ARCHER | DONAHUE

RESIDENTIAL DEVELOPMENT

EXPANDED PROJECT NOTIFICATION FORM

SUBMITTED PURSUANT TO ARTICLE 80 OF THE BOSTON ZONING CODE

SUBMITTED BY:
JDMD OWNER, LLC
408 WHITING AVENUE
DEDHAM, MA 02026

SUBMITTED TO:
BOSTON REDEVELOPMENT AUTHORITY
ONE CITY HALL SQUARE
BOSTON, MA 02201

PREPARED BY:
EBI CONSULTING
1400 HANCOCK STREET, 4TH FLOOR
QUINCY, MA 02169

IN ASSOCIATION WITH:
O'DONOVAN LAW OFFICE
THE ARCHITECTURAL TEAM
LDA ARCHITECTS
HOWARD STEIN HUDSON
ROWAN WILLIAMS DAVIES & IRWIN INC.
CONSIGLI CONSTRUCTION COMPANY, INC.
HALEY AND ALDRICH, INC.
COPLEY WOLF DESIGN GROUP
WALKER PARKING CONSULTANTS
HANCOCK ASSOCIATES

MARCH 31, 2016

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1 INTRODUCTION/PROJECT DESCRIPTION

1.1 INTRODUCTION

JDMD Owner, LLC (the "Proponent") proposes to redevelop existing structures at 33-61 Temple Street in Beacon Hill (the "Project Site") into 75 residential condominiums, with resident amenity space, and accessory below-grade parking for 60 vehicles (the "Proposed Project"). The Project Site includes 2 connected buildings totaling approximately 171,950 gross square feet and an adjacent paved area. The first building, located at 61 Temple Street and known as the Gleason L. & Hiram J. Archer Building (the "Archer"), was originally constructed in 1920 by Suffolk University (the "University"). The University currently uses the 6-story building for classroom and administrative space. The second building, located 33-51 Temple Street and known as the Frank J. Donahue Building (the "Donahue"), was completed in 1966 by the University. The University also currently uses this 5-story building for classroom and administrative space (the Archer and the Donahue are sometimes referred to collectively herein as the "Building"). In addition to the Building, the Project Site includes a paved area immediately to the north of the Building that is currently occupied by a dumpster and bicycle storage. The paved area is also used for loading and unloading. Since the Proponent acquired the Project Site from the University on July 1, 2015, the Proponent has engaged the Beacon Hill community, the Boston Redevelopment Authority (the "BRA"), the Beacon Hill Civic Association (the "BHCA"), the Beacon Hill Architectural Commission (the "BHAC"), and various departments within the City of Boston, to determine the best use for the Project Site. The aforementioned groups have all advocated for the change of use from institutional/university to residential. The Proposed Project will function as an environmentally conscious, full-service residential development offering family sized units in Beacon Hill.

The Proposed Project will embody architecture befitting the Historic Beacon Hill District, the oldest historic district in Massachusetts, and the Proponent will pay special attention to the general design, arrangement, texture, material and color of the architectural features involved and the relationship thereof to the other structures in the neighborhood. The Archer Building, constructed of red brick with granite and cast stone trim and one of the largest expressions of the Classical and Renaissance Revival styles on Beacon Hill, will be restored and will maintain its architectural character. On the other hand, the Proponent will transform the large, institutional modern Donahue Building into a scaled residential structure with a detailed façade and traditional windows in line with historic Beacon Hill architecture. In addition to transforming the Project Site to a residential use appropriate for the Beacon Hill neighborhood, the Proposed Project will also generate construction and full-time job opportunities, improved tax revenues for the City of Boston, affordable housing and other public benefits as further outlined in this document.

Because the Proposed Project will redevelop and change the use of over 100,000 square feet of gross floor area, the Proposed Project is subject to the requirements of Large Project Review pursuant to Article 80B of the Boston Zoning Code (the "Code"). The Proponent submits this Expanded Project Notification Form (EPNF) to the BRA to initiate review of the Proposed Project under Article 80B, Large Project Review, of the Code.

1.2 PROJECT IDENTIFICATION

The Proponent has enlisted a team of mainly Boston-based planners, engineers, attorneys, and consultants (the "Project Team") to assist them with the development of the Proposed Project. The Project Team is listed below.

Proponent:	**JDMD Owner, LLC** 408 Whiting Avenue Dedham, MA 02026 Contact: David Raftery Contact: David Ridini Contact: Matthew Snyder

Architect:
The Architectural Team
50 Commandant's Way
Chelsea, MA 02150
Contact: Mike Binette
Contact: Jay Szymanski

Interior Design
LDa Architects
222 Third Street, #3212
Cambridge, MA 02142
Contact: John Day
Contact: Michael Waters
Contact: Liz Dunne

Structural Engineer:
McNamara Salvia
266 Summer Street
Boston, MA 02210
Contact: Joseph Salvia

Contractor:
Consigli Construction Co., Inc.
101 Federal Street, 11th Floor
Boston, MA 02210
Contact: Brian Barringer
Contact: Chris Scarvalas

Civil Engineer & LEED:
EBI Consulting
21 B Street
Burlington, MA 01803
Contact: John Hession
Contact: Jason Happe

Geotechnical Consultant:
Haley and Aldrich, Inc.
465 Medford Street
Boston, MA 02129
Contact: Denis Bell

Landscape Architect:
Copley Wolff Design Group
160 Boylston Street
Boston, MA 02116
Contact: John Copley

Legal Counsel:
O'Donovan Law Office
10 Tremont Street, Suite 200
Boston, MA 02108
Contact: Sean T. O'Donovan ESQ.

Parking:
Walker Parking Consultants
20 Park Plaza, Suite 1202
Boston, MA 02116
Contact: Art Stadig
Contact: Sarah Morkos

Surveyor:
Hancock Associates
185 Centre Street
Danvers, MA 01923
Contact: Wayne Jalbert

Transportation: **Howard Stein Hudson**
11 Beacon Street, Suite 1010
Boston, MA 02108
Contact: Brian Beisel

Wind: **Rowan Williams Davies & Irwin Inc.(RWDI)**
650 Woodlawn Road West
Guelph, Ontario, Canada N1K 1B8
Contact: Sonia Beaulieu

1.3 PROJECT DESCRIPTION

1.3.1 PROJECT SITE

The Project Site address is 33-61 Temple Street and is located in the Beacon Hill neighborhood of Boston. The southern face of the Building fronts onto Derne Street and sits at the foot of the Massachusetts State House. The Building runs approximately halfway down the block towards Cambridge Street (to the north) between Temple Street (to the east) and Ridgeway Lane (to the west). The approximately 27,758 square feet of Lot Area is composed of six (6) tax parcels, which can be identified as City of Boston Parcel IDs: 0300063000; 0300064000; 0300066000, 0300067000, 0300068000, 0300050000. The Project Site is also shown on the Existing Conditions Plan of Land in **Appendix A**. As stated above, in addition to the Building, the Project Site includes a paved area immediately to the north of the Building that is currently occupied by a dumpster and bicycle storage and is used for loading and unloading. The paved area is approximately 1,848 square feet, and the Proponent plans to redevelop the paved area into a valet operation area with direct access to the vehicle elevator connecting to the proposed below-grade parking garage within the Building. See **Figure 1-1** for an aerial locus map.

1.3.2 AREA CONTEXT

The Proponent submits that there is a significant need in the City of Boston, and the Beacon Hill neighborhood, in particular, for high-quality housing as put forward by the Proposed Project. The introduction of these new family sized residential units will help alleviate the City's housing needs and add to the residential fabric of the Beacon Hill neighborhood.

Temple Street runs from Derne Street to the south towards Cambridge Street to the north and mostly contains typical Beacon Hill row houses. Ridgeway Lane runs from Derne Street to the south towards Cambridge Street to the north and contains typical Beacon Hill row houses and deeded parking spaces.

The Proponent submits that the Proposed Project will alleviate existing grievances from the Beacon Hill community related to the non-conforming institutional/university use of the Building. As noted above, the Proponent acquired the Building from the University on July 1, 2015. Over the years, the University utilized the Building for a variety of its needs including classroom and administrative space, a theater, and the main cafeteria for the student body of approximately 10,000 students. The non-conforming institutional/university use at the Project Site (as well as in additional locations on Beacon Hill) led to a tense relationship between the University and the Beacon Hill community. For the residents in the immediate area of the Building, it became the equivalent of living on a college campus. In 2008, in an effort to address the ongoing issues between the University and the Beacon Hill community, the two sides engaged in extensive negotiations to solve the persisting problems. Ultimately, the two parties entered into an agreement whereby the University agreed to change the uses of some of its Beacon Hill properties and thereafter shift its campus closer to Boston's downtown neighborhood. Said agreement aimed to help alleviate the noisy student traffic that often put the University at odds with its neighbors in Beacon Hill. The University also committed to extend a "non expansion zone" to include the upper parts of Beacon Hill where the Project Site is located. The sale of the Project Site to the Proponent and the Proposed Project put forth will further the goals of the negotiated agreement and remove the non-conforming use and allow a preferred residential use with the architectural and aesthetic improvements befitting the character of the Beacon Hill neighborhood.

In addition to resolving ongoing issues in the neighborhood and creating an aesthetically appropriate structure within the neighborhood, the Proponent has engaged in extensive studies regarding traffic, parking, and other pedestrian friendly measures to help mitigate any potential impacts of its parking garage and related vehicular passage on Temple Street. The Proponent has also worked extensively with the BHCA to help address concerns about the Proposed Project's parking and overall traffic impacts.

1.3.3 PROPOSED PROJECT

The Proposed Project is the adaptive redevelopment of the existing connected Archer and Donahue Buildings into a full service 75-unit residential condominium building. The breakdown of unit sizes is as follows: (22) one bedroom, (38) two bedroom, (13) three bedroom, and (2) four bedroom units. In addition to the residential units there is 5,745 SF of amenity space planned for use by the condominium owners. These spaces will include a concierge desk, package storage, mailroom, and an onsite property manager's office. The uses of the other amenity spaces have not been finalized, but could include uses such as exercise space, lounge and family recreation space.

The Proposed Project also contains 60 parking spaces in a below grade garage accessed via a vehicle elevator entered from the existing paved area at the north end of the Project Site. This existing paved area is currently used for the building's trash removal, loading and bicycle storage. There is an existing level curb at this location. No new curb cuts will be required. The vehicle elevator will be approximately 12'x24' and will allow for one vehicle at a time to be moved from the existing exterior grade level to the elevation of the garage. All garage operations will be done by a professional valet service. Users of the garage will drop off and pick up their cars with the valet at the existing paved area. There will be an accessible entrance to the building from the valet loading zone allowing convenient access to the Building for both users of the garage and valet personnel without leaving the property. Refer to **Figure 1-4**. Within the garage, 56 vehicles will be stored in tandem stacker lift units. Four additional cars will be stored in traditional tandem spaces. The Proposed Project also provides covered storage for a minimum of 75 bikes within the Building.

In addition to adaptively reusing the existing Building, the Proposed Project includes the construction of two penthouse levels of residential and mechanical space above the existing roof. Currently, this section of the Archer Building contains a roof-accessed greenhouse, an enclosed mechanical penthouse and several unscreened pieces of mechanical equipment. Currently, the Donahue Building contains an enclosed mechanical penthouse accessed from within the Building and three large pieces of mechanical equipment accessed from the roof. The Proposed Project will remove all of the existing structures and equipment on the roof. In its place will be 7 residential units, an enclosed mechanical room and screened exterior mechanical equipment. The penthouse will be clad in metal panels and will include large windows with clear glass and doors to private roof decks connected to the 7 residential units.

The penthouse has been designed to be setback from the roof edge and to be at a height which minimizes visual impact and new shadows. The existing unscreened mechanical equipment, much of which is at the edge of the roof, will be removed; the new mechanical equipment will be located further from the roof edge and will be fully screened.

A series of figures more fully illustrate the Proposed Project are included at the end of this section. **Figures 1-2 through 1-25** include an area context figure, an existing site plan, a proposed ground floor site plan, existing building images, schematic floor plans, building elevations, perspective street views and perspective façade views.

1.4 PUBLIC BENEFITS

The development of the Proposed Project will generate a myriad of public benefits for the Beacon Hill community and the City of Boston as a whole, both during construction and on an ongoing basis upon its completion, as described below.

1.4.1 FINANCIAL BENEFITS

The Proposed project will result in significant financial benefits to the City of Boston and its residents, including:

- Significant additional real estate tax revenues to the City's General Fund, projected to a total of approximately $2 million of net new tax revenue each year.

- The Proposed Project will create and/or contribute to affordable housing in accordance with the city's Inclusionary Development Policy.

- The creation of as many as 120 construction jobs.

- The creation of approximately twelve (12) new full-time employment opportunities following the completion of the Proposed Project.

1.4.2 URBAN DESIGN BENEFITS

The development of the Proposed Project will help to refine the design quality of both Temple Street and Ridgeway Lane. Improvements to the public realm will include the following:

- As explained in detail above, the Proposed Project will remove a non-conforming institutional/university use and replace it with a residential use befitting the Beacon Hill neighborhood.

- The Proposed Project will improve the urban design characteristics and aesthetic character of the surrounding area through the introduction of high-quality architecture to the Project Site. For example, the proposed reskinning of the Donahue building with a more suitable façade will reduce the scale and massing of the Building to be more in keeping with the scale of the Beacon Hill neighborhood.

- The Proposed Project will deliver 75 residential units within an ADA accessible building to the Beacon Hill neighborhood. Due to the age of the buildings in neighborhood, there is a significant lack of accessible buildings, and the Proposed Project will help to alleviate this issue and allow many long time residents of Beacon Hill to age in place.

- The proposed additional building entrances, recesses, and projected bays will reintroduce the character of the residential sidewalks otherwise seen in the Beacon Hill neighborhood.

- As explained in detail in **Section 5**, the Proposed Project will incorporate advanced sustainable building technologies, practices, and materials that will achieve LEED certifiable status, with an aim to meet LEED Certified level, or will meet or exceed comparable environmental standards in effect.

- As explained in more detail in **Section 3.1**, the Proposed Project is not expected to adversely affect pedestrian level winds and there will be no new or uncomfortable or dangerous wind conditions created by the Proposed Project.

- As explained in more detail in **Section 3.2**, the Proposed Project's aggregate shadow impacts on the public realm are de minimis.

- The Proposed Project will enhance the streetscape and pedestrian experience through the use of lighting and transparent glass on the façade that will blend the boundaries between the indoor and outdoor environments.

1.4.3 AFFORDABLE HOUSING/INCLUSIONARY DEVELOPMENT POLICY

The Inclusionary Development Policy, approved by the BRA, established that residential projects seeking zoning relief must set aside a percentage of its market rate units as affordable to households of specified levels of income, or create such units off-site, or contribute an amount to a housing creation fund based on a percentage of the total number of the project units. The Proposed Project will create and/or contribute to affordable housing in accordance with the Inclusionary Development Policy.

1.4.4 SMART GROWTH/TRANSIT-ORIENTED DEVELOPMENT

The Proposed Project is consistent with smart-growth and transit-oriented development principles. The Proposed Project is located approximately 1,500 feet from Park Street Station, which is a main thoroughfare for the Massachusetts Bay Transportation Authority (MBTA) system that offers services on the Green Line, Red Line, Orange Line and Blue Line. The Proposed Project is within a few stops of both Back Bay Station and South Station, which both service the commuter rail and connect the areas west and south of Boston. In addition, the Proposed Project is within walking distance from North Station, which also services the commuter rail and connects the areas north of Boston. Thus the Proposed Project concentrates new residential uses in close proximity to major regional rapid transit, commuter rail, and bus lines that provide easy access to the Proposed Project from other neighborhoods in the City of Boston and the Greater Boston area and beyond. The Proposed Project is also within walking distance to both the Downtown neighborhood and Back Bay and many future residents will be able to commute to work without the need for public transportation or motor vehicles. Furthermore, the Proposed Project provides for a large bicycle storage facility on the ground floor that will give residents easy access to their bicycles for trips around the city.

1.5 CITY OF BOSTON ZONING

1.5.1 PROJECT SCOPE

As outlined above, the Proposed Project consists of the following development program: Redevelopment of an approximately 171,950 square foot institutional/university building at 33-61 Temple Street into seventy-five (75) residential condominiums and a below-grade parking garage for sixty (60) vehicles.

1.5.2 LARGE PROJECT REVIEW

Because the Proposed Project involves the redevelopment and change of use of more than 100,000 square feet of gross floor area, the Proposed Project is subject to Large Project Review pursuant to Article 80B of the Code. Under the Mayor's Executive Order dated October 10, 2000, as amended on April 3, 2001, regarding mitigation for development projects, the Mayor, along with other elected officials, appointed an Impact Advisory Group ("IAG") to advise the BRA on mitigation measures.

In connection with the Large Project Review, the Proposed Project may be subject to, among other requirements:

- Boston Civic Design Commission review
- Beacon Hill Architectural Commission review (detailed below)
- Inclusionary Development Policy (detailed above)
- The Green Building requirements under Article 37 of the Code (detailed below)
- The requirements of Article 27D, the Downtown Interim Planning Overlay District (the "Downtown IPOD") (detailed below)

1.5.3 ZONING DISTRICT

The Project Site is located within a H-2-65 Residential Subdistrict in the Boston Proper Zoning District and is subject to the use, dimensional and design standards of said district under the Code. The parcel is also located within and subject to the Subdistrict F, Priority Preservation Subdistrict of the Downtown IPOD per Article 27 of the Code. The Project Site is also within the Beacon Hill Historic District and the Proposed Project is subject to review and approval by the Beacon Hill Architectural Commission. [Note: The Project Site is not within a Groundwater Conservation Protection Overlay District. The Project Site is not within the 100 Year Flood Plan and is not subject to the Flood Hazard District standards set forth in Article 25 of the Code.]

1.5.4 USES AND DIMENSIONS

As stated above, the Proponent proposes to convert the Building from a non-conforming institutional/university use to a residential use, with accessory below-grade parking. The Proposed Project's residential use is allowed as of right in the H-2-65 Residential Subdistrict, and the Code calls for 0.7 parking spaces per residential unit. [Note: The appropriate number of off-street parking spaces and off-street loading facilities for the Proposed Project will be determined through Large Project Review. The Proposed Project's general parking and transportation plan is set forth in **Section 2** of this EPNF.]

Because the intent and purpose of the dimensional requirements set forth in the Code is to reasonably limit the size and density of a building on a lot and to keep the size of the structure in an appropriate scale with the surrounding neighborhood, the Proponent submits that the Proposed Project meets the requirements for the granting of certain variances. Such variances will allow for the reasonable use of the Project Site for a purpose substantially more in keeping with the nature of the Beacon Hill neighborhood.

1.5.5 BUILDING DIMENSIONS

As stated above, the Proposed Project is a redevelopment of an existing building.

Height of Building

The Project Site is located within a limited height district per Article 3-1(A)(i) of the Code where Height of Buildings is limited to 65 feet. Per the Code, for any proposed project that (a) is subject to Large Project Review and (b) is within a downtown district established under Section 3-1C, "Height of Building" means the vertical distance from the grade to the top of the structure of the last occupied floor, and Height of Building is measured from the average elevation of the sidewalk the building abuts. The height of the existing Building is 81.75 feet, therefore, the Building exceeds the height limitation set forth in the Code. However, because the Building existed prior to the effective date of the Zoning Code and said height limitation, the Building is a prior non-conforming structure, and is therefore subject to Section 13-3 of the Code. Section 13-3 states that a building or use that existed on the effective date of the Zoning Code and is dimensionally nonconforming may be altered or enlarged if the nonconformity is not increased and the enlargement itself conforms to the applicable dimensional requirements of the Code. The Proposed Project anticipates additional floors to be added on top of the existing Building and the height will be increased by 33.25 feet. Because such increased Height of Building does not conform to the applicable dimensional requirements, the Proposed Project requires a variance for Building Height from the Zoning Board of Appeal. [Note: The height of the Proposed Project will only exceed the height of the tallest existing mechanicals by 16.25 feet. Also, it is important to note that the additional floors will be setback significantly from the existing roofline and will not be visible from any public ways in the Historic Beacon Hill District.]

Floor Area Ratio ("FAR")

The allowed FAR at the Project Site is 2.0. The Project Site contains approximately 27,758 square feet of Lot Area (as defined in the Code), and the existing Building contains approximately 169,678 square feet of Gross Floor Area (as defined in the Code for the purposes of FAR calculations), therefore the FAR of the existing Building is approximately 6.11, and thus the Building exceeds the FAR limitation set forth in the Code. However, because the Building existed prior to the effective date of the Zoning Code and said FAR limitation, the Building is a prior nonconforming structure, and is therefore subject to Section 13-3 of the Code. Section 13-3 states that a building or use that existed on the effective date of the Zoning Code and is dimensionally nonconforming may be altered or enlarged if the nonconformity is not increased and the enlargement itself conforms to the applicable dimensional requirements of the Code. The Proposed Project increases the Gross Floor Area (as defined by the Code for the purposes of FAR calculations) by approximately 3,322 square feet, therefore the FAR is increased to 6.23. Because the Proposed Project increases the FAR and such increase does not conform to the applicable dimensional requirements, the Proposed Project requires a variance for FAR from the Zoning Board of Appeal.

Front Yard, Side Yard and Rear Yard

The depth requirements for the Project Site are 20 feet for the Front Yard, 10 feet plus 5% of the side wall length for the Side Yards, and 10 feet plus 5% of the rear wall length for the Rear Yard. Given the current configuration of the existing Building where it abuts the lot line on 3 sides, it is impractical to meet such requirements. The existing Building is in line with the existing streetscape and reconfiguring the Building would severely compromise the character and aesthetic appeal of the street and impose an undue financial burden on the Proposed Project. Nevertheless, the Proposed Project requires a variance for Front Yard, Side Yard, and Rear Yard from the Zoning Board of Appeal.

Usable Open Space

Pursuant to Section 17 of the Code, Residential Uses at the Project Site are required to provide Usable Open Space (as defined in the Code) equal to 150 square feet per dwelling unit. Therefore, the Proposed Project would need to provide 11,250 square feet of Usable Open Space. Because the Building abuts the lot line on 3 sides and the rear of the Building will be utilized for the valet operation and access to the below-grade parking garage, the Proposed Project cannot provide Usable Open Space and a variance from the Zoning Board of Appeal is required.

Other

Based on the current design, it is possible additional zoning relief may be required. If additional zoning relief is required, the Proponent may seek relief from the Zoning Board of Appeal.

1.5.6 BEACON HILL ARCHITECTURAL COMMISSION

As stated above, an act of the Massachusetts General Court (Chapter 616 of the Acts of 1955, as amended) created The Historic Beacon Hill District, which is the oldest historic district in Massachusetts. Among other things, the Act established the BHAC, which operates under the purview of the City of Boston Environmental Department.

As stated in the Historic Beacon Hill District Architectural Guidelines, the purpose of the Historic Beacon Hill District is to promote the educational, cultural, economic and general welfare of the public through the preservation of the neighborhood, and to maintain said district as a landmark in the history of architecture and as a tangible reminder of old Boston as it existed in the early days of the Commonwealth. To achieve this purpose, the statute authorizes the BHAC to review proposed changes to the exterior architectural features of buildings within the historic district before any alteration is undertaken, and any such work requires a Certificate of Appropriateness from the BHAC before a building permit is issued. The legislation provides that the BHAC shall determine whether the proposed construction, reconstruction, alteration, change in exterior color or demolition of the exterior architectural feature involved will be appropriate to the preservation of the Historic Beacon Hill District. In passing upon appropriateness, the BHCA considers, in addition to any other pertinent factors, the historical and architectural value and significance, architectural style, general design, arrangement, texture, material and color of the exterior architectural features involved and the relationship thereof to the exterior architectural features of other involved structures in the immediate neighborhood.

The Proponent will file an application for a Certificate of Appropriateness from the BHAC after the plans for the Proposed Project are finalized.

1.5.7 IMPACT ADVISORY GROUP

As stated above, under the Mayor's Executive Order dated October 10, 2000, as amended on April 3, 2001, regarding mitigation for development projects, the Mayor, along with other elected officials, appointed an IAG to advise the BRA on mitigation measures because the Proposed Project is undergoing Large Project Review. The IAG is composed of the following individuals:

- Ted Acworth
- Ania Camargo
- James Ewing
- Jeanette Herrmann

- Frank McGuire
- Erich Shigley
- Ben Starr
- Steve Turner
- Rob Whitney

1.5.8 OTHER REQUIREMENTS

Downtown IPOD

Pursuant to Article 27 of the Code, the Proposed Project will require an interim planning permit pursuant to the Downtown IPOD.

Green Building

Pursuant to Article 37 of the Code, the Proposed Project will be LEED Certifiable under the most appropriate LEED building rating system. In addition, the Proposed Project will engage in Climate Change Preparedness Review. These items are addressed in depth in Section 5 of this EPNF.

1.6 LEGAL INFORMATION

1.6.1 LEGAL JUDGMENTS AVERSE TO PROJECT

The Proponent is unaware of any legal judgments or actions pending that concern the Proposed Project.

1.6.2 HISTORY OF TAX ARREARS

The Proponent is not delinquent in connection with any property owned within the City of Boston.

1.6.3 SITE CONTROL AND PUBLIC EASEMENTS

The Proponent owns the Project Site pursuant to a deed recorded at the Suffolk County Registry of Deeds (the "Registry") in Book 54708, Page 323. Based on the completed survey of the Project Site completed by Hancock Associates dated November 25, 2015 there are no public easements into, through, or surrounding the Project Site. No private agreements with third-party property owners are required to construct the Proposed Project.

1.7 ANTICIPATED PERMITS

Table 1-1 presents a preliminary list of permits and approvals from governmental agencies that are expected to be required for the Proposed Project, based on currently available information. It is possible that only some of these permits or actions will be required, or that additional permits or actions may be required.

Table 1-1: Anticipated Permits and Approvals

Agency	***Approval***
City of Boston	
Boston Redevelopment Authority	- Article 80B Large Project Review - Cooperation Agreement - Affordable Housing Agreement - Certification of Consistency
Boston Civic Design Commission	- Design Review
Boston Employment Commission	- Boston Residents Construction Employment Agreement
Boston Landmarks Commission	- Beacon Hill Architectural Commission Approval (Certificate of Appropriateness)

Boston Water and Sewer Commission	- Site Plan Review - Water and Sewer Connection Permits - Cross Connection Backflow Prevention Approval (as required) - Temporary Construction Dewatering Permit
Public Improvement Commission	- Pedestrian Easement Acceptance Specific Repair Plan - Vertical Discontinuance Permit for Sign, Awning, Hood, Canopy or Marquee (as required)
Boston Transportation Department	- Construction Management Plan - Transportation Access Plan
Boston Public Works Department	- Curb Cut Permit(s) - Street Opening Permit (as required) - Street/Sidewalk Occupancy Permit (as required)
Public Safety Commission Committee on Licenses	- Permit to Erect and Maintain Garage - Inflammable Storage License
Boston Inspectional Services Department	- Demolition Permits - Building Permits - Certificates of Occupancy
State	
Department of Environmental Protection	- Sewer Connection Permit of Self-Certification (as required) - Fossil Fuel Utilization Permit (as required) - Notice of Demolition/Construction
Massachusetts Water Resources Authority	- Temporary Construction Dewatering Permit
Federal	
Federal Aviation Administration	- Determination of No Hazard to Air Navigation

1.8 PUBLIC PARTICIPATION

In advance of this filing, the Proponent has met with numerous stakeholders (e.g. local elected officials, abutting property owners, abutting business owners, the BHCA, the BHAC) regarding the Proposed Project to ensure that information about the Proposed Project was widely available to interested parties. The submission of this EPNF commences the formal regulatory review and community process regarding the Proposed Project.

1.9 SCHEDULE

As further outlined in Section 4 below, construction is anticipated begin in the late summer of 2016 and will finish in early 2018.

Images shown are from the Commonwealth of Massachusetts
Office of Geographic and Environmental Information (MassGIS),
2008 / 2009 U.S. Geological Survey (USGS) Color Ortho Imagery

EBI Consulting
environmental | engineering | due diligence
www.ebiconsulting.com

Title: Figure 1-1
Aerial Locus Map

Date: March 2016

Project: Archer | Donahue
Residential Development
EPNF
Boston, Massachusetts

Job No: 1615000031

Archer | Donahue

Boston, MA

Figure 1-2
Area Context

March 30, 2016

DEVELOPER : JDMD Owner, LLC

ARCHITECT : The Architectural Team

14188

tat | the architectural team

LDa
ARCHITECTURE & INTERIORS

Archer | Donahue
Boston, MA

Figure 1-3
Existing Site Plan

March 30, 2016
DEVELOPER : JDMD Owner, LLC
ARCHITECT : The Architectural Team

14188

tat | the architectural team
LDa
ARCHITECTURE & INTERIORS

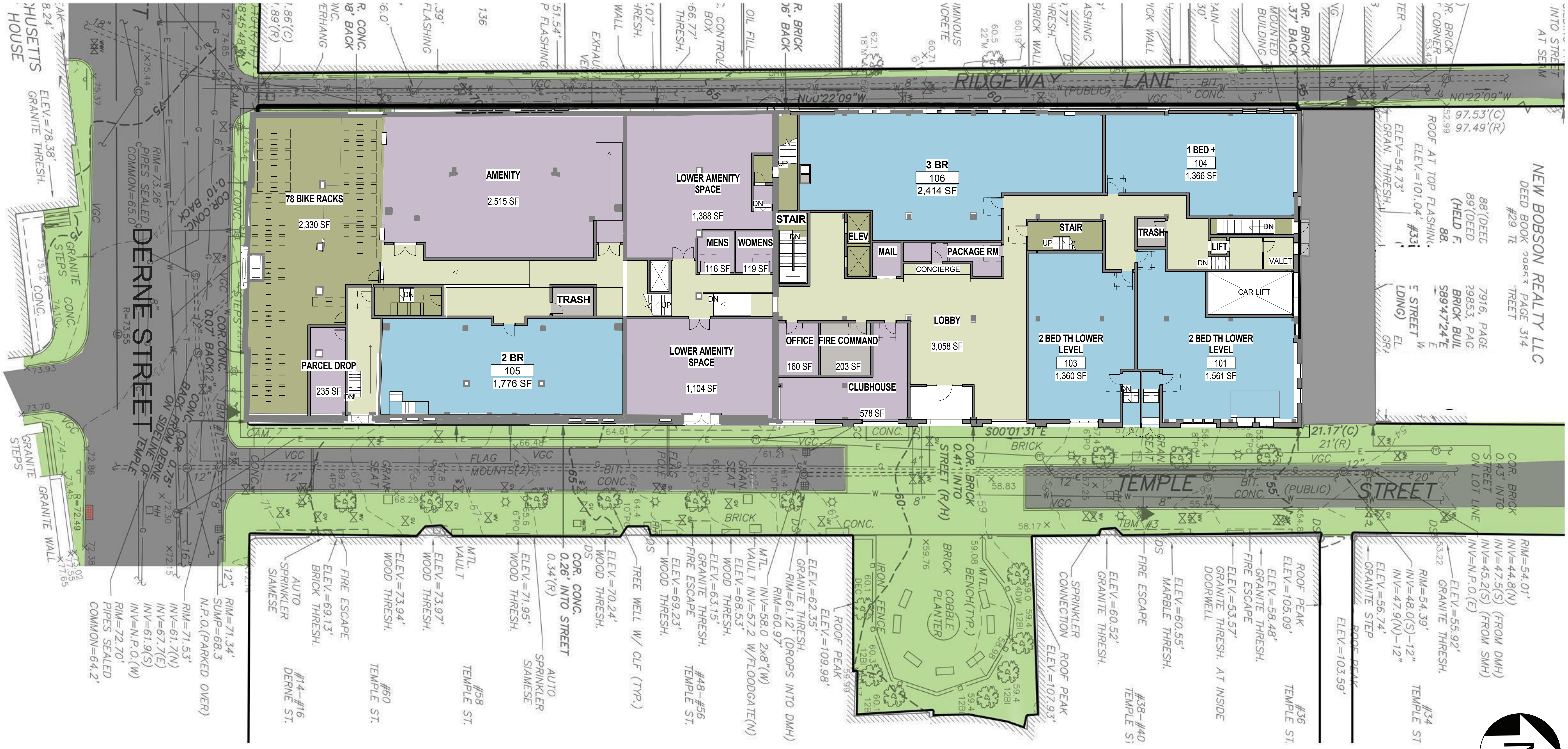

Figure 1-4
Ground Floor / Site Plan

Archer | Donahue
Boston, MA

March 30, 2016

DEVELOPER : JDMD Owner, LLC

ARCHITECT : The Architectural Team

14188

tat the architectural team

LDa ARCHITECTURE & INTERIORS


Donahue - Temple Entrance


Archer - Derne Façade


Archer - Temple Entrance

Archer | Donahue
Boston, MA

Figure 1-5
Existing Building Images

March 30, 2016
DEVELOPER : JDMD Owner, LLC
ARCHITECT : The Architectural Team

14188

tat the architectural team
LDa ARCHITECTURE & INTERIORS

Existing Conditions

Proposed Conditions

Archer | Donahue
Boston, MA

Figure 1-6
Aerial Roof View

March 30, 2016

DEVELOPER : JDMD Owner, LLC

ARCHITECT : The Architectural Team

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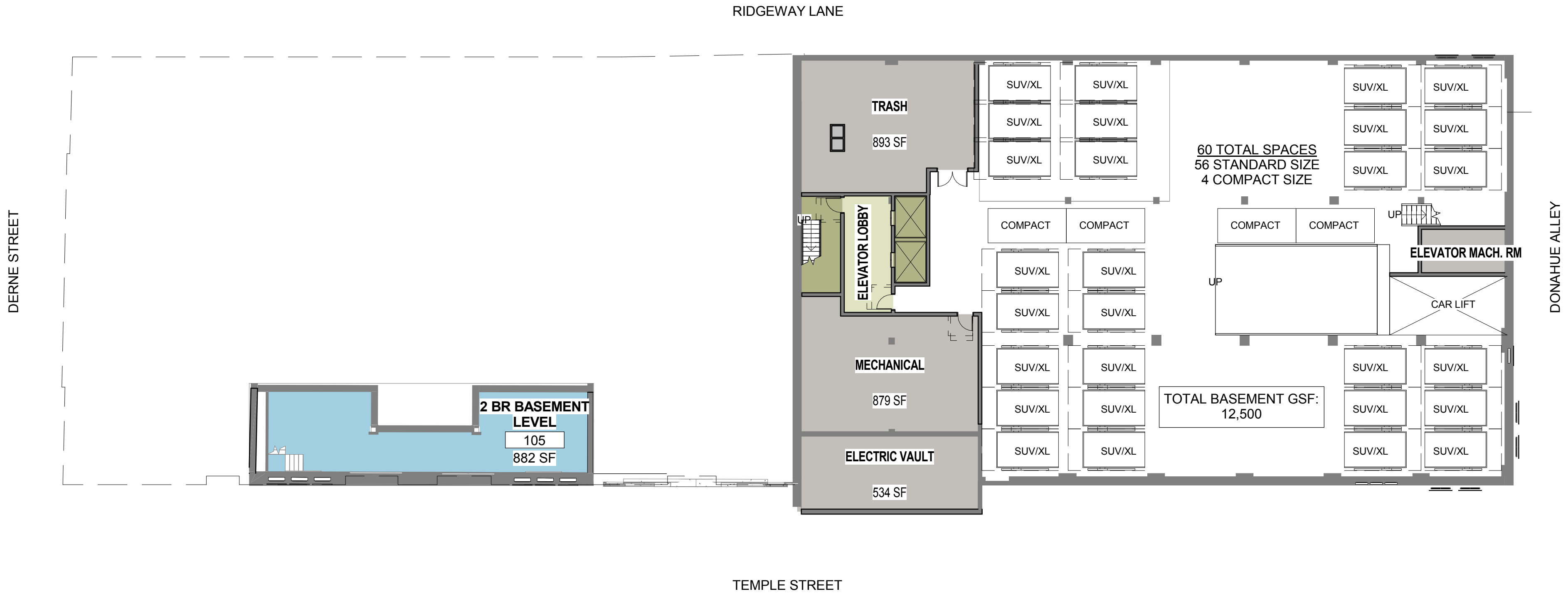
tat the architectural team

LDa
ARCHITECTURE & INTERIORS

- ▨ MISC SPACE
- ▨ PRIVATE / RESIDENTIAL
- ▨ MECHANICAL
- ▨ AMENITY SPACE
- ▨ CIRCULATION/OPEN LOBBY
- ▨ VERTICAL CIRCULATION

1 GROUND FLOOR PLAN
Scale : 1/16" = 1'-0"

- ▨ PRIVATE / RESIDENTIAL
- ▨ MECHANICAL
- ▨ AMENITY SPACE
- ▨ CIRCULATION/OPEN LOBBY
- ▨ VERTICAL CIRCULATION



2 GARAGE FLOOR PLAN
Scale : 1/16" = 1'-0"

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Figure 1-7
Schematic Plan -1

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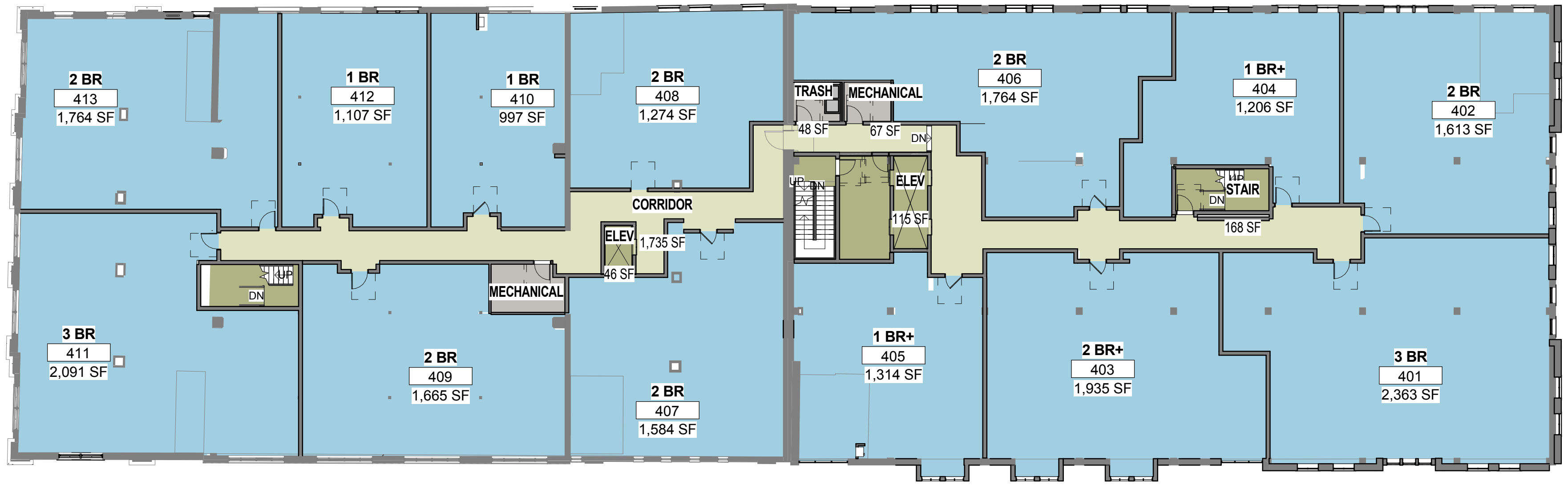
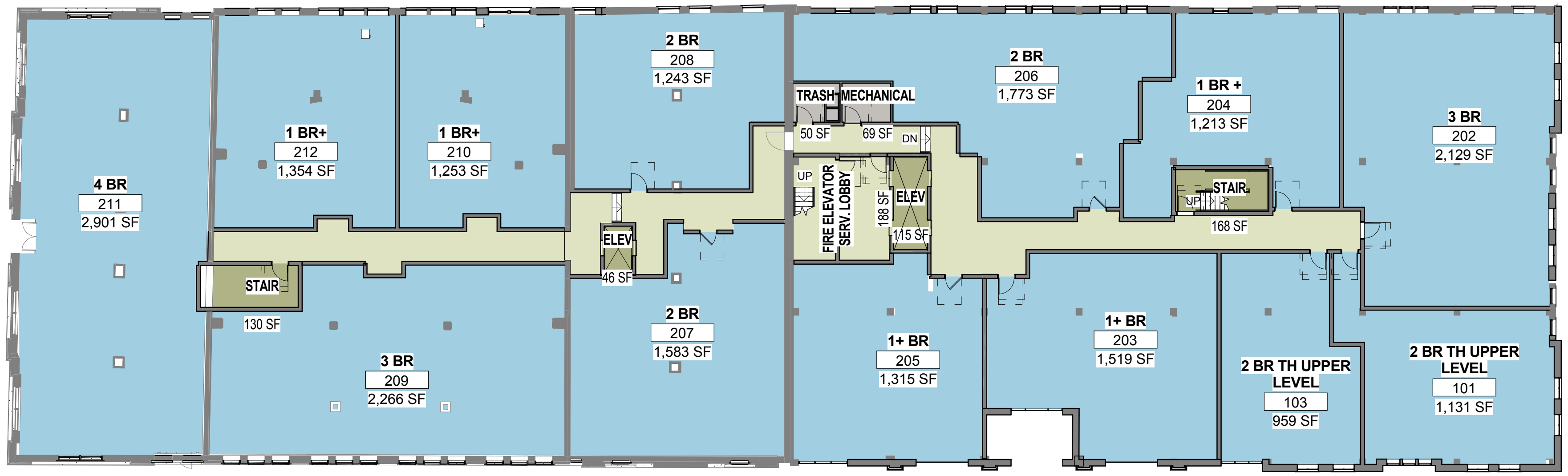


1 THIRD - SIXTH FLOOR PLAN
Scale : 1/16" = 1'-0"

🟦 PRIVATE / RESIDENTIAL
⬜ MECHANICAL
🟨 CIRCULATION/OPEN LOBBY
🟩 VERTICAL CIRCULATION



10 SECOND FLOOR PLAN
Scale : 1/16" = 1'-0"

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Figure 1-8
Schematic Plan -2

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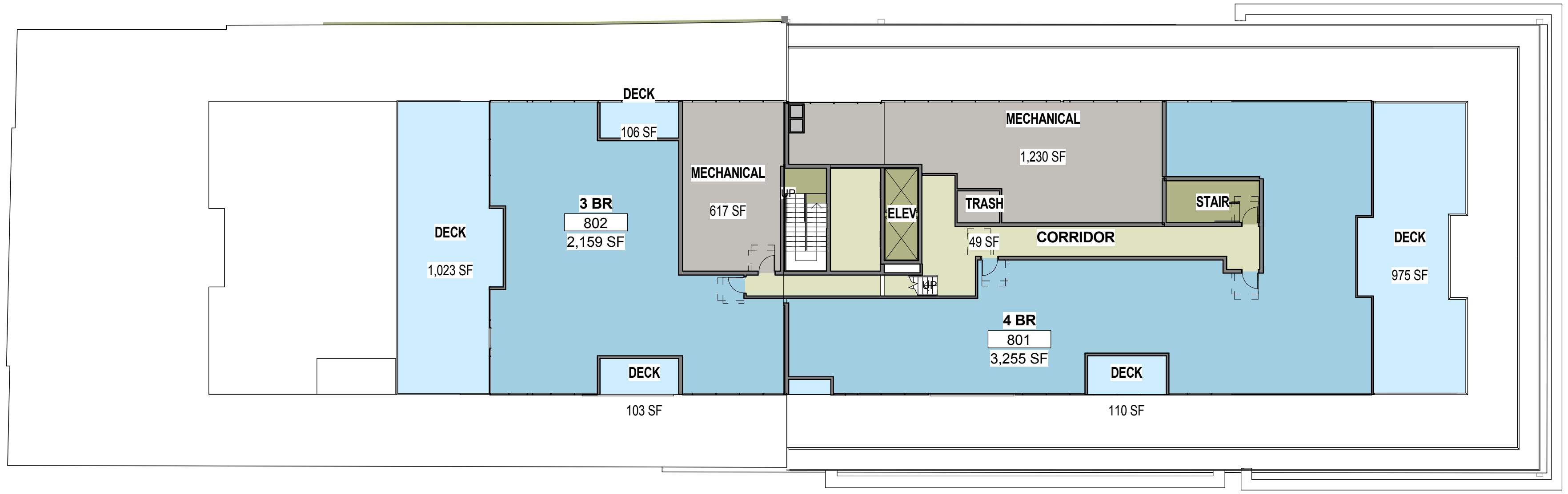
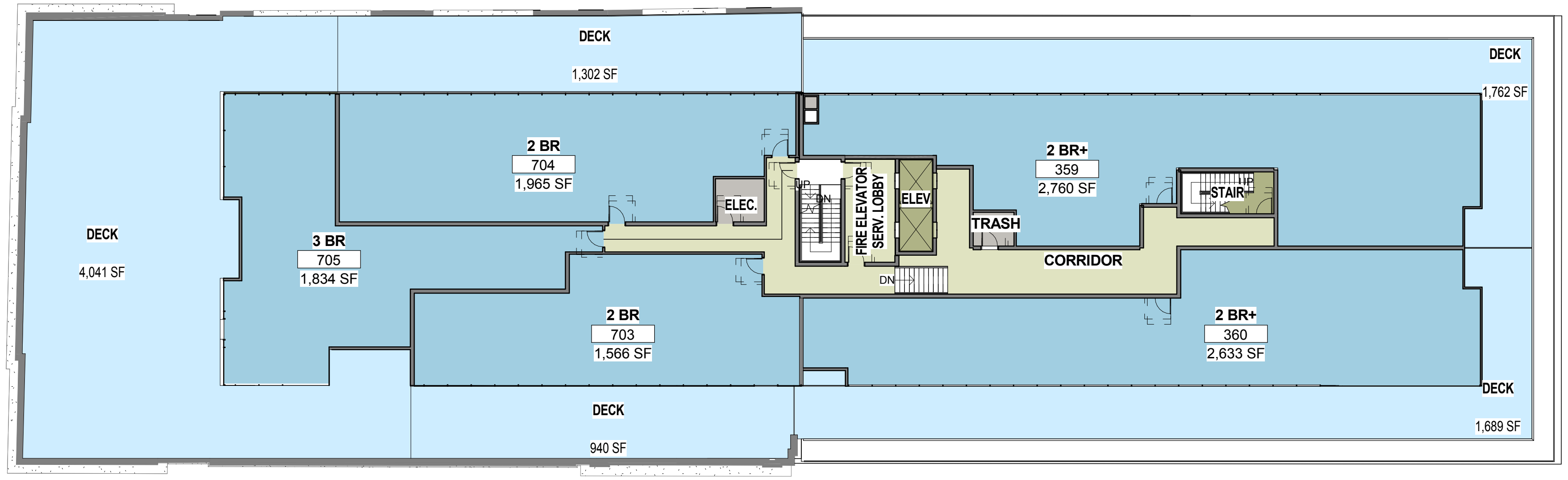
■ MISC SPACE
■ PRIVATE / RESIDENTIAL
■ MECHANICAL
■ CIRCULATION/OPEN LOBBY
■ VERTICAL CIRCULATION



11 PENTHOUSE LEVEL 2
Scale : 1/16" = 1'-0"



10 PENTHOUSE LEVEL 1
Scale : 1/16" = 1'-0"

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Figure 1-9
Schematic Plan -3

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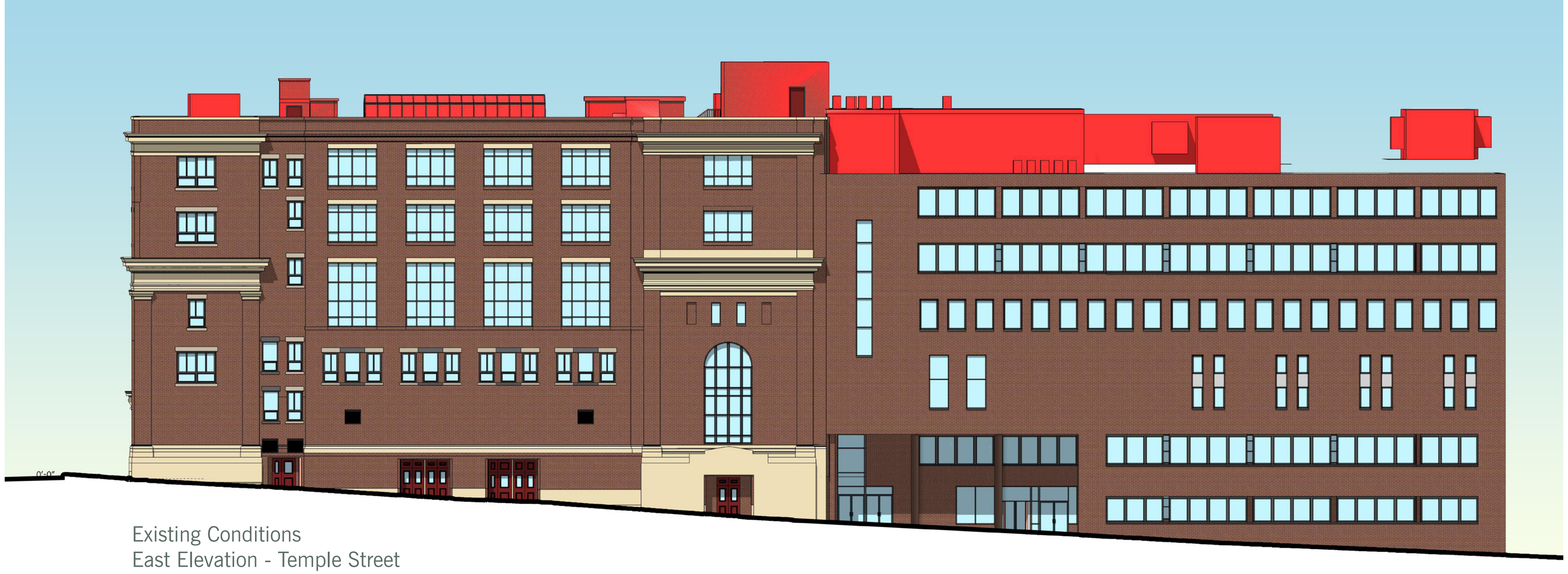
Existing Conditions
South Elevation - Derne Street



Existing Conditions
East Elevation - Temple Street

Proposed Conditions
South Elevation - Derne Street

Proposed Conditions
East Elevation - Temple Street

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Figure 1-10
Elevations - 1

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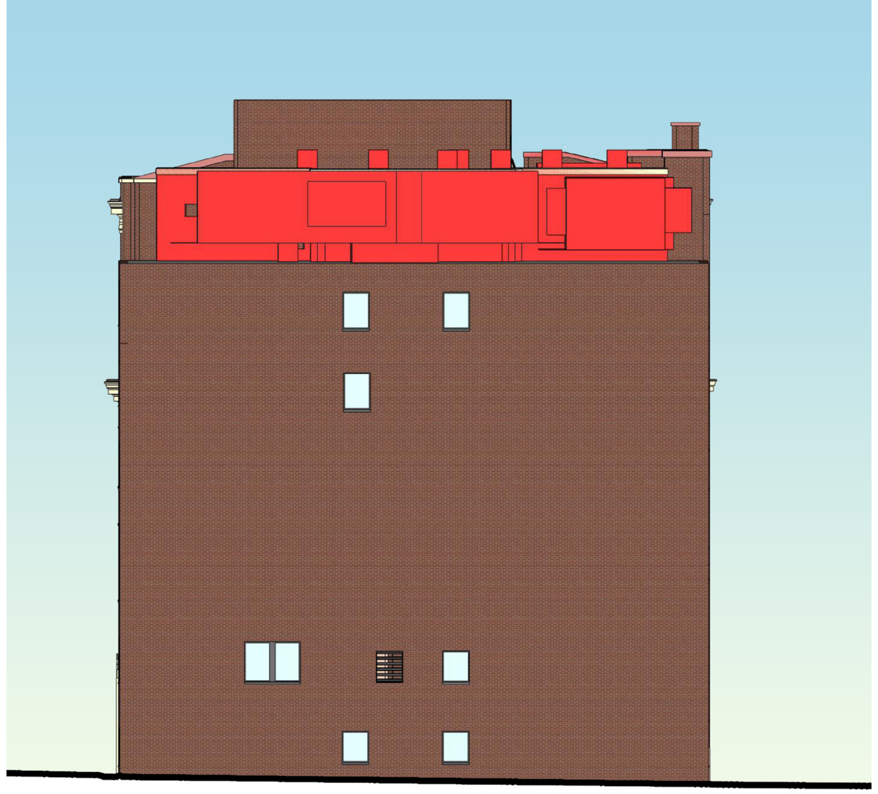

Existing Conditions
North Elevation

Existing Conditions
West Elevation - Ridgeway Lane

Proposed Conditions
North Elevation

Proposed Conditions
West Elevation - Ridgeway Lane

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Figure 1-11
Elevations - 2

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Figure 1-12
Perspective Street View - 1

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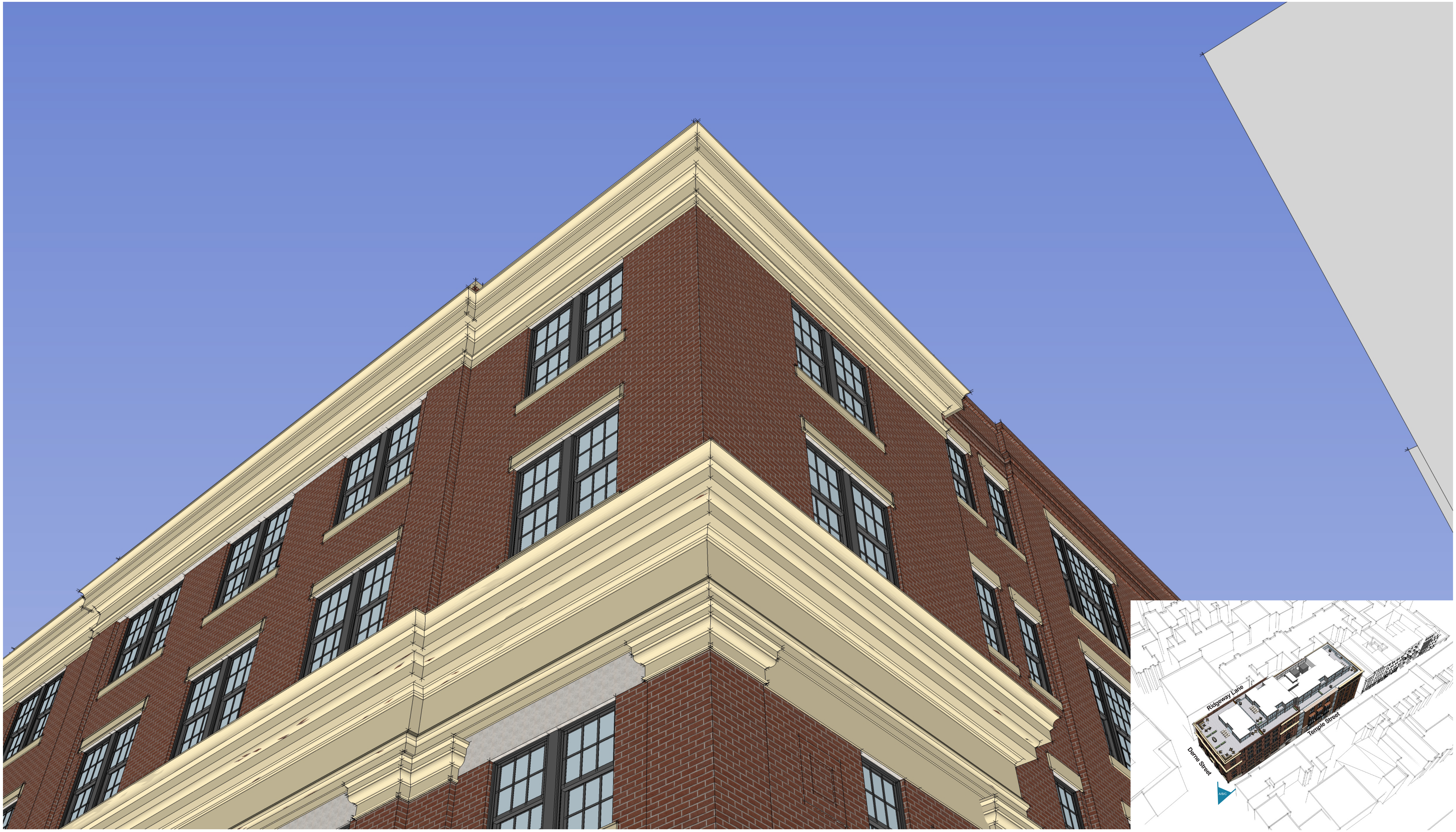

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Figure 1-13
Perspective Street View - 2

March 30, 2016

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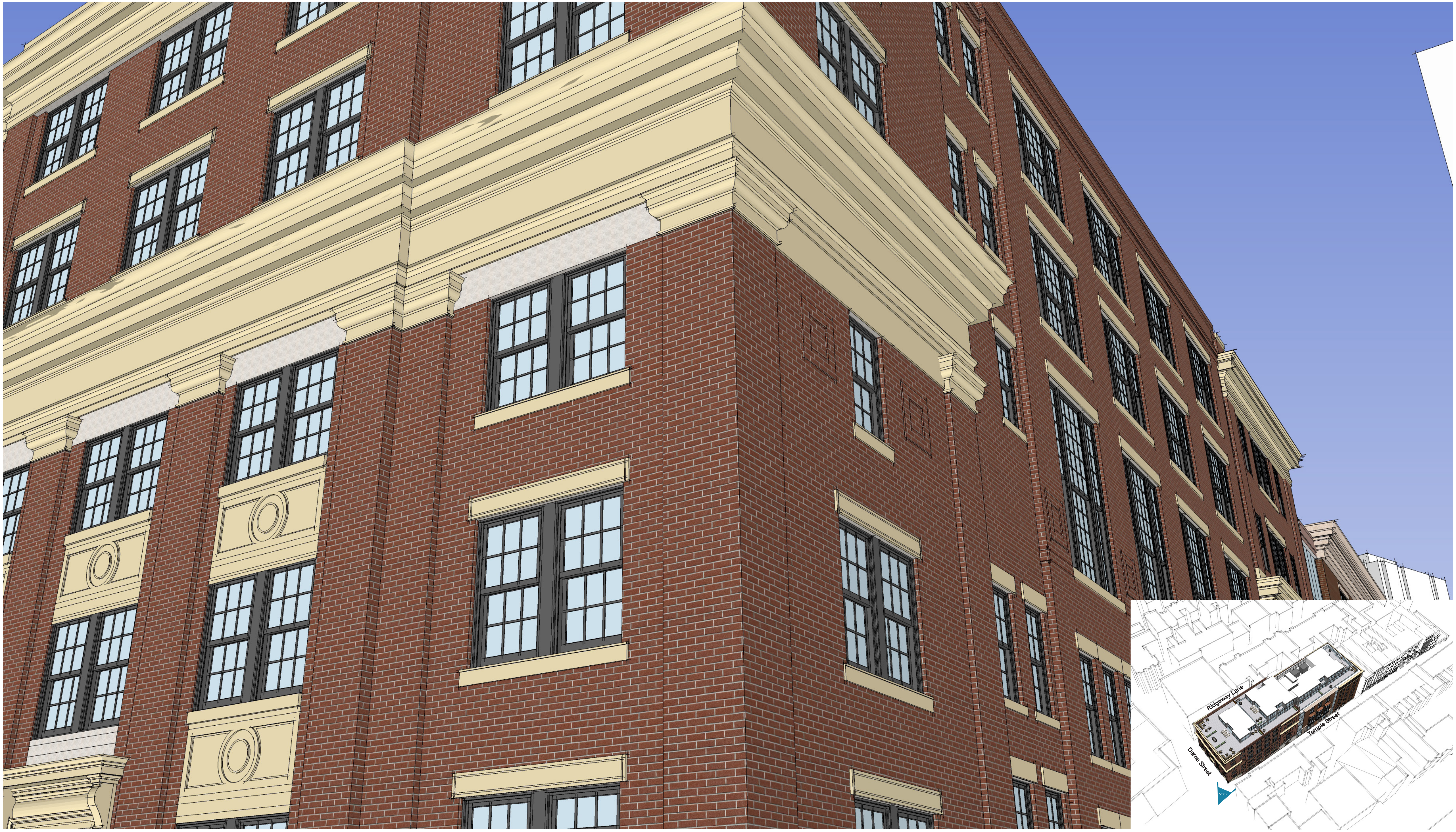

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Figure 1-14
Perspective Street View - 3

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Figure 1-15
Perspective Street View - 4

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Figure 1-16
Perspective Street View - 5

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Figure 1-17
Temple Street Park
Existing View - 6

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Figure 1-18
Temple Street Park
Proposed View - 7

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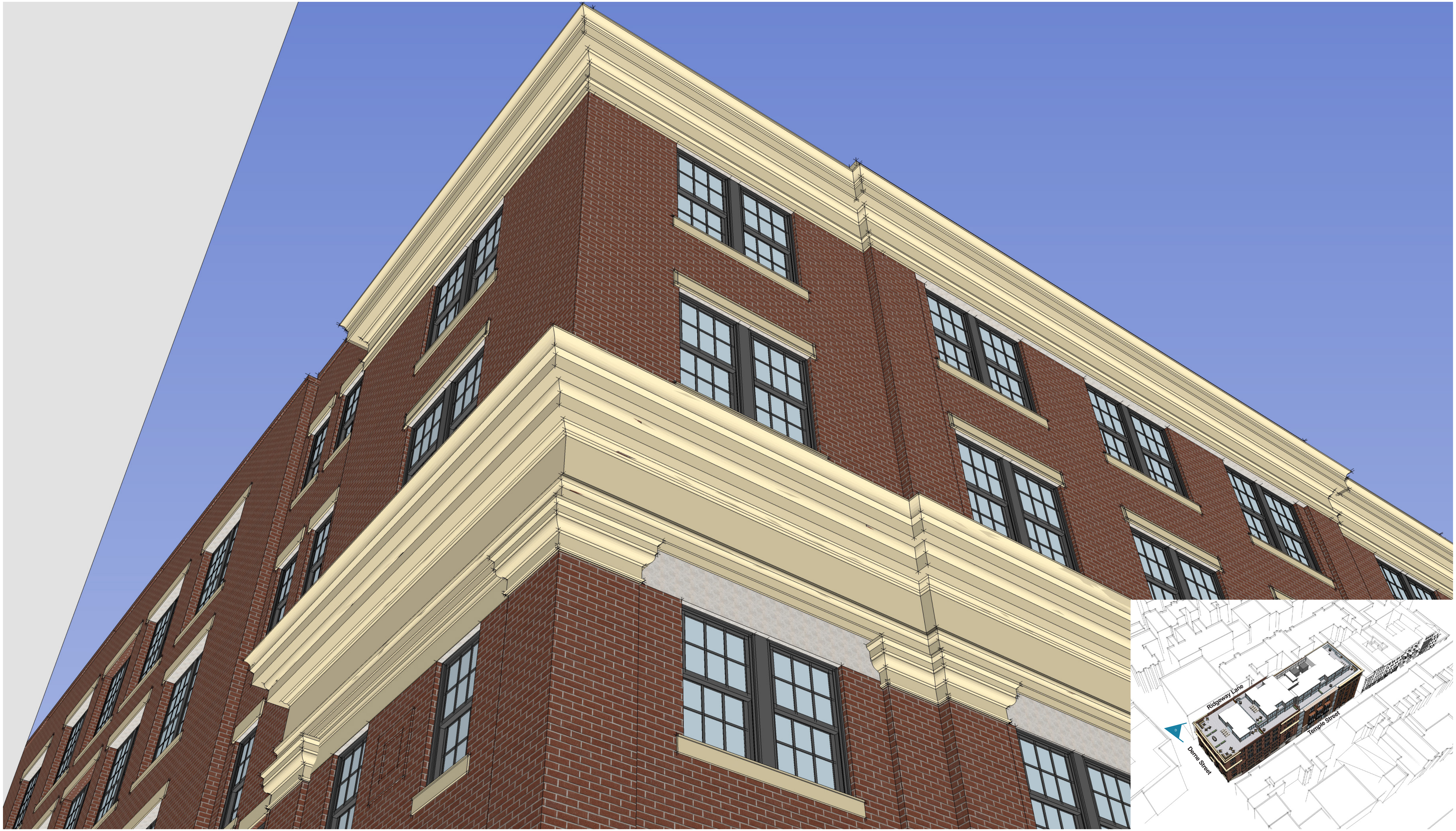

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Figure 1-19
Perspective Street View - 8

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Figure 1-20
Perspective View - 1
Temple and Derne Façades

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Figure 1-21
Perspective View - 2
Temple and North Façades

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Figure 1-22
Perspective View - 3
Ridgeway and North Façades

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Figure 1-23
Perspective View - 4
Donahue Penthouse

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South Elevation - Derne Street

East Elevation - Temple Street

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Figure 1-24
Building Elevations - 1

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West Elevation - Ridgeway Lane

North Elevation

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Figure 1-25
Building Elevations - 2

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2 TRANSPORTATION

Howard Stein Hudson (HSH) has conducted an evaluation of the transportation impacts of the Proposed Project. This transportation study adheres to the Boston Transportation Department (BTD) Transportation Access Plan Guidelines and BRA Article 80B Large Project Review process. This study includes an evaluation of existing conditions, future conditions with and without the Proposed Project, projected parking demand, loading operations, transit services, and pedestrian activity.

2.1 PROJECT DESCRIPTION

The Project Site currently consists of two connected buildings serving Suffolk University consisting of classrooms, offices, and auditorium space, and formerly a cafeteria. The Proposed Project consists of replacing the institutional/university uses with 75 residential condominium units and 60 parking spaces. The parking will be provided below grade with access provided off Temple Street to a vehicle elevator.

2.2 STUDY METHODOLOGY

This transportation study and supporting analyses were conducted in accordance with BTD guidelines, and are described below.

The Existing (2016) Condition analysis includes an inventory of the existing transportation conditions such as traffic characteristics, parking, curb usage, transit, pedestrian circulation, bicycle facilities, loading, and Project Site conditions. Existing counts for vehicles, bicycles, and pedestrians were collected at the study area intersections. A traffic data collection effort forms the basis for the transportation analysis conducted as part of this evaluation.

The future transportation conditions analysis evaluates potential transportation impacts associated with the Proposed Project. Long-term impacts are evaluated for the year 2021, based on a five-year horizon from the year of the filing of this traffic study.

The No-Build (2021) Condition analysis includes general background traffic growth, traffic growth associated with specific developments (not including this Proposed Project), and transportation improvements that are planned in the vicinity of the Project Site.

The Build (2021) Condition analysis includes a net increase in traffic volume due to the addition of Project-generated trip estimates to the traffic volumes developed as part of the No-Build (2021) Condition analysis. Expected roadway, parking, transit, pedestrian, and bicycle accommodations, as well as loading capabilities and deficiencies, are identified.

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

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

2.2.1 STUDY AREA

The transportation study area runs along the Temple Street corridor, bounded by Cambridge Street to the north and Derne Street to the south. The study area consists of the following intersections in the vicinity of the Project Site, also shown on **Figure 2-1**:

- Derne Street/Temple Street (unsignalized); and
- Cambridge Street/Staniford Street/Temple Street (signalized).

2.3 EXISTING (2016) CONDITION

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

2.3.1 EXISTING ROADWAY CONDITIONS

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

Derne Street is classified as an urban minor arterial roadway under BTD jurisdiction. Derne Street runs one-way westbound between Bowdoin Street and Hancock Street. Derne Street consists of one travel lane. On-street parking is provided on both sides of the roadway but is mostly reserved for the general court only. Public on-street parking is limited. Sidewalks are provided on both sides of the roadway.

Temple Street is a local street under BTD jurisdiction that runs one-way northbound from Derne Street to Cambridge Street. The street functions as a shared street with alternating sides of the street having a flush curb between the sidewalk and roadway. Parking is prohibited along both sides of Temple Street.

Cambridge Street is an urban principal arterial roadway under BTD jurisdiction that runs in the east-west direction between Charles Circle and Tremont Street. Cambridge Street generally consists of two travel lanes in each direction separated by a raised median. Sidewalks are provided on both sides of Cambridge Street. On-street metered parking or designated loading zones are generally provided along both sides of the roadway where possible.

Staniford Street is an urban principal arterial roadway under BTD jurisdiction that runs in the north-south direction as an extension of Causeway Street to Cambridge Street. Staniford Street generally consists of two travel lanes in each direction. Sidewalks and metered parking are provided on both sides of the roadway. The roadway is currently under construction. As part of the reconstruction, a cycle track along the east side of the roadway will replace the median and on-street parking along the east side of the roadway.

2.3.2 EXISTING INTERSECTION CONDITIONS

Existing conditions at the study area intersections are described below.

Derne Street/Temple Street is a three-leg, unsignalized intersection with one approach, the Derne Street westbound approach. Derne Street is one-way westbound and consists of one shared through/right-turn lane. Temple Street consists of one travel lane and runs one-way northbound, away from the intersection. Sidewalks, crosswalks and wheelchair ramps are provided across the intersection. On-street parking is normally permitted along Derne Street for General Court members with limited public commercial parking. Parking is not permitted along Temple Street.

Cambridge Street/Staniford Street/Temple Street is a signalized intersection with four approaches. Cambridge Street approaches the intersection from the east and west, while Temple Street forms the northbound approach and Staniford Street forms the southbound approach. Cambridge Street eastbound consists of two through-lanes and a left-turn only lane. Cambridge Street westbound consists of two through-lanes and a right-turn only lane. The Temple Street northbound approach consists of a right-turn only lane. The Staniford Street southbound approach consists of a left-turn lane and a right-turn lane. Crosswalks, wheelchair ramps, and pedestrian signal equipment are provided across all approaches to the intersection with the exception of Temple Street, which has a raised brick crossing. On-street metered parking is provided along Cambridge Street and Staniford Street. Parking is prohibited along Temple Street.

2.3.3 PARKING

An inventory of the on-street and off-street parking in the vicinity of the Project was collected. A description of each follows.

2.3.3.1 On-Street Parking and Curb Usage

On-street parking surrounding the Project Site consists of predominately metered parking or General Court parking. The on-street parking regulations within the study area are shown in **Figure 2-2**.

2.3.3.2 Off-Street Parking

There are approximately 4,609 public parking spaces within one-quarter mile, or a five-minute walk, from the Project Site. Of these, approximately 288 are found in parking lots and 4,321 are in parking garages. Public garages and surface lots within a quarter-mile of the Project Site are shown in **Figure 2-3**. A detailed summary of all parking garages is shown in **Table 2-1** and a detailed summary of all surface parking lots is shown in **Table 2.2**.

Table 2-1: Nearby Off-Street Parking Garages

Map #	Address	Parking Facility	Private Capacity	Public Capacity
Parking Garages				
A	50 Cambridge Street	Center Plaza Garage	0	586
B	100 Cambridge Street	Saltonstall Building	466	0
C	19 Staniford Street	Hurley Building	180	0
D	Congress Street	JFK Building Garage	180	0
E	101 Merrimac Street	101 Merrimac Street Garage	0	70
F	60 Staniford Street	Longfellow Place Garage	490	0
G	130-140 Bowdoin Street	Boston View Apartments	0	107
H	1 Bowdoin Square	Bowdoin Square Office Bldg	25	0
I	1 Ashburton Place	McCormack Building	482	0
J	Derne Street	State House Garage	136	0
K	165 Cambridge Street	Charles River Plaza Garage	0	794
L	1 Beacon Street	One Beacon Street Garage	0	150
M	Tremont Place	73 Tremont Garage	0	120
N	45 Province Street	45 Province Street	110	184
O	50 Sudbury Street	Government Center Garage	0	2,310
Total Spaces			**2,069**	**4,321**

Table 2-2: Nearby Off-Street Surface Parking Lots

Map #	Address	Parking Facility	Private Capacity	Public Capacity
Parking Lots				
1	61 New Sudbury Street	JFK Lot	23	0
2	26–28 Lancaster Street	VIP Parking Lot	0	26
3	302–320 Friend Street	Friend Street Lot	0	41
4	200–204 Friend Street	Friend Street Lot	12	0
5	158 Friend Street	P & P	0	83
6	235–239 Friend Street	J & O Lot	0	26
7	167 Friend Street	Ray Cove Lot	10	0
8	57 Friend Street	57 Friend Street Lot	0	0
9	70 Lancaster Street	Stanhope – Lancaster Street	0	50
10	20 Staniford Street	Staniford Street Lot	35	0
11	185 Cambridge Street	Charles River Plaza Lot	160	0
12	12–14 Ashburton Place	Ashburton Place Lot	0	38
13	17 Beacon Street	Beacon Street Lot	0	24
14	60 Joy Street	Peter Faneuil School Lot	15	0
15	360 Cardinal O'Connell Way	Regina Cleri Lot	13	0
16	41 Blossom Street	N/A	25	0
17	200 Cambridge Street	Boston Fire Department Lot	15	0
Total Spaces			**308**	**288**

2.3.3.3 Car Sharing Services

Car sharing enables easy access to short-term vehicular transportation. Vehicles are rented on an hourly or daily basis, and all vehicle costs (gas, maintenance, insurance, and parking) are included in the rental fee. Vehicles are checked out for a specific time period and returned to their designated location.

Zipcar is the primary company in the Boston car sharing market. There are currently five Zipcar locations, within a quarter-mile from the Project Site. Enterprise Rent-A-Car has also started car sharing service in the Boston area. An Enterprise Rent-A-Car car sharing service location currently exists in the Government Center Garage. The nearby car sharing locations are shown in **Figure 2-4**.

2.3.4 EXISTING TRAFFIC DATA

Traffic volume data was collected at the two intersections in the study area on Tuesday, November 10, 2015. Turning Movement Counts (TMCs) and vehicle classification counts were conducted during the weekday a.m. (7:00 – 9:00 a.m.) and weekday p.m. peak period (4:00 – 6:00 p.m.). The traffic classification counts included car, heavy vehicle, pedestrian, and bicycle movements. The detailed traffic counts are provided in **Appendix B**.

2.3.4.1 Seasonal Adjustment

To account for seasonal variation in traffic volumes throughout the year, data provided by MassDOT was reviewed. The most recent (2011) MassDOT Weekday Seasonal Factors were used to determine the need for seasonal adjustments to the November 2015 TMCs. The seasonal adjustment factor for roadways similar to the study area (Group 6) is 0.97 for November. This indicates that average month traffic volumes are approximately three percent less than the traffic volumes that were collected. Therefore, the traffic counts were not adjusted downward to reflect average month conditions and provide a conservatively high analysis consistent with the peak season traffic volumes. The MassDOT 2011 Weekday Seasonal Factors table is provided in **Appendix B**.

2.3.5 EXISTING VEHICULAR TRAFFIC VOLUMES

The existing traffic volumes that were collected were used to develop the Existing (2016) Condition traffic volumes. The Existing (2016) weekday a.m. Peak Hour and weekday p.m. Peak Hour traffic volumes are shown in **Figure 2-5** and **Figure 2-6**, respectively.

2.3.6 EXISTING BICYCLE VOLUMES AND ACCOMMODATIONS

In recent years, bicycle use has increased dramatically throughout the City of Boston. The Project Site is conveniently located in close proximity to several bicycle facilities, most notably the under construction cycle track along Staniford Street and Causeway Street. Bicycle counts were conducted concurrent with the vehicular TMCs, and are presented in **Figure 2-7**. As shown in the figure, bicycle volumes are heaviest along Cambridge Street.

2.3.6.1 Bicycle Sharing Services

The Project Site is also located in proximity to a bicycle sharing station provided by Hubway. Hubway is the bicycle sharing system in the Boston area, which was launched in 2011 and consists of over 140 stations and 1,300 bicycles. There are four Hubway stations located within a quarter mile, seven-minute walk. The nearest Hubway station is located at the intersection of Cambridge Street and Joy Street. **Figure 2-8** shows the Hubway stations within a quarter mile radius.

2.3.7 EXISTING PEDESTRIAN VOLUMES AND ACCOMMODATIONS

In general, sidewalks are provided along all roadways and are in good condition. Crosswalks are provided at all study area intersections. Pedestrian signal equipment is provided at the only signalized study area intersection.

To determine the amount of pedestrian activity within the study area, pedestrian counts were conducted concurrent with the TMCs at the study area intersection and are presented in **Figure 2-9**. As shown in the figure, pedestrian activity is heavy throughout the study area.

The majority of the pedestrian activity on Temple Street is associated with Suffolk University. There were approximately 185 pedestrians coming to and going from the Project Site during the a.m. Peak Hour and approximately 170 pedestrians during the weekday p.m. Peak Hour. During the weekday midday, there were approximately 555 pedestrians walking to and from the Project Site.

2.3.8 EXISTING PUBLIC TRANSPORTATION SERVICES

The Project Site is located in Beacon Hill in Boston with abundant public transportation opportunities. The Project Site is in close proximity to Bowdoin Station of the Blue line (approximately less than 1,000 feet away), to Park Street Station and Charles MGH Station of the Red Line (less than 0.5 miles away), to Haymarket Station, Government Center Station, and Park Street Station of the Green Line (less than 0.5 miles away), to Haymarket Station and State Street Station of the Orange Line (less than 0.5 miles away), and to North Station of the Commuter Rail (less than 0.5 miles away).

Additionally, the MBTA operates six bus routes in close proximity to the Project. **Figure 2-10** maps all of the public transportation service located in close proximity of the Project Site, and **Table 2-3** provides a brief summary of all routes.

Table 2-3: Existing Public Transportation

Transit Service	Description	Rush Hour Headway*
Rapid Transit Routes		
Orange Line	Oak Grove Station – Forrest Hills Station	6
Red Line	Alewife Station – Braintree Station	9
	Alewife Station – Ashmont Station	9
Green Line	"B" Branch – Boston College – Park Street Station	7
	"C" Branch – Cleveland Circle – North Station	7
	"D" Branch – Riverside – Park Street Station	7
	"E" Branch – Heath Street – Lechmere Station	6
Blue Line	Wonderland – Bowdoin Station	5
Bus Routes		
4	North Station – World Trade Center via Federal Courthouse & South Station	15
43	Ruggles Station – Park & Tremont Streets via Tremont Street	20
55	Jersey & Queensberry Streets – Copley Square or Park & Tremont Streets via Ipswich Street	15
92	Assembly Square Mall – Downtown via Sullivan Square Station, Main Street & Haymarket Station	15
93	Sullivan Square Station – Downtown via Bunker Hill Street & Haymarket Station	7

**** Headway is the time between buses/trains***

2.3.9 EXISTING (2016) CONDITION TRAFFIC OPERATIONS ANALYSIS

The criterion for evaluating traffic operations is level of service (LOS), which is determined by assessing average delay experienced by vehicles at intersections and along intersection approaches. Trafficware's Synchro (version 9) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2000 Highway Capacity Manual (HCM).

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. **Table 2-4** displays the intersection LOS criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. LOS D or better is typically considered desirable during the peak hours of traffic in urban and suburban settings.

Table 2-4: Vehicle Level of Service Criteria

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

***Source: 2000 Highway Capacity Manual, Transportation Research Board*.**

In addition to delay and LOS, the operational capacity and vehicular queues are calculated and used to further quantify traffic operations at intersections. The following describes these other calculated measures. The volume-to-capacity (v/c) ratio is a measure of congestion at an intersection approach. A v/c ratio below one indicates that the intersection approach has adequate capacity to process the arriving traffic volumes over the course of an hour. A v/c ratio of one or greater indicates that the traffic volume on the intersection approach exceeds capacity.

The 95th percentile queue, measured in feet, denotes the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line. This maximum queue occurs five percent, or less, of the time during the peak hour and typically does not develop during off-peak hours. Since volumes fluctuate throughout the hour, the 95th percentile queue represents what can be considered a "worst case" condition. Queues at an intersection are generally below the 95th percentile length throughout most of the peak hour. It is also unlikely that 95th percentile queues for each approach to an intersection occur simultaneously.

Table 2-5 and **Table 2-6** summarize the Existing (2016) Condition capacity analysis for the study area intersection during the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in **Appendix B**.

Table 2-5: Existing (2016) Condition, Capacity Analysis Summary, a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Cambridge Street/Staniford Street/ Temple Street	**C**	**22.3**	**-**	**-**	**-**
Cambridge Street eastbound left	E	56.2	0.75	120	182
Cambridge Street eastbound thru | thru	C	21.4	0.47	107	223
Cambridge Street westbound thru | thru	B	16.0	0.37	105	161
Cambridge Street westbound right	A	1.1	0.18	4	0
Temple Street northbound right	A	0.1	0.04	0	0
Staniford Street southbound left	D	44.9	0.79	146	217
Staniford Street southbound right	A	6.6	0.56	1	23
Unsignalized					
Derne Street/Temple Street	-	-	-	-	-
Derne Street westbound thru/right	A	0.0	0.22	-	0

Table 2-6: Existing (2016) Condition, Capacity Analysis Summary, p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Cambridge Street/Staniford Street/ Temple Street	**C**	**23.8**	**-**	**-**	**-**
Cambridge Street eastbound left	E	58.9	0.83	145	394
Cambridge Street eastbound thru | thru	C	25.2	0.42	127	197
Cambridge Street westbound thru | thru	B	13.5	0.42	100	154
Cambridge Street westbound right	A	0.8	0.16	0	0
Temple Street northbound right	A	0.2	0.06	0	0
Staniford Street southbound left	D	46.2	0.78	137	220
Staniford Street southbound right	A	4.0	0.45	0	9
Unsignalized					
Derne Street/Temple Street	**-**	**-**	**-**	**-**	**-**
Derne Street westbound thru/right	A	0.0	0.29	-	0

Grey shading indicates level of service E or F.

As shown in **Table 2-5** and **Table 2-6**, under the Existing (2016) Condition:

- The intersection of **Cambridge Street/Staniford Street/Temple Street** operates at LOS C during the a.m. peak hour and during the p.m. peak hour. The Cambridge Street eastbound left approach operates at LOS E during both the a.m. and p.m. peak hours.

2.4 NO BUILD (2021) CONDITION

The No-Build (2021) Condition reflects a future scenario that incorporates anticipated traffic volume changes associated with background traffic growth independent of any specific project, traffic associated with other planned specific developments, and planned infrastructure improvements that will affect travel patterns throughout the study area. These infrastructure improvements include roadway, public transportation, pedestrian and bicycle improvements.

2.4.1 BACKGROUND TRAFFIC GROWTH

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

2.4.2 SPECIFIC DEVELOPMENT TRAFFIC GROWTH

Traffic volumes associated with the larger or closer known development projects can affect traffic patterns throughout the study area within the future analysis time horizon. Three such projects were specifically accounted for in the traffic volumes for future scenarios while others were included in the general background traffic growth (the Project Site specific background projects are mapped on **Figure 2-11**):

Government Center Garage – The redevelopment of the existing Government Center Garage will involve a phased demolition of most of the existing garage and construction of new residential, hotel, retail, and office space. The project will eliminate the existing building structure that spans over Congress Street and the Haymarket bus facility, thereby creating two distinct development parcels (west parcel and east parcel). During Phase 1, the project entails the development of 486 residential apartments and approximately 1,300 square feet of ground floor retail space. During Phase 2, the project entails the development of 1,001,200 square feet of office space and approximately 10,800 square feet of ground floor retail. The potential vehicle trip generation associated with this project was distributed to the study area intersections.

Garden Garage – This site is located at 35 Lomasney Way on approximately three acres of land in Boston's West End. The project proposes to construct an approximately 44-story residential building on the site of the existing above-ground Garden Garage. The project would create approximately 470 residential units and 2,300 sf of ground floor retail space. In addition, the existing 650-space garage will be replaced with an 830-space underground parking structure, resulting in a net increase of 180 new spaces. Trips generated by this project were distributed to the study area intersections.

The Boston Garden – This mixed-use transit-oriented project currently proposed will include residential, office, hotel, and retail space. This development is expected to occur over the course several years and extend beyond the traffic study horizon year of this study. The full-build project includes 497 residential units, a 306 room hotel, 810,000 sf of office space, 235,000 sf of retail/restaurant space including a neighborhood grocery store, and over 65,000 sf in expansions to elevators, lobbies, concessions, and an atrium hall for TD Garden and North Station use. An additional 800 parking spaces are planned to be added beneath the project site and will be connected to the existing 1,275 parking space garage underneath the Boston Garden. Trips generated by Phase 1, which includes approximately 306 hotel rooms; approximately 142,000 sf of flex office space; approximately 235,000 sf of commercial/retail/restaurant space to include a grocery store, were distributed to the study area intersections.

2.4.3 PROPOSED INFRASTRUCTURE IMPROVEMENTS

A review of planned improvements to roadway, transit, bicycle, and pedestrian facilities was conducted to determine if there are any nearby improvement projects in the vicinity of the study area. Based on this review, it was determined that there is a current construction project that will add a cycle track to Staniford Street and Causeway Street, while also improving signal timings along the corridor. These signal timing improvements are expected to improve operations at the intersection of Cambridge Street/Staniford Street/Temple Street.

2.4.4 NO BUILD TRAFFIC VOLUMES

The 0.5 percent per year annual growth rate, compounded annually, was applied to the Existing (2016) Condition traffic volumes, then the traffic volumes associated with the specific background development projects listed above was added to develop the No-Build (2021) Condition traffic volumes. The No-Build (2021) weekday morning and evening peak hour traffic volumes are shown on **Figure 2-12** and **Figure 2-13**, respectively.

2.4.5 NO-BUILD (2021) CONDITION TRAFFIC OPERATIONS ANALYSIS

The No-Build (2021) Condition analysis uses the same methodology as the Existing (2016) Condition capacity analysis. **Tables 2-7** and **Table 2-8** present the No-Build (2021) Condition operations analysis for the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in **Appendix B**.

Table 2-7: No-Build (2021) Condition, Capacity Analysis Summary, a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Cambridge Street/Staniford Street/ Temple Street	**C**	**24.9**	**-**	**-**	**-**
Cambridge Street eastbound left	D	49.2	0.74	117	178
Cambridge Street eastbound thru | thru	C	24.1	0.43	108	#273
Cambridge Street westbound thru | thru	C	21.6	0.41	112	203
Cambridge Street westbound right	A	2.1	0.19	0	22
Temple Street northbound right	A	0.1	0.02	0	0
Staniford Street southbound left	D	49.5	0.78	132	187
Staniford Street southbound right	A	8.5	0.55	0	51
Unsignalized					
Derne Street/Temple Street	**-**	**-**	**-**	**-**	**-**
Derne Street westbound thru/right	A	0.0	0.22	-	0

 # – 95th percentile queue exceeds capacity, queue shown is maximum after two cycles

Table 2-8: No-Build (2021) Condition, Capacity Analysis Summary, p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Cambridge Street/Staniford Street/ Temple Street	**C**	**24.6**	**-**	**-**	**-**
Cambridge Street eastbound left	E	56.8	0.83	175	244
Cambridge Street eastbound thru | thru	C	28.0	0.44	136	218
Cambridge Street westbound thru | thru	B	15.7	0.45	110	178
Cambridge Street westbound right	A	0.8	0.17	0	1
Temple Street northbound right	A	0.2	0.06	0	0
Staniford Street southbound left	D	43.5	0.78	140	223
Staniford Street southbound right	A	3.7	0.48	0	1
Unsignalized					
Derne Street/Temple Street	**-**	**-**	**-**	**-**	**-**
Derne Street westbound thru/right	A	0.0	0.30	-	0

As shown in **Table 2-7** and **Table 2-8**, under the No-Build (2021) Condition:

- Although some of the approach LOS change between the Existing (2016) Condition and the No-Build (2021) Condition due to the signal timing changes not associated with the proposed Project, the overall intersection operations of the signalized intersection will continue to operate at the same LOS as the Existing (2016) Condition during both the a.m. and p.m. peak hours.

2.5 BUILD (2021) CONDITION

2.5.1 PROJECT SITE ACCESS AND VEHICLE CIRCULATION

The primary pedestrian access to the Buildings will be located along Temple Street. Vehicular access will be located off of Temple Street, with access to a vehicle elevator as shown in **Figure 2-14**.

2.5.2 PARKING

The Proposed Project will provide 60 parking spaces on the Project Site in a below-grade parking garage under the Building. The parking garage will be accessed by valet via a vehicle elevator located off of Temple Street. Residents will be able to utilize the abundant nearby public parking garages if additional parking is needed.

Current trends indicate that parking demand in downtown Boston is decreasing across all land uses. This is due to a variety of reasons but primarily involve shifting demographics, cost of parking and automobile ownership, access to improved transit service, aggressive implementation by the City of on-street bicycle facilities (bike lanes, cycle tracks), the advent of both car sharing (Zipcar) and bicycle sharing services (Hubway), the rise in ride sharing services (Uber, Lyft), and the general social and environmental concerns of automobile ownership and use.

HSH conducted an unpublished survey (summer 2010) of the new, large residential developments in several downtown neighborhoods. The results show that the actual parking demand ratio for condominiums is about 0.70 vs. the BTD maximum guideline of 1.0 per unit. This project will have a parking ratio of approximately 0.8 spaces per unit.

2.5.3 LOADING AND SERVICE ACCOMMODATIONS

Residential units primarily generate delivery trips related to small packages and prepared food. Deliveries to the Project Site will be limited to SU-36 trucks and smaller delivery vehicles. It is anticipated that the majority of these deliveries will occur between 7:00 a.m. and 1:00 p.m. The low number of anticipated deliveries will have minimal impact on the vehicular operations in the study area.

Loading (including move in/move out activity and trash pick-up) for the Site can be accommodated within the valet area adjacent to the garage entrance. Deliveries to the Site can be accommodated within the valet area or via the existing on street loading zones located along Derne Street. A package drop room is located within the Building near Derne Street.

2.5.4 TRIP GENERATION METHODOLOGY

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

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

To estimate the unadjusted number of vehicular trips for the Proposed Project, the following ITE land use code (LUC) was used:

Land Use Code 230 – Condominium. This land use is described as ownership units that have at least one other owned unit within the same building structure. Both condominiums and townhouses are included in this land use.

2.5.5 MODE SHARE

The BTD provides vehicle, transit, and walking mode split rates for different areas of Boston. The Proposed Project is located in the westerly portion of designated Area 2. The unadjusted vehicular trips were converted to person trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA). The person trips were then distributed to different modes according to the mode shares shown in **Table 2-9**.

Table 2-9: Travel Mode Shares

Direction	Walk/Bicycle Share	Transit Share	Auto Share	Vehicle Occupancy Rate
Daily				
IN	42%	30%	28%	1.13
OUT	42%	30%	28%	1.13
a.m. Peak Hour				
IN	7%	52%	41%	1.13
OUT	51%	18%	31%	1.13
p.m. Peak Hour				
IN	51%	18%	31%	1.13
OUT	7%	52%	41%	1.13

2.5.6 PROJECT TRIP GENERATION

The mode share percentages shown in **Table 2-9** were applied to the number of person trips to develop walk/bicycle, transit, and vehicle trip generation estimates. The trip generation for the Proposed Project by mode is shown in **Table 2-10**. The detailed trip generation information is provided in **Appendix B**.

Table 2-10: Trip Generation

Land Use	Walk/Bicycle Trips	Transit Trips	Auto Trips
Daily			
IN	103	74	60
OUT	103	74	60
TOTAL	206	148	120
a.m. Peak Hour			
IN	0	4	3
OUT	16	6	9
TOTAL	16	10	12
p.m. Peak Hour			
IN	15	5	8
OUT	1	8	5
TOTAL	16	13	13

As shown in **Table 2-10**, during the a.m. peak hour there is expected to be 16 pedestrian trips (0 in and 16 out) and 10 transit trips (4 in and 6 out). The transit trips will be pedestrian trips within the study area, therefore the Proposed Project is expected to have approximately 25 pedestrians during the weekday a.m. Peak Hour. In addition, there are expected to be 12 vehicle trips (3 in and 9 out) during the weekday a.m. Peak Hour.

During the p.m. peak hour there is expected to be 16 pedestrian trips (15 in and 1 out) and 13 transit trips (5 in and 8 out) resulting in approximately 30 pedestrians. In addition, during the weekday p.m. Peak Hour there is expected to 13 vehicle trips (8 in and 5 out).

The Proposed Project will result in a reduction of pedestrian activity on Temple Street since there are approximately 185 pedestrians during the weekday a.m. Peak Hour and 170 pedestrians during the weekday p.m. Peak Hour.

2.5.7 TRIP DISTRIBUTION

The trip distribution identifies the various travel paths for vehicles associated with the Proposed Project. Trip distribution patterns for the Project were based on BTD's origin-destination data for Area 2 and trip distribution patterns presented in traffic studies for nearby projects. The trip distribution patterns for the Proposed Project are illustrated in **Figure 2-15**.

2.5.8 BUILD TRAFFIC VOLUMES

The vehicle trips were distributed through the study area. The Proposed Project-generated trips for the a.m. and p.m. peak hours are shown in **Figure 2-16** and **Figure 2-17**, respectively. The trip assignments were added to the No-Build (2021) Condition vehicular traffic volumes to develop the Build (2021) Condition vehicular traffic volumes. The Build (2021) Condition a.m. and p.m. peak hour traffic volumes are shown on **Figure 2-18** and **Figure 2-19**, respectively.

2.5.9 BICYCLE ACCOMMODATIONS

BTD has established guidelines requiring projects subject to Transportation Access Plan Agreements to provide secure bicycle parking for residents and short-term bicycle racks for visitors. Based on BTD guidelines, the Proposed Project will supply a minimum of 75 secure bicycle parking/storage spaces within the Project Site.

2.5.10 BUILD CONDITION TRAFFIC OPERATIONS ANALYSIS

The Build (2021) Condition analysis uses the same methodology as the Existing (2016) Condition and No-Build (2021) Condition analysis. **Table 2-11** and **Table 2-12** present the Build (2021) Condition capacity analysis for the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in **Appendix B**.

Table 2-11: Build (2021) Condition, Capacity Analysis Summary, a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Cambridge Street/Staniford Street/ Temple Street	**C**	**25.4**	**-**	**-**	**-**
Cambridge Street eastbound left	D	49.2	0.74	117	178
Cambridge Street eastbound thru | thru	C	26.2	0.45	108	#274
Cambridge Street westbound thru | thru	C	21.7	0.42	112	203
Cambridge Street westbound right	A	2.1	0.19	0	23
Temple Street northbound right	A	0.1	0.03	0	0
Staniford Street southbound left	D	49.4	0.77	133	188
Staniford Street southbound right	A	8.5	0.55	0	51
Unsignalized					
Derne Street/Temple Street	**-**	**-**	**-**	**-**	**-**
Derne Street westbound thru/right	A	0.0	0.23	-	0

 # – 95th percentile queue exceeds capacity, queue shown is maximum after two cycles

Table 2-12: Build (2021) Condition, Capacity Analysis Summary, p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized					
Cambridge Street/Staniford Street/ Temple Street	**C**	**24.7**	**-**	**-**	**-**
Cambridge Street eastbound left	E	56.8	0.83	175	244
Cambridge Street eastbound thru | thru	C	28.2	0.45	137	219
Cambridge Street westbound thru | thru	B	15.8	0.46	110	178
Cambridge Street westbound right	A	0.8	0.17	0	1
Temple Street northbound right	A	0.2	0.07	0	0
Staniford Street southbound left	D	43.6	0.78	141	225
Staniford Street southbound right	A	3.7	0.48	0	10
Unsignalized					
Derne Street/Temple Street	**-**	**-**	**-**	**-**	**-**
Derne Street westbound thru/right	A	0.0	0.30	-	0

As shown in **Table 2-11** and **Table 2-12**, under the Build (2021) Condition, all intersection and approaches continue to operate at the same LOS as the No-Build (2021) Condition during both the a.m. and p.m. peak hours.

2.6 TRANSPORTATION DEMAND MANAGEMENT

The Proponent is committed to implementing Transportation Demand Management (TDM) measures to minimize automobile usage and the Proposed Project related traffic impacts. TDM will be facilitated by the nature of the Proposed Project (which does not generate significant peak hour trips) and its proximity to numerous public transit alternatives.

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

The Proponent is prepared to take advantage of good transit access in marketing the Proposed Project to future residents by working with them to implement the following TDM measures to encourage the use of non-vehicular modes of travel.

The TDM measures for the Proposed Project may include, but are not limited, to the following:

- The Proponent will designate a transportation coordinator to oversee transportation issues, including parking, service and loading, and deliveries, and will work with residents as they move in to raise awareness of public transportation, bicycling, and walking opportunities;
- The Proponent will provide orientation packets to new residents containing information on available transportation choices, including transit routes/schedules and nearby vehicle sharing and bicycle sharing locations. On-site management will work with residents as they move in to help facilitate transportation for new arrivals;
- Provide an annual (or more frequent) newsletter or bulletin summarizing transit, ridesharing, bicycling, alternative work schedules, and other travel options;
- Provide electric vehicle charging stations for 5 percent of the parking spaces in the garage;
- Provide information on travel alternatives for employees and visitors via the Internet and in the building lobby;

2.7 TRANSPORTATION MITIGATION MEASURES

While the traffic impacts associated with the new trips are minimal, the Proponent will continue to work with the City of Boston to create a product that efficiently serves vehicle trips, improves the pedestrian environment, and encourages transit and bicycle use.

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

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

2.8 EVALUATION OF SHORT-TERM CONSTRUCTION IMPACTS

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

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

- No construction worker parking on-Project Site;
- Encouragement of worker carpooling;
- Consideration of a subsidy for MBTA passes for full-time employees; and
- Providing secure spaces on-Project Site for workers' supplies and tools so they do not have to be brought to the Project Site each day.

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

Figure 2-1. *Study Area Intersections*

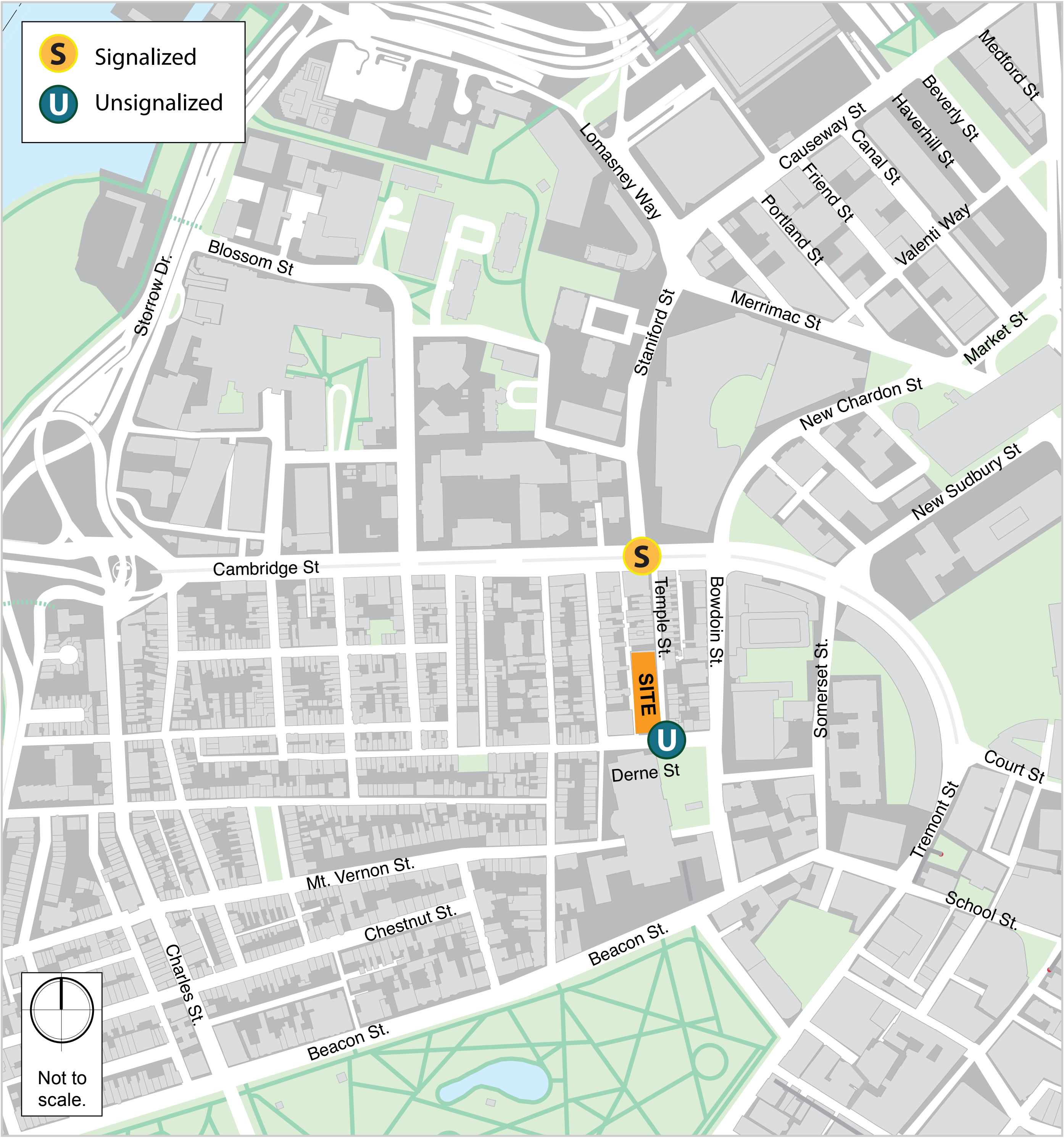


Figure 2-2. ***Existing On-Street Parking***

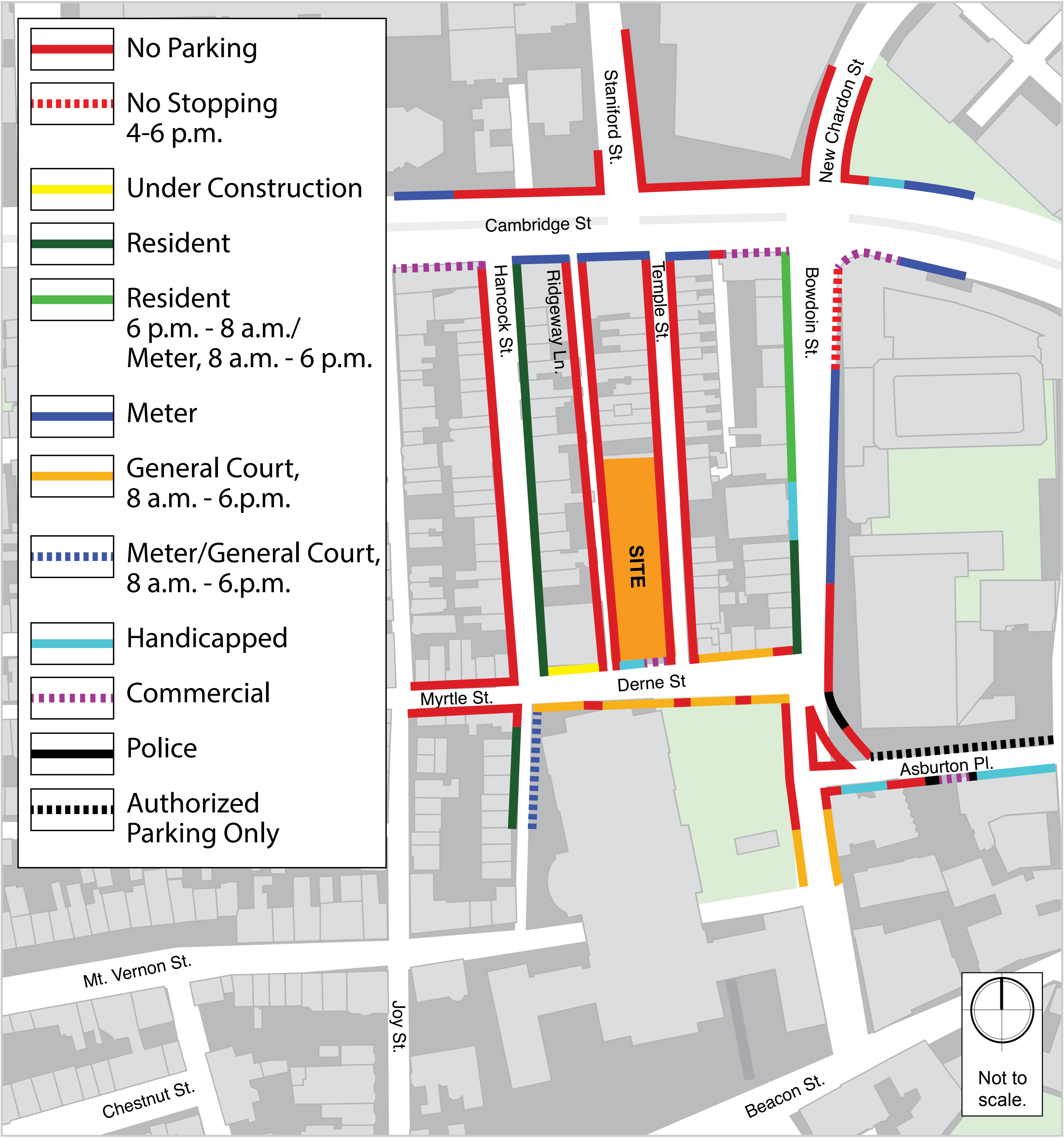


Figure 2-3. ***Existing Off-Street Parking***

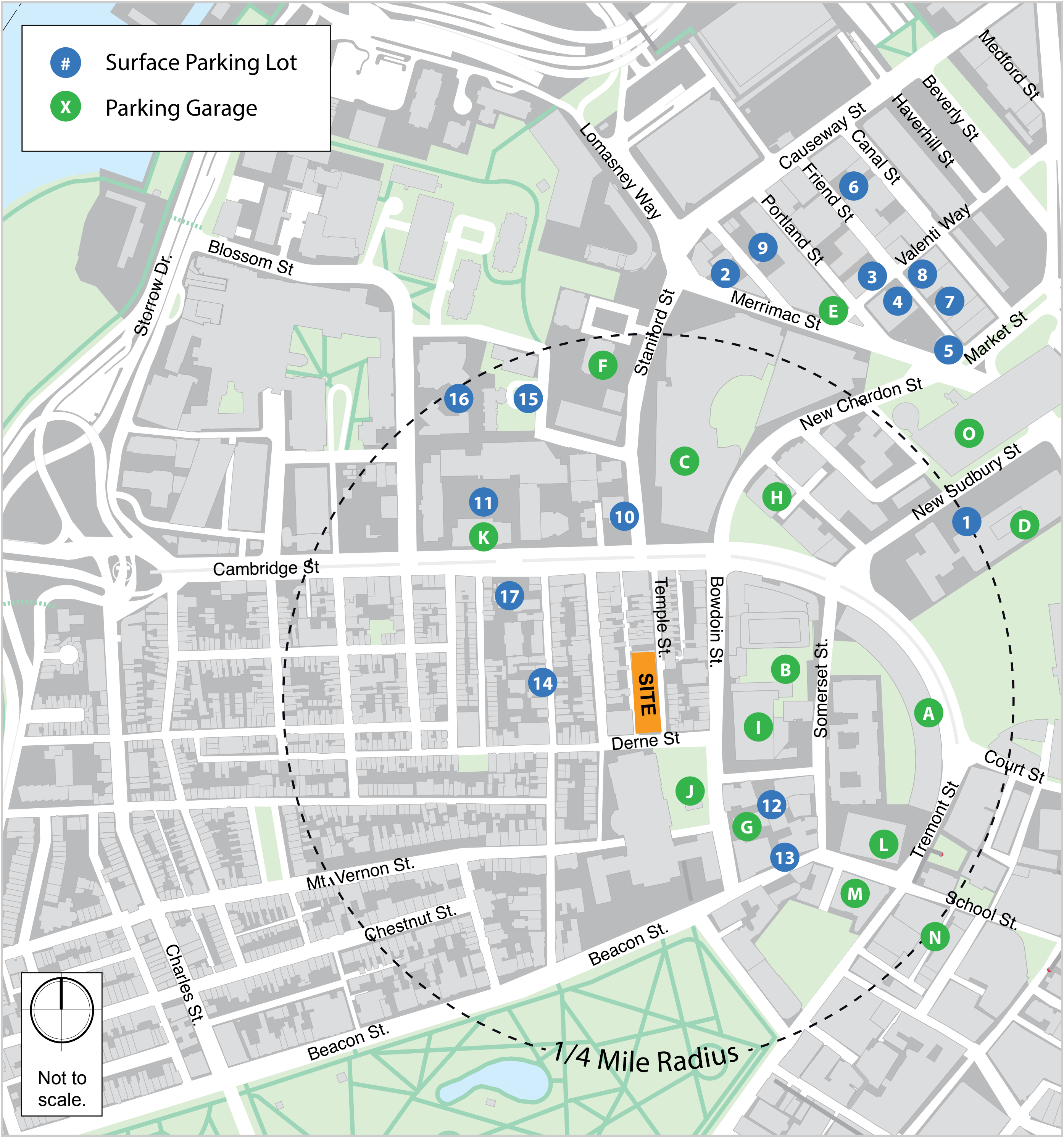


Figure 2-4. ***Existing Car Share Locations***

Figure 2-5. *Existing (2016) Condition Traffic Volumes, Weekday a.m. Peak Hour*

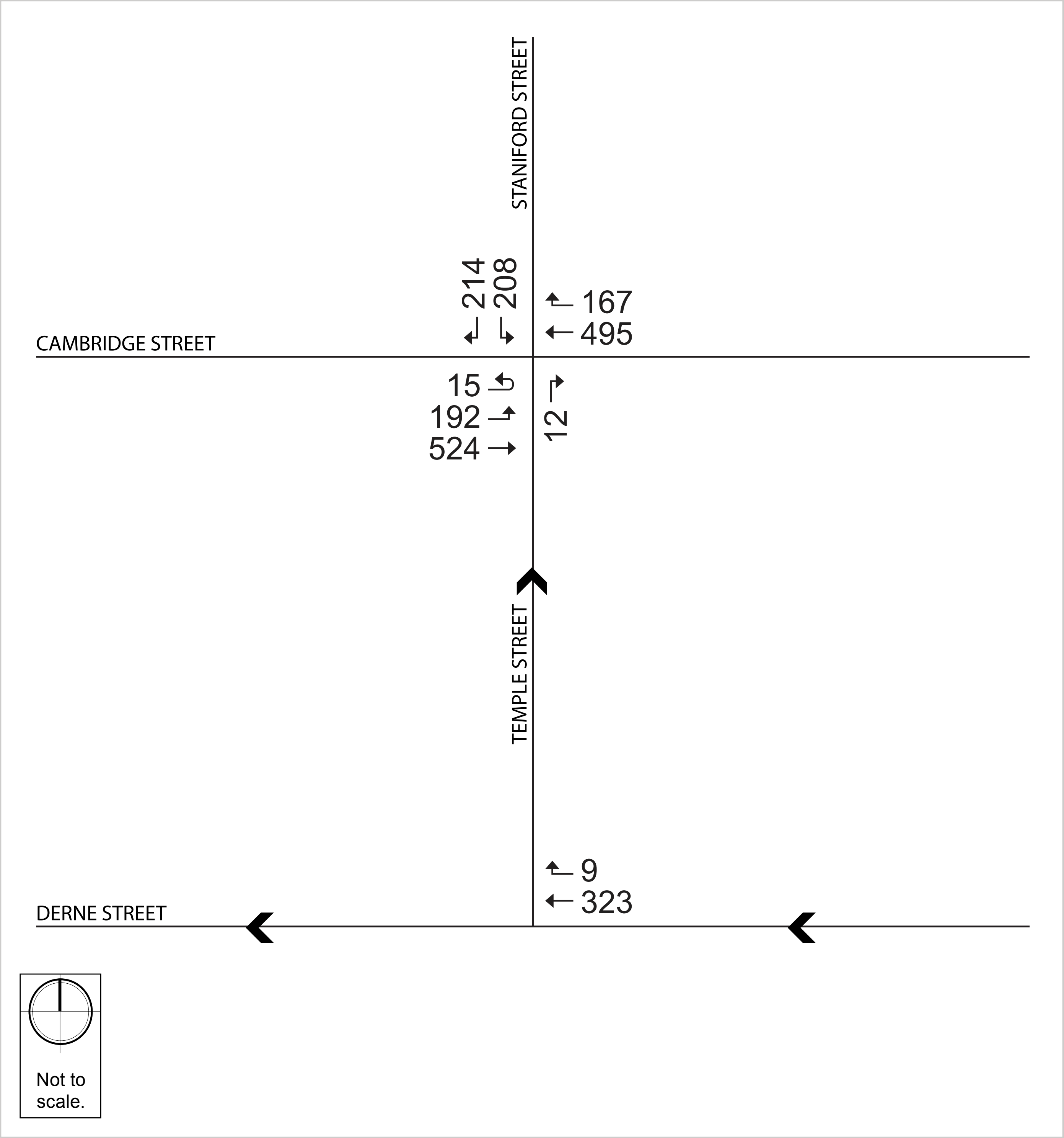


Figure 2-6. *Existing (2016) Condition Traffic Volumes, Weekday p.m. Peak Hour*

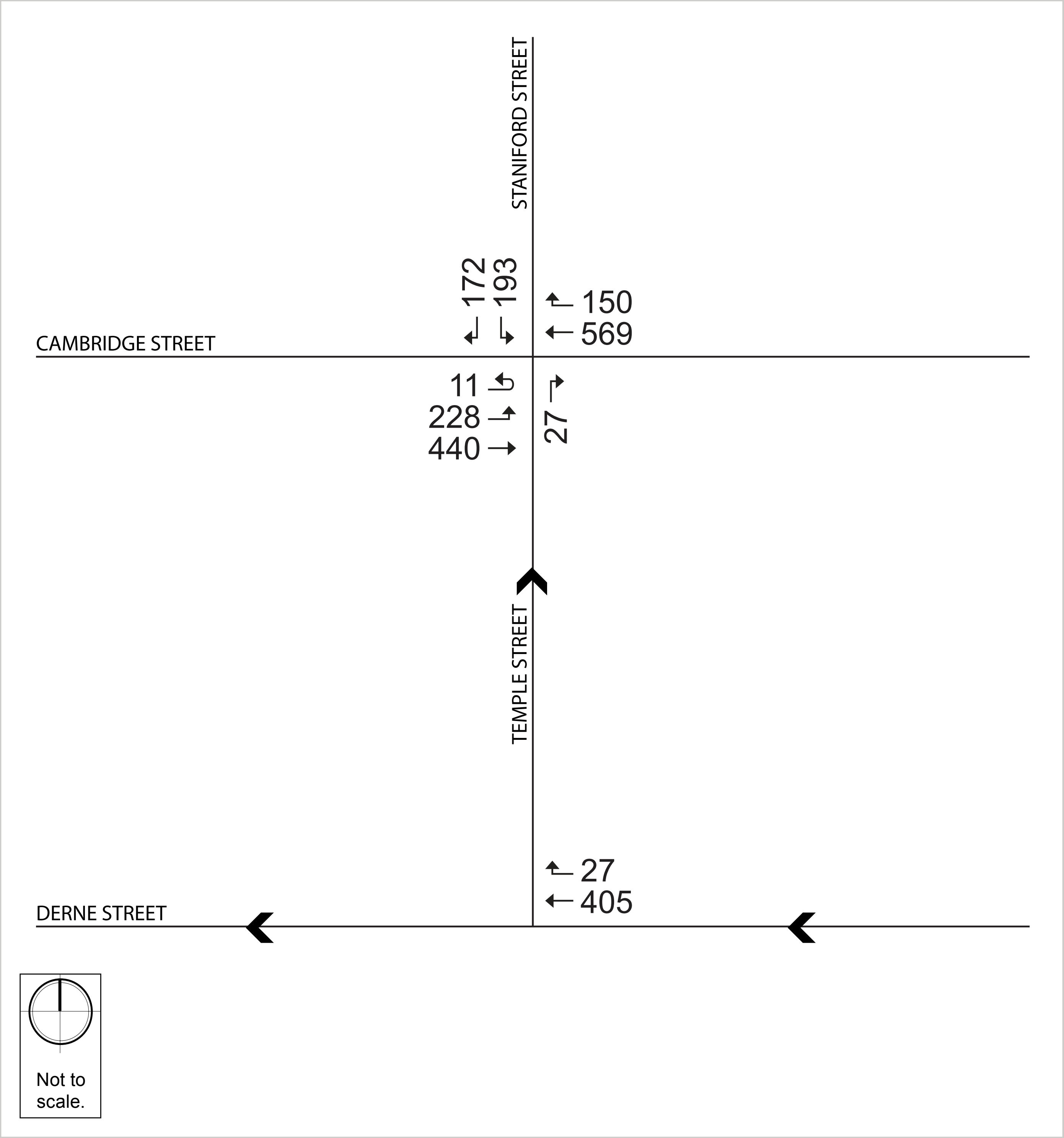


Figure 2-7. *Existing (2016) Bicycle Volumes, a.m. and p.m. Peak Hours*

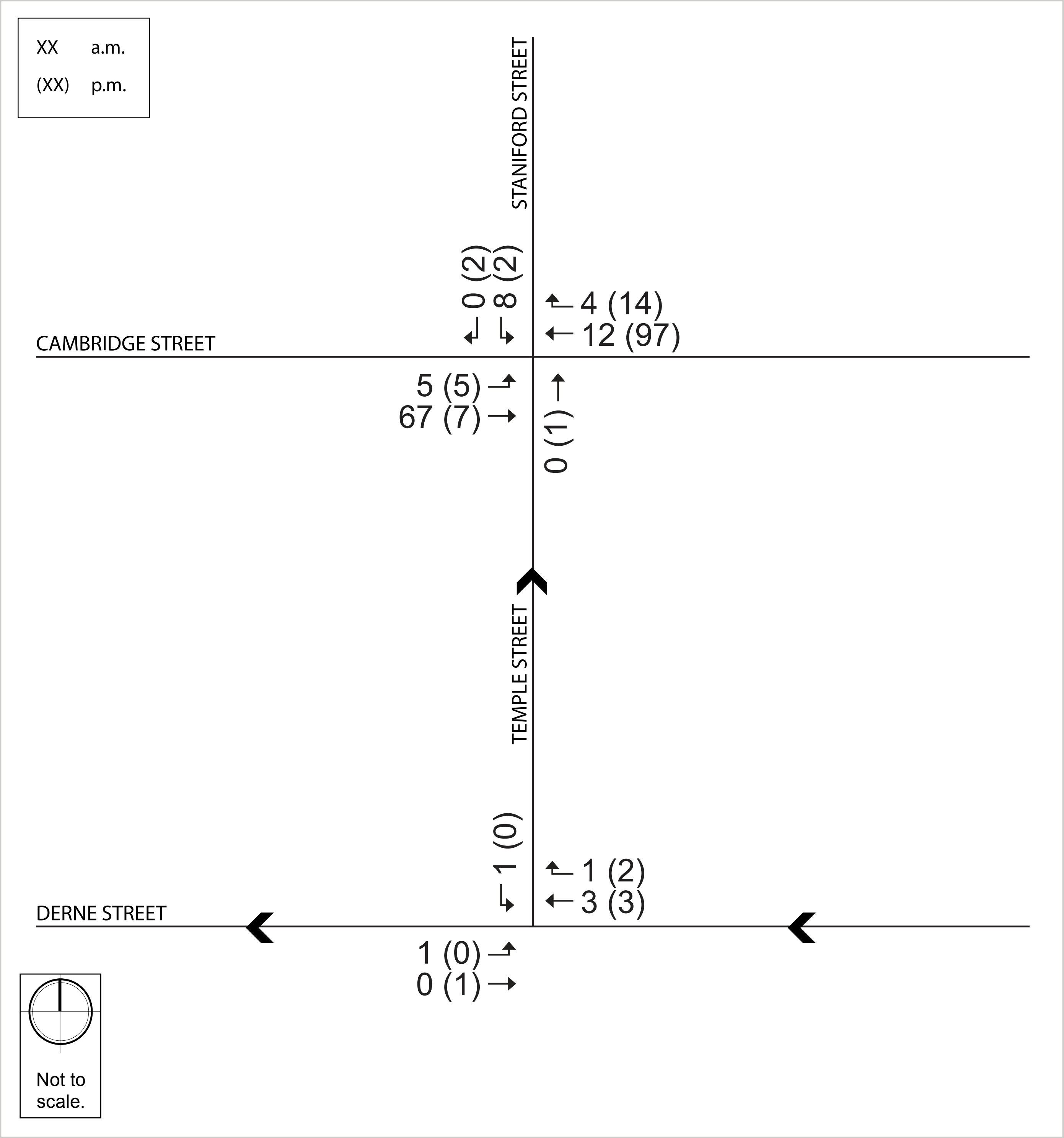


Figure 2-8. ***Existing Bicycle Share Locations***

Figure 2-9. *Existing (2016) Pedestrian Volumes, a.m. and p.m. Peak Hours*

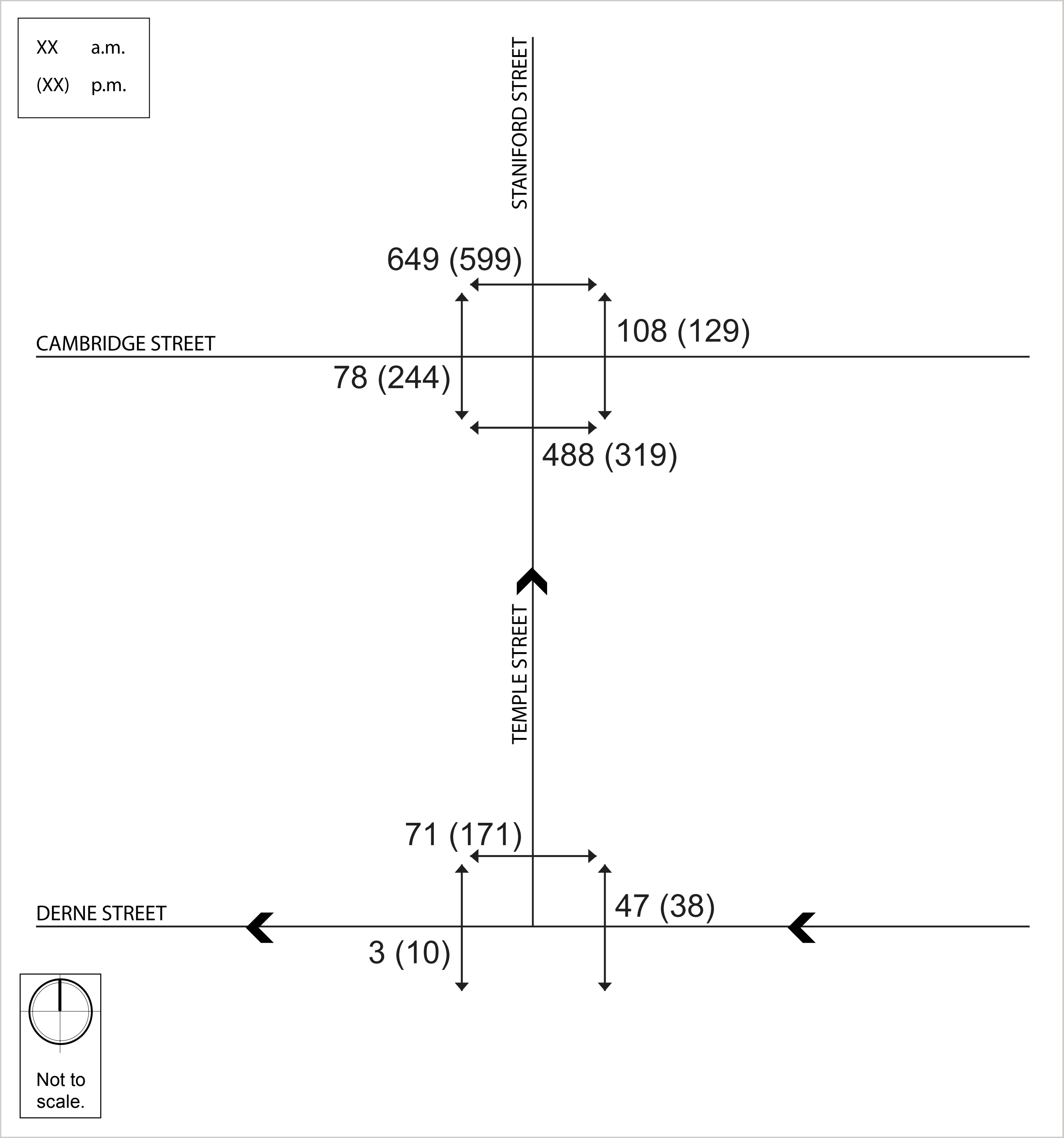


Figure 2-10. *Public Transportation*

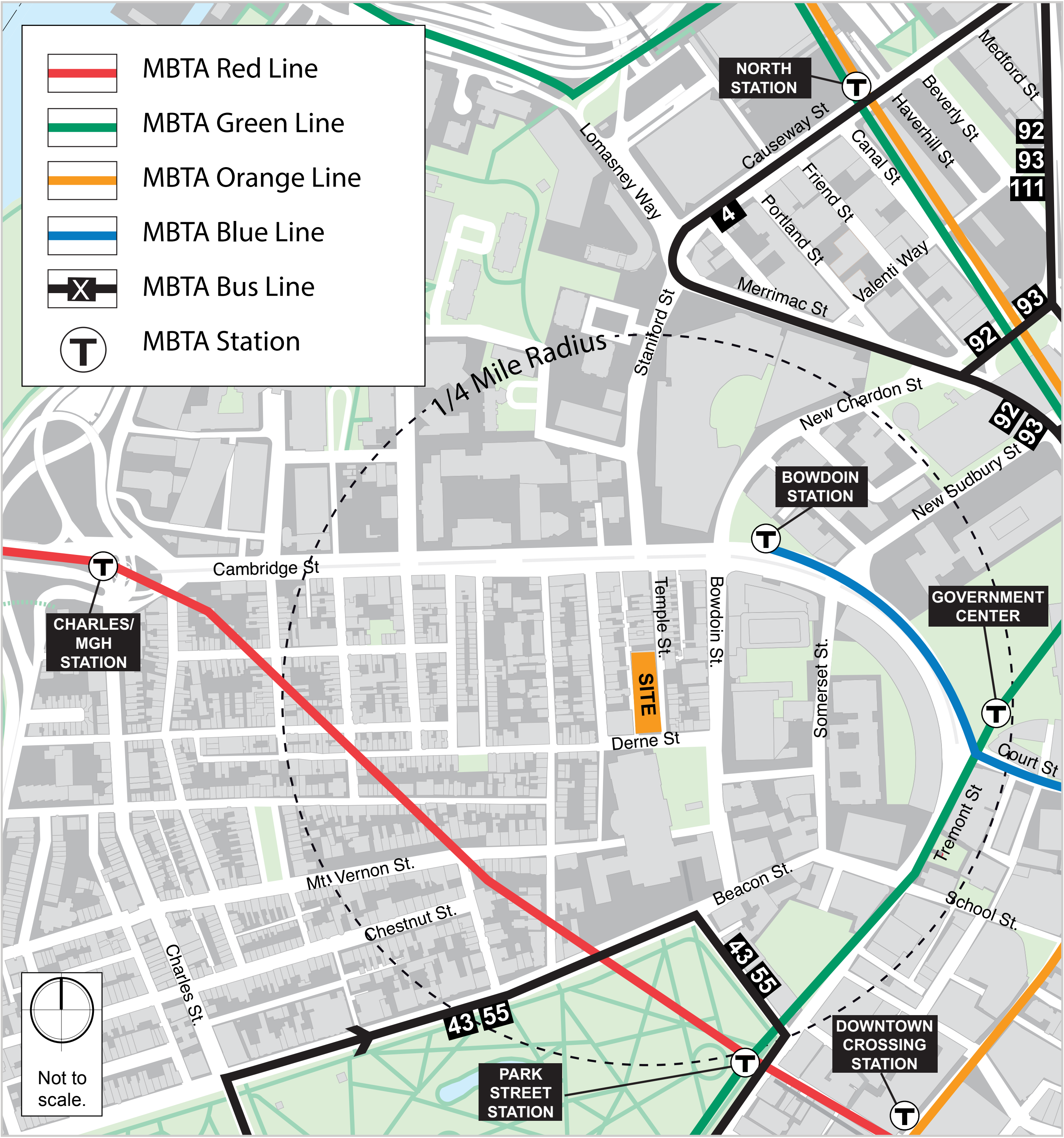


Figure 2-11. *Specific Background Project Locations*

Figure 2-12. *No-Build (2021) Condition Traffic Volumes, Weekday a.m. Peak Hour*

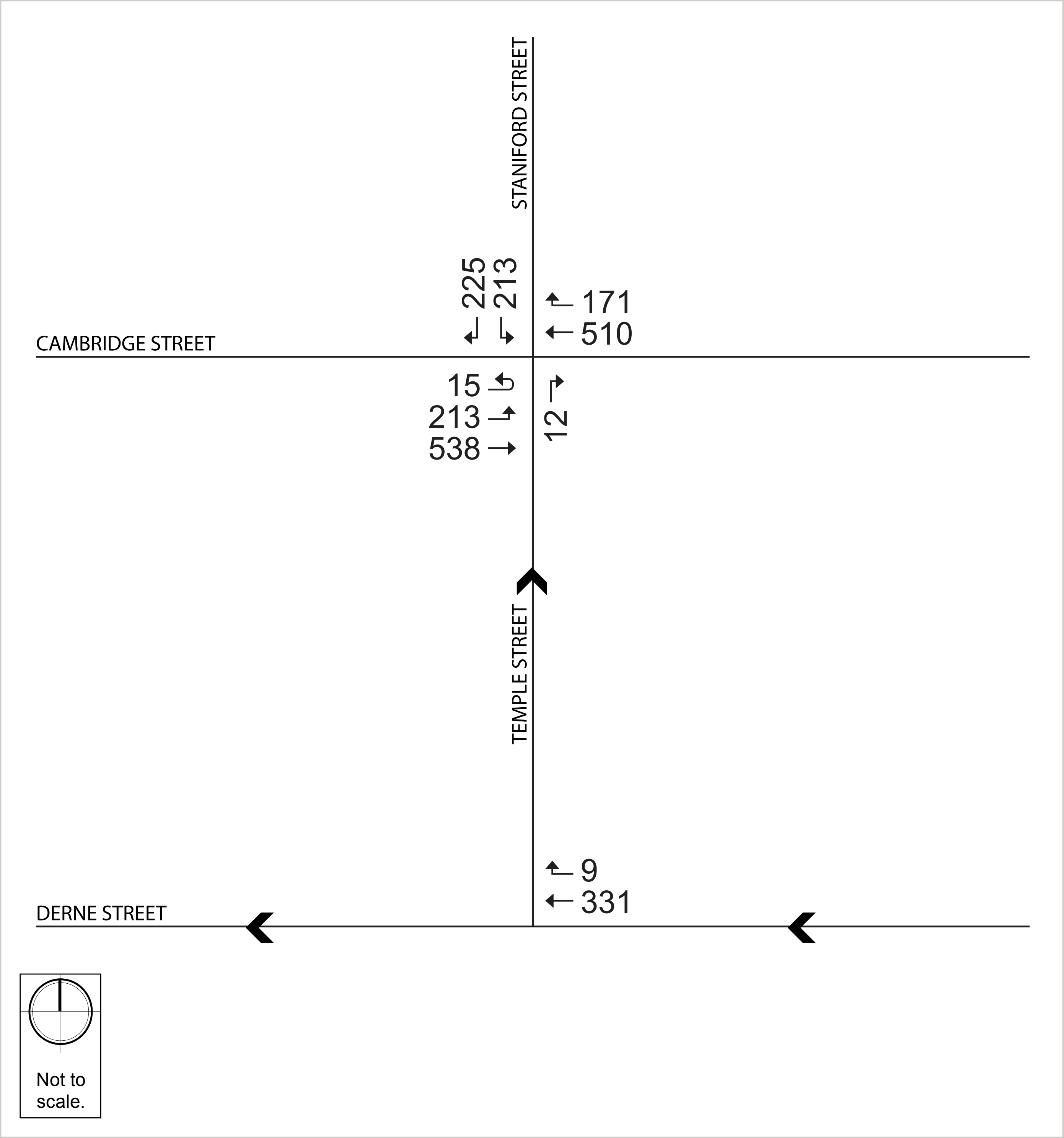


Figure 2-13. *No-Build (2021) Condition Traffic Volumes, Weekday p.m. Peak Hour*

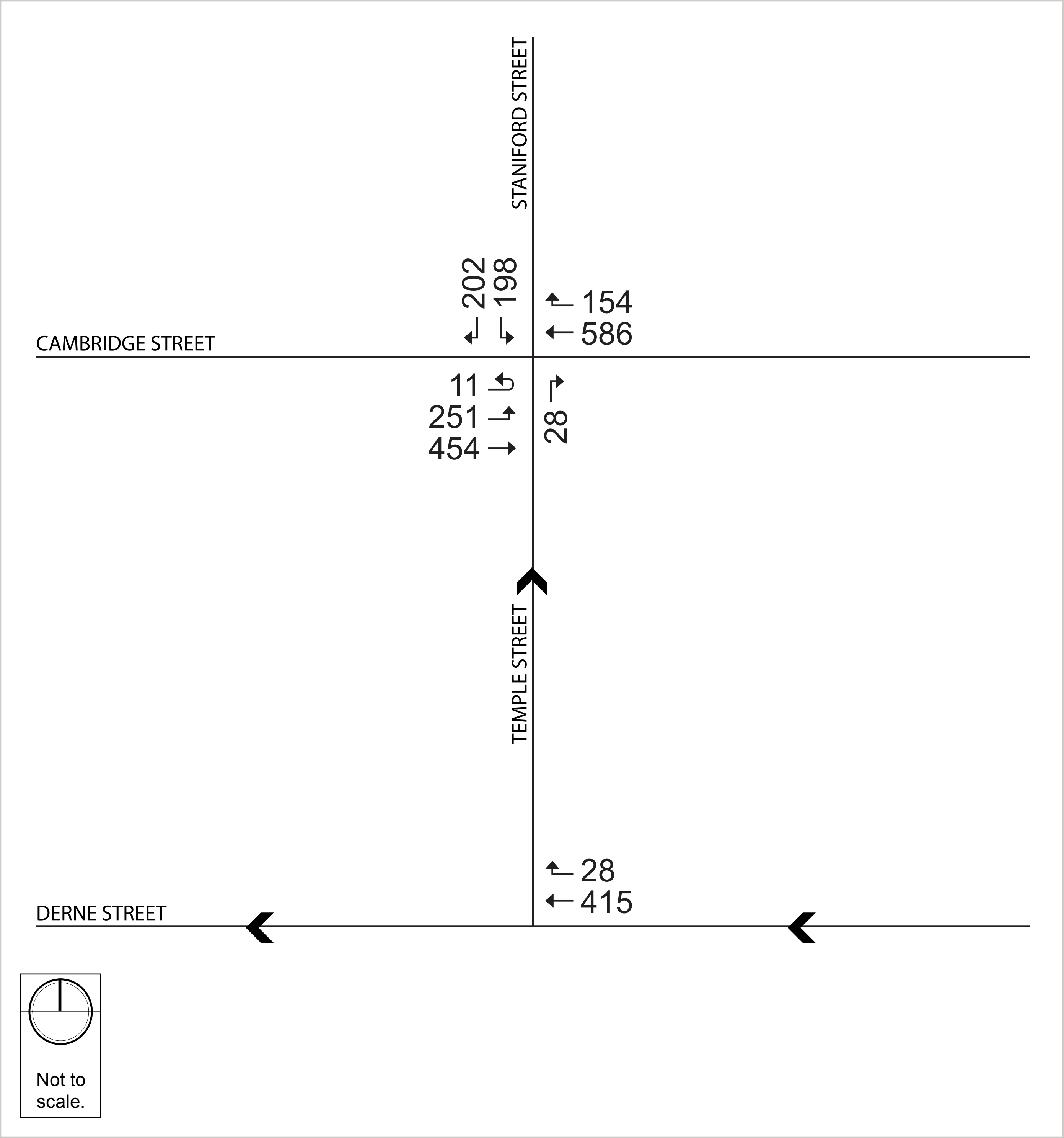


Figure 2-14. *Site Access Plan*

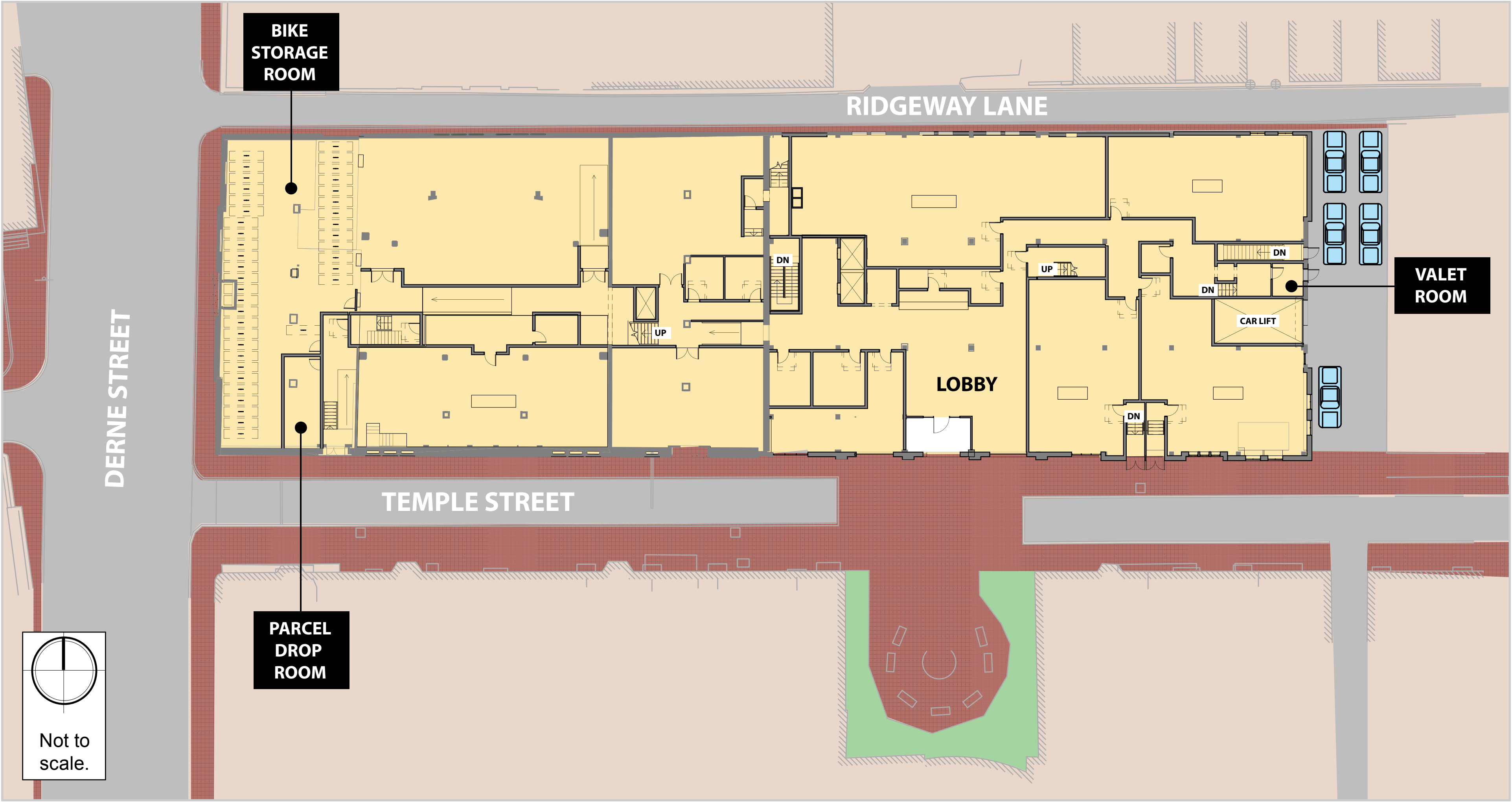


Figure 2-15. ***Trip Distribution***

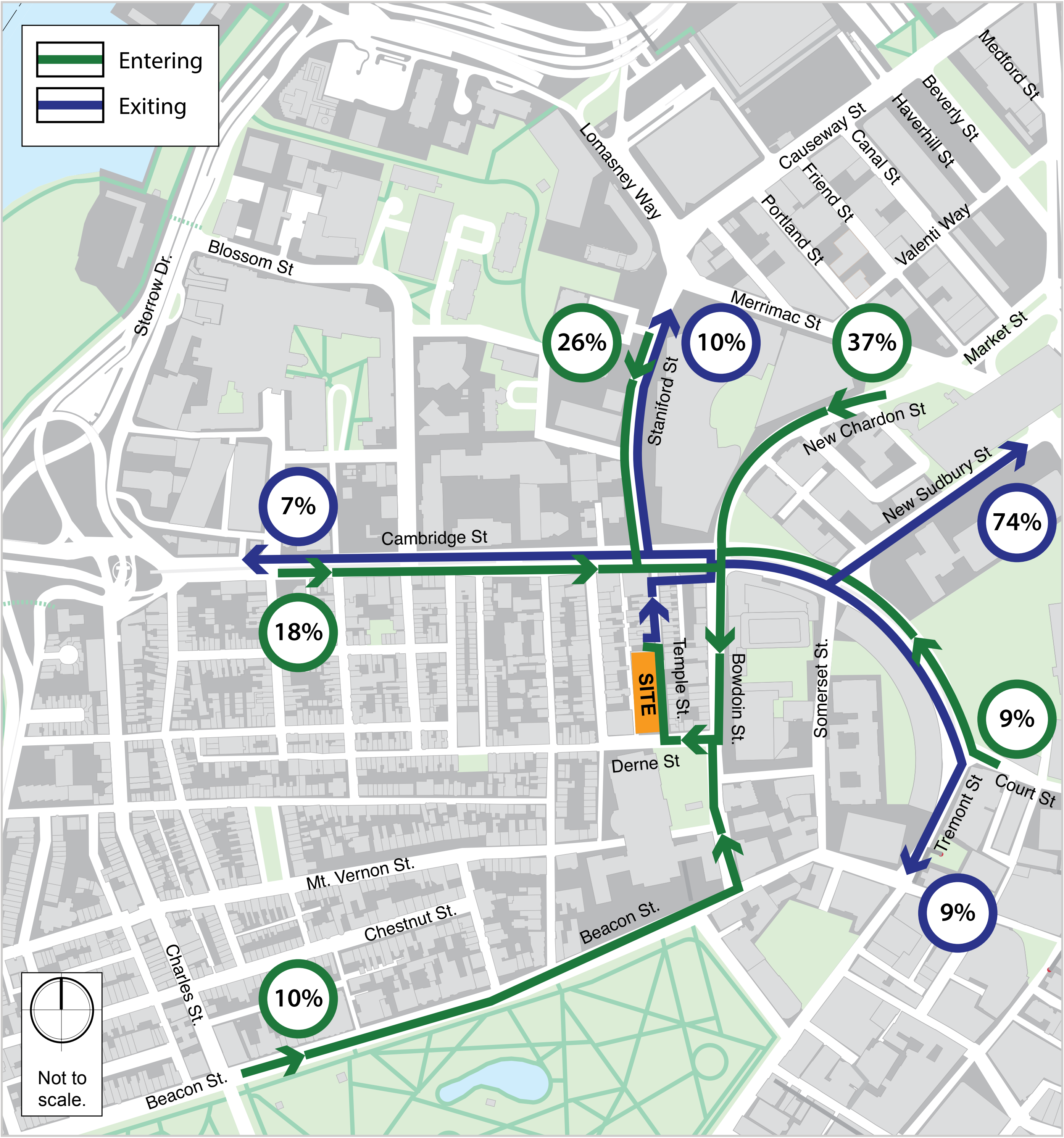


Figure 2-16. *Vehicle Trip Assignment, Weekday a.m. Peak Hour*

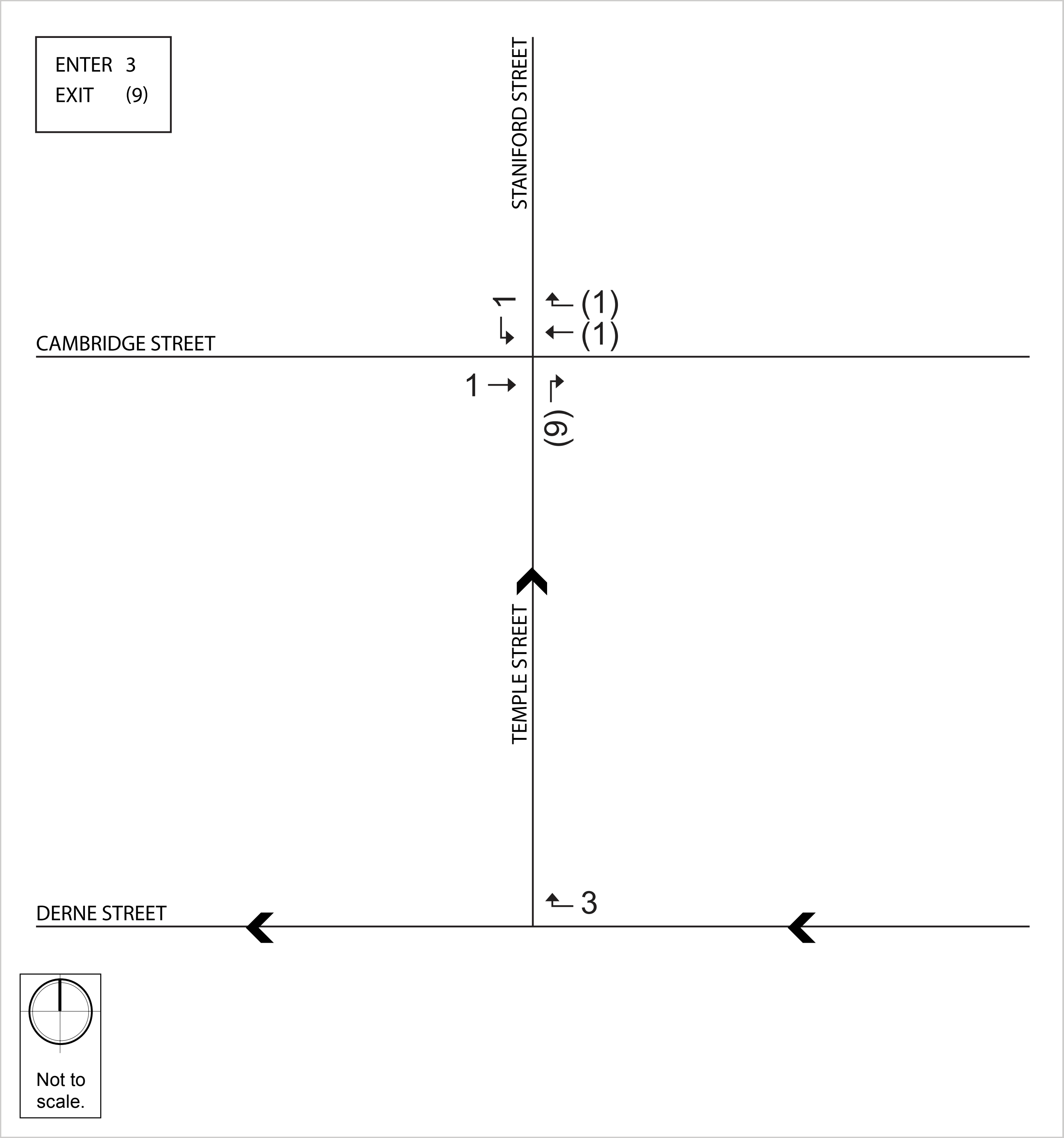


Figure 2-17. *Vehicle Trip Assignment, Weekday p.m. Peak Hour*

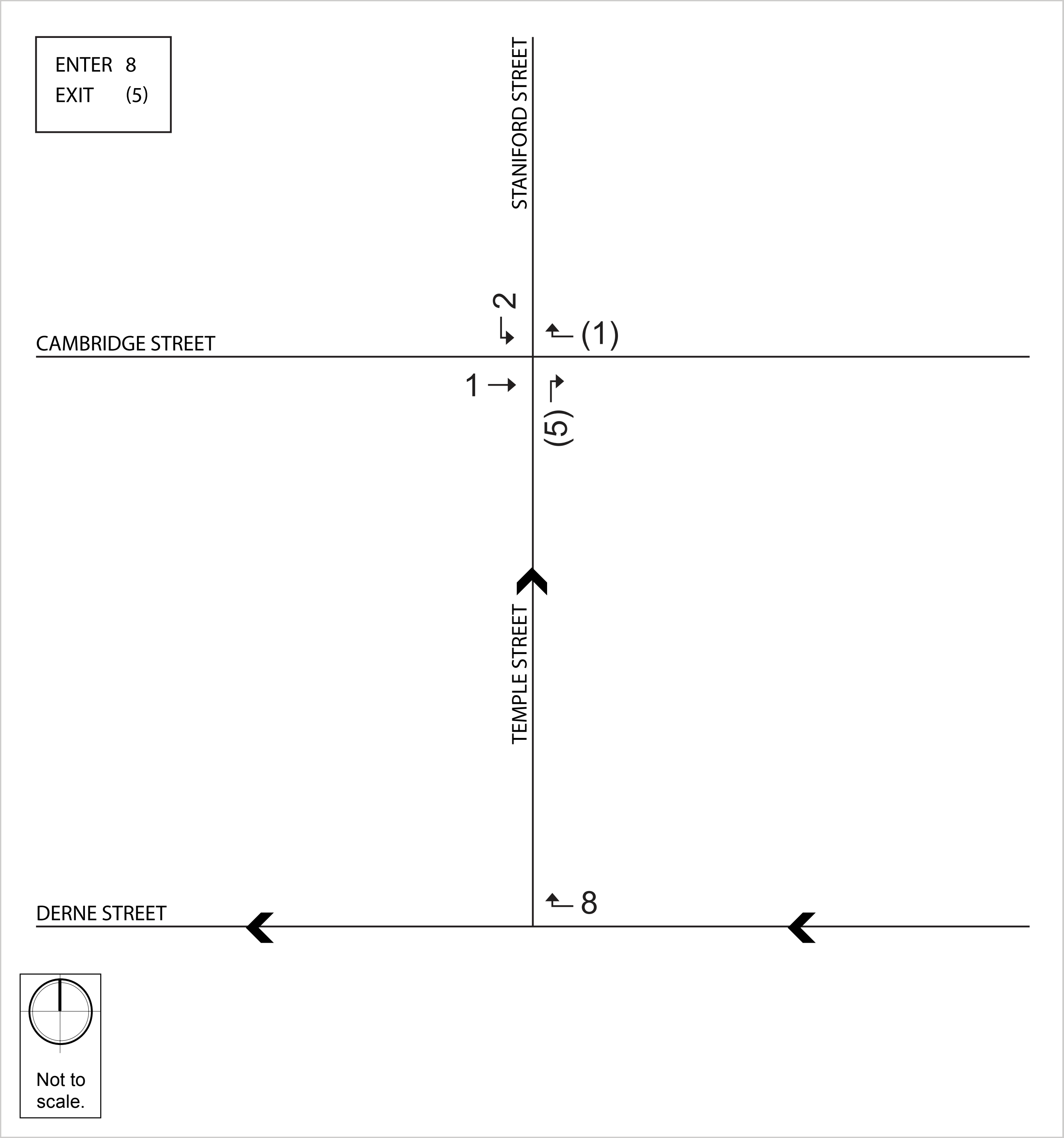


Figure 2-18. *Build (2021) Condition Traffic Volumes, Weekday a.m. Peak Hour*

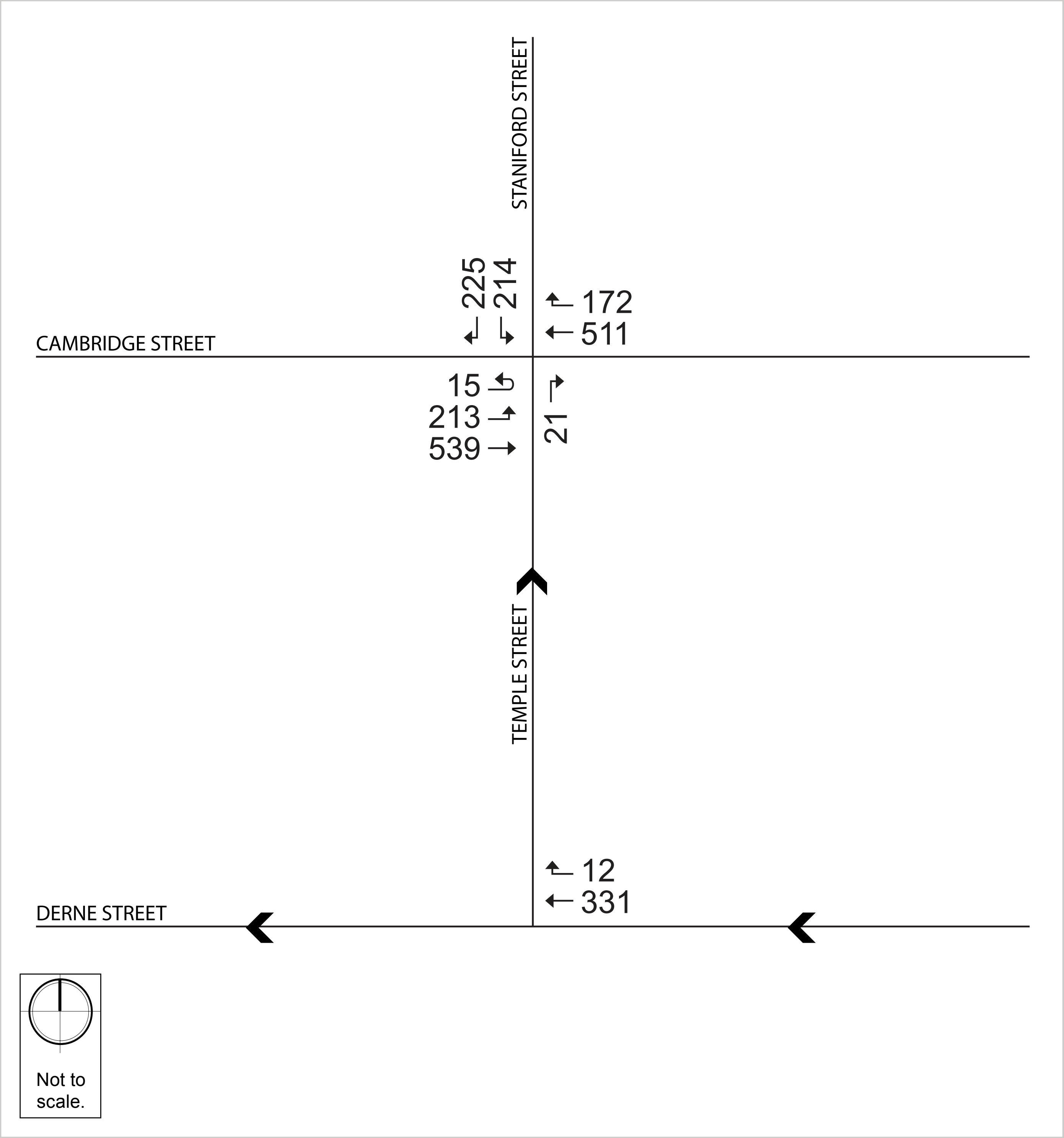
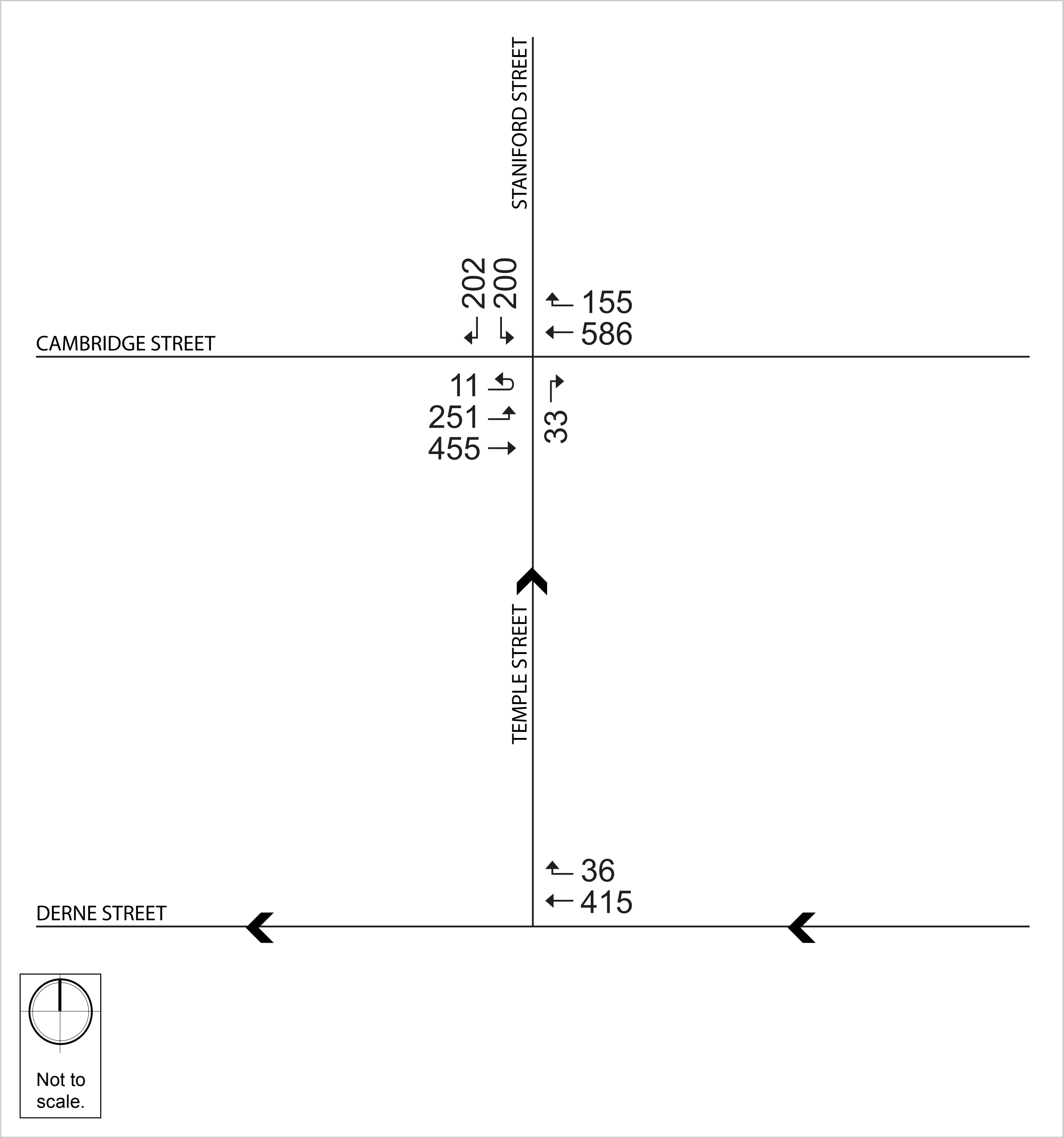


Figure 2-19. *Build (2021) Condition Traffic Volumes, Weekday p.m. Peak Hour*



3 ENVIRONMENTAL REVIEW COMPONENT

3.1 WIND

3.1.1 INTRODUCTION AND METHODOLOGY

The Proponent retained Rowan Williams Davies & Irwin Inc. ("RWDI") to assess the change in pedestrian wind conditions due to the Proposed Project. The objective of the assessment was to provide a qualitative evaluation of wind comfort conditions on and around the Proposed Project and recommend mitigation measures, if necessary. The qualitative assessment is based on the following:

- A review of regional long-term meteorological data;
- RWDI's previous wind-tunnel tests on buildings in Boston, including several on the University campus;
- Design drawings provided by the Proponent to RWDI on February 11, 2016;
- RWDI's engineering judgment and expert knowledge of wind flows around buildings; and
- Use of software developed by RWDI (*Windestimator*) for estimating the potential wind comfort conditions around generalized building forms.

The qualitative approach provides a screening-level estimation of potential wind conditions. To quantify these conditions or refine any conceptual mitigation measures, physical scale model tests were typically required. Over the years, RWDI has conducted thousands of wind-tunnel model studies on pedestrian wind conditions around buildings, yielding a broad knowledge base. This knowledge has been incorporated into RWDI's proprietary software that allows, in many situations, for a qualitative, screening-level numerical estimation of pedestrian wind conditions without wind tunnel testing.

3.1.2 OVERVIEW

Massings immediately surrounding the Building are similar in height, while those located further to the north side of Cambridge Street are mid-rise and high-rise. More high-rise buildings are located to the northeast and southeast in the Boston downtown area. The Massachusetts State House and Boston Common are situated to the south and southwest, respectively, while dense buildings of a few stories dominate to the west in the Beacon Hill neighborhood. The Proposed Project will include the addition of two penthouse floors for a total height of approximately 115 feet. The penthouse floors will be setback from the roof edge. Pedestrian areas on and around the building include the main and secondary entrances (A1 to A4 in **Image 3a in Appendix C**); sidewalks (B, B1 and B2 in **Image 3a in Appendix C**); and rooftop terraces (C in **Image 3b in Appendix C**).

3.1.3 METEOROLOGICAL DATA

Wind statistics at Boston-Logan International Airport between 1981 and 2004 were analyzed for the spring (March to May), summer (June to August), fall (September to November) and winter (December to February) seasons. **Image 4 in Appendix C** graphically depicts the distributions of wind frequency and directionality for these four seasons and for the annual period. When all winds are considered, winds from the northwest and southwest quadrants are predominant. The northeasterly winds are also less frequent, especially in the spring.

Strong winds with mean speeds of greater than 20 mph (red bands) measured at the airport are primarily from the northwesterly directions throughout the year, while the southwesterly and northeasterly winds are also frequent. Therefore, winds from the northwest, southwest and northeast directions were considered most relevant to the study, while winds from other directions were also considered in the analysis.

3.1.4 PEDESTRIAN WIND COMFORT CRITERIA

The BRA has adopted two standards for assessing the relative wind comfort of pedestrians. The first criterion states that an effective gust velocity (hourly mean wind speed +1.5 times the root mean square wind speed) of 31 mph should not be exceeded more than one percent of the time. The second set of criteria used by the BRA to determine the acceptability of specific locations is based on the work of Melbourne [Melbourne, W.H., 1978, "Criteria for Environmental Wind Conditions", Journal of Industrial Aerodynamics, 3 (1978) 241 - 249.] This set of criteria was used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing, or walking. The criteria are expressed in terms of benchmarks for the 1-hour mean wind speed exceeded 1% of the time (i.e., the 99-percentile mean wind speed). They are as follows:

Table 3-1: BRA Mean Wind Criteria *

Dangerous	> 27 mph
Uncomfortable for Walking	> 19 and ≤ 27 mph
Comfortable for Walking	> 15 and ≤ 19 mph
Comfortable for Standing	> 12 and ≤ 15 mph
Comfortable for Sitting	< 12 mph

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

Pedestrians on sidewalks will be active and wind speeds comfortable for walking are appropriate. Lower wind speeds comfortable for standing are desired for building main entrances where people are most likely to linger. For outdoor terraces, low wind speeds comfortable for sitting are desired during the summer. In other seasons, wind conditions in these areas may not be of a concern due to limited usage. The wind climate found in a typical downtown location in Boston is generally comfortable for the pedestrian use of sidewalks and thoroughfares and meets the BRA effective gust velocity criterion of 31 mph. However, without any mitigation measures, this wind climate is likely to be frequently unsuitable for more passive activities such as sitting.

3.1.5 EXISTING WIND CONDITIONS

The existing building is similar in height to its immediate surroundings, which shelter the site from any significant wind impact. The taller buildings to the east, however, tend to deflect winds down to the grade level, thereby causing a localized increase in wind activity along Derne Street. RWDI has completed wind tunnel tests for other projects in this area of Boston. Based on the results of these studies, we anticipate that uncomfortable wind speeds currently occur around the high-rise buildings around the east end of Derne Street. These conditions are likely caused by the prevailing northwest and northeast winds being deflected down by the existing towers (see **Image 5 in Appendix C** for illustration on photos of wind tunnel models). However, these wind impacts are very localized, as lower wind speeds suitable for standing or walking activity were predicted in wind tunnel testing at the intersection of Derne Street and Temple Street (Location B1 in **Image 3a in Appendix C**). No dangerous or unacceptable wind speeds were expected due to the limited building height and dense surroundings. Although we have no previous wind tunnel data specifically for the intersection of Derne Street and Ridgeway Lane (Location B2 in **Image 3a in Appendix C**), similar or lower wind speeds are expected at location B2 as it is further away from the existing tall buildings to the east.

3.1.6 POTENTIAL WIND CONDITIONS

As stated previously, the proposed redevelopment will add two levels of penthouse to the existing building. We do not expect this modification will result in any significant change to the current wind conditions at entrances and on sidewalks. No unacceptable or dangerous wind conditions are expected around the development. The following are additional comments on potential wind conditions in specific areas of the project (see **Images 3a and 3b in Appendix C** for reference).

Building Entrances

The main entrance to the building is located in the middle of the east façade (A1 in **Image 3a in Appendix C**). It is recessed from the main façade and designed with a large lobby. These are all positive design features for wind control. The entrance is sheltered by the building from the prevailing northwest and southwest winds. The increased building height will not affect the building exposure to the northeast and east winds given the existing taller massings situated to the east. Therefore, wind conditions at this entrance are expected to remain the same as those that currently exist, which are considered appropriate for the intended use. Similarly, appropriate wind conditions are also expected in secondary entrances along the street (A2 to A4) since they are located in a narrow, sheltered street and away from exposed building corners.

Sidewalks
The proposed building addition will increase the exposure (beyond the existing surroundings) to the southwest through north winds. This may result in a slight increase in wind speeds along Ridgeway Lane and Derne Street, especially at the southwest building corner (B2 in **Image 3a in Appendix C**). Since the penthouse is recessed from the roof edge in all directions, any increase in wind speeds at grade is expected to be minimal. The overall conditions are still expected to be comfortable for standing or walking activity throughout the year, similar to the existing conditions.

Roof-top Decks
Wind speeds comfortable for standing or walking are expected in the summer at the decks around the penthouse (**Image 6 in Appendix C**) due to increased wind exposure, while lower wind speeds suitable for standing or sitting would typically be desirable. Reduced wind activity can be achieved by including 6 foot or taller guardrails along the perimeter of the decks (Image 6), plus local screens, partitions and/or landscaping on the decks. Higher wind speeds are expected on the roof decks in other seasons, but this is not a concern due to the reduced usage.

3.1.7 CONCLUSION

The proposed redevelopment includes the addition of two penthouse floors. This modification to the existing building is not expected to significantly affect the current wind comfort conditions in the area due to the dense surroundings and the recessed penthouse floors. Based on the past wind tunnel results and local wind climate, appropriate wind conditions are expected in the entrance areas and along sidewalks, similar to those that currently exist. No unacceptable or dangerous wind conditions are expected around the development. For outdoor decks on the roof around the penthouse floors, the Proponent will include wind control measures to reduce the wind activity so that conditions appropriate for standing or sitting are obtained in the summer. These measures may include tall guardrails, wind screens, partitions and/or landscaping.

3.2 SHADOW

3.2.1 INTRODUCTION AND METHODOLOGY

As typically required by the BRA, a shadow impact analysis was conducted to investigate shadow impacts from the Proposed Project during four time periods (9:00 A.M., 12:00 P.M., 3:00 P.M. and 6:00 P.M.) during the vernal equinox (March 21), summer solstice (June 21), autumnal equinox (September 21), and winter solstice (December 21). The shadow analysis presents the existing shadow and new shadow that would be created by the Proposed Project, illustrating the incremental impact of the Proposed Project, specifically the penthouse floors. The analysis focuses on nearby open spaces, sidewalks and residences adjacent to and in the vicinity of the Project Site. [Shadows have been determined using the applicable Altitude and Azimuth data for Boston.] Results of the shadow impact study are discussed in the following sections and are supported by Figures 3-1 through 3-16 included at the end of this Section.

3.2.2 VERNAL EQUINOX (MARCH 21)

At 9:00 A.M. during the vernal equinox, shadow from the Proposed Project will be cast in a northwesterly direction. New shadow will be cast on a small portion of 3 rooftops on Hancock Street. No new shadow will be cast onto nearby streets, sidewalks, or public open spaces.

As the day progresses, the shadows become shorter, falling to the north. At 12:00 P.M., no new shadow will be cast onto nearby streets, sidewalks, residences, or public open spaces.

At 3:00 P.M. new shadow will be cast on a small portion of 1 rooftop on Temple Street and 1 rooftop on Bowdoin Street. No new shadow will be cast onto nearby streets, sidewalks, or public open spaces.

At 6:00 P.M., most of the area is under existing shadow. New shadow will be cast on 2 rooftops on Bowdoin Street and a small portion of public open space between Bowdoin Street and Somerset Street.

3.2.3 SUMMER SOLSTICE (JUNE 21)

At 9:00 A.M. during the summer solstice, shadow from the Proposed Project will be cast in a westerly direction. New shadow will be cast on a small portion of three (3) rooftops on Hancock Street. No new shadow will be cast onto nearby streets, sidewalks, or public open spaces

At 12:00 P.M., slivers of new shadow from the Proposed Project will be cast on Ridgeway Lane.

At 3:00 P.M. no new shadow will be cast onto nearby streets, sidewalks, residences, or public open spaces.

At 6:00 P.M., most of the area is under existing shadow. New shadow will be cast onto 2 rooftops on Bowdoin Street. No new shadow will be cast onto nearby streets, sidewalks, or public open spaces.

3.2.4 AUTUMNAL EQUINOX (SEPTEMBER 21)

At 9:00 A.M. during the autumnal equinox, shadow from the Proposed Project will be cast in a northwesterly direction. New shadow will be cast on slivers of 6 rooftops on Hancock Street. No new shadow will be cast onto nearby streets, sidewalks, or public open spaces

At 12:00 P.M., no new shadow will be cast onto nearby streets, sidewalks, residences, or public open spaces.

At 3:00 P.M. New shadows will be cast on slivers of 4 rooftops on Temple Street. No new shadow will be cast onto nearby streets, sidewalks, or public open spaces.

At 6:00 P.M., most of the area is under existing shadow. New shadow will be cast on 2 rooftops on Bowdoin Street and a small portion of public open space between Bowdoin Street and Somerset Street.

3.2.5 WINTER SOLSTICE (DECEMBER 21)

The winter solstice creates the least favorable conditions for sunlight in Boston. The sun angle during this season is lower than any other season, and this results in elongated shadows that cast onto large portions of the City. At 9:00 A.M. during the winter solstice equinox, new shadow will be cast on 2 rooftops on Hancock Street and a small portion of Cambridge Street.

At 12:00 P.M., new shadow will be cast onto 2 rooftops on Temple Street. No new shadow will be cast onto nearby streets, sidewalks, or public open spaces

At 3:00 P.M. most of the area is under existing shadow, and new shadow will be cast onto 2 rooftops on Bowdoin Street. No new shadow will be cast onto nearby streets, sidewalks, or public open spaces

At 6:00 P.M., the area is under existing shadow. No new shadow will be cast onto nearby streets, sidewalks, residences, or public open spaces.

3.2.6 LACK OF SHADOW IMPACTS ON OPEN SPACES

The Proposed Project complies fully with the Boston Common Shadow Legislation. The Proposed Project casts no new shadow on the Temple Street Park, which is located immediately across from the Proposed Project to the east, or any of the other nearby public open spaces. The new shadows, which are all de minimis, only fall onto a handful of nearby rooftops and cast a very minimal shadow on Ridgeway Lane around noon on the summer solstice.

3.2.7 CONCLUSIONS

In general, much of the new shadow cast by the Proposed Project falls within existing shadows already cast by existing buildings. For this reason, the Proposed Project will have de minimus net new shadow impacts. In no cases will the Proposed Project's shadow impacts have any effect on the health, quality, or serviceability of any public open spaces, historic resources, or other important public resources.

3.3 SOLAR GLARE

As currently designed, the majority of the Proposed Project's exterior glass elevations will be glazed with a low visual reflectivity glass. The Proposed Project is not expected to cause any significant solar glare impacts on the surrounding buildings, parks, pedestrian areas, or roadways. In the unlikely event that there be a design change toward using more reflective glass, then a solar glare analysis will be undertaken to evaluate whether the glazing will have negative impacts on surrounding areas.

3.4 AIR QUALITY

EBI Consulting performed air quality analyses for the Proposed Project. These analyses include an evaluation of existing air quality, and an evaluation of potential carbon monoxide (CO) impacts from the operation of the Proposed Project's fuel combustion equipment (gas-fired boilers, water heaters and diesel-fired emergency generator) and impacts from the operation of the Proposed Project's parking garage.

3.4.1 EXISTING AIR QUALITY

The City of Boston is currently classified as being in attainment of the Massachusetts and National Ambient Air Quality Standards (NAAQS) for all criteria pollutants; see **Table 3-2**.

Table 3-2: Massachusetts and National Ambient Air Quality Standards (NAAQS)

Pollutant	NAAQS	
CO (carbon monoxide) primary standard – not to be exceeded more than once per year	9 ppm	8-hour
	35 ppm	1-hour
NO_2 (nitrogen oxides) 1-hour is primary standard (98th percentile of 1-hour daily maximum concentrations, averaged over 3 years) annual is primary and secondary standard	0.053 ppm	Annual
	0.100 ppm	1-hour
PM_{10} (particulate matter less than 10 micrometers) primary and secondary standard, not to be exceeded more than once per year on average over 3 years	150 $\mu g/m^3$	24-hour
$PM_{2.5}$(particulate matter less than 2.5 micrometers) annual mean (averaged over 3 years) is primary standard, secondary annual standard is 15 $\mu g/m^3$ 24 hour standard is both primary and secondary standard (98th percentile, averaged over 3 years)	12.0 $\mu g/m^3$	Annual
	35 $\mu g/m^3$	24-hour

SO_2 (sulfur dioxide) 1-hour is primary standard (99th percentile of 1-hour daily maximum concentration, averaged over 3 years) 3-hour is secondary standard (not to be exceeded more than once per year)	0.5 ppm	3-hour
	0.075 ppm	1-hour
O_3 (ozone) primary and secondary standard (annual 4th highest daily maximum 8-hour concentration, averaged over 3 years)	0.08 ppm	8-hour
Pb (Lead) primary and secondary standard – not to be exceeded	0.15 µg/m^3	Rolling 3-month
	1.5 µg/m^3	Annual

These air quality standards have been established to protect the public health and welfare in the ambient air, with a margin for safety.

The Massachusetts Department of Environmental Protection (MassDEP) currently operates air monitors in various locations throughout the City. The closest, most representative, MassDEP monitors for carbon monoxide (CO), sulfur dioxide (SO2) and nitrogen dioxide (NO2) are located at Kenmore Square in Boston. For particulates (PM_{10} and $PM_{2.5}$), the closest, most representative monitor is located at One City Square, in Boston. For lead (Pb), and ozone (O_3), the closest, most representative monitor is located at Dudley Square (Harrison Avenue) in Boston.

Table 3-3 summarizes the MassDEP air monitoring data, for the most recent available, complete, three- year period (2012-2014), that are considered to be representative of the Project area. **Table 3-3** shows that existing air quality in the Project area is generally much better than the NAAQS, with the exception of ozone. The highest impacts relative to the NAAQS are for ozone and $PM_{2.5}$. Ozone is a regional air pollutant on which the small amount of ozone-precursors generated by this Project will have an insignificant impact. The Project's operations will not have a significant impact on local $PM_{2.5}$ concentrations.

Table 3-3: Representative Existing Air Quality in the Project Area

Pollutant Averaging Period	Monitor Location	Concentration	NAAQS	Percent of NAAQS
CO, 1-hour	Kenmore Square, Boston	1.5 ppm	35 ppm	4%
CO, 8-hour	Kenmore Square, Boston	1.1 ppm	9 ppm	12%
NO_2, 1-hour	Kenmore Square	0.061 ppm	0.100 ppm	61%
NO_2, annual	Kenmore Square	0.019 ppm	0.053 ppm	36%
O_3, 8-hour	Dudley Square, Harrison Avenue, Boston	0.08 ppm	0.08 ppm (annual 4th highest daily maximum 8-hour concentration, averaged over 3 years)	100%
PM_{10}, 24-hour	One City Square, Boston	69 µg/m^3	150 µg/m^3	46%
$PM_{2.5}$, 24-hour	One City Square	25 µg/m^3	35 µg/m^3	71%

$PM_{2.5}$, annual	One City Square	8.8 μg/m^3	12.0 μg/m^3	73%
Pb, quarterly	Dudley Square, Harrison Avenue, Boston	0.014 μg/m^3	0.15 μg/m^3	9%
Pb, annual	Dudley Square, Harrison Avenue, Boston	0.003 μg/m^3	1.5 μg/m^3	0.2%
SO_2, 1-hour	Kenmore Square	0.03 ppm	0.075 ppm	40%

3.4.2 IMPACTS FROM PARKING GARAGE VENTILATION

The Project includes a parking garage located underground, designed to provide parking spaces for 60 vehicles. An analysis of the worst-case air quality impacts from the proposed parking garage was performed. The procedures used for this analysis are consistent with the United States Environmental Protection Agency (US EPA) Volume 9 guidance, "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 9 (Revised): Evaluating Indirect Sources," EPA-450/4-78-001, September 1978. The objective of the analysis was to determine the maximum CO concentrations inside the garage and at the closest sensitive receptors surrounding the Project. These closest receptors include air intakes located at the Building and nearby existing buildings and pedestrians at ground level anywhere near the Proposed Project. CO emissions from motor vehicles operating inside the garage were calculated and the CO concentrations inside the garage and surrounding the Proposed Project were based on morning and afternoon peak traffic periods. The garage exhaust emissions were modeled using a US EPA-approved air model.

Garage Ventilation System

The proposed parking garage will include mechanical ventilation. The garage ventilation system will be designed to provide adequate dilution of the motor vehicle emissions before they are vented outside. The design of the garage ventilation system will meet all applicable building code requirements. Full ventilation of the garage will require a maximum air flow of approximately 7,000 cubic feet per minute (cfm) of fresh air. This quantity of air is designed to meet the building code and will be more than adequate to dilute the emissions inside the parking garage to safe levels before they are vented outside. The garage ventilation air intake will likely be located at the northwest corner of the Building, along Ridgeway Lane, with the proposed exhaust at the roof.

Peak Garage Traffic Volumes

Parking for the Project will be provided in an underground garage. The peak morning and afternoon one-hour entering and exiting traffic volumes for the garage are shown in **Table 3-4**.

Table 3-4: Representative Peak–Hour Garage Traffic Volumes

Period	Entering (vehicles/hour)	Exiting (vehicles/hour)	Total (vehicles/hour)
Morning Peak Hour	3	9	12
Afternoon Peak Hour	8	5	13

Source: Howard-Stein Hudson, Inc.

Motor Vehicle Emission Rates

Appropriate, conservative, US EPA emission factors were utilized to calculate single vehicle CO emission rates for a vehicle speed of 5 mph. Guidance from the MassDEP was utilized. This represents the worst case, since vehicle emissions decrease in future years due to more stringent emission control requirements for new motor vehicles. The emission rate for a single vehicle at 5 miles per hour, was assumed to be 14.82 grams per mile, for each entering and exiting vehicle.

To determine the maximum one-hour CO emissions inside the garage it was necessary to estimate the amount of time each motor vehicle will be in the parking garage with its engine running. It was conservatively assumed, that every car entering the garage will travel to the farthest parking spot, and that the vehicles leaving the garage will have to travel the same distance from inside the garage to the exit.

Peak Garage CO Emission Rate and CO Concentration Inside the Garage

The peak one-hour CO emission rate for the parking garage was calculated to be 0.39 grams per minute for the morning peak hour and 0.43 grams per minute for the afternoon peak hour. Applying the volumetric garage ventilation flow rate for the parking garage, the peak one-hour CO concentration inside the garage was calculated to be 1.74 parts of CO per million parts of air (ppm) for the morning peak hour and 1.88 ppm for the afternoon peak hour. Therefore, the peak one-hour CO concentration inside the garage will be 1.88 ppm with a peak one-hour emission rate of 0.43 grams/minute (0.0071 grams/second), corresponding to the afternoon peak period. These predictions represent conservative estimates of the peak garage CO emissions.

Peak Ambient CO Concentrations

The emissions from the garage exhaust fan are expected to discharge above the roof. These exhaust fan emissions are combined with the impacts from the gas-fired boilers, water heaters and the emergency generator and are addressed below in **Section 3.5.3**.

Conclusions

A conservative air quality analysis demonstrates that there will be no adverse air quality impacts from the operation of the Proposed Project's parking garage.

3.4.3 IMPACTS FROM HEATING, MECHANICAL, AND EXHAUST SYSTEMS AND PARKING GARAGE

The Proposed Project will include fuel combustion equipment that will emit air pollutants to the atmosphere when operating. Fuel combustion equipment for the Proposed Project will include gas-fired boilers and water heaters. A diesel-fired emergency generator is also proposed. The CO emissions from the garage exhaust fan are also included in this analysis. The objective of this analysis was to determine the maximum carbon monoxide (CO) concentrations at the closest sensitive receptors surrounding the Project Site. These closest sensitive receptors include: air intakes located on the Building and nearby existing buildings, and pedestrians at ground level anywhere near the Project Site. The CO emissions were modeled using a United States Environmental Protection Agency (US EPA) approved air model.

Building Heating CO Emission Rate

The Proposed Project will include fuel combustion equipment that will emit air pollutants to the atmosphere. Fuel combustion equipment for the Proposed Project will include natural gas-fired boilers and water heaters. A 300 kilowatt (kW) diesel-fired emergency generator is also proposed. The US EPA Compilation of Air Pollutant Emission Factors, AP-42, was used to determine the uncontrolled CO emission rate for the natural gas-fired equipment. The total equipment heat input capacity was estimated to be approximately 9 million British thermal units (Btu) per hour (MMBtu/hour). Assuming an AP-42 heating value of 1,020 Btu/cubic foot of natural gas, this translates to approximately 8,824 cubic feet of natural gas burned per hour. A CO emission factor of 84 pounds (lb) per million standard cubic feet of natural gas, the AP-42 emission factor for small boilers less than 100 MMBtu/hour, and also the Massachusetts Department of Environmental Protection (MassDEP) emission factor used for Source Classification code (SCC) code 10300603, commercial/institutional boilers less than 10 MMBtu/hour is used. The maximum total CO emission rate from the Proposed Project's natural gas combustion units is 0.74 lbs/hour (0.093 grams/second). This calculation conservatively assumes that all of the combustion units are operating simultaneously at full design capacity.

The proposed emergency generator will only operate during emergencies and during testing and maintenance. The CO emissions from the emergency generator are 1.51 grams per horsepower-hour, as specified in the Caterpillar equipment specifications for the proposed equipment, which is 0.17 grams per second.

The information concerning the CO emissions from the garage exhaust fan is discussed above in **Section 3.5-2**.

Peak Ambient CO Concentration

Worst-case concentrations of CO from the building combustion and the garage exhausts were predicted for locations around the building using the US EPA AERSCREEN model (Version 15181). The results of the air quality analysis for locations outside and around the building are summarized in **Table 3-5**. The results in **Table 3-5** represent all outside locations on and near the Project Site, including nearby residences. **Appendix D** contains the AERSCREEN model output.

The AERSCREEN model was used to predict the maximum concentration of CO by modeling the combustion source emissions using worst-case meteorological conditions for an urban area. The predicted concentrations presented, represent the worst-case air quality impacts from the combustion units at all locations on and around the Project Site. AERSCREEN predicted one-hour and eight-hour average concentrations of air pollutants.

AERSCREEN predicted that the maximum one-hour CO concentration from the combustion units and the garage exhaust to be 0.36 ppm (407 micrograms per cubic meter (µg/m3)). This concentration represents the maximum CO concentration at any location surrounding the Project Site. The maximum predicted eight-hour CO concentration at any ambient (outside) location will be significantly smaller than the one-hour prediction. This is because: 1) the average number of combustion units operating over the peak eight-hour period will be significantly less than the peak one-hour values used to predict the peak one-hour CO impact, and 2) the worst-case meteorological conditions used to predict the peak one-hour impact will not persist for eight consecutive hours. The maximum predicted eight-hour CO concentration was predicted to be approximately 0.32 ppm. The AERSCREEN model output is provided in **Appendix D**.

The US EPA has established National Ambient Air Quality Standards (NAAQS) to protect the public health and welfare in ambient air, with a margin for safety. The NAAQS for CO are 35 ppm for a one-hour average and 9 ppm for an eight-hour average. The Commonwealth of Massachusetts has established the same standards for CO. The CO background values of 1.5 ppm for a one-hour period and 1.1 ppm for an eight-hour period were added to the maximum predicted ambient impacts to represent the CO contribution from other, more distant, sources. With the background concentration added, the peak, total, one-hour and eight-hour CO impacts from the combustion units, at any location around the building, will be no larger than 1.9 ppm and 1.4 ppm, respectively. These maximum predicted total CO concentrations are safely in compliance with the NAAQS. This analysis demonstrates that the operation of the combustion units and garage exhaust will not have an adverse impact on air quality.

Table 3-5: Peak Predicted Building Heating System and Garage Exhaust Air Quality Impacts

Location	Peak Predicted One-Hour Impact (ppm)	One-Hour NAAQS (ppm)	Peak Predicted Eight-Hour Impact (ppm)	Eight Hour NAAQS (ppm)
Outside – Surrounding the Building*	1.9	35 (NAAQS)	1.4	9 (NAAQS)

NAAQS = Massachusetts and National Ambient Air Quality Standards for CO (ppm = parts per million)
* Representative of maximum CO impact at all nearby residences, buildings, and sidewalks.

Conclusions

A conservative air quality analysis demonstrates that there will be no adverse air quality impacts from the operation of the Proposed Project's fuel combustion equipment and garage exhaust.

3.5 STORMWATER MANAGEMENT AND WATER QUALITY

There is existing storm drain infrastructure in Temple and Derne Streets and Ridgeway Lane surrounding the Project Site, which provides adequate capacity to serve the storm drainage needs of the Proposed Project. Best Management Practices (BMPs) and sustainable design will be incorporated into the Proposed Project wherever practical and applicable.

Stormwater management systems will be designed to remove Total Suspended Solids (TSS) and phosphorous and also provide oil & water separation in compliance with current Boston Water and Sewer Commission (BWSC) requirements. The Proposed Project will meet the Massachusetts Department of Environmental Protection's

(MassDEP) Stormwater Management Standards for redevelopment.

The proposed stormwater management systems will include deep-sump hooded catch basins, water quality units and groundwater recharge systems, where appropriate. The Proposed Project is expected to reduce the peak rate and volume of stormwater runoff leaving the site as well as improve stormwater quality. It is anticipated that stormwater recharge systems will work to passively infiltrate runoff into the ground with a gravity recharge system. The underground recharge system, and any required site closed drainage systems, will be designed so that there will be no increase in the peak rate of stormwater discharge from the Project Site in the future condition compared to the existing condition. In addition, for any portions of the Proposed Project where recharge systems cannot be accommodated, water quality units will be installed to reduce pollutants in stormwater runoff prior to discharge to the BWSC drainage system, per BWSC standards.

All improvements and connections to BWSC infrastructure will be reviewed as part of the Commission's Site Plan Review process. The process includes a comprehensive design review of the proposed service connections, assessment of project demands, and system capacity.

The Proposed Project will also include an Operations and Maintenance (O&M) program identifying required inspections and maintenance of erosion controls and the stormwater management system both during and after construction to ensure the continued proper functioning of the stormwater management system. Erosion and sediment control measures will be implemented during construction to minimize the transport of site soils to off-site areas and BWSC storm drain systems. During construction, erosion controls will be installed within and around the perimeter of the Project Site and existing catch basins in the public rights-of-way along the Project Site frontage will be protected with silt socks to provide for sediment removal from runoff. These controls will be inspected and maintained throughout the construction phase until all areas of disturbance have been stabilized through the placement of pavement, structure, or vegetative cover.

All necessary dewatering associated with construction activities will be conducted in accordance with applicable BWSC, United States Environmental Protection Agency (USEPA), Massachusetts Water Resources Authority (MWRA) regulations and other appropriate discharge permit requirements.

Stormwater management controls will be established in compliance with BWSC standards, and the Proposed Project will reduce stormwater flow, pollutants, or sediments that would potentially impact nearby water bodies including Boston Harbor

3.6 FLOOD HAZARD ZONES/WETLANDS

Based on the Suffolk County Flood Insurance Rate Map (FIRM) Number 25025C0077G, dated September 25, 2009 and the Revised Map Number 25025C0077J, dated March 16, 2016, the Project Site is not located in a special flood hazard area, floodway area, or other flood area.

The Project Site does not contain any wetland resource area regulated by the Massachusetts Wetland Protection Act.

3.7 GEOTECHNICAL/GROUNDWATER

3.7.1 INTRODUCTION

This section describes site subsurface soil and groundwater conditions, planned foundation construction activities for the proposed redevelopment, and mitigation measures for protection of adjacent structures and for maintaining groundwater levels in the Project area during excavation and foundation construction.

3.7.2 PROJECT DESCRIPTION

The existing 5 to 6-story brick buildings located in the Beacon Hill area of Boston are planned to be redeveloped from institutional/university use to residential use. The buildings include the 'Archer' Building and the 'Donahue'

Building. The Archer Building was reportedly constructed in 1920, according to an engraving on the building and the Donahue Building was constructed about 1966, according to design plans on record at the City of Boston Inspectional Services Department.

The Buildings are constructed on sloping Beacon Hill, surrounded by Derne Street to the South, Ridgeway Lane to the West and Temple Street to the East. The lowest level floor in the Archer Building is founded at about El. 59 Boston City Base Datum (BCB) and the lowest level floor in the Donahue Building is founded at El. 46 BCB. Isolated areas of the basement space are depressed a few feet for mechanical space, elevators and sumps.

According to the 1967 drawings for the Donahue Building, the Archer and Donahue Buildings are founded on shallow foundations bearing on the naturally deposited glacial soils, which make up Beacon Hill. The Archer Building appears to be founded on individual concrete spread footings at interior column locations and on concrete strip footings at perimeter wall locations. The Donahue building is founded on a continuous, 3-foot-thick reinforced concrete mat foundation.

The ground surface adjacent to the buildings slopes from about El. 74 at the south wall, at Derne Street, to El. 55 at the north wall.

The Proposed Project includes the following:

- Interior demolition of finishes within the institutional/university buildings and interior renovations to create residential space.
- Converting approximately 12,500 sq. ft of the Donahue Building basement into a parking garage for 60 cars with stackers. The conversion will include installation of a vehicle elevator within the northern section of the Donahue Building with access from Temple Street.
- Temporary excavations will be required to install sub-slab utilities. These excavations will be above groundwater.
- New elevators are planned, contained within the existing elevator shafts.
- No new depressions in the lowest level slabs are planned. The existing slabs and pits are above normal groundwater level.
- No new foundations are planned.

3.7.3 SOIL AND BEDROCK CONDITIONS

Test borings have been completed on Beacon Hill at nearby sites and typically encounter the following soil strata, listed in order of increasing depth below the ground surface:

- Granular Fill
- Glacial Outwash Deposits
- Glacial Till
- Glaciomarine Deposits
- Bedrock

The Granular Fill, where encountered, is typically surficial and placed directly below streets and building slabs, or is present as utility bedding. Sandy Glacial Outwash Deposits have been documented to range from 5 to 30 feet thick and are underlain by at least 65 feet of Glacial Till. At some test boring locations nearby the site, Glaciomarine Deposits have been encountered up to 5-10 feet in thickness. Bedrock, consisting of Cambridge Argillite, exists below Beacon Hill at depths of 120 to 150 feet below ground surface. Cambridge Argillite, is well known in the area. At some locations near the site, up to 20-50 foot thicknesses of weathered zones in the Argillite have been encountered; however, the rock generally increases in quality with depth.

3.7.4 GROUNDWATER CONDITIONS

Groundwater observation wells installed on Somerset Street, about 500 feet east of the Project Site, indicate groundwater levels ranged between El. 30 to El. 35 BCB from 2005 to 2011. These water levels correspond to about 10 to 15 feet below the lowest level slab of the Buildings. Water levels vary somewhat with season, rainfall, construction activities, proximity to underground utilities and other factors.

3.7.5 PROPOSED FOUNDATIONS

Given that the loading conditions of the buildings will not change, current planning for the redeveloped buildings includes reusing the existing shallow foundations. New foundations are not planned, except for isolated elements such as new elevators. Isolated concrete pads will be placed on the existing lowest level slabs for mechanical equipment; however, new foundations are not planned.

3.7.6 GROUNDWATER PROTECTION

The site is located outside of the Groundwater Conservation Overlay District as established by Boston Zoning Code Article 32. Regardless, the project will be designed and constructed in a manner that does not adversely impact groundwater levels. In addition, there may be an opportunity to include a groundwater recharge system, as required by the Boston Water and Sewer Commission. The system is planned to consist of a series of horizontally laid pipes with crushed stone and geotechnical filter fabric installed below the southern end of the Archer Building slab on grade and also possibly beneath the paved area to the north of the Building. Rainwater from the roof of the structure and paved area will be directed to the groundwater systems. Final determination of the feasibility of this scheme is pending further review of the Archer Building structural footings through on site selective demolition to determine footing depth and composition.

The lowest building floors are planned to be unchanged at El. 46 and El. 59 BCB, well above the groundwater levels. Groundwater levels will not be impacted by the building redevelopment, and no sumps or permanent pumping are necessary for the Proposed Project.

3.7.7 IMPACTS ON EXISTING STRUCTURES

The proposed construction is not expected to impact foundations of adjacent or nearby structures. Nearby structures are founded on shallow foundations, similar to the Archer and Donahue Buildings. Excavations at the Project Site are not planned, which would impact adjacent building foundations. Only surficial, temporary localized excavations are required for installation of shallow building utilities.

3.7.8 NOISE AND VIBRATIONS

Below-grade construction is planned to be minimal and will include isolated cutting of interior concrete slabs for utilities and installation of new elevator foundations. The work will be performed using conventional methods and procedures, selected to avoid impacts. As noted above, new foundations are not planned. No pile driving or other significant vibration or noise-generating construction activity is planned for this project.

3.8 SOLID AND HAZARDOUS WASTE

3.8.1 HAZARDOUS WASTE

A Phase I Environmental Site Assessment (ESA) was completed in June 2015 for the Project Site. The main objective of the ESA was to identify recognized environmental conditions in connection with the Project Site, defined in ASTM Practice E 1527-13 as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to any release to the environment, 2) under conditions indicative of a release to the environment, or 3) under conditions that pose a material threat of a future release to the environment.

The Project Site includes six (6) contiguous rectangular-shaped tax parcels, cumulatively totaling approximately 0.637 acres. The Project Site is currently improved with two (2) connected six-story institutional/university buildings, with a gross area of approximately 171,950 square feet. The two buildings are named the Archer Building and the Donahue Building. The Archer building is located on the intersection of Temple and Derne Street. The building was reportedly constructed in 1920. Further down Temple Street lies the Donahue building. The Donahue building was reportedly constructed in 1966. The buildings have been renovated several times in the past and are internally connected. There are no industrial operations taking place at the Project Site. The existing buildings fully occupy the Project Site, with the exception of a small paved area on the northern edge of the Project Site. The paved area extends from Temple Street to Ridgeway Lane, and includes an iron fence with a gate along Ridgeway Lane.

At the time of assessment, the existing buildings were being utilized as institutional/university space. Active classrooms, offices, and a theatre occupy the Archer building. Offices, classrooms, and science labs occupy the Donahue Building. There were no industrial or manufacturing operations observed at the Project Site at the time of assessment.

The ESA identified no evidence of recognized environmental conditions (RECs) in connection with the Project Site.

Limited sampling of suspect asbestos-containing building materials (ACBM), suspect lead-containing paint (LCP) and suspect Polychlorinated Biphenyls (PCB) Caulk was also completed at the Project Site. ACBM was identified in both the Archer and Donahue Buildings and, LCP was only identified within the Archer Building and PCB was only identified within the Donahue Building.

Asbestos-Containing Building Materials

In their current state, the asbestos-containing building materials within the Buildings are in good condition and do not pose an immediate health hazard. Prior to redevelopment activities or other disturbance of these ACBMs, these materials must be abated by a State of Massachusetts licensed asbestos abatement contractor.

Lead-Containing Paint

Based upon XRF and paint chip sample results, painted components within the Archer Building contain detectable concentrations of lead. Consequently, work performed in the buildings that will disturb these surfaces must comply with OSHA standard 29 CFR 1926 for worker protection. Additional requirements include disposal of waste material in compliance with EPA and State of Massachusetts requirements.

PCB-Containing Caulk

Caulk samples collected and analyzed showed detectable concentrations of PCBs greater than 50 mg/kg in the Donahue Building and are considered to be PCB Bulk Product Waste. Prior to redevelopment activities or other disturbance of these materials, removal and disposal of PCB Bulk Product Waste ≥50 mg/kg in accordance with 40 CFR 761.62(b) must be performed.

3.8.2 OPERATION SOLID AND HAZARDOUS WASTE GENERATION

The Proposed Project is expected to generate solid waste typical of other residential projects. Solid waste generated by the Proposed Project will be approximately 156 tons per year, based on the residential space proposed at a generation rate of four (4) pounds per bedroom per day and amenity space proposed at a generation rate of 5.5 tons per 1,000 square feet per year.

Table 3.6: Solid Waste Generation

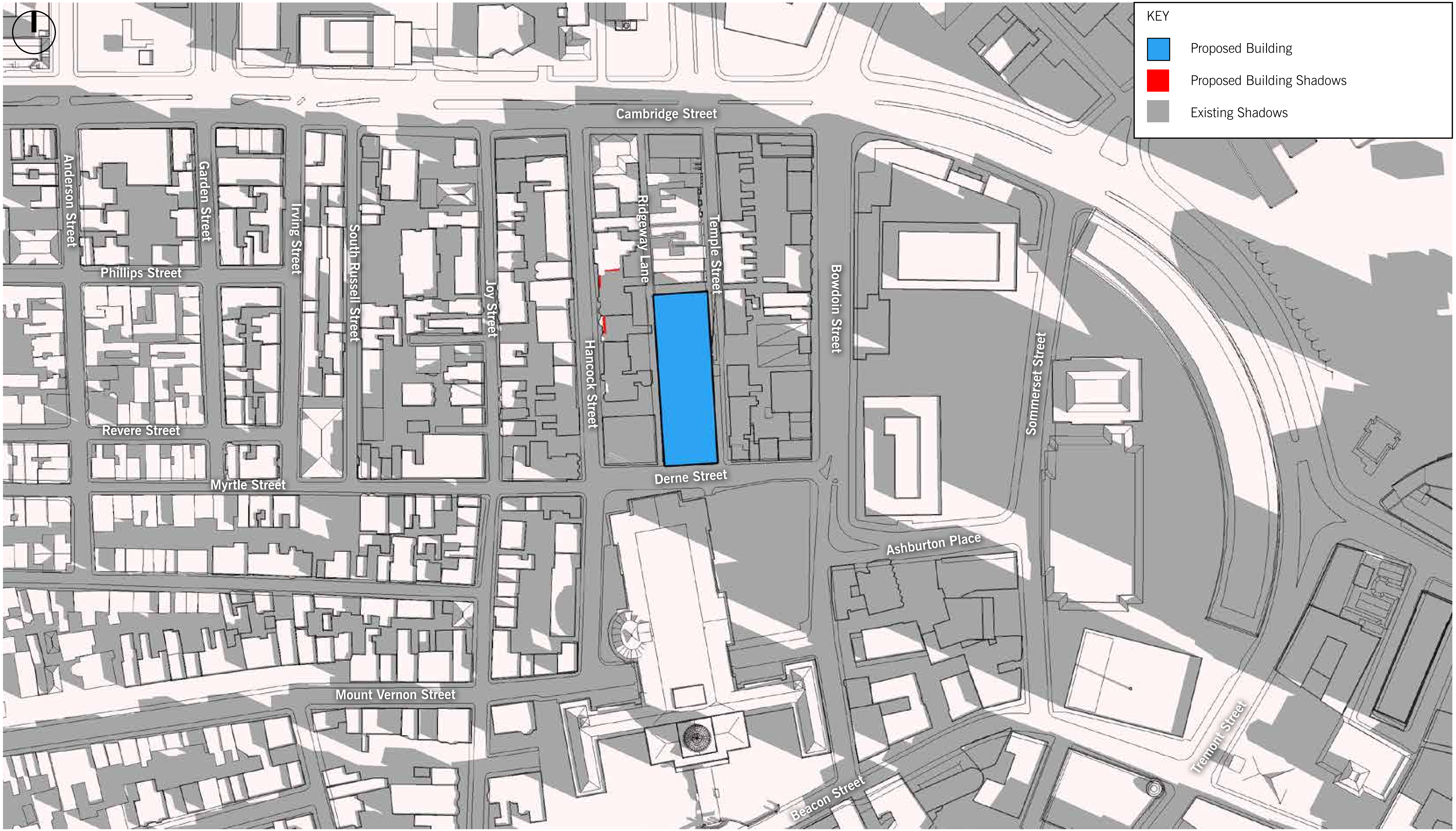
Use	Program	Generation Rate	Solid Waste (tons per year)
Residential	145 Bedrooms	4lbs/bedroom/day	106
Amenity Space	9,038 sf	5.5 tons/1,000 sf/year	50
Total Solid Waste Generation			156

Solid waste typical of residential projects includes wastepaper, cardboard, glass, bottles, and food waste. A portion of the waste will be recycled as described below. The remainder of the waste will be compacted and removed from the basement level trash room by a waste hauler contracted by Building management. With the exception of "household hazardous wastes" typical of residential uses (for example, cleaning fluids and paint), the Proposed Project is not expected to generate hazardous waste.

All trash collection will occur at the Project Site. The Proposed Project will include chutes for the disposal of residents' trash within a trash room on each floor of the Buildings to the main trash room located on the parking garage level. Trash will be removed via the parking garage by a private hauler.

3.8.3 RECYCLING

The Proposed Project will include chutes for the disposal of residents' recyclable materials within the trash room on each floor of the Buildings that is directly connected to the main trash room located on the parking garage level. Recycling will be removed via the parking garage by a private hauler. Recycling and waste reduction will be encouraged for all residents.



Archer | Donahue
Boston, MA

Shadow Study
March 21 @ 9:00AM

March 29, 2016
DEVELOPER : Center Court Partners
ARCHITECT : The Architectural Team

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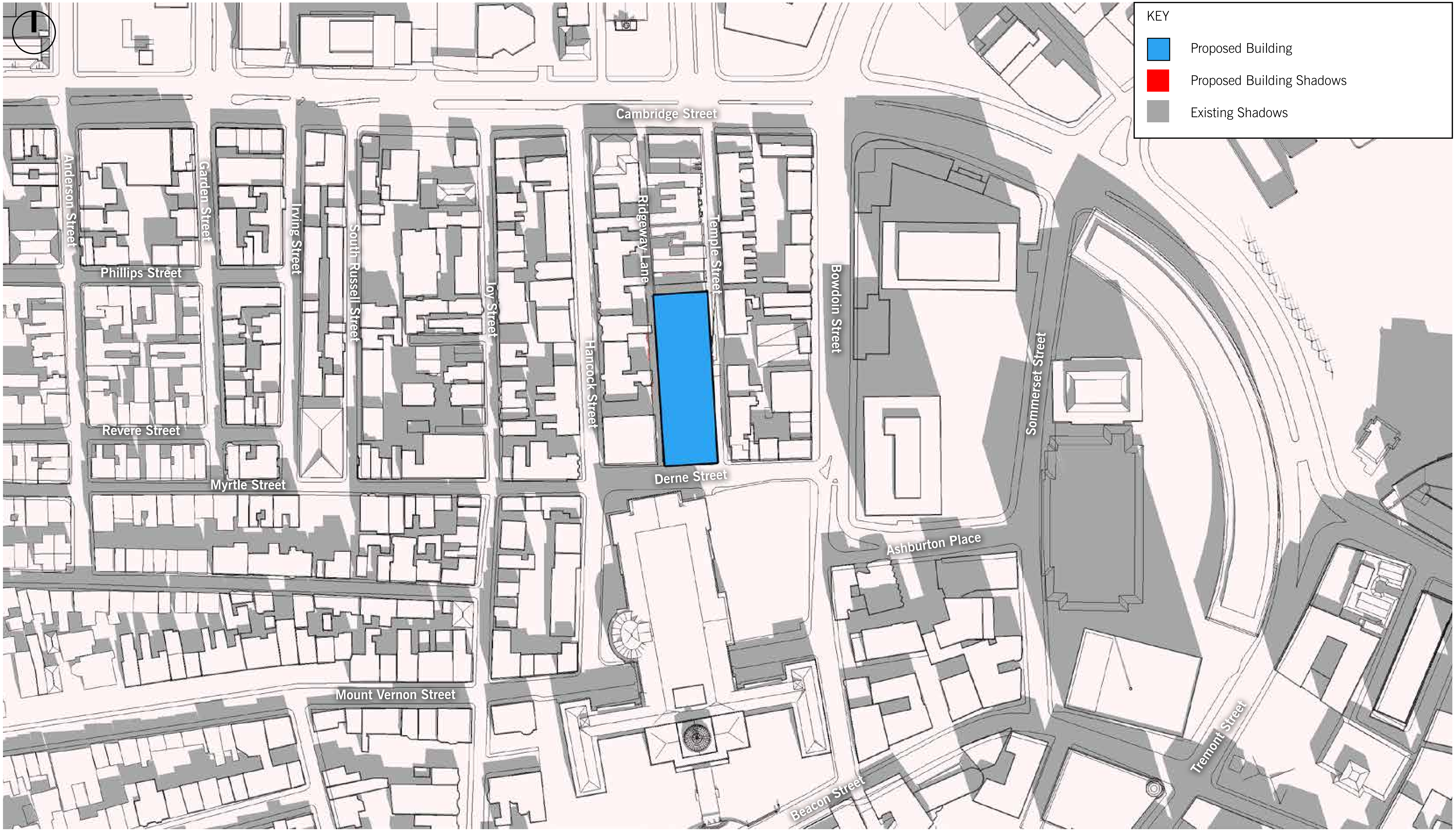

KEY

🟦 Proposed Building

🟥 Proposed Building Shadows

⬛ Existing Shadows

Archer | Donahue

Boston, MA

Shadow Study
March 21 @ 12:00PM

March 29, 2016

DEVELOPER : Center Court Partners

ARCHITECT : The Architectural Team

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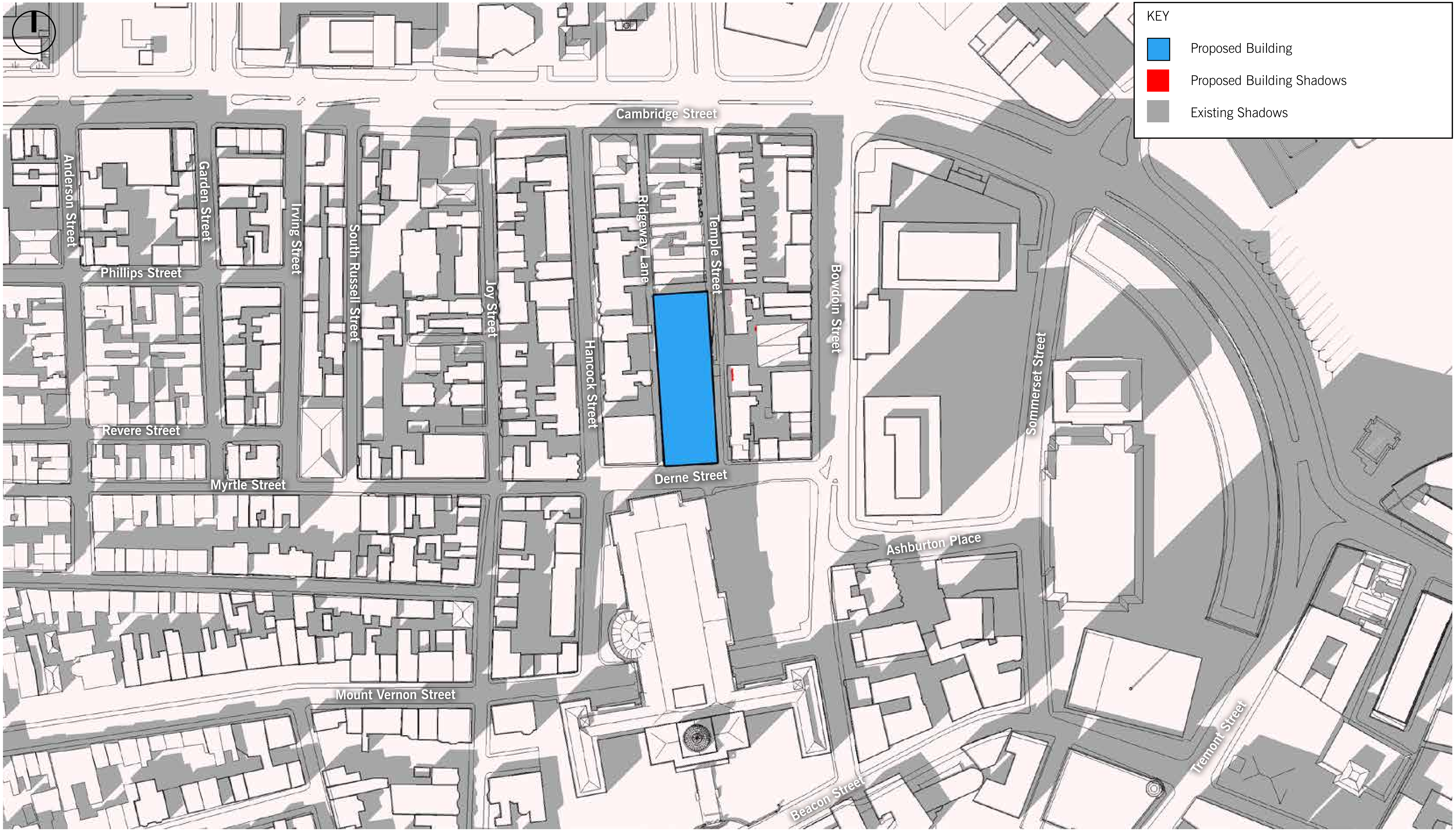

KEY

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🟥 Proposed Building Shadows

▨ Existing Shadows

Archer | Donahue

Boston, MA

Shadow Study
March 21 @ 3:00PM

March 29, 2016

DEVELOPER : Center Court Partners

ARCHITECT : The Architectural Team

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Archer | Donahue

Boston, MA

Shadow Study
March 21 @ 6:00PM

March 29, 2016

DEVELOPER : Center Court Partners

ARCHITECT : The Architectural Team

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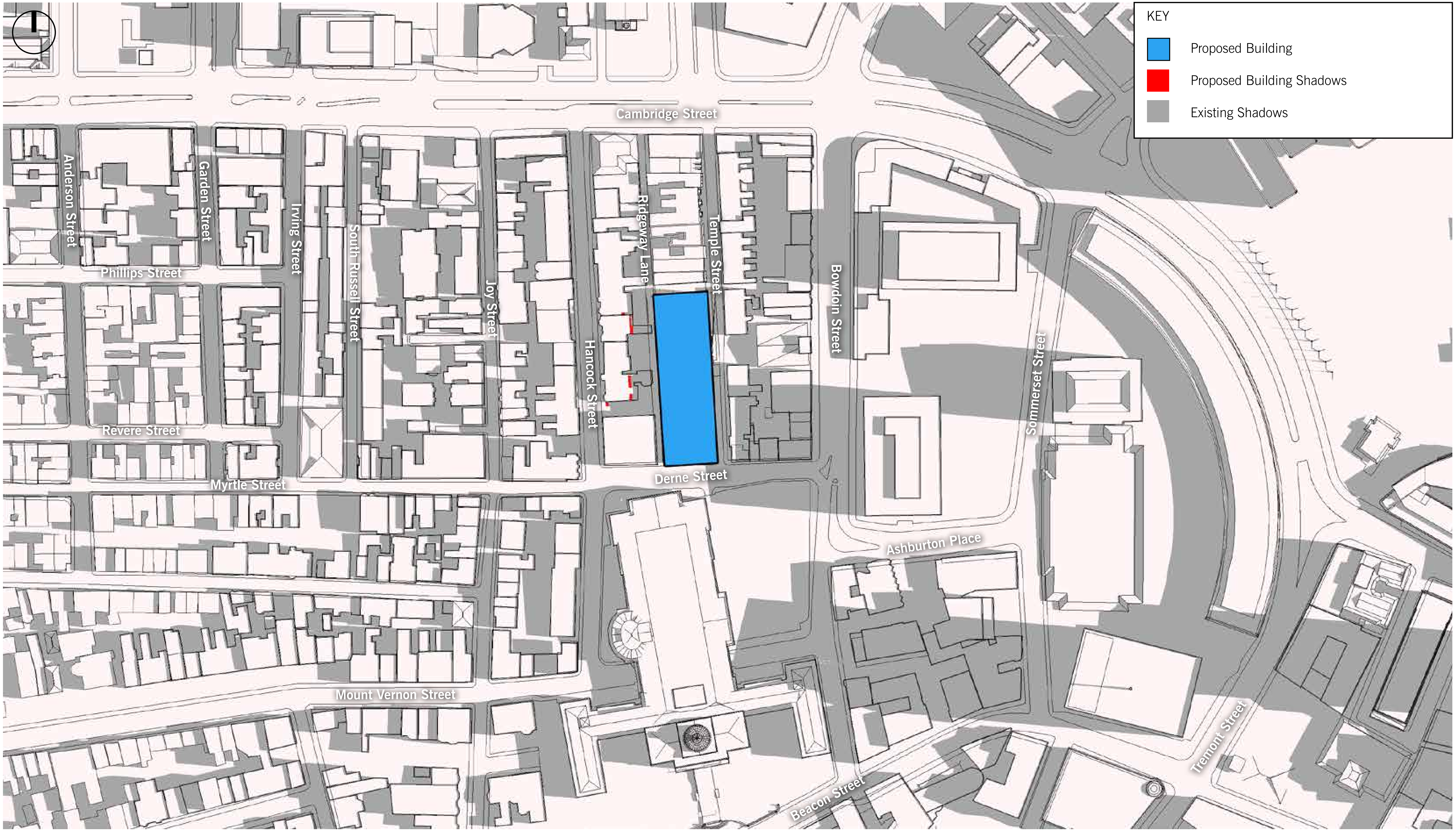

Archer | Donahue

Boston, MA

Shadow Study
June 21 @ 9:00AM

March 29, 2016
DEVELOPER : Center Court Partners
ARCHITECT : The Architectural Team

14188

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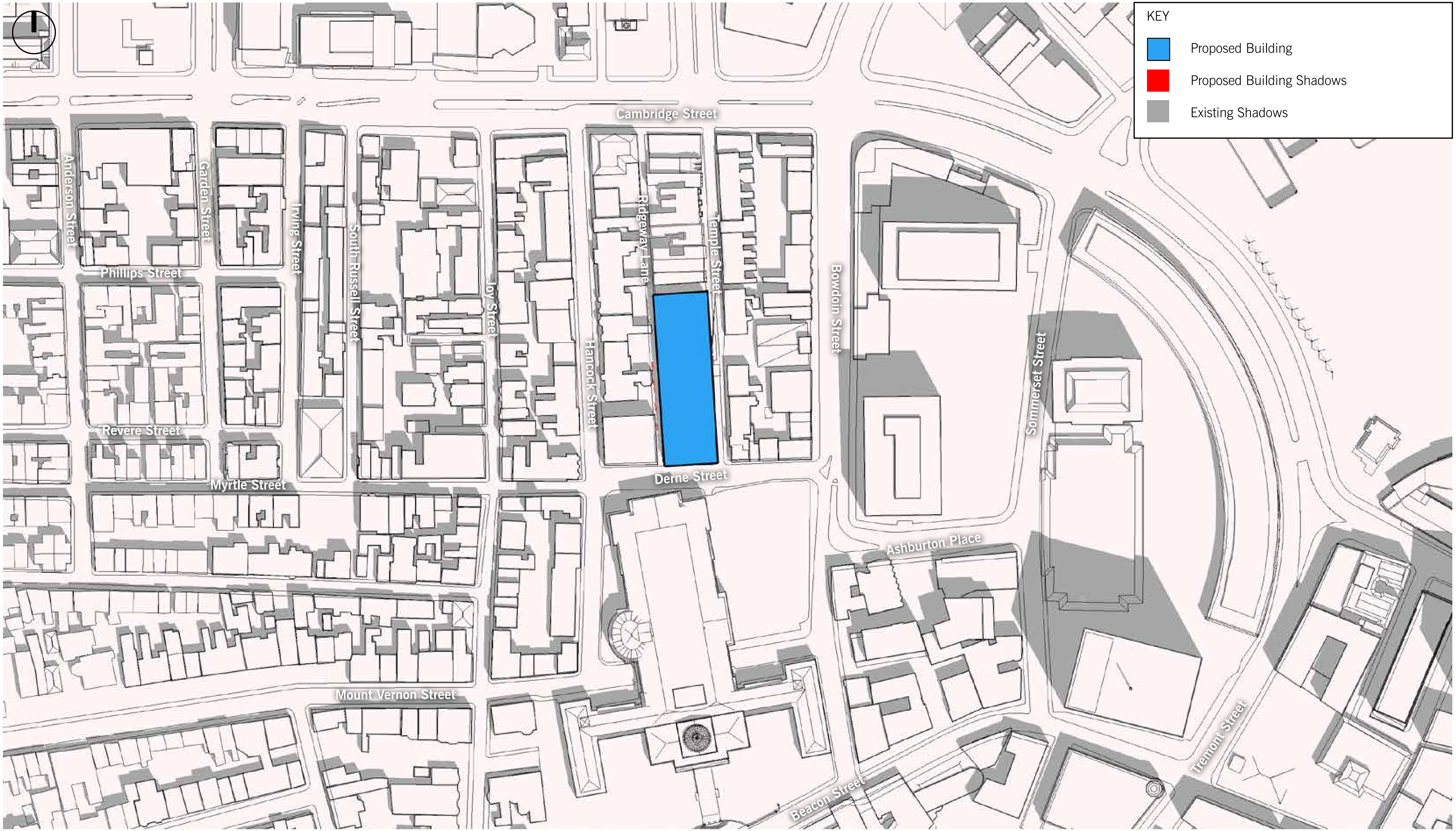

Archer | Donahue

Boston, MA

Shadow Study
June 21 @ 12:00PM

March 29, 2016

DEVELOPER : Center Court Partners

ARCHITECT : The Architectural Team

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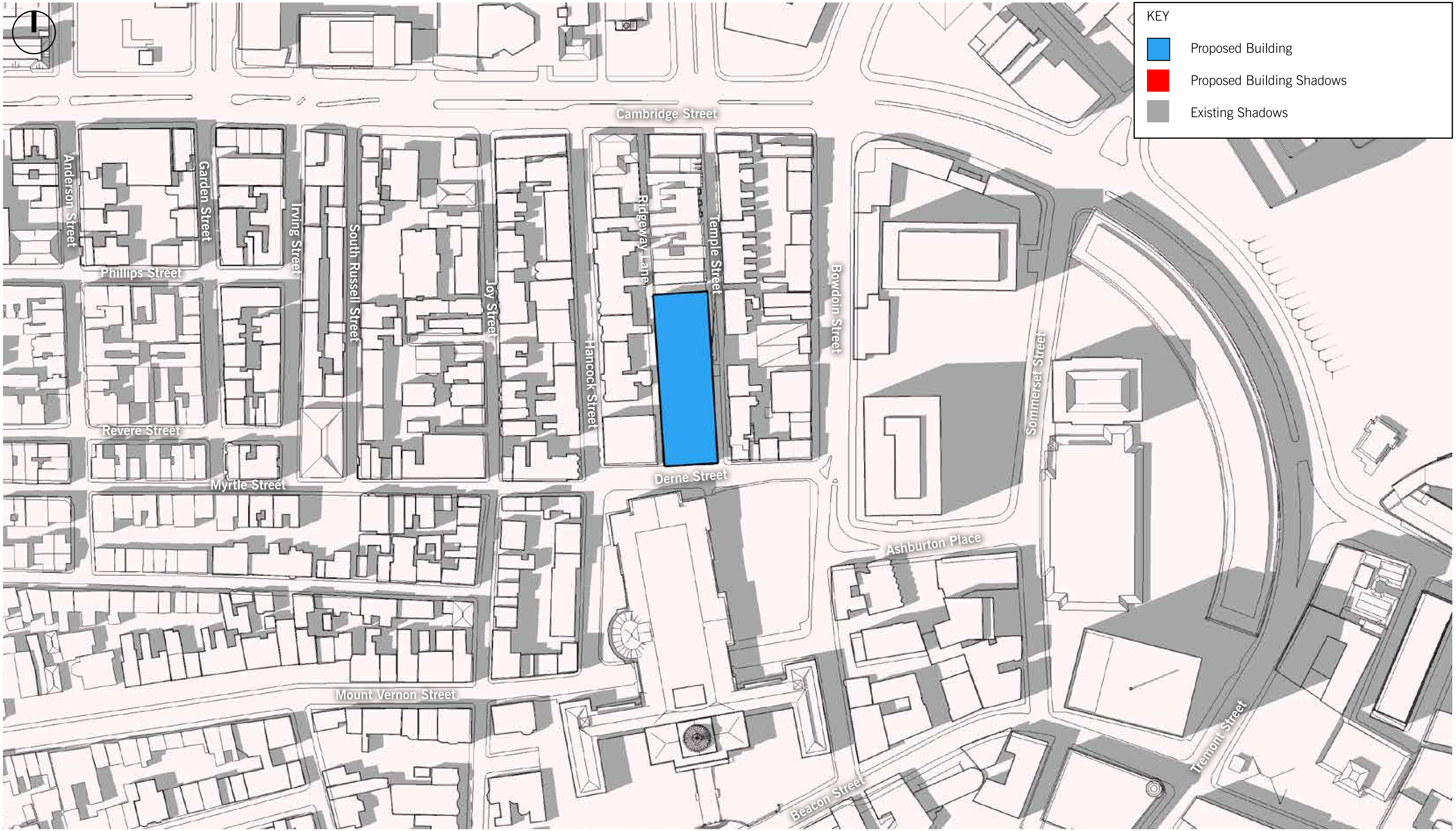

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Boston, MA

Shadow Study
June 21 @ 3:00PM

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ARCHITECT : The Architectural Team

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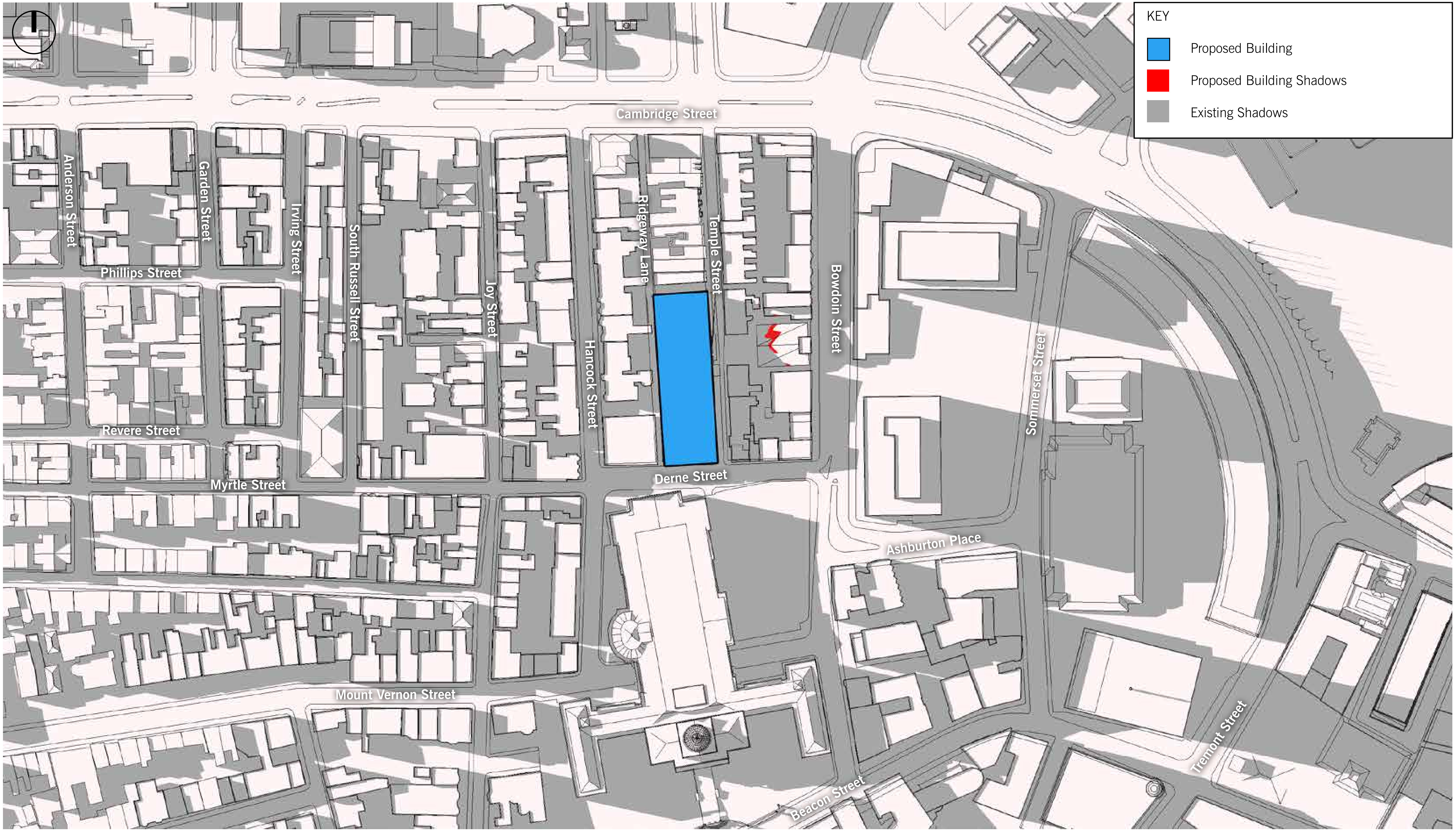

Archer | Donahue

Boston, MA

Shadow Study
June 21 @ 6:00PM

March 29, 2016

DEVELOPER : Center Court Partners

ARCHITECT : The Architectural Team

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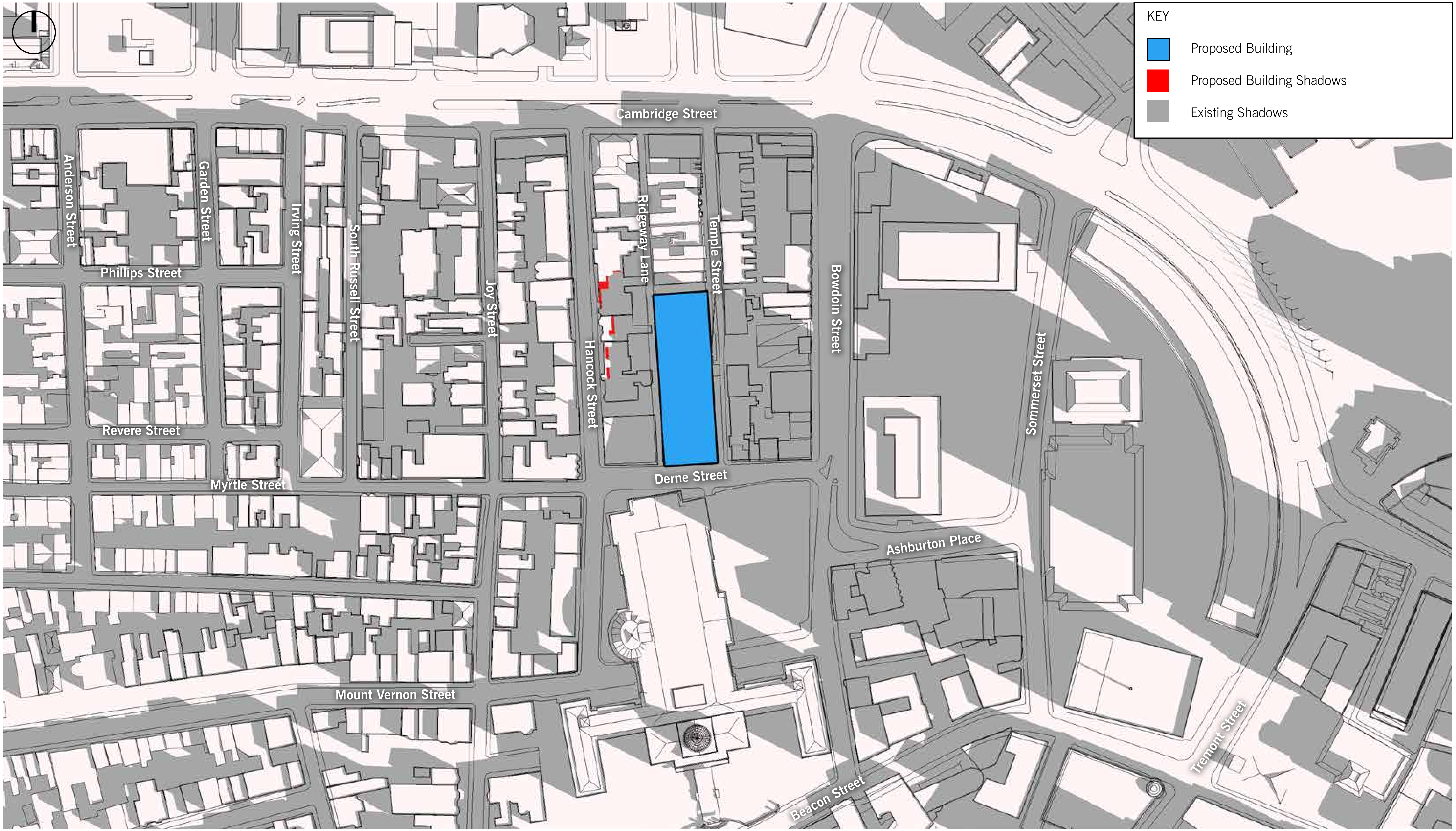

KEY

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🟥 Proposed Building Shadows

⬛ Existing Shadows

Archer | Donahue

Boston, MA

Shadow Study
September 21 @ 9:00AM

March 29, 2016

DEVELOPER : Center Court Partners

ARCHITECT : The Architectural Team

14188

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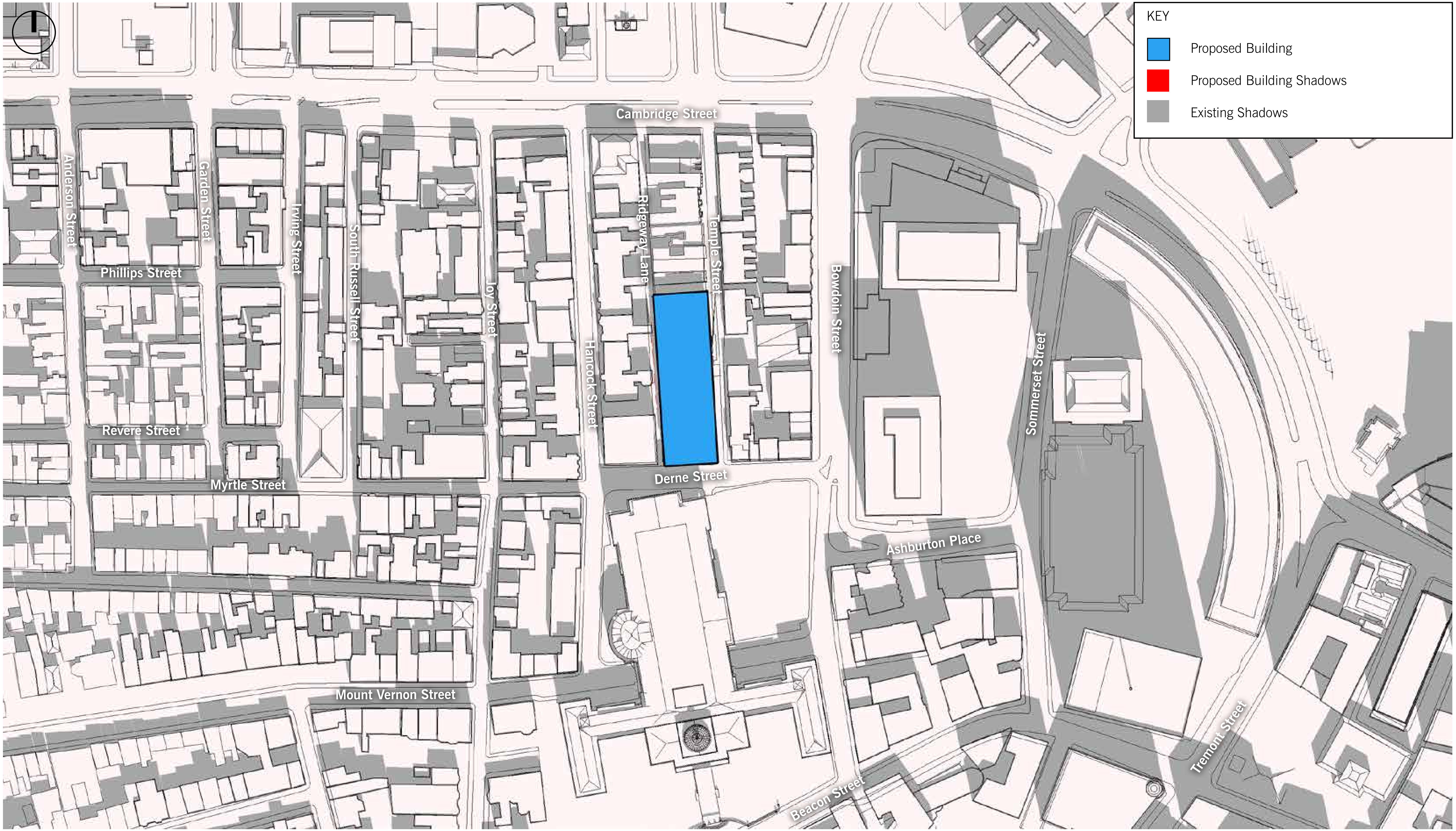

Archer | Donahue

Boston, MA

Shadow Study
September 21 @ 12:00PM

March 29, 2016

DEVELOPER : Center Court Partners

ARCHITECT : The Architectural Team

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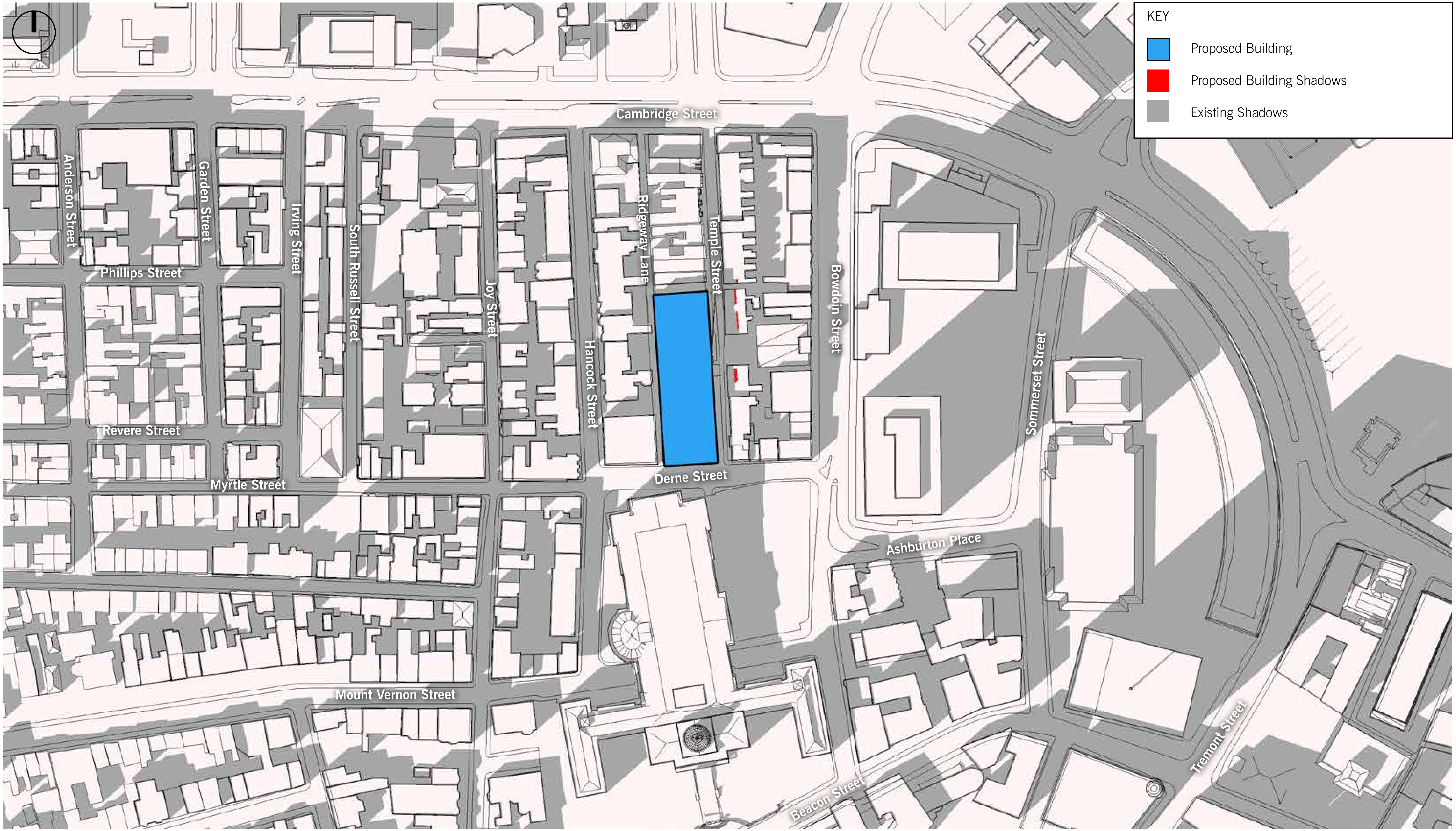

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Archer | Donahue

Boston, MA

Shadow Study
September 21 @ 3:00PM

March 29, 2016

DEVELOPER : Center Court Partners

ARCHITECT : The Architectural Team

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Archer | Donahue

Boston, MA

Shadow Study
September 21 @ 6:00PM

March 29, 2016

DEVELOPER : Center Court Partners

ARCHITECT : The Architectural Team

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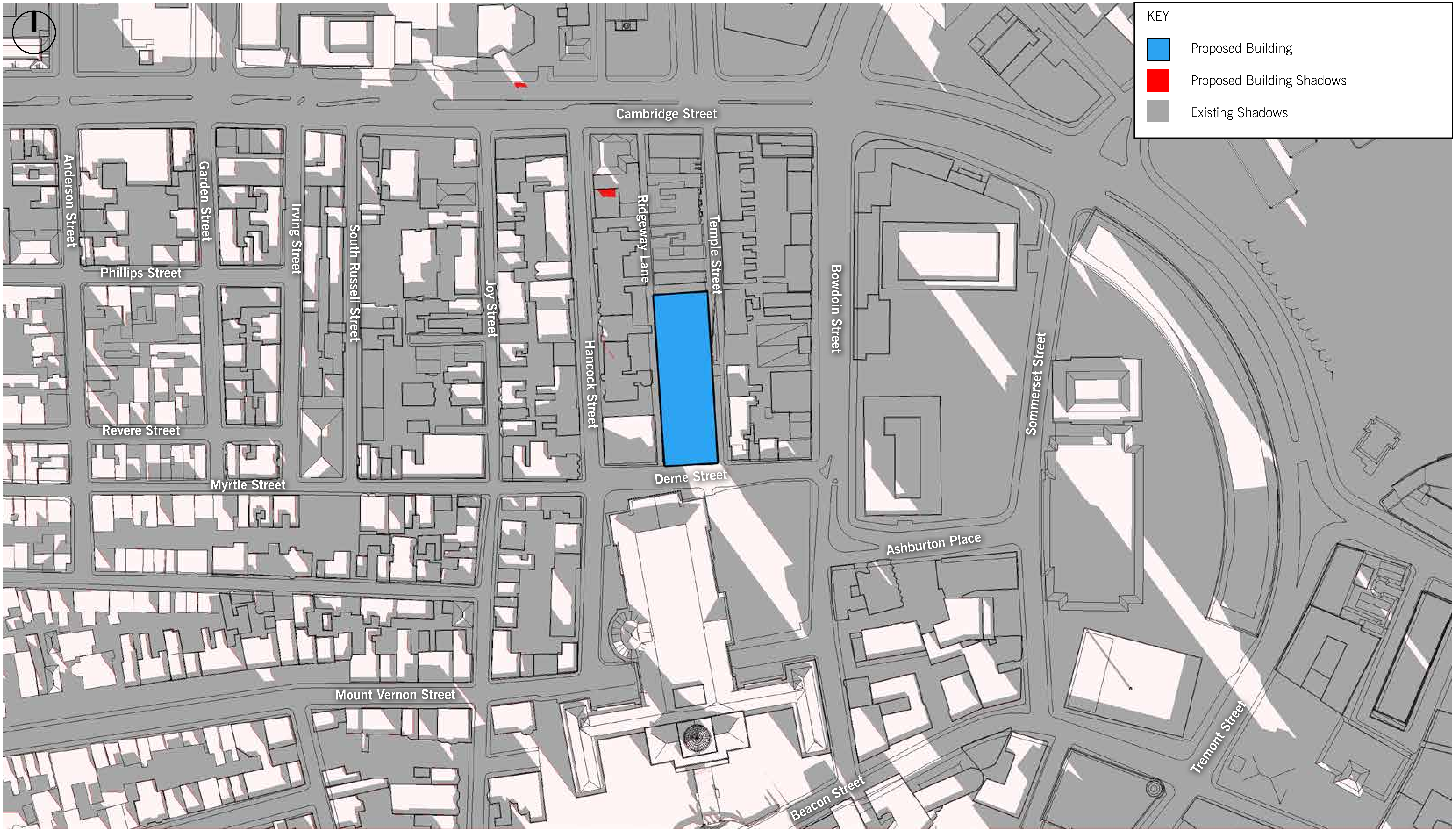

Archer | Donahue
Boston, MA

Shadow Study
December 21 @ 9:00AM

March 29, 2016
DEVELOPER : Center Court Partners
ARCHITECT : The Architectural Team

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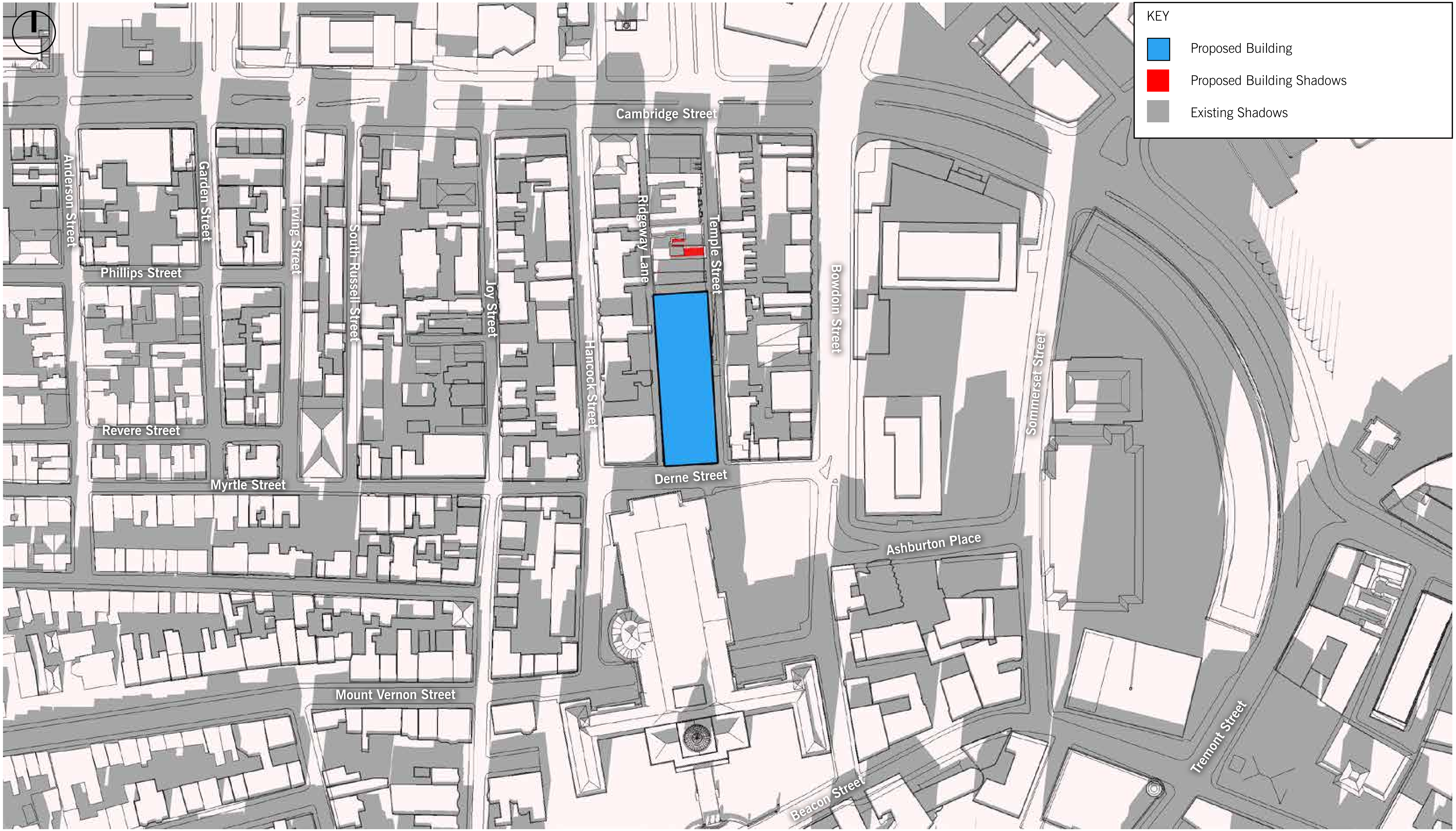

Archer | Donahue

Boston, MA

Shadow Study
December 21 @ 12:00PM

March 29, 2016
DEVELOPER : Center Court Partners
ARCHITECT : The Architectural Team

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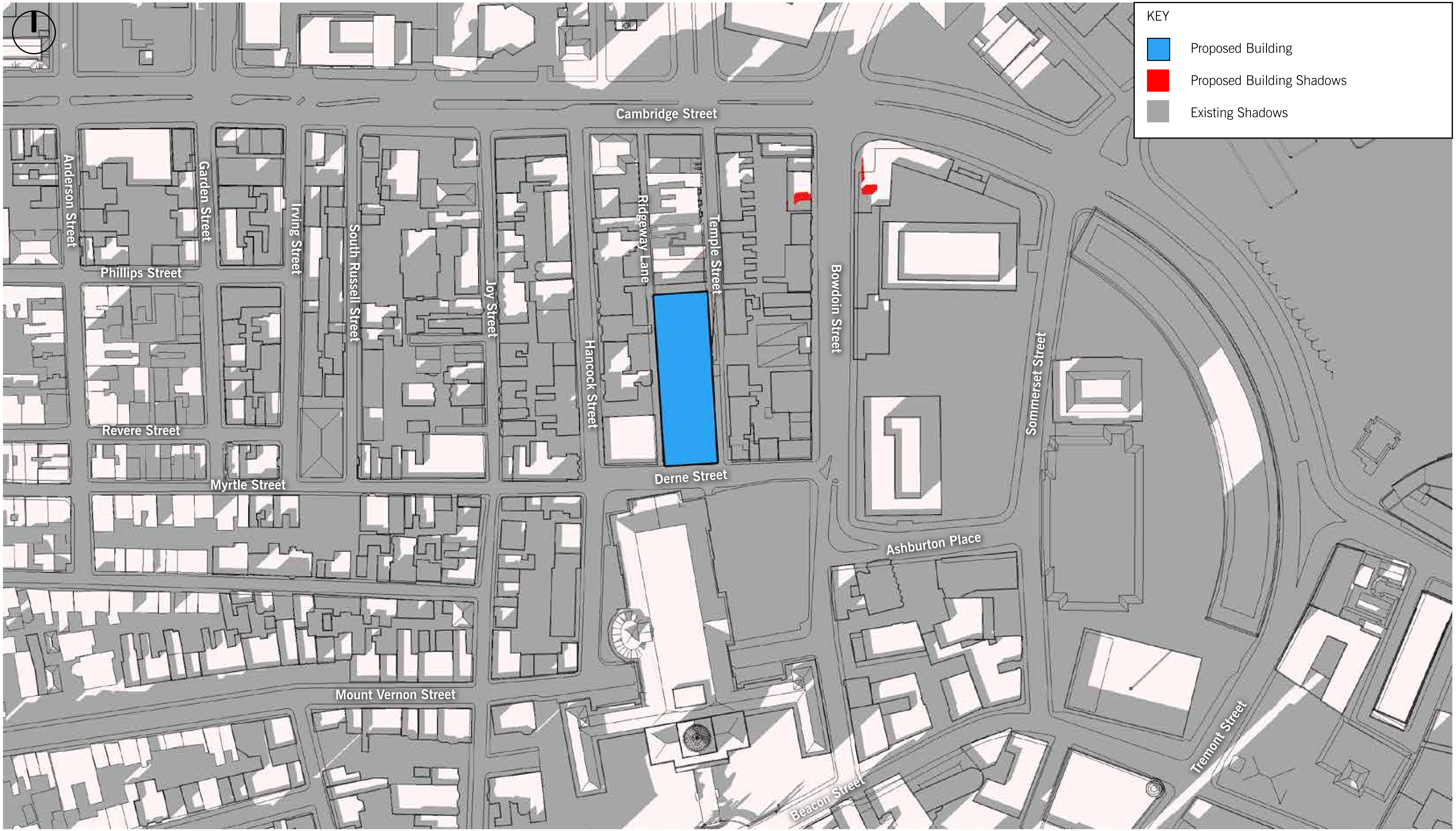

Archer | Donahue

Boston, MA

Shadow Study
December 21 @ 3:00PM

March 29, 2016

DEVELOPER : Center Court Partners

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4 CONSTRUCTION

4.1 PROJECT DESCRIPTION

The Proponent intends to engage Consigli Construction Company (referred to herein as “Consigli” or the “CM”) to redevelop the Building and convert the use from institutional/university to residential. The Proposed Project will require masonry restoration and new window openings around the entire perimeter and 2 steel structure penthouse floors on top of the existing Building. New foundations are not planned, except for isolated elements such as new elevators, including the vehicle elevator to feed the below grade parking garage. Interior framing, drywall, finishes and new MEP systems and elevators will be included.

As the Construction Manager (“CM”), Consigli will administer the Construction Management Plan (“CMP”), and will enforce the provisions of the CMP with all contractors, subcontractors, suppliers and vendors participating in the Proposed Project throughout the construction process. Upon approval, the CMP will become an exhibit to the subcontracts and each subcontractor will be contractually obligated to abide by the approved CMP.

Compliance with the CMP will be monitored through field inspection, meeting minutes, and periodic updates as mandated by the City of Boston and any other authority having jurisdiction. Consigli will have a presence on the site on all days that construction activity is taking place.

4.2 CONSTRUCTION METHODOLOGY

4.2.1 CONSTRUCTION ACTIVITY SCHEDULE

The construction period for the Proposed Project is approximately 18 months. Construction activity will occur between the hours of 7:00 AM and 5:00 PM weekdays. Extended work hours may be required if permitted by the City of Boston.

A narrative description of the construction program is as follows: The construction will begin with the mobilization of a perimeter site fence with scrim around the complete Project Site except the west elevation on Ridgeway Lane. That area will be phased to coincide with exterior demolition and restoration of the façade, with Phase 1 being the southerly portion of the Building and Phase 2 being the northerly portion of the Building. Scaffolding will be placed on Ridgeway Lane one phase at a time. There will be 4 access gates at each corner of the Project Site. The construction phases are listed below as well as the duration of expected execution.

4.2.2 PHASES OF CONSTRUCTION

Major phases of the work are as follows:

• Mobilization	2 weeks
• Abatement	16 weeks
• Demolition	16 weeks
• Limited Foundation and Utilities	12 weeks
• Exterior Façade	44 weeks
• Steel Erection	12 weeks
• Interior Renovations	36 weeks
• Sitework	16 weeks
• Completion	December 2017

4.2.3 CONSTRUCTION STAGING AREAS

The proposed construction logistic plans are designed to isolate construction activity from the surrounding residences while providing safe access for pedestrians and vehicles during normal day to day activities and/or emergencies.

The initial site mobilization will include installation of scrimmed movable chain link fence panels along the Project Site with a jersey barricade pedestrian walkway on Derne Street and a fence enclosure in the curb lane to accommodate Project Site deliveries. This will require utilizing the sidewalk, curb lane, and a partial area in the traffic lane. Scaffolding will be erected for the façade demolition and restoration in 2 phases. The scaffold will be fully enclosed to protect the public.

All construction activities will be kept within areas designated by the approved CMP. There will be no stockpiling of fill, equipment, or materials on public property or public ways unless identified by the CMP and permitted by all authorities having jurisdiction. Truck idling restrictions will be specified in all CM subcontracts. The CM will provide, reconfigure, and maintain all traffic control signage, either directly, or through its subcontractors throughout construction.

4.2.4 SIGNAGE AND PARKING CONTROLS

The sidewalk on the west side of Temple Street may remain closed for the duration of the construction and signs will be posted to direct pedestrians to east side of the street at crosswalks. Signs will also be posted on Derne Street for the lane reconfigurations.

The use of public transportation by all personnel associated with the Proposed Project will be strongly encouraged. There are also public parking lots and garages within walking distance of the Project Site to accommodate worker parking.

4.2.5 PERIMETER PROTECTION/PUBLIC SAFETY

The CM anticipates chain link fence with scrim around the perimeter of Project Site and a jersey barricaded walkway on Derne Street. 4 active construction gates will be provided, allowing access into the Project Site. Boston Police Department details will be coordinated for deliveries. Periodic street closures will be needed for crane access off of Temple Street and Derne Street to accommodate steel erection, roofing activities, and MEP equipment installation on top the Building. The CM anticipates deliveries to the floors by boom truck off of the Derne Street enclosure and the north side staging area enclosure.

The CM or Owner's Project Manager will maintain a log of all contacts including emergencies and complaints, indicating the incident or complaint date, time, and nature of the incident or complaint, and the resolution to the incident or complaint.

The CM will construct an information board for the Proposed Project on Derne Street. The information provided will include:

- General Proposed Project Summary
- Contact Information for the CM
- Emergency Contact Information
- Contact Number for Complaints

4.3 MATERIAL HANDLING

4.3.1 CONSTRUCTION WASTE

Consigli will play an active role in the reprocessing and recycling of construction waste. The disposal contract will include specific requirements that will ensure that construction procedures allow for the necessary segregation, reprocessing, reuse and recycling of materials. For those materials that cannot be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, in accordance with DEP Regulations for Solid Waste Facilities, 310 CMR 10.00. This requirement will be specified in the disposal contract.

4.4 CONSTRUCTION TRAFFIC IMPACTS

4.4.1 WORKER PARKING

The number of workers required during the construction period will vary with an estimated work force ranging from 40 workers during the demolition and abatement phase to as many as 120 workers during the peak of construction. Because the construction workers will be arriving and departing during off peak traffic periods, they are not expected to significantly affect traffic conditions in the project area.

No worker vehicles will be allowed to park on the public streets. Stacking of delivery trucks is not allowed and subcontractors will encourage their employees to use public transportation. The construction team will explore the option of leasing parking spaces for craft labor at an adjacent location. Also, craft labor will be encouraged and permitted to store tools in locked job boxes at the Project Site, as another means to encourage public transit use.

4.4.2 TRUCK ROUTES AND VOLUME

Truck traffic will vary throughout the construction period depending on the various phases of construction. Truck access to and from the project site will primarily utilize Route 93, Route 90, Route 28, Cambridge Street, Bowdoin Street and Derne Street. No truck idling or queuing will be permitted on surrounding City streets at any time.

4.4.3 ROADWAY AND SIDEWALK CLOSURES

The sidewalk on the north side of Derne Street may be closed as needed for the Proposed Project along with the north curb lane. Sections of Ridgeway Lane may be closed at times during construction. The west sidewalk on Temple Street may be closed for the duration of the project. Intermittent Street closures will be needed on Temple and Derne Street to accommodate steel erection and roofing work. Closures will be permitted and approved through the required City agencies.

4.4.4 OFF-SITE STAGING

At no time will the City streets be used for crane placement and/or off-loading of trucks without a permit application and approval.

Any trucks unable to access the loading/queuing area upon arrival shall be directed to off-site areas, not on the public way.

4.5 CONSTRUCTION AIR QUALITY

Construction activities may generate fugitive dust, which could result in localized increase in airborne particulate levels. Fugitive emissions from construction activities will depend upon a multitude of factors such as ambient humidity, recent weather patterns, and phase of construction.

4.5.1 DUST CONTROL

To mitigate dust emissions, the CM and all site related contractors will utilize the following measures:

- Wetting agents will be used regularly to control and suppress dust that may come from exposed excavations, chipping, sawing, blasting or panel removal.
- All trucks for transportation of construction debris will be tarped and their wheels will be cleaned (in the event that trucks ever leave an asphalt surface).
- No storage of construction debris will be allowed on site, other than in dumpsters.
- Construction practices will be monitored to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized and that any emissions of dust are negligible.
- Street cleaning shall be provided as needed during the demolition phase of the project.

4.5.2 ODOR CONTROL

Methods to be used by the CM to control nuisance odor emissions associated with earthwork include the following (the Proposed Project has minimal excavation activities):

- Improving drainage in order to minimize standing water from remaining in excavated areas, and pumping collected groundwater to sump locations.
- Covering stockpiles of excavated material with polyethylene sheeting and securing it with sandbags or an equivalent method to prevent the cover from being displaced by wind.
- Reducing the amount of time that excavated material is exposed to the open atmosphere.
- Maintaining the Project Site free of trash, garbage, and debris.

Methods that shall be used by the CM to control nuisance odors associated with diesel emissions from construction equipment will include:

- Turning off construction equipment not in active use for 5 minutes or more.
- Locating combustion engines away from air intakes, air conditioners, and windows to the greatest extent possible.

4.6 CONSTRUCTION NOISE

Every reasonable effort will be made to minimize the noise impact of construction activities. Mitigation measures to be undertaken will include:

- Heavy and / or noisy equipment will not be started or utilized prior to 7:00 AM.
- Using appropriate mufflers on all equipment and on-going maintenance of intake and exhaust mufflers.
- Muffling enclosures on continuously running equipment, such as air compressors and welding generators.
- Using less noisy specific construction operations and techniques where feasible (e.g., mixing concrete off-site instead of on-site).
- Selecting the quietest of options for all equipment and procedures (e.g., electric instead of diesel-powered equipment, hydraulic instead of pneumatic impact tools).
- Scheduling equipment operations to keep average levels low, synchronize noisiest operations with times of highest ambient levels, and maintain relatively uniform noise levels.
- Turn off idling equipment.
- Locating noisy equipment as far as possible from sensitive areas.
- In the event that there are noise complaints or issues, the CM will provide quantitative noise metering, and will use that information to mitigate neighborhood impact to the greatest extent possible.

4.7 OTHER CONSTRUCTION MITIGATION MEASURES

4.7.1 VIBRATION

Not Applicable

4.7.2 SITE DEWATERING

Project Site dewatering is anticipated to be minimal for this project. If need arises proper authorities will be contacted and procedures followed.

4.7.3 RODENT CONTROL

The City of Boston has declared that the infestation of rodents in the City is a serious problem. In order to control the infestation, the City enforces the requirements established under the Massachusetts State Sanitary Code, Chapter 11; 105 Section 108.6. Policy Number 87-4 established that the extermination of rodents shall be required for the issuance of permits for demolition, excavation, foundation, and basement rehabilitation. The CM will develop a rodent control program for the project prior to its construction start. Boris Pest Control or equivalent will be selected as the manager of the rodent control program.

4.7.4 UTILITIES

Protection of the City of Boston and the MWRA water, sewer, and drain lines will begin before commencement of the site work. Excavation in the area of existing water, sewer, and drain lines will proceed with caution. Hand excavation will take place when excavating in the immediate area of pipe walls is required.

The project specifications will require the contractors to give written notice of pending construction that will affect utilities to all public or private service corporations or officials owning or having charge of such utilities. In addition, the contractors will be required to notify Massachusetts Dig Safe and obtain a dig safe number for each off-site area to be disturbed prior to disturbing the existing ground in any way. The contractor will also be required to locate carefully all subsurface structures before beginning any work or operation that might damage such structure. Finally, the contractor will submit pre-task plans reviewing procedures to assure they will conduct operations so to avoid damaging any structures.

Prior to the start of construction in any phase, the CM will provide the authority with a description of any off-site utility requirements that require street closings. Connections to existing utility services will be coordinated with the appropriate utility provider as well as the City of Boston.

4.7.5 SNOW REMOVAL

Snow from the Project Site will be stockpiled onsite. If the amount of snowfall becomes excessive, snow will be trucked offsite and legally disposed of as necessary.

4.7.6 CLEANING

Sidewalks and the Project Site will be cleaned as needed to minimize accumulation of dirt and debris. Street cleaning will be provided by mechanical street sweeper on a weekly basis during the demolition phase and on an as needed basis during subsequent construction phases. Sweeping limits shall encompass the affected portions of Derne and Temple Streets and Ridgeway Lane. If determined to be necessary, sweeping extents and frequencies will be increased.

4.7.7 MUNICIPAL COORDINATION

Boston Police Department access will be permitted via all sides of the Project Site.

Boston Fire Department access will be permitted via all sides of the Project Site. Existing fire hydrants that are to remain will be flagged and clearly marked for BFD use.

5 SUSTAINABLE DESIGN AND CLIMATE CHANGE PREPAREDNESS

5.1 SUSTAINABLE PRACTICES

The Proposed Project applies a range of policies and initiatives to increase the efficiency of the operations and minimize the Proposed Project's impact on the environment. The Proponent is committed to incorporating sustainable practices into all aspects of the Proposed Project's design. Most notable practices include:

- Locating the project in an area with existing infrastructure and community resources that reduces the Proposed Project's environmental impact and contribution to climate change
- Locating additional parking spaces underground that reduces the heating island effect for the Project Site as well as the local community
- Designing a heating, ventilation, and air conditioning system that reduces energy consumption by at least 20% in order to reduce the contribution to climate change and build a greener economy
- Using building materials that promote sustainable and regenerative material resources cycles

5.2 SUSTAINABLE DESIGN

Sustainable design is an important feature of the redevelopment of the Archer and Donahue buildings. The Proponent understands the environmental and economic impact achieved through environmentally sustainable building design and is dedicated to incorporating LEED's overarching goals into all aspects of the Proposed Project's design and impact.

To comply with Article 37, the Proponent intends to measure the results of their sustainability initiatives using the framework of the Leadership in Energy and Environmental Design (LEED) rating system. The Project Team is currently targeting a total of 51 out of a possible 110 points in LEED v4 Green Building Design and Construction rating system specific to New Construction projects. The final total of points should place the Proposed Project safely in the range of LEED Certified.

This section contains a preliminary LEED Checklist and a description of the Proposed Project's sustainability strategies. The Checklist will be updated regularly as the design develops and engineering assumptions are substantiated.

5.3 NOTABLE SUSTAINABLE DESIGN STRATEGY

The Project Team identified 10 achievable points out of the total 16 points available for the Location and Transportation category. Credits include Sensitive Land Protection (LTc2), Surrounding Density and Diverse Uses (LTc4), and Access to Quality Transportation (LTc5). Additionally, the Project Team identified 2 feasible credits, Bicycle Facilities (LTc6) and Green Vehicles (LTc8), which require further evaluation to determine if the credits are achievable based on the Proposed Project's design. The Project Team will continue to track and evaluate the feasible credits which relate to Bicycle Facilities and Green Vehicles.

The 10 credits within Location and Transportation are being achieved through the following methods:

- Locating the Project Site on existing developed land
- Locating the Proposed Project in a densely populated location as well as locating the Proposed Project within 0.5 mile from existing and publicly available diverse uses
- Locating the Proposed Project within 0.5 mile walking distance of existing subway stations and lines (MBTA Green Line, Blue Line, Red Line)

Sustainable Sites

The Project Team identified 4 achievable points out of the total 10 points available for the Sustainable Sites category. Credits include Site Assessment (SSc1), Heat Island Reduction (SSc5), and Light Pollution Reduction (SSc6).

The 3 credits within Sustainable Sites are being achieved through the following methods:

- Conducting a Phase I Environmental Site Assessment
- Locating parking on the basement floor and using a high reflectance roofing material
- Designing outdoor lighting according to LEED's uplight and light trespass requirements according to the backlight-uplight glare (BUG) method

Water Efficiency

The Project Team identified 3 achievable points out of the total 11 points available for the Water Efficiency category. Credits include Outdoor Water Use Reduction (WEc1), Indoor Water Use Reduction (WEc2), and Water Metering (WEc4). Additionally, the Project Team identified 1 feasible credit, Cooling Tower Water Use (WEc3), which requires further evaluation to determine if the credit is achievable. The Project Team will continue to track and evaluate the feasible credit which relates to Cooling Tower Water Use.

The 3 credits within Water Efficiency are being achieved through the following methods:

- Designing a project that does not require a permanent irrigation system
- Incorporating low flow fixtures, fittings, and appliances that reduce the Proposed Project's total potable water use by 25%
- Installing permanent water meters for indoor plumbing fixtures & fittings and domestic hot water

Energy and Atmosphere

The Project Team identified 13 achievable points out of the total 33 points available for the Energy and Atmosphere category. Credits include Enhanced Commissioning (EAc1), Optimize Energy Performance (EAc2), and Advanced Energy Metering (EAc3). Additionally, the Project Team identified 2 feasible credits, Enhanced Refrigerant Management (EAc6) and Green Power and Carbon Offsets (EAc7), which require further evaluation to determine if the credits are achievable. The Project Team will continue to track and evaluate the feasible credits which relate to Enhanced Refrigerant Management and Green Power and Carbon Offsets.

The 13 credits within Energy and Atmosphere are being achieved through the following methods:

- Implementing and completing the commissioning process activities in accordance with ASHRAE Guideline 0-2005 and ASHRAE Guideline 1.1-2007 for HVAC&R systems as they relate to energy, water, indoor environmental quality, and durability
- Incorporating energy efficiency measures into the design, such as load reduction and HVAC-related strategies, in order to reduce the Proposed Project's total energy consumption by 20%. This is also a requirement of the Stretch Energy Code in Massachusetts for new residential buildings over 100,000 SF
- Installing advanced energy metering for all whole building energy sources used by the Building and any individual energy end uses that represent 10% or more of the total annual consumption of the Building

Materials and Resources

The Project Team identified 5 achievable points out of the total 13 points available for the Materials and Resources category. Credits include Building Product Disclosure and Optimization - Environmental Product (MRc2), Building Product Disclosure and Optimization - Sourcing of Raw Materials (MRc3), Building Product Disclosure and Optimization - Material Ingredients (MRC4), and Construction and Demolition Waste Management (MRc5).

The 5 credits within Materials and Resources are being achieved through the following methods:

- Using at least twenty (20) different permanently installed products sourced from at least five (5) different manufacturers that meet one of USGBC's approved program for environmental product declaration frameworks
- Using at least twenty (20) different permanently installed products sourced from at least five (5) different manufacturers that have publicly released raw material source and extraction reporting
- Using at least twenty (20) different permanently installed produced sourced from at least five (5) different manufacturers that use one of USGBC's approved chemical inventory programs
- Diverting and documenting at least 50% of the total construction and demolition material

Indoor Environmental Quality

The Project Team identified 10 achievable points out of the total 16 points available for the Indoor Environmental Quality category. Credits include Enhanced Indoor Air Quality Strategies (EQc1), Low-Emitting Materials (EQc2), Construction Indoor Air Quality Management Plan (EQc3), Thermal Comfort (EQc5), Interior Lighting (EQc6), and Acoustic Performance (EQc9). Additionally, the Project Team identified 2 feasible credits, Enhanced Indoor Air Quality Strategies (EQc1) and Low-Emitting Materials (EQc2 which require further evaluation to determine if the credits are achievable based on the development of the project design. The Project Team will continue to track and evaluate the feasible credits which relate to Enhanced Indoor Air Quality Strategies and Low-Emitting Materials.

The 10 credits within Indoor Environmental Quality are being achieved through the following methods:

- Complying with entryway system, interior cross-contamination prevention, and filtration requirements for mechanically ventilated spaces
- Incorporating materials into the Proposed Project design that achieve the threshold level of compliance with emissions and content standards for interior paints and coatings applied on site, interior adhesives and sealants applied on site, flooring, composite wood, and insulation for ceilings, walls, thermal, and acoustic
- Developing and implementing an indoor air quality management plan for the construction and pre-occupancy phases of the Building
- Designing heating, ventilation, and air-conditioning systems and the building envelope that meets the ASHRAE Standard 55-2010 requirements for Thermal Comfort Conditions for Human Occupancy
- Providing individual lighting controls for at least 90% of individual occupant spaces with at least three lighting levels (on, midlevel, off)
- Providing manual or automatic glare-control devices for regularly occupied spaces and demonstrating that at least 55% of regularly occupied spaces receive natural lighting
- Achieving background noise levels from heating, ventilation, and air-conditioning systems per 2011 ASHRAE Handbook, HVAC Applications, Chapter 48, Table 1; AHRI Standard 885-2008, Table 15; or local equivalent

Innovation

The Project Team identified 4 achievable points out of the total 6 points available for Innovation category. Credits include Pilot Credit Green Building Education, Pilot Credit O&M Starter Kit – Site Management Policy, Pilot Credit O&M Starter Kit – Green Cleaning Policy and IPM Plan, and LEED Accredited Professional.

The 4 credits within Innovation are being achieved through the following methods:

- Installing a comprehensive signage program into the Building's space to educate the occupants and visitors about the benefits of green building and developing a manual or case study highlighting the Building's sustainable design strategies
- Creating a Site Management Policy for the project
- Creating a Green Cleaning Policy and IPM Plan for the Proposed Project

- Utilizing a LEED Accredited Professional on the Project Team

Regional Priority

The Project Team identified 2 achievable points out of the total 4 points available for Regional Priority category. Credits include Regional Priority: Optimize Energy Performance and Regional Priority: Indoor Water Use Reduction

The 2 credits within Regional Priority are being achieved through the following methods:

- Incorporating energy efficiency measures into the design, such as load reduction and HVAC-related strategies, in order to reduce the project's total energy consumption by 20%. This is also a requirement of the Stretch Energy Code in Massachusetts
- Incorporating low flow fixtures, fittings, and appliances that reduce the Proposed Project's total potable water use by 25%

5.4 CLIMATE CHANGE PREPAREDNESS

5.4.1 INTRODUCTION

The Project Team examined two important factors related to climate change in relation to the Proposed Project design: drought conditions and an increased amount of high-heat days. Based on the Proposed Project's location, the Project Site is not considered susceptible to flooding now or during the full expected life of the Building. Based on the Suffolk County Flood Insurance Rate Map (FIRM) Number 25025C0077G, dated September 25, 2009 and the Revised Map Number 25025C0077J, dated March 16, 2016, the Project Site is not located in a special flood hazard area, floodway area, or other flood area. The Project Site does not contain any wetland resource area regulated by the Massachusetts Wetland Protection Act. Additionally, it is unlikely for the Project Site to experience extreme flooding due to large rain storms.

However, if the Project Site conditions change, the Proposed Project will be designed to adapt to extreme weather events. The Proposed Project will also feature a backup generator that will allow the Building to remain operable without utility power. A copy of the preliminary Climate Change Checklist is included in **Appendix E**.

5.4.2 DROUGHT CONDITIONS

As global temperatures increase due to climate change and relating factors, the occurrence of droughts is predicted to significantly increase by the end of the century. The Proponent intends to minimize the Proposed Project's susceptibility to drought conditions by installing plumbing fixtures that reduce indoor potable water use by at least 25% as well as reducing outdoor water use by requiring no irrigation systems.

5.4.3 HIGH HEAT DAYS

In 2007, the Intergovernmental Panel on Climate Change (IPCC) predicted that Massachusetts would experience an increase in number of days with temperatures more than 90°F, from the current five-to-twenty days annually, to thirty-to-sixty days annually[1]. In order to reduce the impact of high temperature events, the Proposed Project's design employs three strategies: installing a high performance building envelope, designing an underground parking lot, and using a high reflectance roofing material. Such methods are employed to minimize the heat island effect for residents and the local community.

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[1] IPCC (Intergovernmental Panel on Climate Change), 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Avery, M. Tignor, and H. L. Miller (eds.)]. Cambridge University Press, Cambridge, UK, and New York, 996 pp.

6 URBAN DESIGN

6.1 PROJECT SITE DESCRIPTION

Located at the corner of Temple Street and Derne Street, the Proposed Project includes two buildings, the Archer Building and the Donahue Building. The Project Site lies between Derne Street to the south, Cambridge Street to the north, and occupies the full block between Temple Street to the east and Ridgeway Lane to the west.

The Proposed Project is located immediately adjacent to and north of the Massachusetts State House and Ashburton Park in the heart of Boston's historic Beacon Hill Neighborhood. Directly across from the Proposed Project's main entrance / lobby is the Temple Street Park. Just a few blocks to the south is the Public Garden and Boston Common and a few blocks to the east is Boston City Hall and its associated City Hall Plaza. Within walking distance to the West is the Charles River and the Esplanade.

Beacon Hill is centrally located between the Theater District, the Financial District, and the Back Bay. The transit oriented Project Site is served by several MBTA stations: Bowdoin station offers connection to the Blue Line, State Street provides access to the Blue and Orange Lines, Park Street provides access to the Green Line and Charles / MGH or Downtown Crossing connects to the Red Line. A short walk to North Station provides easy access to Commuter Rail lines, the Green Line, Orange Line as well as Amtrak service. Nearby Interstates 90 and 93 allow convenient vehicular access to the surrounding greater Boston area and beyond.

6.2 URBAN DESIGN CONCEPT

The Proposed Project proposes to eliminate the existing institutional/university uses within the Temple Street / Ridgeway Lane neighborhood and provide for-sale residential units. The proposed treatment of The Archer Building and the Donahue Building responds to each of their individual character.

The exterior of the Archer Building, built in 1920, will largely remain intact with sensitive window adjustments and alignments to better correspond to the new residential uses. The Donahue Building's 1960s envelope will be re-skinned with a more suitable façade that reduces the scale and massing of the Building to be more in keeping with the residential scale of the neighborhood. Historic detailing, vernacular and materials will be applied to the exterior elevations of both Buildings in order to respond to and respect the Beacon Hill architectural language, requirements and neighbors.

A two level penthouse addition is proposed to replace the existing mechanical and utilitarian roof structures. Its massing will be set back from the existing roof edge to negate its visual impact from the adjacent street views and minimize any new shadows that may be cast on the surrounding neighborhood. **Refer to Section 3.2 - Shadow**.

6.3 BOSTON LANDMARKS COMMISSION / BEACON HILL ARCHITECTURAL COMMISSION

Due to the Proposed Projects' location within Beacon Hill, it will fall under the purview of the Beacon Hill Architectural Commission. The Project Team will present the proposed design to the said Commission and will seek its comments and approval.

6.4 URBAN DESIGN DETAILS

6.4.1 PUBLIC REALM

The pedestrian experience of Beacon Hill is like no other neighborhood in the City of Boston. The steeply sloped narrow streets put more importance on the interaction of the buildings and the surrounding sidewalks than other typical locations. The constricted streets make the relationship between pedestrians and vehicles even more significant.

The Proposed Project will maintain the character of the existing residential streets and sidewalks traditionally punctuated by building entrances, recesses and projected bays. To the extent possible, the Proposed Project will maintain existing entry and egress points along the perimeter of the Archer Building to serve the new development. The large recessed main entrance to the Donahue Building will be re-purposed as the entrance to the new lobby. The entrance recess will be shifted to be centered directly on the Temple Street Park. The recess provides some relief to the pedestrian by its added width to the sidewalk and also serves as a focal point that aligns with the Temple Street Park immediately across the street. The Proposed Project will also create additional breaks along the façade for direct unit entries along Temple Street.

Vehicular circulation will be carefully managed on the Project Site by a valet parking operation. Access to the basement garage will occur off Temple Street via a vehicular elevator in the north elevation of the Donahue Building. The parking attendants will have designated drop-off and pick up areas on the Project Site for residents to leave and retrieve their vehicles on the property. Trash pick-up and loading from the basement will take place from the garage access drive in order to minimize interruption of normal pedestrian patterns. Trash will be moved from the basement via the vehicular elevator.

6.4.2 MAINTAINING HISTORIC INTEGRITY

The reuse of the Archer Building will be specifically designed to maintain as much of its if historic character as possible. Much of the existing masonry façade will be re-used and maintained. Windows which have been substituted over the years with more modern units will be replaced with more historically accurate units. Some limited window alignments will be adjusted and new openings added to better function with the proposed residential use. Significant building entrances and egress points will be maintained and reused to the extent possible. Exterior masonry will be repaired and restored as needed in accordance with the Historic Beacon Hill District Architectural Guidelines.

6.4.3 DONAHUE BUILDING FAÇADE

The Donahue Building was built in the 1960s and has an institutional modern exterior façade with flat masonry fields interrupted by horizontal ribbon windows. Unlike the Archer Building, the design approach of the Donahue skin is not one of preservation but rather the proposed treatment is to remove the entire exterior envelope back to the structure and apply a new façade.

The new façade breaks the buildings mass into two smaller portions more in keeping with the proportions of the traditional row house forms found on Beacon Hill. New window openings are arranged and aligned more appropriate to residential typologies. The use of projected bays along Temple Street further break down the massing and provide depth to an otherwise flat façade. Two vertical “hyphens” separate the Donahue Building from Archer and separate the two new masses from one another. These breaks in the masonry are intended to be of a contrasting material to further emphasize the reduction of scale. The arcaded portion of the façade is centered on the Temple Street park to enhance the sense of place of this existing unique urban space (refer to Figures included in **Section 1**).

6.4.4 GROUND FLOOR

The Proposed Project has been designed such that both existing buildings will function as one development. Ground floor uses will include a mix of uses appropriate for a residential condominium development of this scale and will vary along the perimeter in response to the sloping exterior grades and the character of each facade's environment.

In the Archer Building, the ground floor will include a limited number of residential units with the remainder of space dedicated to residential amenities and circulation. Existing exterior doors will be reused to the extent possible. The original Derne Street entrance will be re-purposed as direct access to a residential unit. The existing theater entrances along Temple Street will be reused as access to a residential unit or will be converted into exterior glazed fenestration into the unit. The existing egress stair door on Temple Street will also be re-used as a new means of egress and to provide access to a parcel drop off room and resident bike storage room.

The Donahue building will provide the main entrance into the Proposed Project, the existing recessed entry will be partly infilled to center the entrance on the Temple Street Park and reused. The entrance opens to a generous lobby with adjacent support spaces including concierge, mail, package storage and miscellaneous management functions. The balance of the Donahue Building Ground floor will be devoted to a limited number of residential units, some of which with direct exterior access. A second accessible entrance will be located on the north facade to provide access to the valet vehicle loading area.

6.4.5 MAIN ENTRANCE

As discussed in Section 6.4.4, the two buildings will function as one development with a single main entrance and common lobby. The entrance is located in the same general location as the existing recessed Donahue Building entrance, but is shifted one structural bay to the north in order to better align with the Temple Street Park directly opposite the entrance.

6.4.6 PENTHOUSE FLOORS

The Proposed Project proposes to remove the existing assortment of mechanical penthouses, stairs, head houses, green house, HVAC equipment, and miscellaneous other roof structures, and replace it with two penthouse floors. This provides the opportunity to reorganize the roof structures and screen the mechanical equipment. Generous setbacks from the existing roof edge will ensure that the new penthouse floors are not visible from the adjacent streets and will minimize any new shadows, which is demonstrated in Section 3.2.

The residential units on the penthouse floors will contain large outdoor decks which require further setbacks of the penthouse structure, thereby reducing the impact on the surrounding neighborhood. Mechanical equipment will be centrally located and wrapped on three sides by residential units. The remaining side will be screened from view, but will also provide space for required airflow. This arrangement not only limits any view of mechanical equipment but also serves to reduce any noise that may be generated.

6.4.7 URBAN CONTEXT

Best known for its rich architecture, narrow, steeply sloped streets, gas lights and brick sidewalks, Beacon Hill is perhaps the most desirable residential neighborhood in all of Boston. Its architecture is varied and represents many different styles designed by several noted architects dating back to the early 1700s. Its location makes it a convenient walk to some of the most desired urban amenities and is served by several means of public transportation.

The Proposed Project transforms two institutional/university buildings into a single residential development that will include 75 for-sale condominium units. This conversion to family oriented residential units is in keeping with the Beacon Hill Civic Association's mission to protect and preserve Beacon Hill's historic residential character. The Proposed Project's design breaks down the mass of the existing Donahue building, introduces new residential entrances at street level and keeps vehicular traffic isolated from pedestrian flow.

7 HISTORIC AND ARCHEOLOGICAL RESOURCES

7.1 INTRODUCTION

This Section describes the historic and archaeological resources in the area of the Project Site and provides an assessment of the Proposed Project's potential impacts.

7.2 PROJECT SITE

The Project Site is located within Beacon Hill Historic District. The Building is bounded by Derne Street to the south, Temple Street to the east and Ridgeway Lane to the west. With an address of 33-61 Temple Street, the Project Site includes two connected buildings totaling approximately 171,950 gross square feet and an adjacent paved area. The first building, located at 61 Temple Street and known as the Gleason L. & Hiram J. Archer Building, was originally constructed in 1920 by Suffolk University (the "University"). The second building, located 33-51 Temple Street and known as the Frank J. Donahue Building, was completed in 1966 by the University. In addition to the Archer and the Donahue, the Project Site includes a paved area immediately to the north of Building that is currently occupied by a dumpster, bicycle storage and is used for loading and unloading space. The Archer Building, constructed of red brick with granite and cast stone trim and one of the largest expressions of the Classical and Renaissance Revival styles on Beacon Hill, will be restored and will maintain its architectural character. On the other hand, the Proponent will transform the large, institutional modern Donahue building into a scaled-down residential structure with a detailed façade and traditional windows. As stated above, in an effort to preserve the late nineteenth and early twentieth century architectural styles seen throughout the Beacon Hill neighborhood, the City of Boston created the Historic Beacon Hill District in 1955. Shortly thereafter, in 1962, the Beacon Hill Historic District was designated a National Historic Landmark as one of the nation's finest and least-altered early urban environments. Still almost entirely residential in character, the vast majority of the buildings date to the nineteenth century and are constructed of red brick with stone trim, and this style dominates the immediate areas surrounding the Building

The Proposed Project will improve the urban design characteristics and aesthetic character of the neighborhood by reducing the scale and massing of the existing Building by introducing a detailed reskinning of the Donahue Building with a more suitable façade and traditional windows. Furthermore, the proposed additional entrances, recesses, and projected bays will reintroduce the character of the residential buildings otherwise seen in the Beacon Hill neighborhood.

7.3 HISTORIC RESOURCES WITHIN THE VICINITY OF THE PROJECT SITE

The Project Site is located in the vicinity of several historic resources included in the Inventory of Historic and Archaeological Assets of the Commonwealth and listed in the State and National Registers of Historic Places. **Table 7-1** identifies these resources.

Table 7-1: Historic Resources in the Vicinity of the Project Site

Historic Resource	Address	Designation*
African Meeting House	8 Smith Court	NHL, 1974; NHP, 1971
Beacon Hill Historic District		NHL, 1962; LHD, 1955; NHP, 1966
Boston City Hall	1 City Hall Square	NHL, 1980

Boston Common	Bounded by: Park, Beacon, Charles, Boylston, Tremont	NHL, 1987; NHP, 1972; LL, 1977
Charles Sumner House	20 and 22 Hancock Street	NHL, 1973; NHP, 1973
Chester Harding House	16 Beacon Street	NHL, 1965; NHP, 1966
David Sears House	42 Beacon Street	NHL, 1970; NHP, 1970
141 Cambridge Street First Harrison Gray Otis House	141 Cambridge Street	NHL, 1970
Francis Parkman House	50 to 60 Chestnut Street	NHL, 1962; NHP, 1966
Massachusetts State House	24 Beacon Street	NHL, 1960; NHP, 1966
Nathan Appleton Residence	39 and 40 Beacon Street	NHL, 1977; NHP, 1977
Old West Church	131 Cambridge Street	NHL, 1970; NHP, 1970
Boston Public Garden	Bounded by: Beacon, Arlington, Boylston, Charles	NHL, 1987; NHP, 1972; LL, 1977
Samuel Gridley and Julia Ward Howe House	The Swan Houses at 13, 15, and 17 Chestnut Street	NHL, 1974; NHP, 1974
William C. Nell Residence	3, 5, 7, and 7A Smith Court	NHL, 1976; NHP, 1976
William H. Prescott House	54 and 55 Beacon Street	NHL, 1964
Boston Athenaeum	10 ½ Beacon Street	NHL, 1965; NHP, 1966
Ether Dome, Massachusetts General Hospital	55 Fruit Street	NHL, 1965
First Harrison Gray Otis House	141 Cambridge Street	NHL, 1970
Gibson House	137 Beacon Street	NHL, 2001
Massachusetts General Hospital	55 Fruit Street	NHL, 1970
Boston African American National Historic Site	Joy Street	NHP, 1980
Boston Transit Commission Building	15 Beacon Street	NHP, 2007
Peter Faneuil School	60 Joy Street	NHP, 1994

Headquarters House	55 Beacon Street	NHP, 1966
Harrison Gray Otis House (Second)	85 Mt. Vernon Street	NHP, 1973
Park Street District	Tremont, Park and Beacon Streets	NHP, 1974

*Designation

NHP Individually listed on the National Register of Historic Places

NHL National Historic Landmark

LHD Local Historic District

LL Local Landmark

7.4 ARCHEOLOGICAL RESOURCES WITHIN THE PROJECT SITE

According to Massachusetts Historical Commission's (MHC's) online mapping system of historic and archaeological resources, no known archaeological resources are within the Project Site. The Proposed Project involves the redevelopment of an existing building in a densely developed urban area previously disturbed. Impacts to archaeological resources are not anticipated.

7.5 POTENTIAL IMPACTS TO HISTORIC RESOURCES

7.5.1 NEW CONSTRUCTION

The Proposed Project requires a substantial redevelopment of the interior of the Building to allow for the conversion of the space from institutional/university use to residential, the construction of a below-grade parking garage with vehicle elevator access, and the addition of two penthouse floors on top of the existing Building. As stated above, the renovation of the Archer exterior will honor and maintain its architectural character and historic integrity, and the reskinning of the Donahue building with a more suitable façade and traditional windows will reduce the scale and massing of the Building to be more in keeping with the scale of the Beacon Hill neighborhood.

The Project will include 75 residential units, common amenity space, and a 60-space, below-grade parking garage. The proposed penthouse floors will be setback from the roofline so as not to be visible from any public way in the Beacon Hill Historic District. The new penthouse plans will also allow the Proponent to reorganize and screen the visually disruptive building systems located on the existing roof.

The Proposed Project is designed to better blend into the scale and massing of the Beacon Hill Historic District. The classic design with modern features will become a fabric of the surrounding streets and will honor the history of the neighborhood.

7.5.2 VISUAL IMPACTS TO HISTORIC RESOURCES

The Proposed Project involves the redevelopment of the existing Building and the addition of two penthouse floors not visible from a public way within the Beacon Hill Historic District. The Proposed Project will better blend into the scale and massing of the surrounding neighborhood and will minimize its visual impact.

7.5.3 SHADOW IMPACTS TO HISTORIC RESOURCES

Shadow impacts to the historic resources will be minimal. As shown by the shadow study (**Section 3.2**), during isolated periods the Proposed Project will cast minimal new shadow on small areas within the National Register listed Beacon Hill Historic District.

As shown in the shadow study, the majority of the net new shadow will largely be limited to small portions of residential rooftops. Additionally, at times minimal new net shadow will be cast on Temple Street and Ridgeway

Lane. The minimal new shadow on the nearby historic resources will not significantly impact the historic or architectural character of the historic resources and will have no effect on serviceability or maintenance of these resources.

7.5.4 WIND IMPACTS TO HISTORIC RESOURCES

The Proposed Project includes 2 additional penthouse floors that will increase the height of the Building. This additional height will cause de minimis changes in existing wind patterns, as outlined in **Section 3.1**. Wind impacts to historic resources in the vicinity of the Project Site are expected to be unchanged or minimally changed from the current conditions, and no new uncomfortable or dangerous annual wind conditions on public ways will be created by the additional penthouse floors.

7.6 STATUS OF PROJECT REVIEWS WITH HISTORICAL AGENCIES

7.6.1 BOSTON LANDMARKS COMMISSION REVIEW

The Building on the Project Site is within the Beacon Hill Historic District and is under the purview of the Beacon Hill Architectural Commission. At the appropriate time, the Proponent will file an application for a Certificate of Appropriateness from the Beacon Hill Architectural Commission and present plans.

7.6.2 MASSACHUSETTS HISTORICAL COMMISSION

No state or federal funding, licensing, permits and/or approvals requiring review by the MHC are anticipated. In the event that a state or federal action is required for the Proposed Project, an MHC Project Notification Form will be filed for the Proposed Project in compliance with State Register Review and/or Section 106 of the National Historic Preservation Act.

8 INFRASTRUCTURE

The existing utility infrastructure surrounding the Project Site is sufficient to serve the needs of the Project. The following sections describe the existing sanitary sewer, water, and storm drainage systems surrounding the Project Site and explain how these systems will serve the development. This section also discusses any anticipated Project-related impacts on the utilities and identifies mitigation measures to address these potential impacts. Additionally, a brief description of the private utility services including electrical, telephone, cable and natural gas systems is included.

The final design process for the Proposed Project will include required engineering analyses and will adhere to applicable protocols and design standards, ensuring that the Building is properly supported by, and in turn properly uses the utility infrastructure of the City and private utilities. Detailed design of the Project-related utility systems will proceed in conjunction with the final design of the Building and the interior mechanical systems. The systems discussed below include those owned or managed by the Boston Water and Sewer Commission (BWSC) and private utility companies. There will be close coordination among these entities and with the Project engineers and architects during the Design Development Phase of the Proposed Project. 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.

8.1 SANITARY SEWER SYSTEM

8.1.1 EXISTING SEWER SYSTEM

The BWSC owns and maintains the sanitary sewer system adjacent to the Site (See **Figure 8-1**). The sanitary sewer mains in the vicinity of the Project Site include a 12-inch combined sewer located in Derne Street which drains to an 18"x18" combined sewer in Temple Street flowing to the north. An 18" combined sewer is located in Ridgeway Lane flowing to the north.

8.1.2 SEWAGE FLOW

The sewage flow for the Project has been estimated in accordance with 310 CMR 7.15.203: System Sewage Flow Design Criteria. The current Suffolk University uses generate approximately 12,896 gallons per day (gpd) (171,950 sf at 75 gpd/1,000 sf). The Proposed Project includes a total of 75 residential units with a total 145 bedrooms. With 145 bedrooms at 110 gpd per bedroom, the Proposed Project will generate an estimated 15,950 gpd of sewage, resulting in a net increase of approximately 3,054 gpd.

8.1.3 SANITARY SEWER CONNECTION

The Proponent will coordinate with BWSC on the design, capacity and connections of the proposed sanitary sewer system. The design anticipates the installation of a single connection or possibly two connections to the existing BWSC combined sewer to serve the residential building. The Proposed Project's sewage and stormwater flows will connect separately to the BWSC infrastructure, and any illicit connections found during construction will be removed.

All improvements and connections to BWSC infrastructure will be reviewed as part of the BWSC's Site Plan Review process for the Proposed Project. This process includes a comprehensive design review of the proposed service connections, an assessment of the Proposed Project demands and system capacity, and the establishment of service accounts.

8.1.4 SEWER SYSTEM MITIGATION

The environmental design goals for the Proposed Project include reducing wastewater volumes by incorporating efficient fixtures into the design. Water conservation measures such as low-flow fixtures, aerated showerheads, dual-flush toilets and low consumption appliances are being considered to reduce water consumption and sewage generation.

8.2 WATER SYSTEM

8.2.1 EXISTING WATER SERVICE

The water mains in the vicinity of the Project Site are owned and maintained by BWSC (see **Figure 8-2**). There are five different water systems/service districts within the City, which provide service to portions of the City based on ground surface elevation. The five systems are southern low (commonly known as low service), southern high (commonly known as high service), southern extra high, northern low, and northern high. The water mains in the vicinity of the Project Site are part of the southern high service system. There are 12-inch and 16-inch PCI water mains located in Derne Street, an 8-inch a ductile iron cement-lined (DICL) water main in Temple Street and an 8-inch DICL water main in Ridgeway Lane.

According to BWSC's records, there are existing services to the Project Site from Ridgeway Lane and Temple Street. It is anticipated that these existing services will not be utilized as part of the Proposed Project.

There are three (3) existing fire hydrants immediately adjacent to the Project Site. The hydrants are located on Derne and Temple Streets and Ridgeway Lane. The Proponent will confirm that the hydrants are sufficient for the development and coordinate any proposed changes in locations with BWSC and the Boston Fire Department (BFD) during the detailed design phase. Hydrant flow tests will be conducted as part of the Proposed Project design.

8.2.2 ANTICIPATED WATER CONSUMPTION

The Proposed Project's water demand estimate for domestic services is based on the Proposed Project's estimated sewage generation, described above. A conservative factor of 1.1 (110%) is applied to the estimated average daily wastewater flow to account for consumption, system losses, and other usages to estimate an average daily water demand. The Proposed Project's estimated domestic water demand is 17,545 gpd (based on the sewage generation estimate of 15,950 gpd). The current Suffolk University uses domestic water demand is approximately 14,185 gpd. The water for the Project will be supplied by the BWSC system.

8.2.3 PROPOSED WATER SERVICE

The design anticipates the installation of a single connection or possibly two connections to the BWSC water system to serve the residential building. Compliance with the standards for the water system service connections will be reviewed as part of BWSC's Site Plan 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 conforming to BWSC and BFD requirements.

8.2.4 WATER SUPPLY SYSTEM MITIGATION

As discussed in the Sewer System Mitigation Section, water conservation measures such as low-flow fixtures, aerated showerheads, dual-flush toilets and low consumption appliances are being considered to reduce water consumption.

8.3 STORM DRAINAGE SYSTEM

8.3.1 EXISTING DRAINAGE CONDITIONS

The Project Site is a 0.637-acre parcel of land. Currently, the Site is improved with two (2) connected six-story institutional/university buildings, with a gross area of approximately 171,950 square feet. The existing buildings fully occupy the Project Site, with the exception of a small paved area on the northern edge of the Project Site. The paved area extends from Temple Street to Ridgeway Lane, and includes an iron fence with a gate along Ridgeway Lane. The entire Project Site is impervious consisting of buildings or pavement. There are no catch basins that exist on the Project Site today. The adjacent roadways generally slope from the south (Derne Street) to the north towards Cambridge Street. Site generated stormwater runoff drains predominantly to storm drainage facilities in Temple Street with some areas draining to Ridgeway Lane (See **Figure 8-1**). Based on information depicted on the "Existing Conditions Plan of Land" prepared by Hancock Associates, dated November 25, 2015 (**Appendix A**), it appears that the drainage system in Temple Street conveys stormwater to the north in a separated 12" drainage pipe, that discharges to the combined sewer system near the northerly property line. There are no existing detention, recharge or stormwater water quality facilities to mitigate stormwater runoff quantity or quality from the existing building or Project Site.

8.3.2 PROPOSED DRAINAGE SYSTEM

The proposed stormwater management systems will include a combination of catch basins with deep-sumps and oil trap hoods, water quality units and groundwater recharge systems, where appropriate. The groundwater recharge system will recharge 1-inch of runoff from impervious areas in accordance with BWSC requirements, where feasible. In addition to the reduction in the peak rate and volume of stormwater runoff, the Proposed Project is expected to improve stormwater quality. It is anticipated that the stormwater recharge systems will work to passively infiltrate runoff into the ground with a gravity recharge system. The underground recharge system and any required closed drainage systems will be designed so that there will be no increase in the peak rate of stormwater discharge from the Project Site in the developed condition compared to the existing condition. In addition, for any portions of the Proposed Project where recharge systems cannot be accommodated, water quality units will be installed to reduce pollutants in stormwater runoff per BWSC standards prior to discharge.

All improvements and connections to BWSC infrastructure will be reviewed as part of the Commission's Site Plan Review process. The process includes a comprehensive design review of the proposed service connections, assessment of project demands, and system capacity. The Project will meet the Massachusetts Department of Environmental Protection's (MassDEP) Stormwater Management Standards for redevelopment.

8.4 ADDITIONAL UTILITY CONNECTIONS

The electrical, heating and energy systems for the Proposed Project have not yet been designed. Information on these systems will be made available to the appropriate utilities as Project design progresses.

8.4.1 ELECTRICAL SYSTEM

Eversource owns the electrical system in the vicinity of the Project Site. It is expected that adequate service is available in the existing electrical systems in the vicinity of the Proposed Project. The Proponent will work with Eversource as the design progresses and electric demands are determined to confirm adequate system capacity, service connection location and transformer locations.

8.4.2 TELEPHONE AND CABLE SYSTEMS

Verizon, Comcast and RCN provide telephone, cable and internet services in the vicinity of the Project Site. The Proponent will select private telecommunications companies to provide telephone, cable, and internet services. Upon selection of a provider or providers, the Proponent will coordinate service connection locations and obtain appropriate approvals.

8.4.3 NATURAL GAS SYSTEM

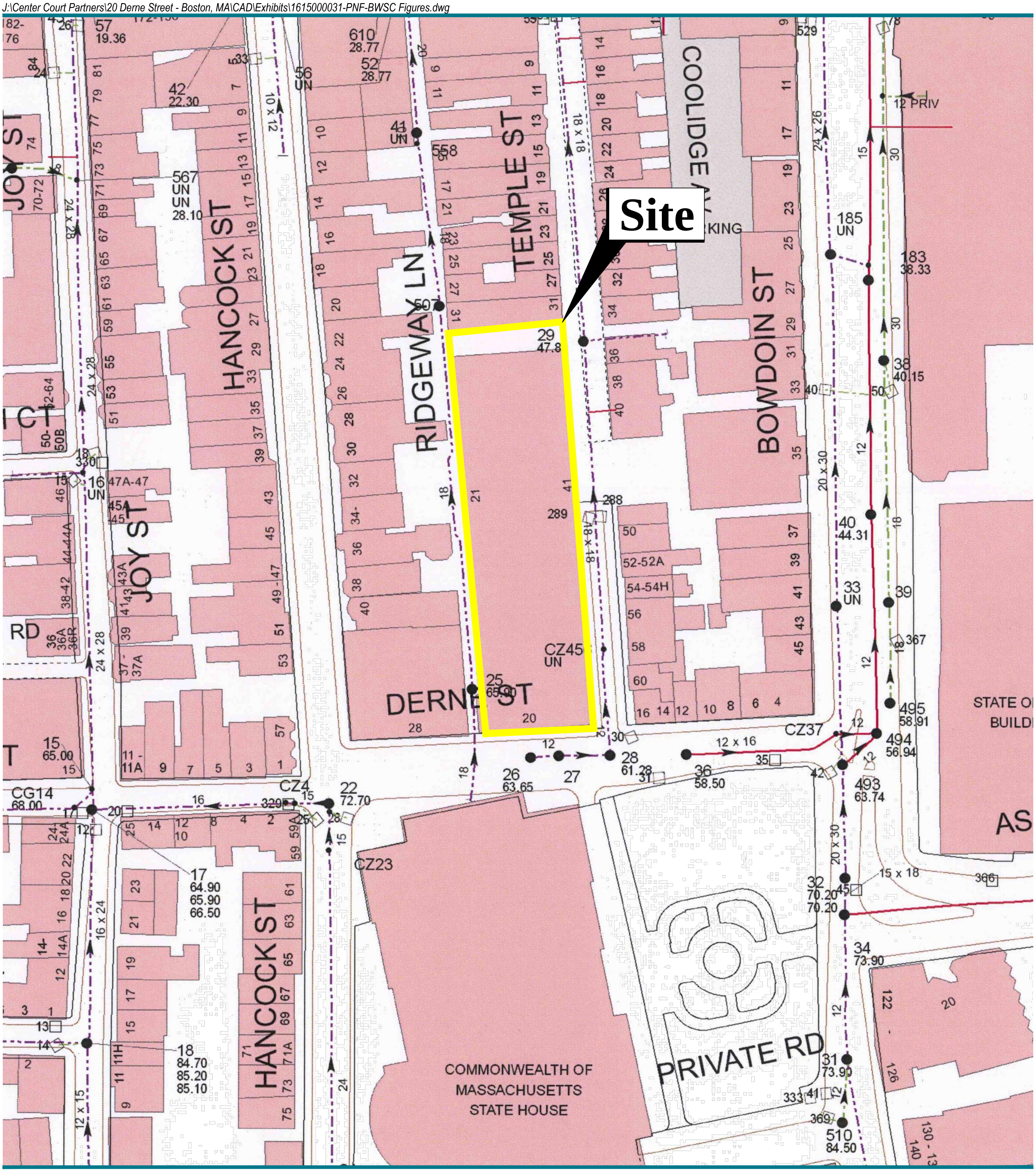
National Grid owns and maintains natural gas services in the vicinity of the Project Site. The Proposed Project is expected to utilize natural gas for heating and domestic hot water. The size and location of the proposed services and gas meter locations will be coordinated with the Project architect and National Grid.

8.5 UTILITY PROTECTION DURING CONSTRUCTION

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

The Proponent will continue to work and coordinate with BWSC and the private utility companies to ensure safe and coordinated utility construction activities as part of the Proposed Project.

J:\Center Court Partners\20 Derne Street - Boston, MA\CAD\Exhibits\1615000031-PNF-BWSC Figures.dwg



BOSTON WATER AND SEWER

Images shown are from the Boston Water Sewer Commission printed on January 13, 2016.

0 50 100 Feet

EBI Consulting
environmental | engineering | due diligence
www.ebiconsulting.com

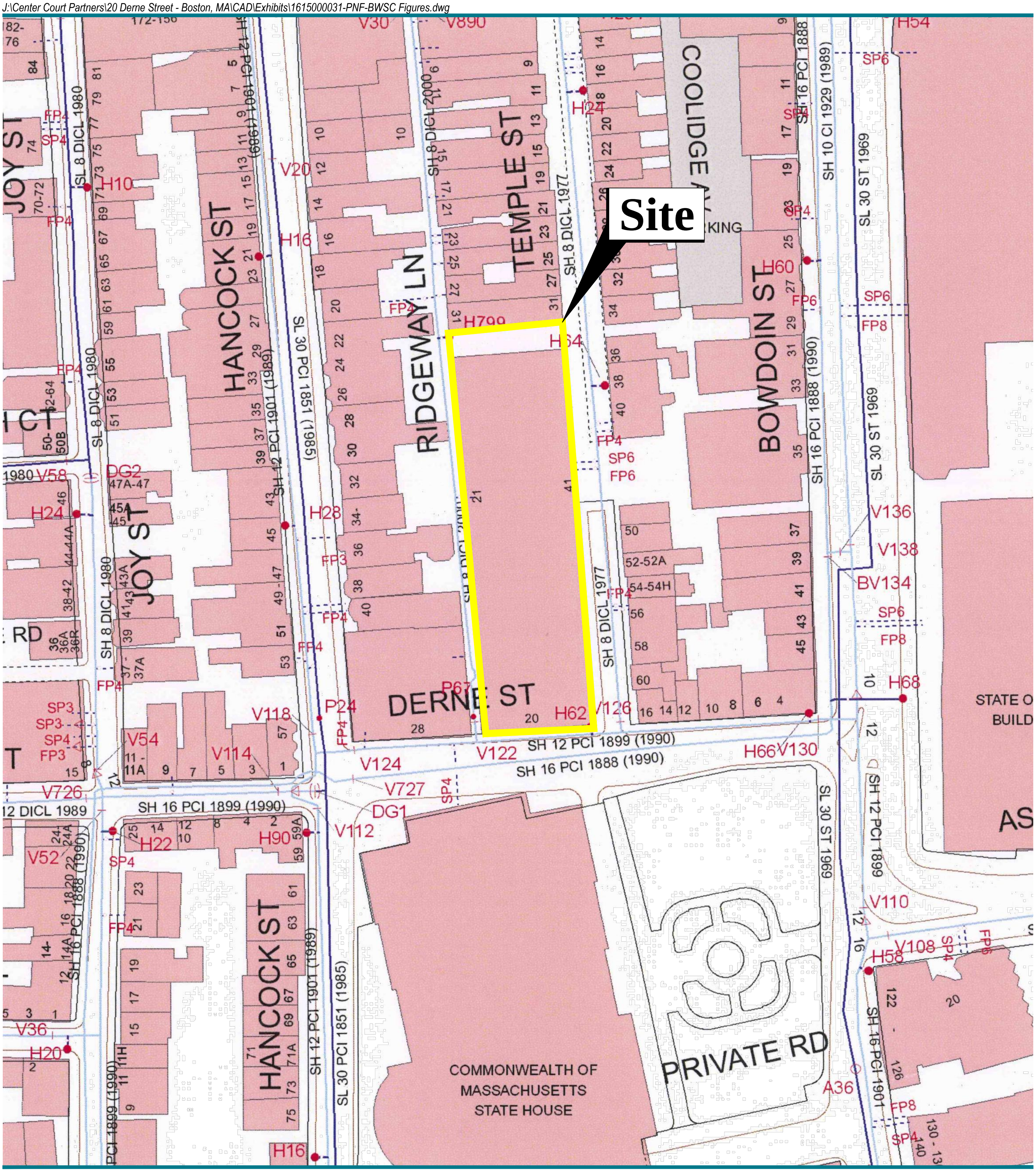
Title: Figure 8-1
BWSC Sewer and Storm Drain Map

Date: March 2016

Project: Archer Donahue Buildings
33-61 Temple Street
Boston, Massachusetts 02114

Job No: 1615000031

J:\Center Court Partners\20 Derne Street - Boston, MA\CAD\Exhibits\1615000031-PNF-BWSC Figures.dwg



BOSTON WATER AND SEWER

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Images shown are from the Boston Water Sewer Commission printed on January 13, 2016.

0 50 100 Feet

EBI Consulting
environmental | engineering | due diligence
www.ebiconsulting.com

Title: Figure 8-2
BWSC Water Map

Date: March 2016

Project: Archer Donahue Buildings
33-61 Temple Street
Boston, Massachusetts 02114

Job No: 1615000031

9 COORDINATION WITH OTHER GOVERNMENTAL AGENCIES

9.1 ARCHITECTURAL ACCESS BOARD REQUIREMENTS AND ADA COMPLIANCE

The Proposed Project will comply with the requirements of the Massachusetts Architectural Access Board and will be designated to comply with the Americans with Disabilities Act. See **Appendix F** for the Accessibility Checklist.

9.2 MASSACHUSETTS ENVIRONMENTAL POLICY ACT (MEPA)

Based on information currently available, the Proponent does not expect that the Proposed Project will require review by the Massachusetts Environmental Policy Act (MEPA) Office of the Massachusetts Executive Office of Energy and Environmental Affairs. Current plans do not result in a state permit or state agency action, state funding or state land transfer and do not meet or exceed any review threshold that would require MEPA review.

9.3 BOSTON CIVIC DESIGN COMMISSION

If required, the Proposed Project will comply with the provisions of Article 28 of the Code. If required, this EPNF, along with all other requested design materials prepared in accordance with Article 28 of the Code, will be submitted to the Boston Civic Design Commission.

APPENDIX A

EXISTING CONDITIONS PLAN OF LAND

ASSESSORS:

ASSESSORS PLAN, WARD 3046, PORTION OF BLOCK 309

GLEASON & HIRAM ARCHER BUILDING

PARCEL ID 0300050000 (#61 TEMPLE STREET)
PARCEL ID 0300068000 (#51 TEMPLE STREET)

FRANK J. DONAHUE BUILDING

PARCEL ID 0300067000 (#41 TEMPLE STREET)
PARCEL ID 0300066000 (#39 TEMPLE STREET)
PARCEL ID 0300064000 (#35 TEMPLE STREET)
PARCEL ID 0300063000 (#33 TEMPLE STREET)

RECORD OWNERS:

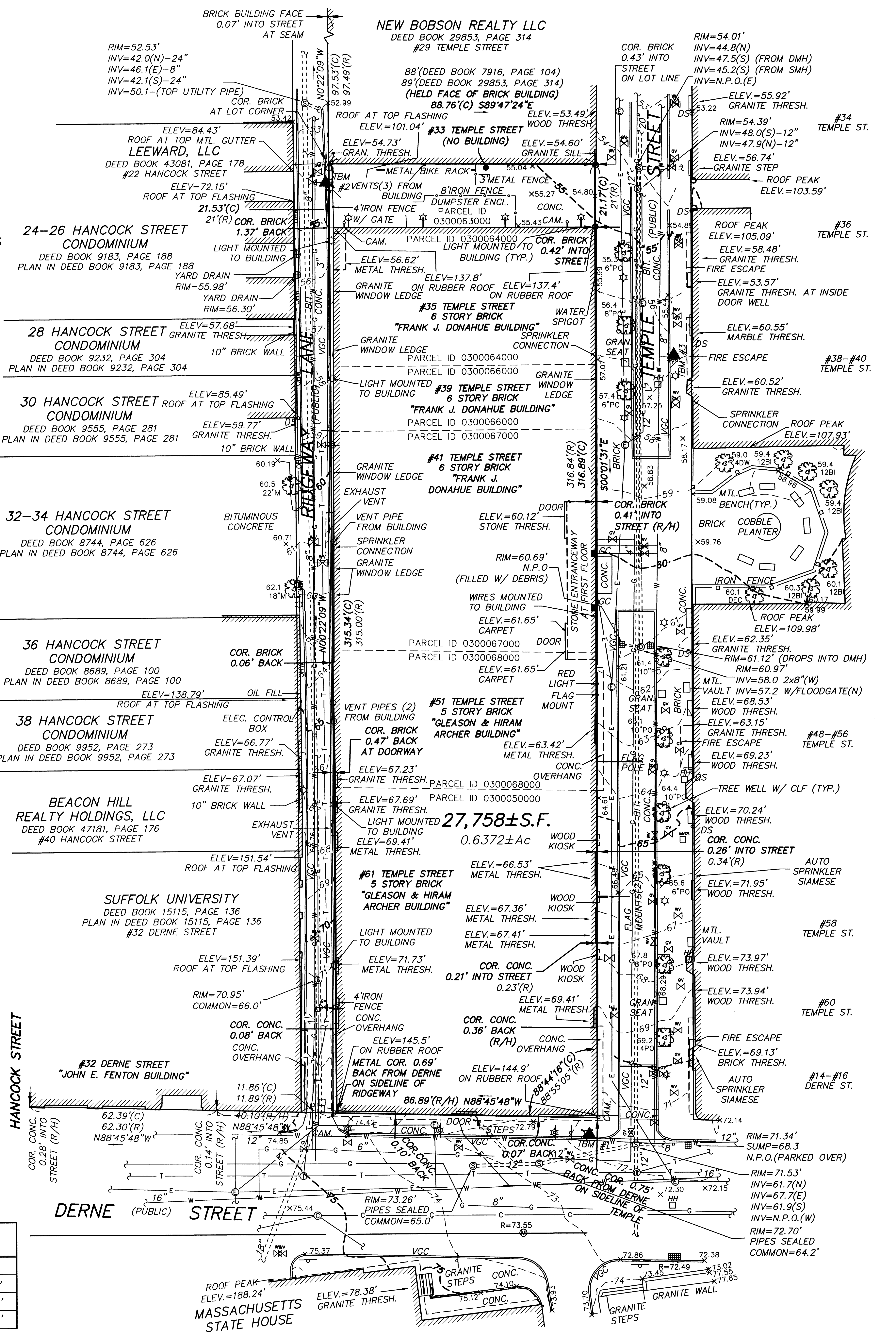
SUFFOLK UNIVERSITY (FKA SUFFOLK LAW SCHOOL)

REFERENCES:

SUFFOLK COUNTY REGISTRY OF DEEDS

DEED BOOK 4187, PAGE 282 (#61 TEMPLE STREET)
DEED BOOK 4187, PAGE 283 (#61 TEMPLE STREET)
DEED BOOK 4187, PAGE 284 (#61 TEMPLE STREET)
DEED BOOK 4187, PAGE 286 (#61 TEMPLE STREET)
DEED BOOK 4187, PAGE 287 (#61 TEMPLE STREET)
DEED BOOK 4207, PAGE 541 (#61 TEMPLE STREET)
DEED BOOK 4207, PAGE 543 (#61 TEMPLE STREET)
DEED BOOK 4444, PAGE 227 (#51 TEMPLE STREET)
DEED BOOK 4485, PAGE 232 (#51 TEMPLE STREET)
DEED BOOK 7685, PAGE 107 (#41 & #39 TEMPLE STREET)
DEED BOOK 7685, PAGE 111 (#35 TEMPLE STREET)
DEED BOOK 7916, PAGE 104 (#33 TEMPLE STREET)
DEED BOOK 7916, PAGE 586 (#33 TEMPLE STREET)
DEED BOOK 7938, PAGE 312 (#33 TEMPLE STREET)
DEED BOOK 477, PAGE 46 (LIGHT/AIR EASEMENT–#51 TEMPLE)
DEED BOOK 25249, PAGE 279 (RESTRICTIVE COVENANTS)
DEED BOOK 25249, PAGE 287 (RESTRICTIVE COVENANTS)
LAND COURT DOCUMENT NO. 783407 (NAME CHANGE)
PLAN ENTITLED "ALTA/ACSM LAND TITLE SURVEY IN BOSTON, MASSACHUSETTS," PREPARED FOR JDMD OWNER, LLC, BY HANCOCK ASSOCIATES, AND DATED 6/30/15 (PROJECT NO.: 19194)
PLAN ENTITLED "ALTA/ACSM LAND TITLE SURVEY IN BOSTON, MASSACHUSETTS," PREPARED FOR SUFFOLK UNIVERSITY, BY HANCOCK ASSOCIATES, AND DATED 2/25/15 (PROJECT NO.: 18957)
PLAN IN DEED BOOK 477, PAGE 47
PLAN IN DEED BOOK 4187, PAGE 283
PLAN IN DEED BOOK 15115, PAGE 136
PLAN ENTITLED "CITY OF BOSTON, PUBLIC WORKS DEPARTMENT, ENGINEERING DIVISION, SPECIFIC REPAIR PLAN, TEMPLE STREET, BOSTON PROPER," DATED SEPTEMBER 19, 1977 (PUBLIC WORKS DEPARTMENT, ENGINEERING DIVISION PLAN L–10524)
CITY OF BOSTON ENGINEERING FIELD BOOK 282, PAGES 120–121, 124–125, 136–137 & 140–141
CITY OF BOSTON ENGINEERING FIELD BOOK 646, PAGE 80
CITY OF BOSTON ENGINEERING FIELD BOOK 665, PAGES 138–139
CITY OF BOSTON ENGINEERING FIELD BOOK 732, PAGES 90–91
CITY OF BOSTON ENGINEERING FIELD BOOK 1263, PAGES 120–121 & 130–131

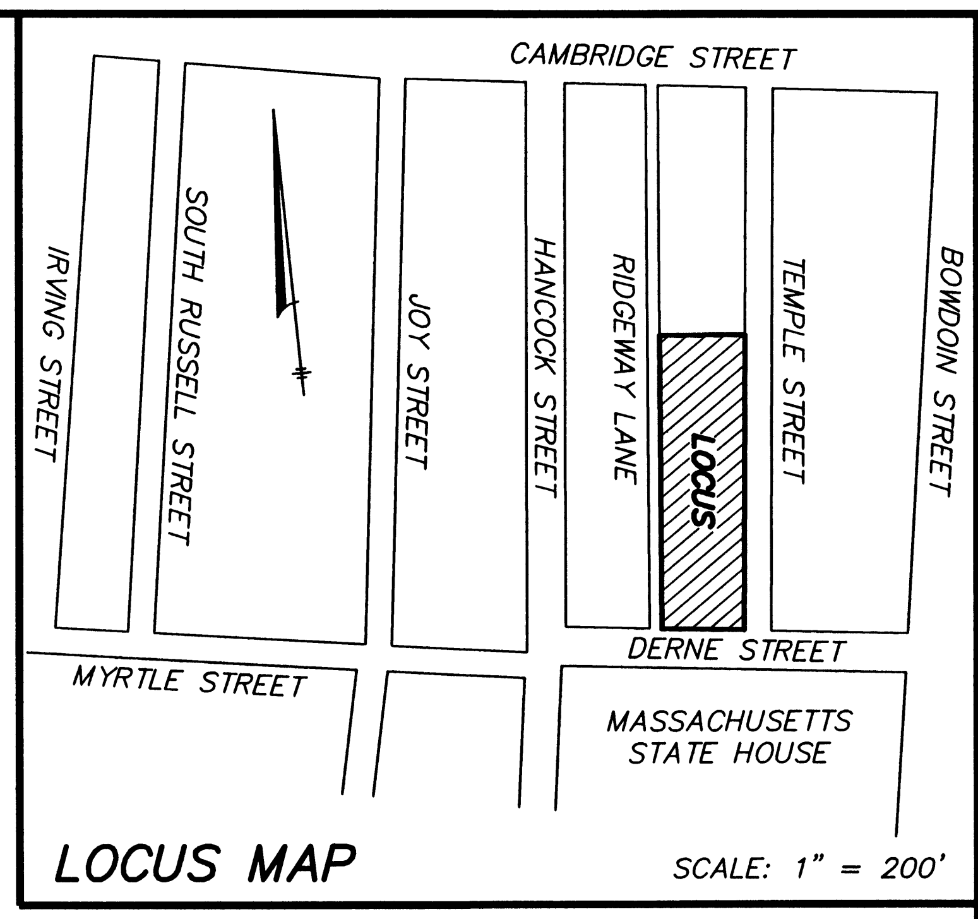
SCALED FROM PLAN IN DEED BOOK 4187, PAGE 283



NO.	ELEVATION BENCH MARKS DATUM: BOSTON CITY BASE (SEE NOTE 1) DESCRIPTION	ELEV.
1.	HYDRANT – BOLT NEAR MAIN OUTLET	74.31'
2.	HYDRANT – BOLT OVER SOUTH OUTLET	57.56'
3.	HYDRANT – BOLT OVER SOUTH OUTLET	59.23'

ZONING: (SEE NOTE 5)

H–2–65 RESIDENTIAL DISTRICT
DOWNTOWN INTERIM PLANNING OVERLAY DISTRICT
RESTRICTED PARKING OVERLAY DISTRICT



LOCUS MAP

SCALE: 1" = 200'

NOTES:

1) ELEVATIONS SHOWN HEREON REFER TO THE BOSTON CITY BASE. PROJECT SOURCE BENCH MARK IS THE RIGHT OUTSIDE CORNER OF THE LOWEST STONE STEP AT #30 JOY STREET, HAVING AN ELEVATION OF 72.86'.

2) UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON FIELD LOCATIONS OF SURFACE VISIBLE STRUCTURES AND FROM AVAILABLE RECORD INFORMATION ON FILE AT THE CITY OF BOSTON ENGINEERING DEPARTMENT, BOSTON WATER AND SEWER COMMISSION, THE MASSACHUSETTS WATER RESOURCE AUTHORITY AND PRIVATE UTILITY COMPANIES. OTHER UNDERGROUND UTILITIES MAY EXIST. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION, SIZE & ELEVATION OF ALL UTILITIES WITHIN THE AREA OF PROPOSED WORK AND TO CONTACT "DIG–SAFE" AT 811 AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION, DEMOLITION OR CONSTRUCTION.

3) ABUTTING BUILDING UTILITY SERVICE LINES ARE NOT SHOWN HERON FOR CLARITY.

4) SITE FEATURES AND TOPOGRAPHY SHOWN HEREON ARE FROM A FIELD SURVEY PERFORMED TROUGH NOVEMBER 18, 2015.

5) ZONING INFORMATION SHOWN HEREON FROM REPORT ENTITLED "ZONING AND SITE REQUIREMENTS SUMMARY, PZR REPORT FOR: SUFFOLK UNIVERSITY, 20 DERNE STREET AND 33 TO 61 TEMPLE STREET, BOSTON, MASSACHUSETTS," BY THE PLANNING & ZONING RESOURCE COMPANY, DATED JUNE 29, 2015 AND PROVIDED BY THE CLIENT. AN INDEPENDENT ZONING ANALYSIS WAS NOT PERFORMED BY THIS OFFICE.

LEGEND:

— — — 70 — — — —		SURFACE CONTOUR
VGC		CURB WITH TYPE
4'IRON FENCE —o—o—o—		IRON FENCE W/ HEIGHT
——— OHW ———		OVERHEAD WIRE
— — — — — — — —		BUILDING OVERHANG/FIRE ESCAPE
———		EDGE OF PAVEMENT
—⋈— WV — W — 6"		WATER MAIN GATE VALVE & SIZE
—⋈— GV — G — 10"		GAS MAIN WITH SIZE & GATE VALVE
———Ⓒ— C —		UNDERGROUND CABLE TELEVISON LINES W/ MANHOLE
———Ⓔ— E —		UNDERGROUND ELECTRIC LINES W/ MANHOLE
———Ⓣ— T —		UNDERGROUND TELEPHONE LINES W/ MANHOLE
====Ⓢ==== 8"		SEWERLINE W/ MANHOLE & PIPE SIZE
====Ⓓ==== 12" ▦		DRAINLINE WITH W/ CATCHBASIN & PIPE SIZE
	(C)	CALCULATED
	(FD)	FOUND
	(M)	MEASURED
	(R)	RECORD
	(R/H)	RECORD AND HELD
	Ac	ACRES
	S.F.	SQUARE FEET
	× 232.6	SPOT ELEVATION
	26.8 12"M	PROMINENT DECIDUOUS TREE WITH ELEVATION, SIZE AND SPECIES
	M	MAPLE
	O	OAK
	BI	BIRCH
	DW	DOGWOOD
	PO	POPLAR
●	BOL.	BOLLARD
○	CAM.	SECURITY CAMERA
	CONC.	CONCRETE
■	GC	GRANITE COLUMN
HH□		HAND HOLE
✡		LIGHT POLE
—o—		SIGN
⋈		VALVE (UNKNOWN UTILITY)
○		VENT
○	DS	DOWNSPOUT
	VGC	VERTICAL GRANITE CURB
	ELEV. TRESH.	ELEVATION THRESHOLD
	RIM=	UTILITY RIM ELEVATION
	INV.=	PIPE INVERT ELEVATION
	BIT.	BITUMINOUS
	N.P.O.	NO PIPE OBSERVED

SCALE: 1" = 20'

0 20 40 80

SITE ADDRESS:

THE ARCHER & DONAHUE BUILDINGS

33-61 Temple Street
Boston, Massachusetts

PREPARED FOR:

JDMD OWNER, LLC

408 WHITING AVENUE
DEDHAM, MA 02026

HANCOCK ASSOCIATES

Civil Engineers
Land Surveyors
Wetland Scientists

185 CENTRE STREET, DANVERS, MA 01923
VOICE (978) 777–3050, FAX (978) 774–7816
WWW.HANCOCKASSOCIATES.COM

GREGORY G. GOULD No. 51280

11/25/15

NO.	BY	APP	DATE	ISSUE/REVISION DESCRIPTION

DATE: 11/25/15	DRAWN BY: DPR
SCALE: 1" = 20'	CHECK BY: GGG

EXISTING CONDITIONS PLAN OF LAND

IN

BOSTON, MASSACHUSETTS

PLOT DATE: Mar 29, 2016 8:22 am
PATH: \\hachelm01\Share\PROJECTS\18957–Suffolk University–Boston\Source Drawings\

DWG: 19586ec.dwg
LAYOUT: EC
SHEET: 1 OF 1
PROJECT NO.: 19586

APPENDIX B

TRANSPORTATION

N/S: Staniford Street/ Temple Street
E/W: Cambridge Street
City, State: Boston, MA
Client: Howard Stein/Hudson/ B. Beisel

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

File Name : 154789 A
Site Code : 2015109
Start Date : 11/10/2015
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Staniford Street From North				**Cambridge Street From East**				**Temple Street From South**				**Cambridge Street From West**				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	29	0	26	0	24	91	0	0	1	0	0	0	0	94	25	8	298
07:15 AM	36	0	35	1	22	92	0	0	0	0	0	0	0	120	26	3	335
07:30 AM	48	0	43	1	37	114	0	1	3	0	0	0	0	100	37	5	389
07:45 AM	53	0	30	0	25	125	0	0	0	0	0	0	0	120	41	6	400
Total	166	0	134	2	108	422	0	1	4	0	0	0	0	434	129	22	1422
08:00 AM	56	0	38	0	38	121	0	0	3	0	0	0	0	128	48	5	437
08:15 AM	47	0	73	0	40	118	0	0	3	0	0	0	0	137	43	1	462
08:30 AM	65	0	41	0	43	120	0	1	3	0	0	0	0	127	51	3	454
08:45 AM	46	0	56	0	46	136	0	1	3	0	0	0	0	132	50	6	476
Total	214	0	208	0	167	495	0	2	12	0	0	0	0	524	192	15	1829
Grand Total	380	0	342	2	275	917	0	3	16	0	0	0	0	958	321	37	3251
Apprch %	52.5	0	47.2	0.3	23	76.7	0	0.3	100	0	0	0	0	72.8	24.4	2.8	
Total %	11.7	0	10.5	0.1	8.5	28.2	0	0.1	0.5	0	0	0	0	29.5	9.9	1.1	
Cars	353	0	316	1	242	859	0	3	12	0	0	0	0	922	306	37	3051
% Cars	92.9	0	92.4	50	88	93.7	0	100	75	0	0	0	0	96.2	95.3	100	93.8
Heavy Vehicles	27	0	26	1	33	58	0	0	4	0	0	0	0	36	15	0	200
% Heavy Vehicles	7.1	0	7.6	50	12	6.3	0	0	25	0	0	0	0	3.8	4.7	0	6.2

	Staniford Street From North					**Cambridge Street From East**					**Temple Street From South**					**Cambridge Street From West**					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	56	0	38	0	94	38	121	0	0	159	3	0	0	0	3	0	128	48	5	181	437
08:15 AM	47	0	73	0	120	40	118	0	0	158	3	0	0	0	3	0	137	43	1	181	462
08:30 AM	65	0	41	0	106	43	120	0	1	164	3	0	0	0	3	0	127	51	3	181	454
08:45 AM	46	0	56	0	102	46	136	0	1	183	3	0	0	0	3	0	132	50	6	188	476
Total Volume	214	0	208	0	422	167	495	0	2	664	12	0	0	0	12	0	524	192	15	731	1829
% App. Total	50.7	0	49.3	0		25.2	74.5	0	0.3		100	0	0	0		0	71.7	26.3	2.1		
PHF	.823	.000	.712	.000	.879	.908	.910	.000	.500	.907	1.00	.000	.000	.000	1.00	.000	.956	.941	.625	.972	.961
Cars	204	0	193	0	397	154	467	0	2	623	9	0	0	0	9	0	508	183	15	706	1735
% Cars	95.3	0	92.8	0	94.1	92.2	94.3	0	100	93.8	75.0	0	0	0	75.0	0	96.9	95.3	100	96.6	94.9
Heavy Vehicles	10	0	15	0	25	13	28	0	0	41	3	0	0	0	3	0	16	9	0	25	94
% Heavy Vehicles	4.7	0	7.2	0	5.9	7.8	5.7	0	0	6.2	25.0	0	0	0	25.0	0	3.1	4.7	0	3.4	5.1

N/S: Staniford Street/ Temple Street
E/W: Cambridge Street
City, State: Boston, MA
Client: Howard Stein/Hudson/ B. Beisel

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

File Name : 154789 A
Site Code : 2015109
Start Date : 11/10/2015
Page No : 1

Groups Printed- Peds and Bikes

	Staniford Street From North					Cambridge Street From East					Temple Street From South					Cambridge Street From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	0	0	26	51	0	0	0	7	6	0	0	0	21	37	0	2	1	9	0	160
07:15 AM	1	0	1	17	73	0	3	0	10	8	0	0	0	26	33	0	7	0	13	0	192
07:30 AM	0	0	0	38	79	0	1	0	12	15	0	0	0	24	56	0	8	1	14	0	248
07:45 AM	0	0	3	55	74	1	4	0	20	15	0	1	0	29	84	0	17	1	15	0	319
Total	1	0	4	136	277	1	8	0	49	44	0	1	0	100	210	0	34	3	51	0	919
08:00 AM	0	0	1	54	114	0	2	0	7	10	0	0	0	34	70	0	20	1	15	0	328
08:15 AM	0	0	0	64	100	1	5	0	10	25	0	0	0	32	87	0	22	1	25	0	372
08:30 AM	0	0	4	73	89	1	4	0	17	16	0	0	0	31	103	0	15	1	24	0	378
08:45 AM	0	0	3	62	93	2	1	0	16	7	0	0	0	39	92	0	10	2	14	0	341
Total	0	0	8	253	396	4	12	0	50	58	0	0	0	136	352	0	67	5	78	0	1419
Grand Total	1	0	12	389	673	5	20	0	99	102	0	1	0	236	562	0	101	8	129	0	2338
Apprch %	0.1	0	1.1	36.2	62.6	2.2	8.8	0	43.8	45.1	0	0.1	0	29.5	70.3	0	42.4	3.4	54.2	0	
Total %	0	0	0.5	16.6	28.8	0.2	0.9	0	4.2	4.4	0	0	0	10.1	24	0	4.3	0.3	5.5	0	

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

	Staniford Street From North						Cambridge Street From East						Temple Street From South						Cambridge Street From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
08:00 AM	0	0	1	54	114	169	0	2	0	7	10	19	0	0	0	34	70	104	0	20	1	15	0	36	328
08:15 AM	0	0	0	64	100	164	1	5	0	10	25	41	0	0	0	32	87	119	0	22	1	25	0	48	372
08:30 AM	0	0	4	73	89	166	1	4	0	17	16	38	0	0	0	31	103	134	0	15	1	24	0	40	378
08:45 AM	0	0	3	62	93	158	2	1	0	16	7	26	0	0	0	39	92	131	0	10	2	14	0	26	341
Total Volume	0	0	8	253	396	657	4	12	0	50	58	124	0	0	0	136	352	488	0	67	5	78	0	150	1419
% App. Total	0	0	1.2	38.5	60.3		3.2	9.7	0	40.3	46.8		0	0	0	27.9	72.1		0	44.7	3.3	52	0		
PHF	.000	.000	.500	.866	.868	.972	.500	.600	.000	.735	.580	.756	.000	.000	.000	.872	.854	.910	.000	.761	.625	.780	.000	.781	.938

N/S: Staniford Street/ Temple Street
E/W: Cambridge Street
City, State: Boston, MA
Client: Howard Stein/Hudson/ B. Beisel

PRECISION
DATA
INDUSTRIES, LLC

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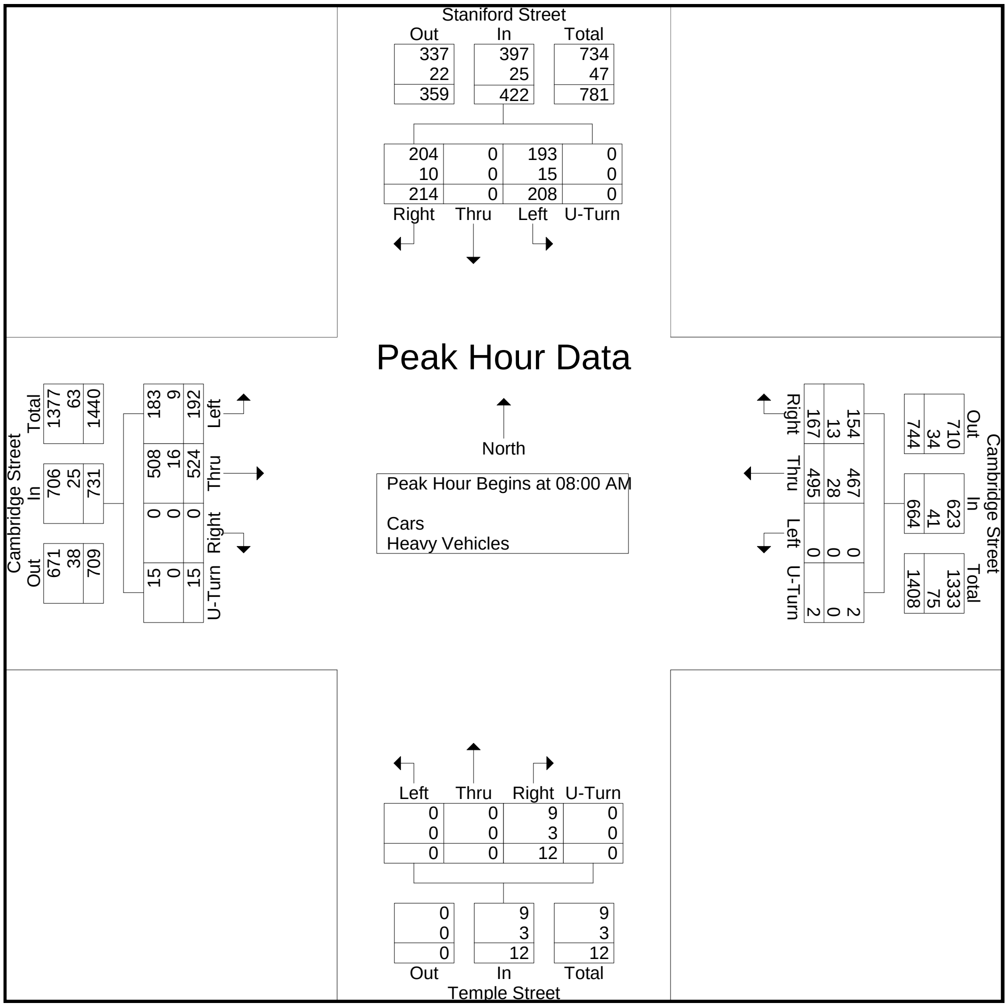
Page No : 1

	Staniford Street From North					Cambridge Street From East					Temple Street From South					Cambridge Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	56	0	38	0	94	38	121	0	0	159	3	0	0	0	3	0	128	48	5	181	437
08:15 AM	47	0	73	0	120	40	118	0	0	158	3	0	0	0	3	0	137	43	1	181	462
08:30 AM	65	0	41	0	106	43	120	0	1	164	3	0	0	0	3	0	127	51	3	181	454
08:45 AM	46	0	56	0	102	46	136	0	1	183	3	0	0	0	3	0	132	50	6	188	476
Total Volume	214	0	208	0	422	167	495	0	2	664	12	0	0	0	12	0	524	192	15	731	1829
% App. Total	50.7	0	49.3	0		25.2	74.5	0	0.3		100	0	0	0		0	71.7	26.3	2.1		
PHF	.823	.000	.712	.000	.879	.908	.910	.000	.500	.907	1.00	.000	.000	.000	1.00	.000	.956	.941	.625	.972	.961
Cars	204	0	193	0	397	154	467	0	2	623	9	0	0	0	9	0	508	183	15	706	1735
% Cars	95.3	0	92.8	0	94.1	92.2	94.3	0	100	93.8	75.0	0	0	0	75.0	0	96.9	95.3	100	96.6	94.9
Heavy Vehicles	10	0	15	0	25	13	28	0	0	41	3	0	0	0	3	0	16	9	0	25	94
% Heavy Vehicles	4.7	0	7.2	0	5.9	7.8	5.7	0	0	6.2	25.0	0	0	0	25.0	0	3.1	4.7	0	3.4	5.1



N/S: Staniford Street/ Temple Street
E/W: Cambridge Street
City, State: Boston, MA
Client: Howard Stein/Hudson/ B. Beisel

File Name : 154789 AA
Site Code : 2015109
Start Date : 11/10/2015
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Staniford Street From North				Cambridge Street From East				Temple Street From South				Cambridge Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	44	0	44	0	47	101	0	0	3	0	0	0	0	139	68	7	453
04:15 PM	40	0	51	0	42	113	0	0	9	0	0	0	0	123	60	8	446
04:30 PM	38	0	53	0	44	103	0	0	3	0	0	0	0	114	78	5	438
04:45 PM	49	0	44	0	43	93	0	0	4	0	0	0	0	128	58	1	420
Total	171	0	192	0	176	410	0	0	19	0	0	0	0	504	264	21	1757
05:00 PM	51	0	54	0	31	133	0	0	7	0	0	0	0	111	53	1	441
05:15 PM	49	0	42	0	38	158	0	0	7	0	0	0	0	120	69	7	490
05:30 PM	36	0	53	0	47	130	0	0	5	0	0	0	0	89	46	3	409
05:45 PM	36	0	44	0	34	148	0	0	8	0	0	0	0	120	60	0	450
Total	172	0	193	0	150	569	0	0	27	0	0	0	0	440	228	11	1790
Grand Total	343	0	385	0	326	979	0	0	46	0	0	0	0	944	492	32	3547
Apprch %	47.1	0	52.9	0	25	75	0	0	100	0	0	0	0	64.3	33.5	2.2	
Total %	9.7	0	10.9	0	9.2	27.6	0	0	1.3	0	0	0	0	26.6	13.9	0.9	
Cars	328	0	369	0	302	944	0	0	43	0	0	0	0	912	480	32	3410
% Cars	95.6	0	95.8	0	92.6	96.4	0	0	93.5	0	0	0	0	96.6	97.6	100	96.1
Heavy Vehicles	15	0	16	0	24	35	0	0	3	0	0	0	0	32	12	0	137
% Heavy Vehicles	4.4	0	4.2	0	7.4	3.6	0	0	6.5	0	0	0	0	3.4	2.4	0	3.9

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

	Staniford Street From North					Cambridge Street From East					Temple Street From South					Cambridge Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
05:00 PM	51	0	54	0	105	31	133	0	0	164	7	0	0	0	7	0	111	53	1	165	441
05:15 PM	49	0	42	0	91	38	158	0	0	196	7	0	0	0	7	0	120	69	7	196	490
05:30 PM	36	0	53	0	89	47	130	0	0	177	5	0	0	0	5	0	89	46	3	138	409
05:45 PM	36	0	44	0	80	34	148	0	0	182	8	0	0	0	8	0	120	60	0	180	450
Total Volume	172	0	193	0	365	150	569	0	0	719	27	0	0	0	27	0	440	228	11	679	1790
% App. Total	47.1	0	52.9	0		20.9	79.1	0	0		100	0	0	0		0	64.8	33.6	1.6		
PHF	.843	.000	.894	.000	.869	.798	.900	.000	.000	.917	.844	.000	.000	.000	.844	.000	.917	.826	.393	.866	.913
Cars	164	0	184	0	348	142	548	0	0	690	25	0	0	0	25	0	426	222	11	659	1722
% Cars	95.3	0	95.3	0	95.3	94.7	96.3	0	0	96.0	92.6	0	0	0	92.6	0	96.8	97.4	100	97.1	96.2
Heavy Vehicles	8	0	9	0	17	8	21	0	0	29	2	0	0	0	2	0	14	6	0	20	68
% Heavy Vehicles	4.7	0	4.7	0	4.7	5.3	3.7	0	0	4.0	7.4	0	0	0	7.4	0	3.2	2.6	0	2.9	3.8

N/S: Staniford Street/ Temple Street
E/W: Cambridge Street
City, State: Boston, MA
Client: Howard Stein/Hudson/ B. Beisel

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

File Name : 154789 AA
Site Code : 2015109
Start Date : 11/10/2015
Page No : 1

Groups Printed- Peds and Bikes

	Staniford Street From North					Cambridge Street From East					Temple Street From South					Cambridge Street From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	3	0	0	86	51	0	4	0	7	20	0	0	0	54	55	0	0	0	42	0	322
04:15 PM	1	0	1	64	41	0	6	0	19	16	0	0	0	62	52	0	0	1	35	0	298
04:30 PM	1	0	0	80	50	2	14	0	10	21	0	0	0	51	41	0	2	1	48	0	321
04:45 PM	0	0	0	113	30	2	13	0	19	13	0	0	0	37	27	0	0	3	48	0	305
Total	5	0	1	343	172	4	37	0	55	70	0	0	0	204	175	0	2	5	173	0	1246
05:00 PM	2	0	1	104	38	5	28	0	11	17	0	0	0	71	40	0	4	0	62	0	383
05:15 PM	0	0	1	97	70	6	28	0	18	14	0	0	0	55	17	0	2	0	72	0	380
05:30 PM	0	0	0	81	66	1	28	0	17	20	0	1	0	58	14	0	1	2	62	0	351
05:45 PM	0	0	1	78	45	5	29	0	12	13	0	0	0	57	22	0	1	1	32	0	296
Total	2	0	3	360	219	17	113	0	58	64	0	1	0	241	93	0	8	3	228	0	1410
Grand Total	7	0	4	703	391	21	150	0	113	134	0	1	0	445	268	0	10	8	401	0	2656
Apprch %	0.6	0	0.4	63.6	35.4	5	35.9	0	27	32.1	0	0.1	0	62.3	37.5	0	2.4	1.9	95.7	0	
Total %	0.3	0	0.2	26.5	14.7	0.8	5.6	0	4.3	5	0	0	0	16.8	10.1	0	0.4	0.3	15.1	0	

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

Peak Hour for Entire Intersection Begins at 04:45 PM

	Staniford Street From North						Cambridge Street From East						Temple Street From South						Cambridge Street From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
04:45 PM	0	0	0	113	30	143	2	13	0	19	13	47	0	0	0	37	27	64	0	0	3	48	0	51	305
05:00 PM	2	0	1	104	38	145	5	28	0	11	17	61	0	0	0	71	40	111	0	4	0	62	0	66	383
05:15 PM	0	0	1	97	70	168	6	28	0	18	14	66	0	0	0	55	17	72	0	2	0	72	0	74	380
05:30 PM	0	0	0	81	66	147	1	28	0	17	20	66	0	1	0	58	14	73	0	1	2	62	0	65	351
Total Volume	2	0	2	395	204	603	14	97	0	65	64	240	0	1	0	221	98	320	0	7	5	244	0	256	1419
% App. Total	0.3	0	0.3	65.5	33.8		5.8	40.4	0	27.1	26.7		0	0.3	0	69.1	30.6		0	2.7	2	95.3	0		
PHF	.250	.000	.500	.874	.729	.897	.583	.866	.000	.855	.800	.909	.000	.250	.000	.778	.613	.721	.000	.438	.417	.847	.000	.865	.926

N/S: Staniford Street/ Temple Street
E/W: Cambridge Street
City, State: Boston, MA
Client: Howard Stein/Hudson/ B. Beisel

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Start Date : 11/10/2015
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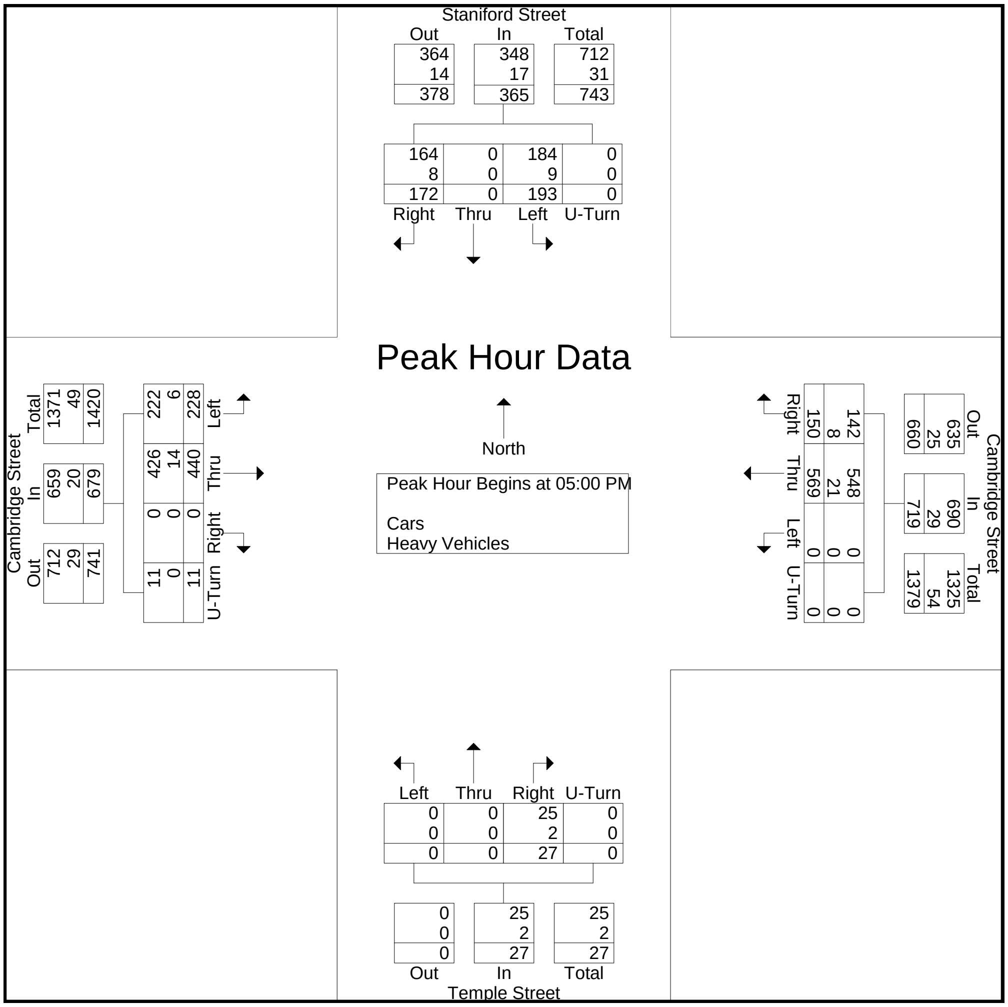
	Staniford Street From North					**Cambridge Street From East**					**Temple Street From South**					**Cambridge Street From West**					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour 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	51	0	54	0	105	31	133	0	0	164	7	0	0	0	7	0	111	53	1	165	441
05:15 PM	49	0	42	0	91	38	158	0	0	196	7	0	0	0	7	0	120	69	7	196	490
05:30 PM	36	0	53	0	89	47	130	0	0	177	5	0	0	0	5	0	89	46	3	138	409
05:45 PM	36	0	44	0	80	34	148	0	0	182	8	0	0	0	8	0	120	60	0	180	450
Total Volume	172	0	193	0	365	150	569	0	0	719	27	0	0	0	27	0	440	228	11	679	1790
% App. Total	47.1	0	52.9	0		20.9	79.1	0	0		100	0	0	0		0	64.8	33.6	1.6		
PHF	.843	.000	.894	.000	.869	.798	.900	.000	.000	.917	.844	.000	.000	.000	.844	.000	.917	.826	.393	.866	.913
Cars	164	0	184	0	348	142	548	0	0	690	25	0	0	0	25	0	426	222	11	659	1722
% Cars	95.3	0	95.3	0	95.3	94.7	96.3	0	0	96.0	92.6	0	0	0	92.6	0	96.8	97.4	100	97.1	96.2
Heavy Vehicles	8	0	9	0	17	8	21	0	0	29	2	0	0	0	2	0	14	6	0	20	68
% Heavy Vehicles	4.7	0	4.7	0	4.7	5.3	3.7	0	0	4.0	7.4	0	0	0	7.4	0	3.2	2.6	0	2.9	3.8



N: Temple Street
E/W: Derne Street
City, State: Boston, MA
Client: Howard Stein/Hudson/ B. Beisel

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Email: datarequests@pdillc.com

File Name : 154789 B
Site Code : 2015109
Start Date : 11/10/2015
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Temple Street From North			**Derne Street From East**			**Derne Street From West**			
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	1	62	0	0	0	0	63
07:15 AM	0	0	0	1	79	0	0	0	0	80
07:30 AM	0	0	0	3	90	0	0	0	0	93
07:45 AM	0	0	0	0	79	0	0	0	0	79
Total	0	0	0	5	310	0	0	0	0	315
08:00 AM	0	0	0	5	75	0	0	0	0	80
08:15 AM	0	0	0	2	68	0	0	0	0	70
08:30 AM	0	0	0	3	81	0	0	0	0	84
08:45 AM	0	0	0	3	66	0	0	0	0	69
Total	0	0	0	13	290	0	0	0	0	303
Grand Total	0	0	0	18	600	0	0	0	0	618
Apprch %	0	0	0	2.9	97.1	0	0	0	0	
Total %	0	0	0	2.9	97.1	0	0	0	0	
Cars	0	0	0	13	561	0	0	0	0	574
% Cars	0	0	0	72.2	93.5	0	0	0	0	92.9
Heavy Vehicles	0	0	0	5	39	0	0	0	0	44
% Heavy Vehicles	0	0	0	27.8	6.5	0	0	0	0	7.1

	Temple Street From North				**Derne Street From East**				**Derne Street From West**				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	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	0	0	0	1	79	0	80	0	0	0	0	80
07:30 AM	0	0	0	0	3	90	0	93	0	0	0	0	93
07:45 AM	0	0	0	0	0	79	0	79	0	0	0	0	79
08:00 AM	0	0	0	0	5	75	0	80	0	0	0	0	80
Total Volume	0	0	0	0	9	323	0	332	0	0	0	0	332
% App. Total	0	0	0		2.7	97.3	0		0	0	0		
PHF	.000	.000	.000	.000	.450	.897	.000	.892	.000	.000	.000	.000	.892
Cars	0	0	0	0	7	301	0	308	0	0	0	0	308
% Cars	0	0	0	0	77.8	93.2	0	92.8	0	0	0	0	92.8
Heavy Vehicles	0	0	0	0	2	22	0	24	0	0	0	0	24
% Heavy Vehicles	0	0	0	0	22.2	6.8	0	7.2	0	0	0	0	7.2

N: Temple Street
E/W: Derne Street
City, State: Boston, MA
Client: Howard Stein/Hudson/ B. Beisel

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Groups Printed- Peds and Bikes

	Temple Street From North				**Derne Street From East**				**Derne Street From West**				
Start Time	Right	Left	Peds EB	Peds WB	Right	Thru	Peds SB	Peds NB	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	0	4	4	1	0	4	2	0	0	0	0	15
07:15 AM	0	0	9	5	0	0	10	1	0	0	0	0	25
07:30 AM	0	0	10	10	0	1	10	0	0	0	2	0	33
07:45 AM	0	0	7	11	0	0	10	0	0	1	0	0	29
Total	0	0	30	30	1	1	34	3	0	1	2	0	102
08:00 AM	0	0	7	9	1	1	12	1	0	0	0	0	31
08:15 AM	0	1	14	3	0	1	13	1	0	0	1	0	34
08:30 AM	0	1	9	3	0	0	16	2	0	0	1	0	32
08:45 AM	0	0	6	5	0	1	17	0	0	0	1	0	30
Total	0	2	36	20	1	3	58	4	0	0	3	0	127
Grand Total	0	2	66	50	2	4	92	7	0	1	5	0	229
Apprch %	0	1.7	55.9	42.4	1.9	3.8	87.6	6.7	0	16.7	83.3	0	
Total %	0	0.9	28.8	21.8	0.9	1.7	40.2	3.1	0	0.4	2.2	0	

	Temple Street From North					**Derne Street From East**					**Derne Street From West**					
Start Time	Right	Left	Peds EB	Peds WB	App. Total	Right	Thru	Peds SB	Peds NB	App. Total	Thru	Left	Peds NB	Peds SB	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

Start Time	Right	Left	Peds EB	Peds WB	App. Total	Right	Thru	Peds SB	Peds NB	App. Total	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
07:30 AM	0	0	10	10	20	0	1	10	0	11	0	0	2	0	2	33
07:45 AM	0	0	7	11	18	0	0	10	0	10	0	1	0	0	1	29
08:00 AM	0	0	7	9	16	1	1	12	1	15	0	0	0	0	0	31
08:15 AM	0	1	14	3	18	0	1	13	1	15	0	0	1	0	1	34
Total Volume	0	1	38	33	72	1	3	45	2	51	0	1	3	0	4	127
% App. Total	0	1.4	52.8	45.8		2	5.9	88.2	3.9		0	25	75	0		
PHF	.000	.250	.679	.750	.900	.250	.750	.865	.500	.850	.000	.250	.375	.000	.500	.934

N: Temple Street
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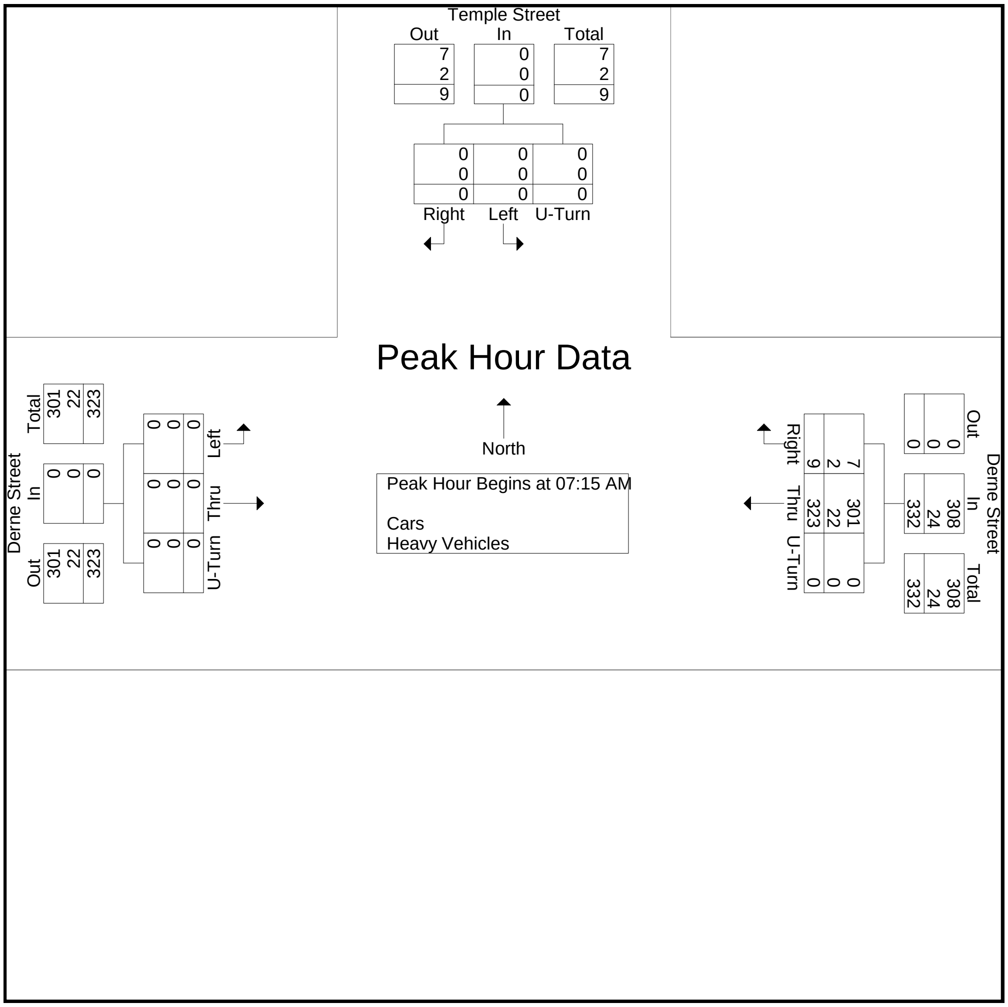
	Temple Street From North				**Derne Street From East**				**Derne Street From West**				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	0	0	0	0	1	79	0	80	0	0	0	0	80
07:30 AM	0	0	0	0	3	90	0	93	0	0	0	0	93
07:45 AM	0	0	0	0	0	79	0	79	0	0	0	0	79
08:00 AM	0	0	0	0	5	75	0	80	0	0	0	0	80
Total Volume	0	0	0	0	9	323	0	332	0	0	0	0	332
% App. Total	0	0	0		2.7	97.3	0		0	0	0		
PHF	.000	.000	.000	.000	.450	.897	.000	.892	.000	.000	.000	.000	.892
Cars	0	0	0	0	7	301	0	308	0	0	0	0	308
% Cars	0	0	0	0	77.8	93.2	0	92.8	0	0	0	0	92.8
Heavy Vehicles	0	0	0	0	2	22	0	24	0	0	0	0	24
% Heavy Vehicles	0	0	0	0	22.2	6.8	0	7.2	0	0	0	0	7.2



N: Temple Street
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Groups Printed- Cars - Heavy Vehicles

	Temple Street From North			**Derne Street From East**			**Derne Street From West**			
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	1	81	0	0	0	0	82
04:15 PM	0	0	0	13	91	0	0	0	0	104
04:30 PM	0	0	0	2	75	0	0	0	0	77
04:45 PM	0	0	0	4	71	0	0	0	0	75
Total	0	0	0	20	318	0	0	0	0	338
05:00 PM	0	0	0	6	98	0	0	0	0	104
05:15 PM	0	0	0	8	109	0	0	0	0	117
05:30 PM	0	0	0	6	117	0	0	0	0	123
05:45 PM	0	0	0	7	81	0	0	0	0	88
Total	0	0	0	27	405	0	0	0	0	432
Grand Total	0	0	0	47	723	0	0	0	0	770
Apprch %	0	0	0	6.1	93.9	0	0	0	0	
Total %	0	0	0	6.1	93.9	0	0	0	0	
Cars	0	0	0	44	710	0	0	0	0	754
% Cars	0	0	0	93.6	98.2	0	0	0	0	97.9
Heavy Vehicles	0	0	0	3	13	0	0	0	0	16
% Heavy Vehicles	0	0	0	6.4	1.8	0	0	0	0	2.1

	Temple Street From North				**Derne Street From East**				**Derne Street From West**				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	0	0	0	6	98	0	104	0	0	0	0	104
05:15 PM	0	0	0	0	8	109	0	117	0	0	0	0	117
05:30 PM	0	0	0	0	6	117	0	123	0	0	0	0	123
05:45 PM	0	0	0	0	7	81	0	88	0	0	0	0	88
Total Volume	0	0	0	0	27	405	0	432	0	0	0	0	432
% App. Total	0	0	0		6.2	93.8	0		0	0	0		
PHF	.000	.000	.000	.000	.844	.865	.000	.878	.000	.000	.000	.000	.878
Cars	0	0	0	0	25	398	0	423	0	0	0	0	423
% Cars	0	0	0	0	92.6	98.3	0	97.9	0	0	0	0	97.9
Heavy Vehicles	0	0	0	0	2	7	0	9	0	0	0	0	9
% Heavy Vehicles	0	0	0	0	7.4	1.7	0	2.1	0	0	0	0	2.1

N: Temple Street
E/W: Derne Street
City, State: Boston, MA
Client: Howard Stein/Hudson/ B. Beisel

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

File Name : 154789 BB
Site Code : 2015109
Start Date : 11/10/2015
Page No : 1

Groups Printed- Peds and Bikes

	Temple Street From North				**Derne Street From East**				**Derne Street From West**				
Start Time	Right	Left	Peds EB	Peds WB	Right	Thru	Peds SB	Peds NB	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	0	21	37	0	2	6	5	0	0	3	0	74
04:15 PM	0	0	14	23	0	1	6	5	0	0	1	0	50
04:30 PM	0	0	17	17	1	0	10	2	0	0	4	0	51
04:45 PM	0	0	17	25	1	0	1	3	1	0	2	0	50
Total	0	0	69	102	2	3	23	15	1	0	10	0	225
05:00 PM	0	1	13	16	0	1	13	2	0	0	1	0	47
05:15 PM	1	0	23	20	1	2	5	3	0	0	1	0	56
05:30 PM	0	0	19	17	0	3	7	4	0	0	0	0	50
05:45 PM	0	0	17	17	0	2	3	2	0	0	0	0	41
Total	1	1	72	70	1	8	28	11	0	0	2	0	194
Grand Total	1	1	141	172	3	11	51	26	1	0	12	0	419
Apprch %	0.3	0.3	44.8	54.6	3.3	12.1	56	28.6	7.7	0	92.3	0	
Total %	0.2	0.2	33.7	41.1	0.7	2.6	12.2	6.2	0.2	0	2.9	0	

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

	Temple Street From North					**Derne Street From East**					**Derne Street From West**					
Start Time	Right	Left	Peds EB	Peds WB	App. Total	Right	Thru	Peds SB	Peds NB	App. Total	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
04:00 PM	0	0	21	37	58	0	2	6	5	13	0	0	3	0	3	74
04:15 PM	0	0	14	23	37	0	1	6	5	12	0	0	1	0	1	50
04:30 PM	0	0	17	17	34	1	0	10	2	13	0	0	4	0	4	51
04:45 PM	0	0	17	25	42	1	0	1	3	5	1	0	2	0	3	50
Total Volume	0	0	69	102	171	2	3	23	15	43	1	0	10	0	11	225
% App. Total	0	0	40.4	59.6		4.7	7	53.5	34.9		9.1	0	90.9	0		
PHF	.000	.000	.821	.689	.737	.500	.375	.575	.750	.827	.250	.000	.625	.000	.688	.760

N: Temple Street
E/W: Derne Street
City, State: Boston, MA
Client: Howard Stein/Hudson/ B. Beisel

PRECISION
DATA
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
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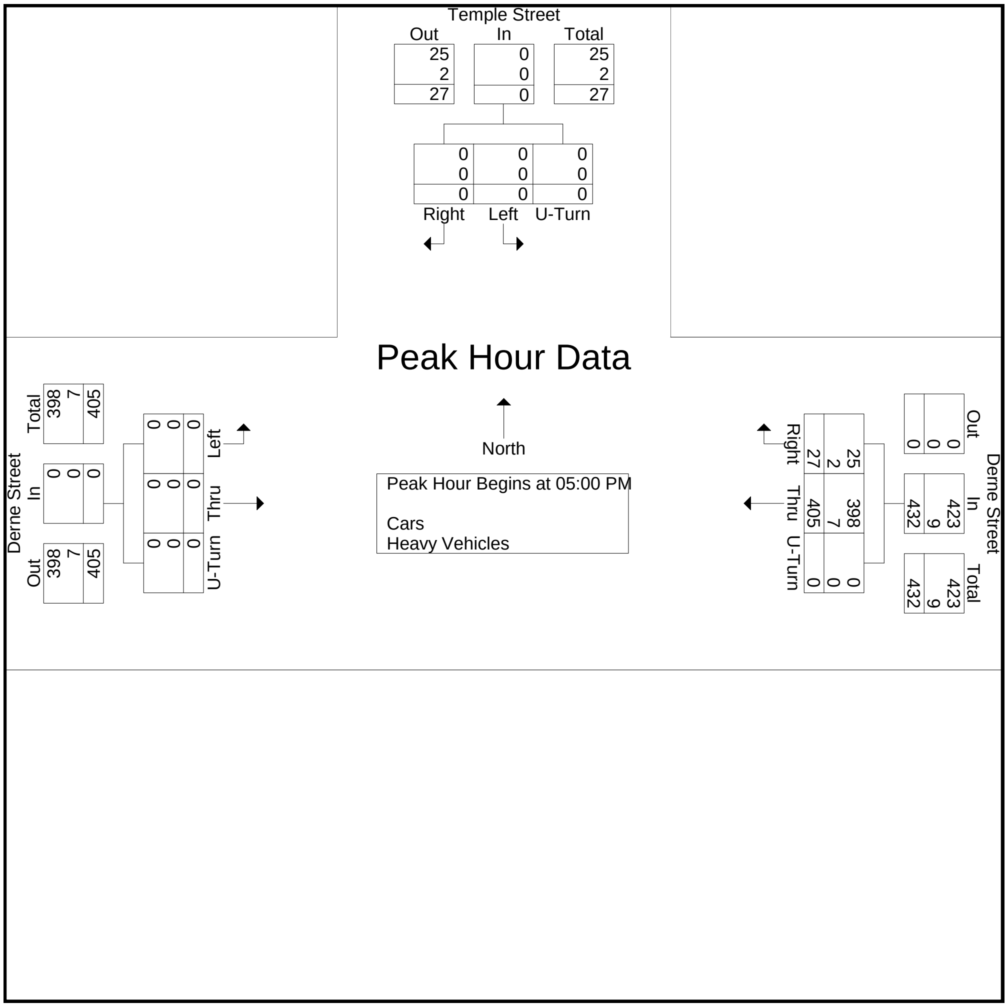
	Temple Street From North				Derne Street From East				Derne Street From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	0	0	0	6	98	0	104	0	0	0	0	104
05:15 PM	0	0	0	0	8	109	0	117	0	0	0	0	117
05:30 PM	0	0	0	0	6	117	0	123	0	0	0	0	123
05:45 PM	0	0	0	0	7	81	0	88	0	0	0	0	88
Total Volume	0	0	0	0	27	405	0	432	0	0	0	0	432
% App. Total	0	0	0		6.2	93.8	0		0	0	0		
PHF	.000	.000	.000	.000	.844	.865	.000	.878	.000	.000	.000	.000	.878
Cars	0	0	0	0	25	398	0	423	0	0	0	0	423
% Cars	0	0	0	0	92.6	98.3	0	97.9	0	0	0	0	97.9
Heavy Vehicles	0	0	0	0	2	7	0	9	0	0	0	0	9
% Heavy Vehicles	0	0	0	0	7.4	1.7	0	2.1	0	0	0	0	2.1



MASSACHUSETTS HIGHWAY DEPARTMENT - STATEWIDE TRAFFIC DATA COLLECTION

2011 WEEKDAY SEASONAL FACTORS *

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

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

RECREATIONAL: (ALL YEARS)

**GROUP 3A:

1. CAPE COD (ALL TOWNS)

2.PLYMOUTH(SOUTH OF RTE.3A)

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

3.MARTHA'S VINEYARD

4.NANTUCKET

***GROUP 3B:

5.PERMANENTS 2 & 189

1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,
1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,
1105,1106,1107,1108,1113,1114,1116,2196,2197,2198

2011 AXLE CORRECTION FACTORS

ROAD INVENTORY FUNCTIONAL CLASSIFICATION	AXLE CORRECTION FACTOR
RURAL	
1	0.95
2	0.97
3	0.98
0,5,6	0.98
URBAN	
1	0.96
2,3	0.98
5	0.98
0,6	0.99

I-84	0.90

ROUND OFF

0 - 999............10
\> 1,000..........100

Apply I-84 factor to stations:

3290, 3921, 3929

2015109 Archer Donohue

Trip Generation Assessment

HOWARD STEIN HUDSON
11-Jan-16

Land Use	**Size**	**Category**	**Trip Rates (Trips/ksf or unit)**	**Unadjusted Vehicle Trips**	**Internal trips**	**Pass-by %**	**Less capture trips**	**Assumed national vehicle occupancy rate[1]**	**Converted to Person trips**	**Transit Share[2]**	**Transit Trips**	**Walk/Bike/ Other Share[2]**	**Walk/ Bike/ Other Trips**	**Vehicle Share[2]**	**Total Vehicle Person Trips**	**Assumed local auto occupancy rate for autos [3]**	**Total Adjusted Auto Trips**
Daily Peak Hour																	
Condominium[4]	75	Total	5.81	436	0%	0%	436	1.13	**492**		**148**		**206**		**138**	1.13	**120**
	units	In	2.91	218	0%	0%	218	1.13	**246**	30%	**74**	42%	**103**	28%	**69**	1.13	**60**
		Out	2.91	218	0%	0%	218	1.13	**246**	30%	**74**	42%	**103**	28%	**69**	1.13	**60**
AM Peak Hour																	
Condominium[4]	75	Total	0.44	33	0%	0%	33	1.13	**38**		**10**		**16**		**13**	1.13	**12**
	units	In	0.07	6	0%	0%	6	1.13	**7**	52%	**4**	7%	**0**	41%	**3**	1.13	**3**
		Out	0.37	27	0%	0%	27	1.13	**31**	18%	**6**	51%	**16**	31%	**10**	1.13	**9**
PM Peak Hour																	
Condominium[4]	75	Total	0.52	39	0%	0%	39	1.13	**44**		**13**		**16**		**15**	1.13	**13**
	units	In	0.35	26	0%	0%	26	1.13	**29**	18%	**5**	51%	**15**	31%	**9**	1.13	**8**
		Out	0.17	13	0%	0%	13	1.13	**15**	52%	**8**	7%	**1**	41%	**6**	1.13	**5**

1. 2009 National vehicle occupancy rates - 1.13:home to work; 1.84: family/personal business; 1.78: shopping; 2.2 social/recreational
2. Mode shares based on peak-hour BTD Data for Area 2
3. Local vehicle occupancy rates based on 2009 National vehicle occupancy rates.
4. ITE Trip Generation Rate, 9th Edition, LUC 230 (Condominium/Townhouses), average rate

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑			↑↑	↱			↱	↰		↱
Traffic Volume (vph)	192	524	0	0	495	167	0	0	12	208	0	214
Future Volume (vph)	192	524	0	0	495	167	0	0	12	208	0	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	145		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	0		1	1		1
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.865			0.850
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1547	2997	0	0	3065	1346	0	0	1183	1518	0	1384
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1547	2997	0	0	3065	1346	0	0	1183	1518	0	1384
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						186			493			246
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		740			255			645			358	
Travel Time (s)		16.8			5.8			14.7			8.1	
Peak Hour Factor	0.98	0.98	0.98	0.90	0.90	0.90	1.00	1.00	1.00	0.87	0.87	0.87
Heavy Vehicles (%)	5%	3%	2%	0%	6%	8%	0%	0%	25%	7%	0%	5%
Parking (#/hr)		0										
Adj. Flow (vph)	196	535	0	0	550	186	0	0	12	239	0	246
Shared Lane Traffic (%)												
Lane Group Flow (vph)	196	535	0	0	550	186	0	0	12	239	0	246
Turn Type	Prot	NA			NA	pm+ov			Prot	Prot		Over
Protected Phases	3	2			6	4			1	4		3
Permitted Phases						6						
Detector Phase	3	2			6	4			1	4		3
Switch Phase												
Minimum Initial (s)	8.0	12.0			8.0	8.0			4.0	8.0		8.0
Minimum Split (s)	28.0	17.0			24.0	27.0			9.0	27.0		28.0
Total Split (s)	30.0	30.0			40.0	30.0			10.0	30.0		30.0
Total Split (%)	30.0%	30.0%			40.0%	30.0%			10.0%	30.0%		30.0%
Maximum Green (s)	25.0	25.0			35.0	26.0			5.0	26.0		25.0
Yellow Time (s)	3.0	3.0			3.0	3.0			3.0	3.0		3.0
All-Red Time (s)	2.0	2.0			2.0	1.0			2.0	1.0		2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0	0.0		0.0
Total Lost Time (s)	5.0	5.0			5.0	4.0			5.0	4.0		5.0
Lead/Lag	Lead	Lag				Lag			Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0			2.0	2.0			2.0	2.0		2.0
Recall Mode	Min	C-Max			C-Max	Min			None	Min		Min
Walk Time (s)	7.0				7.0	7.0				7.0		7.0
Flash Dont Walk (s)	16.0				12.0	16.0				16.0		16.0
Pedestrian Calls (#/hr)	0				0	0				0		0
Act Effct Green (s)	17.0	47.2			49.1	74.0			4.5	19.9		17.0
Actuated g/C Ratio	0.17	0.47			0.49	0.74			0.04	0.20		0.17
v/c Ratio	0.75	0.38			0.37	0.18			0.02	0.79		0.56
Control Delay	56.2	21.4			15.3	0.6			0.1	44.9		6.1
Queue Delay	0.0	0.0			0.6	0.4			0.0	0.0		0.5
Total Delay	56.2	21.4			16.0	1.1			0.1	44.9		6.6
LOS	E	C			B	A			A	D		A
Approach Delay		30.7			12.2							
Approach LOS		C			B							
Queue Length 50th (ft)	120	107			105	4			0	146		1
Queue Length 95th (ft)	182	223			161	0			0	217		23
Internal Link Dist (ft)		660			175			565			278	
Turn Bay Length (ft)	145											
Base Capacity (vph)	386	1414			1504	1041			527	398		530
Starvation Cap Reductn	0	0			578	512			0	0		73
Spillback Cap Reductn	0	0			0	0			0	0		0
Storage Cap Reductn	0	0			0	0			0	0		0
Reduced v/c Ratio	0.51	0.38			0.59	0.35			0.02	0.60		0.54

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 25 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 22.3 Intersection LOS: C
Intersection Capacity Utilization 51.5% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 121: Temple Street/Staniford Streer & Cambridge Street

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↱			
Traffic Volume (veh/h)	0	0	323	9	0	0
Future Volume (Veh/h)	0	0	323	9	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.89	0.89	0.92	0.92
Hourly flow rate (vph)	0	0	363	10	0	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)						
pX, platoon unblocked						
vC, conflicting volume	373				368	368
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	373				368	368
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1197				636	682

Direction, Lane #	WB 1
Volume Total	373
Volume Left	0
Volume Right	10
cSH	1700
Volume to Capacity	0.22
Queue Length 95th (ft)	0
Control Delay (s)	0.0
Lane LOS	
Approach Delay (s)	0.0
Approach LOS	

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑			↑↑	↱			↱	↰		↱
Traffic Volume (vph)	228	440	0	0	569	150	0	0	27	193	0	172
Future Volume (vph)	228	440	0	0	569	150	0	0	27	193	0	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	145		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	0		1	1		1
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.865			0.850
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1577	2997	0	0	3124	1384	0	0	1382	1547	0	1384
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1577	2997	0	0	3124	1384	0	0	1382	1547	0	1384
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						163			506			198
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		733			248			645			360	
Travel Time (s)		16.7			5.6			14.7			8.2	
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.84	0.84	0.84	0.87	0.87	0.87
Heavy Vehicles (%)	3%	3%	0%	0%	4%	5%	0%	0%	7%	5%	0%	5%
Parking (#/hr)		0										
Adj. Flow (vph)	262	506	0	0	618	163	0	0	32	222	0	198
Shared Lane Traffic (%)												
Lane Group Flow (vph)	262	506	0	0	618	163	0	0	32	222	0	198
Turn Type	Prot	NA			NA	pm+ov			Prot	Prot		Over
Protected Phases	3	2			6	4			1	4		3
Permitted Phases						6						
Detector Phase	3	2			6	4			1	4		3
Switch Phase												
Minimum Initial (s)	8.0	12.0			8.0	8.0			4.0	8.0		8.0
Minimum Split (s)	28.0	17.0			24.0	27.0			9.0	27.0		28.0
Total Split (s)	30.0	29.0			41.0	29.0			12.0	29.0		30.0
Total Split (%)	30.0%	29.0%			41.0%	29.0%			12.0%	29.0%		30.0%
Maximum Green (s)	25.0	24.0			36.0	25.0			7.0	25.0		25.0
Yellow Time (s)	3.0	3.0			3.0	3.0			3.0	3.0		3.0
All-Red Time (s)	2.0	2.0			2.0	1.0			2.0	1.0		2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0	0.0		0.0
Total Lost Time (s)	5.0	5.0			5.0	4.0			5.0	4.0		5.0
Lead/Lag	Lead	Lag				Lag			Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0			2.0	2.0			2.0	2.0		2.0
Recall Mode	Min	C-Max			C-Max	Min			None	Min		Min
Walk Time (s)	7.0				7.0	7.0				7.0		7.0
Flash Dont Walk (s)	16.0				12.0	16.0				16.0		16.0
Pedestrian Calls (#/hr)	0				0	0				0		0
Act Effct Green (s)	20.1	41.7			47.4	70.9			4.5	18.5		20.1
Actuated g/C Ratio	0.20	0.42			0.47	0.71			0.04	0.18		0.20
v/c Ratio	0.83	0.41			0.42	0.16			0.06	0.78		0.45
Control Delay	58.9	25.2			13.0	0.4			0.2	46.2		4.0
Queue Delay	0.0	0.0			0.5	0.4			0.0	0.0		0.0
Total Delay	58.9	25.2			13.5	0.8			0.2	46.2		4.0
LOS	E	C			B	A			A	D		A
Approach Delay		36.7			10.8							
Approach LOS		D			B							
Queue Length 50th (ft)	159	127			100	0			0	137		0
Queue Length 95th (ft)	229	197			154	0			0	220		9
Internal Link Dist (ft)		653			168			565			280	
Turn Bay Length (ft)	145											
Base Capacity (vph)	394	1249			1480	1026			567	386		494
Starvation Cap Reductn	0	0			432	523			0	0		0
Spillback Cap Reductn	0	0			0	0			0	0		0
Storage Cap Reductn	0	0			0	0			0	0		0
Reduced v/c Ratio	0.66	0.41			0.59	0.32			0.06	0.58		0.40

Intersection Summary

Area Type: CBD

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 94 (94%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 23.8 Intersection LOS: C

Intersection Capacity Utilization 55.1% ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 121: Temple Street/Staniford Streer & Cambridge Street

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	405	27	0	0
Future Volume (Veh/h)	0	0	405	27	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.88	0.88	0.92	0.92
Hourly flow rate (vph)	0	0	460	31	0	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)						
pX, platoon unblocked						
vC, conflicting volume	491				476	476
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	491				476	476
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1083				552	593

Direction, Lane #	WB 1
Volume Total	491
Volume Left	0
Volume Right	31
cSH	1700
Volume to Capacity	0.29
Queue Length 95th (ft)	0
Control Delay (s)	0.0
Lane LOS	
Approach Delay (s)	0.0
Approach LOS	

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑			↑↑	↱			↱	↰		↱
Traffic Volume (vph)	213	538	0	0	510	171	0	0	12	213	0	225
Future Volume (vph)	213	538	0	0	510	171	0	0	12	213	0	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	145		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	0		1	1		1
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.865			0.850
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1547	2997	0	0	3065	1346	0	0	1183	1518	0	1384
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1547	2997	0	0	3065	1346	0	0	1183	1518	0	1384
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						190			588			259
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		740			255			645			358	
Travel Time (s)		16.8			5.8			14.7			8.1	
Peak Hour Factor	0.98	0.98	0.98	0.90	0.90	0.90	1.00	1.00	1.00	0.87	0.87	0.87
Heavy Vehicles (%)	5%	3%	2%	0%	6%	8%	0%	0%	25%	7%	0%	5%
Parking (#/hr)		0										
Adj. Flow (vph)	217	549	0	0	567	190	0	0	12	245	0	259
Shared Lane Traffic (%)												
Lane Group Flow (vph)	217	549	0	0	567	190	0	0	12	245	0	259
Turn Type	Prot	NA			NA	pm+ov			Prot	Prot		Over
Protected Phases	3	2			6	4			1	4		3
Permitted Phases						6						
Detector Phase	3	2			6	4			1	4		3
Switch Phase												
Minimum Initial (s)	8.0	12.0			8.0	8.0			4.0	8.0		8.0
Minimum Split (s)	28.0	17.0			24.0	27.0			9.0	27.0		28.0
Total Split (s)	32.0	18.0			29.0	29.0			11.0	29.0		32.0
Total Split (%)	35.6%	20.0%			32.2%	32.2%			12.2%	32.2%		35.6%
Maximum Green (s)	27.0	13.0			24.0	25.0			6.0	25.0		27.0
Yellow Time (s)	3.0	3.0			3.0	3.0			3.0	3.0		3.0
All-Red Time (s)	2.0	2.0			2.0	1.0			2.0	1.0		2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0	0.0		0.0
Total Lost Time (s)	5.0	5.0			5.0	4.0			5.0	4.0		5.0
Lead/Lag	Lead	Lag				Lag			Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0			2.0	2.0			2.0	2.0		2.0
Recall Mode	Min	C-Max			C-Max	Min			None	Min		Min
Walk Time (s)	7.0				7.0	7.0				7.0		7.0
Flash Dont Walk (s)	16.0				12.0	16.0				16.0		16.0
Pedestrian Calls (#/hr)	0				0	0				0		0
Act Effct Green (s)	17.0	38.3			40.2	64.0			4.5	18.8		17.0
Actuated g/C Ratio	0.19	0.43			0.45	0.71			0.05	0.21		0.19
v/c Ratio	0.74	0.43			0.41	0.19			0.02	0.78		0.55
Control Delay	49.2	24.1			20.6	1.4			0.1	49.5		8.5
Queue Delay	0.0	0.0			1.0	0.6			0.0	0.0		0.0
Total Delay	49.2	24.1			21.6	2.1			0.1	49.5		8.5
LOS	D	C			C	A			A	D		A
Approach Delay		31.2			16.7							
Approach LOS		C			B							
Queue Length 50th (ft)	117	108			112	0			0	132		0
Queue Length 95th (ft)	178	#273			203	22			0	187		51
Internal Link Dist (ft)		660			175			565			278	
Turn Bay Length (ft)	145											
Base Capacity (vph)	464	1275			1369	1009			627	424		596
Starvation Cap Reductn	0	0			521	536			0	0		0
Spillback Cap Reductn	0	0			0	0			0	0		0
Storage Cap Reductn	0	0			0	0			0	0		0
Reduced v/c Ratio	0.47	0.43			0.67	0.40			0.02	0.58		0.43

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 24.9 Intersection LOS: C
Intersection Capacity Utilization 53.6% ICU Level of Service A
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 121: Temple Street/Staniford Streer & Cambridge Street

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↱			
Traffic Volume (veh/h)	0	0	331	9	0	0
Future Volume (Veh/h)	0	0	331	9	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.89	0.89	0.92	0.92
Hourly flow rate (vph)	0	0	372	10	0	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)						
pX, platoon unblocked						
vC, conflicting volume	382				377	377
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	382				377	377
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1188				629	674

Direction, Lane #	WB 1
Volume Total	382
Volume Left	0
Volume Right	10
cSH	1700
Volume to Capacity	0.22
Queue Length 95th (ft)	0
Control Delay (s)	0.0
Lane LOS	
Approach Delay (s)	0.0
Approach LOS	

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	23.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑			↑↑	↱			↱	↰		↱
Traffic Volume (vph)	251	454	0	0	586	154	0	0	28	198	0	202
Future Volume (vph)	251	454	0	0	586	154	0	0	28	198	0	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	145		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	0		1	1		1
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.865			0.850
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1577	2997	0	0	3124	1384	0	0	1382	1547	0	1384
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1577	2997	0	0	3124	1384	0	0	1382	1547	0	1384
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						167			547			232
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		733			248			645			360	
Travel Time (s)		16.7			5.6			14.7			8.2	
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.84	0.84	0.84	0.87	0.87	0.87
Heavy Vehicles (%)	3%	3%	0%	0%	4%	5%	0%	0%	7%	5%	0%	5%
Parking (#/hr)		0										
Adj. Flow (vph)	289	522	0	0	637	167	0	0	33	228	0	232
Shared Lane Traffic (%)												
Lane Group Flow (vph)	289	522	0	0	637	167	0	0	33	228	0	232
Turn Type	Prot	NA			NA	pm+ov			Prot	Prot		Over
Protected Phases	3	2			6	4			1	4		3
Permitted Phases						6						
Detector Phase	3	2			6	4			1	4		3
Switch Phase												
Minimum Initial (s)	8.0	12.0			8.0	8.0			4.0	8.0		8.0
Minimum Split (s)	28.0	17.0			24.0	27.0			9.0	27.0		28.0
Total Split (s)	33.0	25.0			36.0	31.0			11.0	31.0		33.0
Total Split (%)	33.0%	25.0%			36.0%	31.0%			11.0%	31.0%		33.0%
Maximum Green (s)	28.0	20.0			31.0	27.0			6.0	27.0		28.0
Yellow Time (s)	3.0	3.0			3.0	3.0			3.0	3.0		3.0
All-Red Time (s)	2.0	2.0			2.0	1.0			2.0	1.0		2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0	0.0		0.0
Total Lost Time (s)	5.0	5.0			5.0	4.0			5.0	4.0		5.0
Lead/Lag	Lead	Lag				Lag			Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0			2.0	2.0			2.0	2.0		2.0
Recall Mode	Min	C-Max			C-Max	Min			None	Min		Min
Walk Time (s)	7.0				7.0	7.0				7.0		7.0
Flash Dont Walk (s)	16.0				12.0	16.0				16.0		16.0
Pedestrian Calls (#/hr)	0				0	0				0		0
Act Effct Green (s)	22.1	39.2			44.9	68.9			4.5	19.1		22.1
Actuated g/C Ratio	0.22	0.39			0.45	0.69			0.04	0.19		0.22
v/c Ratio	0.83	0.44			0.45	0.17			0.06	0.78		0.48
Control Delay	56.8	28.0			15.1	0.4			0.2	43.5		3.7
Queue Delay	0.0	0.0			0.6	0.5			0.0	0.0		0.0
Total Delay	56.8	28.0			15.7	0.8			0.2	43.5		3.7
LOS	E	C			B	A			A	D		A
Approach Delay		38.3			12.6							
Approach LOS		D			B							
Queue Length 50th (ft)	175	136			110	0			0	140		0
Queue Length 95th (ft)	244	218			178	1			0	223		10
Internal Link Dist (ft)		653			168			565			280	
Turn Bay Length (ft)	145											
Base Capacity (vph)	441	1174			1401	998			597	417		554
Starvation Cap Reductn	0	0			389	506			0	0		0
Spillback Cap Reductn	0	0			0	0			0	0		0
Storage Cap Reductn	0	0			0	0			0	0		0
Reduced v/c Ratio	0.66	0.44			0.63	0.34			0.06	0.55		0.42

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 94 (94%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 24.6 Intersection LOS: C
Intersection Capacity Utilization 57.3% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 121: Temple Street/Staniford Streer & Cambridge Street

	↰	→	←	↖	↘	↙
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↱			
Traffic Volume (veh/h)	0	0	415	28	0	0
Future Volume (Veh/h)	0	0	415	28	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.88	0.88	0.92	0.92
Hourly flow rate (vph)	0	0	472	32	0	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)						
pX, platoon unblocked						
vC, conflicting volume	504				488	488
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	504				488	488
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1071				543	584

Direction, Lane #	WB 1
Volume Total	504
Volume Left	0
Volume Right	32
cSH	1700
Volume to Capacity	0.30
Queue Length 95th (ft)	0
Control Delay (s)	0.0
Lane LOS	
Approach Delay (s)	0.0
Approach LOS	

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑			↑↑	↱			↱	↰		↱
Traffic Volume (vph)	213	539	0	0	511	172	0	0	21	214	0	225
Future Volume (vph)	213	539	0	0	511	172	0	0	21	214	0	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	145		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	0		1	1		1
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.865			0.850
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1547	2997	0	0	3065	1346	0	0	1183	1518	0	1384
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1547	2997	0	0	3065	1346	0	0	1183	1518	0	1384
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						191			587			259
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		740			255			645			358	
Travel Time (s)		16.8			5.8			14.7			8.1	
Peak Hour Factor	0.98	0.98	0.98	0.90	0.90	0.90	1.00	1.00	1.00	0.87	0.87	0.87
Heavy Vehicles (%)	5%	3%	2%	0%	6%	8%	0%	0%	25%	7%	0%	5%
Parking (#/hr)		0										
Adj. Flow (vph)	217	550	0	0	568	191	0	0	21	246	0	259
Shared Lane Traffic (%)												
Lane Group Flow (vph)	217	550	0	0	568	191	0	0	21	246	0	259
Turn Type	Prot	NA			NA	pm+ov			Prot	Prot		Over
Protected Phases	3	2			6	4			1	4		3
Permitted Phases						6						
Detector Phase	3	2			6	4			1	4		3
Switch Phase												
Minimum Initial (s)	8.0	12.0			8.0	8.0			4.0	8.0		8.0
Minimum Split (s)	28.0	17.0			24.0	27.0			9.0	27.0		28.0
Total Split (s)	32.0	18.0			29.0	29.0			11.0	29.0		32.0
Total Split (%)	35.6%	20.0%			32.2%	32.2%			12.2%	32.2%		35.6%
Maximum Green (s)	27.0	13.0			24.0	25.0			6.0	25.0		27.0
Yellow Time (s)	3.0	3.0			3.0	3.0			3.0	3.0		3.0
All-Red Time (s)	2.0	2.0			2.0	1.0			2.0	1.0		2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0	0.0		0.0
Total Lost Time (s)	5.0	5.0			5.0	4.0			5.0	4.0		5.0
Lead/Lag	Lead	Lag				Lag			Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0			2.0	2.0			2.0	2.0		2.0
Recall Mode	Min	C-Max			C-Max	Min			None	Min		Min
Walk Time (s)	7.0				7.0	7.0				7.0		7.0
Flash Dont Walk (s)	16.0				12.0	16.0				16.0		16.0
Pedestrian Calls (#/hr)	0				0	0				0		0
Act Effct Green (s)	17.0	36.3			40.1	64.0			4.5	18.9		17.0
Actuated g/C Ratio	0.19	0.40			0.45	0.71			0.05	0.21		0.19
v/c Ratio	0.74	0.45			0.42	0.19			0.03	0.77		0.55
Control Delay	49.2	26.2			20.7	1.4			0.1	49.4		8.5
Queue Delay	0.0	0.0			1.0	0.6			0.0	0.0		0.0
Total Delay	49.2	26.2			21.7	2.1			0.1	49.4		8.5
LOS	D	C			C	A			A	D		A
Approach Delay		32.7			16.7							
Approach LOS		C			B							
Queue Length 50th (ft)	117	108			112	0			0	133		0
Queue Length 95th (ft)	178	#274			203	23			0	188		51
Internal Link Dist (ft)		660			175			565			278	
Turn Bay Length (ft)	145											
Base Capacity (vph)	464	1209			1366	1009			626	424		596
Starvation Cap Reductn	0	0			518	535			0	0		0
Spillback Cap Reductn	0	0			0	0			0	0		0
Storage Cap Reductn	0	0			0	0			0	0		0
Reduced v/c Ratio	0.47	0.45			0.67	0.40			0.03	0.58		0.43

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 25.4 Intersection LOS: C
Intersection Capacity Utilization 53.6% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 121: Temple Street/Staniford Streer & Cambridge Street

	↗	→	←	↖	↘	↙
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↱			
Traffic Volume (veh/h)	0	0	331	12	0	0
Future Volume (Veh/h)	0	0	331	12	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.89	0.89	0.92	0.92
Hourly flow rate (vph)	0	0	372	13	0	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)						
pX, platoon unblocked						
vC, conflicting volume	385				378	378
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	385				378	378
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1185				627	673

Direction, Lane #	WB 1
Volume Total	385
Volume Left	0
Volume Right	13
cSH	1700
Volume to Capacity	0.23
Queue Length 95th (ft)	0
Control Delay (s)	0.0
Lane LOS	
Approach Delay (s)	0.0
Approach LOS	

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑			↑↑	↱			↱	↰		↱
Traffic Volume (vph)	251	455	0	0	586	155	0	0	33	200	0	202
Future Volume (vph)	251	455	0	0	586	155	0	0	33	200	0	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	145		0	0		0	0		0	0		0
Storage Lanes	1		0	0		1	0		1	1		1
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.865			0.850
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1577	2997	0	0	3124	1384	0	0	1382	1547	0	1384
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1577	2997	0	0	3124	1384	0	0	1382	1547	0	1384
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						168			546			232
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		733			248			645			360	
Travel Time (s)		16.7			5.6			14.7			8.2	
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.84	0.84	0.84	0.87	0.87	0.87
Heavy Vehicles (%)	3%	3%	0%	0%	4%	5%	0%	0%	7%	5%	0%	5%
Parking (#/hr)		0										
Adj. Flow (vph)	289	523	0	0	637	168	0	0	39	230	0	232
Shared Lane Traffic (%)												
Lane Group Flow (vph)	289	523	0	0	637	168	0	0	39	230	0	232
Turn Type	Prot	NA			NA	pm+ov			Prot	Prot		Over
Protected Phases	3	2			6	4			1	4		3
Permitted Phases						6						
Detector Phase	3	2			6	4			1	4		3
Switch Phase												
Minimum Initial (s)	8.0	12.0			8.0	8.0			4.0	8.0		8.0
Minimum Split (s)	28.0	17.0			24.0	27.0			9.0	27.0		28.0
Total Split (s)	33.0	25.0			36.0	31.0			11.0	31.0		33.0
Total Split (%)	33.0%	25.0%			36.0%	31.0%			11.0%	31.0%		33.0%
Maximum Green (s)	28.0	20.0			31.0	27.0			6.0	27.0		28.0
Yellow Time (s)	3.0	3.0			3.0	3.0			3.0	3.0		3.0
All-Red Time (s)	2.0	2.0			2.0	1.0			2.0	1.0		2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0	0.0		0.0
Total Lost Time (s)	5.0	5.0			5.0	4.0			5.0	4.0		5.0
Lead/Lag	Lead	Lag				Lag			Lead	Lag		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0			2.0	2.0			2.0	2.0		2.0
Recall Mode	Min	C-Max			C-Max	Min			None	Min		Min
Walk Time (s)	7.0				7.0	7.0				7.0		7.0
Flash Dont Walk (s)	16.0				12.0	16.0				16.0		16.0
Pedestrian Calls (#/hr)	0				0	0				0		0
Act Effct Green (s)	22.1	39.0			44.7	68.9			4.5	19.2		22.1
Actuated g/C Ratio	0.22	0.39			0.45	0.69			0.04	0.19		0.22
v/c Ratio	0.83	0.45			0.46	0.17			0.07	0.78		0.48
Control Delay	56.8	28.2			15.2	0.4			0.2	43.6		3.7
Queue Delay	0.0	0.0			0.6	0.5			0.0	0.0		0.0
Total Delay	56.8	28.2			15.8	0.8			0.2	43.6		3.7
LOS	E	C			B	A			A	D		A
Approach Delay		38.3			12.7							
Approach LOS		D			B							
Queue Length 50th (ft)	175	137			110	0			0	141		0
Queue Length 95th (ft)	244	219			178	1			0	225		10
Internal Link Dist (ft)		653			168			565			280	
Turn Bay Length (ft)	145											
Base Capacity (vph)	441	1170			1397	997			596	417		554
Starvation Cap Reductn	0	0			386	505			0	0		0
Spillback Cap Reductn	0	0			0	0			0	0		0
Storage Cap Reductn	0	0			0	0			0	0		0
Reduced v/c Ratio	0.66	0.45			0.63	0.34			0.07	0.55		0.42

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 94 (94%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 24.7 Intersection LOS: C
Intersection Capacity Utilization 57.4% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 121: Temple Street/Staniford Streer & Cambridge Street

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↱			
Traffic Volume (veh/h)	0	0	415	36	0	0
Future Volume (Veh/h)	0	0	415	36	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.88	0.88	0.92	0.92
Hourly flow rate (vph)	0	0	472	41	0	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)						
pX, platoon unblocked						
vC, conflicting volume	513				492	492
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	513				492	492
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1063				539	580

Direction, Lane #	WB 1
Volume Total	513
Volume Left	0
Volume Right	41
cSH	1700
Volume to Capacity	0.30
Queue Length 95th (ft)	0
Control Delay (s)	0.0
Lane LOS	
Approach Delay (s)	0.0
Approach LOS	

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	30.0%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX C

PEDESTRIAN WIND ASSESSMENT

Suffolk University – Law School

Boston, MA

Pedestrian Wind Assessment

RWDI # 1600041
March 30, 2016

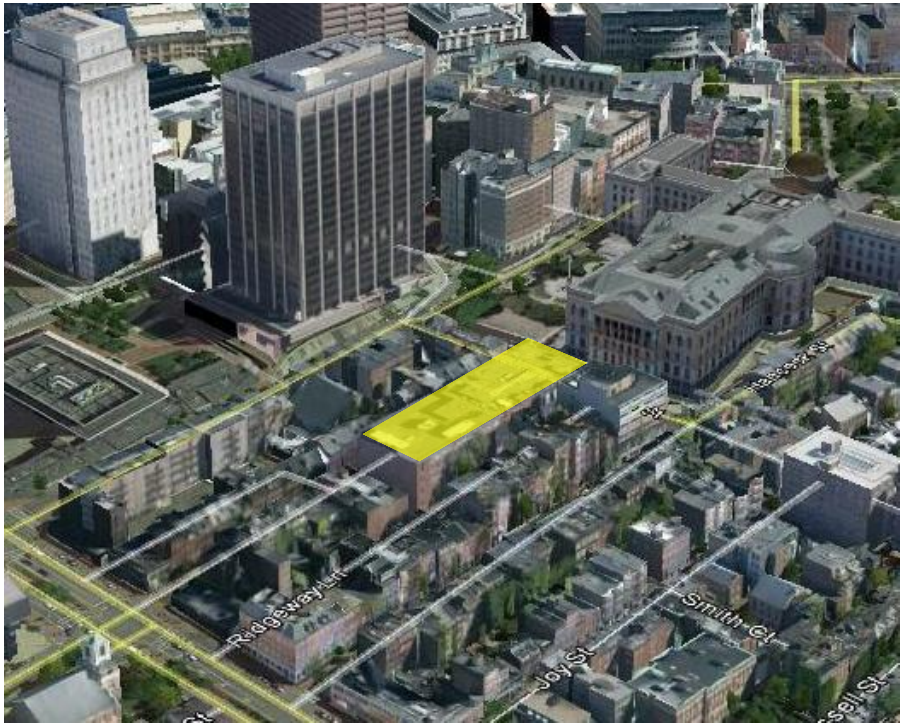


Image Courtesy of Google earth^{TM}

SUBMITTED TO

JDMD Owner LLC

cc: Matthew Snyder
Center Court Partners, LLC
914.522.0759
msnyder@cenercourtpartners.com

SUBMITTED BY

Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West
Guelph, Ontario, Canada N1K 1B8
519.823.1311

Hanqing Wu, Ph.D., P.Eng.
Technical Director / Principal
Hanqing.Wu@rwdi.com

Sonia Beaulieu, M.Sc., P.Eng., ing.
Senior Project Manager / Principal
Sonia.Beaulieu@rwdi.com

1. Introduction

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by JDMD Owner LLC to assess the change in pedestrian wind conditions due to the proposed renovation of the Suffolk University Law School building on Temple Street in Boston, MA (Image 1). The objective of this assessment is to provide a qualitative evaluation of wind comfort conditions on and around the development and recommend mitigation measures, if necessary.

This qualitative assessment is based on the following:

- a review of regional long-term meteorological data;
- our previous wind-tunnel tests on buildings in the Boston area, including several on the Suffolk University campus;
- design drawings received by RWDI on March 28, 2016;
- our engineering judgment and expert knowledge of wind flows around buildings[1,3]; and
- Use of software developed by RWDI (*Windestimator*[2]) for estimating the potential wind comfort conditions around generalized building forms.

This qualitative approach provides a screening-level estimation of potential wind conditions. To quantify these conditions or refine any conceptual mitigation measures, physical scale model tests would typically be required.

Note that other wind issues, such as those relating to cladding and structural loads, door pressures, exhaust re-entrainment, snowdrifts, etc., are not considered in the scope of this assessment.

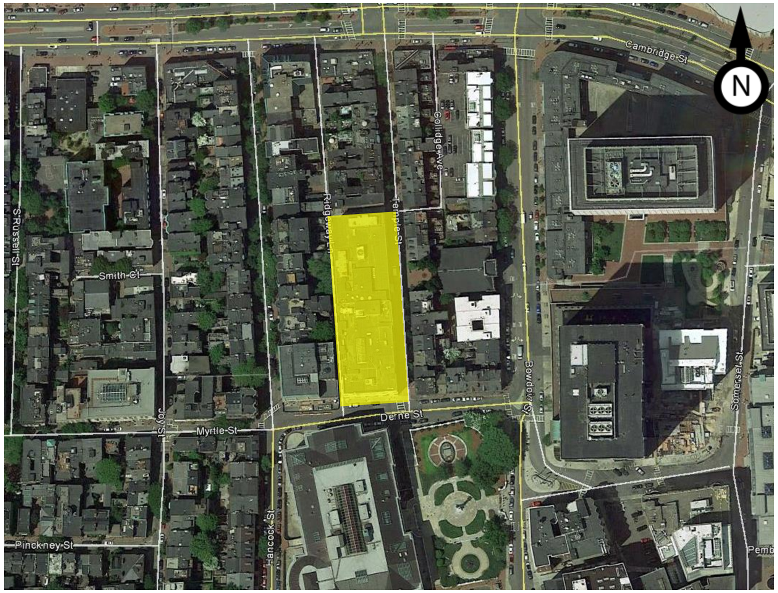


Image 1 - Aerial Photograph of Existing Site and Surroundings
(Image courtesy of Google earth^{TM})

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1. H. Wu and F. Kriksic (2012). “Designing for Pedestrian Comfort in Response to Local Climate”, *Journal of Wind Engineering and Industrial Aerodynamics*, vol.104-106, pp.397-407.
2. H. Wu, C.J. Williams, H.A. Baker and W.F. Waechter (2004), “Knowledge-based Desk-Top Analysis of Pedestrian Wind Conditions”, *ASCE Structure Congress 2004,* Nashville, Tennessee.
3. C.J. Williams, H. Wu, W.F. Waechter and H.A. Baker (1999), “Experience with Remedial Solutions to Control Pedestrian Wind Problems”, *10th International Conference on Wind Engineering*, Copenhagen, Denmark.

2. Building and Site Information

The existing 5 to 6-story building is located on the north side of Derne Street between Temple Street and Ridgeway Lane (Images 1 and 2). Massings immediately surrounding the building are similar in height, while those located further to the north side of Cambridge Street are mid- and high-rise. More high-rise buildings are located to the northeast through southeast in the Boston downtown area. The State House and Boston Common are situated to the south and southwest, respectively, while dense buildings of a few stories dominate to the west in the Beacon Hill area.

The proposed renovation will include the addition of two levels of penthouse for a total height of 115 feet. The penthouse will be recessed from the roof edge. Pedestrian areas on and around the building include the main and secondary entrances (A1 to A4 in Image 3a); sidewalks (B, B1 and B2); and roof-top terraces (C in Image 3b).

Image 2 – Street View of Existing Building and Surroundings (Courtesy of Google earth™)

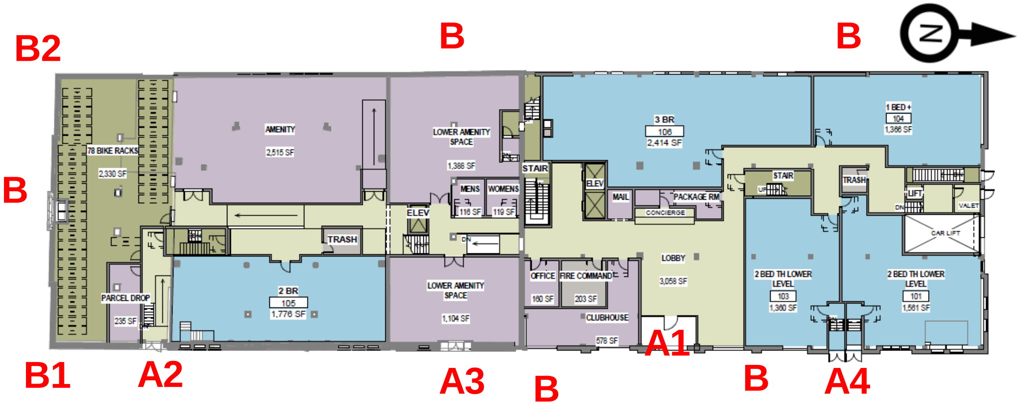


Image 3a – Level 1 Plan

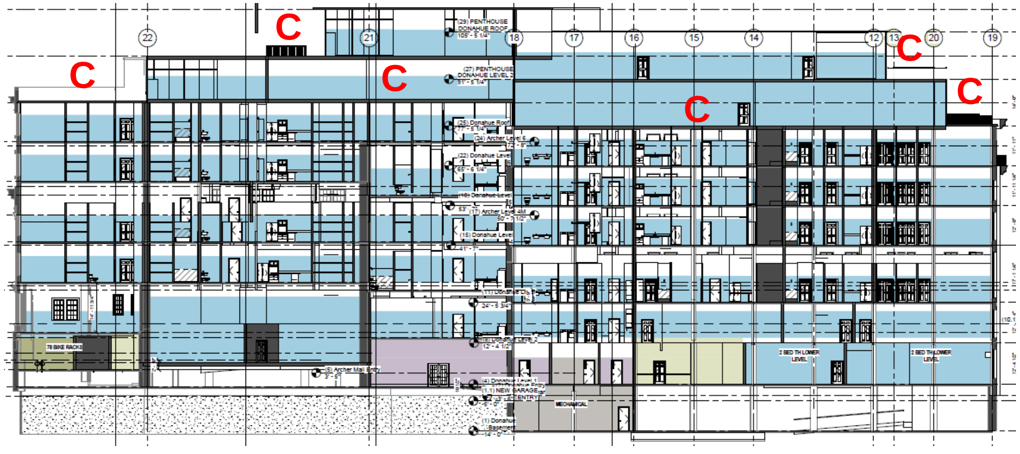


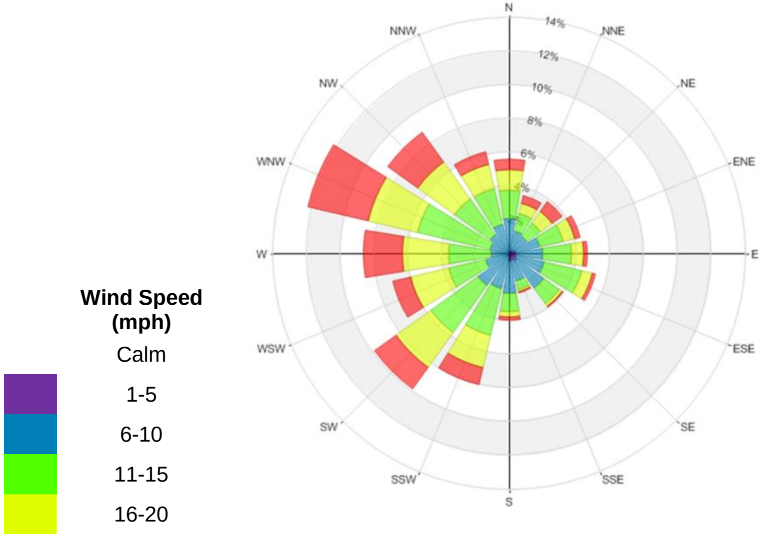
Image 3b – Building Section

3. Meteorological Data

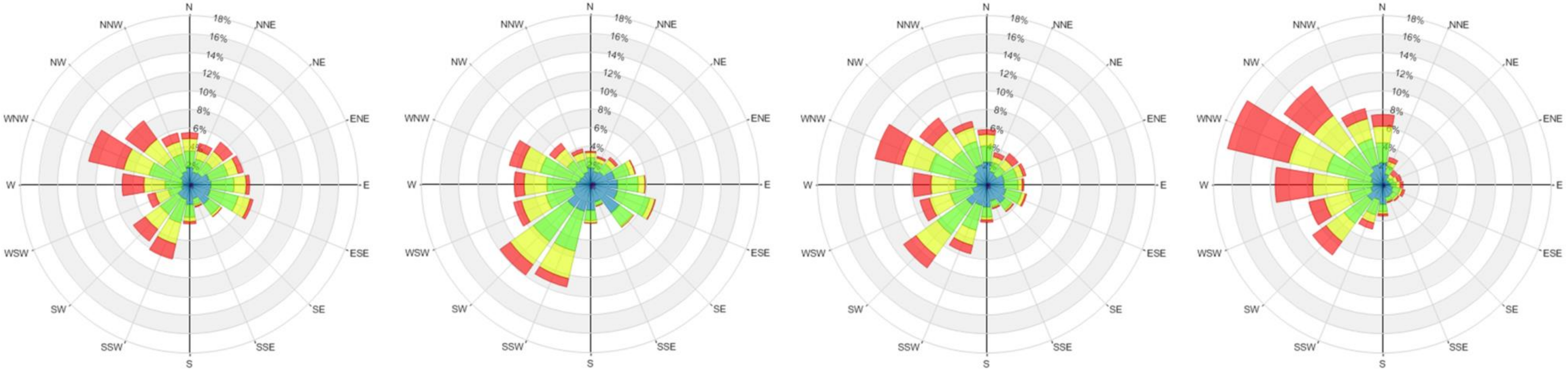
Wind statistics at Boston-Logan International Airport between 1981 and 2014 were analyzed for the spring (March to May), summer (June to August), fall (September to November) and winter (December to February) seasons. Image 4 graphically depict the distributions of wind frequency and directionality for these four seasons and for the annual period. When all winds are considered, winds from the northwest and southwest quadrants are predominant. The northeasterly winds are also frequent, especially in the spring.

Strong winds with mean speeds greater than 20 mph (red bands) measured at the airport are prevalently from the northwesterly directions throughout the year, while the southwesterly and northeasterly winds are also frequent.

Therefore, winds from the northwest, southwest and northeast directions are considered most relevant to the current study, while winds from other directions are also considered in our analysis.



Annual Winds



Spring (March to May) **Summer (June to August)** **Fall (September to November)** **Winter (December to February)**

Image 4 - Directional Distribution (%) of Winds (Blowing From) - Boston Logan International Airport (1981 to 2014)

4. Explanation of Wind Criteria

The BRA has adopted two standards for assessing the relative wind comfort of pedestrians. The first criterion states that an effective gust velocity (hourly mean wind speed +1.5 times the root mean square wind speed) of 31 mph should not be exceeded more than one percent of the time. The second set of criteria used by the BRA to determine the acceptability of specific locations is based on the work of Melbourne[4]. This set of criteria is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing, or walking. The criteria are expressed in terms of benchmarks for the 1-hour mean wind speed exceeded 1% of the time (i.e., the 99-percentile mean wind speed). They are as follows:

Table 1: BRA Mean Wind Criteria *

Dangerous	*> 27 mph*
Uncomfortable for Walking	*> 19 and ≤ 27 mph*
Comfortable for Walking	*> 15 and ≤ 19 mph*
Comfortable for Standing	*> 12 and ≤ 15 mph*
Comfortable for Sitting	*< 12 mph*

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

Pedestrians on sidewalks will be active and wind speeds comfortable for walking are appropriate. Lower wind speeds comfortable for standing are desired for building main entrances where people are apt to linger. For outdoor terraces, low wind speeds comfortable for sitting are desired during the summer. In other seasons, wind conditions in these areas may not be of a concern due to limited usage.

The wind climate found in a typical downtown location in Boston is generally comfortable for the pedestrian use of sidewalks and thoroughfares and meets the BRA effective gust velocity criterion of 31 mph. However, without any mitigation measures, this wind climate is likely to be frequently unsuitable for more passive activities such as sitting.

---

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

5. Potential Wind Conditions

In order to predict wind speeds and occurrence frequencies, consideration must be given to the local climate, as well as to building's geometry, orientation, position and height in the context of existing surroundings. Over the years, RWDI has conducted thousands of wind-tunnel model studies on pedestrian wind conditions around buildings, yielding a broad knowledge base. This knowledge has been incorporated into RWDI's proprietary software that allows, in many situations, for a qualitative, screening-level numerical estimation of pedestrian wind conditions without wind tunnel testing.

5.1 Existing Wind Conditions

The existing building is similar in height to its immediate surroundings, which shelter the site from any significant wind impact. The taller buildings to the east, however, tend to deflect winds down to the grade level, thereby causing a localized increase in wind activity along Derne Street.

RWDI has completed wind tunnel tests for other projects in this area of Boston (Image 5). Based on the results of these studies, we anticipate that uncomfortable wind speeds currently occur around the high-rise buildings around the east end of Derne Street. These conditions are likely caused by the prevailing northwest and northeast winds being deflected down by the existing towers (see Image 5 for illustration on photos of wind tunnel models).

However, these wind impacts are very localized, as lower wind speeds suitable for standing or walking activity were predicted in wind tunnel testing at the intersection of Derne Street and Temple Street (Location B1 in Image 3a). No dangerous or unacceptable wind speeds were expected due to the limited building height and dense surroundings.

Although we have no previous wind tunnel data specifically for the intersection of Derne Street and Ridgeway Lane (B2 in Image 3a), similar or lower wind speeds are expected at B2 as it is further away from the existing tall buildings to the east.

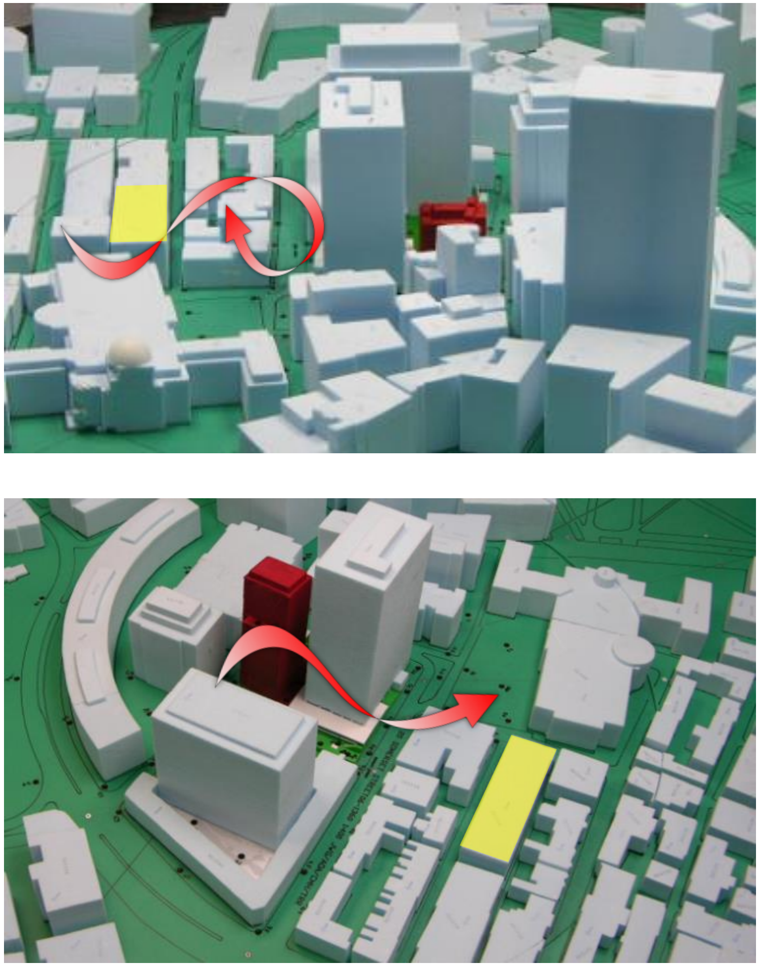


Image 5 – Winds Deflected down by Tall Buildings

5.2 Potential Wind Conditions

As stated previously, the proposed renovation will add one story plus two levels of penthouse to the existing building. We do not expect this modification will result in any significant change to the current wind conditions at entrances and on sidewalks. **No unacceptable or dangerous wind conditions are expected around the development.**

The following are additional comments on potential wind conditions in specific areas of the project (see Images 3a and 3b for reference).

A. Building Entrances

The main entrance to the building is located in the middle of the east façade (A1 in Image 3a). It is recessed from the main façade and designed with a large lobby. These are all positive design features for wind control.

The entrance is sheltered by the building from the prevailing northwest and southwest winds. The increased building height will not affect the building exposure to the northeast and east winds given the existing taller massings situated to the east. Therefore, wind conditions at this entrance are expected to remain the same as those that currently exist, which are considered appropriate for the intended use.

Similarly, appropriate wind conditions are also expected in secondary entrances along the street (A2 to A4) since they are located in a narrow, sheltered street and away from exposed building corners.

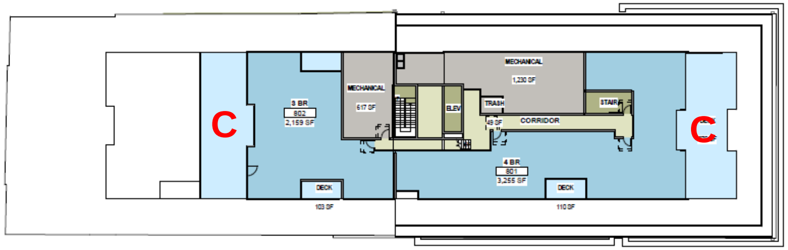
B. Sidewalks

The proposed building addition will increase the exposure (beyond the existing surroundings) to the southwest through north winds. This may result in a slight increase in wind speeds along Ridgeway Lane and Derne Street, especially at the southwest building corner (B2 in Image 3a). Since the penthouse is recessed from the roof edge in all directions, any increase in wind speeds at grade is expected to be minimal. The overall conditions are still expected to be comfortable for standing or walking activity throughout the year, similarly to the existing conditions.

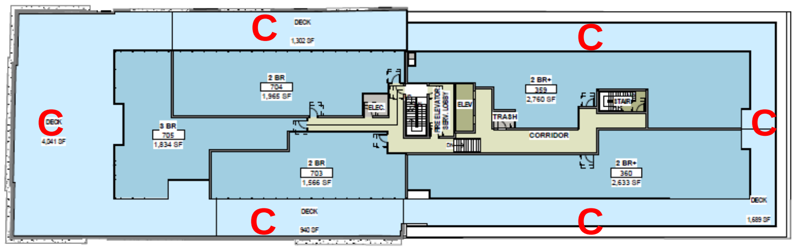
C. Roof-top Decks

Wind speeds comfortable for standing or walking are expected in the summer at the decks around the penthouse (Image 6) due to increased wind exposure, while lower wind speeds suitable for standing or sitting would typically be desirable. Reduced wind activity can be achieved by including 6 ft or taller guardrails along the perimeter of the decks (Image 6), plus local screens, partitions and/or landscaping on the decks.

Higher wind speeds are expected on the roof decks in other seasons, but this is not a concern due to the reduced usage.



Penthouse Level 2



Penthouse Level 1

Image 6 – Penthouse Plans

6. Conclusions

The proposed renovation includes the addition of two levels of penthouse. This modification to the existing building is not expected to significantly affect the current wind comfort conditions in the area due to the dense surroundings and the recessed penthouse. Based on the past wind tunnel results and local wind climate, appropriate wind conditions are expected in the entrance areas and along sidewalks, similar to those that currently exist. No unacceptable or dangerous wind conditions are expected around the development.

For outdoor decks on the roof around the penthouse, we recommend that wind control measures be added to reduce the wind activity so that conditions appropriate for standing or sitting are obtained in the summer. These measures may include tall guardrails, wind screens, partitions and/or landscaping.

7. Applicability of Results

In the event of any significant changes to the design, construction or operation of the building or addition of surroundings in the future, RWDI could provide an assessment of their impact on the design considered in this report. It is the responsibility of others to contact RWDI to initiate this process.

APPENDIX D

AERSCREEN MODEL OUTPUT

```
*** AERMOD - VERSION  14134 ***   *** ARCHER & DONOHUE                                                    ***        03/01/16
*** AERMET - VERSION SCREEN ***   ***                                                                     ***        10:50:51
                                                                                                                     PAGE   1
**MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN

                                            ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses URBAN Dispersion Algorithm for the SBL for     1 Source(s),
  for Total of    1 Urban Area(s):
  Urban Population =    645966.0 ;  Urban Roughness Length =  1.000 m

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Assumes Receptors on FLAT Terrain.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Used.

**Other Options Specified:
        NOCHKD   - Suppresses checking of date sequence in meteorology files
        SCREEN   - Use screening option
which forces calculation of centerline values

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  OTHER
```

```
**Model Calculates  1 Short Term Average(s) of:   1-HR

**This Run Includes:      1 Source(s);       1 Source Group(s); and      55 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: SCREEN

**Output Options Selected:
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs Tables of Overall Maximum Short Term Values (MAXTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs External File(s) of Ranked Values (RANKFILE Keyword)

         NOTE: Option for EXPonential format used in formatted output result files (FILEFORM Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     0.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.5 MB of RAM.
```

```
**MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN


                                                   *** POINT SOURCE DATA ***

              NUMBER EMISSION RATE                         BASE     STACK   STACK    STACK     STACK    BLDG   URBAN  CAP/  EMIS RATE
  SOURCE       PART.  (GRAMS/SEC)     X        Y         ELEV.    HEIGHT  TEMP.   EXIT VEL. DIAMETER  EXISTS SOURCE HOR   SCALAR
    ID         CATS.              (METERS) (METERS) (METERS) (METERS) (DEG.K)  (M/SEC)  (METERS)                         VARY BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

SOURCE           0   0.10000E+01      0.0       0.0     0.0    35.10   475.00    12.20     0.31    YES     YES   NO
```

```
**MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN


                                          *** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID                                                        SOURCE IDs
-----------                                                        ----------


 ALL        SOURCE      ,
```

```
*** AERMOD - VERSION  14134 ***   *** ARCHER & DONOHUE                                                    ***        03/01/16
*** AERMET - VERSION SCREEN ***   ***                                                                     ***        10:50:51
                                                                                                                     PAGE   4
**MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN


                                          *** SOURCE IDs DEFINED AS URBAN SOURCES ***

 URBAN ID   URBAN POP                                  SOURCE IDs
 --------   ---------                                  ----------


             645966.   SOURCE      ,
```

```
**MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN

                                         *** DIRECTION SPECIFIC BUILDING DIMENSIONS ***


SOURCE ID: SOURCE
 IFV    BH      BW      BL     XADJ    YADJ     IFV    BH      BW      BL     XADJ    YADJ
   1   34.1,   91.2,   32.4,  -16.2,    0.0,      2   34.1,   91.2,   32.4,  -16.2,    0.0,
   3   34.1,   91.2,   32.4,  -16.2,    0.0,      4   34.1,   91.2,   32.4,  -16.2,    0.0,
   5   34.1,   91.2,   32.4,  -16.2,    0.0,      6   34.1,   91.2,   32.4,  -16.2,    0.0,
   7   34.1,   91.2,   32.4,  -16.2,    0.0,      8   34.1,   91.2,   32.4,  -16.2,    0.0,
   9   34.1,   91.2,   32.4,  -16.2,    0.0,     10   34.1,   91.2,   32.4,  -16.2,    0.0,
  11   34.1,   91.2,   32.4,  -16.2,    0.0,     12   34.1,   91.2,   32.4,  -16.2,    0.0,
  13   34.1,   91.2,   32.4,  -16.2,    0.0,     14   34.1,   91.2,   32.4,  -16.2,    0.0,
  15   34.1,   91.2,   32.4,  -16.2,    0.0,     16   34.1,   91.2,   32.4,  -16.2,    0.0,
  17   34.1,   91.2,   32.4,  -16.2,    0.0,     18   34.1,   91.2,   32.4,  -16.2,    0.0,
  19   34.1,   91.2,   32.4,  -16.2,    0.0,     20   34.1,   91.2,   32.4,  -16.2,    0.0,
  21   34.1,   91.2,   32.4,  -16.2,    0.0,     22   34.1,   91.2,   32.4,  -16.2,    0.0,
  23   34.1,   91.2,   32.4,  -16.2,    0.0,     24   34.1,   91.2,   32.4,  -16.2,    0.0,
  25   34.1,   91.2,   32.4,  -16.2,    0.0,     26   34.1,   91.2,   32.4,  -16.2,    0.0,
  27   34.1,   91.2,   32.4,  -16.2,    0.0,     28   34.1,   91.2,   32.4,  -16.2,    0.0,
  29   34.1,   91.2,   32.4,  -16.2,    0.0,     30   34.1,   91.2,   32.4,  -16.2,    0.0,
  31   34.1,   91.2,   32.4,  -16.2,    0.0,     32   34.1,   91.2,   32.4,  -16.2,    0.0,
  33   34.1,   91.2,   32.4,  -16.2,    0.0,     34   34.1,   91.2,   32.4,  -16.2,    0.0,
  35   34.1,   91.2,   32.4,  -16.2,    0.0,     36   34.1,   91.2,   32.4,  -16.2,    0.0,
```

```
**MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN

                                                        *** DISCRETE CARTESIAN RECEPTORS ***
                                                      (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                                    (METERS)

    (      1.0,       0.0,       0.0,       0.0,      34.1);         (      2.0,       0.0,       0.0,       0.0,      34.1);
    (      3.0,       0.0,       0.0,       0.0,      34.1);         (      4.0,       0.0,       0.0,       0.0,      34.1);
    (      5.0,       0.0,       0.0,       0.0,      34.1);         (      6.0,       0.0,       0.0,       0.0,      34.1);
    (      7.0,       0.0,       0.0,       0.0,      34.1);         (      8.0,       0.0,       0.0,       0.0,      34.1);
    (      9.0,       0.0,       0.0,       0.0,      34.1);         (     10.0,       0.0,       0.0,       0.0,      34.1);
    (     11.0,       0.0,       0.0,       0.0,      34.1);         (     12.0,       0.0,       0.0,       0.0,      34.1);
    (     13.0,       0.0,       0.0,       0.0,      34.1);         (     14.0,       0.0,       0.0,       0.0,      34.1);
    (     15.0,       0.0,       0.0,       0.0,      34.1);         (     16.0,       0.0,       0.0,       0.0,      34.1);
    (     17.0,       0.0,       0.0,       0.0,      34.1);         (     18.0,       0.0,       0.0,       0.0,      34.1);
    (     19.0,       0.0,       0.0,       0.0,      34.1);         (     20.0,       0.0,       0.0,       0.0,      34.1);
    (     21.0,       0.0,       0.0,       0.0,      34.1);         (     22.0,       0.0,       0.0,       0.0,      34.1);
    (     23.0,       0.0,       0.0,       0.0,      34.1);         (     24.0,       0.0,       0.0,       0.0,      34.1);
    (     25.0,       0.0,       0.0,       0.0,      34.1);         (     26.0,       0.0,       0.0,       0.0,      34.1);
    (     27.0,       0.0,       0.0,       0.0,      34.1);         (     28.0,       0.0,       0.0,       0.0,      34.1);
    (     29.0,       0.0,       0.0,       0.0,      34.1);         (     30.0,       0.0,       0.0,       0.0,      34.1);
    (     31.0,       0.0,       0.0,       0.0,      34.1);         (     32.0,       0.0,       0.0,       0.0,      34.1);
    (     33.0,       0.0,       0.0,       0.0,      34.1);         (     34.0,       0.0,       0.0,       0.0,      34.1);
    (     35.0,       0.0,       0.0,       0.0,      34.1);         (     36.0,       0.0,       0.0,       0.0,      34.1);
    (     37.0,       0.0,       0.0,       0.0,      34.1);         (     38.0,       0.0,       0.0,       0.0,      34.1);
    (     39.0,       0.0,       0.0,       0.0,      34.1);         (     40.0,       0.0,       0.0,       0.0,      34.1);
    (     41.0,       0.0,       0.0,       0.0,      34.1);         (     42.0,       0.0,       0.0,       0.0,      34.1);
    (     43.0,       0.0,       0.0,       0.0,      34.1);         (     44.0,       0.0,       0.0,       0.0,      34.1);
    (     45.0,       0.0,       0.0,       0.0,      34.1);         (     46.0,       0.0,       0.0,       0.0,      34.1);
    (     47.0,       0.0,       0.0,       0.0,      34.1);         (     48.0,       0.0,       0.0,       0.0,      34.1);
    (     49.0,       0.0,       0.0,       0.0,      34.1);         (     50.0,       0.0,       0.0,       0.0,      34.1);
    (     51.0,       0.0,       0.0,       0.0,      34.1);         (     52.0,       0.0,       0.0,       0.0,      34.1);
    (     53.0,       0.0,       0.0,       0.0,      34.1);         (     54.0,       0.0,       0.0,       0.0,      34.1);
```

```
(     55.0,       0.0,       0.0,       0.0,      34.1);
```

```
**MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN

                                           *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                              (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1

               NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                                 *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                           (METERS/SEC)

                                                1.54,   3.09,   5.14,   8.23,  10.80,
```

```
 *** AERMOD - VERSION  14134 ***   *** ARCHER & DONOHUE                                                    ***        03/01/16
 *** AERMET - VERSION SCREEN ***   ***                                                                     ***        10:50:51
                                                                                                                      PAGE   8
 **MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN

                                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

   Surface file:   aerscreen_02_01.sfc                                                              Met Version: SCREEN
   Profile file:   aerscreen_02_01.pfl
   Surface format: FREE
   Profile format: FREE
   Surface station no.:    11111                  Upper air station no.:    22222
                  Name: SCREEN                                     Name: SCREEN
                  Year:   2010                                     Year:   2010

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 10 01 01   1 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.4  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
 10 01 02   2 01   -1.2  0.043 -9.000  0.020 -999.  104.      5.4  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
 10 01 03   3 01   -1.2  0.043 -9.000  0.020 -999.  208.      5.4  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
 10 01 04   4 01   -1.1  0.043 -9.000  0.020 -999.   21.      5.9  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
 10 01 05   5 01   -1.1  0.043 -9.000  0.020 -999.  104.      5.9  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
 10 01 06   6 01   -1.1  0.043 -9.000  0.020 -999.  208.      5.9  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
 10 01 07   7 01   -0.4  0.043 -9.000  0.020 -999.   21.     17.3  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
 10 01 08   8 01   -0.4  0.043 -9.000  0.020 -999.  104.     17.3  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
 10 01 09   9 01   -0.4  0.043 -9.000  0.020 -999.  208.     17.3  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
 10 01 10  10 01   -1.3  0.043 -9.000  0.020 -999.   21.      6.0  1.00   1.00   0.14    0.50  270.   10.0  310.9    2.0
 10 01 11  11 01   -1.3  0.043 -9.000  0.020 -999.  104.      6.0  1.00   1.00   0.14    0.50  270.   10.0  310.9    2.0
 10 01 12  12 01   -1.3  0.043 -9.000  0.020 -999.  208.      6.0  1.00   1.00   0.14    0.50  270.   10.0  310.9    2.0
 10 01 13  13 01   -1.2  0.043 -9.000  0.020 -999.   21.      6.6  1.00   1.00   0.14    0.50  270.   10.0  310.9    2.0
 10 01 14  14 01   -1.2  0.043 -9.000  0.020 -999.  104.      6.6  1.00   1.00   0.14    0.50  270.   10.0  310.9    2.0
 10 01 15  15 01   -1.2  0.043 -9.000  0.020 -999.  208.      6.6  1.00   1.00   0.14    0.50  270.   10.0  310.9    2.0
 10 01 16  16 01   -0.4  0.043 -9.000  0.020 -999.   21.     19.3  1.00   1.00   0.14    0.50  270.   10.0  310.9    2.0
 10 01 17  17 01   -0.4  0.043 -9.000  0.020 -999.  104.     19.3  1.00   1.00   0.14    0.50  270.   10.0  310.9    2.0
 10 01 18  18 01   -0.4  0.043 -9.000  0.020 -999.  208.     19.3  1.00   1.00   0.14    0.50  270.   10.0  310.9    2.0
```

```
10 01 19  19 01   -0.8  0.043 -9.000  0.020 -999.   21.      7.6  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
10 01 20  20 01   -0.8  0.043 -9.000  0.020 -999.  104.      7.6  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
10 01 21  21 01   -0.8  0.043 -9.000  0.020 -999.  208.      7.6  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
10 01 22  22 01   -0.8  0.043 -9.000  0.020 -999.   21.      8.3  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
10 01 23  23 01   -0.8  0.043 -9.000  0.020 -999.  104.      8.3  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
10 01 24  24 01   -0.8  0.043 -9.000  0.020 -999.  208.      8.3  1.00   1.00   0.14    0.50  270.   10.0  249.8    2.0
```

```
First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
10 01 01 01   10.0 1  270.    0.50   249.9   99.0  -99.00  -99.00
```

F indicates top of profile (=1) or below (=0)

```
**MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN

                                         *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  ALL      ***
                                             INCLUDING SOURCE(S):     SOURCE      ,

                                                        *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                                   ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

     X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)               X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
-
            1.00         0.00      392.66004  (10021112)                      2.00         0.00     1044.52755  (10021112)
            3.00         0.00     1205.73885  (10021112)                      4.00         0.00     1251.39131  (10051112)
            5.00         0.00     1477.25184  (10051112)                      6.00         0.00     1522.66981  (10051512)
            7.00         0.00     1485.52283  (10051712)                      8.00         0.00     1415.62010  (10052012)
            9.00         0.00     1325.42064  (10052012)                     10.00         0.00     1226.34920  (10052012)
           11.00         0.00     1127.77973  (10052012)                     12.00         0.00     1034.34138  (10052012)
           13.00         0.00      970.86752  (10072112)                     14.00         0.00      918.68281  (10072112)
           15.00         0.00      865.95802  (10072112)                     16.00         0.00      814.35120  (10072112)
           17.00         0.00      764.84167  (10072112)                     18.00         0.00      717.96283  (10072112)
           19.00         0.00      673.95966  (10072112)                     20.00         0.00      632.89409  (10072112)
           21.00         0.00      594.71445  (10072112)                     22.00         0.00      559.30262  (10072112)
           23.00         0.00      526.50379  (10072112)                     24.00         0.00      496.14566  (10072112)
           25.00         0.00      468.05083  (10072112)                     26.00         0.00      442.04446  (10072112)
           27.00         0.00      417.95883  (10072112)                     28.00         0.00      395.63593  (10072112)
           29.00         0.00      374.92865  (10072112)                     30.00         0.00      355.70118  (10072112)
           31.00         0.00      337.82888  (10072112)                     32.00         0.00      321.19781  (10072112)
           33.00         0.00      305.70412  (10072112)                     34.00         0.00      291.25329  (10072112)
           35.00         0.00      277.80103  (10031912)                     36.00         0.00      268.21998  (10031912)
           37.00         0.00      259.09425  (10031912)                     38.00         0.00      250.39950  (10031912)
           39.00         0.00      242.11242  (10031912)                     40.00         0.00      234.21080  (10031912)
           41.00         0.00      226.67351  (10031912)                     42.00         0.00      219.48053  (10031912)
```

```
43.00          0.00      212.61296  (10031912)                    44.00          0.00      206.05293  (10031912)
45.00          0.00      199.78357  (10031912)                    46.00          0.00      193.78895  (10031912)
47.00          0.00      188.05418  (10031912)                    48.00          0.00      182.56417  (10031912)
49.00          0.00      177.29969  (10031912)                    50.00          0.00      172.25496  (10031912)
51.00          0.00      167.41850  (10031912)                    52.00          0.00      162.77947  (10031912)
53.00          0.00      158.32771  (10031912)                    54.00          0.00      154.05364  (10031912)
55.00          0.00      149.94826  (10031912)
```

```
 *** AERMOD - VERSION  14134 ***   *** ARCHER & DONOHUE                                                       ***        03/01/16
 *** AERMET - VERSION SCREEN ***   ***                                                                        ***        10:50:51
                                                                                                                         PAGE  10
 **MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN

                                          *** THE MAXIMUM   50   1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  ALL      ***
                                              INCLUDING SOURCE(S):     SOURCE      ,

                                                    ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

 RANK        CONC    (YYMMDDHH) AT      RECEPTOR (XR,YR) OF TYPE    RANK        CONC    (YYMMDDHH) AT      RECEPTOR (XR,YR) OF
TYPE
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
-
    1.    1522.66981 (10051512) AT (      6.00,       0.00)  DC       26.    1415.62010 (10052012) AT (      8.00,       0.00)  DC
    2.    1520.27263 (10051112) AT (      6.00,       0.00)  DC       27.    1414.30926 (10051712) AT (      8.00,       0.00)  DC
    3.    1520.18773 (10050812) AT (      6.00,       0.00)  DC       28.    1414.17953 (10051712) AT (      5.00,       0.00)  DC
    4.    1502.74906 (10051712) AT (      6.00,       0.00)  DC       29.    1405.23561 (10051312) AT (      8.00,       0.00)  DC
    5.    1502.68565 (10051212) AT (      6.00,       0.00)  DC       30.    1405.13239 (10051012) AT (      8.00,       0.00)  DC
    6.    1502.58690 (10050912) AT (      6.00,       0.00)  DC       31.    1404.84941 (10051212) AT (      8.00,       0.00)  DC
    7.    1485.52283 (10051712) AT (      7.00,       0.00)  DC       32.    1404.66444 (10050912) AT (      8.00,       0.00)  DC
    8.    1479.82483 (10051212) AT (      7.00,       0.00)  DC       33.    1387.31572 (10051512) AT (      8.00,       0.00)  DC
    9.    1479.67099 (10050912) AT (      7.00,       0.00)  DC       34.    1375.18700 (10051112) AT (      8.00,       0.00)  DC
   10.    1479.16981 (10052012) AT (      7.00,       0.00)  DC       35.    1374.98698 (10050812) AT (      8.00,       0.00)  DC
   11.    1478.65140 (10052012) AT (      6.00,       0.00)  DC       36.    1372.74737 (10051812) AT (      5.00,       0.00)  DC
   12.    1477.25184 (10051112) AT (      5.00,       0.00)  DC       37.    1366.29497 (10052012) AT (      5.00,       0.00)  DC
   13.    1477.20372 (10051512) AT (      7.00,       0.00)  DC       38.    1357.27109 (10051012) AT (      5.00,       0.00)  DC
   14.    1474.19952 (10050812) AT (      5.00,       0.00)  DC       39.    1357.26120 (10051312) AT (      5.00,       0.00)  DC
   15.    1472.37484 (10051512) AT (      5.00,       0.00)  DC       40.    1344.43753 (10051812) AT (      8.00,       0.00)  DC
   16.    1468.82818 (10051112) AT (      7.00,       0.00)  DC       41.    1325.42064 (10052012) AT (      9.00,       0.00)  DC
   17.    1468.67031 (10050812) AT (      7.00,       0.00)  DC       42.    1319.48356 (10051712) AT (      9.00,       0.00)  DC
   18.    1466.68176 (10051312) AT (      6.00,       0.00)  DC       43.    1316.93773 (10051312) AT (      9.00,       0.00)  DC
   19.    1466.63778 (10051012) AT (      6.00,       0.00)  DC       44.    1316.82273 (10051012) AT (      9.00,       0.00)  DC
   20.    1465.65965 (10051312) AT (      7.00,       0.00)  DC       45.    1307.74360 (10051212) AT (      9.00,       0.00)  DC
   21.    1465.57890 (10051012) AT (      7.00,       0.00)  DC       46.    1307.54424 (10050912) AT (      9.00,       0.00)  DC
   22.    1446.41452 (10051812) AT (      6.00,       0.00)  DC       47.    1281.19645 (10051512) AT (      9.00,       0.00)  DC
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 23.    1421.78037 (10051212) AT (      5.00,       0.00)  DC       48.    1266.95007 (10051112) AT (      9.00,       0.00)  DC
 24.    1421.76837 (10050912) AT (      5.00,       0.00)  DC       49.    1266.72912 (10050812) AT (      9.00,       0.00)  DC
 25.    1420.23520 (10051812) AT (      7.00,       0.00)  DC       50.    1251.39131 (10051112) AT (      4.00,       0.00)  DC

*** RECEPTOR TYPES:  GC = GRIDCART
                     GP = GRIDPOLR
                     DC = DISCCART
                     DP = DISCPOLR
```

```
 **MODELOPTs:   NonDFAULT CONC      FLAT      FLGPOL    NOCHKD    SCREEN

                                                         *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                                               ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

                                                                 DATE
NETWORK
GROUP ID                                  AVERAGE CONC     (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE
GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
-

ALL      HIGH   1ST HIGH VALUE IS    1522.66981  ON 10051512: AT (       6.00,        0.00,     0.00,     0.00,   34.10)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
```

```
*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of            0 Fatal Error Message(s)
A Total of            0 Warning Message(s)
A Total of            0 Informational Message(s)

A Total of          536 Hours Were Processed

A Total of            0 Calm Hours Identified

A Total of            0 Missing Hours Identified (  0.00 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
              ***  NONE  ***


   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
```

APPENDIX E

CLIMATE CHANGE PREPAREDNESS AND RESILIENCY CHECKLIST

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:	Archer Donahue Buildings
Project Address Primary:	41 Temple Street, Boston MA
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	David Raftery, Manager, JDMD Owner, LLC, davidraftery@comcast.net

A.2 - Team Description

Owner / Developer:	JDMD Owner, LLC
Architect:	The Architectural Team
Engineer (building systems):	WSP Group
Sustainability / LEED:	EBI Consulting
Permitting:	O'Donovan Law Office, Sean T. O'Donovan ESQ.
Construction Management:	Consigli Construction Co., Inc.
Climate Change Expert:	EBI Consulting

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:	*Amenities area/residential*

What is the principal Construction Type – select most appropriate type?

☐ Wood Frame	☐ Masonry	☑ Steel Frame	☑ Concrete

Describe the building?

Site Area:	*27,758 SF SF*	Building Area:	*190,781 SF*
Building Height:	*+/- 110 Ft.*	Number of Stories:	*8 Flrs.*
First Floor Elevation (reference Boston City Base):	*60.12 ft Elev.*	Are there below grade spaces/levels, if yes how many:	*1 level No / Number of Levels*

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:	*2500 kW base and 1400 kW peak*	Heating:	*4200 MMBtu/hr base and 5250 MMBtu/hr peak*
What is the planned building Energy Use Intensity:	*36.8 kbtu/SF*	Cooling:	*300 Tons/hr base and 350 Tons/hr peak*

What are the peak energy demands of your critical systems in the event of a service interruption?

Electric:	*250 kW*	Heating:	*0 (MMBtu/hr)*
		Cooling:	*0 (Tons/hr)*

What is nature and source of your back-up / emergency generators?

Electrical Generation:	*300 (kW)*		Fuel Source:	*Diesel engine*
System Type and Number of Units:	☑ Combustion Engine	☐Gas Turbine	☐Combine Heat and Power	*1 (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 / 91** *Deg.*	*based on ASHRAE Fundamentals 2013 99.6% heating; 0.4% cooling

What Extreme Heat Event characteristics will be used for project planning – Peak High, Duration, and Frequency?

95 Deg.	*5 Days*	*6 Events / yr.*

What Drought characteristics will be used for project planning – Duration and Frequency?

30 Days	*1 Events / 5 yr.*

What Extreme Rain Event characteristics will be used for project planning – Seasonal Rain Fall, Peak Rain Fall, and Frequency of Events per year?

45 Inches / yr.	*4 Inches*	*1 Event / 2 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?

105 mph Peak Wind	*10 Hours*	*1 Event / 4 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 %*
How is performance determined:	Energy Model

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 = 38*	Walls / Curtain Wall Assembly:	*R = 21, 29 U = 0.42*
Foundation:	*R = 25*	Basement / Slab:	*R = 10*
Windows:	*R = 2.5 / U = 0.35*	Doors:	*R = 1.4 / U =0.7*

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:				

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?	no		
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 55/75 ft*

Building Proximity to Water: *2,500 Ft.*

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?

2,030 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

APPENDIX F

ACCESSIBILITY 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:	33-61 Temple Street
Project Address Primary:	33-61 Temple Street, Boston, MA
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	David Raftery / Project Head / JDMD Owner, LLC / davidraftery@comcast.net / 781.326.3961

Team Description

Owner / Developer:	JDMD Owner, LLC
Architect:	The Architectural Team, Inc
Engineer (building systems):	WSP Parsons Brinckerhoff
Sustainability / LEED:	EBI Consulting
Permitting:	O'Donovan Law Office
Construction Management:	Consigli Construction

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:

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 Units, Residential Lobby and amenity space*

What is the Construction Type – select most appropriate type?

Wood Frame	Masonry	**Steel Frame**	**Concrete**

Describe the building?

Site Area:	*27,758 SF*	Building Area:	*173,000SF*
Building Height:	*+/- 115 Ft.*	Number of Stories:	*8 Flrs.*
First Floor Elevation:	*60.12 Ft Elev.*	Are there below grade spaces:	***Yes** / No*

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 development is located on a gently sloping side of Beacon Hill. The surrounding streets are classified as Neighborhood Residential Streets, per the Boston Complete Streets Guidelines. Temple Street is a shared street for about 40ft (no curb) between the entry to the development and a small city pocket park (Temple Street Park) which face each other across the street.
List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter rail, subway, bus, etc.	Park Street Station (Green and Red Lines) .04 Miles

List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc.	Massachusetts General Hospital, Boston Public Library – West End Branch, and Beacon Hill Nursery School
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.	Temple Street does connect the Derne Street Entrance to the Massachusetts State House with Cambridge Street at Staniford Street and the Commonwealth of Massachusetts Office Building at that intersection.

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?	There are sidewalks on Temple and Derne Streets. There is not a sidewalk on Ridgeway Lane. There are pedestrian sidewalk curb ramps at the intersections of Derne St and Ridgeway Lane and Derne St and Temple Street. Temple Street is a shared street directly in front of development entry.
If yes above, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.	The Derne Street sidewalks and curb ramps are concrete in good condition. The Temple Street sidewalks and shared street pavement are brick in fair to good condition.
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.	Yes, the sidewalks and pedestrian ramps are existing to remain. The sidewalks and ramps have not been verified to be compliant.
Is the development site within a historic district? If yes, please identify.	Yes, the project is in the Beacon Hill Historic District.

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	There are no new proposed sidewalks.
If yes above, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.	N/A
What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.	N/A
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?	N/A
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?	N/A
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?	N/A

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?	60 valet spaces
What is the total number of accessible spaces provided at the development site?	Per 521 CMR 23.8, Valet parking facilities need to provide an accessible Passenger Loading Zone, but need not provide accessible spaces. One accessible Passenger Loading Zone will be provided.
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?	All parking is valet, there is no designated visitor parking.
Has a drop-off area been identified? If yes, will it be accessible?	Yes, it will be accessible complying with 521 CMR 23.7.2.
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.	See attached diagram.

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.	N/A. The development is built to the property line and does not have exterior circulation on the property.
Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.	The main entry to the building and the entry from the valet passenger loading zone are both flush conditions with the exterior sidewalk. There are 3 direct entries to residential units all of which do have stairs. One of these three is the existing entry on Derne Street which will remain an be utilized as a direct entry to a residential unit.
Are the accessible entrance and the standard entrance integrated?	Yes.
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.	There are no public roof decks or courtyards.
Has an accessible routes way-finding and signage package been developed? If yes, please describe.	Not at this time.

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.

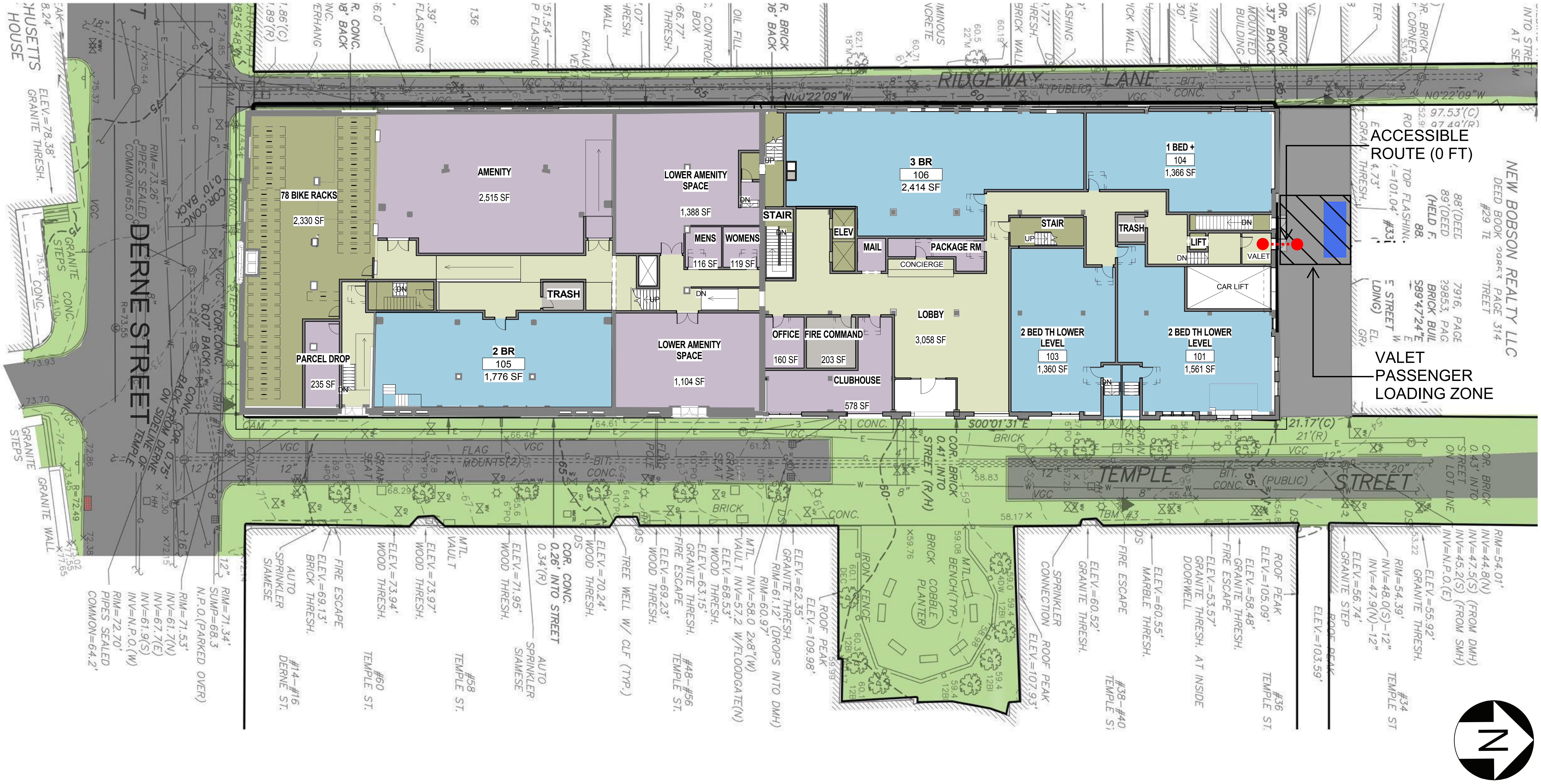
What is the total number of proposed units for the development?	75 units
How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?	75 for sale, market value units
How many accessible units are being proposed?	0 units, Per 521 CMR section 9.4, Group 2 units are not required for multiple dwellings for sale. All 75 units in the project are for sale.

Please provide plan and diagram of the accessible units.	N/A
How many accessible units will also be affordable? If none, please describe reason.	N/A
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.	There are a few units which will have internal stairs due to existing changes in floor level in the building. Additionally it is proposed to have 2 townhome 2 level units.
Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor's Commission for Persons with Disabilities Advisory Board?	Not at this time.
Did the Advisory Board vote to support this project? **If no,** what recommendations did the Advisory Board give to make this project more accessible?	N/A

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



ACCESSIBLE ROUTE (0 FT)

VALET PASSENGER LOADING ZONE

Archer | Donahue
Boston, MA

ACCESSIBLE ROUTE DIAGRAM
- ACCESSIBILITY CHECKLIST

March 30, 2016
DEVELOPER : JDMD Owner, LLC
ARCHITECT : The Architectural Team

14188

tat the architectural team

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ARCHITECTURE & INTERIORS