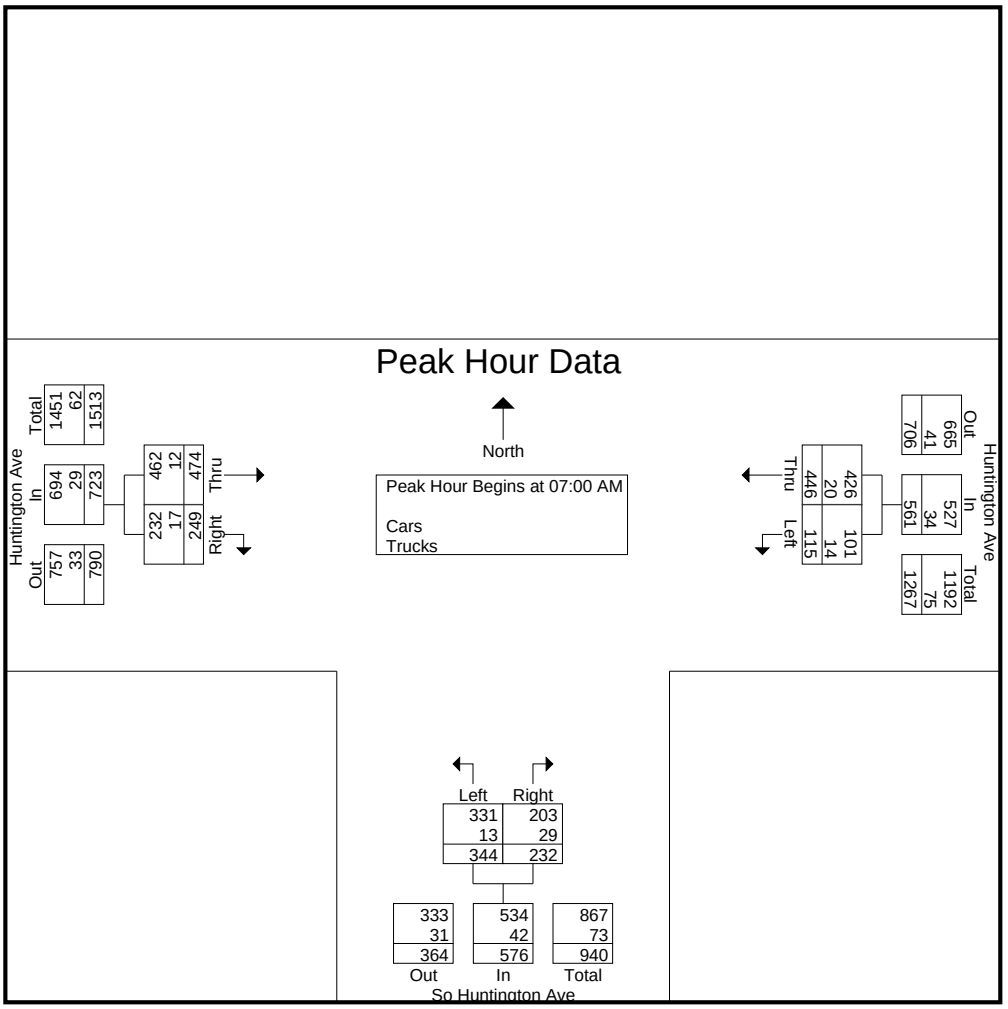
	Huntington Ave From East		So Huntington Ave From South		Huntington Ave From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	24	60	83	81	95	55	398
07:15 AM	30	110	90	48	122	65	465
07:30 AM	29	125	89	46	110	74	473
07:45 AM	32	151	82	57	147	55	524
Total	115	446	344	232	474	249	1860
08:00 AM	27	111	92	43	83	40	396
08:15 AM	16	74	69	63	118	47	387
08:30 AM	29	94	82	66	84	63	418
08:45 AM	18	86	86	64	139	73	466
Total	90	365	329	236	424	223	1667
Grand Total	205	811	673	468	898	472	3527
Apprch %	20.2	79.8	59	41	65.5	34.5	
Total %	5.8	23	19.1	13.3	25.5	13.4	
Cars	174	779	648	426	871	449	3347
% Cars	84.9	96.1	96.3	91	97	95.1	94.9
Trucks	31	32	25	42	27	23	180
% Trucks	15.1	3.9	3.7	9	3	4.9	5.1

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687AM04
Site Code : 16870004
Start Date : 6/23/2015

	Huntington Ave From East			So Huntington Ave From South			Huntington Ave From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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	24	60	84	83	**81**	**164**	95	55	150	398
07:15 AM	30	110	140	**90**	48	138	122	65	187	465
07:30 AM	29	125	154	89	46	135	110	**74**	184	473
07:45 AM	**32**	**151**	**183**	82	57	139	**147**	55	**202**	**524**
Total Volume	115	446	561	344	232	576	474	249	723	1860
% App. Total	20.5	79.5		59.7	40.3		65.6	34.4		
PHF	.898	.738	.766	.956	.716	.878	.806	.841	.895	.887
Cars	101	426	527	331	203	534	462	232	694	1755
% Cars	87.8	95.5	93.9	96.2	87.5	92.7	97.5	93.2	96.0	94.4
Trucks	14	20	34	13	29	42	12	17	29	105
% Trucks	12.2	4.5	6.1	3.8	12.5	7.3	2.5	6.8	4.0	5.6

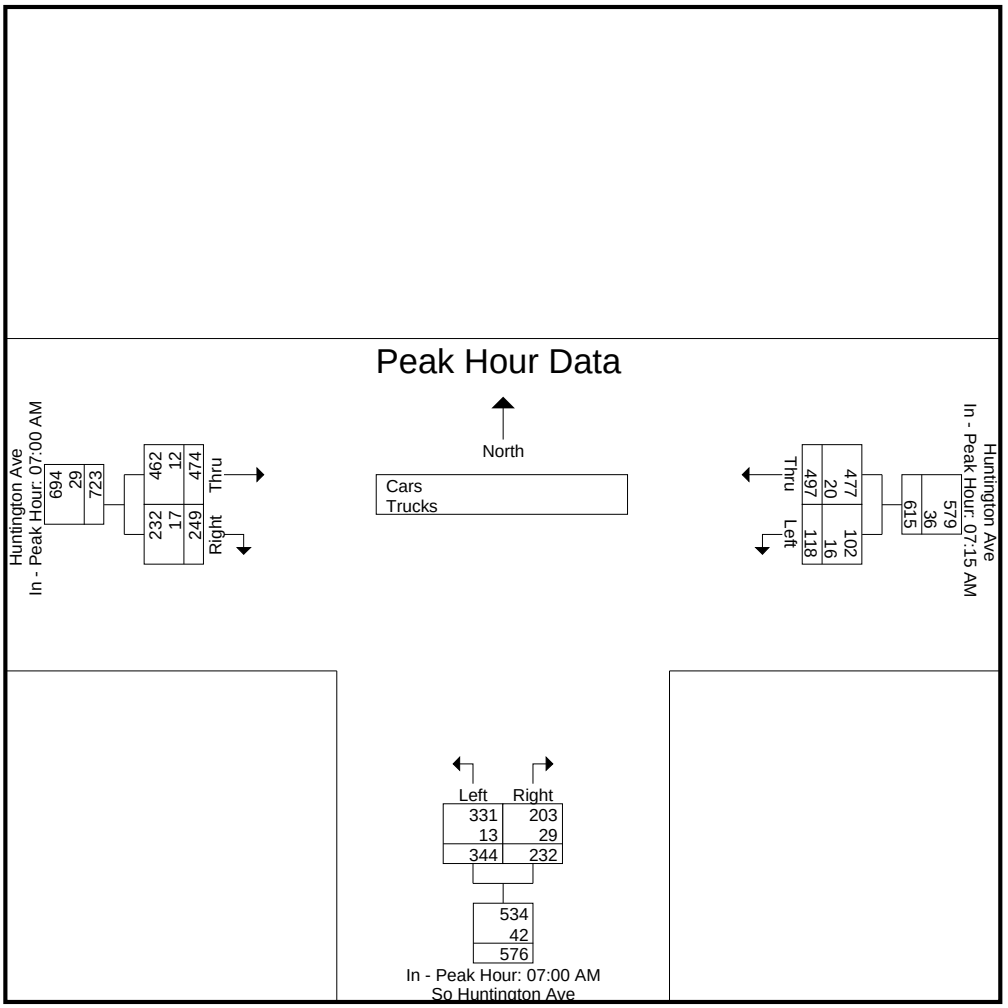


Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687AM04
Site Code : 16870004
Start Date : 6/23/2015

	Huntington Ave From East			So Huntington Ave From South			Huntington Ave From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Each Approach Begins at:										
	07:15 AM			07:00 AM			07:00 AM			
+0 mins.	30	110	140	83	**81**	**164**	95	55	150	
+15 mins.	29	125	154	**90**	48	138	122	65	187	
+30 mins.	**32**	**151**	**183**	89	46	135	110	**74**	184	
+45 mins.	27	111	138	82	57	139	**147**	55	**202**	
Total Volume	118	497	615	344	232	576	474	249	723	
% App. Total	19.2	80.8		59.7	40.3		65.6	34.4		
PHF	.922	.823	.840	.956	.716	.878	.806	.841	.895	
Cars	102	477	579	331	203	534	462	232	694	
% Cars	86.4	96	94.1	96.2	87.5	92.7	97.5	93.2	96	
Trucks	16	20	36	13	29	42	12	17	29	
% Trucks	13.6	4	5.9	3.8	12.5	7.3	2.5	6.8	4	



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687AM04
Site Code : 16870004
Start Date : 6/23/2015

Groups Printed- Cars

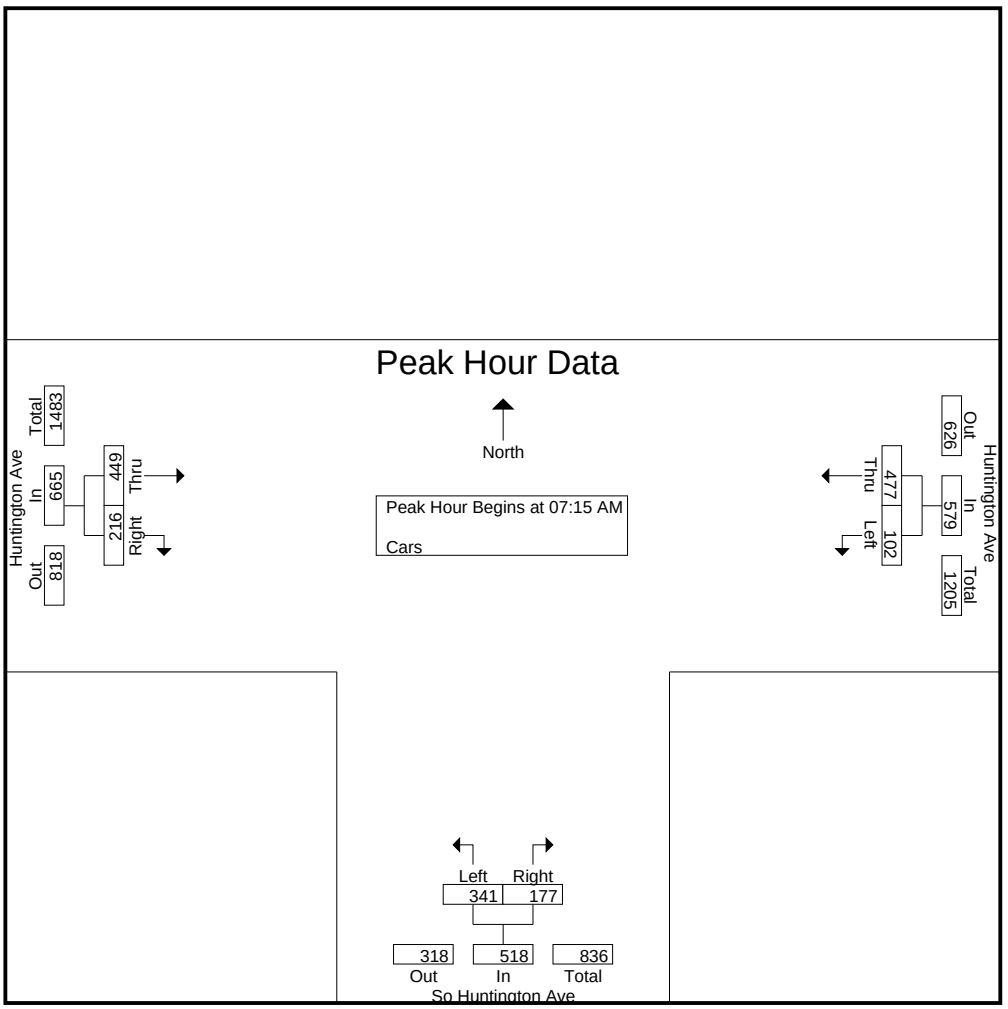
	Huntington Ave From East		So Huntington Ave From South		Huntington Ave From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	23	55	79	66	92	54	369
07:15 AM	28	106	86	42	117	62	441
07:30 AM	24	120	88	43	107	66	448
07:45 AM	26	145	78	52	146	50	497
Total	101	426	331	203	462	232	1755
08:00 AM	24	106	89	40	79	38	376
08:15 AM	11	71	65	59	114	45	365
08:30 AM	26	92	79	62	80	63	402
08:45 AM	12	84	84	62	136	71	449
Total	73	353	317	223	409	217	1592
Grand Total	174	779	648	426	871	449	3347
Apprch %	18.3	81.7	60.3	39.7	66	34	
Total %	5.2	23.3	19.4	12.7	26	13.4	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687AM04
Site Code : 16870004
Start Date : 6/23/2015

	Huntington Ave From East			So Huntington Ave From South			Huntington Ave From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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	**28**	106	134	86	42	128	117	62	179	441
07:30 AM	24	120	144	88	43	**131**	107	**66**	173	448
07:45 AM	26	**145**	**171**	78	**52**	130	**146**	50	**196**	**497**
08:00 AM	24	106	130	**89**	40	129	79	38	117	376
Total Volume	102	477	579	341	177	518	449	216	665	1762
% App. Total	17.6	82.4		65.8	34.2		67.5	32.5		
PHF	.911	.822	.846	.958	.851	.989	.769	.818	.848	.886



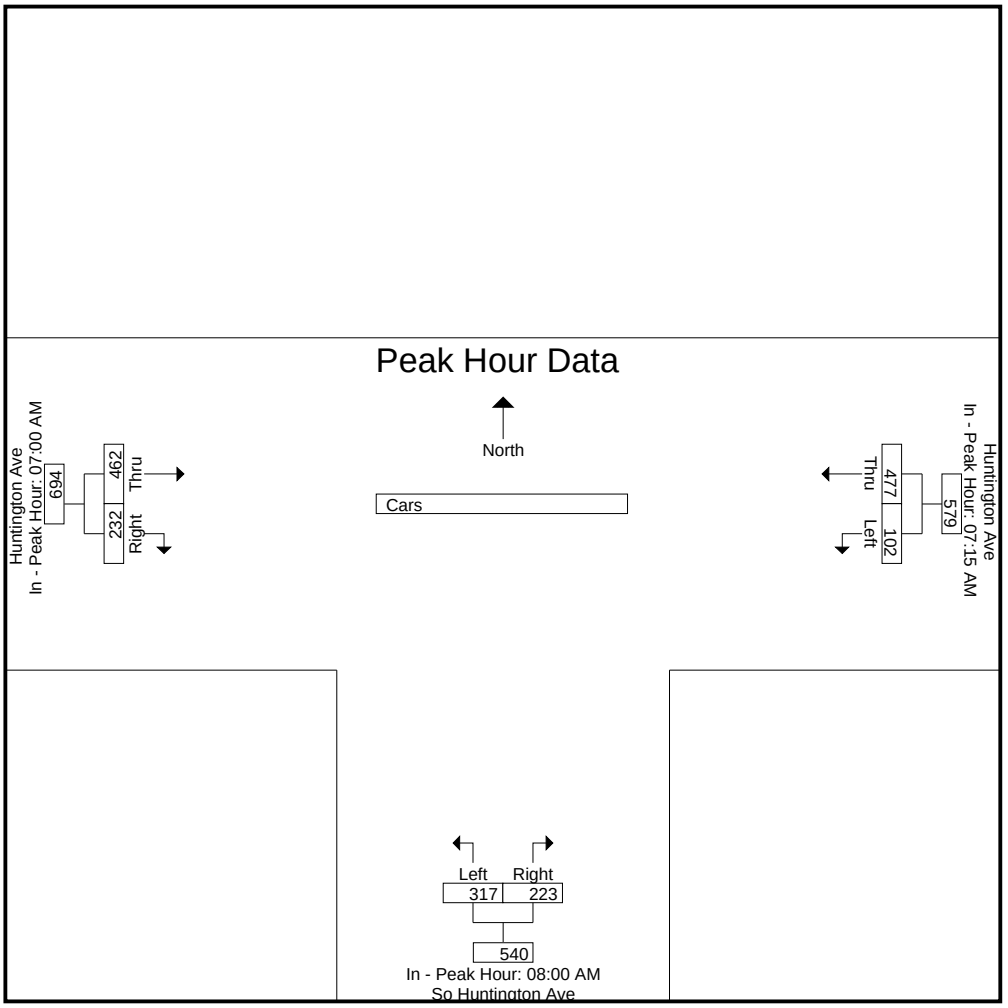
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			08:00 AM			07:00 AM		
+0 mins.	**28**	106	134	**89**	40	129	92	54	146
+15 mins.	24	120	144	65	59	124	117	62	179
+30 mins.	26	**145**	**171**	79	**62**	141	107	**66**	173
+45 mins.	24	106	130	84	62	**146**	**146**	50	**196**
Total Volume	102	477	579	317	223	540	462	232	694
% App. Total	17.6	82.4		58.7	41.3		66.6	33.4	
PHF	.911	.822	.846	.890	.899	.925	.791	.879	.885

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687AM04
Site Code : 16870004
Start Date : 6/23/2015
Page No : 6



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687AM04
Site Code : 16870004
Start Date : 6/23/2015
Page No : 7

Groups Printed- Trucks

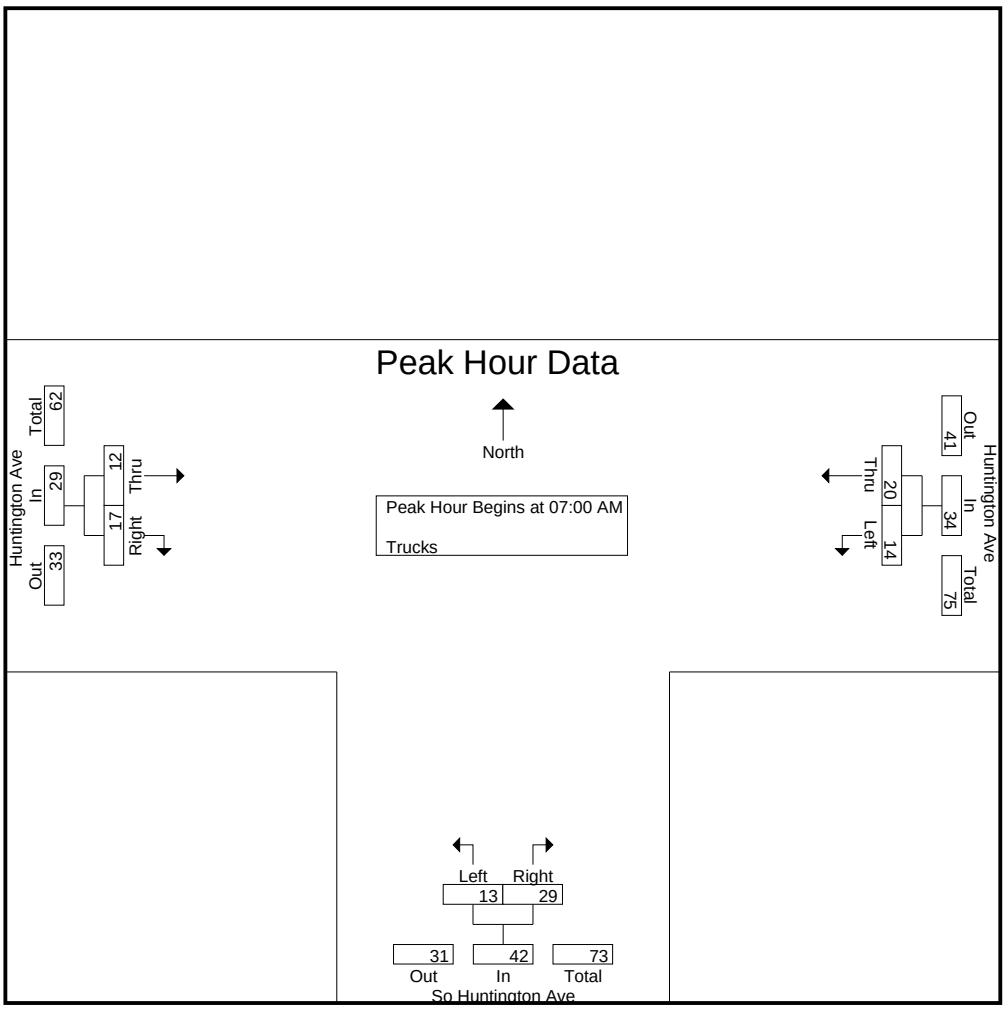
	Huntington Ave From East		So Huntington Ave From South		Huntington Ave From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00 AM	1	5	4	15	3	1	29
07:15 AM	2	4	4	6	5	3	24
07:30 AM	5	5	1	3	3	8	25
07:45 AM	6	6	4	5	1	5	27
Total	14	20	13	29	12	17	105
08:00 AM	3	5	3	3	4	2	20
08:15 AM	5	3	4	4	4	2	22
08:30 AM	3	2	3	4	4	0	16
08:45 AM	6	2	2	2	3	2	17
Total	17	12	12	13	15	6	75
Grand Total	31	32	25	42	27	23	180
Apprch %	49.2	50.8	37.3	62.7	54	46	
Total %	17.2	17.8	13.9	23.3	15	12.8	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687AM04
Site Code : 16870004
Start Date : 6/23/2015

	Huntington Ave From East			So Huntington Ave From South			Huntington Ave From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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	1	5	6	**4**	**15**	**19**	3	1	4	**29**
07:15 AM	2	4	6	4	6	10	**5**	3	8	24
07:30 AM	5	5	10	1	3	4	3	**8**	**11**	25
07:45 AM	**6**	**6**	**12**	4	5	9	1	5	6	27
Total Volume	14	20	34	13	29	42	12	17	29	105
% App. Total	41.2	58.8		31	69		41.4	58.6		
PHF	.583	.833	.708	.813	.483	.553	.600	.531	.659	.905



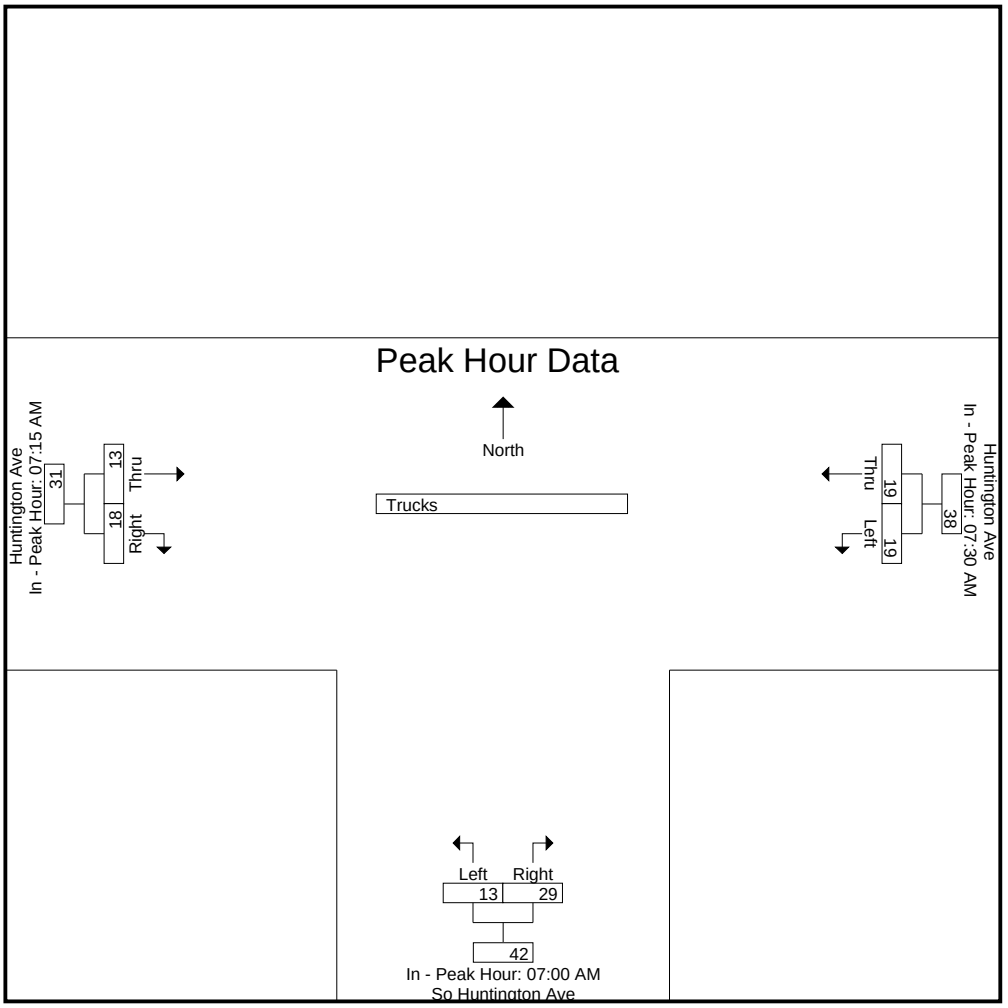
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:00 AM			07:15 AM		
+0 mins.	5	5	10	**4**	**15**	**19**	**5**	3	8
+15 mins.	**6**	**6**	**12**	4	6	10	3	**8**	**11**
+30 mins.	3	5	8	1	3	4	1	5	6
+45 mins.	5	3	8	4	5	9	4	2	6
Total Volume	19	19	38	13	29	42	13	18	31
% App. Total	50	50		31	69		41.9	58.1	
PHF	.792	.792	.792	.813	.483	.553	.650	.563	.705

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687AM04
Site Code : 16870004
Start Date : 6/23/2015
Page No : 9



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687AM04
Site Code : 16870004
Start Date : 6/23/2015

Groups Printed- Bikes Peds

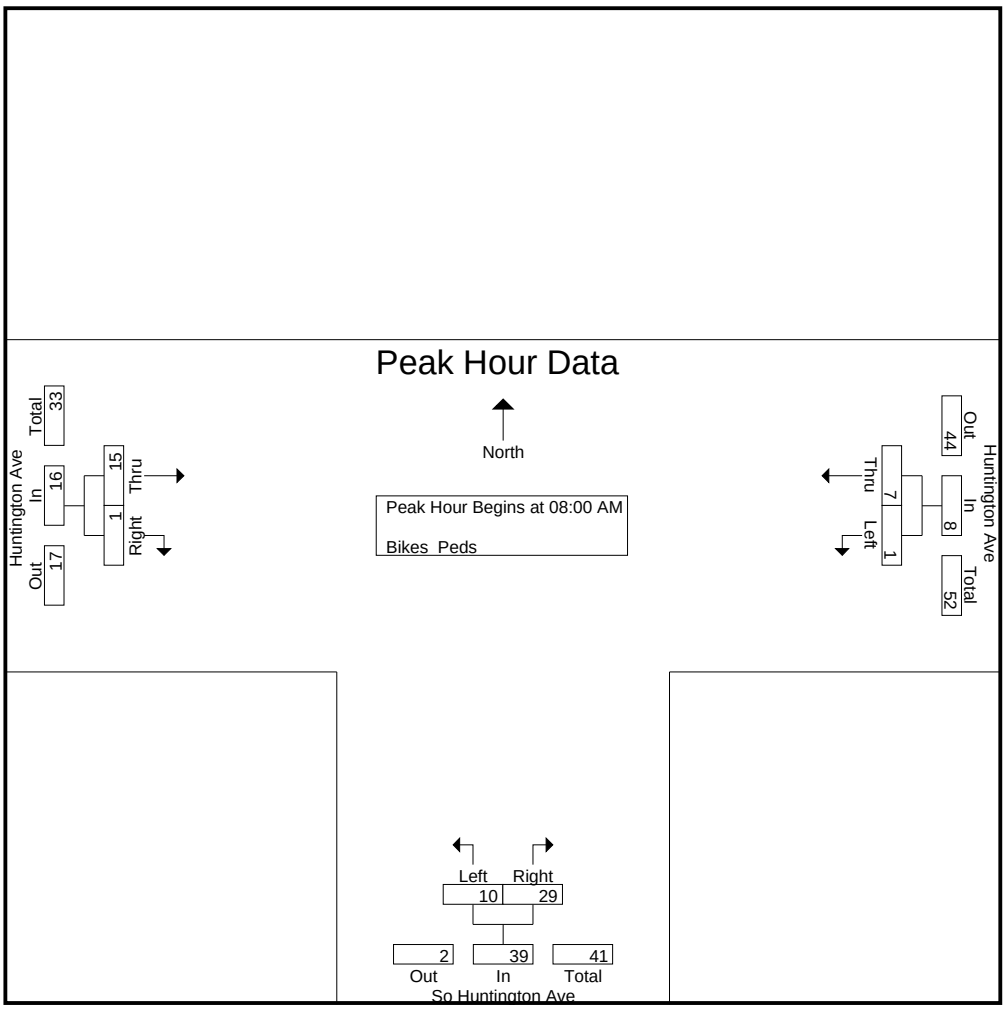
	Huntington Ave From East			So Huntington Ave From South			Huntington Ave From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	2	17	0	1	12	0	0	4	33	3	36
07:15 AM	0	1	28	1	6	18	3	0	4	50	11	61
07:30 AM	1	0	32	2	5	27	2	0	15	74	10	84
07:45 AM	0	0	31	2	4	29	5	0	8	68	11	79
Total	1	3	108	5	16	86	10	0	31	225	35	260
08:00 AM	0	3	35	3	8	32	4	0	17	84	18	102
08:15 AM	0	1	21	3	6	24	3	0	10	55	13	68
08:30 AM	1	2	19	0	3	26	2	0	5	50	8	58
08:45 AM	0	1	24	4	12	26	6	1	6	56	24	80
Total	1	7	99	10	29	108	15	1	38	245	63	308
Grand Total	2	10	207	15	45	194	25	1	69	470	98	568
Apprch %	16.7	83.3		25	75		96.2	3.8				
Total %	2	10.2		15.3	45.9		25.5	1		82.7	17.3	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687AM04
Site Code : 16870004
Start Date : 6/23/2015

	Huntington Ave From East			So Huntington Ave From South			Huntington Ave From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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	**3**	**3**	3	8	11	4	0	4	18
08:15 AM	0	1	1	3	6	9	3	0	3	13
08:30 AM	**1**	2	3	0	3	3	2	0	2	8
08:45 AM	0	1	1	**4**	**12**	**16**	**6**	**1**	**7**	**24**
Total Volume	1	7	8	10	29	39	15	1	16	63
% App. Total	12.5	87.5		25.6	74.4		93.8	6.2		
PHF	.250	.583	.667	.625	.604	.609	.625	.250	.571	.656



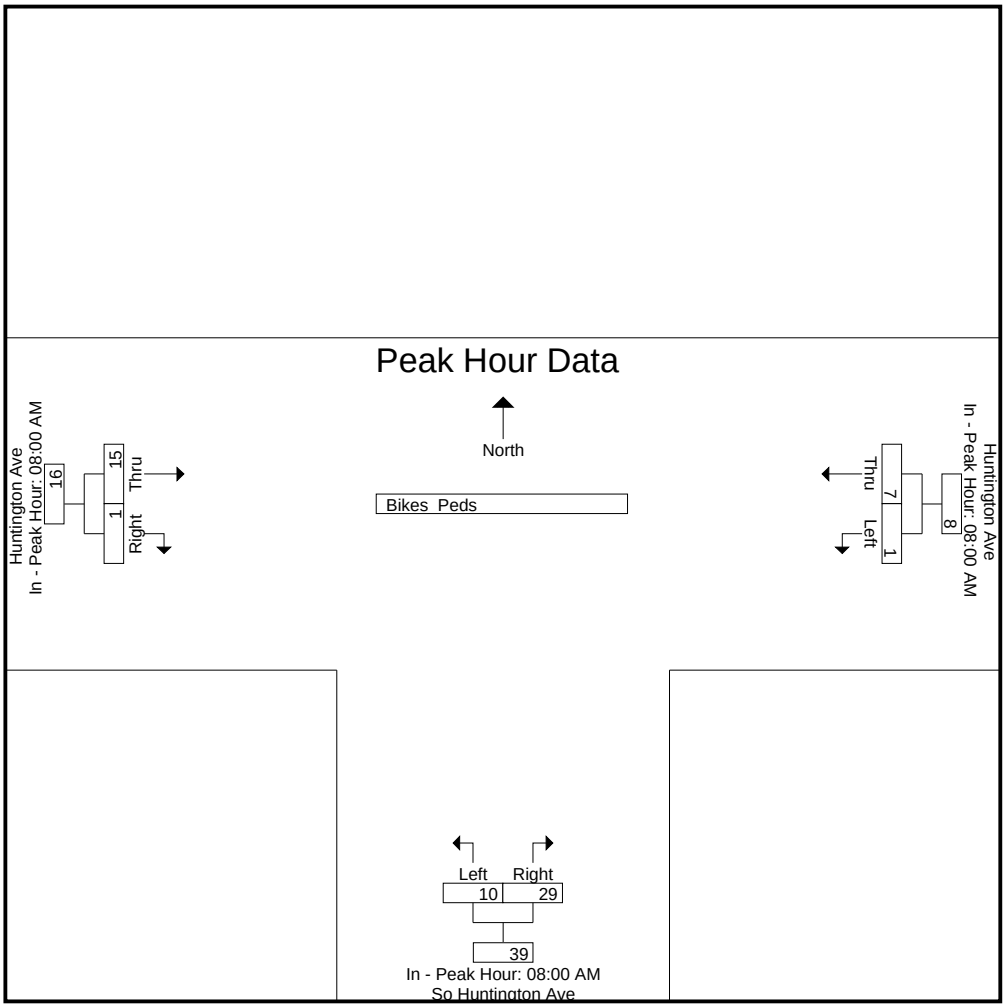
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			08:00 AM			08:00 AM		
+0 mins.	0	**3**	**3**	3	8	11	4	0	4
+15 mins.	0	1	1	3	6	9	3	0	3
+30 mins.	**1**	2	3	0	3	3	2	0	2
+45 mins.	0	1	1	**4**	**12**	**16**	**6**	**1**	**7**
Total Volume	1	7	8	10	29	39	15	1	16
% App. Total	12.5	87.5		25.6	74.4		93.8	6.2	
PHF	.250	.583	.667	.625	.604	.609	.625	.250	.571

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687AM04
Site Code : 16870004
Start Date : 6/23/2015
Page No : 12



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687PM04
Site Code : 16870004
Start Date : 6/18/2015
Page No : 1

Groups Printed- Cars - Trucks

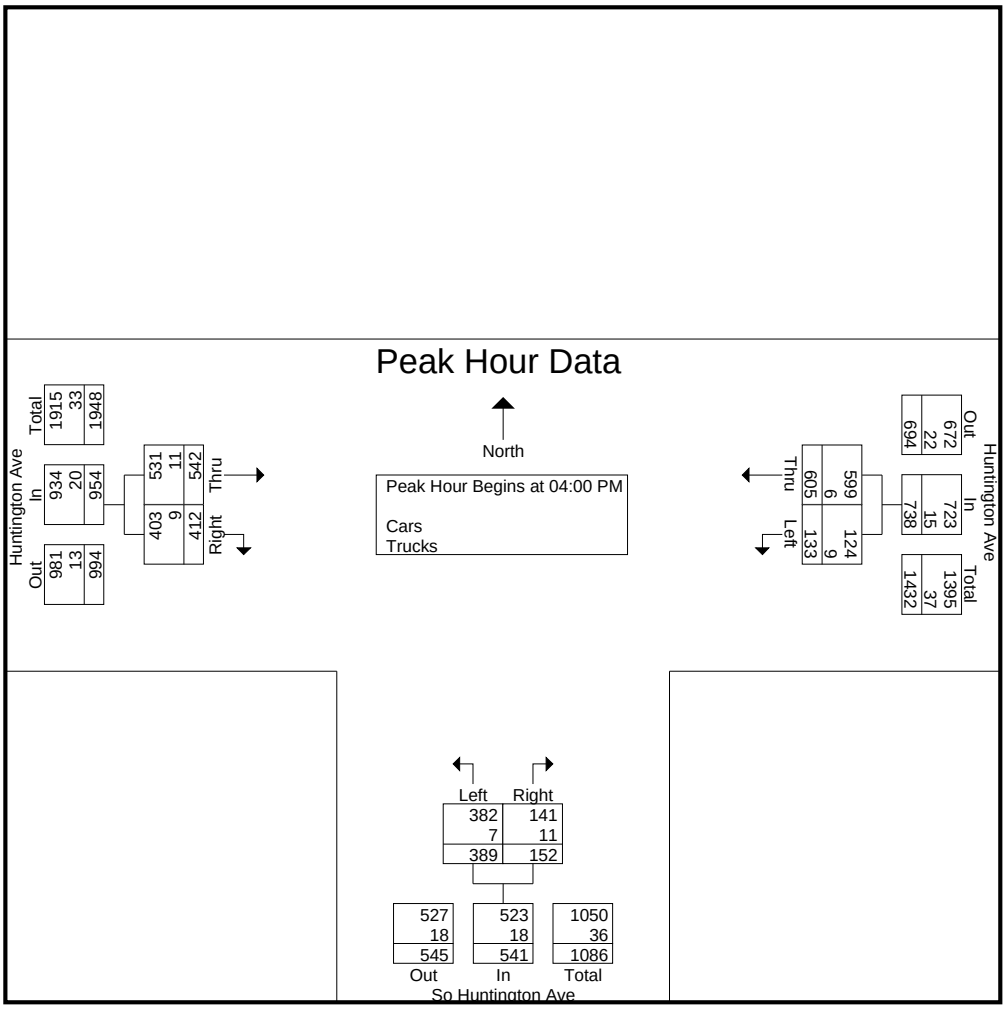
	Huntington Ave From East		So Huntington Ave From South		Huntington Ave From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	30	169	95	28	138	96	556
04:15 PM	44	156	81	44	125	101	551
04:30 PM	33	135	108	41	130	93	540
04:45 PM	26	145	105	39	149	122	586
Total	133	605	389	152	542	412	2233
05:00 PM	37	134	94	29	108	117	519
05:15 PM	24	172	107	28	123	83	537
05:30 PM	37	155	70	29	152	107	550
05:45 PM	27	135	83	29	121	98	493
Total	125	596	354	115	504	405	2099
Grand Total	258	1201	743	267	1046	817	4332
Apprch %	17.7	82.3	73.6	26.4	56.1	43.9	
Total %	6	27.7	17.2	6.2	24.1	18.9	
Cars	240	1188	734	246	1026	801	4235
% Cars	93	98.9	98.8	92.1	98.1	98	97.8
Trucks	18	13	9	21	20	16	97
% Trucks	7	1.1	1.2	7.9	1.9	2	2.2

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687PM04
Site Code : 16870004
Start Date : 6/18/2015

	Huntington Ave From East			So Huntington Ave From South			Huntington Ave From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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	30	**169**	199	95	28	123	138	96	234	556
04:15 PM	**44**	156	**200**	81	**44**	125	125	101	226	551
04:30 PM	33	135	168	**108**	41	**149**	130	93	223	540
04:45 PM	26	145	171	105	39	144	**149**	**122**	**271**	**586**
Total Volume	133	605	738	389	152	541	542	412	954	2233
% App. Total	18	82		71.9	28.1		56.8	43.2		
PHF	.756	.895	.923	.900	.864	.908	.909	.844	.880	.953
Cars	124	599	723	382	141	523	531	403	934	2180
% Cars	93.2	99.0	98.0	98.2	92.8	96.7	98.0	97.8	97.9	97.6
Trucks	9	6	15	7	11	18	11	9	20	53
% Trucks	6.8	1.0	2.0	1.8	7.2	3.3	2.0	2.2	2.1	2.4



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

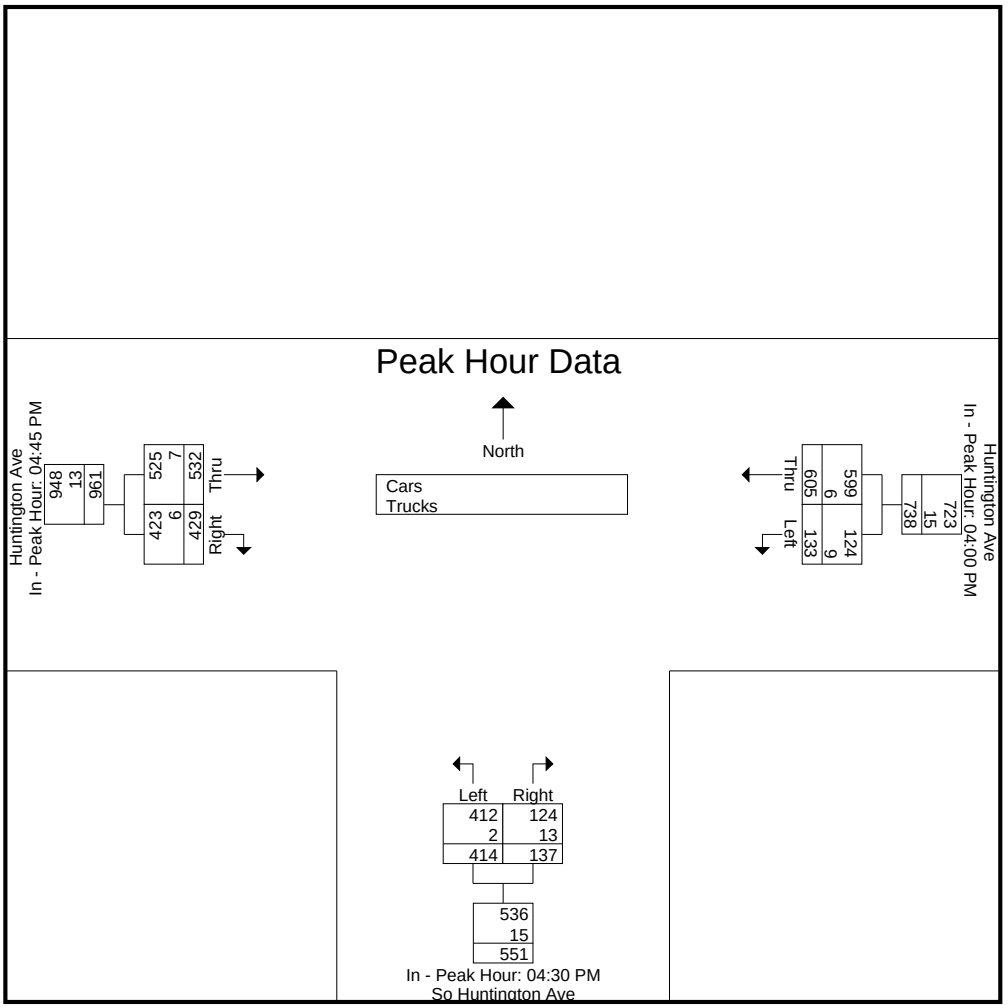
File Name : 1687PM04
Site Code : 16870004
Start Date : 6/18/2015

	Huntington Ave From East			So Huntington Ave From South			Huntington Ave From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM			04:30 PM			04:45 PM		
+0 mins.	30	**169**	199	**108**	**41**	**149**	149	**122**	**271**
+15 mins.	**44**	156	**200**	105	39	144	108	117	225
+30 mins.	33	135	168	94	29	123	123	83	206
+45 mins.	26	145	171	107	28	135	**152**	107	259
Total Volume	133	605	738	414	137	551	532	429	961
% App. Total	18	82		75.1	24.9		55.4	44.6	
PHF	.756	.895	.923	.958	.835	.924	.875	.879	.887
Cars	124	599	723	412	124	536	525	423	948
% Cars	93.2	99	98	99.5	90.5	97.3	98.7	98.6	98.6
Trucks	9	6	15	2	13	15	7	6	13
% Trucks	6.8	1	2	0.5	9.5	2.7	1.3	1.4	1.4



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687PM04
Site Code : 16870004
Start Date : 6/18/2015
Page No : 4

Groups Printed- Cars

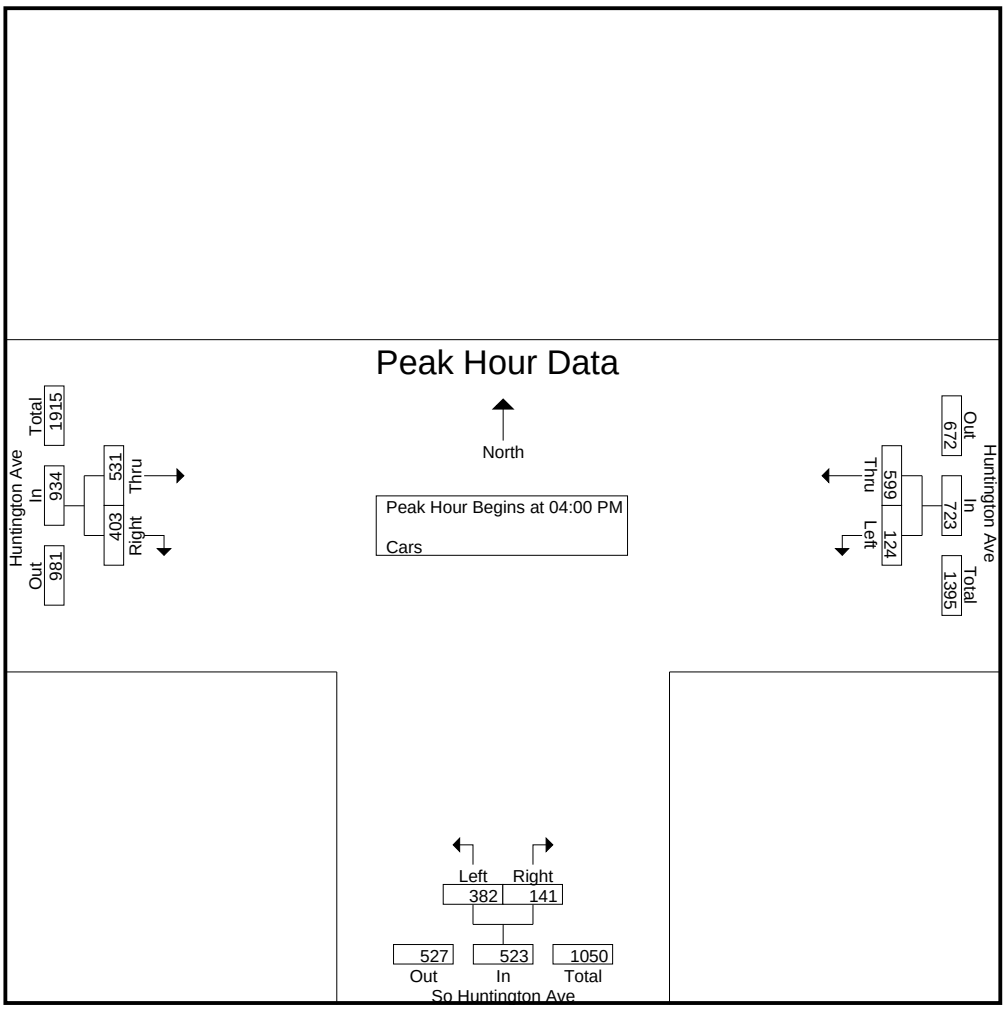
	Huntington Ave From East		So Huntington Ave From South		Huntington Ave From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	29	167	92	27	134	93	542
04:15 PM	41	154	79	42	121	99	536
04:30 PM	32	134	108	36	128	90	528
04:45 PM	22	144	103	36	148	121	574
Total	124	599	382	141	531	403	2180
05:00 PM	35	132	94	26	107	116	510
05:15 PM	22	170	107	26	120	82	527
05:30 PM	36	154	70	27	150	104	541
05:45 PM	23	133	81	26	118	96	477
Total	116	589	352	105	495	398	2055
Grand Total	240	1188	734	246	1026	801	4235
Apprch %	16.8	83.2	74.9	25.1	56.2	43.8	
Total %	5.7	28.1	17.3	5.8	24.2	18.9	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687PM04
Site Code : 16870004
Start Date : 6/18/2015

	Huntington Ave From East			So Huntington Ave From South			Huntington Ave From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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	29	**167**	**196**	92	27	119	134	93	227	542
04:15 PM	**41**	154	195	79	**42**	121	121	99	220	536
04:30 PM	32	134	166	**108**	36	**144**	128	90	218	528
04:45 PM	22	144	166	103	36	139	**148**	**121**	**269**	**574**
Total Volume	124	599	723	382	141	523	531	403	934	2180
% App. Total	17.2	82.8		73	27		56.9	43.1		
PHF	.756	.897	.922	.884	.839	.908	.897	.833	.868	.949



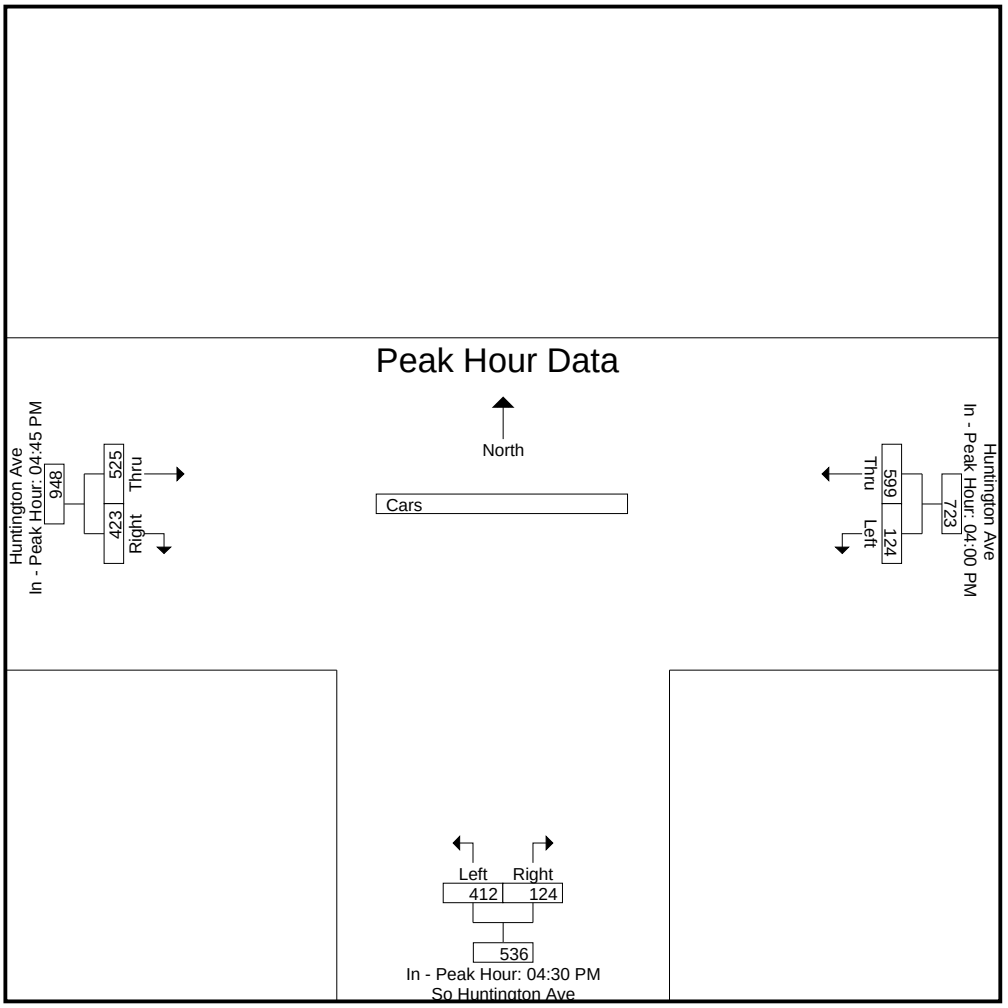
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:30 PM			04:45 PM		
+0 mins.	29	**167**	**196**	**108**	**36**	**144**	148	**121**	**269**
+15 mins.	**41**	154	195	103	36	139	107	116	223
+30 mins.	32	134	166	94	26	120	120	82	202
+45 mins.	22	144	166	107	26	133	**150**	104	254
Total Volume	124	599	723	412	124	536	525	423	948
% App. Total	17.2	82.8		76.9	23.1		55.4	44.6	
PHF	.756	.897	.922	.954	.861	.931	.875	.874	.881

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687PM04
Site Code : 16870004
Start Date : 6/18/2015
Page No : 6



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687PM04
Site Code : 16870004
Start Date : 6/18/2015
Page No : 7

Groups Printed- Trucks

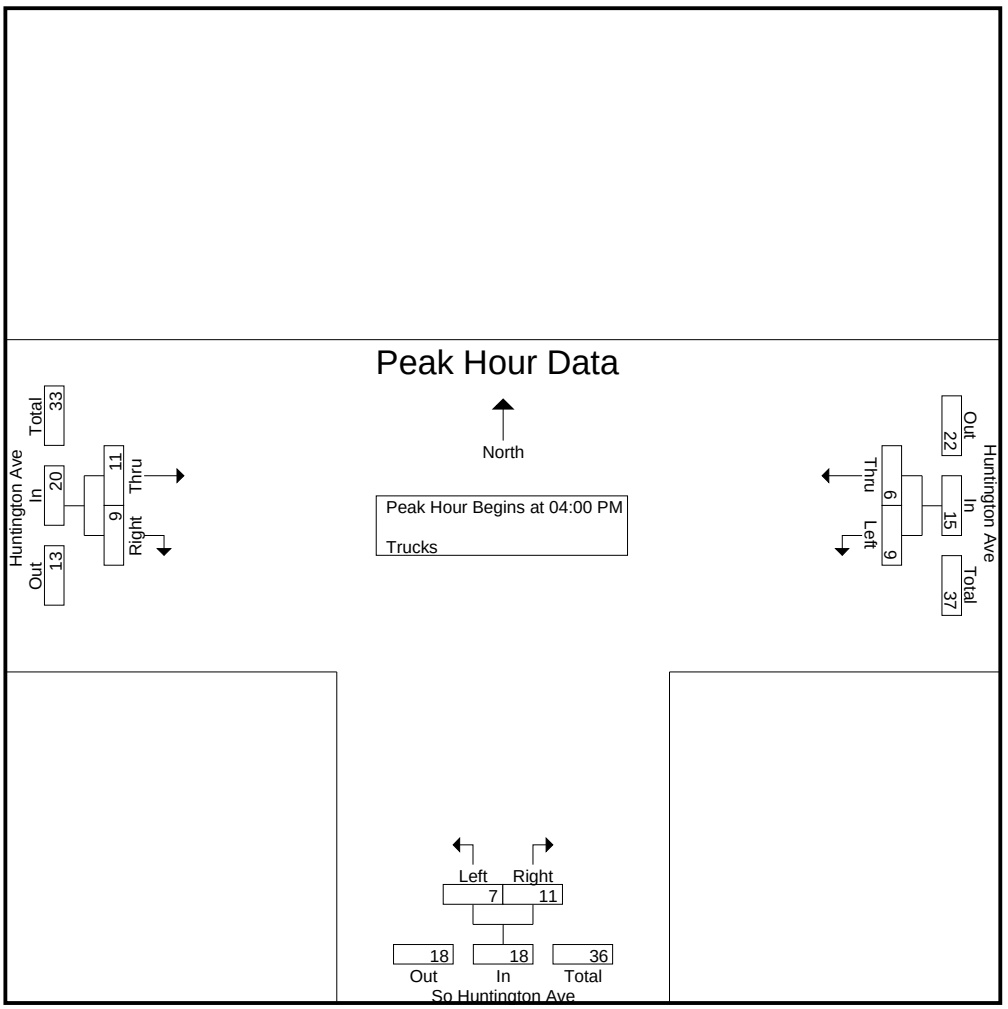
	Huntington Ave From East		So Huntington Ave From South		Huntington Ave From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
04:00 PM	1	2	3	1	4	3	14
04:15 PM	3	2	2	2	4	2	15
04:30 PM	1	1	0	5	2	3	12
04:45 PM	4	1	2	3	1	1	12
Total	9	6	7	11	11	9	53
05:00 PM	2	2	0	3	1	1	9
05:15 PM	2	2	0	2	3	1	10
05:30 PM	1	1	0	2	2	3	9
05:45 PM	4	2	2	3	3	2	16
Total	9	7	2	10	9	7	44
Grand Total	18	13	9	21	20	16	97
Apprch %	58.1	41.9	30	70	55.6	44.4	
Total %	18.6	13.4	9.3	21.6	20.6	16.5	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687PM04
Site Code : 16870004
Start Date : 6/18/2015

	Huntington Ave From East			So Huntington Ave From South			Huntington Ave From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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	**2**	3	**3**	1	4	**4**	**3**	**7**	14
04:15 PM	3	2	**5**	2	2	4	4	2	6	**15**
04:30 PM	1	1	2	0	**5**	**5**	2	3	5	12
04:45 PM	**4**	1	5	2	3	5	1	1	2	12
Total Volume	9	6	15	7	11	18	11	9	20	53
% App. Total	60	40		38.9	61.1		55	45		
PHF	.563	.750	.750	.583	.550	.900	.688	.750	.714	.883



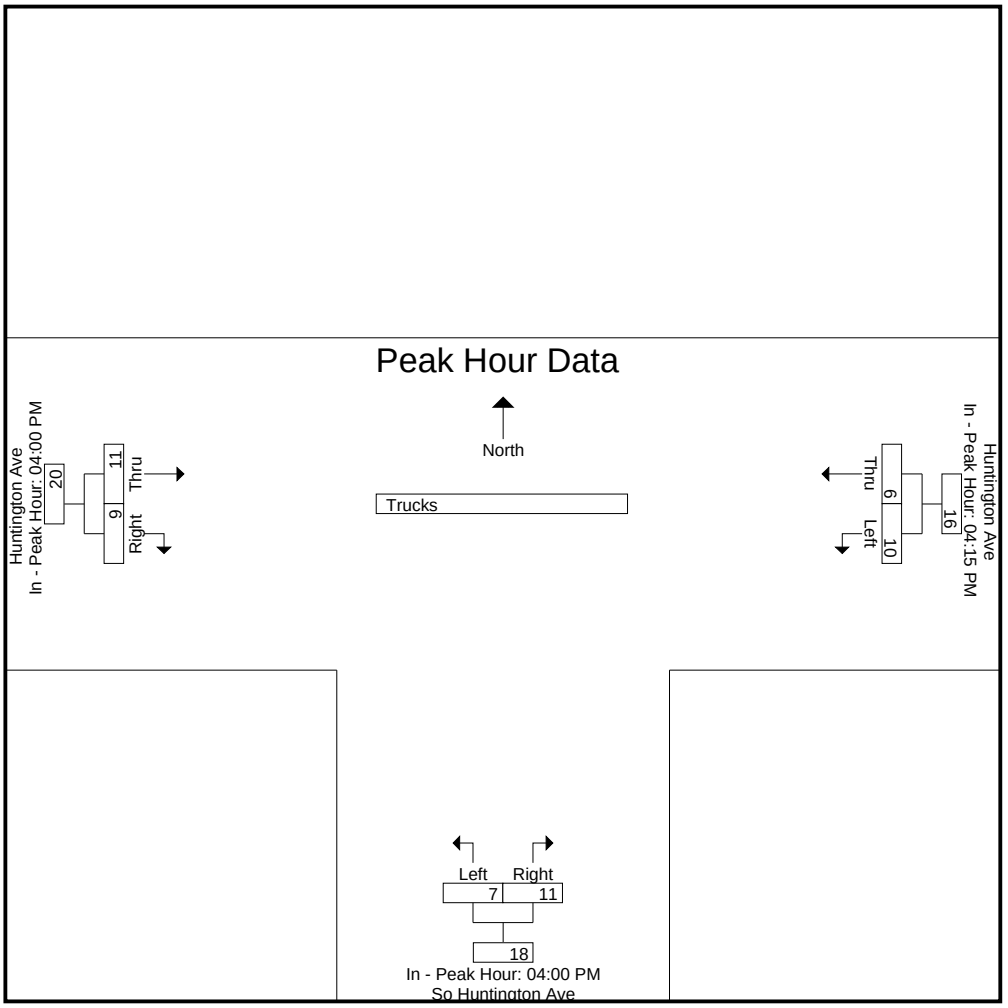
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:00 PM			04:00 PM		
+0 mins.	3	**2**	**5**	**3**	1	4	**4**	**3**	**7**
+15 mins.	1	1	2	2	2	4	4	2	6
+30 mins.	**4**	1	5	0	**5**	**5**	2	3	5
+45 mins.	2	2	4	2	3	5	1	1	2
Total Volume	10	6	16	7	11	18	11	9	20
% App. Total	62.5	37.5		38.9	61.1		55	45	
PHF	.625	.750	.800	.583	.550	.900	.688	.750	.714

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687PM04
Site Code : 16870004
Start Date : 6/18/2015
Page No : 9



Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687PM04
Site Code : 16870004
Start Date : 6/18/2015
Page No : 10

Groups Printed- Bikes Peds

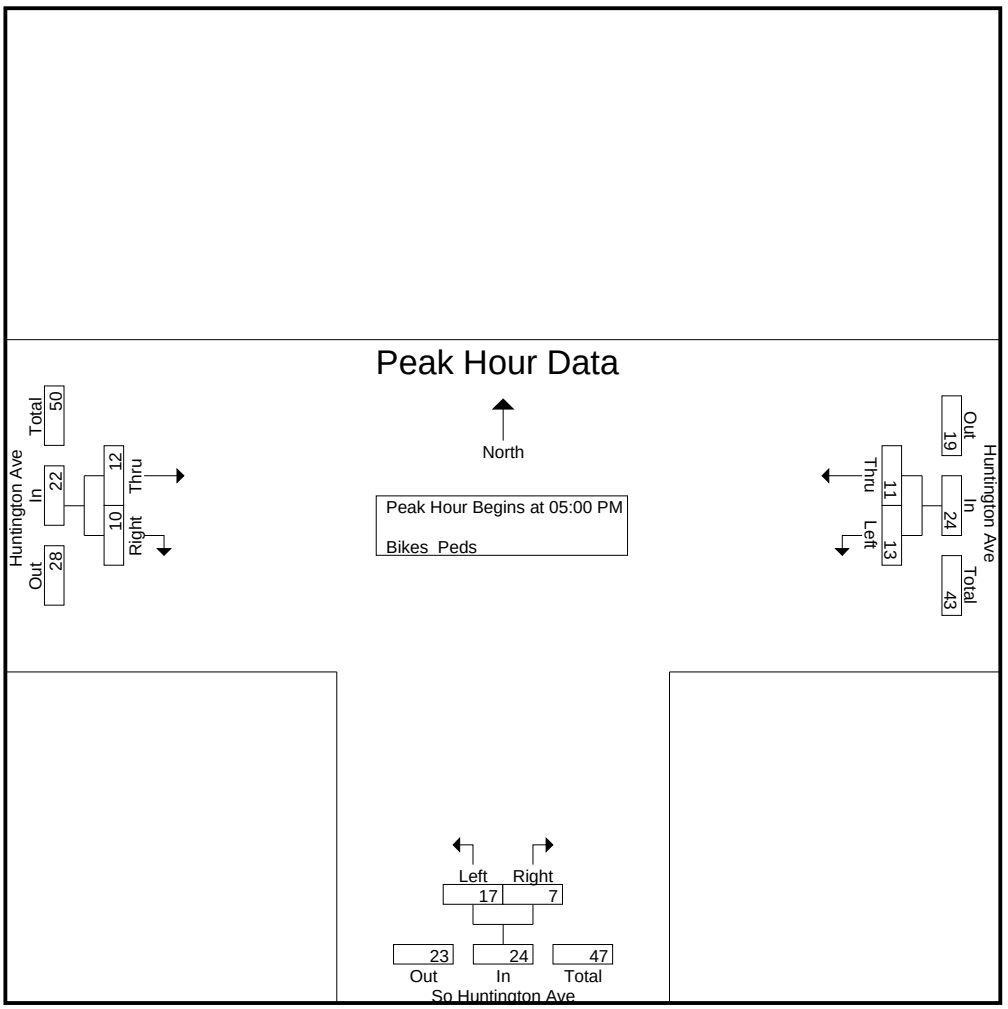
	Huntington Ave From East			So Huntington Ave From South			Huntington Ave From West					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	3	0	11	1	1	9	0	1	28	48	6	54
04:15 PM	3	0	24	5	4	7	0	0	18	49	12	61
04:30 PM	2	1	23	4	1	4	1	1	16	43	10	53
04:45 PM	0	0	19	2	0	11	0	2	36	66	4	70
Total	8	1	77	12	6	31	1	4	98	206	32	238
05:00 PM	3	3	13	4	1	8	5	1	26	47	17	64
05:15 PM	3	2	22	9	0	1	2	2	30	53	18	71
05:30 PM	4	2	27	2	4	6	4	6	34	67	22	89
05:45 PM	3	4	25	2	2	3	1	1	27	55	13	68
Total	13	11	87	17	7	18	12	10	117	222	70	292
Grand Total	21	12	164	29	13	49	13	14	215	428	102	530
Apprch %	63.6	36.4		69	31		48.1	51.9				
Total %	20.6	11.8		28.4	12.7		12.7	13.7		80.8	19.2	

Accurate Counts
978-664-2565

N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687PM04
Site Code : 16870004
Start Date : 6/18/2015
Page No : 11

	Huntington Ave From East			So Huntington Ave From South			Huntington Ave From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	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	3	3	6	4	1	5	**5**	1	6	17
05:15 PM	3	2	5	**9**	0	**9**	2	2	4	18
05:30 PM	**4**	2	6	2	**4**	6	4	**6**	**10**	**22**
05:45 PM	3	**4**	**7**	2	2	4	1	1	2	13
Total Volume	13	11	24	17	7	24	12	10	22	70
% App. Total	54.2	45.8		70.8	29.2		54.5	45.5		
PHF	.813	.688	.857	.472	.438	.667	.600	.417	.550	.795



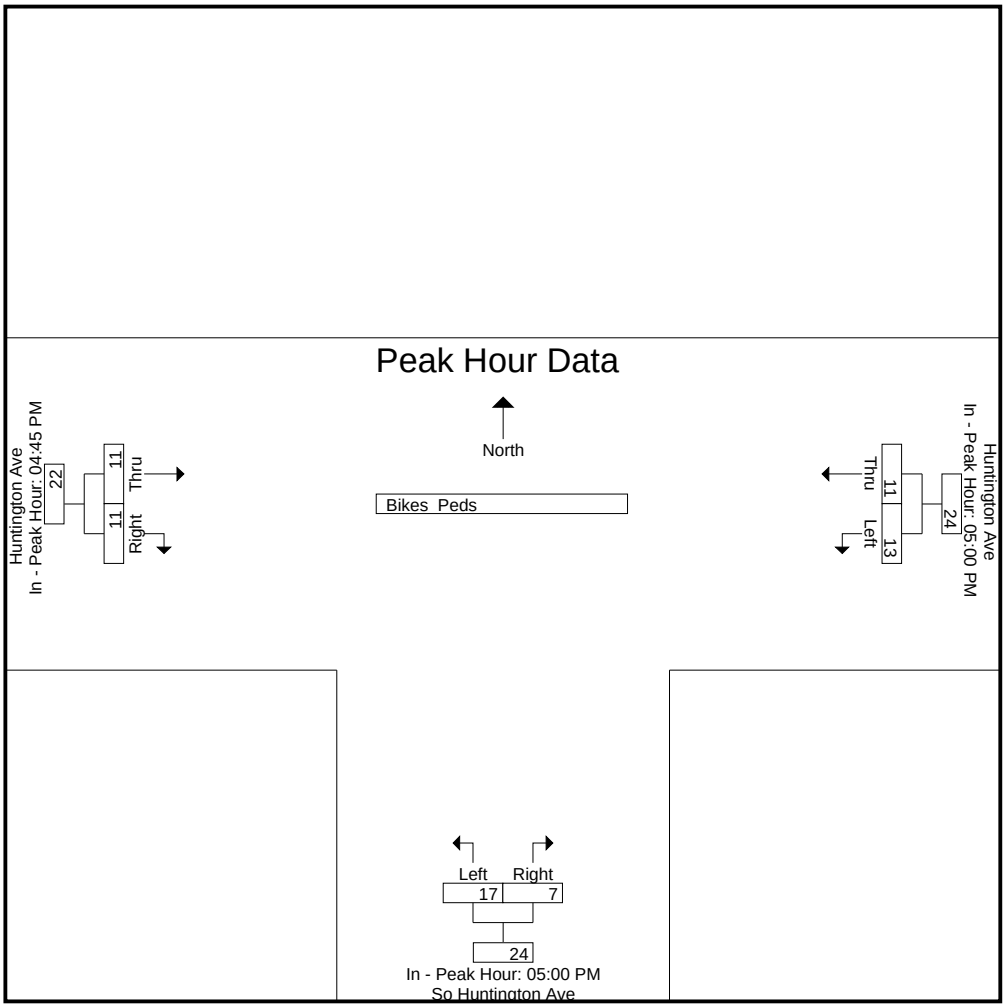
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			04:45 PM		
+0 mins.	3	3	6	4	1	5	0	2	2
+15 mins.	3	2	5	**9**	0	**9**	**5**	1	6
+30 mins.	**4**	2	6	2	**4**	6	2	2	4
+45 mins.	3	**4**	**7**	2	2	4	4	**6**	**10**
Total Volume	13	11	24	17	7	24	11	11	22
% App. Total	54.2	45.8		70.8	29.2		50	50	
PHF	.813	.688	.857	.472	.438	.667	.550	.458	.550

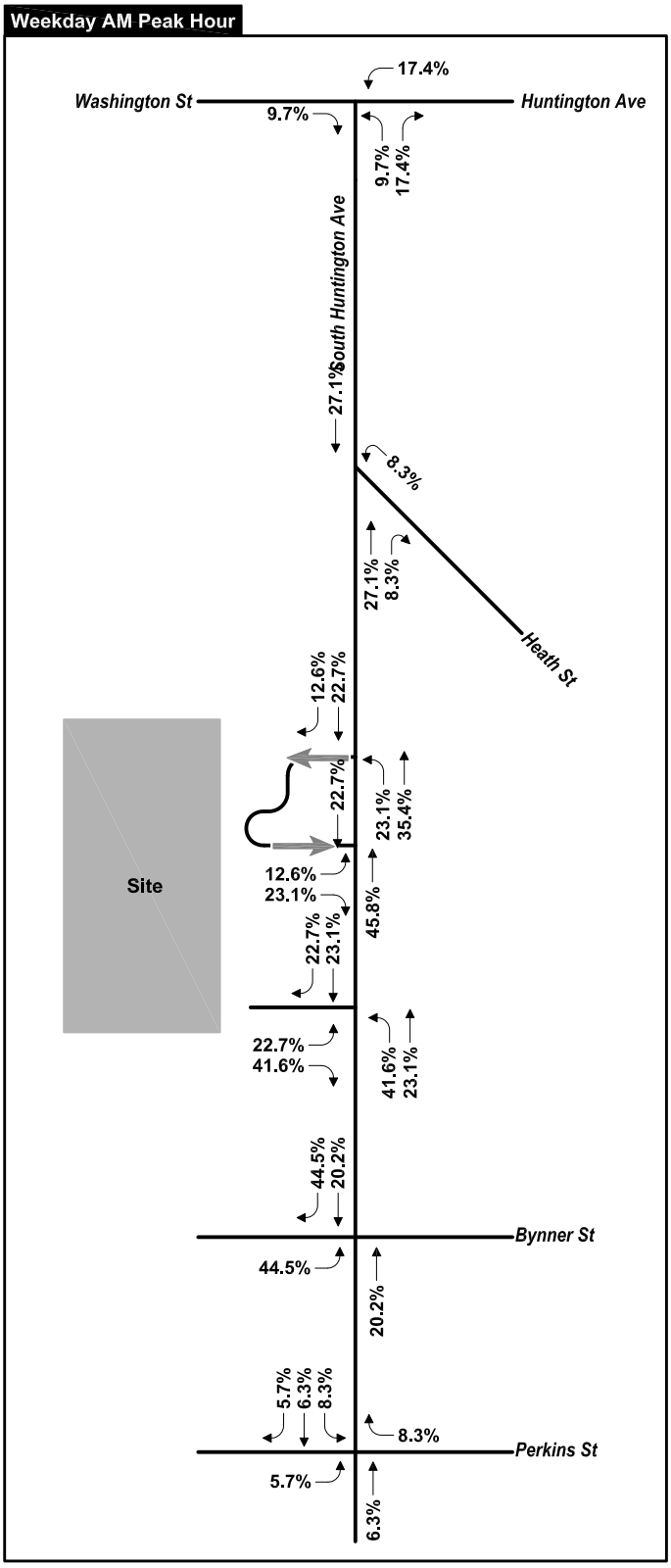
Accurate Counts
978-664-2565

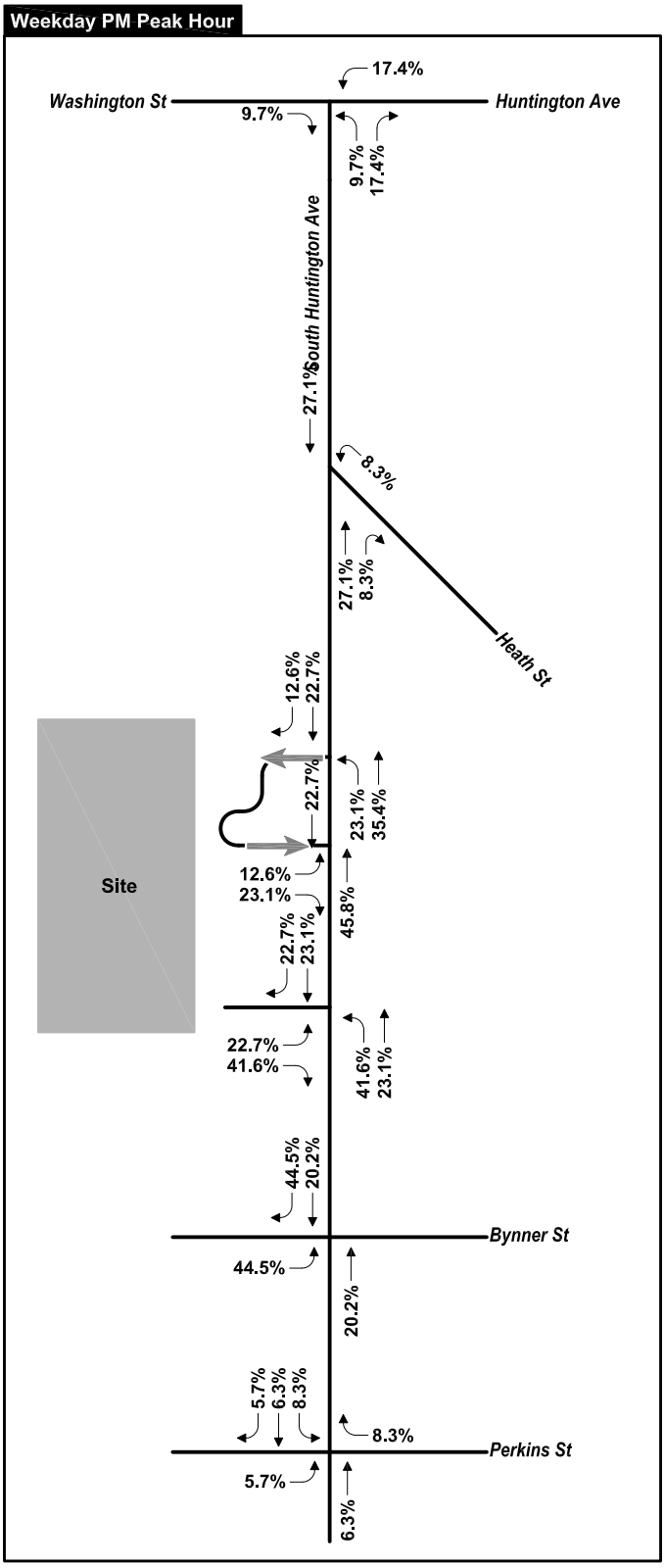
N/S Street : South Huntington Avenue
E/W Street : Huntington Avenue
City/State : Boston, MA
Weather : Cloudy

File Name : 1687PM04
Site Code : 16870004
Start Date : 6/18/2015
Page No : 12



Local Trip Distribution





Not to Scale

Local Trip Distribution

Goddard House Revitalization and Redevelopment
Boston, MA

Intersection Capacity Analysis

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	537	272	140	592	360	198
v/c Ratio	1.18	0.49	0.30	0.66	0.84	0.23
Control Delay	146.5	19.7	38.6	29.7	58.3	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	146.5	19.7	38.6	29.7	58.3	11.2
Queue Length 50th (ft)	217	128	72	242	263	45
Queue Length 95th (ft)	#383	97	#177	#673	339	127
Internal Link Dist (ft)	373			354	1127	
Turn Bay Length (ft)						
Base Capacity (vph)	454	685	472	903	599	845
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	1.18	0.40	0.30	0.66	0.60	0.23

Intersection Summary

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	462	234	118	497	353	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	9	11	16	13	12
Total Lost time (s)	5.0	5.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3049	1211	1378	1668	1565	1280
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3049	1211	1378	1668	1565	1280
Peak-hour factor, PHF	0.86	0.86	0.84	0.84	0.98	0.98
Adj. Flow (vph)	537	272	140	592	360	198
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	537	272	140	592	360	198
Confl. Bikes (#/hr)		14				
Heavy Vehicles (%)	3%	8%	14%	4%	3%	9%
Bus Blockages (#/hr)	0	0	0	0	10	10
Parking (#/hr)				1		
Turn Type	NA	pt+ov	Prot	NA	Prot	pt+ov
Protected Phases	1	1 5	6	1 6	5	5 6
Permitted Phases						
Actuated Green, G (s)	14.3	47.1	41.1	61.4	32.8	79.9
Effective Green, g (s)	14.3	47.1	41.1	55.4	32.8	79.9
Actuated g/C Ratio	0.12	0.39	0.34	0.46	0.27	0.67
Clearance Time (s)	5.0		6.0		6.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	363	475	471	770	427	852
v/s Ratio Prot	c0.18	0.22	0.10	c0.35	c0.23	0.15
v/s Ratio Perm						
v/c Ratio	1.48	0.57	0.30	0.77	0.84	0.23
Uniform Delay, d1	52.9	28.6	28.9	27.0	41.2	7.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	230.1	1.0	0.1	4.2	13.5	0.1
Delay (s)	282.9	29.6	29.0	31.1	54.7	8.0
Level of Service	F	C	C	C	D	A
Approach Delay (s)	197.7			30.7	38.1	
Approach LOS	F			C	D	

Intersection Summary			
HCM 2000 Control Delay	97.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	401	273	209	264	126	280
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.88	0.88	0.85	0.85
Hourly flow rate (vph)	422	287	238	300	148	329
Pedestrians	24			15	24	
Lane Width (ft)	10.5			10.0	13.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	2			1	2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1207		
pX, platoon unblocked						
vC, conflicting volume			446		1245	461
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			446		1245	461
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			78		0	43
cM capacity (veh/h)			1090		144	577

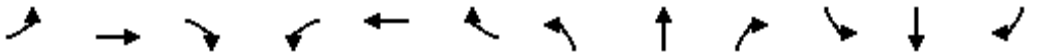
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NW 1	NW 2
Volume Total	422	287	238	300	148	329
Volume Left	0	0	238	0	148	0
Volume Right	0	287	0	0	0	329
cSH	1700	1700	1090	1700	144	577
Volume to Capacity	0.25	0.17	0.22	0.18	1.03	0.57
Queue Length 95th (ft)	0	0	21	0	193	89
Control Delay (s)	0.0	0.0	9.2	0.0	143.4	19.2
Lane LOS			A		F	C
Approach Delay (s)	0.0		4.1		57.8	
Approach LOS					F	

Intersection Summary			
Average Delay	17.3		
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	362	207	745	20	209	87
v/c Ratio	0.94	0.41	0.93	0.03	0.28	0.11
Control Delay	60.4	23.3	38.8	0.1	13.7	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.4	23.3	38.8	0.1	13.7	4.2
Queue Length 50th (ft)	136	62	249	0	44	0
Queue Length 95th (ft)	#422	125	#730	0	130	25
Internal Link Dist (ft)	281	334	760		387	
Turn Bay Length (ft)				100		100
Base Capacity (vph)	384	502	803	784	757	765
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	0.94	0.41	0.93	0.03	0.28	0.11

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	192	74	64	3	89	53	39	654	19	3	174	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	13	12	12	12	16	12	12	13
Total Lost time (s)		3.0			4.0			4.0	4.0		4.0	4.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00			0.99			1.00	0.96		1.00	0.98
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.97			0.95			1.00	0.85		1.00	0.85
Flt Protected		0.97			1.00			1.00	1.00		1.00	1.00
Satd. Flow (prot)		1634			1488			1658	1504		1542	1455
Flt Permitted		0.65			0.99			0.97	1.00		0.99	1.00
Satd. Flow (perm)		1087			1480			1620	1504		1528	1455
Peak-hour factor, PHF	0.91	0.91	0.91	0.70	0.70	0.70	0.93	0.93	0.93	0.85	0.85	0.85
Adj. Flow (vph)	211	81	70	4	127	76	42	703	20	4	205	87
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	11	0	0	47
Lane Group Flow (vph)	0	362	0	0	207	0	0	745	9	0	209	40
Confl. Bikes (#/hr)			3			4			27			2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	5%	0%	11%	1%
Parking (#/hr)		1			1							
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1		1	1		1
Actuated Green, G (s)		24.3			24.3			35.5	35.5		35.5	35.5
Effective Green, g (s)		25.3			24.3			35.5	35.5		35.5	35.5
Actuated g/C Ratio		0.33			0.32			0.46	0.46		0.46	0.46
Clearance Time (s)		4.0			4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)		2.0			2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		359			470			751	697		709	675
v/s Ratio Prot												
v/s Ratio Perm		c0.33			0.14			c0.46	0.01		0.14	0.03
v/c Ratio		1.01			0.44			0.99	0.01		0.29	0.06
Uniform Delay, d1		25.6			20.7			20.4	11.1		12.7	11.3
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		49.6			0.2			31.0	0.0		1.1	0.2
Delay (s)		75.2			20.9			51.3	11.1		13.8	11.5
Level of Service		E			C			D	B		B	B
Approach Delay (s)		75.2			20.9			50.3			13.1	
Approach LOS		E			C			D			B	

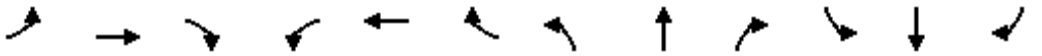
Intersection Summary			
HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	112.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	508	249	454	8	209	36
v/c Ratio	1.10	0.63	0.80	0.02	0.46	0.06
Control Delay	94.1	39.2	39.8	22.0	27.8	21.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.1	39.2	39.8	22.0	27.8	21.5
Queue Length 50th (ft)	~222	115	214	3	83	12
Queue Length 95th (ft)	#554	#240	#534	16	207	43
Internal Link Dist (ft)	246	196	408		760	
Turn Bay Length (ft)				100		100
Base Capacity (vph)	463	396	565	514	450	576
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	1.10	0.63	0.80	0.02	0.46	0.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	265	186	12	1	156	52	74	367	8	30	162	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	10	12	15	10	12	15
Total Lost time (s)		3.0			5.0			5.0	5.0		5.0	5.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00			0.99			1.00	0.96		1.00	0.98
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		1.00			0.97			1.00	0.85		1.00	0.85
Flt Protected		0.97			1.00			0.99	1.00		0.99	1.00
Satd. Flow (prot)		1429			1548			1625	1356		1534	1516
Flt Permitted		0.50			1.00			0.91	1.00		0.77	1.00
Satd. Flow (perm)		734			1546			1484	1356		1184	1516
Peak-hour factor, PHF	0.91	0.91	0.91	0.84	0.84	0.84	0.97	0.97	0.97	0.92	0.92	0.92
Adj. Flow (vph)	291	204	13	1	186	62	76	378	8	33	176	36
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	508	0	0	239	0	0	454	8	0	209	36
Confl. Bikes (#/hr)			8			4			21			3
Heavy Vehicles (%)	0%	0%	8%	0%	2%	4%	1%	5%	13%	3%	12%	3%
Parking (#/hr)		1										
Turn Type	D.P+P	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	3	3 4			4			1			1	
Permitted Phases	4			4			1		1	1		1
Actuated Green, G (s)		40.4			23.2			35.3	35.3		35.3	35.3
Effective Green, g (s)		40.4			23.2			35.3	35.3		35.3	35.3
Actuated g/C Ratio		0.41			0.24			0.36	0.36		0.36	0.36
Clearance Time (s)					5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)					2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		425			367			536	489		427	547
v/s Ratio Prot		c0.21										
v/s Ratio Perm		c0.28			0.15			c0.31	0.01		0.18	0.02
v/c Ratio		1.20			0.65			0.85	0.02		0.49	0.07
Uniform Delay, d1		28.7			33.6			28.7	20.0		24.2	20.4
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		108.8			3.1			15.2	0.1		4.0	0.2
Delay (s)		137.5			36.7			43.9	20.1		28.2	20.6
Level of Service		F			D			D	C		C	C
Approach Delay (s)		137.5			36.7			43.5			27.1	
Approach LOS		F			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	72.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	97.7	Sum of lost time (s)	19.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	589	498	157	640	426	168
v/c Ratio	1.44	0.84	0.34	0.75	0.87	0.19
Control Delay	247.8	36.9	42.1	36.1	57.2	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	247.8	36.9	42.1	36.1	57.2	11.4
Queue Length 50th (ft)	~325	309	81	314	308	31
Queue Length 95th (ft)	#422	288	#259	#842	407	113
Internal Link Dist (ft)	373			354	1127	
Turn Bay Length (ft)						
Base Capacity (vph)	410	675	456	848	592	858
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	1.44	0.74	0.34	0.75	0.72	0.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	512	433	140	570	388	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	9	11	16	13	12
Total Lost time (s)	7.0	7.0	6.0	7.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3079	1282	1468	1717	1615	1308
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3079	1282	1468	1717	1615	1308
Peak-hour factor, PHF	0.87	0.87	0.89	0.89	0.91	0.91
Adj. Flow (vph)	589	498	157	640	426	168
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	589	498	157	640	426	168
Confl. Bikes (#/hr)		6				
Heavy Vehicles (%)	2%	2%	7%	1%	1%	8%
Bus Blockages (#/hr)	0	0	0	0	7	7
Parking (#/hr)				1		
Turn Type	NA	pt+ov	Prot	NA	Prot	pt+ov
Protected Phases	1	1 5	6	1 6	5	5 6
Permitted Phases						
Actuated Green, G (s)	12.4	48.9	37.3	55.7	36.5	79.8
Effective Green, g (s)	12.4	48.9	37.3	49.7	36.5	79.8
Actuated g/C Ratio	0.10	0.41	0.31	0.41	0.30	0.66
Clearance Time (s)	7.0		6.0		6.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	318	522	456	711	491	869
v/s Ratio Prot	c0.19	c0.39	0.11	c0.37	0.26	0.13
v/s Ratio Perm						
v/c Ratio	1.85	0.95	0.34	0.90	0.87	0.19
Uniform Delay, d1	53.8	34.5	31.9	32.8	39.5	7.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	395.4	27.8	0.2	14.2	14.5	0.0
Delay (s)	449.2	62.2	32.1	47.0	53.9	7.8
Level of Service	F	E	C	D	D	A
Approach Delay (s)	271.9			44.1	40.9	
Approach LOS	F			D	D	

Intersection Summary			
HCM 2000 Control Delay	143.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	276	115	351	271	221	296
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.77	0.77	0.94	0.94
Hourly flow rate (vph)	378	158	456	352	235	315
Pedestrians	52			41	52	
Lane Width (ft)	10.5			10.0	13.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	4			3	5	
Right turn flare (veh)						
Median type	Raised			None		
Median storage veh)	1					
Upstream signal (ft)				1207		
pX, platoon unblocked						
vC, conflicting volume			430		1746	471
vC1, stage 1 conf vol					430	
vC2, stage 2 conf vol					1316	
vCu, unblocked vol			430		1746	471
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			58		0	42
cM capacity (veh/h)			1076		117	547

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NW 1	NW 2
Volume Total	378	158	456	352	235	315
Volume Left	0	0	456	0	235	0
Volume Right	0	158	0	0	0	315
cSH	1700	1700	1076	1700	117	547
Volume to Capacity	0.22	0.09	0.42	0.21	2.01	0.58
Queue Length 95th (ft)	0	0	54	0	483	91
Control Delay (s)	0.0	0.0	10.8	0.0	542.7	20.1
Lane LOS			B		F	C
Approach Delay (s)	0.0		6.1		243.5	
Approach LOS					F	

Intersection Summary			
Average Delay	73.3		
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	315	129	387	36	407	276
v/c Ratio	0.74	0.36	0.44	0.04	0.46	0.30
Control Delay	33.9	24.0	13.7	0.1	14.0	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	24.0	13.7	0.1	14.0	4.4
Queue Length 50th (ft)	99	37	65	0	70	7
Queue Length 95th (ft)	235	96	271	1	282	68
Internal Link Dist (ft)	281	334	760		387	
Turn Bay Length (ft)				100		100
Base Capacity (vph)	630	541	879	937	886	914
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	0.50	0.24	0.44	0.04	0.46	0.30

Intersection Summary

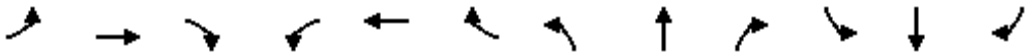
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	140	95	17	75	11	35	310	32	37	321	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	13	12	12	12	16	12	12	13
Total Lost time (s)		3.0			4.0			4.0	4.0		4.0	4.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		0.99			1.00			1.00	0.97		1.00	0.97
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.95			0.99			1.00	0.85		1.00	0.85
Flt Protected		0.99			0.99			0.99	1.00		0.99	1.00
Satd. Flow (prot)		1628			1542			1657	1603		1671	1458
Flt Permitted		0.96			0.90			0.94	1.00		0.94	1.00
Satd. Flow (perm)		1569			1404			1562	1603		1575	1458
Peak-hour factor, PHF	0.84	0.84	0.84	0.80	0.80	0.80	0.89	0.89	0.89	0.88	0.88	0.88
Adj. Flow (vph)	35	167	113	21	94	14	39	348	36	42	365	276
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	17	0	0	106
Lane Group Flow (vph)	0	315	0	0	129	0	0	387	19	0	407	170
Confl. Bikes (#/hr)			2			1			10			13
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%
Parking (#/hr)		1			1							
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1		1	1		1
Actuated Green, G (s)		16.5			16.5			36.2	36.2		36.2	36.2
Effective Green, g (s)		17.5			16.5			36.2	36.2		36.2	36.2
Actuated g/C Ratio		0.25			0.24			0.52	0.52		0.52	0.52
Clearance Time (s)		4.0			4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)		2.0			2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		397			335			818	839		825	763
v/s Ratio Prot												
v/s Ratio Perm		c0.20			0.09			0.25	0.01		c0.26	0.12
v/c Ratio		0.79			0.39			0.47	0.02		0.49	0.22
Uniform Delay, d1		24.1			22.0			10.4	7.9		10.6	8.9
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		9.8			0.3			2.0	0.0		2.1	0.7
Delay (s)		33.9			22.3			12.4	8.0		12.7	9.5
Level of Service		C			C			B	A		B	A
Approach Delay (s)		33.9			22.3			12.0			11.4	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	69.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	391	278	327	15	343	99
v/c Ratio	0.70	0.79	0.70	0.02	0.65	0.16
Control Delay	27.7	50.6	35.2	21.5	31.8	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	50.6	35.2	21.5	31.8	21.6
Queue Length 50th (ft)	138	135	143	5	146	33
Queue Length 95th (ft)	#333	#317	#375	22	#386	96
Internal Link Dist (ft)	246	196	408		760	
Turn Bay Length (ft)				100		100
Base Capacity (vph)	616	419	465	620	528	618
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.66	0.70	0.02	0.65	0.16

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	76	236	25	4	205	32	73	211	13	66	257	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	10	12	15	10	12	15
Total Lost time (s)		3.0			5.0			5.0	5.0		5.0	5.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00			1.00			1.00	0.97		1.00	0.97
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.99			0.98			1.00	0.85		1.00	0.85
Flt Protected		0.99			1.00			0.99	1.00		0.99	1.00
Satd. Flow (prot)		1435			1596			1628	1556		1647	1553
Flt Permitted		0.82			0.99			0.71	1.00		0.80	1.00
Satd. Flow (perm)		1187			1584			1168	1556		1324	1553
Peak-hour factor, PHF	0.86	0.86	0.86	0.87	0.87	0.87	0.87	0.87	0.87	0.94	0.94	0.94
Adj. Flow (vph)	88	274	29	5	236	37	84	243	15	70	273	99
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	391	0	0	273	0	0	327	15	0	343	99
Confl. Bikes (#/hr)			13			3			7			9
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	0%	5%	0%	2%	3%	0%
Parking (#/hr)		1										
Turn Type	D.P+P	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	3	3 4			4			1			1	
Permitted Phases	4			4			1		1	1		1
Actuated Green, G (s)		36.5			19.5			35.6	35.6		35.6	35.6
Effective Green, g (s)		36.5			19.5			35.6	35.6		35.6	35.6
Actuated g/C Ratio		0.39			0.21			0.38	0.38		0.38	0.38
Clearance Time (s)					5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)					2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		505			328			442	589		501	588
v/s Ratio Prot		c0.14										
v/s Ratio Perm		0.16			c0.17			c0.28	0.01		0.26	0.06
v/c Ratio		0.77			0.83			0.74	0.03		0.68	0.17
Uniform Delay, d1		25.1			35.7			25.2	18.3		24.5	19.4
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		6.7			15.7			10.6	0.1		7.4	0.6
Delay (s)		31.8			51.4			35.8	18.4		31.9	20.0
Level of Service		C			D			D	B		C	B
Approach Delay (s)		31.8			51.4			35.1			29.2	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	551	293	150	607	396	217
v/c Ratio	1.45	0.53	0.32	0.70	0.86	0.25
Control Delay	253.0	21.1	39.3	32.7	57.1	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	253.0	21.1	39.3	32.7	57.1	10.6
Queue Length 50th (ft)	~305	154	72	269	289	36
Queue Length 95th (ft)	#394	106	#219	#726	367	139
Internal Link Dist (ft)	373			354	1127	
Turn Bay Length (ft)						
Base Capacity (vph)	381	656	474	866	599	870
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	1.45	0.45	0.32	0.70	0.66	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	474	252	126	510	388	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	9	11	16	13	12
Total Lost time (s)	5.0	5.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3049	1211	1378	1668	1565	1280
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3049	1211	1378	1668	1565	1280
Peak-hour factor, PHF	0.86	0.86	0.84	0.84	0.98	0.98
Adj. Flow (vph)	551	293	150	607	396	217
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	551	293	150	607	396	217
Confl. Bikes (#/hr)		14				
Heavy Vehicles (%)	3%	8%	14%	4%	3%	9%
Bus Blockages (#/hr)	0	0	0	0	10	10
Parking (#/hr)				1		
Turn Type	NA	pt+ov	Prot	NA	Prot	pt+ov
Protected Phases	1	1 5	6	1 6	5	5 6
Permitted Phases						
Actuated Green, G (s)	11.4	46.9	41.3	58.7	35.5	82.8
Effective Green, g (s)	11.4	46.9	41.3	52.7	35.5	82.8
Actuated g/C Ratio	0.10	0.39	0.34	0.44	0.30	0.69
Clearance Time (s)	5.0		6.0		6.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	289	473	474	732	462	883
v/s Ratio Prot	c0.18	0.24	0.11	c0.36	c0.25	0.17
v/s Ratio Perm						
v/c Ratio	1.91	0.62	0.32	0.83	0.86	0.25
Uniform Delay, d1	54.3	29.4	29.0	29.7	39.9	6.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	420.7	1.7	0.1	7.4	14.0	0.1
Delay (s)	475.0	31.1	29.1	37.0	53.9	7.0
Level of Service	F	C	C	D	D	A
Approach Delay (s)	320.9			35.5	37.3	
Approach LOS	F			D	D	

Intersection Summary			
HCM 2000 Control Delay	144.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	422	287	227	279	130	308
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.88	0.88	0.85	0.85
Hourly flow rate (vph)	444	302	258	317	153	362
Pedestrians	24			15	24	
Lane Width (ft)	10.5			10.0	13.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	2			1	2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1207		
pX, platoon unblocked						
vC, conflicting volume			468		1325	483
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			468		1325	483
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			76		0	35
cM capacity (veh/h)			1070		125	561

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NW 1	NW 2
Volume Total	444	302	258	317	153	362
Volume Left	0	0	258	0	153	0
Volume Right	0	302	0	0	0	362
cSH	1700	1700	1070	1700	125	561
Volume to Capacity	0.26	0.18	0.24	0.19	1.22	0.65
Queue Length 95th (ft)	0	0	24	0	237	115
Control Delay (s)	0.0	0.0	9.4	0.0	218.5	22.4
Lane LOS			A		F	C
Approach Delay (s)	0.0		4.2		80.6	
Approach LOS					F	

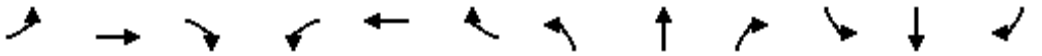
Intersection Summary			
Average Delay	23.9		
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	387	247	770	20	218	91
v/c Ratio	1.08	0.49	0.96	0.03	0.30	0.12
Control Delay	97.4	24.6	44.2	0.1	14.0	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.4	24.6	44.2	0.1	14.0	4.1
Queue Length 50th (ft)	~162	76	265	0	46	0
Queue Length 95th (ft)	#469	149	#762	0	137	25
Internal Link Dist (ft)	281	334	760		387	
Turn Bay Length (ft)				100		100
Base Capacity (vph)	359	508	803	784	734	767
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	1.08	0.49	0.96	0.03	0.30	0.12

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	198	87	66	3	116	54	40	676	19	3	182	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	13	12	12	12	16	12	12	13
Total Lost time (s)		3.0			4.0			4.0	4.0		4.0	4.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00			0.99			1.00	0.96		1.00	0.98
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.97			0.96			1.00	0.85		1.00	0.85
Flt Protected		0.97			1.00			1.00	1.00		1.00	1.00
Satd. Flow (prot)		1637			1502			1658	1504		1542	1455
Flt Permitted		0.60			0.99			0.97	1.00		0.96	1.00
Satd. Flow (perm)		1015			1495			1619	1504		1483	1455
Peak-hour factor, PHF	0.91	0.91	0.91	0.70	0.70	0.70	0.93	0.93	0.93	0.85	0.85	0.85
Adj. Flow (vph)	218	96	73	4	166	77	43	727	20	4	214	91
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	11	0	0	49
Lane Group Flow (vph)	0	387	0	0	247	0	0	770	9	0	218	42
Confl. Bikes (#/hr)			3			4			27			2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	5%	0%	11%	1%
Parking (#/hr)		1			1							
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1		1	1		1
Actuated Green, G (s)		24.3			24.3			35.5	35.5		35.5	35.5
Effective Green, g (s)		25.3			24.3			35.5	35.5		35.5	35.5
Actuated g/C Ratio		0.33			0.32			0.46	0.46		0.46	0.46
Clearance Time (s)		4.0			4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)		2.0			2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		335			474			751	697		688	675
v/s Ratio Prot												
v/s Ratio Perm		c0.38			0.17			c0.48	0.01		0.15	0.03
v/c Ratio		1.16			0.52			1.03	0.01		0.32	0.06
Uniform Delay, d1		25.6			21.3			20.5	11.1		12.9	11.3
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		98.3			0.5			39.4	0.0		1.2	0.2
Delay (s)		123.9			21.8			59.9	11.1		14.1	11.5
Level of Service		F			C			E	B		B	B
Approach Delay (s)		123.9			21.8			58.7			13.3	
Approach LOS		F			C			E			B	

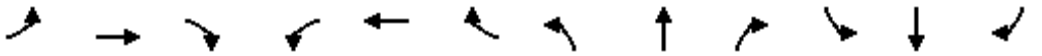
Intersection Summary			
HCM 2000 Control Delay	59.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	116.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	532	259	468	8	218	38
v/c Ratio	1.16	0.65	0.83	0.02	0.51	0.07
Control Delay	117.9	40.3	42.1	22.0	29.2	21.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	117.9	40.3	42.1	22.0	29.2	21.5
Queue Length 50th (ft)	~218	120	224	3	88	13
Queue Length 95th (ft)	#599	#263	#558	16	221	45
Internal Link Dist (ft)	246	196	408		760	
Turn Bay Length (ft)				100		100
Base Capacity (vph)	458	396	563	514	428	576
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	1.16	0.65	0.83	0.02	0.51	0.07

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	274	198	12	1	163	54	76	378	8	32	168	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	10	12	15	10	12	15
Total Lost time (s)		3.0			5.0			5.0	5.0		5.0	5.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00			0.99			1.00	0.96		1.00	0.98
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		1.00			0.97			1.00	0.85		1.00	0.85
Flt Protected		0.97			1.00			0.99	1.00		0.99	1.00
Satd. Flow (prot)		1430			1549			1625	1356		1534	1516
Flt Permitted		0.49			1.00			0.90	1.00		0.73	1.00
Satd. Flow (perm)		714			1547			1481	1356		1126	1516
Peak-hour factor, PHF	0.91	0.91	0.91	0.84	0.84	0.84	0.97	0.97	0.97	0.92	0.92	0.92
Adj. Flow (vph)	301	218	13	1	194	64	78	390	8	35	183	38
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	532	0	0	249	0	0	468	8	0	218	38
Confl. Bikes (#/hr)			8			4			21			3
Heavy Vehicles (%)	0%	0%	8%	0%	2%	4%	1%	5%	13%	3%	12%	3%
Parking (#/hr)		1										
Turn Type	D.P+P	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	3	3 4			4			1			1	
Permitted Phases	4			4			1		1	1		1
Actuated Green, G (s)		40.4			23.2			35.3	35.3		35.3	35.3
Effective Green, g (s)		40.4			23.2			35.3	35.3		35.3	35.3
Actuated g/C Ratio		0.41			0.24			0.36	0.36		0.36	0.36
Clearance Time (s)					5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)					2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		421			367			535	489		406	547
v/s Ratio Prot		c0.22										
v/s Ratio Perm		c0.30			0.16			c0.32	0.01		0.19	0.03
v/c Ratio		1.26			0.68			0.87	0.02		0.54	0.07
Uniform Delay, d1		28.7			33.9			29.1	20.0		24.7	20.4
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		136.5			3.9			17.8	0.1		5.0	0.2
Delay (s)		165.1			37.8			47.0	20.1		29.7	20.7
Level of Service		F			D			D	C		C	C
Approach Delay (s)		165.1			37.8			46.5			28.4	
Approach LOS		F			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	83.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	97.7	Sum of lost time (s)	19.0
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	603	544	178	656	466	184
v/c Ratio	1.47	0.87	0.42	0.81	0.89	0.21
Control Delay	261.8	39.4	44.7	40.2	57.2	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	261.8	39.4	44.7	40.2	57.2	11.5
Queue Length 50th (ft)	~337	324	101	366	325	34
Queue Length 95th (ft)	#434	#404	#299	#868	#460	123
Internal Link Dist (ft)	373			354	1127	
Turn Bay Length (ft)						
Base Capacity (vph)	410	675	424	810	592	859
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	1.47	0.81	0.42	0.81	0.79	0.21

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	525	473	158	584	424	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	9	11	16	13	12
Total Lost time (s)	7.0	7.0	6.0	7.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3079	1282	1468	1717	1615	1308
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3079	1282	1468	1717	1615	1308
Peak-hour factor, PHF	0.87	0.87	0.89	0.89	0.91	0.91
Adj. Flow (vph)	603	544	178	656	466	184
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	603	544	178	656	466	184
Confl. Bikes (#/hr)		6				
Heavy Vehicles (%)	2%	2%	7%	1%	1%	8%
Bus Blockages (#/hr)	0	0	0	0	7	7
Parking (#/hr)				1		
Turn Type	NA	pt+ov	Prot	NA	Prot	pt+ov
Protected Phases	1	1 5	6	1 6	5	5 6
Permitted Phases						
Actuated Green, G (s)	12.4	51.5	34.7	53.1	39.1	79.8
Effective Green, g (s)	12.4	51.5	34.7	47.1	39.1	79.8
Actuated g/C Ratio	0.10	0.43	0.29	0.39	0.33	0.66
Clearance Time (s)	7.0		6.0		6.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	318	550	424	673	526	869
v/s Ratio Prot	c0.20	c0.42	0.12	c0.38	0.29	0.14
v/s Ratio Perm						
v/c Ratio	1.90	0.99	0.42	0.97	0.89	0.21
Uniform Delay, d1	53.8	34.0	34.5	35.9	38.3	7.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	414.9	35.1	0.2	28.1	15.9	0.0
Delay (s)	468.7	69.1	34.8	64.0	54.2	7.9
Level of Service	F	E	C	E	D	A
Approach Delay (s)	279.2			57.7	41.1	
Approach LOS	F			E	D	

Intersection Summary			
HCM 2000 Control Delay	150.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	295	119	387	287	229	326
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.77	0.77	0.94	0.94
Hourly flow rate (vph)	404	163	503	373	244	347
Pedestrians	52			41	52	
Lane Width (ft)	10.5			10.0	13.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	4			3	5	
Right turn flare (veh)						
Median type	Raised			None		
Median storage veh)	1					
Upstream signal (ft)				1207		
pX, platoon unblocked						
vC, conflicting volume			456		1886	497
vC1, stage 1 conf vol					456	
vC2, stage 2 conf vol					1430	
vCu, unblocked vol			456		1886	497
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			52		0	34
cM capacity (veh/h)			1053		95	529

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NW 1	NW 2
Volume Total	404	163	503	373	244	347
Volume Left	0	0	503	0	244	0
Volume Right	0	163	0	0	0	347
cSH	1700	1700	1053	1700	95	529
Volume to Capacity	0.24	0.10	0.48	0.22	2.58	0.66
Queue Length 95th (ft)	0	0	66	0	567	118
Control Delay (s)	0.0	0.0	11.5	0.0	810.5	23.9
Lane LOS			B		F	C
Approach Delay (s)	0.0		6.6		348.4	
Approach LOS					F	

Intersection Summary			
Average Delay	104.0		
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	352	165	416	37	426	289
v/c Ratio	0.75	0.41	0.49	0.04	0.50	0.32
Control Delay	34.1	24.2	15.4	0.2	15.5	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	24.2	15.4	0.2	15.5	5.0
Queue Length 50th (ft)	113	48	82	0	84	10
Queue Length 95th (ft)	#287	120	297	1	300	77
Internal Link Dist (ft)	281	334	760		387	
Turn Bay Length (ft)				100		100
Base Capacity (vph)	610	533	846	906	851	890
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	0.58	0.31	0.49	0.04	0.50	0.32

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	168	97	18	103	11	36	335	33	38	337	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	13	12	12	12	16	12	12	13
Total Lost time (s)		3.0			4.0			4.0	4.0		4.0	4.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		0.99			1.00			1.00	0.97		1.00	0.97
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.96			0.99			1.00	0.85		1.00	0.85
Flt Protected		0.99			0.99			1.00	1.00		0.99	1.00
Satd. Flow (prot)		1637			1550			1657	1602		1671	1458
Flt Permitted		0.96			0.92			0.94	1.00		0.93	1.00
Satd. Flow (perm)		1575			1433			1561	1602		1569	1458
Peak-hour factor, PHF	0.84	0.84	0.84	0.80	0.80	0.80	0.89	0.89	0.89	0.88	0.88	0.88
Adj. Flow (vph)	37	200	115	22	129	14	40	376	37	43	383	289
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	18	0	0	110
Lane Group Flow (vph)	0	352	0	0	165	0	0	416	19	0	426	179
Confl. Bikes (#/hr)			2			1			10			13
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%
Parking (#/hr)		1			1							
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1		1	1		1
Actuated Green, G (s)		18.7			18.7			36.0	36.0		36.0	36.0
Effective Green, g (s)		19.7			18.7			36.0	36.0		36.0	36.0
Actuated g/C Ratio		0.28			0.26			0.51	0.51		0.51	0.51
Clearance Time (s)		4.0			4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)		2.0			2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		435			376			789	810		793	737
v/s Ratio Prot												
v/s Ratio Perm		c0.22			0.12			0.27	0.01		c0.27	0.12
v/c Ratio		0.81			0.44			0.53	0.02		0.54	0.24
Uniform Delay, d1		24.0			21.9			11.9	8.8		11.9	9.9
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		10.1			0.3			2.5	0.1		2.6	0.8
Delay (s)		34.1			22.2			14.4	8.9		14.5	10.7
Level of Service		C			C			B	A		B	B
Approach Delay (s)		34.1			22.2			13.9			13.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	71.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	411	305	346	15	361	101
v/c Ratio	0.73	0.80	0.82	0.02	0.76	0.17
Control Delay	29.0	50.3	45.0	21.6	38.8	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	50.3	45.0	21.6	38.8	22.1
Queue Length 50th (ft)	148	151	166	5	167	35
Queue Length 95th (ft)	#392	#361	#423	22	#439	98
Internal Link Dist (ft)	246	196	408		760	
Turn Bay Length (ft)				100		100
Base Capacity (vph)	583	408	422	602	474	600
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	0.70	0.75	0.82	0.02	0.76	0.17

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	247	26	4	224	37	75	226	13	70	270	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	10	12	15	10	12	15
Total Lost time (s)		3.0			5.0			5.0	5.0		5.0	5.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00			1.00			1.00	0.97		1.00	0.97
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.99			0.98			1.00	0.85		1.00	0.85
Flt Protected		0.99			1.00			0.99	1.00		0.99	1.00
Satd. Flow (prot)		1435			1594			1628	1556		1647	1552
Flt Permitted		0.78			0.99			0.66	1.00		0.74	1.00
Satd. Flow (perm)		1134			1583			1091	1556		1225	1552
Peak-hour factor, PHF	0.86	0.86	0.86	0.87	0.87	0.87	0.87	0.87	0.87	0.94	0.94	0.94
Adj. Flow (vph)	94	287	30	5	257	43	86	260	15	74	287	101
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	411	0	0	300	0	0	346	15	0	361	101
Confl. Bikes (#/hr)			13			3			7			9
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	0%	5%	0%	2%	3%	0%
Parking (#/hr)		1										
Turn Type	D.P+P	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	3	3 4			4			1			1	
Permitted Phases	4			4			1		1	1		1
Actuated Green, G (s)		38.9			21.7			35.4	35.4		35.4	35.4
Effective Green, g (s)		38.9			21.7			35.4	35.4		35.4	35.4
Actuated g/C Ratio		0.40			0.23			0.37	0.37		0.37	0.37
Clearance Time (s)					5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)					2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		512			357			401	572		450	571
v/s Ratio Prot		c0.14										
v/s Ratio Perm		0.18			c0.19			c0.32	0.01		0.29	0.07
v/c Ratio		0.80			0.84			0.86	0.03		0.80	0.18
Uniform Delay, d1		25.3			35.6			28.2	19.4		27.3	20.6
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		8.4			15.1			21.1	0.1		14.0	0.7
Delay (s)		33.6			50.7			49.2	19.5		41.3	21.2
Level of Service		C			D			D	B		D	C
Approach Delay (s)		33.6			50.7			48.0			36.9	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	41.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	96.2	Sum of lost time (s)	19.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	551	294	151	607	398	222
v/c Ratio	1.45	0.53	0.32	0.70	0.86	0.25
Control Delay	253.0	21.0	39.4	32.9	56.9	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	253.0	21.0	39.4	32.9	56.9	10.7
Queue Length 50th (ft)	~305	154	73	270	290	37
Queue Length 95th (ft)	#394	106	#223	#728	369	142
Internal Link Dist (ft)	373			354	1127	
Turn Bay Length (ft)						
Base Capacity (vph)	381	656	472	863	599	869
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	1.45	0.45	0.32	0.70	0.66	0.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	474	253	127	510	390	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	9	11	16	13	12
Total Lost time (s)	5.0	5.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3049	1211	1378	1668	1565	1280
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3049	1211	1378	1668	1565	1280
Peak-hour factor, PHF	0.86	0.86	0.84	0.84	0.98	0.98
Adj. Flow (vph)	551	294	151	607	398	222
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	551	294	151	607	398	222
Confl. Bikes (#/hr)		14				
Heavy Vehicles (%)	3%	8%	14%	4%	3%	9%
Bus Blockages (#/hr)	0	0	0	0	10	10
Parking (#/hr)				1		
Turn Type	NA	pt+ov	Prot	NA	Prot	pt+ov
Protected Phases	1	1 5	6	1 6	5	5 6
Permitted Phases						
Actuated Green, G (s)	11.4	47.1	41.1	58.5	35.7	82.8
Effective Green, g (s)	11.4	47.1	41.1	52.5	35.7	82.8
Actuated g/C Ratio	0.10	0.39	0.34	0.44	0.30	0.69
Clearance Time (s)	5.0		6.0		6.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	289	475	471	729	465	883
v/s Ratio Prot	c0.18	0.24	0.11	c0.36	c0.25	0.17
v/s Ratio Perm						
v/c Ratio	1.91	0.62	0.32	0.83	0.86	0.25
Uniform Delay, d1	54.3	29.2	29.1	29.9	39.7	7.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	420.7	1.7	0.1	7.7	13.8	0.1
Delay (s)	475.0	30.9	29.3	37.6	53.6	7.0
Level of Service	F	C	C	D	D	A
Approach Delay (s)	320.5			35.9	36.9	
Approach LOS	F			D	D	

Intersection Summary			
HCM 2000 Control Delay	144.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	429	289	227	281	130	308
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.88	0.88	0.85	0.85
Hourly flow rate (vph)	452	304	258	319	153	362
Pedestrians	24			15	24	
Lane Width (ft)	10.5			10.0	13.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	2			1	2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				1207		
pX, platoon unblocked						
vC, conflicting volume			476		1335	491
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			476		1335	491
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			76		0	35
cM capacity (veh/h)			1063		123	556

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NW 1	NW 2
Volume Total	452	304	258	319	153	362
Volume Left	0	0	258	0	153	0
Volume Right	0	304	0	0	0	362
cSH	1700	1700	1063	1700	123	556
Volume to Capacity	0.27	0.18	0.24	0.19	1.24	0.65
Queue Length 95th (ft)	0	0	24	0	241	118
Control Delay (s)	0.0	0.0	9.5	0.0	226.6	22.8
Lane LOS			A		F	C
Approach Delay (s)	0.0		4.2		83.3	
Approach LOS					F	

Intersection Summary			
Average Delay	24.5		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	390	247	771	20	224	104
v/c Ratio	1.09	0.49	0.96	0.03	0.31	0.13
Control Delay	100.8	24.6	44.7	0.1	14.1	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	100.8	24.6	44.7	0.1	14.1	3.9
Queue Length 50th (ft)	~176	76	266	0	48	0
Queue Length 95th (ft)	#472	149	#764	0	141	27
Internal Link Dist (ft)	281	334	760		387	
Turn Bay Length (ft)				100		100
Base Capacity (vph)	358	508	802	784	733	773
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	1.09	0.49	0.96	0.03	0.31	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	201	87	66	3	116	54	40	677	19	3	187	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	13	12	12	12	16	12	12	13
Total Lost time (s)		3.0			4.0			4.0	4.0		4.0	4.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00			0.99			1.00	0.96		1.00	0.98
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.97			0.96			1.00	0.85		1.00	0.85
Flt Protected		0.97			1.00			1.00	1.00		1.00	1.00
Satd. Flow (prot)		1637			1502			1658	1504		1542	1455
Flt Permitted		0.60			0.99			0.97	1.00		0.96	1.00
Satd. Flow (perm)		1013			1495			1619	1504		1481	1455
Peak-hour factor, PHF	0.91	0.91	0.91	0.70	0.70	0.70	0.93	0.93	0.93	0.85	0.85	0.85
Adj. Flow (vph)	221	96	73	4	166	77	43	728	20	4	220	104
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	11	0	0	56
Lane Group Flow (vph)	0	390	0	0	247	0	0	771	9	0	224	48
Confl. Bikes (#/hr)			3			4			27			2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	5%	0%	11%	1%
Parking (#/hr)		1			1							
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1		1	1		1
Actuated Green, G (s)		24.3			24.3			35.5	35.5		35.5	35.5
Effective Green, g (s)		25.3			24.3			35.5	35.5		35.5	35.5
Actuated g/C Ratio		0.33			0.32			0.46	0.46		0.46	0.46
Clearance Time (s)		4.0			4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)		2.0			2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		335			474			751	697		687	675
v/s Ratio Prot												
v/s Ratio Perm		c0.39			0.17			c0.48	0.01		0.15	0.03
v/c Ratio		1.16			0.52			1.03	0.01		0.33	0.07
Uniform Delay, d1		25.6			21.3			20.5	11.1		12.9	11.4
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		101.6			0.5			39.8	0.0		1.3	0.2
Delay (s)		127.2			21.8			60.3	11.1		14.2	11.6
Level of Service		F			C			E	B		B	B
Approach Delay (s)		127.2			21.8			59.1			13.4	
Approach LOS		F			C			E			B	

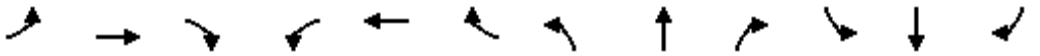
Intersection Summary			
HCM 2000 Control Delay	60.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	117.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	532	260	468	8	222	39
v/c Ratio	1.16	0.66	0.83	0.02	0.53	0.07
Control Delay	118.1	40.4	42.1	22.0	30.0	21.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	118.1	40.4	42.1	22.0	30.0	21.5
Queue Length 50th (ft)	~219	121	224	3	91	13
Queue Length 95th (ft)	#600	#263	#558	16	227	45
Internal Link Dist (ft)	246	196	408		760	
Turn Bay Length (ft)				100		100
Base Capacity (vph)	457	396	563	514	419	576
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	1.16	0.66	0.83	0.02	0.53	0.07

Intersection Summary

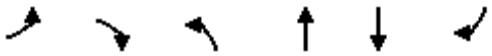
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	274	198	12	1	163	55	76	378	8	34	170	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	10	12	15	10	12	15
Total Lost time (s)		3.0			5.0			5.0	5.0		5.0	5.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00			0.99			1.00	0.96		1.00	0.98
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		1.00			0.97			1.00	0.85		1.00	0.85
Flt Protected		0.97			1.00			0.99	1.00		0.99	1.00
Satd. Flow (prot)		1430			1548			1625	1356		1535	1516
Flt Permitted		0.48			1.00			0.90	1.00		0.71	1.00
Satd. Flow (perm)		711			1546			1479	1356		1103	1516
Peak-hour factor, PHF	0.91	0.91	0.91	0.84	0.84	0.84	0.97	0.97	0.97	0.92	0.92	0.92
Adj. Flow (vph)	301	218	13	1	194	65	78	390	8	37	185	39
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	532	0	0	250	0	0	468	8	0	222	39
Confl. Bikes (#/hr)			8			4			21			3
Heavy Vehicles (%)	0%	0%	8%	0%	2%	4%	1%	5%	13%	3%	12%	3%
Parking (#/hr)		1										
Turn Type	D.P+P	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	3	3 4			4			1			1	
Permitted Phases	4			4			1		1	1		1
Actuated Green, G (s)		40.4			23.2			35.3	35.3		35.3	35.3
Effective Green, g (s)		40.4			23.2			35.3	35.3		35.3	35.3
Actuated g/C Ratio		0.41			0.24			0.36	0.36		0.36	0.36
Clearance Time (s)					5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)					2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		420			367			534	489		398	547
v/s Ratio Prot		c0.22										
v/s Ratio Perm		c0.30			0.16			c0.32	0.01		0.20	0.03
v/c Ratio		1.27			0.68			0.88	0.02		0.56	0.07
Uniform Delay, d1		28.7			33.9			29.2	20.0		25.0	20.5
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		137.7			4.1			18.0	0.1		5.5	0.3
Delay (s)		166.4			38.0			47.2	20.1		30.5	20.7
Level of Service		F			D			D	C		C	C
Approach Delay (s)		166.4			38.0			46.8			29.0	
Approach LOS		F			D			D			C	

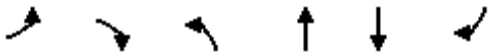
Intersection Summary			
HCM 2000 Control Delay	83.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	97.7	Sum of lost time (s)	19.0
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	6	10	2	812	342	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.91	0.91	0.85	0.85
Hourly flow rate (vph)	7	11	2	892	402	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				467		
pX, platoon unblocked	0.58					
vC, conflicting volume	1300	403	404			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1156	403	404			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	98	100			
cM capacity (veh/h)	127	650	1161			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	17	895	404
Volume Left	7	2	0
Volume Right	11	0	1
cSH	255	1161	1700
Volume to Capacity	0.07	0.00	0.24
Queue Length 95th (ft)	5	0	0
Control Delay (s)	20.1	0.1	0.0
Lane LOS	C	A	
Approach Delay (s)	20.1	0.1	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	3	6	0	818	336	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.91	0.91	0.85	0.85
Hourly flow rate (vph)	3	7	0	899	395	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				588		
pX, platoon unblocked	0.59					
vC, conflicting volume	1294	395	395			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1153	395	395			
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	100			
cM capacity (veh/h)	130	656	1169			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	10	899	395
Volume Left	3	0	0
Volume Right	7	0	0
cSH	279	1700	1700
Volume to Capacity	0.04	0.53	0.23
Queue Length 95th (ft)	3	0	0
Control Delay (s)	18.4	0.0	0.0
Lane LOS	C		
Approach Delay (s)	18.4	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	603	547	182	656	467	186
v/c Ratio	1.47	0.88	0.43	0.81	0.88	0.21
Control Delay	261.8	39.5	45.0	40.5	56.7	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	261.8	39.5	45.0	40.5	56.7	11.5
Queue Length 50th (ft)	~337	325	104	368	325	35
Queue Length 95th (ft)	#434	#408	#309	#868	#464	125
Internal Link Dist (ft)	373			354	1127	
Turn Bay Length (ft)						
Base Capacity (vph)	410	675	421	807	592	858
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	1.47	0.81	0.43	0.81	0.79	0.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	525	476	162	584	425	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	9	11	16	13	12
Total Lost time (s)	7.0	7.0	6.0	7.0	6.0	6.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3079	1282	1468	1717	1615	1308
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3079	1282	1468	1717	1615	1308
Peak-hour factor, PHF	0.87	0.87	0.89	0.89	0.91	0.91
Adj. Flow (vph)	603	547	182	656	467	186
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	603	547	182	656	467	186
Confl. Bikes (#/hr)		6				
Heavy Vehicles (%)	2%	2%	7%	1%	1%	8%
Bus Blockages (#/hr)	0	0	0	0	7	7
Parking (#/hr)				1		
Turn Type	NA	pt+ov	Prot	NA	Prot	pt+ov
Protected Phases	1	1 5	6	1 6	5	5 6
Permitted Phases						
Actuated Green, G (s)	12.4	51.8	34.4	52.8	39.4	79.8
Effective Green, g (s)	12.4	51.8	34.4	46.8	39.4	79.8
Actuated g/C Ratio	0.10	0.43	0.29	0.39	0.33	0.66
Clearance Time (s)	7.0		6.0		6.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	318	553	420	669	530	869
v/s Ratio Prot	c0.20	c0.43	0.12	c0.38	0.29	0.14
v/s Ratio Perm						
v/c Ratio	1.90	0.99	0.43	0.98	0.88	0.21
Uniform Delay, d1	53.8	33.8	34.9	36.2	38.1	7.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	414.9	35.0	0.3	29.7	15.3	0.0
Delay (s)	468.7	68.8	35.1	65.9	53.4	7.9
Level of Service	F	E	D	E	D	A
Approach Delay (s)	278.5			59.2	40.5	
Approach LOS	F			E	D	

Intersection Summary			
HCM 2000 Control Delay	150.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	298	120	387	294	231	326
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.77	0.77	0.94	0.94
Hourly flow rate (vph)	408	164	503	382	246	347
Pedestrians	52			41	52	
Lane Width (ft)	10.5			10.0	13.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	4			3	5	
Right turn flare (veh)						
Median type	Raised			None		
Median storage veh)	1					
Upstream signal (ft)				1207		
pX, platoon unblocked						
vC, conflicting volume			460		1899	501
vC1, stage 1 conf vol					460	
vC2, stage 2 conf vol					1439	
vCu, unblocked vol			460		1899	501
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			52		0	34
cM capacity (veh/h)			1049		93	526

Direction, Lane #	NB 1	NB 2	SB 1	SB 2	NW 1	NW 2
Volume Total	408	164	503	382	246	347
Volume Left	0	0	503	0	246	0
Volume Right	0	164	0	0	0	347
cSH	1700	1700	1049	1700	93	526
Volume to Capacity	0.24	0.10	0.48	0.22	2.63	0.66
Queue Length 95th (ft)	0	0	66	0	576	120
Control Delay (s)	0.0	0.0	11.5	0.0	837.0	24.1
Lane LOS			B		F	C
Approach Delay (s)	0.0		6.6		361.2	
Approach LOS					F	

Intersection Summary			
Average Delay	107.3		
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	365	165	422	37	429	290
v/c Ratio	0.76	0.39	0.51	0.04	0.52	0.33
Control Delay	34.4	23.5	16.1	0.2	16.2	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	23.5	16.1	0.2	16.2	5.1
Queue Length 50th (ft)	120	48	91	0	93	11
Queue Length 95th (ft)	#309	119	302	1	303	78
Internal Link Dist (ft)	281	334	760		387	
Turn Bay Length (ft)				100		100
Base Capacity (vph)	588	526	830	890	833	876
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.31	0.51	0.04	0.52	0.33

Intersection Summary

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

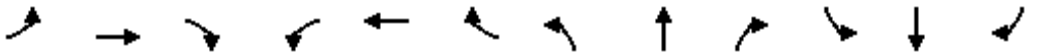
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	168	97	18	103	11	36	340	33	38	340	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	13	12	12	12	16	12	12	13
Total Lost time (s)		3.0			4.0			4.0	4.0		4.0	4.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		0.99			1.00			1.00	0.97		1.00	0.97
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.96			0.99			1.00	0.85		1.00	0.85
Flt Protected		0.99			0.99			1.00	1.00		1.00	1.00
Satd. Flow (prot)		1638			1550			1657	1602		1671	1457
Flt Permitted		0.94			0.92			0.94	1.00		0.93	1.00
Satd. Flow (perm)		1551			1442			1561	1602		1568	1457
Peak-hour factor, PHF	0.84	0.84	0.84	0.80	0.80	0.80	0.89	0.89	0.89	0.88	0.88	0.88
Adj. Flow (vph)	50	200	115	22	129	14	40	382	37	43	386	290
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	19	0	0	111
Lane Group Flow (vph)	0	365	0	0	165	0	0	422	18	0	429	179
Confl. Bikes (#/hr)			2			1			10			13
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%
Parking (#/hr)		1			1							
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1		1	1		1
Actuated Green, G (s)		19.9			19.9			35.9	35.9		35.9	35.9
Effective Green, g (s)		20.9			19.9			35.9	35.9		35.9	35.9
Actuated g/C Ratio		0.29			0.27			0.50	0.50		0.50	0.50
Clearance Time (s)		4.0			4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)		2.0			2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		447			396			774	794		777	722
v/s Ratio Prot												
v/s Ratio Perm		c0.24			0.11			0.27	0.01		c0.27	0.12
v/c Ratio		0.82			0.42			0.55	0.02		0.55	0.25
Uniform Delay, d1		24.0			21.5			12.6	9.3		12.7	10.5
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		10.5			0.3			2.8	0.1		2.8	0.8
Delay (s)		34.4			21.8			15.4	9.4		15.5	11.3
Level of Service		C			C			B	A		B	B
Approach Delay (s)		34.4			21.8			14.9			13.8	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	72.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	412	307	348	15	364	102
v/c Ratio	0.84	0.77	0.86	0.03	0.81	0.17
Control Delay	39.2	47.2	50.3	21.6	43.0	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	47.2	50.3	21.6	43.0	22.2
Queue Length 50th (ft)	157	152	169	5	172	36
Queue Length 95th (ft)	#473	#364	#432	22	#454	98
Internal Link Dist (ft)	246	196	408		760	
Turn Bay Length (ft)				100		100
Base Capacity (vph)	491	400	404	591	451	590
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	0.84	0.77	0.86	0.03	0.81	0.17

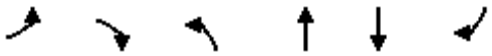
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	247	26	4	224	39	75	228	13	71	271	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	10	12	15	10	12	15
Total Lost time (s)		5.0			5.0			5.0	5.0		5.0	5.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00			1.00			1.00	0.97		1.00	0.97
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.99			0.98			1.00	0.85		1.00	0.85
Flt Protected		0.99			1.00			0.99	1.00		0.99	1.00
Satd. Flow (prot)		1435			1593			1628	1555		1646	1552
Flt Permitted		0.71			0.99			0.65	1.00		0.71	1.00
Satd. Flow (perm)		1027			1582			1064	1555		1187	1552
Peak-hour factor, PHF	0.86	0.86	0.86	0.87	0.87	0.87	0.87	0.87	0.87	0.94	0.94	0.94
Adj. Flow (vph)	95	287	30	5	257	45	86	262	15	76	288	102
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	412	0	0	302	0	0	348	15	0	364	102
Confl. Bikes (#/hr)			13			3			7			9
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	0%	5%	0%	2%	3%	0%
Parking (#/hr)		1										
Turn Type	D.P+P	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	3	3 4			4			1			1	
Permitted Phases	4			4			1		1	1		1
Actuated Green, G (s)		38.3			23.2			35.3	35.3		35.3	35.3
Effective Green, g (s)		38.3			23.2			35.3	35.3		35.3	35.3
Actuated g/C Ratio		0.39			0.24			0.36	0.36		0.36	0.36
Clearance Time (s)					5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)					2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		466			376			384	562		429	561
v/s Ratio Prot		c0.14										
v/s Ratio Perm		c0.21			0.19			c0.33	0.01		0.31	0.07
v/c Ratio		0.88			0.80			0.91	0.03		0.85	0.18
Uniform Delay, d1		27.6			35.0			29.6	20.1		28.7	21.3
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		17.3			11.1			27.5	0.1		18.5	0.7
Delay (s)		44.9			46.1			57.0	20.2		47.2	22.0
Level of Service		D			D			E	C		D	C
Approach Delay (s)		44.9			46.1			55.5			41.7	
Approach LOS		D			D			E			D	

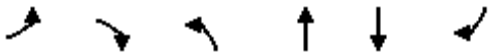
Intersection Summary			
HCM 2000 Control Delay	46.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	97.6	Sum of lost time (s)	21.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	3	5	10	400	584	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	3	5	11	455	664	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				467		
pX, platoon unblocked	0.85					
vC, conflicting volume	1144	667	670			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1084	667	670			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	99			
cM capacity (veh/h)	204	461	925			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	466	670
Volume Left	3	11	0
Volume Right	5	0	7
cSH	313	925	1700
Volume to Capacity	0.03	0.01	0.39
Queue Length 95th (ft)	2	1	0
Control Delay (s)	16.8	0.4	0.0
Lane LOS	C	A	
Approach Delay (s)	16.8	0.4	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	3	2	0	403	582	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	3	2	0	458	661	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				588		
pX, platoon unblocked	0.87					
vC, conflicting volume	1119	661	661			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1061	661	661			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	100			
cM capacity (veh/h)	216	464	932			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	5	458	661
Volume Left	3	0	0
Volume Right	2	0	0
cSH	275	1700	1700
Volume to Capacity	0.02	0.27	0.39
Queue Length 95th (ft)	2	0	0
Control Delay (s)	18.4	0.0	0.0
Lane LOS	C		
Approach Delay (s)	18.4	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		

Existing Parking – July 2015

Existing Parking – July 2015

In order to understand the existing usage of the on-street parking surrounding the proposed site, an occupancy study was conducted on a typical weekday, Wednesday July 22, 2015. However, to account for street cleaning, the mid-day counts along the east side South Huntington Avenue between Bynner Street and Perkins Street, and on the south side of Castleton Street were conducted on Thursday July 23, 2015. Since street cleaning shifts the demand of parking from one side of the street to another, the total parking occupied during the mid-day is a worst case scenario. Due to the construction at 161 South Huntington Avenue, there are approximately 14 spaces along the west side of South Huntington Avenue that were not available for public use and were not included in the inventory. Two specific time periods captured the availability of parking in the area.

- **12:00 PM** captured on-street parking availability after the morning peak period; and
- **8:00 PM** captured on-street parking availability after the evening peak period and into the overnight hours.

The results of the occupancy study, illustrated in the attached figures, are summarized in Table 1.

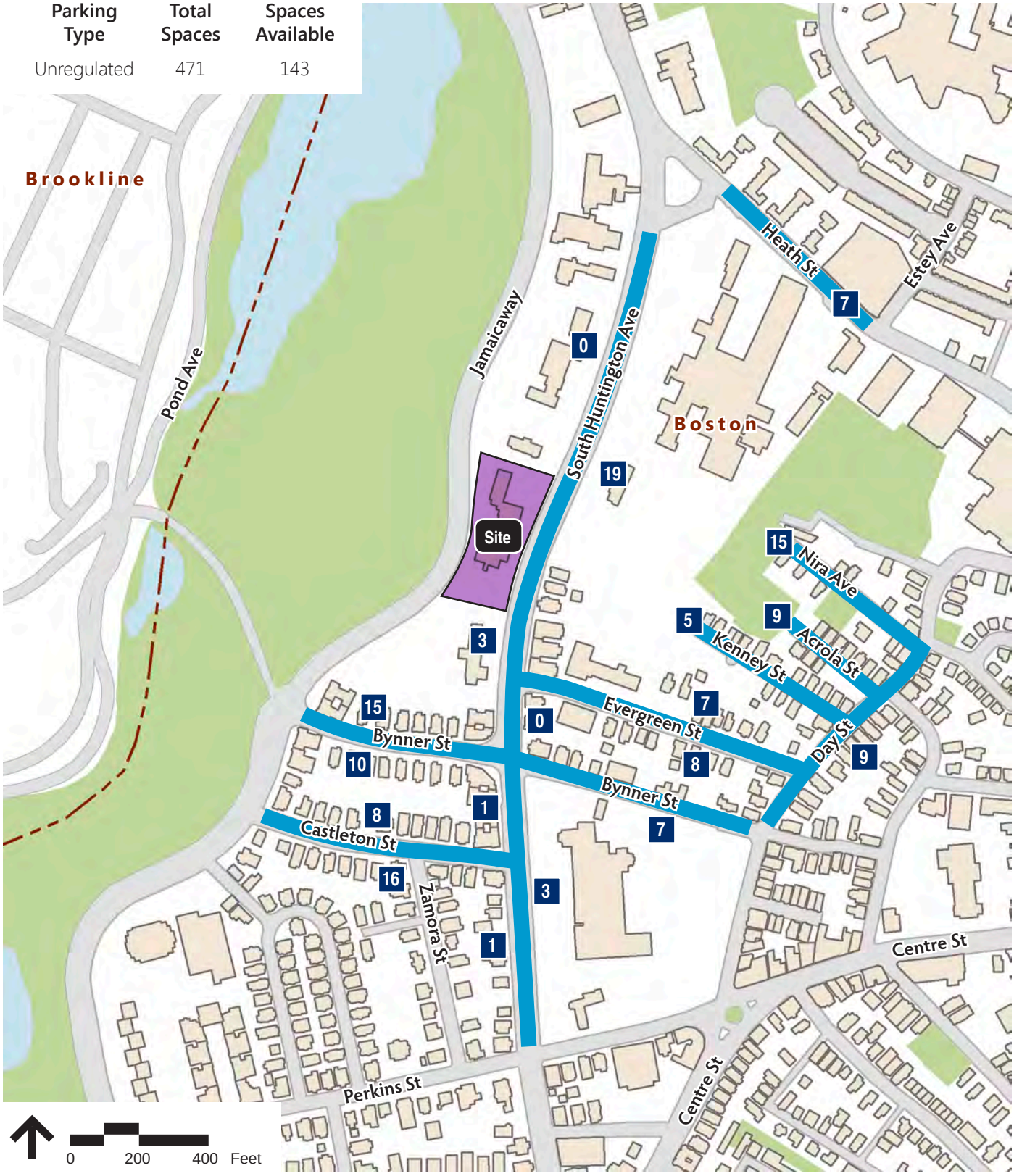
TABLE 1 ON-STREET PARKING UTILIZATION

Location	Total Number of Spaces	Number of Spaces Available	
		12:00 PM	8:00 PM
South Huntington Avenue between Heath Street and Bynner Street (west side of the street)	42*	3	20
South Huntington Avenue between Heath Street and Bynner Street (east side of the street)	45	19	19
Evergreen Street between South Huntington Avenue and Day Street (both sides of the street)	70	15	24
Bynner Street between Jamaicaway and Day Street (both sides of the street)	71	32	31
South Huntington Avenue between Bynner Street and Perkins Street (both sides of the street)	52	5	20
Castleton Street between Jamaicaway and South Huntington Avenue (both sides of the street)	63	24	20
Heath Street between South Huntington Avenue and Estey Street (both sides of the street)	24	7	4
Day Street between Nira Avenue and Bynner Street (east side of the street)	31	9	10
Kenney Street (north side of the street)	19	5	3
Acrola Street (north side of the street)	15	9	2
Nira Avenue (both sides of the street)	39	15	24
Total	**471**	**143**	**177**

Source: VHB July 2015, *Note: Approximately 14 spaces were not included due to construction activity.

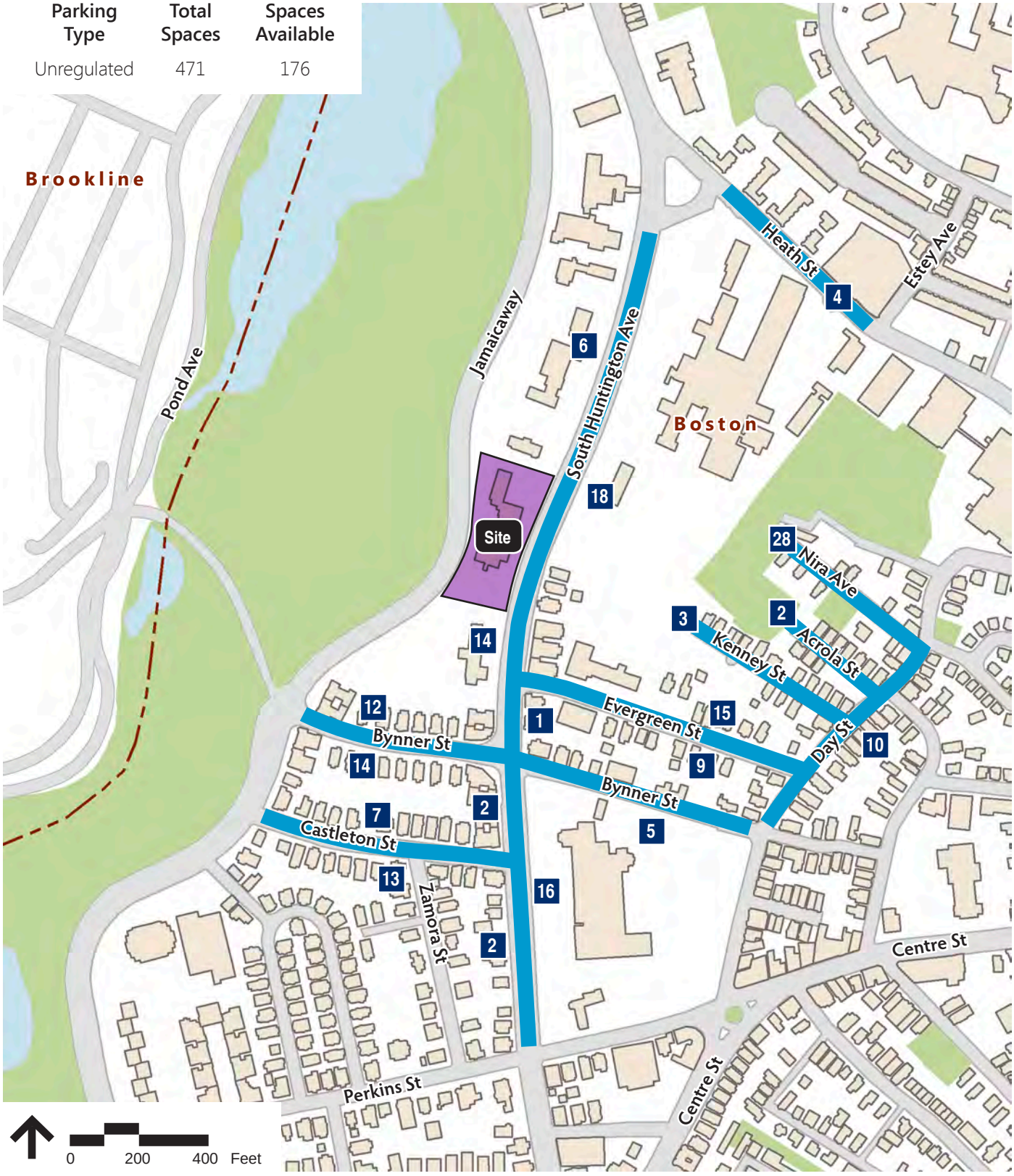
The results of this parking occupancy study show that there is on-street parking available during the daytime and into the overnight hours (8:00 PM) on streets surrounding the Project site. On South Huntington Avenue in the immediate vicinity of the Project site, spaces are mostly occupied during the day since employees from the nearby businesses are allowed to park with no restrictions but generally become available after typical business hours.

Parking Type	Total Spaces	Spaces Available
Unregulated	471	143



Parking Utilization - Available Spaces
Wednesday, July 22, 2015 - 12 PM
Goddard House Renovation and Redevelopment
Boston, MA

Parking Type	Total Spaces	Spaces Available
Unregulated	471	176



Parking Utilization - Available Spaces
Wednesday, July 22, 2015 - 8 PM
Goddard House Renovation and Redevelopment
Boston, MA

APPENDIX C: BRA Checklists

Accessibility Checklist & Accessibility Site Plan

Climate Change Preparedness and Resiliency Checklist

LEED Project Checklist

Accessibility Checklist

(to be added to the BRA Development Review Guidelines)

In 2009, a nine-member Advisory Board was appointed to the Commission for Persons with Disabilities in an effort to reduce architectural, procedural, attitudinal, and communication barriers affecting persons with disabilities in the City of Boston. These efforts were instituted to work toward creating universal access in the built environment.

In line with these priorities, the Accessibility Checklist aims to support the inclusion of people with disabilities. In order to complete the Checklist, you must provide specific detail, including descriptions, diagrams and data, of the universal access elements that will ensure all individuals have an equal experience that includes full participation in the built environment throughout the proposed buildings and open space.

In conformance with this directive, all development projects subject to Boston Zoning Article 80 Small and Large Project Review, including all Institutional Master Plan modifications and updates, are to complete the following checklist and provide any necessary responses regarding the following:

- improvements for pedestrian and vehicular circulation and access;
- encourage new buildings and public spaces to be designed to enhance and preserve Boston's system of parks, squares, walkways, and active shopping streets;
- ensure that persons with disabilities have full access to buildings open to the public;
- afford such persons the educational, employment, and recreational opportunities available to all citizens; and
- preserve and increase the supply of living space accessible to persons with disabilities.

We would like to thank you in advance for your time and effort in advancing best practices and progressive approaches to expand accessibility throughout Boston's built environment.

Accessibility Analysis Information Sources:

1. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
    a. http://www.ada.gov/2010ADAstandards_index.htm
2. Massachusetts Architectural Access Board 521 CMR
    a. http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/aab/aab-rules-and-regulations-pdf.html
3. Boston Complete Street Guidelines
    a. http://bostoncompletestreets.org/
4. City of Boston Mayors Commission for Persons with Disabilities Advisory Board
    a. http://www.cityofboston.gov/Disability
5. City of Boston – Public Works Sidewalk Reconstruction Policy
    a. http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf
6. Massachusetts Office On Disability Accessible Parking Requirements
    a. www.mass.gov/anf/docs/mod/hp-parking-regulations-mod.doc
7. MBTA Fixed Route Accessible Transit Stations
    a. http://www.mbta.com/about_the_mbta/accessibility/

Article 80 | ACCESSIBILTY CHECKLIST

Project Information

Project Name:	**Goddard House Renovation and Redevelopment**
Project Address Primary:	**201-205 South Huntington Avenue**
Project Address Additional:	**N/A**
Project Contact (name / Title / Company / email / phone):	**Noah Maslan / Principal / Eden Properties** **Noah@Eden-Properties.com / 617-594-1160**

Team Description

Owner / Developer:	**Eden Properties LLC in partnership with Samuels & Associates, Inc.**
Architect:	**Prellwitz Chilinski Associates, Inc.**
Engineer (building systems):	**Wozny/Barbar & Associates, Inc.**
Sustainability / LEED:	**Prellwitz Chilinski Associates, Inc.**
Permitting:	**VHB**
Construction Management:	**N/A**

Project Permitting and Phase

At what phase is the project – at time of this questionnaire?

PNF / Expanded PNF Submitted	Draft / Final Project Impact Report Submitted	BRA Board Approved
BRA Design Approved	Under Construction	Construction just completed:

Article 80 | ACCESSIBILTY CHECKLIST

Building Classification and Description

What are the principal Building Uses - select all appropriate uses?

Residential – One to Three Unit	**Residential - Multi-unit, Four +**	Institutional	Education
Commercial	Office	Retail	Assembly
Laboratory / Medical	Manufacturing / Industrial	Mercantile	Storage, Utility and Other
First Floor Uses (List)	**Residential, Lobby**		

What is the Construction Type – select most appropriate type?

Wood Frame	**Masonry**	Steel Frame	Concrete

Describe the building?

Site Area:	***87,187 SF***	Building Area:	***32,792 SF 163,004 GSF***
Building Height:	***46 Ft to 55 Ft.***	Number of Stories:	***4 to 6 Flrs.***
First Floor Elevation:	***96' 4" Goddard 91' 0" New Bldg Elev.***	Are there below grade spaces:	***Partial existing levels/ 3***

Assessment of Existing Infrastructure for Accessibility:

This section explores the proximity to accessible transit lines and proximate institutions such as, but not limited to hospitals, elderly and disabled housing, and general neighborhood information. The proponent should identify how the area surrounding the development is accessible for people with mobility impairments and should analyze the existing condition of the accessible routes through sidewalk and pedestrian ramp reports.

Provide a description of the development neighborhood and identifying characteristics.	The site is located in between South Huntington Avenue and the Jamaicaway. The two existing curb cuts to the site are to remain as-is. The neighborhood has a mix of multifamily housing residential buildings and the VA hospital across the street from the site. The adjacent new residential development at 161 South Huntington is in the process of making sidewalk improvements in front of their property.
List the surrounding ADA compliant MBTA transit lines and the proximity	MBTA Green line "E" Heath Street train station located at the intersection of South Huntington and Heath Street is 0.2 miles from the site. The train station is ADA accessible. The MBTA bus route # 39 has stops on South Huntington Avenue.

to the development site: Commuter rail, subway, bus, etc.	
List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc.	Mount Pleasant home at 301 South Huntington Avenue is senior housing and advanced primary care facility. Veterans Affairs Healthcare hospital is across the street from the site at 150 South Huntington Avenue. Sherrill House at 135 South Huntington Avenue is a nursing and rehabilitation center.
Is the proposed development on a priority accessible route to a key public use facility? List the surrounding: government buildings, libraries, community centers and recreational facilities and other related facilities.	No

Surrounding Site Conditions – Existing:

This section identifies the current condition of the sidewalks and pedestrian ramps around the development site.

Are there sidewalks and pedestrian ramps existing at the development site?	Yes
If yes above, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.	The existing 10 ft sidewalk on South Huntington Ave is concrete in varying physical condition. There are no street trees. There are existing trolley poles on both sides of the street. The cross slope at the Goddard House entrance does not appear to be flush with the road, and has a trolley pole and manhole cover at the cross slope area.
Are the sidewalks and pedestrian ramps existing-to-remain? **If yes,** have the sidewalks and pedestrian ramps been verified as compliant? **If yes,** please provide surveyors report.	No
Is the development site within a historic district? **If yes,** please identify.	No

Surrounding Site Conditions – Proposed

This section identifies the proposed condition of the walkways and pedestrian ramps in and around the development site. The width of the sidewalk contributes to the degree of comfort and enjoyment of walking along a street. Narrow sidewalks do not support lively pedestrian activity, and may create dangerous conditions that force people to walk in the street. Typically, a five foot wide Pedestrian Zone supports two people walking side by side or two wheelchairs passing each other. An eight foot wide Pedestrian Zone allows two pairs of people to comfortable pass each other, and a ten foot or wider Pedestrian Zone can support high volumes of pedestrians.

Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? See: www.bostoncompletestreets.org	Yes
If yes above, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.	Neighborhood Main (South Huntington Avenue)
What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.	Total: 10 ft; Frontage & Pedestrian: 10 ft; Furnishing: None
List the proposed materials for each Zone. Will the proposed materials be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way?	Concrete on both Public and Private
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the City of Boston Public Improvement Commission?	Yes
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way?	No
If yes above, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be?	

Proposed Accessible Parking:

See Massachusetts Architectural Access Board Rules and Regulations 521 CMR Section 23.00 regarding accessible parking requirement counts and the Massachusetts Office of Disability Handicap Parking Regulations.

What is the total number of parking spaces provided at the development site parking lot or garage?	A total of 83 on-grade parking spaces will be provided with two designated accessible parking spaces near the accessible residential entrance.
What is the total number of accessible spaces provided at the development site?	Four
Will any on street accessible parking spaces be required? If yes, has the proponent contacted the Commission for Persons with Disabilities and City of Boston Transportation Department regarding this need?	No
Where is accessible visitor parking located?	The two designated accessible parking spaces will be located near the residential entrance with elevators.
Has a drop-off area been identified? If yes, will it be accessible?	No
Include a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations. Please include route distances.	Both buildings will have separate accessible parking and routes as shown on the plan.

Circulation and Accessible Routes:

The primary objective in designing smooth and continuous paths of travel is to accommodate persons of all abilities that allow for universal access to entryways, common spaces and the visit-ability* of neighbors.

**Visit-ability – Neighbors ability to access and visit with neighbors without architectural barrier limitations*

Provide a diagram of the accessible route connections through the site.	Provided.
Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.	The new building will be accessible from the street and underground parking via an elevator. The existing Goddard House main entrance is not currently accessible, but there is an additional entrance facing South Huntington that is accessible and close to an elevator. This existing entry will be maintained as the accessible entrance.
Are the accessible entrance and the standard entrance integrated?	Yes for the new building; No for Goddard House.
If no above, what is the reason?	
Will there be a roof deck or outdoor courtyard space? If yes, include diagram of the accessible route.	Yes. Resident amenity spaces are located on the 3rd floor on both buildings and are accessible by elevators, and some units have patios. All outdoor patios and decks will be flush with the interior floors.
Has an accessible routes way-finding and signage package been developed? If yes, please describe.	No

Accessible Units: (If applicable)

In order to facilitate access to housing opportunities this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing choice.

What is the total number of proposed units for the development?	167
How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?	All units are for rent.

Article 80 | ACCESSIBILTY CHECKLIST

How many accessible units are being proposed?	5% (9 units)
Please provide plan and diagram of the accessible units.	See Figure C-1.
How many accessible units will also be affordable? If none, please describe reason.	13%
Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs at entry or step to balcony. **If yes,** please provide reason.	No; except for ten units in the existing Goddard House basement levels 1 , 2 and 3 that may have steps within the unit.
Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor's Commission for Persons with Disabilities Advisory Board?	Not yet
Did the Advisory Board vote to support this project? **If no,** what recommendations did the Advisory Board give to make this project more accessible?	See above

Thank you for completing the Accessibility Checklist!

For questions or comments about this checklist or accessibility practices, please contact:

kathryn.quigley@boston.gov | Mayors Commission for Persons with Disabilities

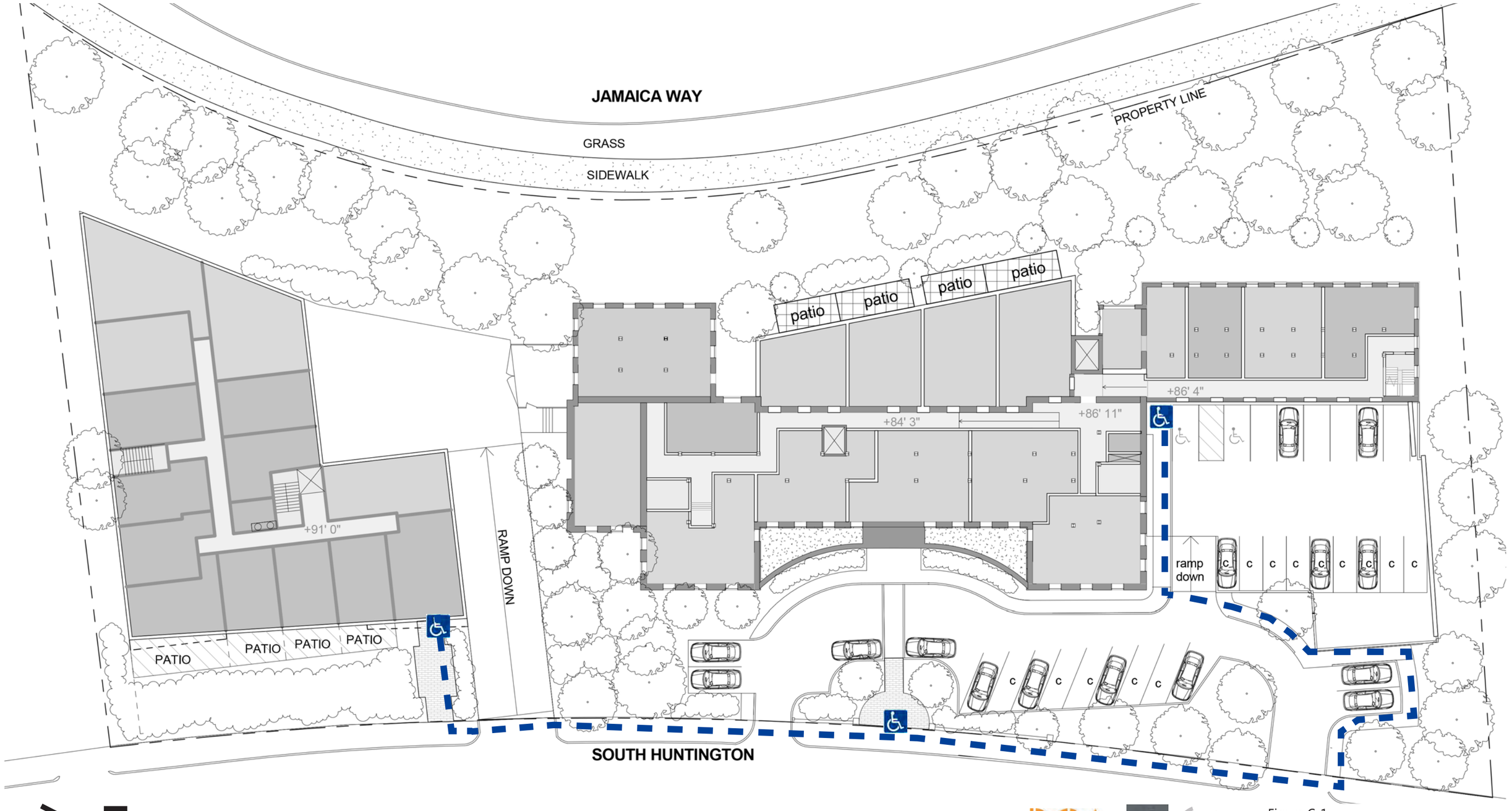


Figure C-1

Proposed Site Plan & Accessibility

Climate Change Preparedness and Resiliency Checklist for New Construction

In November 2013, in conformance with the Mayor's 2011 Climate Action Leadership Committee's recommendations, the Boston Redevelopment Authority adopted policy for all development projects subject to Boston Zoning Article 80 Small and Large Project Review, including all Institutional Master Plan modifications and updates, are to complete the following checklist and provide any necessary responses regarding project resiliency, preparedness, and to mitigate any identified adverse impacts that might arise under future climate conditions.

For more information about the City of Boston's climate policies and practices, and the 2011 update of the climate action plan, *A Climate of Progress*, please see the City's climate action web pages at http://www.cityofboston.gov/climate

In advance we thank you for your time and assistance in advancing best practices in Boston.

Climate Change Analysis and Information Sources:

1. Northeast Climate Impacts Assessment (www.climatechoices.org/ne/)
2. USGCRP 2009 (http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts/)
3. Army Corps of Engineers guidance on sea level rise (http://planning.usace.army.mil/toolbox/library/ECs/EC11652212Nov2011.pdf)
4. Proceeding of the National Academy of Science, "Global sea level rise linked to global temperature", Vermeer and Rahmstorf, 2009 (http://www.pnas.org/content/early/2009/12/04/0907765106.full.pdf)
5. "Hotspot of accelerated sea-level rise on the Atlantic coast of North America", Asbury H. Sallenger Jr*, Kara S. Doran and Peter A. Howd, 2012 (http://www.bostonredevelopmentauthority.org/planning/Hotspot of Accelerated Sea-level Rise 2012.pdf)
6. "Building Resilience in Boston": Best Practices for Climate Change Adaptation and Resilience for Existing Buildings, Linnean Solutions, The Built Environment Coalition, The Resilient Design Institute, 2103 (http://www.greenribboncommission.org/downloads/Building_Resilience_in_Boston_SML.pdf)

Checklist

Please respond to all of the checklist questions to the fullest extent possible. For projects that respond "Yes" to any of the D.1 – Sea-Level Rise and Storms, Location Description and Classification questions, please respond to all of the remaining Section D questions.

Checklist responses are due at the time of initial project filing or Notice of Project Change and final filings just prior seeking Final BRA Approval. A PDF of your response to the Checklist should be submitted to the Boston Redevelopment Authority via your project manager.

Please Note: When initiating a new project, please visit the BRA web site for the most current Climate Change Preparedness & Resiliency Checklist.

A.1 - Project Information

Project Name:	**Goddard House Renovation and Redevelopment**
Project Address Primary:	**201-205 South Huntington Avenue**
Project Address Additional:	**N/A**
Project Contact (name / Title / Company / email / phone):	**Noah Maslan / Principal / Eden Properties Noah@Eden-Properties.com / 617-594-1160**

A.2 - Team Description

Owner / Developer:	**Eden Properties LLC in partnership with Samuels & Associates, Inc.**
Architect:	**Prellwitz Chilinski Associates, Inc.**
Engineer (building systems):	**Wozny/Barbar & Associates, Inc.**
Sustainability / LEED:	**Prellwitz Chilinski Associates, Inc.**
Permitting:	**VHB**
Construction Management:	**N/A**
Climate Change Expert:	**VHB**

A.3 - Project Permitting and Phase

At what phase is the project – most recent completed submission at the time of this response?

PNF / Expanded PNF Submission	Draft / Final Project Impact Report Submission	BRA Board Approved	Notice of Project Change
Planned Development Area	BRA Final Design Approved	Under Construction	Construction just completed:

A.4 - Building Classification and Description

List the principal Building Uses:	**Residential**
List the First Floor Uses:	**Residential, Lobby**

What is the principal Construction Type – select most appropriate type?

Wood Frame	**Masonry**	Steel Frame	Concrete

Describe the building?

Site Area:	***87,189 SF***	Building Area:	***32,792 SF 163,004 GSF***
Building Height:	***46 Ft to 55 Ft.***	Number of Stories:	***4 to 6 Flrs.***
First Floor Elevation (reference Boston City Base):	***96' 4" Goddard 91' 0" New Bldg Elev.***	Are there below grade spaces/levels, if yes how many:	***Partial existing levels/ 3***

A.5 - Green Building

Which LEED Rating System(s) and version has or will your project use (by area for multiple rating systems)?

Select by Primary Use:	New Construction	Core & Shell	Healthcare	Schools
	Retail	**Homes Midrise**	Homes	Other
Select LEED Outcome:	Certified	**Silver**	Gold	Platinum

Will the project be USGBC Registered and / or USGBC Certified?

Registered:	*Yes / **No***	Certified:	*Yes / **No***

A.6 - Building Energy

What are the base and peak operating energy loads for the building?

Electric:	*864 (kW)*	Heating:	*TBD (MMBtu/hr)*
What is the planned building Energy Use Intensity:	*TBD (kbut/SF or kWh/SF)*	Cooling:	*TBD (Tons/hr)*

What are the peak energy demands of your critical systems in the event of a service interruption?

Electric:	*TBD (kW)*	Heating:	*TBD (MMBtu/hr)*
		Cooling:	*TBD (Tons/hr)*

What is nature and source of your back-up / emergency generators? ***No emergency generators are proposed as part of this project.***

Electrical Generation:	*(kW)*		Fuel Source:	
System Type and Number of Units:	Combustion Engine	Gas Turbine	Combine Heat and Power	*(Units)*

B - Extreme Weather and Heat Events

Climate change will result in more extreme weather events including higher year round average temperatures, higher peak temperatures, and more periods of extended peak temperatures. The section explores how a project responds to higher temperatures and heat waves.

B.1 - Analysis

What is the full expected life of the project?

Select most appropriate:	10 Years	25 Years	50 Years	**75 Years**

What is the full expected operational life of key building systems (e.g. heating, cooling, ventilation)?

Select most appropriate:	10 Years	**25 Years**	50 Years	75 Years

What time span of future Climate Conditions was considered?

Select most appropriate:	10 Years	25 Years	50 Years	**75 Years**

Analysis Conditions - What range of temperatures will be used for project planning – Low/High?

8.1 /90.6 Deg

What Extreme Heat Event characteristics will be used for project planning – Peak High, Duration, and Frequency?

95 Deg.	*5 Days*	*2 Events / yr.*

What Drought characteristics will be used for project planning – Duration and Frequency?

5 Days	*2 Events / yr.*

What Extreme Rain Event characteristics will be used for project planning – Seasonal Rain Fall, Peak Rain Fall, and Frequency of Events per year?

41.51 Inches / yr.	*4.9 Inches*	*127 Events / yr.*

What Extreme Wind Storm Event characteristics will be used for project planning – Peak Wind Speed, Duration of Storm Event, and Frequency of Events per year?

Peak Wind	*Hours*	*Events / yr.*

B.2 - Mitigation Strategies

What will be the overall energy performance, based on use, of the project and how will performance be determined?

Building energy use below code:	*20%*	**In accordance with the current Stretch Energy Code (ASHRAE 90.1-2007, Appendix G).**
How is performance determined:	**A building energy model will be conducted as design advances and as required for a future Building Permit for both buildings.**	

What specific measures will the project employ to reduce building energy consumption?

Select all appropriate:	**High performance building envelop**	**High performance lighting & controls**	**Building day lighting**	**EnergyStar equip. / appliances**
	High performance HVAC equipment	**Energy recovery ventilation**	No active cooling	No active heating
Describe any added measures:				

What are the insulation (R) values for building envelop elements?

Roof:	*R = **39***	Walls / Curtain Wall Assembly:	***R = Walls = R-21 CW U-Value=0.31 SF U-Value=0.32 (System Performance)***
Foundation:	*R = **10***	Basement / Slab:	*R =**NA***
Windows:	*U =**0.24***	Doors:	*U =**0.37***

What specific measures will the project employ to reduce building energy demands on the utilities and infrastructure?

On-site clean energy / CHP system(s)	Building-wide power dimming	Thermal energy storage systems	Ground source heat pump

	On-site Solar PV	On-site Solar Thermal	Wind power	None
Describe any added measures:	**Participate in the Energy Star Program, install LED Lighting**			

Will the project employ Distributed Energy / Smart Grid Infrastructure and /or Systems?

Select all appropriate:	Connected to local distributed electrical	Building will be Smart Grid ready	Connected to distributed steam, hot, chilled water	Distributed thermal energy ready

Will the building remain operable without utility power for an extended period?

	*Yes / **No***	If yes, for how long:	*Days*
If Yes, is building "Islandable?			
If Yes, describe strategies:			

Describe any non-mechanical strategies that will support building functionality and use during an extended interruption(s) of utility services and infrastructure:

Select all appropriate:	Solar oriented – longer south walls	Prevailing winds oriented	External shading devices	Tuned glazing,
	Building cool zones	**Operable windows**	**Natural ventilation**	Building shading
	Potable water for drinking / food preparation	Potable water for sinks / sanitary systems	Waste water storage capacity	**High Performance Building Envelop**
Describe any added measures:				

What measures will the project employ to reduce urban heat-island effect?

Select all appropriate:	High reflective paving materials	**Shade trees & shrubs**	**High reflective roof materials**	Vegetated roofs
Describe other strategies:				

What measures will the project employ to accommodate rain events and more rain fall?

Select all appropriate:	On-site retention systems & ponds	**Infiltration galleries & areas**	vegetated water capture systems	Vegetated roofs
Describe other strategies:				

What measures will the project employ to accommodate extreme storm events and high winds?

Select all appropriate:	Hardened building structure & elements	**Buried utilities & hardened infrastructure**	Hazard removal & protective landscapes	**Soft & permeable surfaces (water infiltration)**
Describe other strategies:				

C - Sea-Level Rise and Storms

Rising Sea-Levels and more frequent Extreme Storms increase the probability of coastal and river flooding and enlarging the extent of the 100 Year Flood Plain. This section explores if a project is or might be subject to Sea-Level Rise and Storm impacts.

C.1 - Location Description and Classification:

Do you believe the building to susceptible to flooding now or during the full expected life of the building?

*Yes / **No***

Describe site conditions?

Site Elevation – Low/High Points:	*Boston City Base Elev.(Ft.)*
Building Proximity to Water:	*700Ft.*

Is the site or building located in any of the following?

Coastal Zone:	*Yes / **No***	Velocity Zone:	*Yes / **No***
Flood Zone:	*Yes / **No***	Area Prone to Flooding:	*Yes / **No***

Will the 2013 Preliminary FEMA Flood Insurance Rate Maps or future floodplain delineation updates due to Climate Change result in a change of the classification of the site or building location?

2013 FEMA Prelim. FIRMs:	*Yes / **No***	Future floodplain delineation updates:	*Yes / **No***

What is the project or building proximity to nearest Coastal, Velocity or Flood Zone or Area Prone to Flooding?

500 Ft.

If you answered YES to any of the above Location Description and Classification questions, please complete the following questions.** **Otherwise you have completed the questionnaire; thank you!

C - Sea-Level Rise and Storms

This section explores how a project responds to Sea-Level Rise and / or increase in storm frequency or severity.

C.2 - Analysis

How were impacts from higher sea levels and more frequent and extreme storm events analyzed:

Sea Level Rise:	*Ft.*	Frequency of storms:	*per year*

C.3 - Building Flood Proofing

Describe any strategies to limit storm and flood damage and to maintain functionality during an extended periods of disruption.

What will be the Building Flood Proof Elevation and First Floor Elevation:

Flood Proof Elevation:	*Boston City Base Elev.(Ft.)*	First Floor Elevation:	*Boston City Base Elev. (Ft.)*

Will the project employ temporary measures to prevent building flooding (e.g. barricades, flood gates):

	Yes / No	If Yes, to what elevation	*Boston City Base Elev. (Ft.)*
If Yes, describe:			

What measures will be taken to ensure the integrity of critical building systems during a flood or severe storm event:

Systems located above 1st Floor.	Water tight utility conduits	Waste water back flow prevention	Storm water back flow prevention

Were the differing effects of fresh water and salt water flooding considered:

Yes / No

Will the project site / building(s) be accessible during periods of inundation or limited access to transportation:

Yes / No	If yes, to what height above 100 Year Floodplain:	*Boston City Base Elev. (Ft.)*

Will the project employ hard and / or soft landscape elements as velocity barriers to reduce wind or wave impacts?

Yes / No

If Yes, describe:

Will the building remain occupiable without utility power during an extended period of inundation:

Yes / No	If Yes, for how long:	*days*

Describe any additional strategies to addressing sea level rise and or sever storm impacts:

C.4 - Building Resilience and Adaptability

Describe any strategies that would support rapid recovery after a weather event and accommodate future building changes that respond to climate change:

Will the building be able to withstand severe storm impacts and endure temporary inundation?

Select appropriate:				
	Yes / No	Hardened / Resilient Ground Floor Construction	Temporary shutters and or barricades	Resilient site design, materials and construction

Can the site and building be reasonably modified to increase Building Flood Proof Elevation?

Select appropriate:				
	Yes / No	Surrounding site elevation can be raised	Building ground floor can be raised	Construction been engineered
Describe additional strategies:				

Has the building been planned and designed to accommodate future resiliency enhancements?

Select appropriate:				
	Yes / No	Solar PV	Solar Thermal	Clean Energy / CHP System(s)
		Potable water storage	Wastewater storage	Back up energy systems & fuel
Describe any specific or additional strategies:				

Thank you for completing the Boston Climate Change Resilience and Preparedness Checklist!

For questions or comments about this checklist or Climate Change Resiliency and Preparedness best practices, please contact: John.Dalzell.BRA@cityofboston.gov

LEED for Homes Mid-rise Pilot Simplified Project Checklist

for Homes

Builder Name:	***Unknown at this Time***
Project Team Leader (if different):	***Noah Maslan, Eden Properties***
Home Address (Street/City/State):	***201-205 South Huntington Ave, Boston, Massachusetts***

Project Description: Goddard House

Building type: ***Mid-rise multi-family*** # of stories: ***6***

# of units: ***110*** Avg. Home Size Adjustment: ***-7.5***

Adjusted Certification Thresholds

Certified: ***37.5*** Gold: ***67.5***

Silver: ***52.5*** Platinum: ***82.5***

Project Point Total

Prelim: ***61.5 + 4 maybe pts*** **Final:** ***14.5***

Certification Level

Prelim: ***Not Certified*** **Final:** ***Not Certified***

Final Credit Category Total Points

ID: 0 ***SS: 5*** ***EA: 7*** ***EQ: 0***

LL: 0 ***WE: 0*** ***MR: 2.5*** ***AE: 0***

Min. Point Thresholds Not Met for Prelim. OR Final Rating

date last updated :

last updated by :

					Max Pts	Project Points Preliminary Y/Pts	Maybe	No	Final Y/Pts
Innovation and Design Process (ID)			(No Minimum Points Required)		Max				
1. Integrated Project Planning		1.1	Preliminary Rating		Prereq	*Y*			
		1.2	Energy Expertise for MID-RISE		Prereq	*Y*			***Y***
		1.3	Professional Credentialed with Respect to LEED for Homes		1	*1*	*0*		***0***
		1.4	Design Charrette		1	*1*	*0*		***0***
		1.5	Building Orientation for Solar Design		1	*0*	*0*	*N*	***0***
		1.6	Trades Training for MID-RISE		1	*0*	*0*	*N*	***0***
2. Durability Management Process		2.1	Durability Planning		Prereq	*Y*			
		2.2	Durability Management		Prereq	*Y*			
		2.3	Third-Party Durability Management Verification		3	*0*	*0*	*N*	***0***
3.Innovative or Regional Design		3.1	Innovation #1	***Building Performance Partnership***	1	*1*	*0*		***0***
		3.2	Innovation #2	***Exemplary Performance SS 5.3***	1	*1*	*0*		***0***
		3.3	Innovation #3	***Exemplary Performance SS 7.1***	1	*1*	*0*		***0***
		3.4	Innovation #4	***Demolition Waste Diversion***	1	*1*	*0*		***0***
				Sub-Total for ID Category:	***11***	*6*	*0*		***0***
Location and Linkages (LL)			(No Minimum Points Required)	*OR*	Max				
1. LEED ND		1	LEED for Neighborhood Development	**LL2-6**	10	*0*	*0*	*N*	***0***
2. Site Selection		2	Site Selection		2	*2*	*0*		***0***
3. Preferred Locations		3.1	Edge Development		1	*0*	*0*	*N*	***0***
		3.2	Infill	**LL 3.1**	2	*2*	*0*		***0***
		3.3	Brownfield Redevelopment for MID-RISE		1	*0*	*0*	*N*	***0***
4. Infrastructure		4	Existing Infrastructure		1	*1*	*0*		***0***
5. Community Resources/ Transit		5.1	Basic Community Resources for MID-RISE		1	*0*	*0*	*N*	***0***
		5.2	Extensive Community Resources for MID-RISE	**LL 5.1, 5.3**	2	*0*	*0*	*N*	***0***
		5.3	Outstanding Community Resources for MID-RISE	**LL 5.1, 5.2**	3	*3*	*0*		***0***
6. Access to Open Space		6	Access to Open Space		1	*1*	*0*		***0***
				Sub-Total for LL Category:	***10***	*9*	*0*		***0***
Sustainable Sites (SS)			(Minimum of 5 SS Points Required)	*OR*	Max				
1. Site Stewardship		1.1	Erosion Controls During Construction		Prerequisite	*Y*			
		1.2	Minimize Disturbed Area of Site for MID-RISE		1	*1*	*0*		***0***
2. Landscaping		2.1	No Invasive Plants		Prerequisite	*Y*			
		2.2	Basic Landscape Design	**SS 2.5**	1	*1*	*0*		***0***
		2.3	Limit Conventional Turf for MID-RISE	**SS 2.5**	2	*1*	*0*		***1***
		2.4	Drought Tolerant Plants for MID-RISE	**SS 2.5**	1	*1*	*0*		***0***
		2.5	Reduce Overall Irrigation Demand by at Least 20% for MID-RISE		3	*0*	*0*	*N*	***0***
3. Local Heat Island Effects		3.1	Reduce Site Heat Island Effects for MID-RISE		1	*0*	*0*	*N*	***0***
		3.2	Reduce Roof Heat Island Effects for MID-RISE		1	*1*	*0*		***0***
4. Surface Water Management		4.1	Permeable Lot for MID-RISE		2	*0*	*0.5*		***0***
		4.2	Permanent Erosion Controls		1	*0*	*1*		***0***
		4.3	Stormwater Quality Control for MID-RISE		2	*2*	*0*		***0***
5. Nontoxic Pest Control		5	Pest Control Alternatives		2	*1*	*0*		***0***
6. Compact Development		6.1	Moderate Density for MID-RISE		2	*0*	*0*	*N*	***0***
		6.2	High Density for MID-RISE	**SS 6.1, 6.3**	3	*0*	*0*	*N*	***0***
		6.3	Very High Density for MID-RISE	**SS 6.1, 6.2**	4	*4*	*0*		***4***
7. Alternative Transportation		7.1	Public Transit for MID-RISE		2	*2*	*0*		***0***
		7.2	Bicycle Storage for MID-RISE		1	*1*	*0*		***0***
		7.3	Parking Capacity/Low-Emitting Vehicles for MID-RISE		1	*1*	*0*		***0***
				Sub-Total for SS Category:	***22***	*16*	*1.5*		***5***

LEED for Homes Mid-rise Pilot Simplified Project Checklist (continued)

					Max Pts	Project Points Preliminary			Final
Water Efficiency (WE)			(Minimum of 3 WE Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Water Reuse		1	Water Reuse for MID-RISE		5	0	0	N	0
2. Irrigation System		2.1	High Efficiency Irrigation System for MID-RISE	**WE 2.2**	2	0	2		0
		2.2	Reduce Overall Irrigation Demand by at Least 45% for MID-RISE		2	0	0	N	0
3. Indoor Water Use		3.1	High-Efficiency Fixtures and Fittings		3	1	0		0
		3.2	Very High Efficiency Fixtures and Fittings		6	4	0		0
		3.3	Water Efficient Appliances for MID-RISE		2	2	0		0
				Sub-Total for WE Category:	**15**	7	2		0
Energy and Atmosphere (EA)			(Minimum of 0 EA Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Optimize Energy Performance		1.1	Minimum Energy Performance for MID-RISE		Prereq	Y			
		1.2	Testing and Verification for MID-RISE		Prereq	Y			
		1.3	Optimize Energy Performance for MID-RISE		34	7	0		7
7. Water Heating		7.1	Efficient Hot Water Distribution		2	0	0	N	0
		7.2	Pipe Insulation		1	1	0		0
11. Residential Refrigerant Management		11.1	Refrigerant Charge Test		Prereq	Y			
		11.2	Appropriate HVAC Refrigerants		1	1	0		0
				Sub-Total for EA Category:	**38**	9	0		7
Materials and Resources (MR)			(Minimum of 2 MR Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Material-Efficient Framing		1.1	Framing Order Waste Factor Limit		Prereq	Y			
		1.2	Detailed Framing Documents	**MR 1.5**	1	0	0	N	0
		1.3	Detailed Cut List and Lumber Order	**MR 1.5**	1	0	0	N	0
		1.4	Framing Efficiencies	**MR 1.5**	3	0	0	N	0
		1.5	Off-site Fabrication		4	4	0		0
2. Environmentally Preferable Products		2.1	FSC Certified Tropical Wood		Prereq	Y			
		2.2	Environmentally Preferable Products		8	3.5	0.5		0
3. Waste Management		3.1	Construction Waste Management Planning		Prereq	Y			
		3.2	Construction Waste Reduction		3	2.5	0		2.5
				Sub-Total for MR Category:	**16**	10	0.5		2.5
Indoor Environmental Quality (EQ)			(Minimum of 6 EQ Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
2. Combustion Venting		2	Basic Combustion Venting Measures		Prereq	Y			
3. Moisture Control		3	Moisture Load Control		1	0	0	N	0
4. Outdoor Air Ventilation		4.1	Basic Outdoor Air Ventilation for MID-RISE		Prereq	Y			
		4.2	Enhanced Outdoor Air Ventilation for MID-RISE		2	0	0	N	0
		4.3	Third-Party Performance Testing for MID-RISE		1	0	0	N	0
5. Local Exhaust		5.1	Basic Local Exhaust		Prerequisite	Y			
		5.2	Enhanced Local Exhaust		1	1	0		0
		5.3	Third-Party Performance Testing		1	0	0	N	0
6. Distribution of Space Heating and Cooling		6.1	Room-by-Room Load Calculations		Prereq	Y			
		6.2	Return Air Flow / Room by Room Controls		1	0	0	N	0
		6.3	Third-Party Performance Test / Multiple Zones		2	0	0	N	0
7. Air Filtering		7.1	Good Filters		Prereq	Y			
		7.2	Better Filters	**EQ 7.3**	1	0	0	N	0
		7.3	Best Filters		2	0	0	N	0
8. Contaminant Control		8.1	Indoor Contaminant Control during Construction		1	1	0		0
		8.2	Indoor Contaminant Control for MID-RISE		2	0	0	N	0
		8.3	Preoccupancy Flush		1	0	0	N	0
9. Radon Protection		9.1	Radon-Resistant Construction in High-Risk Areas		Prereq	N/A			
		9.2	Radon-Resistant Construction in Moderate-Risk Areas		1	0	0	N	0
10. Garage Pollutant Protection		10.1	No HVAC in Garage for MID-RISE		Prereq	Y			
		10.2	Minimize Pollutants from Garage for MID-RISE	**EQ 10.3**	2	2	0		0
		10.3	Detached Garage or No Garage for MID-RISE		3	0	0	N	0
11. ETS Control		11	Environnmental Tobacco Smoke Reduction for MID-RISE		1	0.5	0		0
12. Compartmentalization of Units		12.1	Compartmentalization of Units		Prereq	Y			
		12.2	Enhanced Compartmentalization of Units		1	0	0	N	0
				Sub-Total for EQ Category:	**21**	4.5	0		0
Awareness and Education (AE)			(Minimum of 0 AE Points Required)		Max	Y/Pts	Maybe	No	Y/Pts
1. Education of the Homeowner or Tenant		1.1	Basic Operations Training		Prereq	Y			
		1.2	Enhanced Training		1	0	0	N	0
		1.3	Public Awareness		1	0	0	N	0
2. Education of Building Manager		2	Education of Building Manager		1	0	0	N	0
				Sub-Total for AE Category:	**3**	0	0		0

LEED for Homes Mid-rise Pilot Simplified Project Checklist

for Homes

Builder Name:	***Unknown at this Time***
Project Team Leader (if different):	***Noah Maslan, Eden Properties***
Home Address (Street/City/State):	***201-205 South Huntington Ave, Boston, Massachusetts***

Project Description: New Building

Building type: ***Mid-rise multi-family*** # of stories: ***6***

# of units: ***57*** Avg. Home Size Adjustment: ***-9***

Adjusted Certification Thresholds

Certified: ***36.0*** Gold: ***66.0***

Silver: ***51.0*** Platinum: ***81.0***

Project Point Total

Prelim: ***62 + 4 maybe pts*** **Final:** ***14.5***

Certification Level

Prelim: ***Not Certified*** **Final:** ***Not Certified***

Final Credit Category Total Points

ID: 0 ***SS: 5*** ***EA: 7*** ***EQ: 0***

LL: 0 ***WE: 0*** ***MR: 2.5*** ***AE: 0***

Min. Point Thresholds Not Met for Prelim. OR Final Rating

date last updated :

last updated by :

					Max Pts	Project Points Preliminary Y/Pts	Maybe	No	Final Y/Pts
Innovation and Design Process (ID)			(No Minimum Points Required)		Max				
1. Integrated Project Planning		1.1	Preliminary Rating		Prereq	*Y*			
		1.2	Energy Expertise for MID-RISE		Prereq	*Y*			***Y***
		1.3	Professional Credentialed with Respect to LEED for Homes		1	*1*	*0*		***0***
		1.4	Design Charrette		1	*1*	*0*		***0***
		1.5	Building Orientation for Solar Design		1	*0*	*0*	*N*	***0***
		1.6	Trades Training for MID-RISE		1	*0*	*0*	*N*	***0***
2. Durability Management Process		2.1	Durability Planning		Prereq	*Y*			
		2.2	Durability Management		Prereq	*Y*			
		2.3	Third-Party Durability Management Verification		3	*0*	*0*	*N*	***0***
3.Innovative or Regional Design		3.1	Innovation #1	***Building Performance Partnership***	1	*1*	*0*		***0***
		3.2	Innovation #2	***Exemplary Performance SS 5.3***	1	*1*	*0*		***0***
		3.3	Innovation #3	***Exemplary Performance SS 7.1***	1	*1*	*0*		***0***
		3.4	Innovation #4	***Demolition Waste Diversion***	1	*1*	*0*		***0***
				Sub-Total for ID Category:	***11***	*6*	*0*		***0***
Location and Linkages (LL)			(No Minimum Points Required)	*OR*	Max				
1. LEED ND		1	LEED for Neighborhood Development	**LL2-6**	10	*0*	*0*	*N*	***0***
2. Site Selection		2	Site Selection		2	*2*	*0*		***0***
3. Preferred Locations		3.1	Edge Development		1	*0*	*0*	*N*	***0***
		3.2	Infill	**LL 3.1**	2	*2*	*0*		***0***
		3.3	Brownfield Redevelopment for MID-RISE		1	*0*	*0*	*N*	***0***
4. Infrastructure		4	Existing Infrastructure		1	*1*	*0*		***0***
5. Community Resources/ Transit		5.1	Basic Community Resources for MID-RISE		1	*0*	*0*	*N*	***0***
		5.2	Extensive Community Resources for MID-RISE	**LL 5.1, 5.3**	2	*0*	*0*	*N*	***0***
		5.3	Outstanding Community Resources for MID-RISE	**LL 5.1, 5.2**	3	*3*	*0*		***0***
6. Access to Open Space		6	Access to Open Space		1	*1*	*0*		***0***
				Sub-Total for LL Category:	***10***	*9*	*0*		***0***
Sustainable Sites (SS)			(Minimum of 5 SS Points Required)	*OR*	Max				
1. Site Stewardship		1.1	Erosion Controls During Construction		Prerequisite	*Y*			
		1.2	Minimize Disturbed Area of Site for MID-RISE		1	*1*	*0*		***0***
2. Landscaping		2.1	No Invasive Plants		Prerequisite	*Y*			
		2.2	Basic Landscape Design	**SS 2.5**	1	*1*	*0*		***0***
		2.3	Limit Conventional Turf for MID-RISE	**SS 2.5**	2	*1*	*0*		***1***
		2.4	Drought Tolerant Plants for MID-RISE	**SS 2.5**	1	*1*	*0*		***0***
		2.5	Reduce Overall Irrigation Demand by at Least 20% for MID-RISE		3	*0*	*0*	*N*	***0***
3. Local Heat Island Effects		3.1	Reduce Site Heat Island Effects for MID-RISE		1	*0*	*0*	*N*	***0***
		3.2	Reduce Roof Heat Island Effects for MID-RISE		1	*1*	*0*		***0***
4. Surface Water Management		4.1	Permeable Lot for MID-RISE		2	*0*	*0.5*		***0***
		4.2	Permanent Erosion Controls		1	*0*	*1*		***0***
		4.3	Stormwater Quality Control for MID-RISE		2	*2*	*0*		***0***
5. Nontoxic Pest Control		5	Pest Control Alternatives		2	*1.5*	*0*		***0***
6. Compact Development		6.1	Moderate Density for MID-RISE		2	*0*	*0*	*N*	***0***
		6.2	High Density for MID-RISE	**SS 6.1, 6.3**	3	*0*	*0*	*N*	***0***
		6.3	Very High Density for MID-RISE	**SS 6.1, 6.2**	4	*4*	*0*		***4***
7. Alternative Transportation		7.1	Public Transit for MID-RISE		2	*2*	*0*		***0***
		7.2	Bicycle Storage for MID-RISE		1	*1*	*0*		***0***
		7.3	Parking Capacity/Low-Emitting Vehicles for MID-RISE		1	*1*	*0*		***0***
				Sub-Total for SS Category:	***22***	*16.5*	*1.5*		***5***

LEED for Homes Mid-rise Pilot Simplified Project Checklist (continued)

					Max Pts	Project Points Preliminary			Final
Water Efficiency (WE)			(Minimum of 3 WE Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Water Reuse		1	Water Reuse for MID-RISE		5	0	0	N	0
2. Irrigation System		2.1	High Efficiency Irrigation System for MID-RISE	**WE 2.2**	2	0	2		0
		2.2	Reduce Overall Irrigation Demand by at Least 45% for MID-RISE		2	0	0	N	0
3. Indoor Water Use		3.1	High-Efficiency Fixtures and Fittings		3	1	0		0
		3.2	Very High Efficiency Fixtures and Fittings		6	4	0		0
		3.3	Water Efficient Appliances for MID-RISE		2	2	0		0
				Sub-Total for WE Category:	**15**	7	2		0
Energy and Atmosphere (EA)			(Minimum of 0 EA Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Optimize Energy Performance		1.1	Minimum Energy Performance for MID-RISE		Prereq	Y			
		1.2	Testing and Verification for MID-RISE		Prereq	Y			
		1.3	Optimize Energy Performance for MID-RISE		34	7	0		7
7. Water Heating		7.1	Efficient Hot Water Distribution		2	0	0	N	0
		7.2	Pipe Insulation		1	1	0		0
11. Residential Refrigerant Management		11.1	Refrigerant Charge Test		Prereq	Y			
		11.2	Appropriate HVAC Refrigerants		1	1	0		0
				Sub-Total for EA Category:	**38**	9	0		7
Materials and Resources (MR)			(Minimum of 2 MR Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
1. Material-Efficient Framing		1.1	Framing Order Waste Factor Limit		Prereq	Y			
		1.2	Detailed Framing Documents	**MR 1.5**	1	0	0	N	0
		1.3	Detailed Cut List and Lumber Order	**MR 1.5**	1	0	0	N	0
		1.4	Framing Efficiencies	**MR 1.5**	3	0	0	N	0
		1.5	Off-site Fabrication		4	4	0		0
2. Environmentally Preferable Products		2.1	FSC Certified Tropical Wood		Prereq	Y			
		2.2	Environmentally Preferable Products		8	3.5	0.5		0
3. Waste Management		3.1	Construction Waste Management Planning		Prereq	Y			
		3.2	Construction Waste Reduction		3	2.5	0		2.5
				Sub-Total for MR Category:	**16**	10	0.5		2.5
Indoor Environmental Quality (EQ)			(Minimum of 6 EQ Points Required)	*OR*	Max	Y/Pts	Maybe	No	Y/Pts
2. Combustion Venting		2	Basic Combustion Venting Measures		Prereq	Y			
3. Moisture Control		3	Moisture Load Control		1	0	0	N	0
4. Outdoor Air Ventilation		4.1	Basic Outdoor Air Ventilation for MID-RISE		Prereq	Y			
		4.2	Enhanced Outdoor Air Ventilation for MID-RISE		2	0	0	N	0
		4.3	Third-Party Performance Testing for MID-RISE		1	0	0	N	0
5. Local Exhaust		5.1	Basic Local Exhaust		Prerequisite	Y			
		5.2	Enhanced Local Exhaust		1	1	0		0
		5.3	Third-Party Performance Testing		1	0	0	N	0
6. Distribution of Space Heating and Cooling		6.1	Room-by-Room Load Calculations		Prereq	Y			
		6.2	Return Air Flow / Room by Room Controls		1	0	0	N	0
		6.3	Third-Party Performance Test / Multiple Zones		2	0	0	N	0
7. Air Filtering		7.1	Good Filters		Prereq	Y			
		7.2	Better Filters	**EQ 7.3**	1	0	0	N	0
		7.3	Best Filters		2	0	0	N	0
8. Contaminant Control		8.1	Indoor Contaminant Control during Construction		1	1	0		0
		8.2	Indoor Contaminant Control for MID-RISE		2	0	0	N	0
		8.3	Preoccupancy Flush		1	0	0	N	0
9. Radon Protection		9.1	Radon-Resistant Construction in High-Risk Areas		Prereq	N/A			
		9.2	Radon-Resistant Construction in Moderate-Risk Areas		1	0	0	N	0
10. Garage Pollutant Protection		10.1	No HVAC in Garage for MID-RISE		Prereq	Y			
		10.2	Minimize Pollutants from Garage for MID-RISE	**EQ 10.3**	2	2	0		0
		10.3	Detached Garage or No Garage for MID-RISE		3	0	0	N	0
11. ETS Control		11	Environnmental Tobacco Smoke Reduction for MID-RISE		1	0.5	0		0
12. Compartmentalization of Units		12.1	Compartmentalization of Units		Prereq	Y			
		12.2	Enhanced Compartmentalization of Units		1	0	0	N	0
				Sub-Total for EQ Category:	**21**	4.5	0		0
Awareness and Education (AE)			(Minimum of 0 AE Points Required)		Max	Y/Pts	Maybe	No	Y/Pts
1. Education of the Homeowner or Tenant		1.1	Basic Operations Training		Prereq	Y			
		1.2	Enhanced Training		1	0	0	N	0
		1.3	Public Awareness		1	0	0	N	0
2. Education of Building Manager		2	Education of Building Manager		1	0	0	N	0
				Sub-Total for AE Category:	**3**	0	0		0