JANUARY 2017

# 1000 Boylston Street Project BOSTON, MA

## PROJECT NOTIFICATION FORM


PROPONENT
ADG Scotia II LLC
c/o Weiner Ventures LLC

SUBMITTED TO
Boston Redevelopment Authority,
d/b/a Boston Planning & Development Agency

SUBMITTED BY
vhb

IN ASSOCIATION WITH
Elkus Manfredi Architects
Goulston & Storrs
Haley & Aldrich
WSP | Parsons Brinckerhoff
RWDI

**ADG SCOTIA II LLC**
*c/o Weiner Ventures LLC*
*200 Clarendon Street, Floor 50*
*Boston, MA 02116*

January 3, 2017

**BY HAND**

Brian Golden, Director
Boston Planning & Development Agency
Boston City Hall, 9th Floor
Boston, MA 02201

**Re: 1000 Boylston Street Project**
**Boston, MA**

Dear Director Golden:

Weiner Ventures LLC, on behalf of ADG Scotia II LLC (the "**Proponent**"), is pleased to submit the enclosed Project Notification Form ("**PNF**") for the 1000 Boylston Street Project under Section 80B of the Boston Zoning Code. On November 14, 2016, a Letter of Intent in accordance with Executive Order dated October 10, 2000, as amended, was submitted indicating the intent to file the PNF.

The Project described in the PNF consists of development of up to approximately 689,000 square feet for condominium and rental residential uses with up to approximately 35,000 square feet of retail on a portion of the ground and second floors, and an above-grade parking garage with up to approximately 303 spaces. The Project will be developed on a site comprised of four parcels, currently held in separate ownership, but which are anticipated to be owned in fee or groundleased to the Proponent, consisting of so-called Parcel 15 owned by the Massachusetts Department of Transportation, property owned by Proponent bounded by Scotia and St. Cecilia Streets, property owned by The Prudential Insurance Company of America bounded by Boylston Street and Dalton Streets, and air rights over a portion of Cambria Street owned by the City of Boston, anticipated to be conveyed to Proponent. The Project is the culmination of a planning process of over 15 years duration as reflected in the 2000 "Civic Vision for Turnpike Air Rights in Boston" and will infill the entire breach along the south side of Boylston Street between Dalton Street and St. Cecilia Street.

The Project will require zoning relief under the Zoning Code. Related map and text amendments to create a Planned Development Area ("**PDA**") and approve a PDA Development Plan are also being proposed.

We look forward to continuing to work with the Authority, the Citizens Advisory Committee serving as an Impact Advisory Group, elected officials and the community in the review and

implementation of the 1000 Boylston Street Project. We are very excited to be a part of implementing the Civic Vision for this important area of Boston.

Sincerely,

Adam J. Weiner
Managing Member

cc: Mr. Jonathan Greeley
Ms. Lauren Shurtleff
Mr. Christopher Tracy

8792046.1

# 1000 Boylston Street Project

Boston, Massachusetts

SUBMITTED TO **Boston Redevelopment Authority**
**d/b/a Boston Planning & Development Agency**
One City Hall Square
Boston, MA 02201

PROPONENT **ADG Scotia II LLC**
**c/o Weiner Ventures LLC**
200 Clarendon Street, Floor 50
Boston, MA 02116

PREPARED BY **VHB**
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Boston, MA 02110

*In association with:*
Elkus Manfredi Architects
Goulston & Storrs
Haley & Aldrich
WSP | Parsons Brinckerhoff
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January 3, 2017

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# Project Description and General Information

ADG Scotia II LLC (the "Proponent") submits this Project Notification Form ("PNF") to the Boston Redevelopment Authority ("BRA"), d/b/a the Boston Planning and Development Agency ("BPDA") to initiate the Article 80B, Large Project Review process required by the Boston Zoning Code (the "Code") for the 1000 Boylston Street project (the "Project"). Concurrently with the submission of this PNF, the Proponent is filing an Environmental Notification Form ("ENF") to initiate the state review process, in accordance with the Massachusetts Environmental Policy Act ("MEPA") M.G.L. c. 30, Sections 61-62I and the regulations promulgated thereunder set forth at 301 CMR 11.00.

The Project consists of two residential buildings containing a total of up to approximately 342 residential units (consisting of up to approximately 182 rental units and up to approximately 160 for-sale units), up to approximately 35,000 square feet of first and second-story retail and restaurant space fronting on Boylston Street and St. Cecilia Street, and a four-story 303-space above-grade parking garage containing up to approximately 303 spaces. The Project will be constructed on a vacant site comprised of both land and air rights above and adjacent to the Turnpike, and bounded by Boylston, Dalton, Cambria, St. Cecilia and Scotia Streets in the Back Bay (the "Project Site"). Refer to Section 1.1 for a site location map, and Figure 1.2 for a site context map.

The Project will transform the Project Site from an undeveloped highway overpass into a hub of residential and retail activity, which will help knit together the fabric of the City. The Project will provide a new connection between the Back Bay neighborhood, the bustling Massachusetts Avenue corridor south of Boylston Street and the Fenway neighborhood. This connection will be strengthened by street-level retail and an improved streetscape that will provide significant urban design and social benefits, as well as stimulate economic growth.

This chapter provides an overview of the Project history and background, describes the existing site conditions and Project, and summarizes Project-related public benefits. It also identifies the anticipated required permits and approvals, summarizes ongoing public agency and community outreach, identifies the development team and provides relevant legal information regarding the Proponent and the Project Site.

## 1.1 Project History and Background

Over more than 15 years, the Project Site, along with the remainder of the air rights corridor over the Boston Extension of the Massachusetts Turnpike (the "Turnpike"), has been the subject of extensive planning and review by the BRA, as well as by the Massachusetts Department of Transportation ("MassDOT") and its predecessor agency. In 1998, the City of Boston (the "City") commissioned a group of residents, business owners, elected officials, and design and planning experts to craft a vision for the air rights over the Boston Extension of the Turnpike. The "Civic Vision for Turnpike Air Rights in Boston", issued in June 2000, (the "Civic Vision"), outlined the vision for 23 air rights parcels. Parcels 11-15, as depicted on Figure 1.3, were described as the area from Charlesgate to the Hynes Convention Center. Air rights developments in this area were encouraged to re-establish the broader sidewalk widths across the Turnpike, to have multiple entrances and windows at street level, and to find ways to incorporate parking in air rights projects.

In September 2008, the Massachusetts Turnpike Authority issued a Request for Proposals ("RFP") for Air Rights Parcels 12, 13, 14, and 15. The aspiration of the RFP was that the air rights projects would link the Fenway and Back Bay neighborhoods, ending a separation established by railroad tracks and widened by the Turnpike Extension.

In 2008, four proponents submitted proposals, but the recession caused MassDOT to put the process on hold until early 2011. Between August 2011 and May 2012, nine Community Advisory Committee ("CAC") meetings were held. The Proponent submitted a response to the RFP for Parcels 12, 14, and 15 on March 13, 2012. This proposal received favorable recommendation by the CAC on June 29, 2012 and favorable comment by the BRA on August 1, 2012. On March 4, 2013, the Proponent was designated as the Developer for Air Rights Parcels 12 and 15. A Development Agreement was executed between MassDOT and the Proponent on June 19, 2014 for Parcel 15, which anticipated that the ground lease, a form of which was attached to the Development Agreement, would be executed at a later date subsequent to the satisfaction of various conditions.[1]

The Proponent's Parcel 15 proposal (approved in the 2013 designation) related only to Parcel 15 and the Scotia Parcel (described further below in Section 1.2.2). The Scotia Parcel was acquired in 2008 by an affiliate of the Proponent. The Proponent's 2013 proposal for Parcel 15 and the Scotia Parcel included 168,800 square feet of residential uses (120 units) as well as a 194,400 square feet of hotel space (270 keys) with 9,100 square feet of retail space and 240 parking spaces in a single building approximately 398 feet in height. Only 25 percent of the building footprint was to be on turnpike air rights.

Not included in the proposal approved in the 2013 designation was a triangular-shaped parcel located above the Turnpike at the corner of Boylston and Dalton Streets and owned by the Prudential Insurance Company of America (the "Prudential

[1] A separate Development Agreement was executed for Air Rights Parcel 12.

Parcel"). In the course of meetings with the BRA and CAC regarding the Proponent's 2013 designated proposal, the CAC requested that the Proponent engage Prudential with the goal of including the Prudential Parcel within the Project. The Prudential Parcel comprises approximately half of the existing opening along Boylston Street above the Turnpike.

The CAC wanted the Proponent to expand the designated project and cover the entirety of the opening above the Turnpike. With Prudential included and the entire opening decked over, the Project would generate greater urban design and economic benefits. After listening carefully to the CAC, the Proponent engaged Prudential and is in the process of finalizing both a modification to the 2014 Development Agreement with MassDOT and an agreement with Prudential to reflect the incorporation of the Prudential Parcel into the Project.

The expanding the Project to include the Prudential Parcel, together with intervening factors since 2013, required that the Project be modified and expanded—including increases in height, density, and parking—to continue to fit the urban design context but to remain economically viable, based on considerations of added costs, risk, and complexity, including:

- Addition of a second building;
- Increase in the proportion of the project footprint spanning the Turnpike from approximately 25 percent to approximately 60 percent;
- Escalation of industry-wide construction costs from 2013 to date of anticipated commencement of Project; and
- Financial costs and joint venture structuring to account for Prudential and the Prudential Parcel.

The Project proposed in this PNF incorporates the Prudential Parcel and reflects the community's vision of a single project stretching from Scotia Street to Dalton Street, filling in the street wall on Dalton and Boylston Streets, and completing the deck over the Turnpike.

## 1.2 Project Site Context and Existing Conditions

### 1.2.1 Project Site Context

Located in Boston's Back Bay neighborhood, the Project Site is undeveloped and exists as a major gap in the cityscape created by the nearby Hynes Convention Center and Prudential Center, the shops and residences of the Back Bay, the bustling corridor of Massachusetts Avenue, and the Christian Science Center Plaza (Figure 1.2). As described further in Chapter 2, *Urban Design*, large-scale development ongoing in this area includes construction along the so-called "high-spine" tracing from the Project Site generally along the Turnpike right-of-way from the Prudential Center eastward to Copley Place and Stuart Street (Figure 2.2). The Project aims to fill this gap and provide a new connection to the surrounding areas, strengthened by

street-level retail, an improved streetscape, and new residents who will enliven the area on a 24/7 basis.

### 1.2.2 Existing Site Conditions

Figure 1.4 includes the existing conditions site plan and Figure 1.5 presents photographs of the existing site conditions. The Project Site is bounded on the north by Boylston Street, on the east by Dalton Street and the Hynes Convention Center, on the south by Scotia Street and an existing above-ground garage, and on the west by St. Cecilia Street and the rear façade of buildings fronting on Massachusetts Avenue. A portion of the Project Site is a vacant grass lot, and a portion of the Project Site is open to the Turnpike below.

As shown in Figure 1.6, the Project Site is comprised of the following four parcels currently held in separate ownership:

1. The Prudential Parcel, proposed to be leased to the Proponent or its designee;
2. A parcel located above the Turnpike between the Prudential Parcel and Cambria Street ("Parcel 15"), owned by MassDOT, proposed to be leased to the Proponent, or its designee;
3. A parcel comprised of above-grade air rights spanning Cambria Street between Parcel 15 and the Scotia Parcel (the "Cambria Street Air Rights Parcel"), owned by the City of Boston subject to public way easement rights. It is proposed that the rights of the public will be discontinued above a specific elevation allowing for continued use of the surface and subsurface by the public and that the air rights will be acquired by the BPDA from the City, and then conveyed to the Proponent by the BPDA; and
4. A grass-covered parcel located across Cambria Street from Parcel 15 formerly used by the St. Cecilia Parish (whose church building is located on the opposite side of Scotia Street), owned by ADG Scotia LLC, an affiliate of the Proponent (the "Scotia Parcel").

The combination of these four (4) parcels is vital to the development's master plan as it provides a unique opportunity to infill the entire breach in the street wall along the south side of Boylston Street between Dalton Street and St. Cecilia Street, which is a longstanding goal of the Civic Vision.

## 1.3 Project Description

The Project consists of two residential buildings rising above a 6- to 7-story podium that spans the Project Site (the "Podium"). The Podium, which is 6 stories tall fronting Boylston Street and 7 stories tall along Scotia Street, will contain up to approximately 35,000 square feet of first and second-story retail, including restaurant space facing Boylston and St. Cecilia Streets above which will be a four-story above-grade parking garage accessible from Dalton Street containing up to approximately 303 parking spaces, lobbies for the condominium and rental residential components, and amenity space for the residential uses in the Project.

Atop the Podium, and set back from the street wall along Boylston Street, are up to approximately 342 residential units split among two slender residential buildings: the "West Building", or the "Residences Building"; and the "East Building", or the "Apartments Building." The West Building rises 32 stories above the Podium to a height of up approximately 566 feet from grade to the top of the highest occupiable floor and contains up to approximately 160 condominium units. The East Building rises 17 stories above the Podium to a height of up to approximately 283 feet from grade to the top of the highest occupiable floor and contains up to approximately 182 residential rental units. Refer to Figure 1.7 for the proposed site plan.

### 1.3.1 Project Vision

The Project is envisioned as a vibrant residential development with ground-floor uses, which will activate the street, and that aims to repair the discontinuity in the urban street wall left behind by the Turnpike expansion through Boston. It will improve the pedestrian realm by providing active ground floor uses along Boylston Street, one of Boston's most walkable districts, and will knit together two distinct Boston neighborhoods: the Back Bay and the Fenway.

The Project is conceived as a holistic and transformative development. The Project offers a considerable opportunity to rejuvenate a vacant highway overpass, transform the adjoining public realm, create an attractive and appealing place worthy of its prominent location, and become an asset to the vibrant Back Bay and Fenway neighborhoods and the City.

By introducing a mix of uses in appropriate and carefully considered locations, the Project will reinforce the existing mixed-use character of the area, while also creating a sustainable development. The Project will bring new residents who will enliven the area on a 24/7 basis and stimulate economic growth.

### 1.3.2 Proposed Development Program

The proposed development program has been carefully considered and reflects the density of development required to mitigate cost premiums associated with the construction of up to approximately 23,000 square feet of deck over the Turnpike coupled with increased costs associated with an Air Rights development. The proposed development program is presented in Table 1-1 below. Note: all dimensions are approximate.

**Table 1-1 Proposed Development Program**

| Project Element | Approximate Dimensions | Quantity | Building Height[1] |
|---|---|---|---|
| Project Site Lot Area[2] | 40,955 sf | | |
| Residences Building | 442,000 sf | up to 160 units | 33 stories above Podium, 566 ft/586 ft |
| Apartments Building | 212,000 sf | up to 182 units | 17 stories above Podium, 283 ft/301 ft |
| Retail | 35,000 sf | NA | 2 stories, 99 ft |
| **Total Gross Floor Area (GFA)** | **689,000 GFA** | **up to 342 units** | **NA** |
| Parking Garage [zoning GFA exclusion] | NA | up to 303 spaces | 4 levels |
| Floor Area Ratio[3] | 17 | NA | NA |

NA=Not Applicable
sf=square feet
ft=feet

1 In accordance with the Boston Zoning Code, heights are measured from "Grade" consisting of the average elevation of the nearest sidewalks at the lines of the streets on which the Project abuts: Boylston Street, St. Cecilia Street, Scotia Street, Cambria Street and Dalton Street. Table includes zoning heights to the top of the highest occupiable floor and to the top of mechanicals.

2 Since the rights of the public in the Cambria Street Air Rights Parcel are anticipated to be discontinued, the footprint of the Cambria Streets Air Rights Parcel is included in the Project Site Lot Area.

3 Floor Area Ratio (FAR) calculation for the PDA is based on provisions of Sec. 41-12(2) applicable in HAPC District, which excludes parking areas, and which will be extended through the Development Plan to the portions of the Project Site located in the B-8-120C District. Accordingly, the FAR calculation is based on a GFA of up to approximately 689,000 square feet.

### 1.3.3 Proposed Building Design Overview

The Project is consistent with several key urban design principles specific to the Project Site, the Back Bay and Fenway neighborhoods, and the Civic Vision, which include:

- Repair the discontinuity in the urban street wall left behind by the Turnpike expansion through Boston, to provide a cohesive link between the Back Bay and Fenway neighborhoods;
- Enliven the public realm with generous sidewalks and ground and second floor uses that engage pedestrians; and
- Respect the scale and character of the urban street wall and the Back Bay Architectural District by placing the lower-scale elements of the Project closest to Boylston Street and setting back the taller elements of the Project.

The proposed building design is described in further detail in Chapter 2, *Urban Design*.

### 1.3.4 Proposed Public Realm Improvements

The Project Site design strategy focuses on creating pedestrian-oriented sidewalks and streets. The public realm will be upgraded to provide a number of conveniences and amenities throughout the Project Site consistent with the fundamental goals of the Boston Transportation Department's ("BTD") Complete Streets guidelines, wherever feasible. Refer to Chapter 2, *Urban Design* for additional details.

### 1.3.5 Access and Loading

As described more fully in Chapter 4, *Transportation,* and illustrated on Figure 2.10, vehicular access to the Project will be via a driveway on Dalton Street. Drop-off areas are proposed at both residential entrances located on Boylston Street. Visitor parking for residents will be accommodated at these same areas on Boylston Street.

Three off-street loading docks for the Project are proposed along Cambria Street, which is consistent with the current primary use of Cambria Street as a service road for vehicles accessing the loading docks at the adjacent Hynes Convention Center.

### 1.3.6 Parking

The residential units will be supported by up to approximately 303 parking spaces provided on four floors within the Podium above the retail space. The parking garage will accommodate Electric Vehicle (EV) charging stations, based on demand over time.

### 1.3.7 Project Schedule/Phasing

The Proponent submitted a Letter of Intent to the BPDA on November 14, 2016. Throughout the coming months, the Proponent expects to work diligently with the community and with City and State agencies to complete the Article 80B Large Project Review and MEPA review processes. The Proponent anticipates commencing site preparation and utility relocation work in early 2018. The deep foundation work for the Podium and residential buildings will follow the completion of the site preparation and utility work. Work on the Podium is expected to be complete by the third quarter of 2019, and work on the residential buildings is expected to be complete by early-to-mid 2021.

## 1.4 Summary of Public Benefits

Public benefits for the surrounding neighborhoods and the City of Boston will include, but not be limited to, the following:

**Urban Design and Public Realm Benefits**

› ***Contributing to the Cohesiveness of the City***—The Project will span and cover the undeveloped areas of the Turnpike, thus knitting together the Back Bay and Fenway neighborhoods of the City.

- ***Improved Street and Pedestrian Environment***—
  - The Podium will extend across the entire Project Site and create a high-quality continuous street frontage activated by vibrant and engaging ground and second floor uses, such as retail and restaurant spaces, and residential building lobbies.
  - The Project will provide an upgraded streetscape, including new sidewalks, street lighting, limited landscaping and other public amenities along Boylston Street and other abutting streets, consistent with the BTD's Complete Streets guidelines, wherever feasible.
  - Through the use of glass facades, wherever possible, the Project will provide transparency and create an inviting and safe ground-level experience for pedestrians.
- ***New Retail and Service Development*** –The Project will provide up to approximately 35,000 square feet of first and second-floor retail and restaurant space facing Boylston and St. Cecilia Streets, which will enhance pedestrian activity around the Project Site and provide amenities to neighbors and building residents.
- ***Architecture*** –
  - The Project will introduce height and massing that create separation between the buildings and preserve light and air.
  - The Project reinforces the urban "high spine" planning strategy, reflecting high design standards and successfully complementing the height and massing in the area while designing the buildings to minimize wind and shadow impacts on surrounding neighborhood public space resources.
  - The Project, and in particular the West Building, will be a prominent architectural addition to the skyline visible from West of the City and along Commonwealth Avenue.

**Sustainability/Environmental Benefits**

- ***Area Revitalization*** –The Project revitalizes an underutilized urban site and uses land efficiently by increasing density in proximity to public transportation.
- ***Stormwater Management*** – The Project will improve the quality and quantity of site stormwater runoff compared to existing conditions, including consideration for groundwater recharge in accordance with provisions applicable to the Groundwater Conservation Overlay District ("GCOD"). Additionally, the proposed stormwater management systems will comply with the 2008 Massachusetts Department of Environmental Protection ("MassDEP") Stormwater Management Policy and Standards.
- ***LEEDv4 certifiable*** – In compliance with Article 37, the Project intends to be Leadership in Energy and Environmental Design version 4 ("LEEDv4") certifiable. Through the incorporation of a variety of sustainable design strategies, the Project will improve water quality and reduce the urban heat island effect, among other environmental benefits.

- ***Resource Conservation*** – By utilizing sustainable design strategies and exceeding the minimum building energy code requirements, the Project will maximize the conservation of energy and water, and minimize impacts to regional infrastructure and water resources. The Project will meet the requirements of the current Massachusetts Stretch Energy Code.
- ***Renewable Energy*** – The Proponent and project design team has completed early evaluation of the feasibility of clean and renewable energy sources, including solar photovoltaic (PV) panels and a cogeneration system.
  - While the evaluation determined that competing space requirements for the roof and the relatively small roof area compared to the building volume makes roof-top solar PV panels unattractive, the Proponent will continue to consider facade-mounted, or Building-Integrated (BIPV), panels for the West Building given its relatively unobstructed South, East, and West exposure.
  - A Combined Heat and Power ("CHP") system was investigated and deemed infeasible under current Eversource policy.
- ***Improved Wellness*** – Through the incorporation of sustainable design elements, the Project will promote health and wellness with improved indoor air and access to views and daylight. The Proponent and design team will consider the health and wellness of its future occupants and users through consideration of the WELL Building Standard® ("WELL") principles in building design and during operation.
- ***Climate Resilience*** – By designing for resilience, the Project seeks to integrate climate change adaptations that reduce vulnerability given future changes in climate scenarios and natural events, such as severe weather.

**Social and Economic Benefits**

- ***Additional Residential Opportunities*** -The Project will provide up to approximately 342 new units of housing – a low traffic-generating use – geared to meet the needs of both the for-sale condominiums and rental housing markets. The Project promotes a vibrant mixed-use neighborhood, and will draw customers to other restaurants, stores, and services in the area.
- ***Affordable Housing*** – The Project will establish affordable housing opportunities consistent with the Inclusionary Development Policy.
- ***Enhanced Retail Opportunities*** – The Project will provide new and diverse retail opportunities for neighborhood residents, visitors, and the public at large.
- ***New Job Creation*** -The Project will enhance the economy by providing new job opportunities and a source of customers for local retail and restaurant establishments. It will create permanent jobs relating to the retail, restaurant, parking and residential administration components, and create approximately 1,300 construction jobs in a variety of trades.
- ***Enhanced Tax Revenues*** – The Project will generate new real estate tax revenues for the City of Boston.

## 1.5 Regulatory Context

This section lists the anticipated permits and approvals, as well as the local planning and regulatory controls applicable to the Project.

### 1.5.1 City of Boston Zoning

The Project Site spans the boundary between the Huntington Avenue / Prudential Center ("HAPC") District under Article 41 of the Code and the B-8-120-C zoning district of Boston Proper. The portion of the Project Site within the HAPC District is located in the St. Cecilia Special Study Area subject to Section 41-9 of the Code. The entirety of the Project Site is also located within the GCOD, pursuant to Article 32 of the Code, and the Restricted Parking Overlay District. The Project requires zoning relief.

It is anticipated that the Project Site will be included within a PDA Special Purpose Overlay District for a Planned Development Area, designated by the addition of the letter "D" to the area, which will include the Project Site and abutting portions of streets, which will be improved by Proponent as public realm improvements in connection with the Project.

The Proponent will first seek amendment of Article 41 of the Code to allow a PDA Special Purpose Overlay District for a portion of the Planned Development Area to be developed at the portion of the Project Site within the HAPC District, and will then seek designation of the PDA Parcel, as shown on Figure 1.8, as a PDA Special Purpose Overlay District for a Planned Development Area, together with the adoption of a Development Plan for the Project, all pursuant to Article 80C of the Code.

#### Uses

The uses of the Project as multifamily dwellings, general retail, restaurant and garage accessory to residential use are permitted in both the B-8-120C District and in the HAPC District. In the HAPC District, Ground Level uses on Boylston Street are limited to various retail, restaurant and service uses, and to residential lobbies not exceeding 40 feet of frontage.

#### Dimensional Requirements

Article 13 of the Code imposes the following dimensional requirements upon the portion of the Project Site within the B-8-120C District:

- A maximum Floor Area Ratio ("FAR") of 8, and a maximum height of 120 feet;
- Lot size, open space, lot width and yard requirements for dwelling uses are based on the least restrictive residence district; and
- No parapet setback from a side lot line is required.

For the portion of the Project Site in the HAPC District, Section 41-9 of the Code imposes a maximum FAR of 7 and a maximum height of 100 feet for a project which

undergoes Article 80B, Large Project Review. Also, although sub-surface parking and at-grade parking for residential uses are excluded from Gross Floor Area ("GFA") calculations under the Code, the area of parking that is above-grade is included in determining FAR calculations. However, in a Planned Development Area in the HAPC District, above-grade parking is not included in GFA calculations.

Section 41-18 of the Code imposes certain "Specific Design Requirements" on the portion of the Project Site within the HAPC District, including Street Wall Continuity, Street Wall Height, Display Window Area Regulations, and Setback and Floorplate Requirements. Relief from strict compliance with these provisions is by exception under Article 6A of the Code.

Based on the current design of the Project, it will exceed the maximum permitted FAR and height in both the B-8-120C District and the HAPC District, and may not meet some of the design requirements applicable to the portion of the Project Site within the HAPC District. As noted above, Zoning Relief will be sought through adoption of the Development Plan for a PDA.

**Off-Street Parking and Loading**

Neither Article 23 of the Code applicable to the portion of the Project Site in the B-8-120C District, nor Section 41-19 of the Code applicable to the portion of the Project Site in the HAPC District, requires any minimum number of parking spaces. However, a minimum of 0.7 parking spaces for each new on-site dwelling unit is required in a Planned Development Area within the HAPC District.

Loading requirements for the portion of the Project Site in the B-8-120C District are established under Article 24 of the Code. Under Section 41-20 of the Code loading requirements for the portion of the Project Site in the HAPC District are established Article 80B Large Project Review.

**Groundwater Conservation Overlay District**

Under Article 32 of the Code, a conditional use permit is required for projects within the GCOD involving paving or other surfacing of lot area, extension of a structure occupying more than 50 square feet of lot area, and construction of a structure involving excavation below grade to a depth of seven (7) or more feet below Boston City Base. As required under Section 32-6 of the Code (and described further in Chapter 6, *Infrastructure*), the Project will infiltrate not less than one (1) inch of rainfall across the portion of the Project Site to be occupied by the Project and will not have a negative effect on groundwater on the lot or adjacent lots. It is anticipated that the Development Plan for the PDA will include a mechanism for demonstration of compliance with the requirements of Article 32.

**Inclusionary Housing**

The Inclusionary Development Policy ("IDP"), approved by the BRA in December 2015, established as city policy that any residential project seeking zoning relief must set aside at least 13 percent of its market rate units as affordable to households at

specified levels of income within a project. Alternatively, in the Zone A within which the Project Site is located, a project can create the equivalent of 18 percent of the total number of units off-site, or contribute to a housing creation fund at a per-unit subsidy equal to 18 percent of the total number of project units.

**City of Boston Zoning Code Article 80B, Large Project Review**

Because the Project exceeds 50,000 square feet of gross floor area and is located in part in a downtown zoning district, it is subject to Large Project Review by the BPDA pursuant to Article 80B of the Boston Zoning Code. The Large Project Review process was commenced by the filing of a Letter of Intent with the BPDA on November 14, 2016, a copy of which is included in Appendix A of this PNF.

### 1.5.2 Fenway Urban Renewal Plan

The Project Site lies within the Fenway Urban Renewal Plan Area (the "URPA"). Under the Fenway Urban Renewal Plan (the "URP"), 0.75 parking spaces are required per residential dwelling, one parking space is required per 400 square feet of commercial retail floor area, and one loading dock is required for 15,000 to 50,000 square feet of commercial retail floor area.

Implementation of the Project will require a minor modification of the provisions of the Plan to designate the Cambria Street Air Rights Parcel (which is proposed to be conveyed to the Proponent) as a Disposition Parcel and to establish use and dimensional requirements.

### 1.5.3 Massachusetts Environmental Policy Act (MEPA)

The Project is subject to MEPA review because it involves land transfers in the form of an Air Rights Lease from MassDOT and a transfer of air rights from the BPDA acting as urban renewal authority under G.L. c. 121B. The Project also requires state permits/approvals and exceeds the following review threshold:

› 301 CMR 11.03(6)(a)6: Generation of 3,000 or more New average daily trips ("adt") on roadways providing access to a single location.

The state review process will be undertaken concurrently with the City's Article 80 review process, in accordance with the Massachusetts Environmental Policy Act ("MEPA") M.G.L. c. 30, Sections 61-62I and the regulations promulgated thereunder set forth at 301 CMR 11.00.

### 1.5.4 Public Benefits Determination

A portion of the Project Site is located in landlocked tidelands. Accordingly, a Public Benefits Determination for the Project will be requested from MEPA, pursuant to 301 CMR 13.02.

### 1.5.5 Anticipated Permits/Approvals

Table 1-2 below presents a list of permits and approvals from local, state, and federal governmental agencies, which may be required for the Project. It is possible that not all permits or actions listed will be required, or that additional permits or actions may be needed, based on determinations during Project design and development.

**Table 1-2 List of Anticipated Project Permits and Approvals**

| Agency/Department | Permit/Approval/Action |
|---|---|
| **City of Boston** | |
| Boston Planning & Development Agency | Article 80B Large Project Review and Execution of Related Agreements |
| | Recommendation of Text and Map Amendments regarding PDA eligibility |
| | Recommendation of PDA Designation [include certification of compliance with GCOD standards] and Map Amendment |
| | Minor Modification to Urban Renewal Plan |
| | Taking of Cambria Air Rights from City and Disposition to Proponent |
| | Design Review |
| Boston Zoning Commission/Mayor | Approval of Text and Map Amendments regarding PDA eligibility |
| | Approval of PDA Designation [include certification of compliance with GCOD standards] and Map Amendment |
| Boston Civic Design Commission | Schematic Design Review |
| Boston Transportation Department | Transportation Access Plan Agreement |
| | Construction Management Plan |
| | Valet License for on-street valet (as required) |
| Boston Water and Sewer Commission | Site Plan Review |
| | Water and Sewer Connection Permits |
| | Temporary Construction Dewatering Permit (issued jointly with MWRA) |
| | Groundwater Trust Certification |
| Public Improvement Commission/Public Works Department | Cambria Street Air Rights and Subsurface Discontinuances |
| | Specific Repair Plan/Curb Cut Permit |
| | License for Injection Well below Sidewalk |
| | Agreement for Temporary Earth Retention Systems, Tie-Back Systems and Temporary Support of Subsurface Construction (as required) |
| | Permits/Canopy Licenses for signs and awnings (as required) |

| Agency/Department | Permit/Approval/Action |
|---|---|
| Tree Warden (Boston Parks Department) | Approval of Cutting of Public Shade Trees |
| Public Safety Commission/Boston Committee on Licenses | Permit to Erect and Maintain Parking Structure<br>Inflammables License |
| Boston Air Pollution Control Commission | Confirmation of exemption |
| Boston Fire Department | Plan review<br>Approval of fire safety equipment |
| Boston Inspectional Services Department | Building Permit<br>Other construction-related permits<br>Certificates of Occupancy |
| **Commonwealth of Massachusetts** | |
| Executive Office of Energy and Environmental Affairs (MEPA Office) | Review under Massachusetts Environmental Policy Act, including Public Benefits Determination |
| Massachusetts Historical Commission | State Register Review |
| Massachusetts Department of Transportation | Development Agreement and Air Rights Lease<br>Design Review<br>Construction Management Plan<br>Approval under G.L. c. 40, sec. 54A (if applicable)<br>Access permit(s) (as applicable) |
| Department of Environmental Protection | Injection Well Permit |
| Department of Public Utilities | Approval of Rail Vertical Clearance under G.L. c. 160 Sec. 98 |
| Massachusetts Department of Housing and Community Development | Review and Comment regarding Minor Modification to Urban Renewal Plan.<br>Review and Comment regarding disposition of Cambria Street Air Rights |
| Massachusetts Water Resources Authority | Temporary Construction Dewatering Permit (issued jointly with BWSC) |
| **Federal** | |
| Federal Aviation Administration | Determination of No Hazard to Air Navigation |

## 1.6 Agency Coordination and Community Outreach

As the development plan has progressed, the Proponent and members of the Project team have met, and will continue to meet, with City of Boston agencies, elected officials, members of the CAC, abutting owners, neighborhood groups, community leaders, business owners, area residents, and other stakeholders to seek input and feedback. Two community meetings with the CAC have recently been held about the Project.

The filing of this PNF initiates the formal agency coordination and community outreach process. The Proponent is fully committed to maintaining an open

dialogue and will continue to engage the public throughout the review and approval processes.

## 1.7 Development Team

This section lists the members of the design and consulting team and provides their primary contact information.

| | |
|---|---|
| Proponent | ADG Scotia II LLC<br>c/o Weiner Ventures LLC<br>200 Clarendon Street, Floor 50<br>Boston, MA 02116<br>617-236-0200<br>*Contact:* Adam Weiner |
| Project Management | D. Levine Management LLC<br>P.O. Box 812299<br>Wellesley, MA 02482<br>857-990-3008<br>*Contact*: Donald Levine |
| Architect | Elkus Manfredi Architects<br>25 Drydock Ave<br>Boston, MA 02210<br>617-426-1300<br>*Contact:* David Manfredi<br>Kevin Lennon |
| Legal Counsel | Goulston & Storrs<br>400 Atlantic Avenue<br>Boston, MA 02110<br>617-482-1776<br>*Contact:* Marilyn Sticklor<br>Michael Flannery |
| Site Civil Engineering, Permitting, Transportation, Historic | VHB<br>99 High Street, 10th Floor<br>Boston, MA 02110<br>617-728-7777<br>*Contact:* Mark Junghans, Project Manager/Civil Engineer<br>Lauren DeVoe, AICP, LEED AP BD+C, Senior Environmental Planner<br>Kyle Greaves, AICP, Environmental Planner<br>David Bohn, PE, ENV SP, Senior Principal/Transportation/Traffic Engineer<br>Rita Walsh, Preservation Planner |

| | |
|---|---|
| Geotechnical Engineer & Environmental Engineer | Haley & Aldrich<br>465 Medford Street, Suite 2200<br>Boston, MA 02129<br>617-886-7408<br>*Contact:* Marya Gorczyca, P.E., Senior Vice President |
| Mechanical, Plumbing, Electrical Engineer and Sustainability Consultant | WSP Group<br>88 Black Falcon Avenue, Suite 210,<br>Boston, MA 02210<br>617-210-1735<br>*Contacts:* Tom Burroughs, Burroughs, PE, LEED AP, Senior Vice President Building Systems<br>Luka Matutinovic, P.Eng, LEED AP BD+C, Associate Built Ecology |
| Construction Management | Suffolk Construction<br>65 Allerton Street<br>Boston, MA 02119<br>617-445-3500<br>*Contact:* Scott Menard, Vice President Preconstruction |

## 1.8 Legal Information

### 1.8.1 Legal Judgments or Actions Pending Concerning the Proposed Project

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

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

The Proponent does not have a history of tax arrears on any property owned within the City of Boston.

### 1.8.3 Evidence of Site Control

The Scotia Parcel is owned by an affiliate of the Proponent.

Parcel 15 is owned by MassDOT. The Proponent and MassDOT are parties to a Development Agreement, as it may be amended, pursuant to which the Proponent will acquire interests in Parcel 15 through a Land Transfer.

The Prudential Parcel is owned by Prudential. The Proponent and Prudential are parties to an agreement, as it may be amended, pursuant to which the Project will be developed by the Proponent.

The Cambria Street Air Rights Parcel is owned by the City of Boston. The BPDA is being requested to take such air rights parcel by eminent domain from the City, and convey such area to the Proponent.

### 1.8.4 Public Easements

There are two public easements through the Project Site. The Cambria Street Air Rights Parcel is subject to a public way easement, which will be discontinued prior to the Proponent's acquisition of the Cambria Street Air Rights. The Prudential Parcel is subject to an easement in favor of MassDOT pursuant to which the Turnpike is operated and maintained within the boundaries of the Prudential Parcel.

In addition, Parcel 15 may be made subject to certain easements in favor of MassDOT that will ensure the continued operation and maintenance of the Turnpike and adjacent railroad tracks within the boundaries of Parcel 15.

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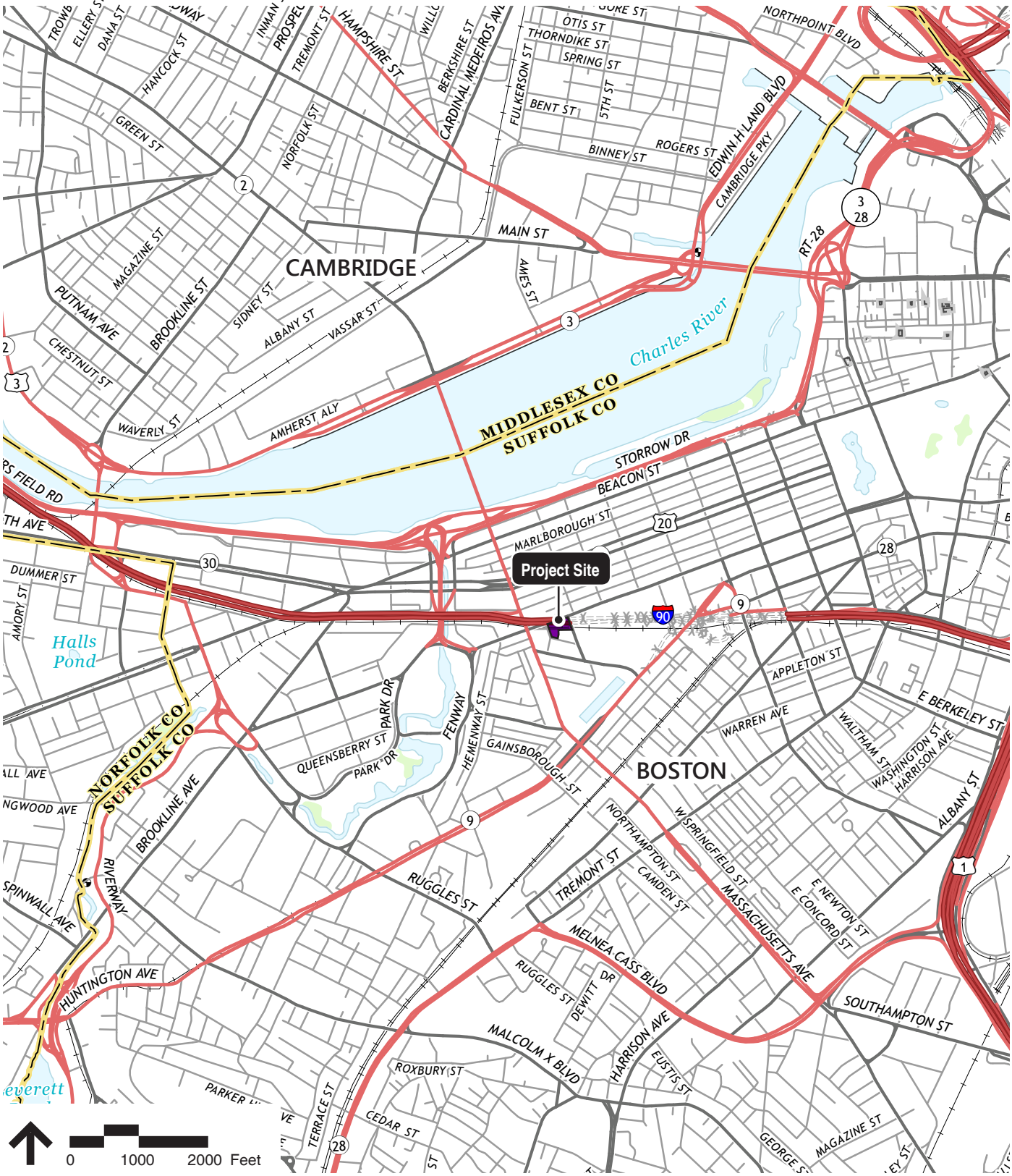
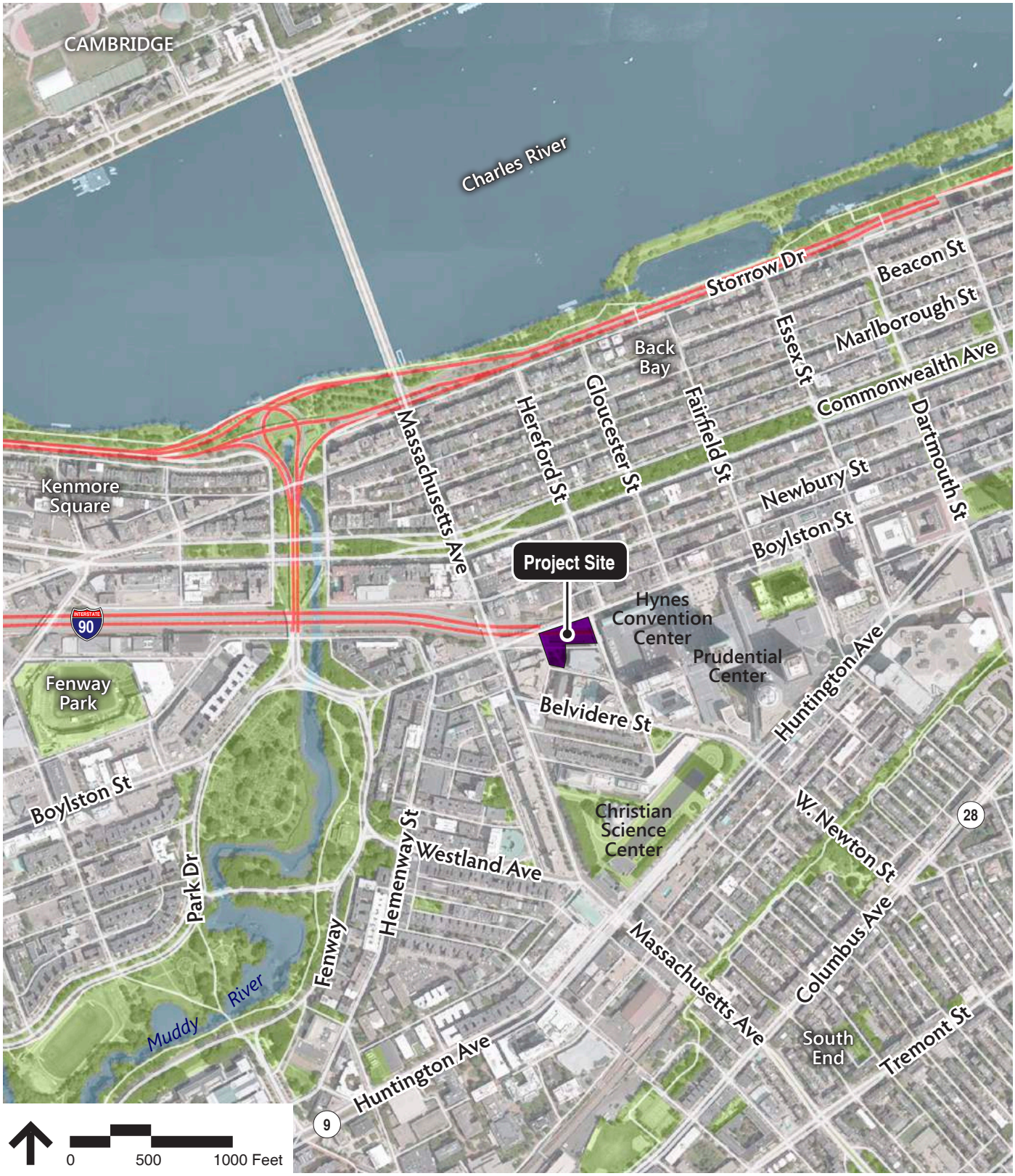



Source: MBTA

Site Locus Map

Figure 1.1

**1000 Boylston Street**
**Boston, Massachusetts**




Source: ArcGIS Online Bing Aerial

Project Site Context

Figure 1.2

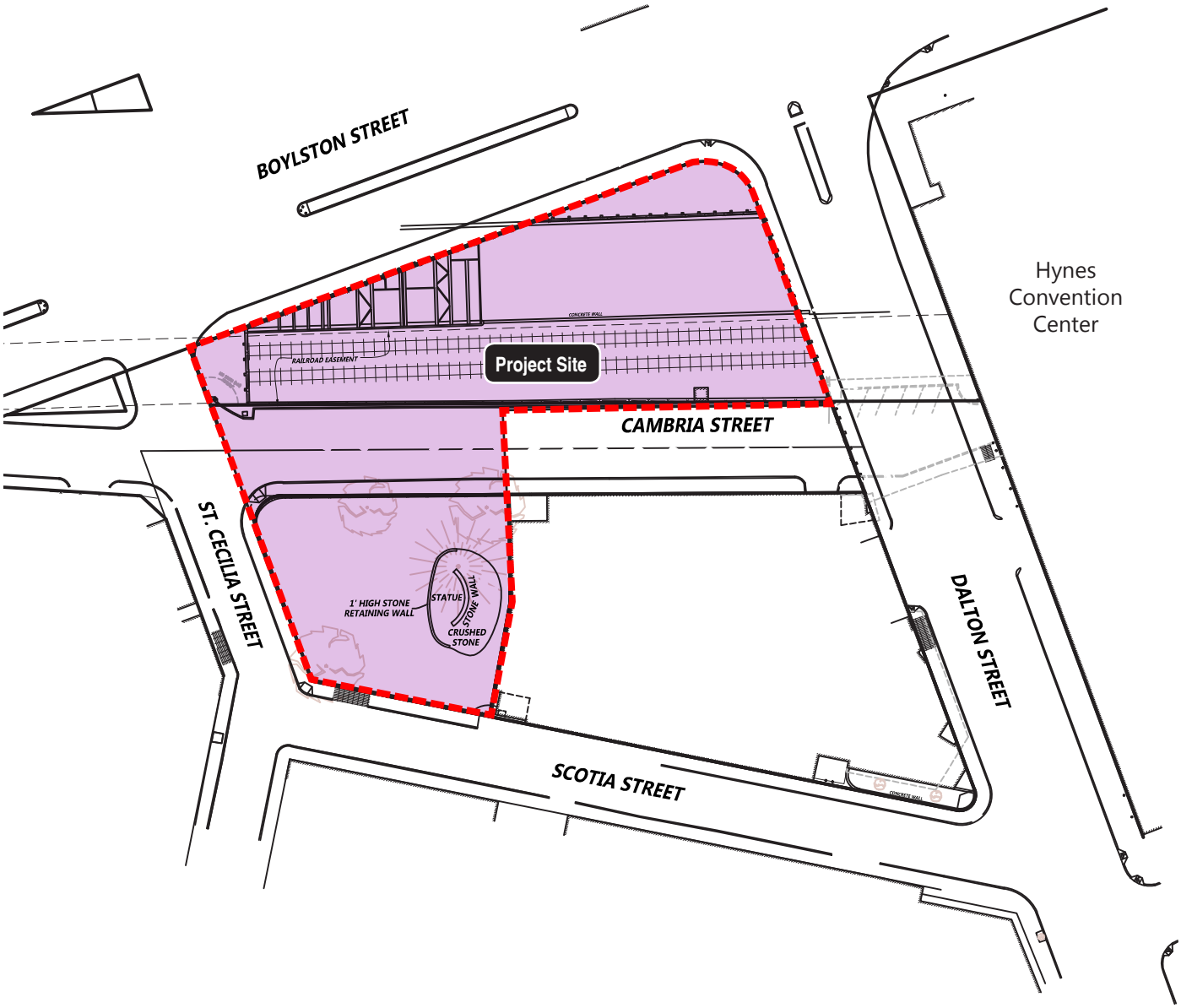
**1000 Boylston Street**
**Boston, Massachusetts**


Aerial Image Source: Google Earth

ELKUS | MANFREDI ARCHITECTS

MASS DOT Air Rights Parcels
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 1.3




0 40 80 Feet

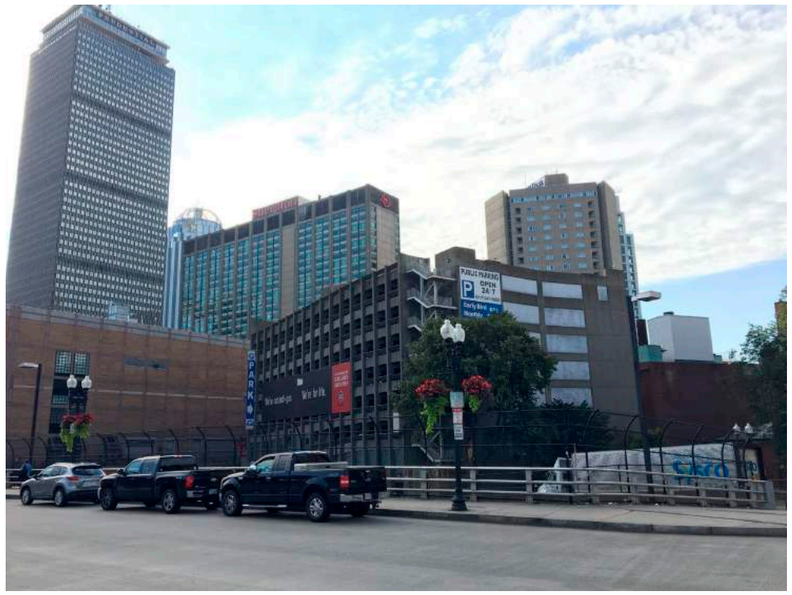
Source: Feldman Professional Land Surveyors

Project Site Boundary

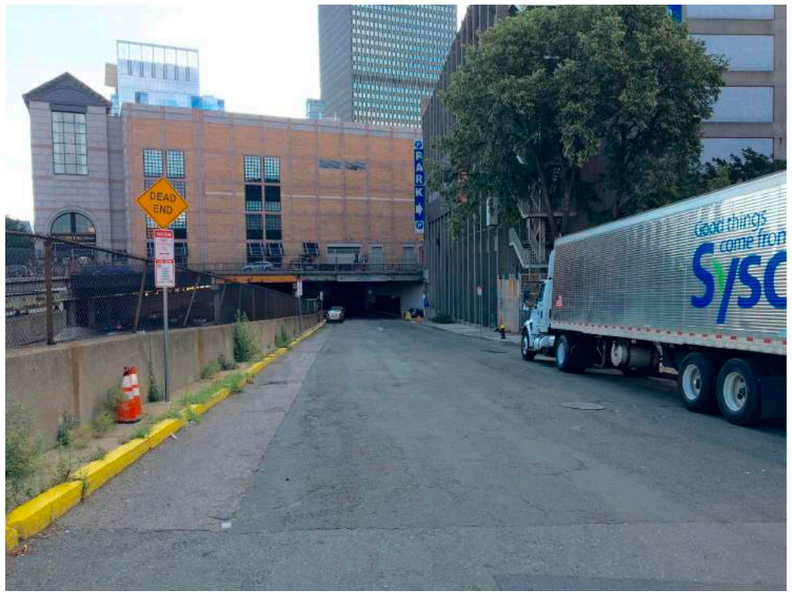
Existing Conditions Plan

Figure 1.4

**1000 Boylston Street**
**Boston, Massachusetts**

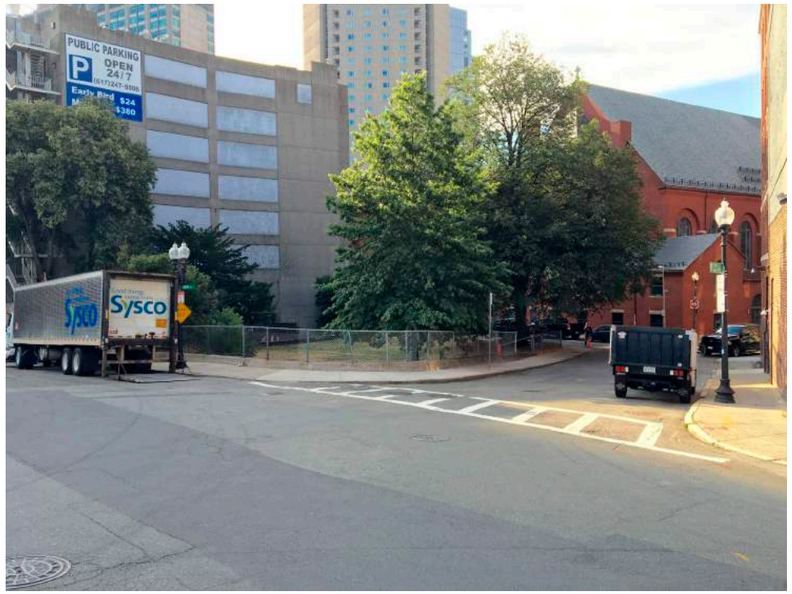



Bolyston Street looking South East towards Existing Garage



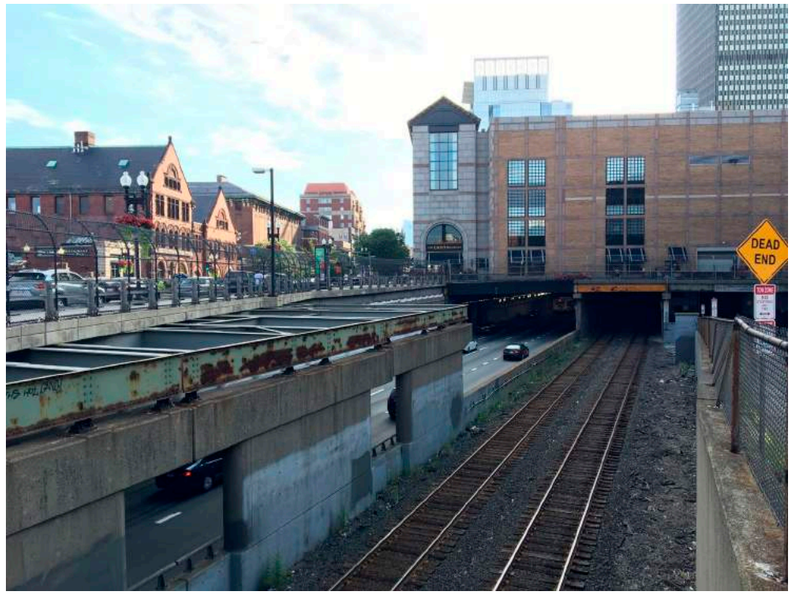

Cambria Street looking East towards Hynes Convention Center


Corner of Dalton Street and Boylston Street looking West




Corner of St. Cecilia Street and Cambria Street looking South towards Scotia Street

Dalton Street looking West towards St. Cecila Street and Boylston Street



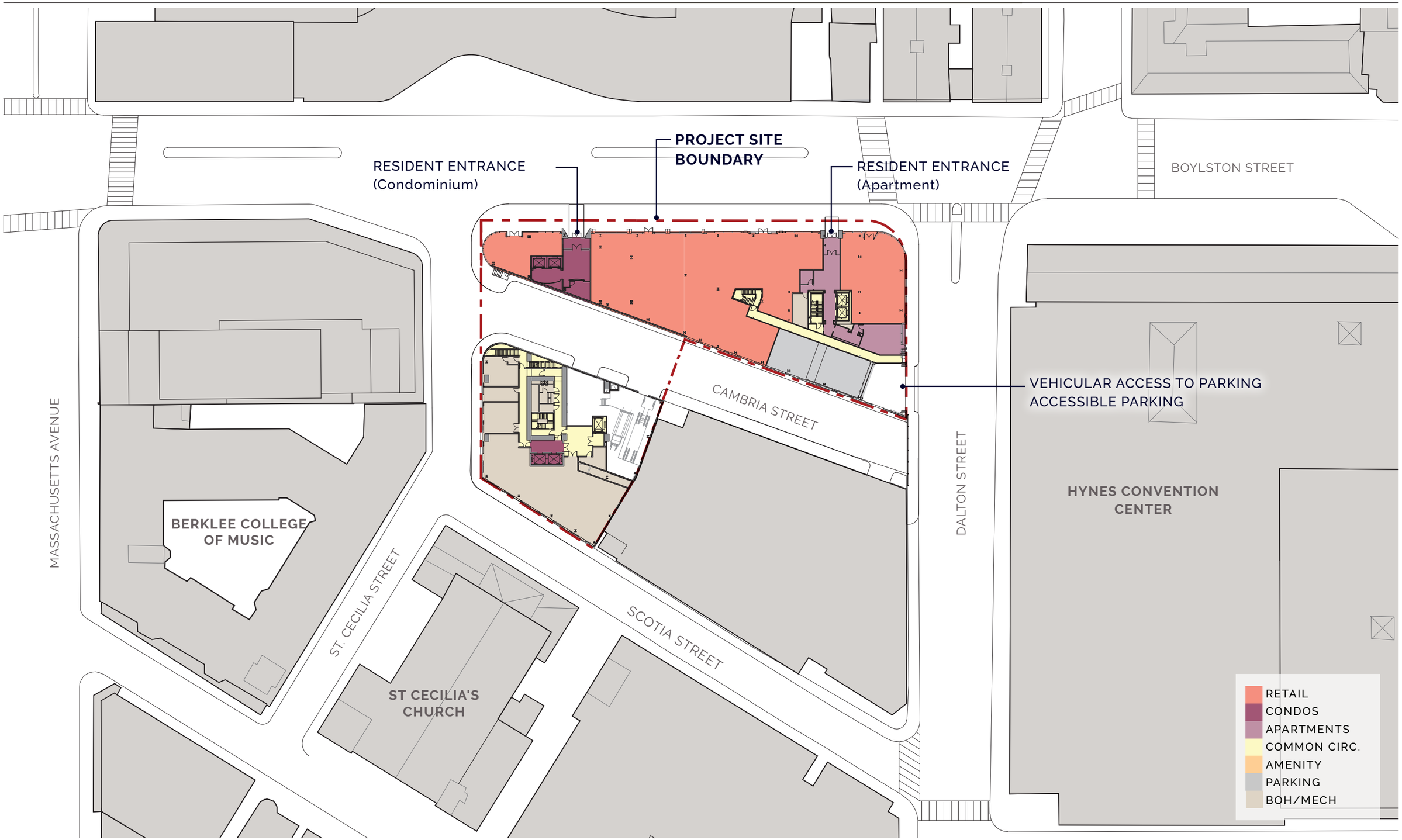

St. Cecilia Street looking East over Tracks and Turnpike


ELKUS | MANFREDI ARCHITECTS

Project Site Development Parcels
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 1.6

Source Info




0 30 60 Feet

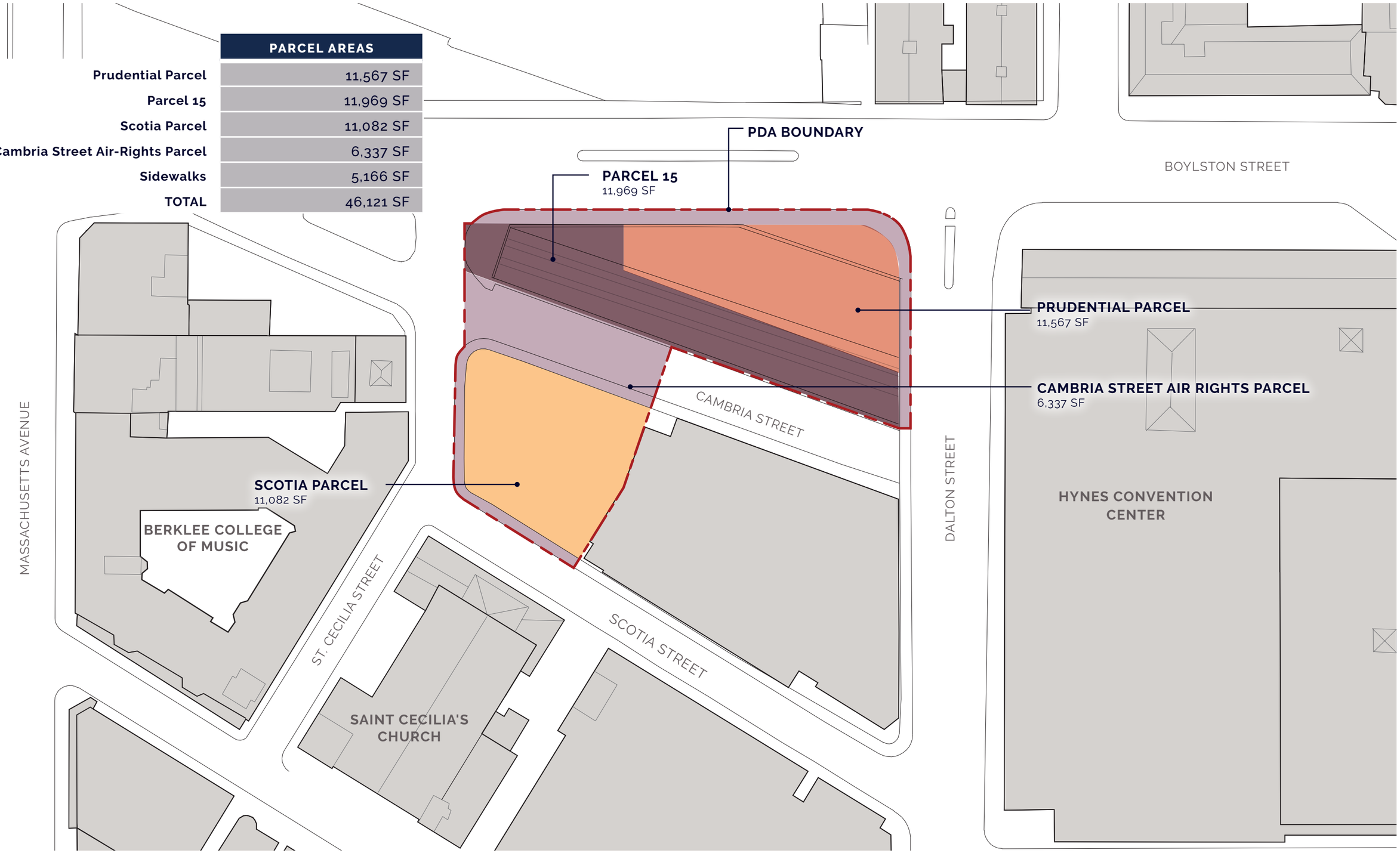
Source Info

ELKUS | MANFREDI ARCHITECTS

Proposed Conditions Site Plan
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 1.7

| PARCEL AREAS | |
|---|---|
| Prudential Parcel | 11,567 SF |
| Parcel 15 | 11,969 SF |
| Scotia Parcel | 11,082 SF |
| Cambria Street Air-Rights Parcel | 6,337 SF |
| Sidewalks | 5,166 SF |
| TOTAL | 46,121 SF |




0 30 60 Feet

Source Info

ELKUS | MANFREDI ARCHITECTS

PDA Parcel Plan
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 1.8

# 2

# Urban Design

This chapter describes the existing urban context of the Project Site and discusses the planning principles and design goals for the Project. It also describes urban design characteristics (i.e., height and massing) and public realm improvements proposed as part of the Project. Supporting graphics are provided, including massing diagrams, building floorplans, building sections, building elevations and view perspectives.

## 2.1 Summary of Key Findings and Benefits

The Project benefits both the immediate neighborhoods and the City at large by improving retail vitality, enhancing the public realm, and providing high quality residential space in a highly visible and accessible Back Bay location. The Project design will dramatically improve the character of the public realm and neighborhood access, and the area will be significantly enhanced by the urban design and architectural character of the Project. The following is a summary of the key urban design benefits:

- Knits together the Back Bay and Fenway neighborhoods by constructing buildings spanning and covering the open areas of the Turnpike.
- Provides a podium base that extends across the entire Project Site creating a high-quality continuous street frontage activated by vibrant and engaging ground floor uses, such as retail and restaurant spaces, as well as residential building lobbies.
- Provides up to approximately 35,000 square feet of first and second-floor retail and restaurant space facing Boylston Street, which will enhance pedestrian activity around the Project Site and provide amenities to neighbors and building residents.
- Provides an upgraded streetscape, including new sidewalks, street lighting, landscaping where feasible and other public amenities along Boylston, Dalton, St Cecilia and Scotia Streets, consistent with the BTD's Complete Streets guidelines, wherever feasible.
- Provides transparency and creates a more inviting and safer ground-level experience for pedestrians through the use of glass facades.
- Preserves light and air around the buildings by separating the building massing into two components.

- Reinforces the urban "high spine" planning strategy by reflecting high design standards and successfully complementing the height and massing in the area while designing the buildings to minimize wind and shadow impacts on surrounding neighborhood public space resources.
- Creates iconic architecture, in particular for the West Building, which will be a prominent architectural addition to the skyline visible from west of the City and along Commonwealth Avenue.

## 2.2 Neighborhood Context

As described in Chapter 1, *Project Description and General Information,* and illustrated in Figure 2.1, the Project Site is bounded to the north by Boylston Street, to the east by Dalton Street and the Hynes Convention Center, to the south by Scotia Street and an existing above-ground garage, and to the west by St. Cecilia Street and the rear façade of Berklee College of Music buildings fronting Massachusetts Avenue. A portion of the Project Site (the Scotia Parcel) is a vacant grass lot, and much of the Project Site is open to the Turnpike below.

The architectural character of the Back Bay is typified by three- to five-story brownstones flanking tree-lined streets. Two linear green spaces give the Back Bay further distinction: the Commonwealth Avenue Mall that links the Public Garden; and the Fens in Boston's Emerald Necklace; and the Esplanade along the Charles River. There are a number of historical architectural landmarks in the neighborhood, including Trinity Church, the Boston Public Library, and Old South Church, as well as modern icons of the City, such as the Prudential and new Hancock Towers. Copley Square provides a proper civic foreground to the Public Library, Trinity Church, and the new Hancock Tower. Figures 2.2 and 2.3 illustrate the existing Urban Context and existing land uses near the Project Site.

The Project has been designed to be respectful of the history and spirit of the Back Bay by:

- Designing buildings to minimize wind and shadow impacts on the surrounding neighborhood and civic and historic resources;
- Creating a vibrant street-level pedestrian experience; and
- Enhancing connectivity between the surrounding Back Bay and Fenway neighborhoods.

While the urban fabric of the Back Bay is generally consistent and continuous in its massing and scale north of Boylston Street, the massing along Boylston Street on the south side where the Project Site is located is taller and much more diverse. This east-west zone, along the southern edge of the Back Bay, is part of what has become known as the "High Spine". This zone is characterized by a continuous urban edge and a number of buildings over 250 feet in height including but not limited to the two Hancock Towers, the Prudential Tower, and 111 Huntington Avenue.

Boylston Street is an important and lively thoroughfare of the Back Bay. The pedestrian nature of the street is reinforced by the presence of commercial uses, institutions, such as the Boston Public Library, Berklee College of Music, and Trinity Church, and a well-developed street wall. As seen in Figure 2.2, under existing conditions the street wall at the Project Site does not exist, diminishing the pedestrian experience. This breach in the street wall along Boylston Street is caused by the Turnpike and the rail tracks that run beneath the Project Site (Figure 1.3) and continue west in front of the Berklee College of Music and Parcel 12. The Project represents an opportunity to build and activate the street edge to be consistent with the rest of Boylston Street east of the Project Site.

An existing parking garage occupies the southeast corner of the block along Dalton and Scotia Streets. Along Boylston Street, the Project Site is flanked by the Hynes Convention Center to the east and Berklee School of Music to the west. Dalton Street is a connector to the South End neighborhood while St. Cecilia and Scotia Streets are primarily service oriented.

Cambria Street runs through the Project Site and slopes down from St. Cecilia Street to below Dalton Street, where it provides service access to the Hynes Convention Center. The only terra firma on the Project Site is the Scotia Parcel.

## 2.3 Planning Principles and Design Goals

The project design embodies several key urban design principles specific to the Project Site, and the Back Bay and Fenway neighborhoods, as well as the Civic Vision, which include:

- Repair the discontinuity in the urban street wall left behind by the Turnpike expansion to provide a cohesive link between the Back Bay and Fenway neighborhoods;
- Enliven the public realm with generous sidewalks and ground floor uses that engage pedestrians; and
- Respect the scale and character of the urban street wall and the Back Bay Architectural District by placing the lower-scale elements of the Project closest to Boylston Street and setting back the taller elements of the Project, as recommended in the Civic Vision.

## 2.4 Design Concept and Development

The project design consists of two residential buildings set atop a 6- to 7-story podium. The Podium, which is roughly the height of the adjacent Hynes Convention Center at up to approximately 99 feet, will provide up to approximately 35,000 square feet of retail and restaurant space on two levels fronting Boylston Street, and up to approximately 303 above-grade parking spaces on four levels of parking. The Podium will span the entirety of the Project Site, but maintain sufficient clearance above Cambria Street to allow for continued passage of vehicles. Rising out of the Podium will be two slender residential buildings: the West Building (also referred to

as the Residences Building); and the East Building (also referred to as the Apartments Building)—together containing up to approximately 342 residential units, and each set back from the Podium's street wall on Boylston Street to respect the scale and character of the urban street wall and the Back Bay Architectural District.

The West Building is situated partially on the Scotia Parcel and partially within the Cambria Street Air Rights Parcel and Parcel 15. The West Building, rising 33 stories above the Podium, is up to approximately 566 feet tall from grade to the top of the highest occupiable floor and provides up to approximately 160 condominium units. Two levels consist of mechanical penthouse space.

The East Building is proposed on the Prudential Parcel and Parcel 15. The East Building, rising 17 stories above the Podium, is up to approximately 283 feet tall from grade to the top of the highest occupiable floor and provides up to approximately 182 apartment units. Mechanical penthouse uses are located on one level.

The top of the Podium features outdoor space consisting of terraces and greenery. All Project residents will have access to the outdoor space at the top of the Podium. The seventh floor of the West Building contains amenities for the condominium units.

## 2.4.1 Height and Massing

### The Podium

The Podium provides an up to approximately 99-foot tall continuous street wall on Boylston Street that is consistent with the height of the neighboring Hynes Convention Center and scale of the street wall created by other buildings in the vicinity. The Podium aims to complete the urban block and is set back up to approximately eight feet from the north property line to form a generous 18-foot wide sidewalk along Boylston Street. Access to the loading docks will be located discreetly on Cambria Street--in effect, under the Podium. Figure 2.4 illustrates the Project's massing concept and the evolution of the design in response to the urban context.

### Structural Considerations

Project loads within the Air Rights portion of the Project Site must fall along three lines around the Turnpike below:

1. The line between the east and westbound lanes of the Turnpike (the "North Line");
2. The line between the eastbound Turnpike and the commuter rail tracks (the "Center Line"); and
3. The line between the commuter rail tracks and Cambria Street (the "South Line").

These structural considerations influence the geometry and design of the East and West Buildings, as illustrated in Figure 2.5.

**West Building**

The West Building is set back from Boylston Street and the base of the building, on its north side, is aligned with the grid of the Turnpike and Cambria Street below to allow the structural column loads to bear directly on foundation elements aligned along the South Line. As the building rises, the northern face and its structure rotate to the west, offering varied views across the Back Bay to Beacon Hill, the Charles River and Cambridge. This manner of shaping the building, or bending its faces in response to both internal (programmatic) and external (contextual) forces, is a theme that is carried around the perimeter wherever possible. As shown in Figure 2.4, the east side rotates subtly to the north, with the northeast corner leaning inwards to diminish the width of the tower as it rises and to balance the size of living areas in the northeast residential units. The southeast face rotates into the mass, to the north, increasing its distance from the adjacent garage property as the tower rises. The west and southwest faces are at the property line and, therefore, rise vertically from the Podium.

The West Building is also articulated as two offset and interlocking volumes. The northern volume generally contains living areas, and its skin is distinguished from the southern volume, which encloses more varied program and includes private spaces. The north volume is cut open at selected levels to allow terraces to wrap three sides of the tower. The frequency of these special terrace floors increases towards the top. The two volumes are further differentiated by their distinct inflection at the top of the building.

**East Building**

The ends of the East Building (at the northeast and southwest) inflect inward towards the structural bearing lines below. The tapering of the ends of the building reduces its apparent bulk while narrowing the floorplate in areas where core and circulation spaces are not included. As is the case with the West Building, the East Building is expressed as two volumes, north and south. The north volume includes the north-facing apartment units and is taller (as it includes the mechanical program at the top of the building), and the south volume contains the south-facing units.

**Relationship of Buildings**

The two buildings are meant to have distinct yet related personalities. Both buildings, and particularly the West Building, will be highly visible from many points in and around the City. The West Building will be very prominent to those entering the City from the west on the Turnpike or along Commonwealth Avenue. Refer to Figures 2.6a through 2.6i for the combined floor plans for both buildings.

### 2.4.2 Character and Exterior Materials

The materials and architectural expression of the Project will invite openness and transparency, enhance the vibrant pedestrian nature of Boylston Street, and convey a level of architectural quality worthy of the Back Bay neighborhood. As illustrated in Figures 2.7a through 2.7d, the exterior material selection articulates the three primary components of the Project (the Podium, East Building, and West Building) and imparts an overall lightness to the building massing.

As shown in Figures 2.8a and 2.8b, the Podium along Boylston Street includes retail uses and residential entries on the first and second floors, above-grade parking on floors three through six, and a landscaped roof terrace on the seventh floor at the base of the residential buildings. Quality materials and careful detailing will clearly identify and distinguish the entrances of the East and West Buildings. The garage will be clad in a veil of variably fritted glass which will filter light and partially screen parking activities during the day. At night, internal garage lighting will illuminate the glass from within, creating interesting patterns that will soften the use and enliven the Boylston streetscape. The landscaped roof terrace will create a green cornice with plantings that will be visible from the ground level.

Like the garage, the West Building will also be clad in glass, as illustrated in Figures 2.9a through 2.9c. There are two distinct glass skins corresponding to the two interlocking volumes of the building. As mentioned above, the north volume contains living spaces and is, therefore, wrapped in an open and transparent glass wall. The south volume, with its more varied program, is clad in a glass wall that combines vision glass and shadow box and is representative of the more private spaces. Though the expression of the glass façades will vary, the glass types, colors and frames will be designed to work with glass of the other building elements. At the top of the tower, the glass wall will transform and include metal light catching elements that will be illuminated at night to contribute to the visual richness of the Boston skyline. The glass facades will receive daylight in a constantly changing fashion and will render the mass differently throughout the course of the day. The greenery introduced atop the podium will be reiterated at the terraces intermittently cut into the West Building.

The East Building will be clad in a panelized glass and metal system to distinguish it from the West Building. The East Building will relate to the taller West Building in the color of glass and metal (Figures 2.9a and 2.9c). The panels are grouped in three story units, with one window generally per room, and staggered slightly from each other. The three story groupings give verticality to the façade and legibility to the scale while avoiding the monotony of one-story punched windows. The units, which are also well scaled to the prefabrication process, are separated by thin horizontal (metal) blades. The subtle staggering of the units, together with the faceting of the facades, will create a rich pattern of reflections from the glass by day, and a varied pattern of light by night. The overall reading will be a strong counterpoint to the gracefully turned glass walls of the West Building.

While each component of the Project has a distinct expression tailored to its particular role, there will be a relationship among them that conveys a sense of balanced harmony.

## 2.5 Site Design

The design strategy for the Project Site focuses on repairing the discontinuity in the Boylston street wall created by the Turnpike's extension through the City. To that end, the Project will construct a podium base that extends across the entire Project Site and creates a high-quality continuous street wall activated by vibrant and engaging ground and second floor uses, including retail and restaurant spaces, and residential building lobbies.

To reinforce the connection between the new buildings and the surrounding context, the Project will rehabilitate the perimeter sidewalks and enhance the public realm to incorporate the BTD Complete Streets design principles, where feasible. These principles include clearly defined pedestrian routes, bicycle facilities and landscaping, where feasible. These strategies will improve public accessibility and strengthen the connection between the Back Bay and its surrounding neighborhoods. Refer to Figure 2.10 for the site access and circulation plan.

### 2.5.1 Pedestrian Realm

As illustrated in Figure 2.11, the Proponent seeks to make significant improvements to Boylston Street and its adjacent sidewalks. Within the Project area, portions of Boylston Street will be repaved and striped to accommodate a bike lane and a drop-off zone for the two residential entrances, subject to applicable approvals.

A generous pedestrian zone along Boylston Street will include new paving, bollards, bike racks, trash receptacles and lighting, and will connect the Back Bay and Fenway neighborhoods. A consistent family of materials will be selected to provide a cohesive palette. Ground level entrances for the residential lobbies, restaurant and retail uses will include carefully designed display windows, canopies, signage and outdoor seating.

The pedestrian zone along Dalton Street will also be repaved and will incorporate a flush pedestrian condition at the parking garage entrance, giving priority to pedestrians. Accessible curb ramps with tactile surfaces will be incorporated into the sidewalks to allow for barrier-free connections along the major pedestrian corridors.

The pedestrian zone on St. Cecilia Street and Scotia Street will be repaved, freed of obstructions, and will have a comfortable and compliant slope wherever feasible. Additionally, street lighting will be installed to provide a safer pedestrian environment.

**Complete Streets**

Boylston Street is one of Boston's most heavily traveled pedestrian corridors. The strong pedestrian nature of the street is reinforced by the presence of ground-level retail and restaurants, institutions such as the Boston Public Library, and a well-developed urban street wall. The pedestrian realm of this iconic street is defined by wide sidewalks with distinct zones including a greenscape/furnishing zone adjacent to the roadway, a generous pedestrian zone, and a frontage zone adjacent to the building. It is the intent of the Proponent to incorporate the fundamental goals of the Complete Street Guidelines, where feasible.

**Accessibility**

The Project will significantly improve accessibility around the Project Site by creating generous barrier-free pedestrian zones along Boylston Street and Dalton Street. Care will be taken to select materials and consider key elements to address the goals outlined in the Accessibility Checklist provided in Appendix B.

The Project will implement the following:

- New drop-off areas will be created along Boylston Street in front of the building entries, the design of which will incorporate a curb ramp to provide barrier-free access to the buildings.
- The sidewalk on Boylston Street will be widened to create a generous, barrier-free pedestrian zone along the entire Project frontage. Curb ramps will be provided to allow for connections to adjacent sidewalks and nearby bus stops.
- The sidewalk on Dalton Street will be paved in concrete, free of obstructions and will have a comfortable and compliant slope, where feasible.
- The parking ingress/egress will incorporate a flush sidewalk condition giving priority to the pedestrian over the vehicle.

  It is anticipated that five percent of the residential units in the East Building and West Building will be designed to be accessible, in compliance with 521 CMR.

### 2.5.2 On-Street Parking

Although no on-street parking is anticipated, distinct drop-off zones are proposed to be provided along Boylston Street proximate to the two residential entry lobbies (Figure 2.10). These locations are intended to provide convenience for restaurant and retail patrons and residents alike.


0 200 400 Feet

Source Info

ELKUS | MANFREDI ARCHITECTS

Neighborhood Context Plan
**1000 Boylston Street**
**Boston, Massachusetts**

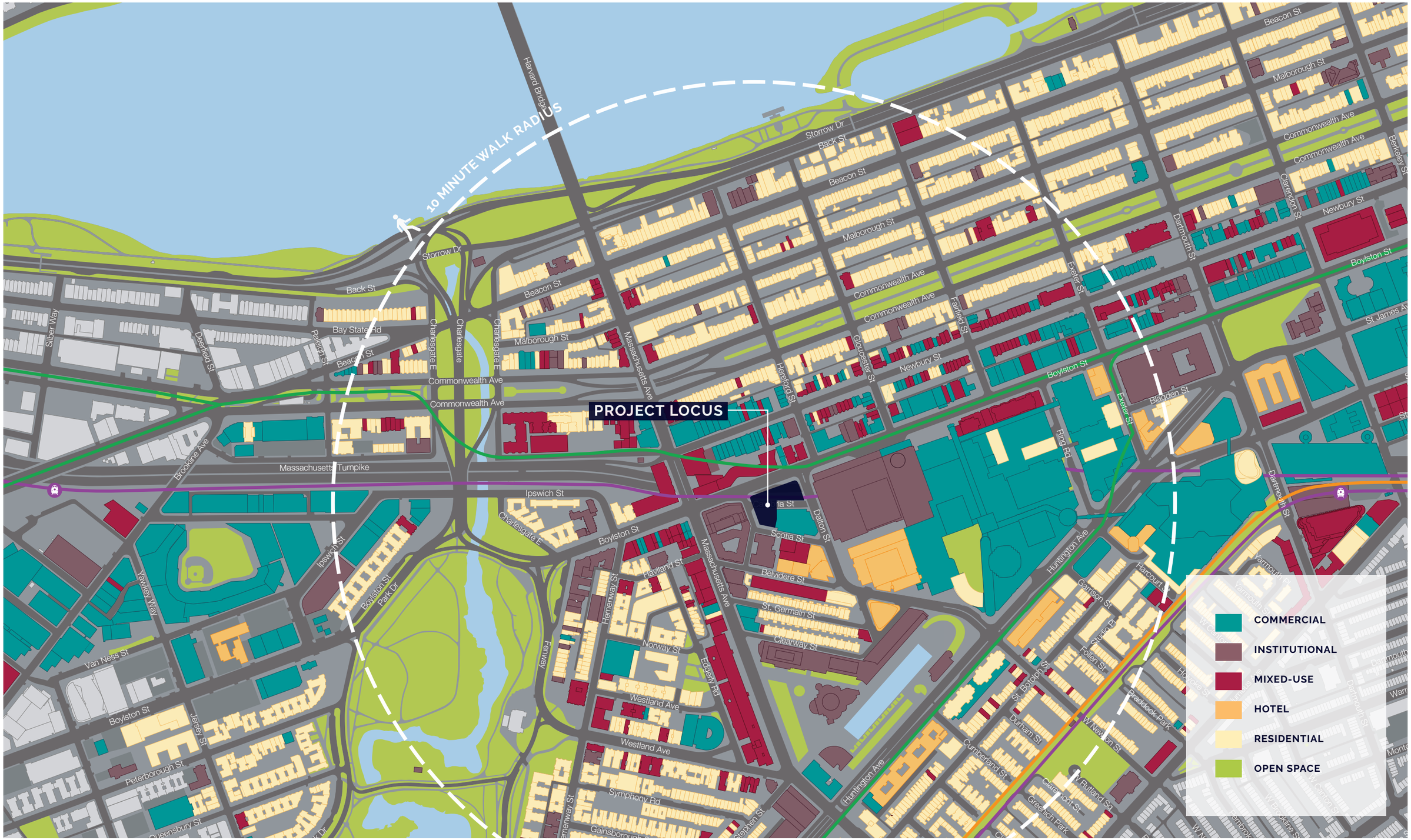
Figure 2.1


Source Info

ELKUS | MANFREDI ARCHITECTS

Existing Urban Context
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.2

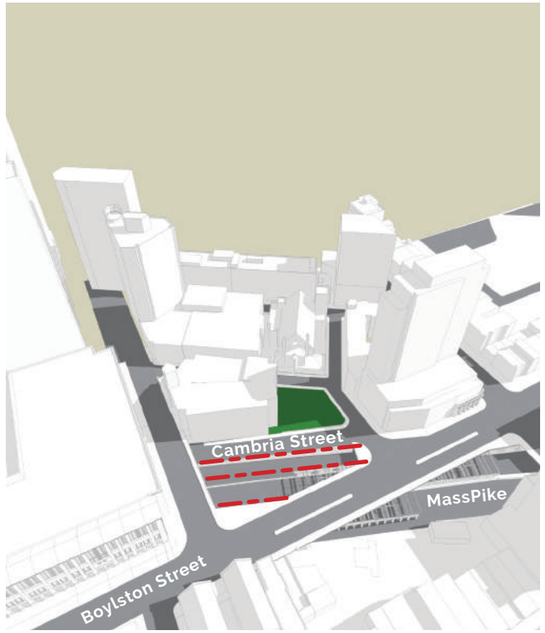



Source Info

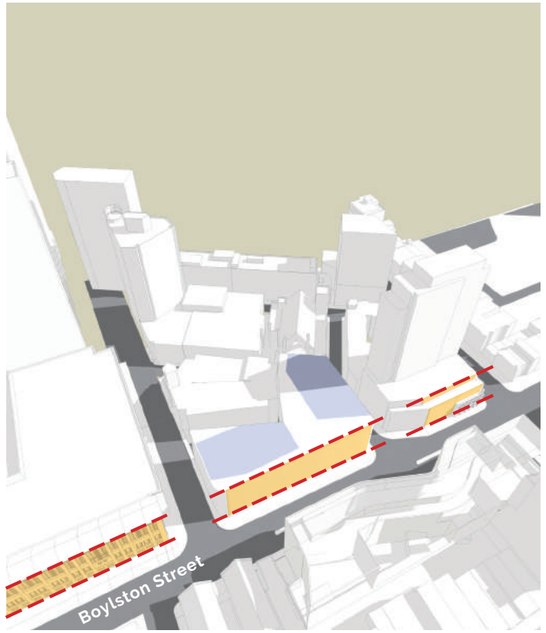
ELKUS | MANFREDI ARCHITECTS

Existing Use Plan
**1000 Boylston Street**
**Boston, Massachusetts**

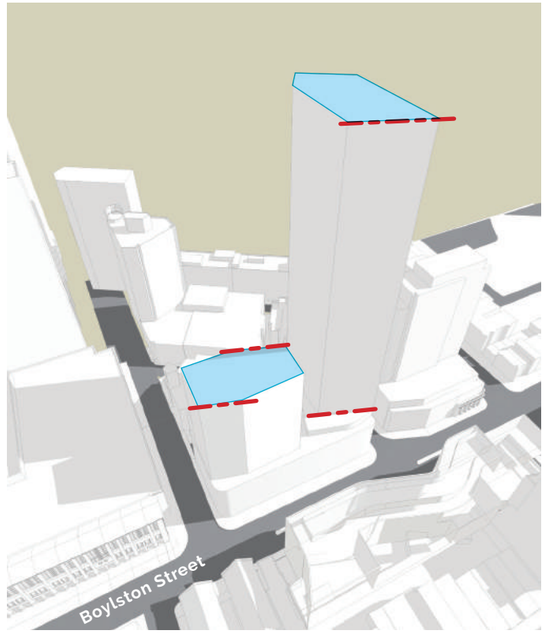
Figure 2.3



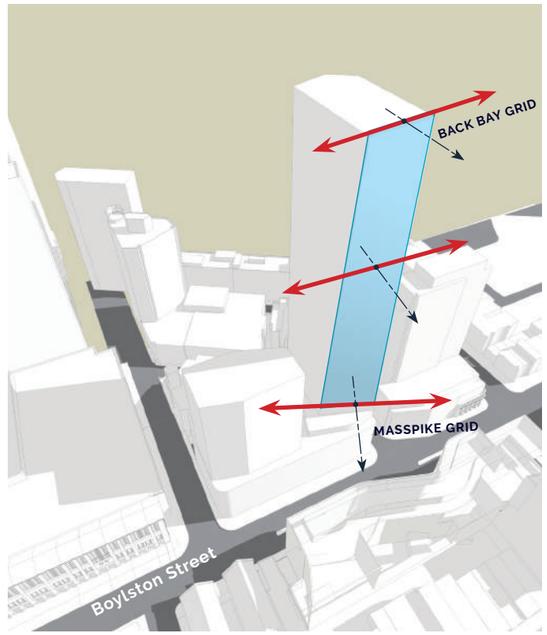

1 STRUCTURAL BEARING LINES



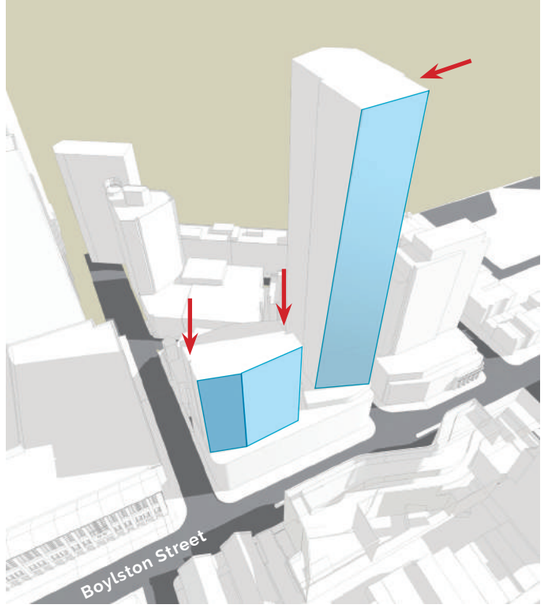

2 URBAN STREETWALL



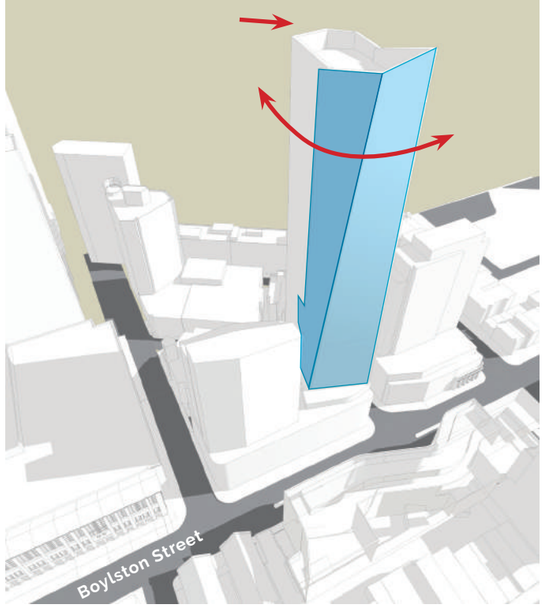

3 FOOTPRINT EXTRUSIONS




4 FACADE ROTATION




5 SHEARED EXTRUSIONS




6 TWISTED FORM


7 BALCONIES

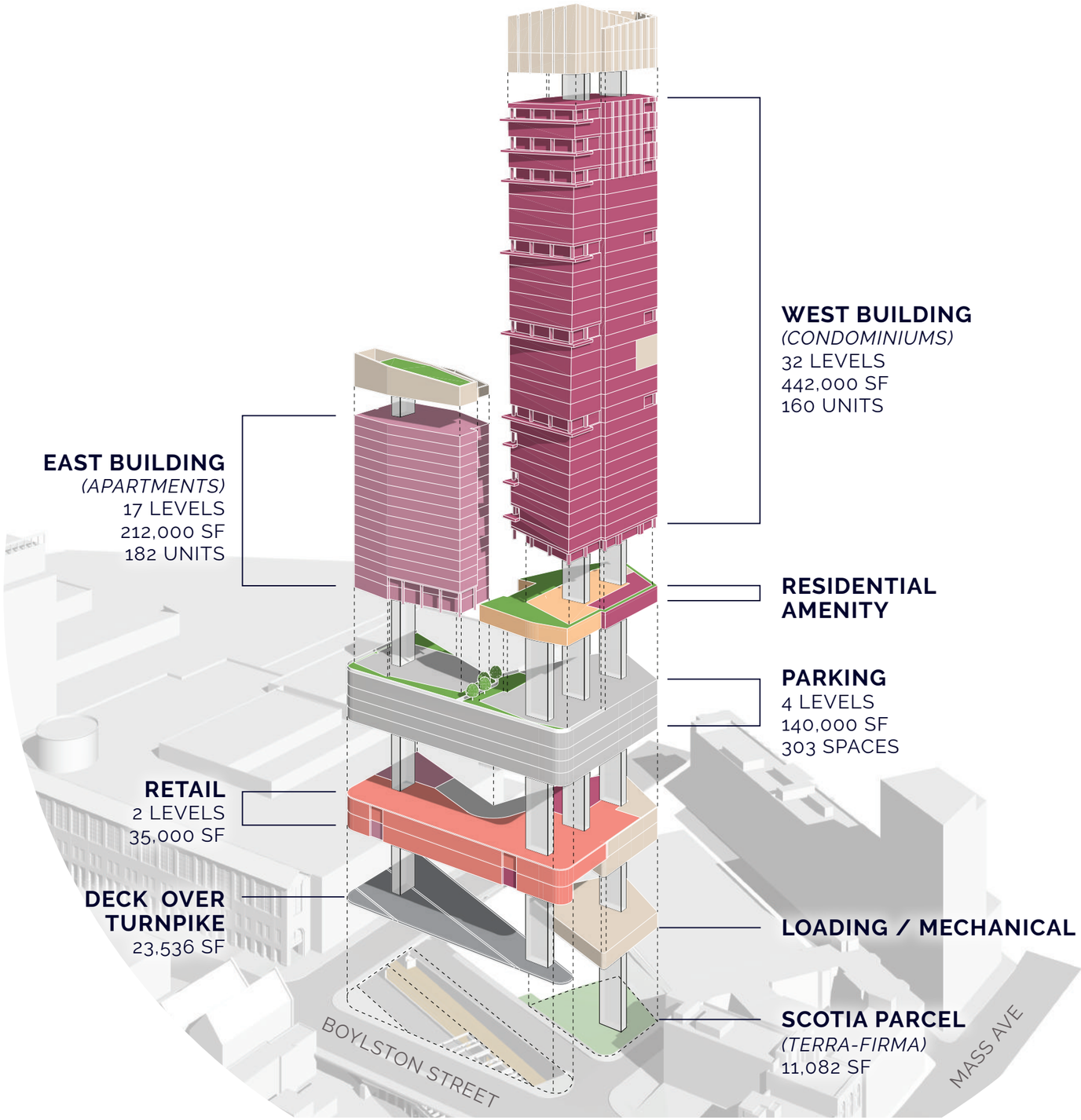

8 GREEN

ELKUS | MANFREDI ARCHITECTS

Massing Concept Diagram
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.4

Source Info

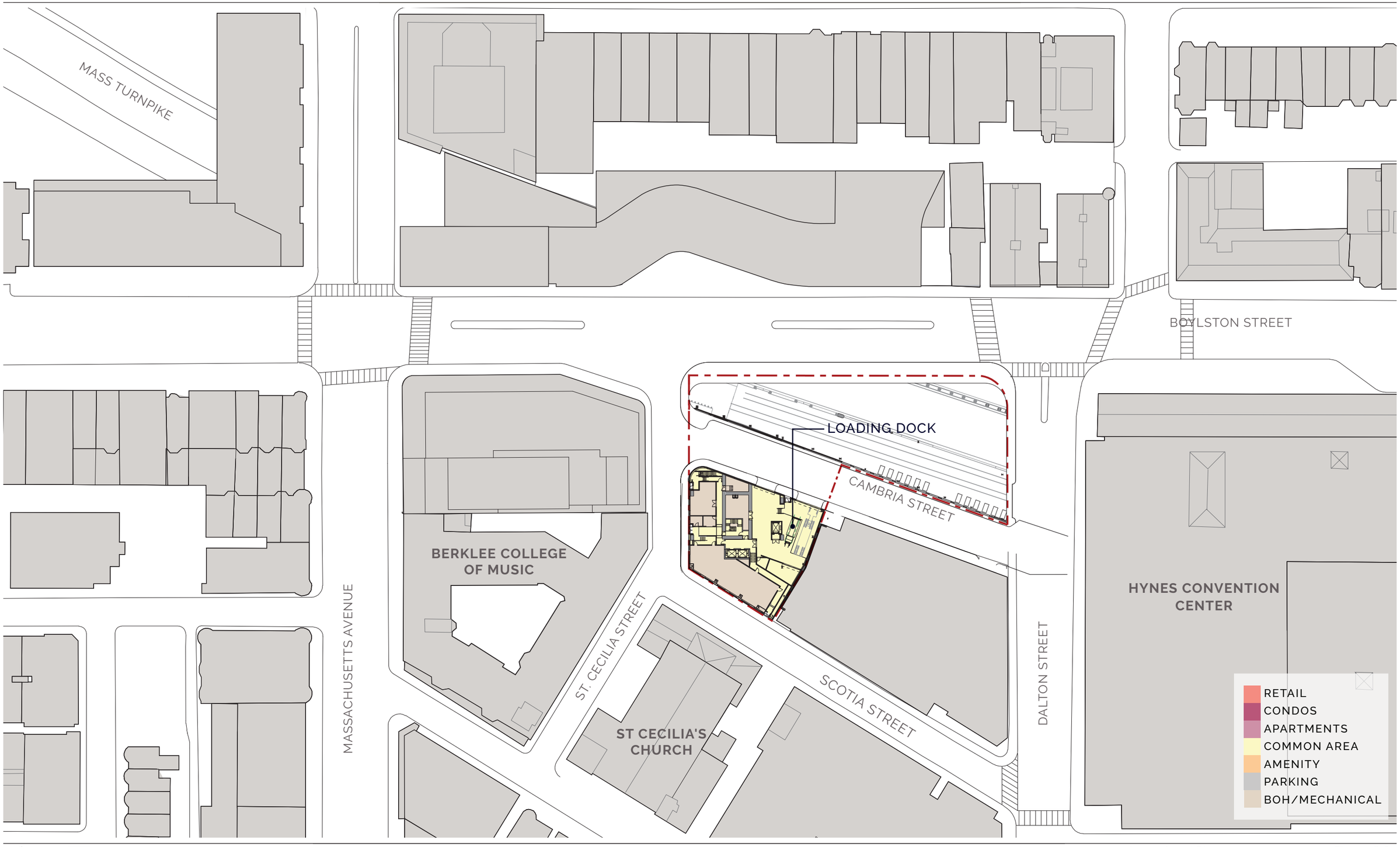



ELKUS | MANFREDI ARCHITECTS

Program Stacking Diagram
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.5

Source Info

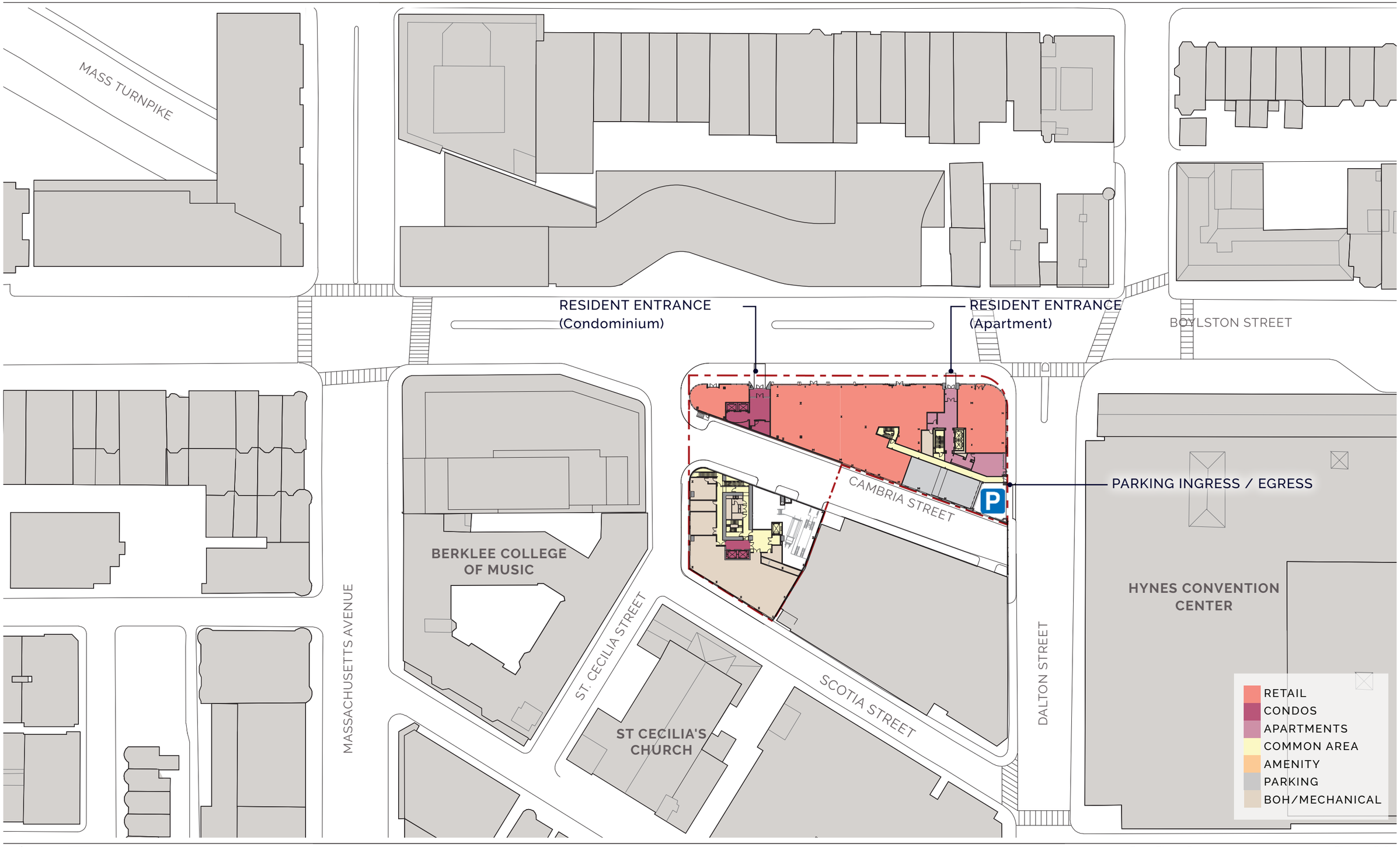



Source Info

ELKUS | MANFREDI ARCHITECTS

Lower Level Plan
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.6a

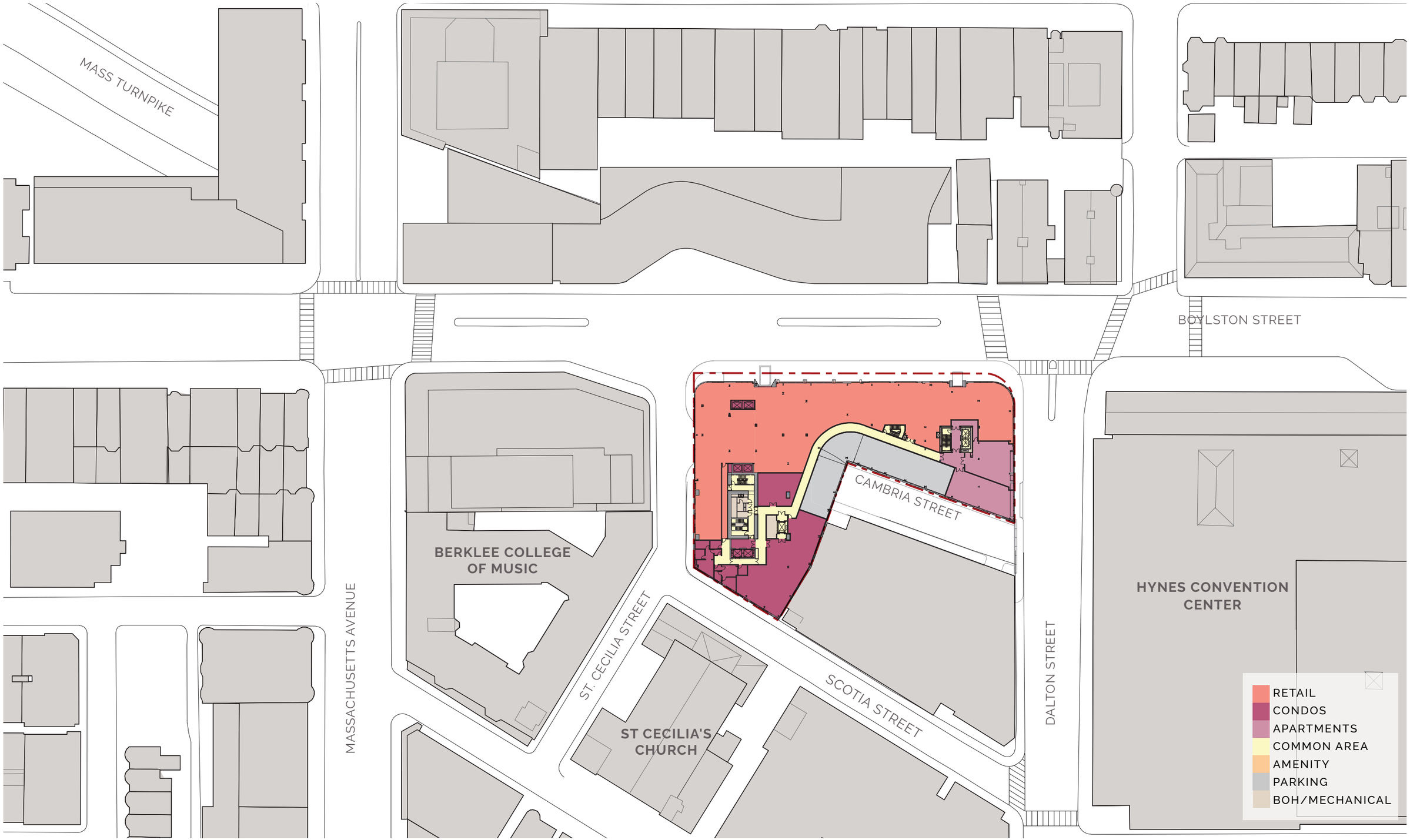



Source Info

ELKUS | MANFREDI ARCHITECTS

First Floor Plan
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.6b

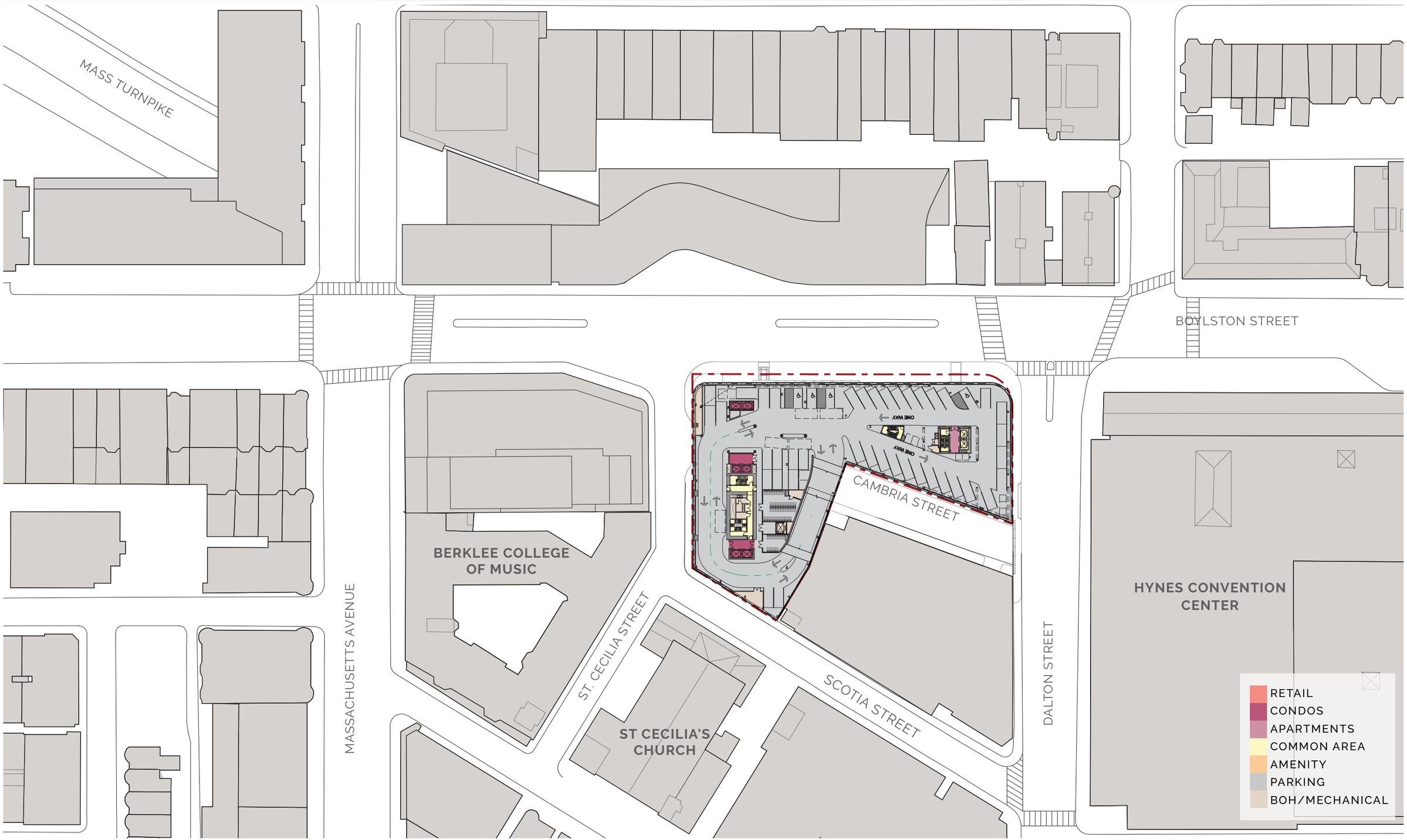



Source Info

ELKUS | MANFREDI ARCHITECTS

Second Floor Plan
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.6c

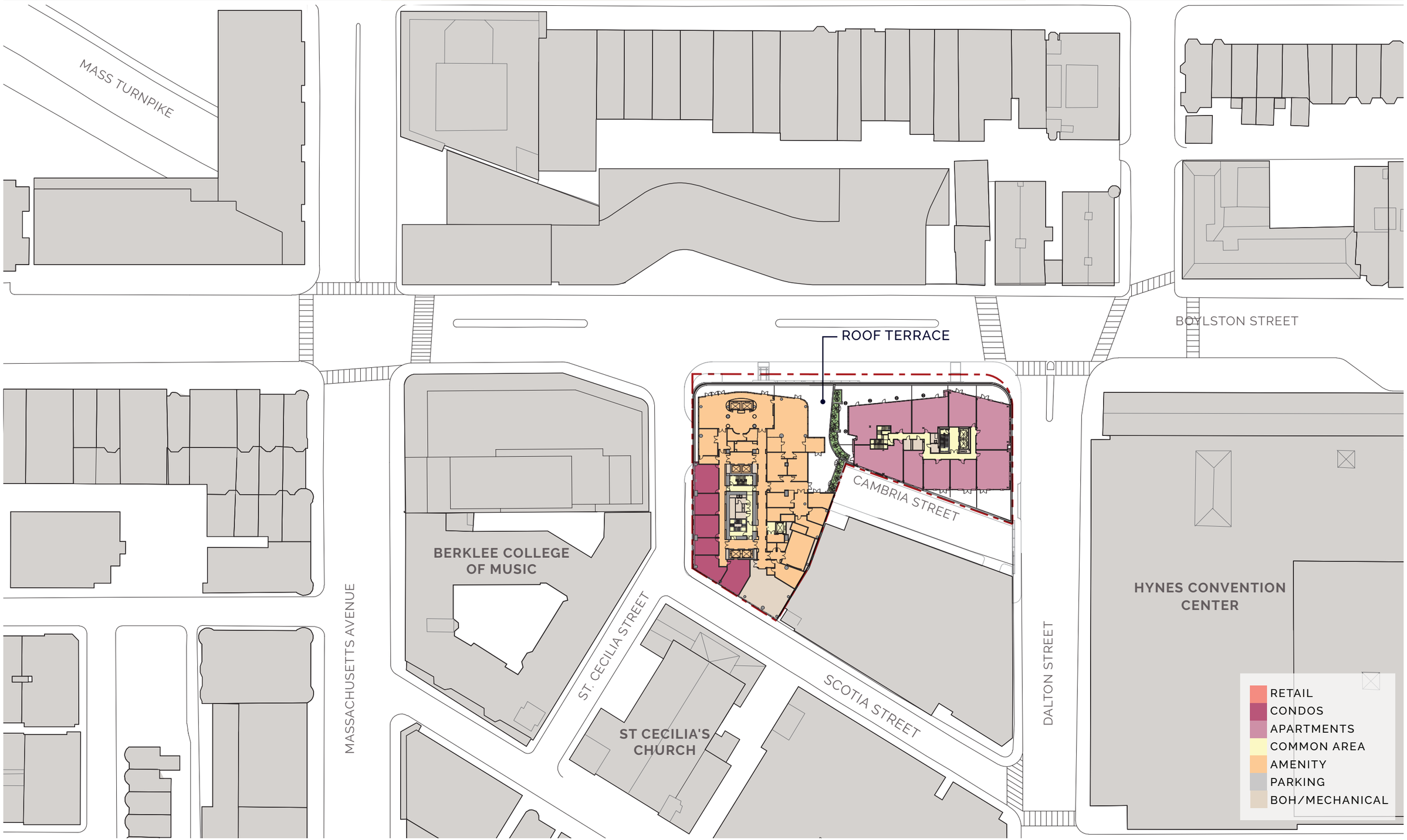



Source Info

ELKUS | MANFREDI ARCHITECTS

Typical Parking Plan
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.6d

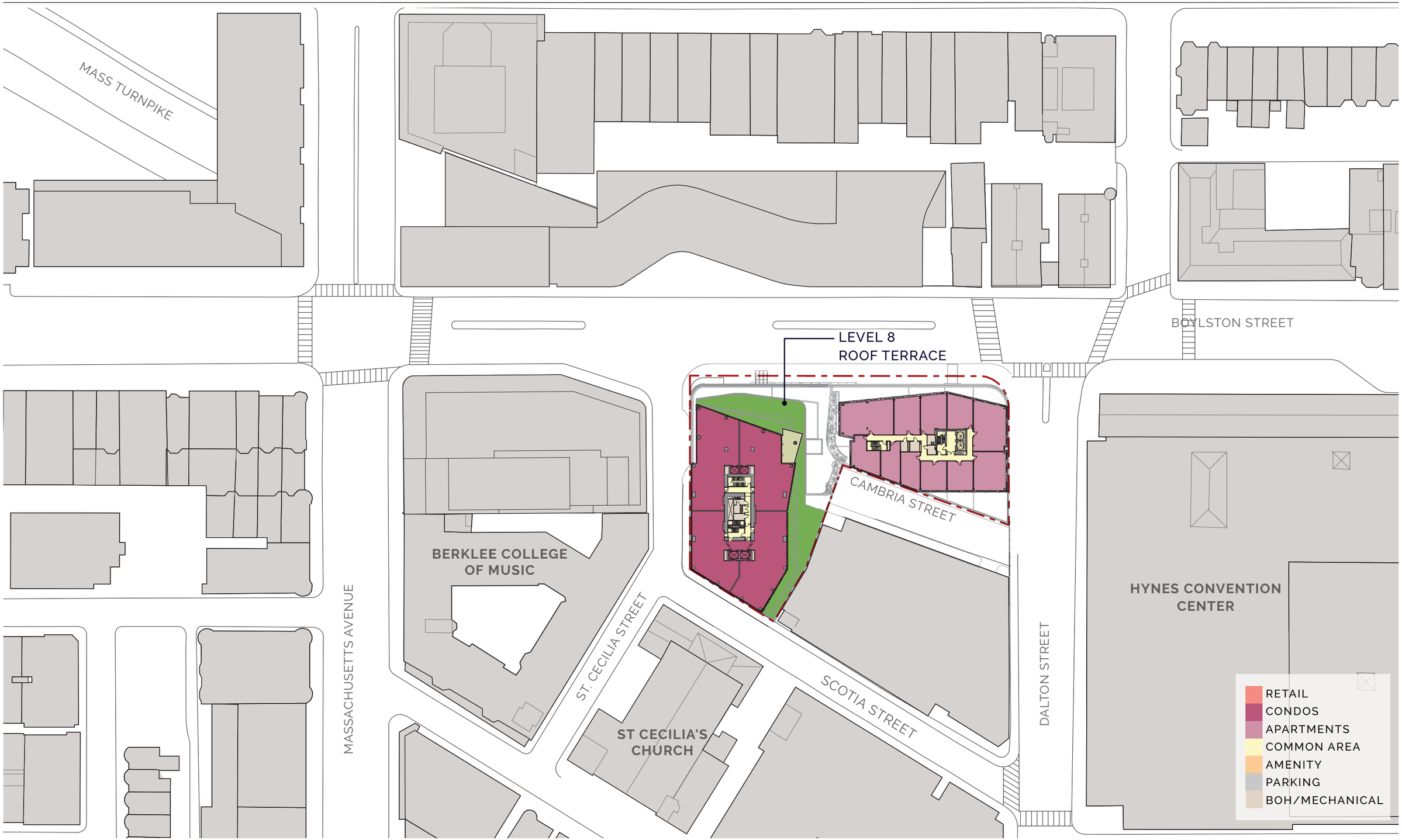



Source Info

ELKUS | MANFREDI ARCHITECTS

Level 7 Plan
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.6e

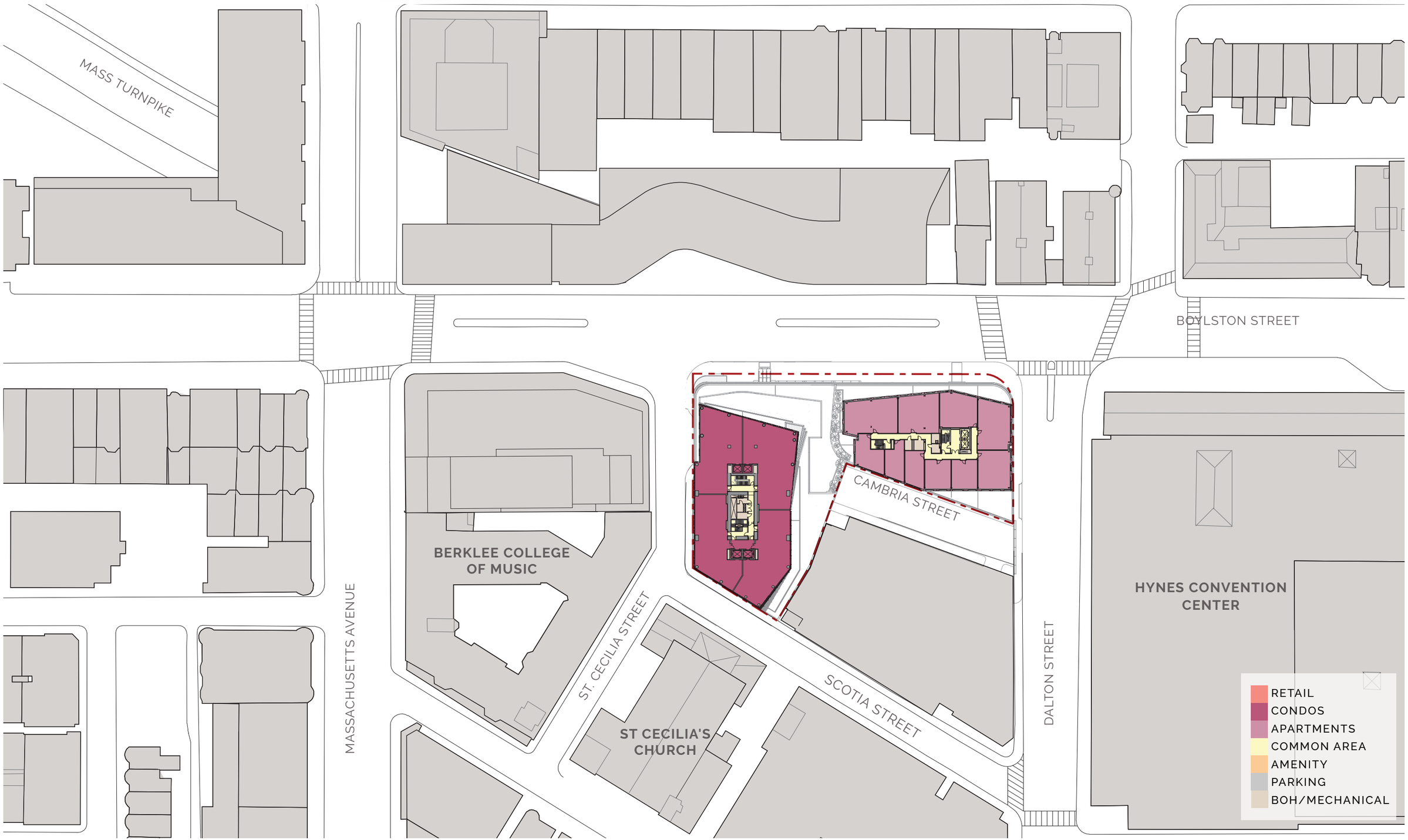



Source Info

ELKUS | MANFREDI ARCHITECTS

Typical Floor Plan Floors 8-14
**1000 Boylston Street**
**Boston, Massachusetts**

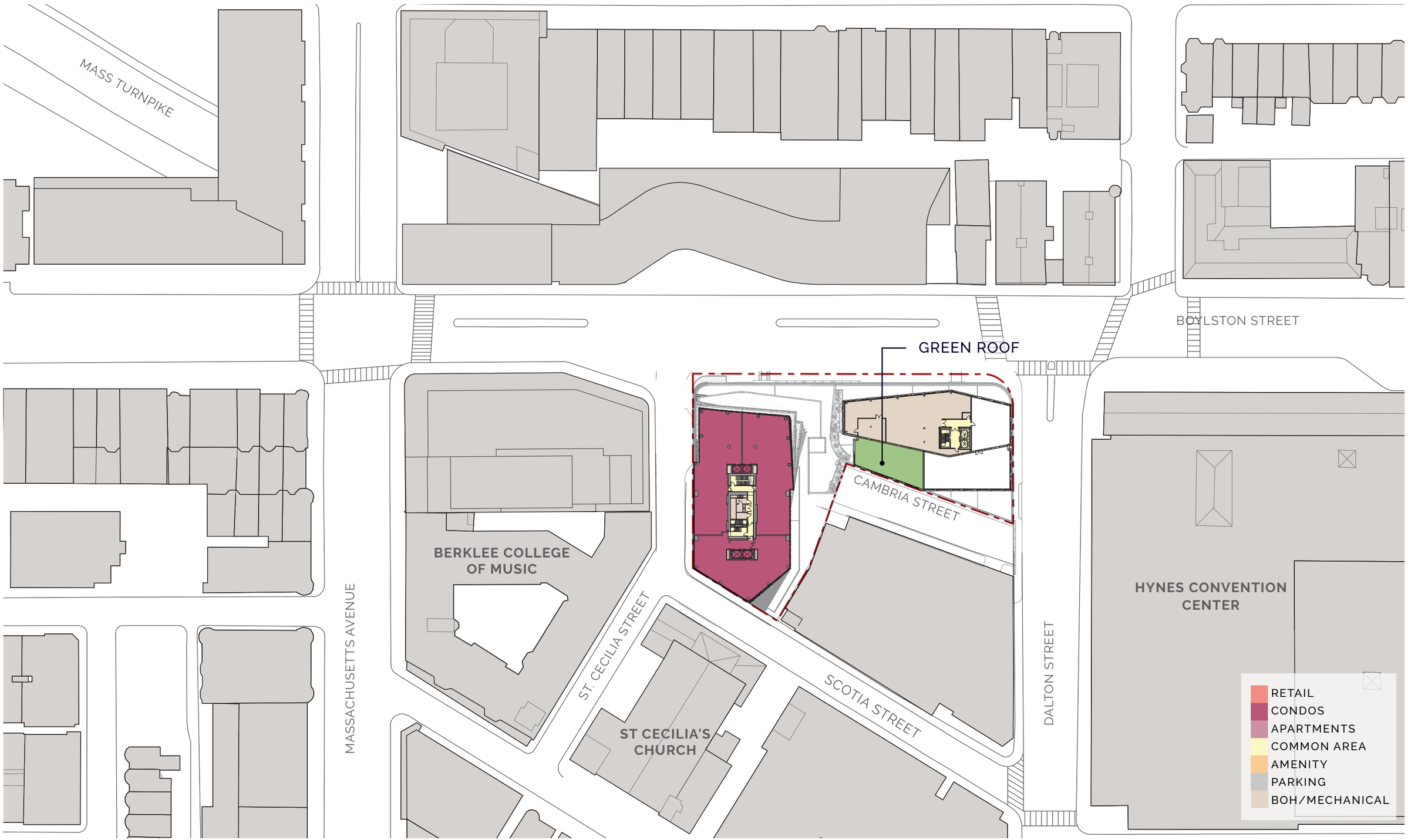
Figure 2.6f




Source Info

ELKUS | MANFREDI ARCHITECTS

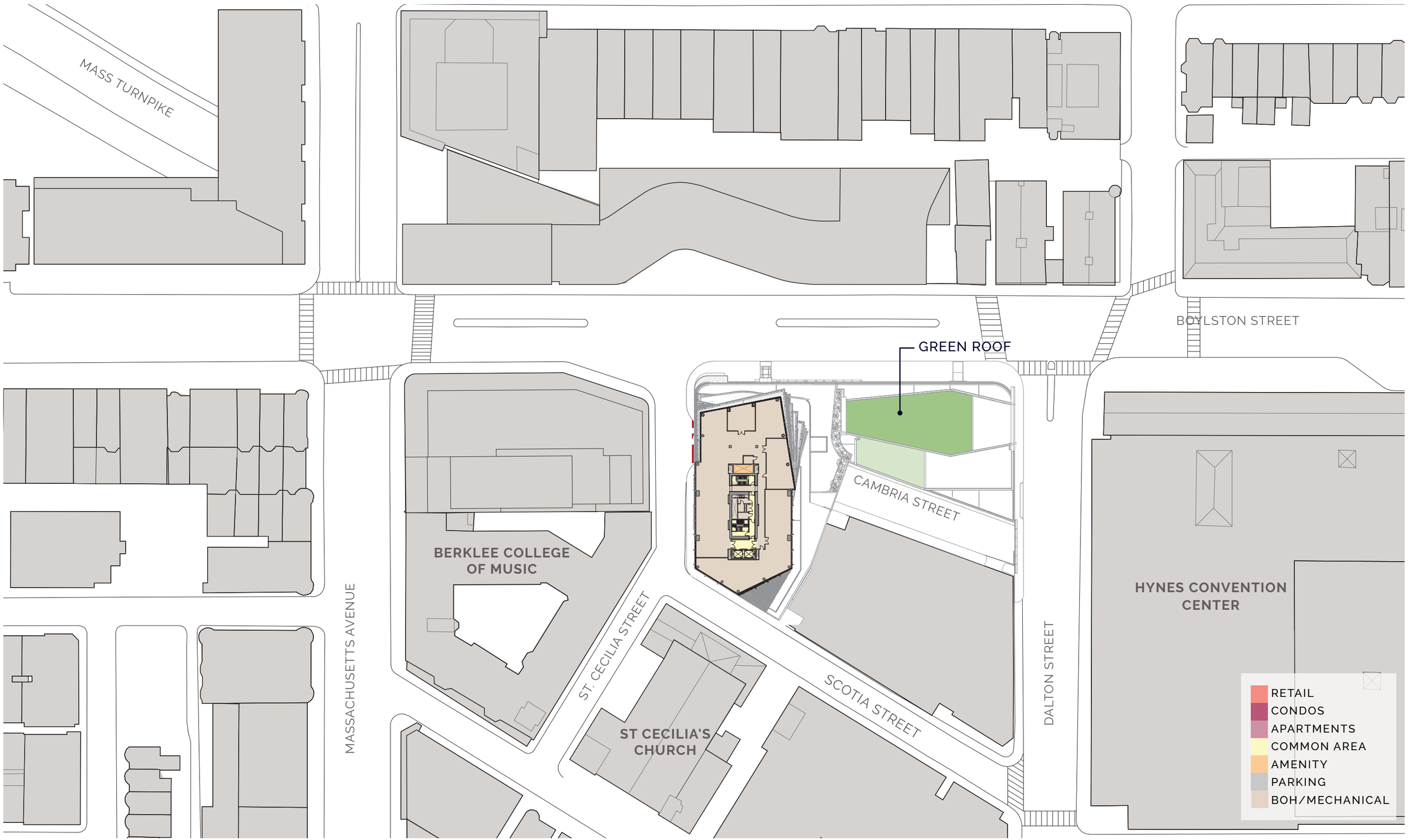
Typical Floor Plan Floors 15-24 Figure 2.6g
**1000 Boylston Street**
**Boston, Massachusetts**




Source Info

ELKUS | MANFREDI ARCHITECTS

Typical Floor Plan Floors 25-40 Figure 2.6h
**1000 Boylston Street**
**Boston, Massachusetts**

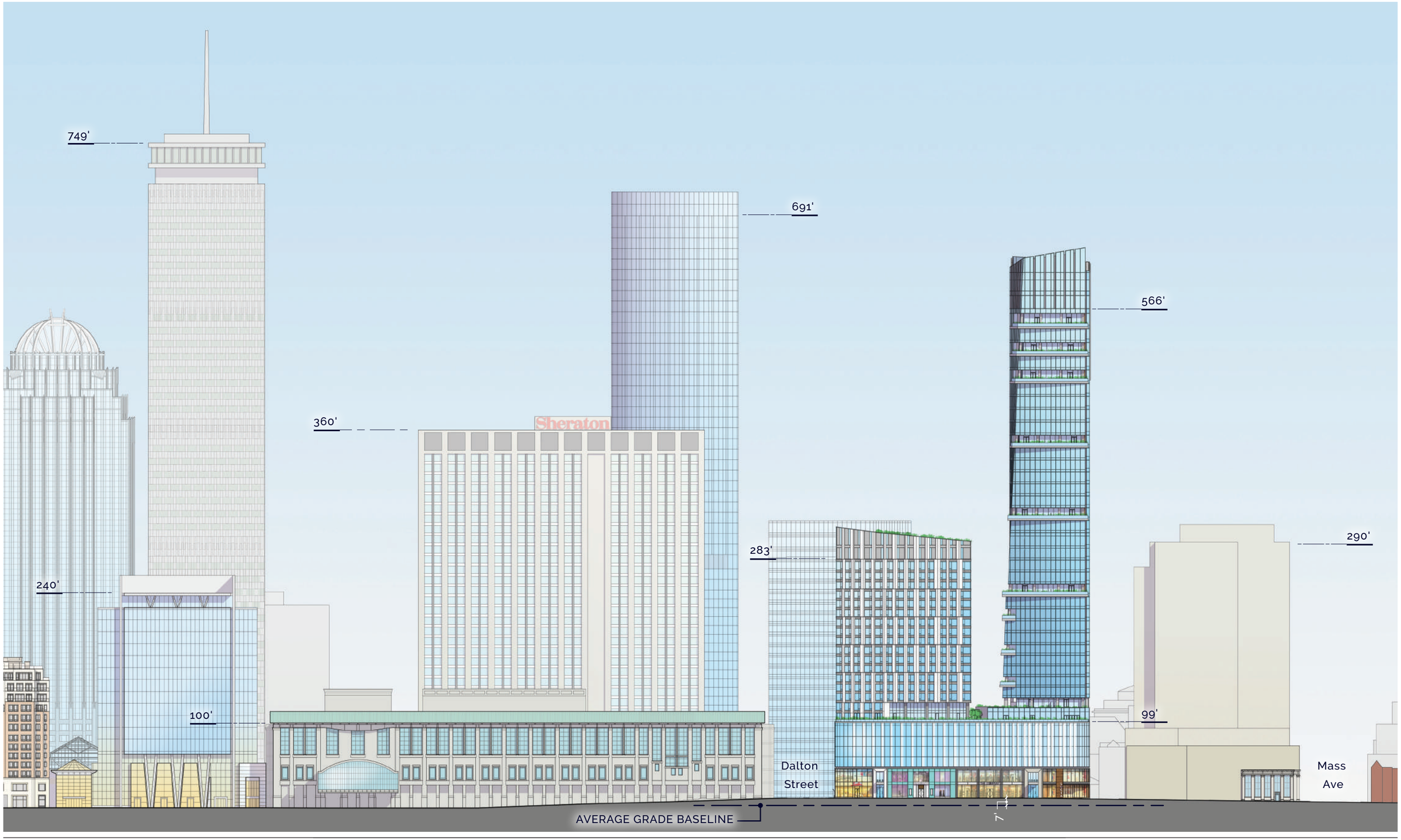



Source Info

ELKUS | MANFREDI ARCHITECTS

Mechanical Penthouse Plan
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.6i



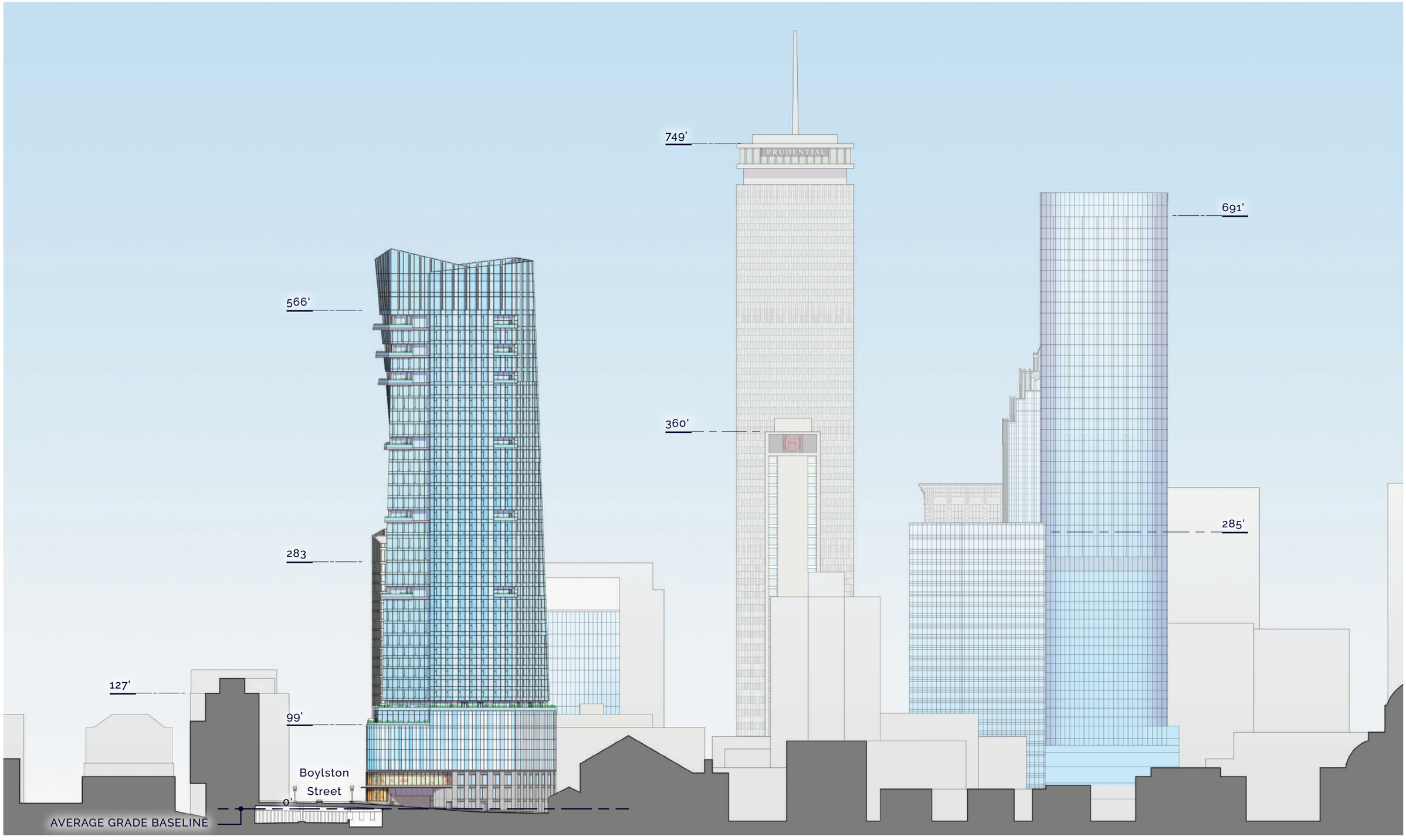

0 50 100 Feet

Source Info

ELKUS | MANFREDI ARCHITECTS

North Elevation | Boylston Street
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.7a



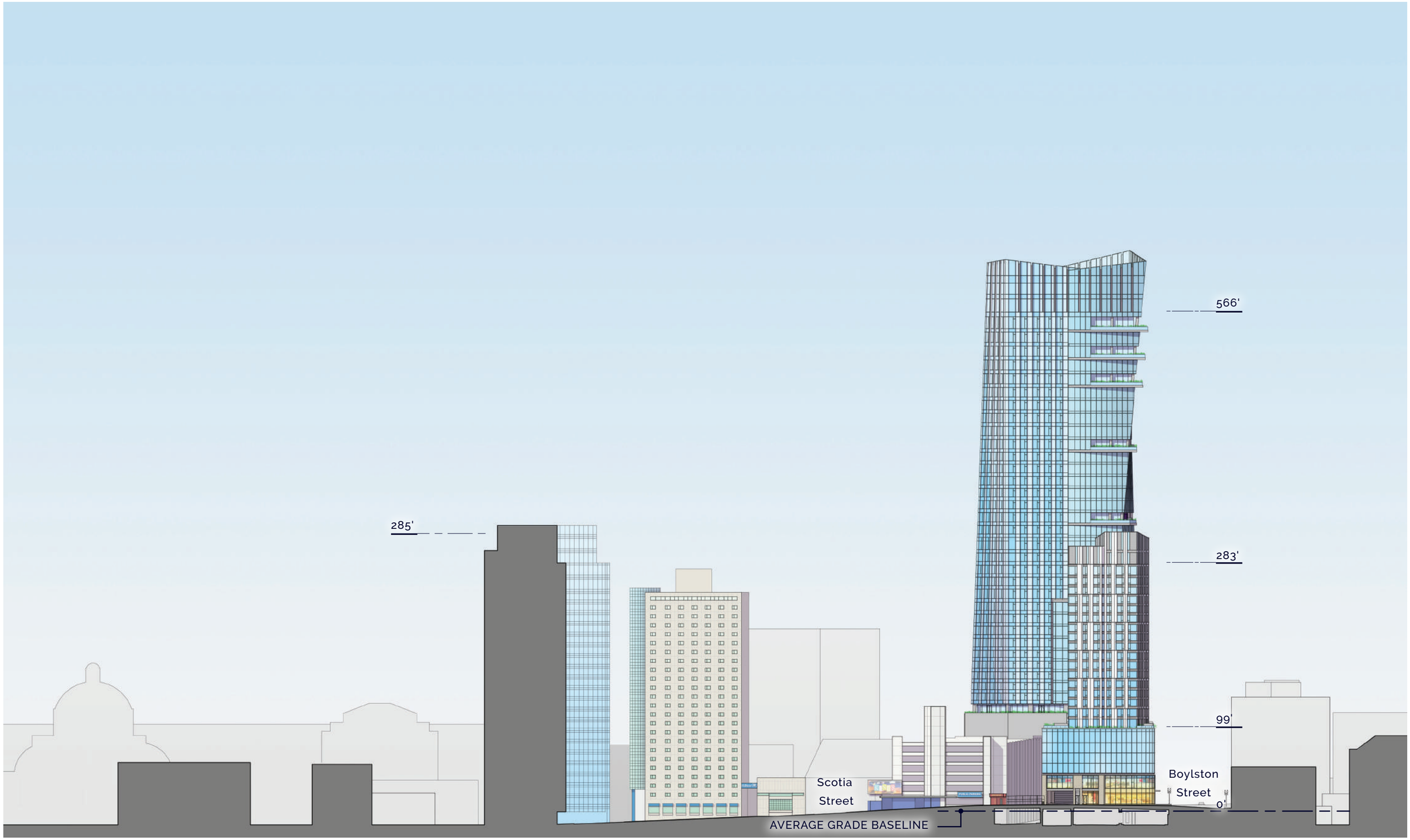

0 50 100 Feet

Source Info

ELKUS | MANFREDI ARCHITECTS

West Elevation | St Cecilia's Street
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.7b



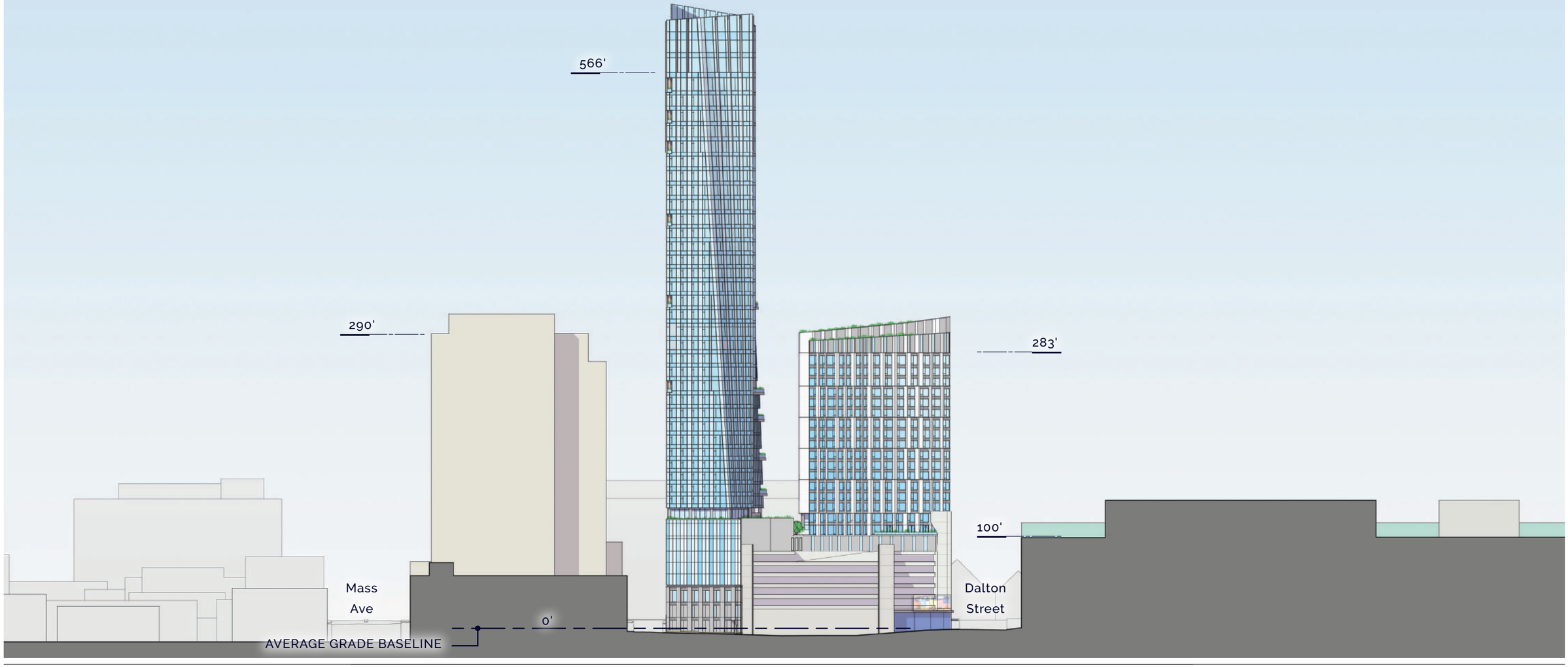

0 50 100 Feet

Source Info

ELKUS | MANFREDI ARCHITECTS

East Elevation | Dalton Street
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.7c



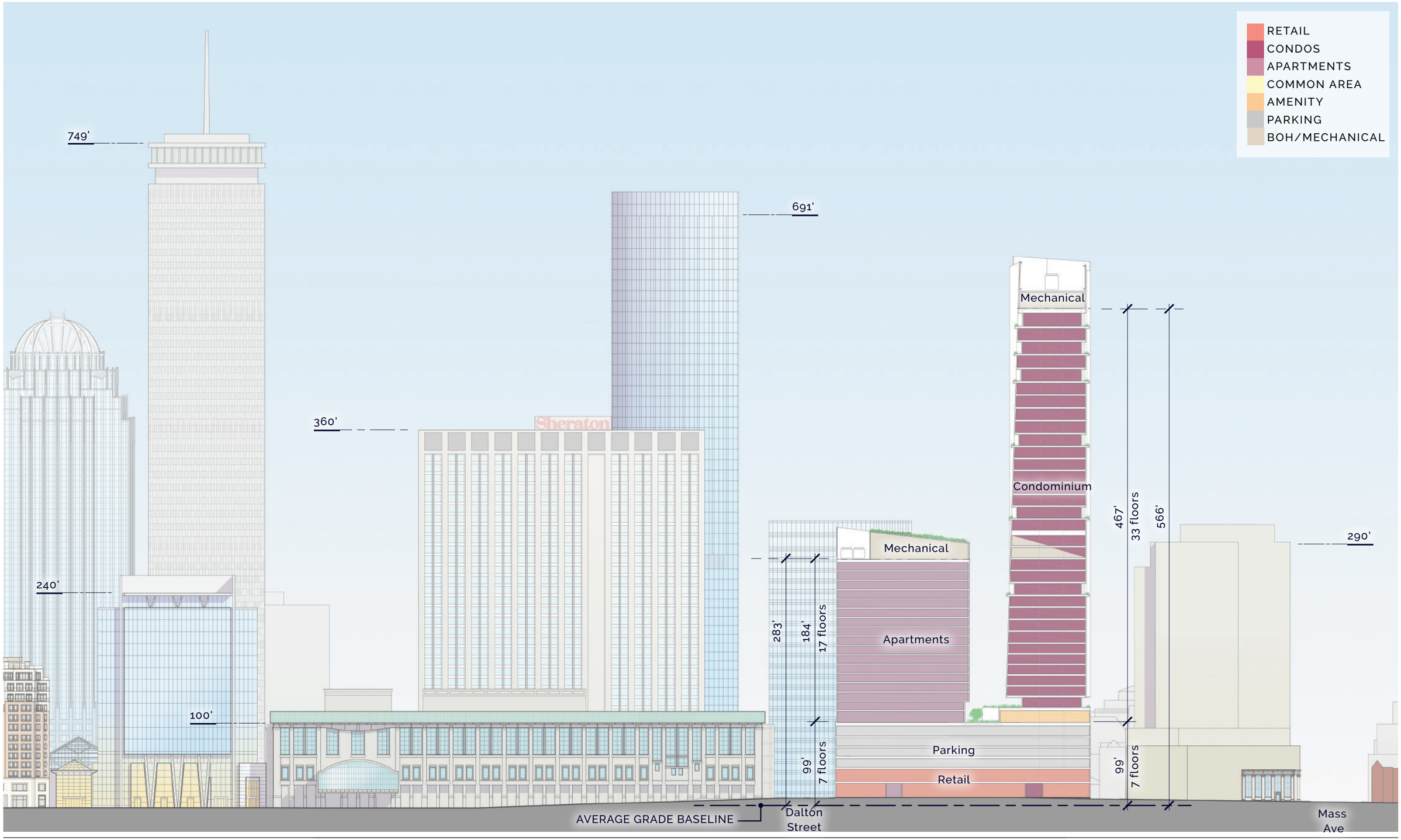

0 50 100 Feet

Source Info

ELKUS | MANFREDI ARCHITECTS

South Elevation
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.7d




0 50 100 Feet

Source Info

ELKUS | MANFREDI ARCHITECTS

Building Section 1
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.8a

RETAIL
CONDOS
APARTMENTS
COMMON AREA
AMENITY
PARKING
BOH/MECHANICAL

749'
PRUDENTIAL
691'
360'
285'
127'
0'
Mechanical
Condominium
Mech.
566'
467'
33 floors
99'
7 floors
Parking
Retail
Loading / Mechanical
AVERAGE GRADE BASELINE
ACCESS TO HYNES CONVENTION CENTER VIA CAMBRIA STREET

0 50 100 Feet

Boylston Street

Source Info

ELKUS | MANFREDI ARCHITECTS

Building Section 2
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.8b


ELKUS | MANFREDI ARCHITECTS

View from the North
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.9a

Source Info


ELKUS | MANFREDI ARCHITECTS

View from Massachusetts Avenue
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.9b

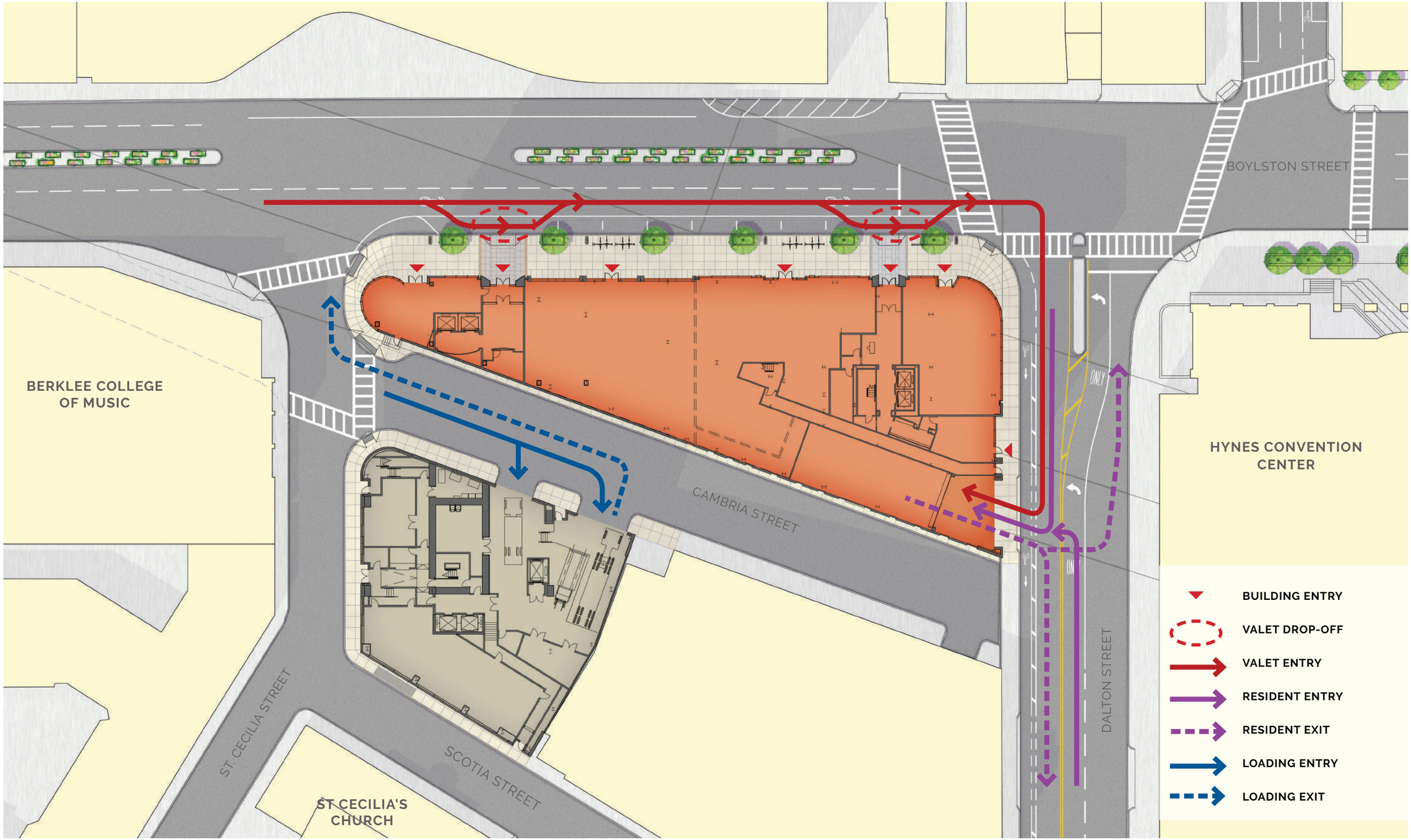
Source Info


ELKUS | MANFREDI ARCHITECTS

Pedestrian View from Boylston
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.9c

Source Info



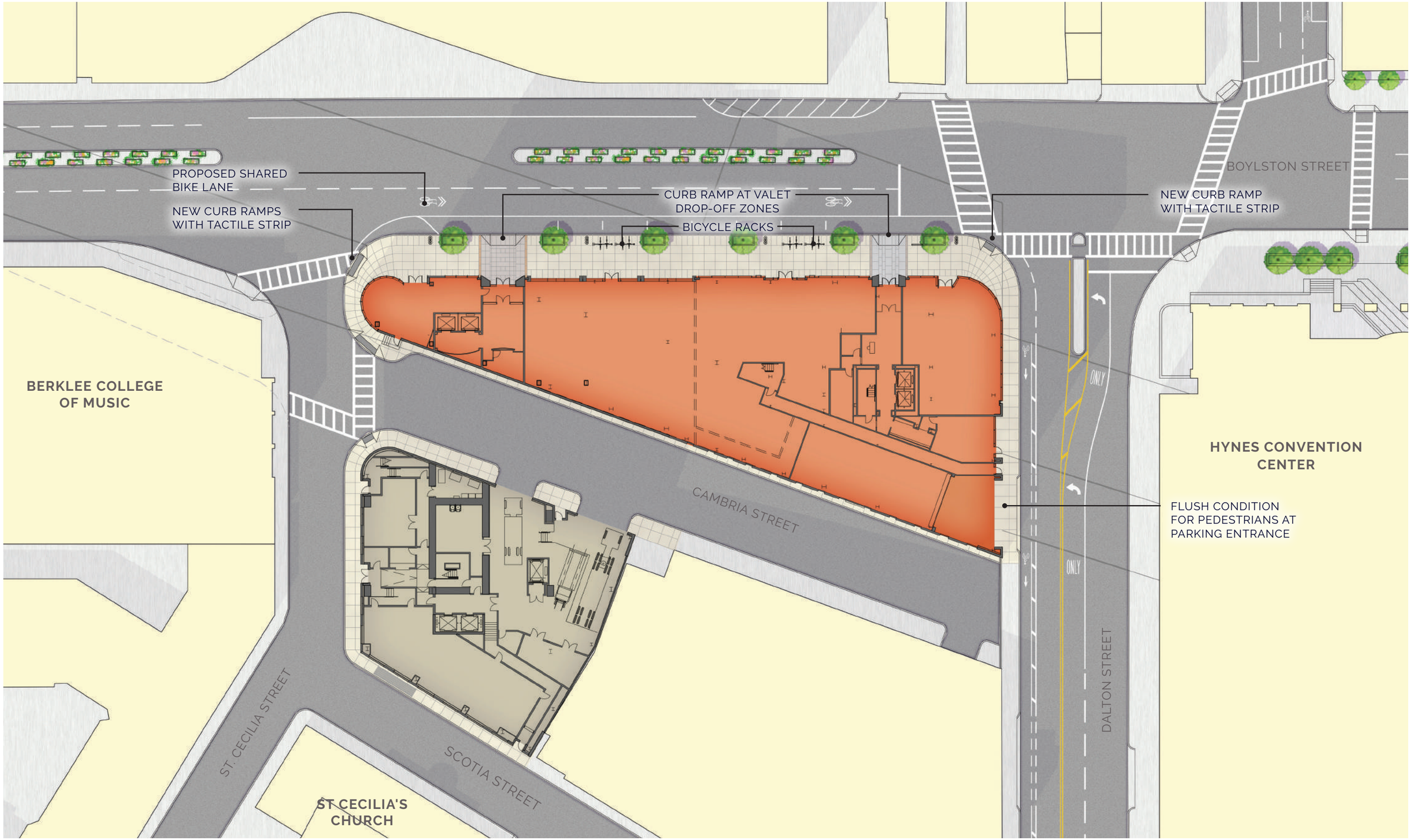

0 20 40 Feet

Source Info

ELKUS | MANFREDI ARCHITECTS

Circulation Diagram
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.10




Source Info

ELKUS | MANFREDI ARCHITECTS

Streetscape Improvement Plan
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 2.11

# 3

# Sustainability/Green Building Design and Climate Change Preparedness

This chapter provides preliminary information regarding the Project's sustainability/ green building, and climate change preparedness and resiliency strategies, as applicable. It identifies the proposed U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED™) version 4 ("v4") rating system level based on early design, describes building-specific strategies for each LEED category, and explains how key credits will be achieved. It also discusses a framework for considering present and future climate conditions in project design.

The Project is inherently sustainable in that it utilizes an urban site in a densely developed neighborhood of Boston by constructing new building area over a major highway (i.e., within Air Rights) and reusing an existing urban site. The Proponent is committed to building a livable, sustainable, and forward-thinking Project. In summary, the Project aims to:

- Utilize the opportunity to develop over a portion of the MassPike and revitalize an underutilized urban site;
- Improve pedestrian access near multimodal, alternative transportation services;
- Promote health and wellness with green infrastructure to improve air and water quality;
- Exceed minimum energy performance requirements;
- Incorporate clean and renewable energy sources to the extent feasible;
- Minimize impact on municipal water supply by minimizing potable water consumption;
- Minimize impacts on stormwater systems and improve stormwater and effluent quality; and
- Efficiently use materials and resources during construction and in Project operation.

The project team will use the USGBC's LEED v4 rating system as a model for incorporating sustainable design strategies into the Project, and will also consider the health and wellness of its future occupants and users through consideration of the WELL Building Standard® ("WELL") principles in building design and during

operation. As the project design progresses, the Proponent will continue to research and consider additional green building strategies.

## 3.1 Summary of Key Findings and Benefits

The key findings and benefits related to sustainability/green building design and climate change preparedness include the following Project attributes:

- Revitalizes an underutilized urban site, uses land efficiently by increasing density in proximity to public transportation.
- Utilizing sustainable design strategies and exceeding the state energy code performance minimums, the Project will maximize the conservation of energy, water and other resources and minimize impacts to regional infrastructure and water resources.
- Considers the feasibility of clean and renewable energy sources, including a building-integrated photovoltaic system.
- Promotes health and wellness, assists in improving air and water quality, and reduces the urban heat island effect through the incorporation of a variety of sustainable design strategies.
- Complies with Article 37, Green Buildings of the Code by demonstrating the early project design would achieve a LEEDv4 Certified level, as demonstrated by the draft LEEDv4 scorecard (Figure 3.2).
- Seeks to integrate climate change adaptations in building design that reduce vulnerability given future climate scenarios and natural events, such as flooding, severe precipitation and heat.

## 3.2 Regulatory Context

The following section provides an overview of the state and local regulatory context related to energy efficiency and GHG emissions

### 3.2.1 Article 37 Green Buildings

Through Article 37 – Green Buildings, the City of Boston encourages major building projects to be "planned, designed, constructed, and managed to minimize adverse environmental impacts; to conserve natural resources; to promote sustainable development; and to enhance the quality of life in Boston." Any project that is subject to Article 80, Large Project Review is also subject to the requirements of Article 37.

Article 37 requires all projects over 50,000 gross square feet to meet LEED certification standards by either certifying the proposed project or demonstrating that the project would meet the minimum requirements to achieve a LEED Certified level (all LEED pre-requisites and at least 40 points associated with credits listed on the LEED project checklist) without registering the project with the USGBC ("LEED certifiable"). With the LEED version 4 ("v4") rating system effective as of October 31,

2016, the BPDA requires initial Article 80 Large Project Review submissions on or after November 1st to demonstrate LEED certifiable using LEEDv4.

**Boston Green Building Credits**

Appendix A of Article 37 lists "Boston Green Building Credits," which are credits that may be included in the calculation toward achieving a LEEDv4 certifiable project. These credits along with the prerequisites were developed by the City and are intended to address local issues unique to development within Boston. The credits include the following categories: Modern Grid; Historic Preservation; Groundwater Recharge; and Modern Mobility.

### 3.2.2 Stretch Energy Code

As part of the Green Communities Act of 2008, Massachusetts developed an optional building code, known as the "Stretch Energy Code," that gives cities and towns the ability to choose stronger energy performance in buildings than otherwise required under the state building code. Codified by the Board of Building Regulations and Standards as 780 CMR Appendix 115.AA of the 8th edition Massachusetts Building Code, the Stretch Energy Code is an appendix to the Massachusetts building code, based on further amendments to the International Energy Conservation Code (IECC). The Stretch Energy Code increases the energy efficiency code requirements for new construction and major residential renovations or additions in municipalities that adopt it. The Stretch Energy Code applies to both residential and commercial buildings and, specifically, to new commercial buildings over 5,000 square feet in size, including multi-family residential buildings over three (3) stories. The City of Boston adopted the Stretch Energy Code, which became mandatory on July 1, 2011.

Effective January 1, 2017, the Stretch Energy Code requires a 10 percent greater energy efficiency compared to the state's energy code (the "Base Code"). This PNF assesses the energy performance of the Project using the Stretch Energy Code requirements in effect as of January 1, 2017 in order to demonstrate the Project can meet such requirements.

### 3.2.3 MEPA Greenhouse Gas Policy and Protocol

The Executive Office of Energy and Environmental Affairs (EEA) has developed the MEPA Greenhouse Gas Emissions Policy and Protocol (the "MEPA GHG Policy"), which requires project proponents to identify and describe the feasible measures to minimize both mobile and stationary source GHG emissions generated by their proposed project(s). Mobile sources include vehicles traveling to and from a project while stationary sources include on-site boilers, heaters, and/or internal combustion engines (direct sources) as well as the consumption of energy in the form of fossil fuels (indirect sources). Greenhouse gases include several air pollutants, such as carbon dioxide ($CO_2$), methane, hydrofluorocarbons, and perfluorocarbons. The MEPA GHG Policy calls for the evaluation of $CO_2$ emissions for a land development

project because $CO_2$ is the predominant man made contributor to global warming. This evaluation makes use of the terms $CO_2$ and GHG interchangeably.

The MEPA GHG Policy states that all projects undergoing MEPA review requiring the submission of an Environmental Impact Report (EIR) must quantify the project's GHG emissions and identify measures to avoid, minimize, or mitigate such emissions. In addition to quantifying project-related GHG emissions, the MEPA GHG Policy requires proponents to quantify the effectiveness of proposed improvements in terms of energy savings and, therefore, potential emissions reductions. The goal of the MEPA GHG Policy is to identify and implement measures to minimize or reduce the total GHG emissions anticipated to be generated by that respective project.

The Proponent intends to provide an analysis of stationary and mobile source GHG emissions, in accordance with the MEPA GHG Policy as part of the MEPA Draft EIR.

## 3.3 Sustainability Approach

As demonstrated in Figures 3.1a and 3.1b, the Project has been designed based on a holistic approach to sustainability that promotes livability and economic development, while simultaneously mitigating the external impacts of energy, water, waste, and emissions. It seeks to incorporate sustainable features through the LEEDv4 rating system to demonstrate compliance with Article 37 (discussed further below in Section 3.3.1).

Site sustainability is enhanced with strategies that reduce urban heat island effect and stormwater runoff: 100 percent covered vehicle parking, vegetated and highly-emissive[1] roofs, and stormwater detention and treatment.

The Project will save potable water by installing low-flow fixtures, drip-irrigation, and drought-tolerant landscaping, as well as conductivity meters and automatic controls for chemical treatment on cooling towers reducing the need for additional make-up water demand.

Energy savings measures will include high-performance glazing, condensing boilers, high-efficiency chillers with variable speed compressors, low lighting power density and ventilation air heat recovery. Harmful refrigerants will not be used and the Project will be commissioned to help ensure major energy-using equipment is installed correctly.

Environmental impacts of resource extraction, processing and transportation will be limited by specifying regional and recycled materials. Further impact reductions will be achieved by diverting construction waste from landfill and encouraging recycling at the building.

[1] The emittance of a material refers to its ability to release absorbed heat.

The Project will achieve excellent indoor environmental quality by specifying low-VOC materials, installing filtration media and entryway systems and designing spaces for high levels of thermal comfort.

### 3.3.1 Compliance with Article 37

Consistent with the sustainability goals for the Project and requirements of Article 37, the Proponent and project design team intend to incorporate sustainable design and construction principles and practices into the Project. Based on preliminary design, the Project is targeting a LEEDv4 Certified rating, as demonstrated in the preliminary LEED scorecard presented in Figure 3.2. The Project is currently tracking 46 'Yes' points for a Certified rating and 34 'maybe' points. The 'maybe' points represent credits that will continue to be evaluated as design progresses.

The design team for the Project includes several LEED Accredited Professionals (AP), including the Architect of Record, Kevin Lennon, AIA, LEED AP with Elkus Manfredi Architects. Other team members with LEED accreditation include the MEP Principal in Charge, Thomas Burroughs, PE, LEED AP with WSP | Parsons Brinckerhoff, the sustainability consultant, Luka Matutinovic, P.Eng., LEED AP BD+C, Practice Leader of WSP | Parsons Brinckerhoff's Built Ecology Group, and Lauren DeVoe, AICP, LEED AP, Senior Environmental Planner with VHB. The Proponent and project design team will continue to evaluate and incorporate sustainable design and energy conservation as the design process continues.

#### Boston Green Building Credits

Based on an initial feasibility study, the Project is unlikely to achieve the Historic Preservation, Modern Grid, and Groundwater Recharge credits. The Proponent will develop a comprehensive Transportation Demand Management ("TDM") plan, which may meet the Modern Mobility credit requirements. While further evaluation of the applicability of this credit could be included as part of the DPIR, this credit depends on future building operations and, therefore, achievement of it will likely not be confirmed until final design.

## 3.4 Greenhouse Gas Emissions Reductions Strategies

In support of Boston's GHG reduction goals, the Proponent has evaluated and incorporated strategies to minimize energy consumption associated with the Project through building energy modeling based on conceptual design as well as considered clean/renewable energy sources. Also, the Proponent is planning to engage utility providers to better understand available alternative/cleaner energy sources and grants/rebates.

This section presents a preliminary assessment of the Project-related GHG emissions, as required by Article 80 requirements for initial submissions. As previously mentioned, the subsequent MEPA Draft EIR filing will present the full GHG

assessment, in accordance with the MEPA GHG Policy methodologies and requirements.

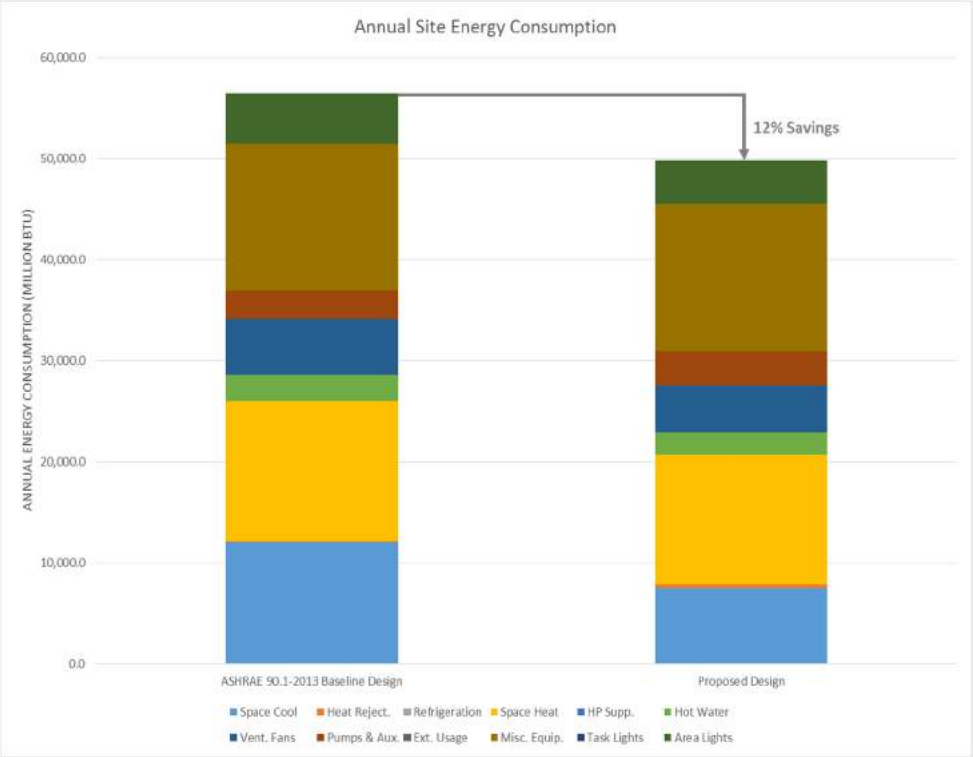
### 3.4.1 Preliminary Energy Model

The computer-based eQUEST whole building energy simulation software was used to estimate the amount of overall energy consumed by the proposed residential buildings including the garage and retail space from its projected electricity and gas usage based on assumptions for the Project's building elements, such as (but not limited to) the specific type of use(s) and users of the buildings, building configuration and architecture type, building envelope (walls/windows), interior fit-out (where known), and HVAC equipment efficiency ratings. To estimate associated stationary source GHG emissions, the amount of consumed energy is then converted into the amount of $CO_2$ emitted using the standardized conversion factor.

As discussed previously, the Stretch Energy Code requirements as in effect as of January 1, 2017 were considered by using the prior state energy code as the baseline for which to compare energy savings to (the "Base Case"). For the purposes of the stationary source GHG emissions assessment, the residential buildings have been designed to meet the Stretch Energy Code requirements as in effect as of January 1, 2017 (the "Design Case"), or approximately 10 percent better than the Base Code (ASHRAE 90.1-2013).

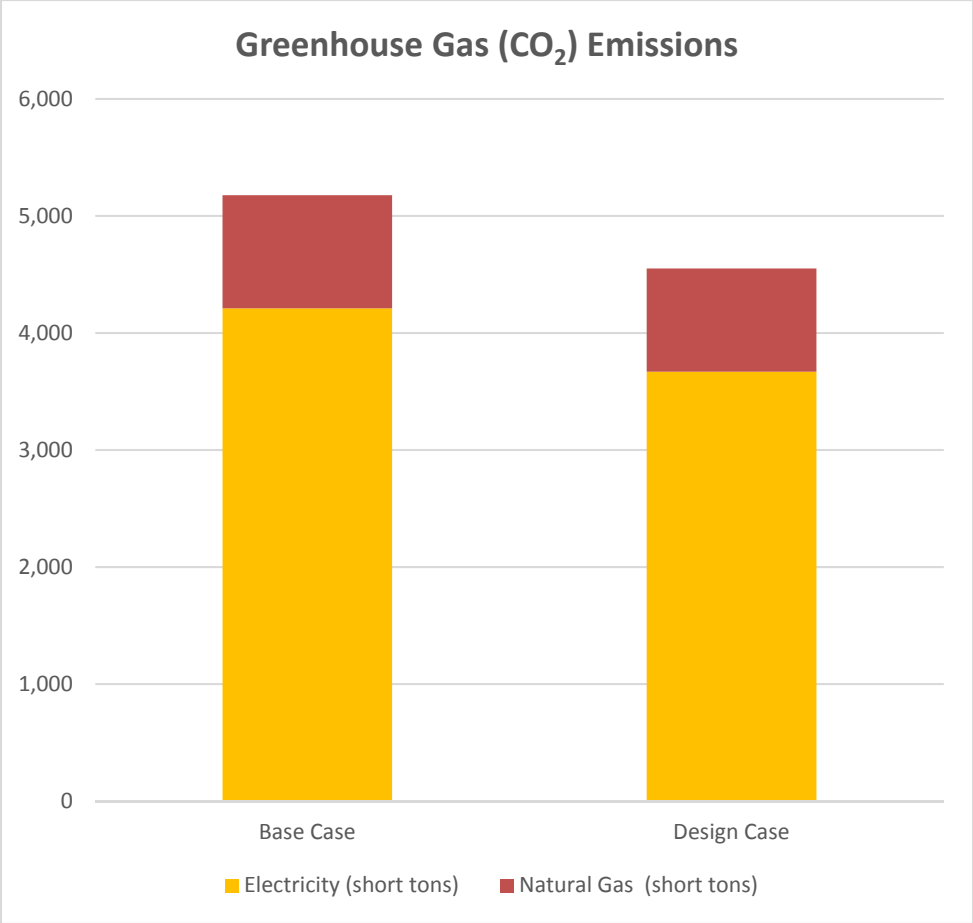
The results of the preliminary energy model in Table 3-1 demonstrate that it is feasible for the Project to comply with the Stretch Energy Code requirements as in effect as of January 1, 2017. Based on the preliminary design parameters assumed in the Design Case, the proposed residential building would achieve an energy savings of approximately 12 percent when compared to the Base Case. As seen in Table 3-2, this would result in a GHG emissions reduction of 12 percent (from an estimated 5,177 tons per year $CO_2$ emissions to 4,551 tons per year).

**Table 3-1 Preliminary Energy Model Results**




| | Energy Consumption | | |
|---|---|---|---|
| | **Electricity (MBtu)** | **Natural Gas (MBtu)** | **Total (kBtu/sf)** |
| Base Case (ASHRAE 90.1-2013) | 39,981 (71%) | 16,517 (29%) | 68 |
| Design Case | 34,844 (70%) | 15,065 (30%) | 60 |
| Savings | 5,137 | 1,452 | 8 |
| Savings Target | - | - | 10% |
| Percent Savings | 13% | 9% | **12%** |

**Table 3-2 Greenhouse Gas Analysis**




| | Greenhouse Gas ($CO_2$) Emissions | | |
|---|---|---|---|
| | **Electricity (short tons)** | **Natural Gas (short tons)** | **Total (short tons)** |
| Base Case (ASHRAE 90.1-2013) | 4,211 (81%) | 966 (19%) | 5,177 |
| Design Case | 3,670 (81%) | 881 (19%) | 4,551 |
| Savings | 541 | 85 | 626 |
| Percent Savings | 13% | 9% | 12% |

Note: 726 lb CO2/MWh was used to convert electricity consumption into the amount of CO2 emissions (2014 ISO-New England Marginal Emissions Report). 117.08 lb CO2/Mbtu was used to convert gas consumption into the amount of CO2 emissions (The Energy Information Administration Documentation for Emissions for GHG).

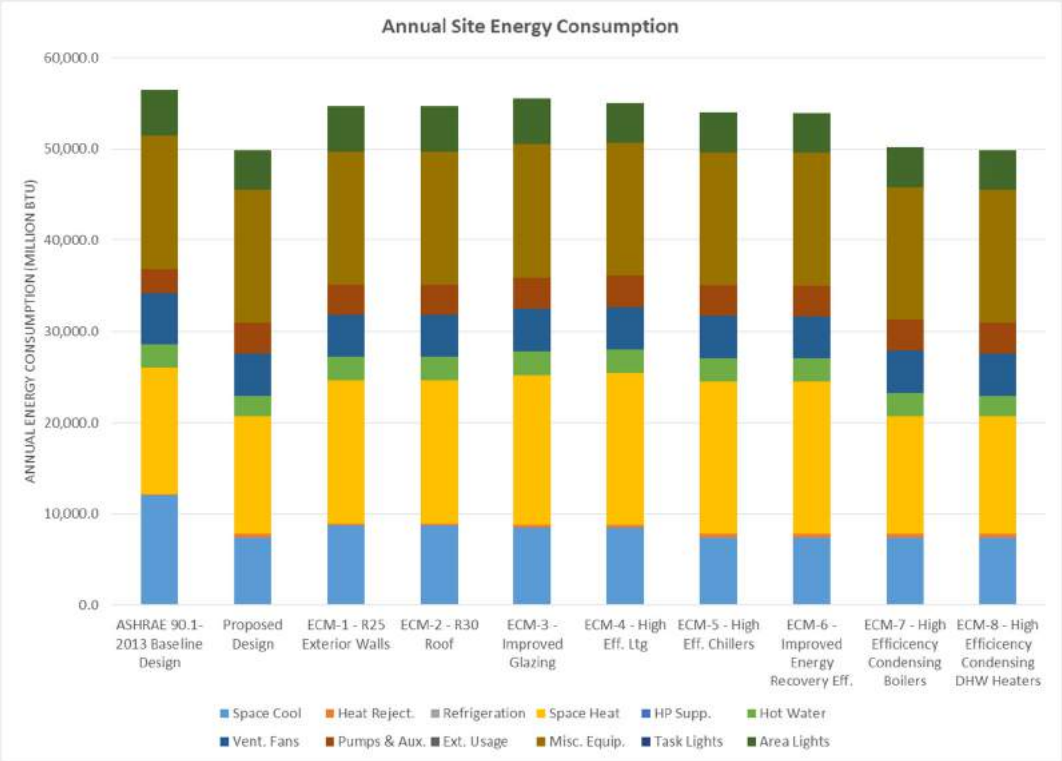
### 3.4.2 Energy Efficiency Measures

The energy savings calculated in the preliminary energy model were based on several key energy conservation measures for the Project that include:

- High-performance glazing and efficient building materials (walls and windows);
- Condenser water plant that exceeds base energy code efficiency with variable speed technology, and energy recovery for exhaust;
- High-efficiency chillers with variable speed compressors;
- Low lighting power density;
- Ventilation air heat recovery;
- Consumption controlled technology, increasing the likelihood of reducing consumption by individual unit metering; and
- Commissioning to help ensure major energy-using equipment is installed correctly.

As the Project's design develops, the Project Team will consider further load reduction where possible through additional strategies.

**Table 3-3 Energy Efficiency Measures**



### 3.4.3 Clean and Renewable Energy Analysis

**Photovoltaic Panels**

For the purposes of gaining a better understanding of their potential contribution to on-site power generation, a detailed analysis of roof top locations for solar photovoltaic (PV) systems has been conducted for the Project. This evaluation determined that competing space requirements for the roof and the relatively small roof area compared to the building volume make roof-top generation unattractive.

Facade-mounted, or Building-Integrated (BIPV), panels are an attractive choice for the West Building given its relatively unobstructed south, east, and west exposure. BIPV panels will be further considered for the rooftop mechanical penthouse enclosure and the spandrel panels on the top five floors of the West Building. Approximately 1,650 panels could be installed in these areas for a total array size of approximately 430 kW. Based on the vertical tilt of the panels and the different façade orientations, this array could produce approximately 330,000 kWh per year (2 percent of the total building consumption) and offset approximately 120 tons of $CO_2$ per year (the equivalent of taking 25 cars off the road each year).[2]

**Combined Heat and Power**

Combined heat and power (CHP) systems, also known as cogeneration, generate electricity and useful thermal energy in a single, integrated system. CHP systems are most advantageous for facilities that have a hot water demand year-round. The Proponent and project team have conducted a conceptual analysis of a CHP system to serve the Project. Eversource has indicated that it will not allow cogeneration while the building is connected to the utility network. The system could be run in island mode and transfer between the utility and the CHP to drive a selected load but this would preclude an important financial and efficiency element of a CHP, which is to sell electricity back to the grid during non-peak on-site demand. Therefore, a CHP system has been dismissed as a viable alternative/clean energy option for the Project.

Due to the electric utility's policy on CHP, the Proponent is committed to investing in energy conservation measures through design, which, based on preliminary building energy modeling, is expected to exceed the Stretch Energy Code requirements in effect as of January 1, 2017. In addition, given the project phasing timeframe, it is anticipated that energy conservation technologies will advance providing additional, potentially more viable, options than a CHP system.

**Wind**

The feasibility of generating electricity from wind sources was assessed and rejected for the following reasons:

[2] Based on *Greenhouse Gas Emissions from a Typical Passenger Vehicle*, EPA, 2014

- Competing roof area for mechanical equipment, vegetated roofs and amenities;
- Wind speed in Boston is too low for cost-effective electricity generation; and
- Small, vertical wind turbines provide insignificant electricity generation relative to total building demand.

**Transpired Solar Collectors**

The feasibility of using solar energy to preheat ventilation air was assessed and rejected for the following reasons:

- Transpired solar collectors are ideal for large opaque south-facing walls. Residential projects have too much glazing and not enough continuous opaque wall area to make this technology viable; and
- The Project includes energy recovery wheels to preheat all outside air entering the building. The energy recovery wheels recover heat from building return air that would otherwise be exhausted. Since the residential units are naturally ventilated with operable windows, installing a solar collector would not be a cost-effective solution.

**Solar Thermal**

The feasibility of generating thermal energy from solar thermal was assessed and rejected for the following reasons:

- Competing roof area for mechanical equipment, vegetated roofs and amenities; and
- Roof area is very small relative to high hot water demands in residential buildings.

**Geothermal (Ground Source Heat Pumps)**

The feasibility of generating electricity from geothermal sources was assessed and rejected for the following reasons:

- The Project is building over the Turnpike and adjacent rail corridor and there are significant space constraints for foundations and services;
- The little amount of available firm ground below the Project cannot provide any significant capacity relative to the Project heating and cooling demand; and
- Relatively low cost of natural gas and relatively high cost of electricity makes Geothermal much less cost-effective compared with other clean energy technologies.

Based on load estimates, the Project would require a well field of approximately 270,000 sf of open land area. The above conclusions are based on 500-square foot per ton of cooling and 2.5 ton per well cooling available. To be able to provide cooling, 650 wells are required. Each well needs to be placed 20 feet apart and a total of 270,000 square feet area requirement, which is not feasible given the urban and Air Rights location of the Project Site.

### 3.4.4 Energy Efficiency Assistance

The Proponent is aware that the Project's electrical and natural gas service providers may potentially offer technical assistance and incentives for implementing energy efficiency measures. By working with these utilities throughout the design process, the Proponent will evaluate additional energy conservation strategies and, therefore, additional energy savings and associated GHG emissions reductions may be achieved.

Furthermore, the Proponent is committed to meeting the applicable requirements of the City of Boston Building Energy Reporting and Disclosure Ordinance, Section 7-2.2 of the Boston Ordinances, once the Project is in operation.

## 3.5 Climate Change Preparedness and Resiliency

This section discusses the approach to preparing for anticipated changes in climate, in accordance with Appendix 7 of the BPDA Development Review Guidelines. The required Climate Change Resiliency and Preparedness Checklist has been completed for the Project and is provided in Appendix B.

### 3.5.1 Sea Level Rise and Extreme Flooding

New England is expected to experience greater localized sea level rise due to climate change. There are many sources which have quantified the expected sea level rise and evaluated the various scenarios in the context of the City of Boston. The Massachusetts Office of Coastal Zone Management (CZM) has prepared the document *Sea Level Rise: Understand and Applying Trends and Future Scenarios for Analysis and Planning*, which provides projections of expected sea level rise for Boston at several points in the future under different emission scenarios: Lowest; Intermediate Low; Intermediate High; and Highest.

The CZM document gives planners and designers a resource for 'bathtub model' evaluations of assets and infrastructure. These elevations can be added to flood elevations provided by resources, such as the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) program. These maps provide the 1 and 0.2 percent annual probability (i.e., 100-year and 500-year flood elevations along U.S. waterways and coasts). These maps, when combined with sea level rise, can provide a basic flood elevation evaluation tool.

The Massachusetts Department of Transportation (MassDOT) and Federal Highway Administration (FHA) have taken the CZM sea level rise information one-step further than the 'bathtub' model, by creating a dynamic flooding model. The *MassDOT-FHWA Pilot Project Report: Climate Change and Extreme Weather Vulnerability Assessments and Adaptation Options for the Central Artery* provided flood elevations generated by a hydrodynamic model coupled with a wave simulation model, over the topography and bathymetry of the greater Boston area. This model provides the most accurate publicly available site-specific flooding model with sea level rise in Boston for certain planning years and emission scenarios.

Based on this report, the Project Site is not at high risk of inundation from sea level rise during its design life. To protect against flood risk, however minimal, the Project is studying locating critical building systems above grade and may consider physical measures, such as removable flood barriers, if deemed necessary at the appropriate future time.

### 3.5.2 Extreme Weather Conditions

This section examines how the Project may be affected by and will prepare for climate change-induced extreme weather events.

The 2011 *Massachusetts Climate Change Adaptation Report* projects an increase in extreme weather events which could consist of drought, tropical rainfall patterns (i.e., increased precipitation), extreme heat and cold stretches, an increase in the number of days with extreme heat (i.e., temperatures greater than 90°F and 100°F), fewer days of snow, and increased winter precipitation.

To understand the potential impacts of extreme weather conditions, the Proponent will use Whole Building Energy Simulation to analyze the performance of heating and cooling equipment under extreme cold (0ºF) and heat events (95ºF) and will assess occupant thermal comfort under extreme conditions lasting up to three consecutive days, including thermal comfort in the event of a power outage and loss of heating and cooling capacity.

The Proponent will also explore providing a Cool Room with dedicated cooling systems provided with back-up power where at-risk residents can take shelter.

### 3.5.3 Potential Resiliency Measures

The Proponent and project design team plan to evaluate potential design elements to mitigate the effects of climate change as the design of each Project component progresses. Potential Project sustainability and resiliency measures (Figures 3.1a and 3.1b).

**Site Design Measures**

› The Project looks to provide correctly sized stormwater conveyance infrastructure to effectively remove stormwater from the Project Site.

**Building Design Measures**

› The HVAC system has been evaluated for performance during extreme weather events and anthropogenic future climate change.

› A CHP system and building-integrated solar PV are being studied to provide utility grid relief and resilient back-up power generation.

› Operable windows provide natural ventilation during a power loss.

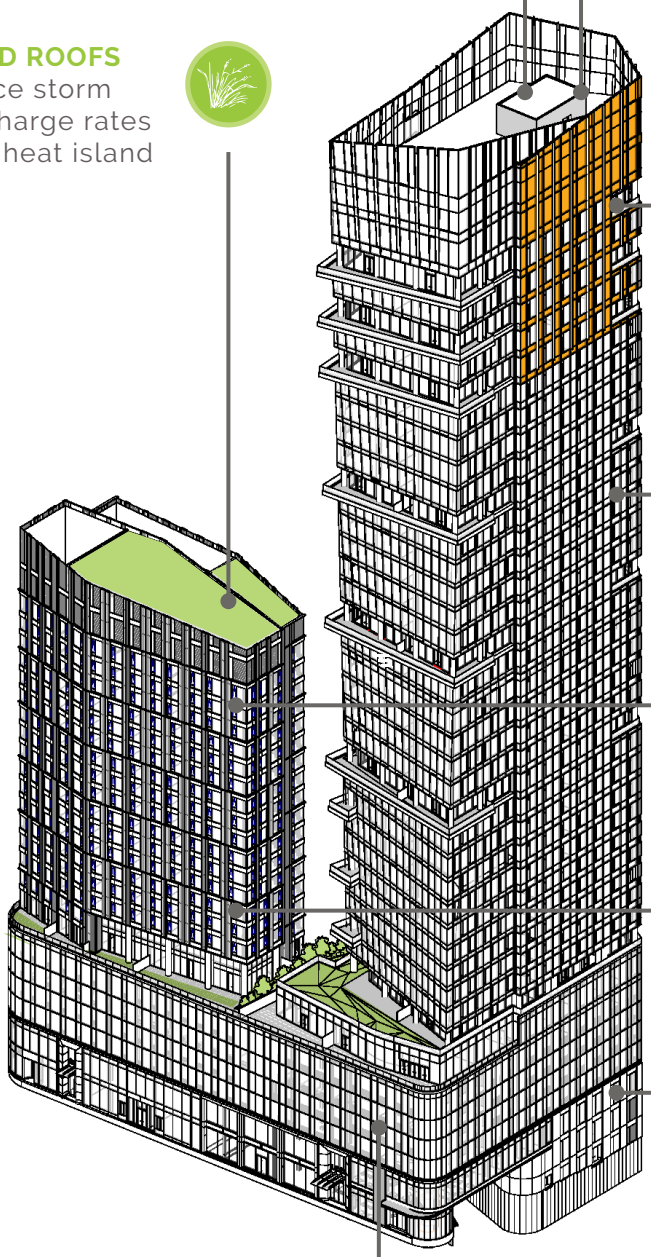
- Redundant connections for domestic water and fire protection systems ensure functionality in case of damage or other problems caused by extreme weather events.
- Sewage backflow valves prevent backflow into building during rainstorms and floods to avoid building damage and maintain occupant safety and comfort.
- Elevated equipment also ensures continued functionality in case of flooding.
- Rainscreen cladding on the façade also improves building durability during typical and extreme rainfall events.

**HIGHLY URBAN LOCATIONS**
Provides access to public transportation and reduces car dependance.

**HIGH EFFICIENCY CONDENSING BOILERS AND MAGNETIC BEARING CHILLERS**
Reduce energy costs and GHG emissions

**COMBINED HEAT AND POWER**
The design team will study the feasibility of CHP. Can provide utility grid relief and resilient back-up power generation

**VEGETATED ROOFS**
Help reduce storm water discharge rates and urban heat island effect.



**BUILDING INTEGRATED PHOTOVOLTAICS**
The design team will study the feasibility of incorporating a BIPV system on the top of the building

**OPERABLE WINDOWS**
Provide natural ventilation and promote energy conservation during mild weather

**DAYLIGHTING**
Clear glazing on the north facade promotes daylighting

**LOW-FLOW FIXTURES**
Reduce water demand

**REDUNDANT CONNECTIONS**
for domestic and fire protection systems improve resiliency

**SEWAGE BACKFLOW VALVES**
Prevents backflow into building during rainstorms and floods

**ELECTRIC VEHICLE CHARGING STATIONS**

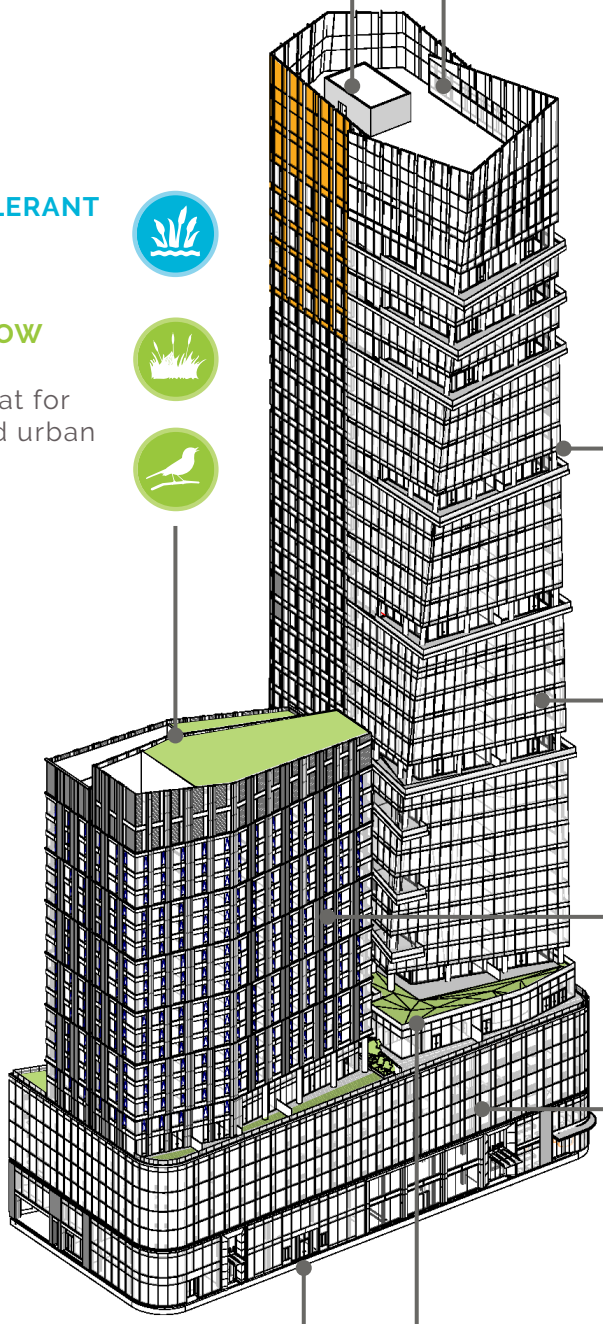
**ELEVATED EQUIPMENT**
all major equipment will be elevated to protect from flooding and imprive resiliency

**HVAC SYSTEM**
Evaluated for performance during extreme weather events and anthropogenic future climate change

**DROUGHT TOLERANT PLANTING**

**NATIVE MEADOW PLANTING**
Provides habitat for pollinators and urban birds species.

**BARRIER FREE ENTRANCES**
Promotes inclusivity and mobility



**COMBINED HEAT AND POWER**
The design team will study the feasibility. Can provide utility grid relief and resilient back-up power generation

**OUTSIDE AIR MONITORING**
Ensures adequate ventilation is provided to all areas of the building

**MEASUREMENT AND VERIFICATION**
Help manage long-term performance and promote accountability and conservation.

**HIGH PERFORMANCE GLAZING**
low-E coating and low solar shading coefficient reduce cooling loads during the summer and heat loss during the winter

**RECYCLED and REGIONAL MATERIALS**
Reduce environmental impacts from development and transportation

**RAIN SCREEN CLADDING**
Improves envelope durability and performance

**SECURE BICYCLE STORAGE and SHARED BICYCLE PROGRAM**
Helps promote alternatives to cars.

**RAINWATER HARVESTING**
Reduces storm water runoff and aids groundwater recharge

WSP | PARSONS BRINCKERHOFF

Sustainability and Resiliency Infographic Figure 3.1b
**1000 Boylston Street**
**Boston, Massachusetts**

## LEED v4 for BD+C: New Construction and Major Renovation

Project Checklist

Project Name: 100
Date: 11/08/2016

| Y | ? | N | | | |
|---|---|---|---|---|---|
| 1 | | | Credit | Integrative Process | 1 |

| 14 | 0 | 1 | **Location and Transportation** | | 16 |
|---|---|---|---|---|---|
| | | | Credit | LEED for Neighborhood Development Location | 16 |
| 1 | | | Credit | Sensitive Land Protection | 1 |
| | | 1 | Credit | High Priority Site | 2 |
| 5 | | | Credit | Surrounding Density and Diverse Uses | 5 |
| 5 | | | Credit | Access to Quality Transit | 5 |
| 1 | | | Credit | Bicycle Facilities | 1 |
| 1 | | | Credit | Reduced Parking Footprint | 1 |
| 1 | | | Credit | Green Vehicles | 1 |

| 2 | 5 | 2 | **Sustainable Sites** | | 10 |
|---|---|---|---|---|---|
| Y | | | Prereq | Construction Activity Pollution Prevention | Required |
| | 1 | | Credit | Site Assessment | 1 |
| | | 1 | Credit | Site Development - Protect or Restore Habitat | 2 |
| | | 1 | Credit | Open Space | 1 |
| | 3 | | Credit | Rainwater Management | 3 |
| 2 | | | Credit | Heat Island Reduction | 2 |
| | 1 | | Credit | Light Pollution Reduction | 1 |

| 6 | 2 | 3 | **Water Efficiency** | | 11 |
|---|---|---|---|---|---|
| Y | | | Prereq | Outdoor Water Use Reduction | Required |
| Y | | | Prereq | Indoor Water Use Reduction | Required |
| Y | | | Prereq | Building-Level Water Metering | Required |
| 1 | 1 | | Credit | Outdoor Water Use Reduction | 2 |
| 2 | 1 | 3 | Credit | Indoor Water Use Reduction | 6 |
| 2 | | | Credit | Cooling Tower Water Use | 2 |
| 1 | | | Credit | Water Metering | 1 |

| 10 | 7 | 16 | **Energy and Atmosphere** | | 33 |
|---|---|---|---|---|---|
| Y | | | Prereq | Fundamental Commissioning and Verification | Required |
| Y | | | Prereq | Minimum Energy Performance | Required |
| Y | | | Prereq | Building-Level Energy Metering | Required |
| Y | | | Prereq | Fundamental Refrigerant Management | Required |
| 6 | | | Credit | Enhanced Commissioning | 6 |
| 2 | 4 | 12 | Credit | Optimize Energy Performance | 18 |
| 1 | | | Credit | Advanced Energy Metering | 1 |
| | | 2 | Credit | Demand Response | 2 |
| | 1 | 2 | Credit | Renewable Energy Production | 3 |
| 1 | | | Credit | Enhanced Refrigerant Management | 1 |
| | 2 | | Credit | Green Power and Carbon Offsets | 2 |

| 5 | 6 | 2 | **Materials and Resources** | | 13 |
|---|---|---|---|---|---|
| Y | | | Prereq | Storage and Collection of Recyclables | Required |
| Y | | | Prereq | Construction and Demolition Waste Management Planning | Required |
| | 3 | 2 | Credit | Building Life-Cycle Impact Reduction | 5 |
| 1 | 1 | | Credit | Building Product Disclosure and Optimization - Environmental Product Declarations | 2 |
| 1 | 1 | | Credit | Building Product Disclosure and Optimization - Sourcing of Raw Materials | 2 |
| 1 | 1 | | Credit | Building Product Disclosure and Optimization - Material Ingredients | 2 |
| 2 | | | Credit | Construction and Demolition Waste Management | 2 |

| 4 | 8 | 2 | **Indoor Environmental Quality** | | 16 |
|---|---|---|---|---|---|
| Y | | | Prereq | Minimum Indoor Air Quality Performance | Required |
| Y | | | Prereq | Environmental Tobacco Smoke Control | Required |
| 1 | 1 | | Credit | Enhanced Indoor Air Quality Strategies | 2 |
| 1 | 2 | | Credit | Low-Emitting Materials | 3 |
| 1 | | | Credit | Construction Indoor Air Quality Management Plan | 1 |
| | | 2 | Credit | Indoor Air Quality Assessment | 2 |
| 1 | | | Credit | Thermal Comfort | 1 |
| | 2 | | Credit | Interior Lighting | 2 |
| | 1 | | Credit | Daylight | 3 |
| | 1 | | Credit | Quality Views | 1 |
| | 1 | | Credit | Acoustic Performance | 1 |

| 3 | 3 | 0 | **Innovation** | | 6 |
|---|---|---|---|---|---|
| 2 | 3 | | Credit | Innovation | 5 |
| 1 | | | Credit | LEED Accredited Professional | 1 |

| 1 | 3 | 0 | **Regional Priority** | | 4 |
|---|---|---|---|---|---|
| 1 | | | Credit | Regional Priority: Cooling Tower Water Use | 1 |
| | 1 | | Credit | Regional Priority: Renewable Energy | 1 |
| | 1 | | Credit | Regional Priority: Rainwater Management | 1 |
| | 1 | | Credit | Regional Priority: Life Cycle Impact Reduction | 1 |

| 46 | 34 | 26 | **TOTALS** | Possible Points: | 110 |
|---|---|---|---|---|---|

**Certified:** 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

Preliminary LEED Scorecard

Figure 3.2

**1000 Boylston Street**
**Boston, Massachusetts**

# 4

# Transportation and Parking

This chapter provides a summary of existing transportation conditions at the Project Site and a preliminary trip generation estimate of transportation operations to be anticipated for the Project. A complete assessment of Project-related transportation impacts within the study area will be provided in the DPIR.

As described previously in Chapter 1, *Project Description and General Information*, the Proponent is proposing to construct a mixed-use redevelopment project comprising up to approximately 689,000 square feet (exclusive of above-grade parking) of new development partially over air rights above the Turnpike. In summary, the Project will include:

- Up to approximately 342 residential units that will be a mix of condominiums (up to approximately 160 units) and apartments (up to approximately 182 units);
- Retail space totaling up to approximately 35,000 square feet; and
- Up to approximately 303 above grade structured parking spaces.

The Project will include a 7-story podium with two floors of retail, four floors of above-grade structured parking, and a partial level of loading and mechanical space along Scotia Street, which will be the base for two residential buildings.

## 4.1 Summary of Key Findings and Benefits

The following is a summary of the Project's key findings and benefits related to transportation:

- Implements a robust program of TDM strategies to take full advantage of its multiple mobility options and its synergy with the surrounding vibrant mixed-use neighborhoods.
- Captures internal trips between different uses, which will result in the reduction of vehicle trips.
- Takes advantage of the excellent local and regional roadway access and adjacency to multi-modal transportation services due to its central location in Back Bay and the proximity to the Turnpike.
- Incorporates bicycle accommodations in compliance with BTD's guidelines to encourage bicycling, and walking, as transportation modes.
- Provides up to approximately 303 new above-grade vehicle parking spaces for its residential occupants.

## 4.2 Existing Transportation Conditions

This section provides a summary of existing transportation conditions at the Project Site including:

- A description of adjacent roadways;
- Public transportation services in the area;
- Pedestrian and bicycle environment; and
- Nearby public parking.

### 4.2.1 Roadways

The Project Site is bound by Boylston Street, Dalton Street, Scotia Street and St. Cecilia Street (Figure 1.2). In addition, Cambria Street runs through the Project Site and slopes down from grade at the intersection of St. Cecilia Street to the Hynes Convention Center loading area below Dalton Street. These streets are described further in the sections below.

#### Boylston Street

Boylston Street is an east/west roadway north of the Project Site that extends from Boston's Fenway neighborhood to the west to the Boston Common in the east. Adjacent to the Project Site, Boylston Street accommodates two-way traffic separated by a raised median. Two travel lanes and metered parking are provided on each side. To the east of the Project Site, Boylston Street becomes one-way eastbound. Sidewalks are provided along both sides of the street, and crosswalks are available at all signalized intersections.

#### Cambria Street

Cambria Street is a two-way, dead-end street connecting Boylston Street to the Hynes Convention Center loading docks. Adjacent to the Project Site, Cambria Street provides one general travel lane for two-way traffic. Cambria Street is signed as "no stopping," with the exception of a portion of the north side of the street. A sidewalk is provided only on the south side of Cambria Street.

#### Dalton Street

Dalton Street is a north/south roadway adjacent to the Project Site that connects from Boylston Street to the north to Clearway Street to the south. Along the Project Site, the street provides two travel lanes northbound, one with a shared lane for bicycles, and one travel lane southbound and a bicycle lane. Parking is prohibited along the portion of Dalton Street adjacent to the Project Site. To the south, Back Bay resident parking is provided. Sidewalks are provided along both sides of the street, and crosswalks are provided at all signalized intersections.

**Scotia Street**

Scotia Street is a one-way eastbound street connecting St. Cecilia Street to the west with Dalton Street to the east. The street provides one general travel lane. Metered parking is available along the north side of Scotia Street and some metered parking is available along the south side. Along the majority of the south side of the street, parking is prohibited. The eastern half of Scotia Street has loading docks along the southern side directly opposite the Kings Boston restaurant. Sidewalks are provided along both sides of the street, and a crosswalk is provided at the Scotia Street approach to Dalton Street.

**St. Cecilia Street**

St. Cecilia Street is a north/south roadway bordering the Project Site to the west. The street extends from Boylston Street to the north to Belvidere Street to the south. St. Cecilia Street, from Boylston Street to Scotia Street, is two-way with one travel lane in each direction. From Scotia Street to Belvidere Street, St. Cecilia Street is one-way northbound. The southern half of St. Cecilia Street has metered parking along the west side and resident permit parking along the east side of the street. The northern half of St. Cecilia Street has a loading zone from Scotia Street to Cambria Street along the west side, and parking is prohibited along the east side of the street. Sidewalks are provided along St. Cecilia Street, but no crosswalks are present.

### 4.2.2 Public Transportation Services

The Project Site is currently served by several MBTA public transportation services, as shown in Figure 4.1. The Green Line's Hynes Convention Center Station is the closest subway stop to the Project Site, located approximately ¼-mile to the northwest. The Orange Line's Massachusetts Avenue Station is located approximately ½-mile to the south. In addition, several MBTA bus routes serve the immediate project area, with several stops within a ½-mile of the Project Site.

Peak period frequencies/headways for MBTA services are summarized in Table 4-1. A description of each MBTA bus and subway line that services the Project Site is also provided below.

**Table 4-1 MBTA Services**

| Transit Line/Route | Origin/Destination | Rush-Hour Frequency (mins) |
|---|---|---|
| Route 1 | Harvard/Holyoke Gate – Dudley Station via Massachusetts Avenue | 10 |
| Route 9 | City Point – Copley Square via Broadway Station | 5 – 10 |
| Route 39 | Forest Hills Station – Back Bay Station via Huntington Avenue | 6 – 10 |
| Route 55 | Jersey & Queensbury – Copley Square or Park and Tremont Streets via Ipswich Street | 15 – 30 |
| Route 170 - Outbound | Central Square, Waltham – Dudley Square | 25 – 60 |
| Route CT1 | Central Square Cambridge – B.U. Medical Center/Boston Medical Center via M.I.T. | 20 – 23 |
| Green Line – Hynes Station and Prudential Station | Park Street – Boston College (B), North Station – Cleveland Circle (C), Park Street – Riverside (D), Lechmere – Heath Street (E) | 6 |
| Orange Line – Massachusetts Avenue Station | Oak Grove – Forest Hills | 6 |
| Commuter Rail | Framingham/Worcester, Franklin, Needham, Providence/Stoughton | Varies |

Source: MBTA June 2016

**Route 1 – Harvard/Holyoke Gate – Dudley Station via Massachusetts Avenue**

This route connects Harvard Square in Cambridge to Dudley Station in Roxbury via Massachusetts Avenue. The nearest bus stop to the Project Site is located at Massachusetts Avenue and Newbury Street at the Hynes Convention Center Station. Various stops along the route connect to the Green Line, Red Line, Orange Line, and Silver Line. The bus route runs on weekdays from 4:37 AM to 1:27 AM with approximately 10-minute headways during peak hours. On Saturday, service runs from 4:40 AM to 1:40 AM, and Sunday service is from 6:00 AM to 1:32 AM.

**Route 9 - City Point – Copley Square via Broadway Station**

This route connects Copley Square in the Back Bay with South Boston via Broadway Station. The nearest bus stop to the Project Site is located at Ring Road at Huntington Avenue. Various stops along the route connect to the Green Line, Red Line, and Silver Line. The bus route runs on weekdays from 5:13 AM to 1:14 AM with five- to 10-minute headways during peak hours. On Saturday, service runs from 5:10 AM to 1:14 AM, and Sunday services is from 6:00 AM to 1:12 AM.

**Route 39 - Forest Hills Station – Back Bay Station via Huntington Avenue**

This route connects the Back Bay area with the Forest Hills Station in Jamaica Plain via Huntington Avenue. Forest Hills Station is the southern ending point for the Orange Line. The nearest bus stop to the Project Site is located at the corner of Dalton Street at Boylston Street. Various stops along this route connect to the Orange Line and Commuter Rail. The bus route runs on weekdays from 4:42 AM to 1:24 AM with six- to

10-minute headways during peak hours. On Saturday, the bus route runs from 4:37 AM to 1:23 AM, and on Sunday, service is from 5:45 AM to 1:17 AM.

**Route 55 - Jersey & Queensbury – Copley Square or Park & Tremont Streets via Ipswich Street**

This route connects the Park Street and Tremont Street intersection by the Boston Common and Copley Square to the Fenway/Kenmore area via Ipswich Street. The nearest bus stop to the Project Site is located at the corner of Dalton Street at Boylston Street. Various stops along the bus route connect to the Green Line and Red Line. Weekday service runs from 5:50 AM to 11:10 PM with 15- to 30-minute headways during peak hours. On Saturday, the service runs from 6:00 AM to 11:11 PM, and Sunday service is from 8:15 AM to 11:09 PM.

**Route 170 - Central Square, Waltham – Dudley Square**

This route connects Central Square in Waltham to Dudley Square in Lower Roxbury. The nearest bus stop to the Project Site is located at the corner of Boylston Street at St. Cecilia Street with outbound service only. Stops along this route connect to the Orange Line, Silver Line, and Commuter Rail. Route 170 only offers two trips outbound from Boston (6:15 PM and 6:40 PM) and two trips inbound from Waltham (3:55 PM and 4:55 PM). There is no service on weekends and holidays.

**Route CT1 – Central Square, Cambridge – B.U. Medical Center/Boston Medical Center via M.I.T.**

This route connects Central Square in Cambridge, with Boston's South End neighborhood by traveling through the Massachusetts Institute of Technology campus and along Massachusetts Avenue. The nearest stop to the Project Site is located at Massachusetts Avenue at Newbury Street (Hynes Convention Center Station). Stops along this route connect to the Red Line, Orange Line, Green Line and Silver Line. The weekday service runs from 6:30 AM to 7:41 PM with approximately 20- to 23-minute headways during the peak hours. This route does not have weekend service.

**Green Line – B, C, D, E Lines**

The Green Line has four routes that travel through Boston and then branch off to serve the surrounding communities. The B Line extends to Boston College in Brighton, the C Line extends to Cleveland Circle in Brighton, and the D Line extends to Riverside Station in Newton. The nearest stop to the Project Site for the B, C, and D lines is located at the Hynes Convention Center Station, and the nearest stop for the E line is located at the Prudential Station. Service runs from 4:56 AM to 12:52 AM Monday through Friday with six-minute headways during rush hour. On Saturday, service runs from 4:45 AM to 12:52 AM, and Sunday service is from 5:20 AM to 12:52 AM.

**Orange Line – Oak Grove/Forest Hills**

The Orange Line connects Oak Grove in Malden to Forest Hills in Jamaica Plain. The nearest stop to the Project Site is located at the Massachusetts Avenue Station on Massachusetts Avenue. Service runs from 5:16 AM to 12:35 AM Monday through Friday with six-minute headways during peak hours. On Saturday, service runs from 5:16 AM to 12:35 AM, and Sunday service is from 6:00 AM to 12:35 AM.

**Commuter Rail Services**

Back Bay Station is located just under 1-mile walk from the Project Site and provides service to the following commuter rail lines: Framingham/Worcester; Needham; Franklin; and Providence/Stoughton. These rail lines service various areas to the west and south of Boston. Back Bay Station is located within Zone 1A in the Massachusetts Bay Commuter Rail fare system. Schedule information varies according to the rail line.

**Private Bus Services**

The Massachusetts Port Authority offers a Back Bay Logan Express bus route with transportation between the Hynes Convention Center and Logan Airport. The route runs daily from 5:00 AM to 9:00 PM. Fare for a one-way trip is $7.50 or $3.00 if a valid MBTA pass is shown.

### 4.2.3 Pedestrians and Bicycles

Adjacent to the Project Site are ample sidewalks and pedestrian crossing accommodations at intersections. The Project Site's frontage on Boylston Street experiences an active pedestrian environment because it links destinations in the Back Bay and the Prudential Center to the east with the Berklee College of Music, the Fenway, Hynes Convention Center Station and other vibrant areas to the west.

Hubway stations are located at the intersections of Boylston Street at Massachusetts Avenue and Newbury Street at Hereford Street. These stations are within an approximately ¼-mile (or two blocks) walking distance.

Within the immediate vicinity of the Project Site there are no public bicycle parking accommodations. On-street bicycle travel lanes are provided on Dalton Street adjacent to the Project Site.

### 4.2.4 Public Parking

Off-street public parking is located in the vicinity of the Project Site, as shown on Figure 4.2. Parking near the Project Site is subject to a variety of on-street regulations including metered spaces, Back Bay resident spaces, and commercial loading zones. Directly adjacent to the Project Site, there are metered spaces on Boylston Street and Scotia Street. The remaining Project Site perimeter is signed "no stopping."

The closest Zipcar spaces are provided at 1085 Boylston Street and the intersection of Belvidere Street and Dalton Street according to the Zipcar website in June 2016.

## 4.3 Future Conditions

This section provides a summary of future transportation conditions at the Project Site including:

- Future Parking
- Pedestrian and Bicycle Accommodations
- Loading Activities
- Estimated Trip Generation
- Construction Impacts
- Transportation Demand Management

### 4.3.1 Parking and Valet Services

Figure 2.10 presents the site access and circulation plan for the Proposed Project. The Project will be supported by up to approximately 303 parking spaces contained within a four-story above-grade parking garage within the Podium and served by a driveway off Dalton Street. The parking will be dedicated to residential use. A portion of these spaces will provide charging stations for electric vehicles.

A drop-off zone and valet operations to support the Project are proposed on Boylston Street adjacent to the Project Site where there is currently metered parking over the Turnpike (Figure 2.10). The Proponent will work with the City to determine how many valet spaces may be provided and their hours of use in order to minimize the disruption to on-street public spaces.

### 4.3.2 Pedestrians

The Project Site is bounded by an active sidewalk environment. The proposed building massing will eliminate the open bridge structure to the MBTA tracks and Turnpike below creating a seamless ground floorplan, which may reduce noise and wind for pedestrians. The Project will install new sidewalks, crosswalks, and street lighting around the perimeter of the Project Site, further improving the pedestrian realm.

### 4.3.3 Bicycles

Consistent with the BTD's bicycle parking guidelines, which were created to encourage bicycling, reduce energy use and emissions, and promote healthy neighborhoods, the Project will provide bicycle storage on-site. The Proponent currently proposes to meet the BTD's guidelines and provide one bicycle space per residential unit (1:1 bike ratio) and will work closely with the City to try to accommodate all of its bicycle parking demand on-site. Additionally, bicycle racks

will be provided at-grade for public use and an on-site bicycle sharing program will be available for residents.

### 4.3.4 Loading

Three dedicated off-street loading docks will be provided for the Project. Two of the docks will accommodate single-unit trucks and the third dock will provide a compactor. Trucks will back into the loading docks from Cambria Street, which is a low-volume dead-end street.

### 4.3.5 Preliminary Transportation Assessment

This section provides a summary of preliminary trip generation estimates for the Project.

#### Unadjusted Trip Generation

Consistent with BTD and MEPA guidelines, trips were estimated using the Institute of Transportation Engineers (ITE) Trip Generation Manual. The ITE manual yields "unadjusted" vehicle trips meaning that these trips do not reflect alternative modes of transportation such as walking and public transportation. The most appropriate ITE land use codes were used:

- LUC 220 (Apartments) – This land use code was used to estimate apartment trips. The Project currently comprises a mix of condominiums and apartments.
- LUC 230 (Condominiums) – This land use code was used to estimate condominium trips.
- LUC 820 (Retail) – This land use code was used to estimate the retail trips.

The resulting unadjusted ITE based Project trips for each trip type for the weekday daily, AM, and PM peak-hour periods are presented in Table 4-2.

**Table 4-2 Unadjusted Trip Generation**

| | | | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|
| **Land Use** | **Land Use Code** | **Daily** | **Enter** | **Exit** | **Total** | **Enter** | **Exit** | **Total** |
| Apartment | LUC 220 | 1,210 | 19 | 74 | 93 | 73 | 39 | 112 |
| Condominium | LUC 230 | 930 | 12 | 58 | 70 | 56 | 27 | 83 |
| Retail | LUC 820 | 1,494 | 21 | 13 | 34 | 62 | 68 | 130 |
| **Total** | | **3,634** | **52** | **145** | **197** | **191** | **134** | **325** |

Source: Institute of Transportation Engineers (ITE) Trip Generation Manual

Since the Project is located close to the Prudential Center, Copley Place, and a considerable number of urban retail storefronts on Boylston and Newbury Streets, the retail component of the Project is not expected to generate significant trips on its own. The forthcoming DPIR will address trips captured in the neighborhood that may reduce overall Project impacts.

**Adjusted Trip Generation**

To account for alternative modes of transportation, mode splits were applied to the trip results presented in Table 4-2 above. The auto mode split includes all vehicle based trips including taxis. Mode splits for the area are based on BTD Guidelines and are shown in Table 4-3.

**Table 4-3 Peak Hour Mode Share**

| Mode | Residential | Retail |
|---|---|---|
| Vehicle | 21% | 33% |
| Transit | 15% | 31% |
| Walk/Bike/Other | 64% | 36% |

Source: BTD Guidelines, Zone 4

The 2009 National Household Travel Survey provides a national Average Vehicle Occupancy (AVO) of 1.13 persons/vehicle for work based trips (residential) and 1.78 persons/vehicle for retail to convert ITE vehicle trips to person trips. This national rate is typically used to adjust ITE vehicle trips into person trips. Local mode shares are then applied to the person trips to estimate vehicle, transit, walk/bike/other trips, as shown in Table 4-4. Vehicle-person trips (or the number of persons traveling in vehicles) are then adjusted back to vehicle trips by again applying the national AVO.

As shown in Table 4-4, the completed/fully occupied Project is expected to generate approximately 46 net-new vehicle trips (14 in, 32 out) during the weekday morning peak hour and 84 new vehicle trips (48 in, 36 out) during the weekday evening peak hour. On a daily basis, the Project is expected to generate approximately 1,008 vehicle trips both entering and exiting. The impacts of the projected Project-generated traffic will be analyzed in the forthcoming DPIR.

**Table 4-4 Adjusted Trip Generation**

| Time Period/Direction | Walk/Bike/Other | Transit | Vehicles |
|---|---|---|---|
| **Daily** | | | |
| In | 1,302 | 509 | 504 |
| Out | 1,302 | 509 | 504 |
| Daily Total | 2,604 | 1,018 | 1,008 |
| **AM Peak Hour** | | | |
| In | 36 | 17 | 14 |
| Out | 104 | 30 | 32 |
| AM Total | 140 | 47 | 46 |
| **PM Peak Hour** | | | |
| In | 133 | 55 | 48 |
| Out | 92 | 50 | 36 |
| PM Total | 225 | 105 | 84 |

**Proposed Study Area**

Figure 4.3 illustrates the proposed Study Area based on the preliminary trip distribution results. The proposed Study Area for the DPIR includes the following locations, which will be confirmed in consultation with BTD:

- Newbury Street at Massachusetts Avenue/Interstate 90 Ramp
- Newbury Street at Hereford Street
- Massachusetts Avenue at Boylston Street
- Boylston Street at Dalton Street/Hereford Street
- Boylston Street at Gloucester Street
- Dalton Street at Scotia Street
- Dalton Street at Belvidere Street
- Huntington Avenue at Belvidere Street

**Trip Distribution**

Preliminary trip distribution for the Project, based on BTD's guidelines for Area 4 (the Project study area), is shown in Figures 4.4a and 4.4b. BTD's guidelines, based on 2000 census data, provide information on where area residents work and where area employees live. Using these data, Project vehicle trips can then be assigned to the roadway network. A summary of the regional trip distribution results is presented in Table 4-5. Due to one-way street operations in the area, arrival and departure patterns will vary to and from the Project Site.

**Table 4-5 Geographic Trip Distribution**

| Primary Corridor | Retail Distribution | | Residential Distribution | |
|---|---|---|---|---|
| | In | Out | In | Out |
| Boylston Street | 4% | 4% | 6% | 19% |
| Columbus Avenue | 4% | 4% | 5% | 5% |
| Commonwealth Avenue | 3% | 3% | 5% | 5% |
| Massachusetts Avenue | 10% | 10% | 13% | 13% |
| Huntington Avenue | 38% | 14% | 44% | 16% |
| Storrow Drive | 26% | 26% | 18% | 18% |
| Tremont Street | 15% | 15% | 9% | 9% |
| Turnpike (I-90) | 0% | 24% | 0% | 15% |
| **Total** | 100% | 100% | 100% | 100% |

Source: BTD Zone 4 Trip Distribution

The results of the preliminary trip distribution indicate that trips will be well dispersed throughout the street network.

## 4.4 Construction Impacts

The Proponent will develop a detailed Construction Management Plan (CMP) for approval by BTD and MassDOT prior to construction. These plans will detail construction vehicle routing and staging, any temporary lane or sidewalk closures, and plans to maintain acceptable transportation operations around the Project Site.

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

Contractors will be encouraged to devise access plans for their personnel that deemphasize auto use, such as seeking off-site parking, providing transit subsidies, on-site lockers, etc. Construction workers will also be encouraged to use public transportation to access the Project Site.

During the construction period, pedestrian activity adjacent to the Project Site may be impacted by sidewalk closures. A variety of measures will be considered and implemented to protect the safety of pedestrians. Temporary walkways, appropriate lighting, and new directional and informational signage to direct pedestrians around the construction site will be provided. After construction is complete, finished pedestrian sidewalks will be permanently reconstructed to meet ADA standards around the Site. Damage to sidewalks and adjacent roadway caused by construction activity will be repaired per City standards. See Section 5.12 of Chapter 5, *Environmental Protection* for additional information.

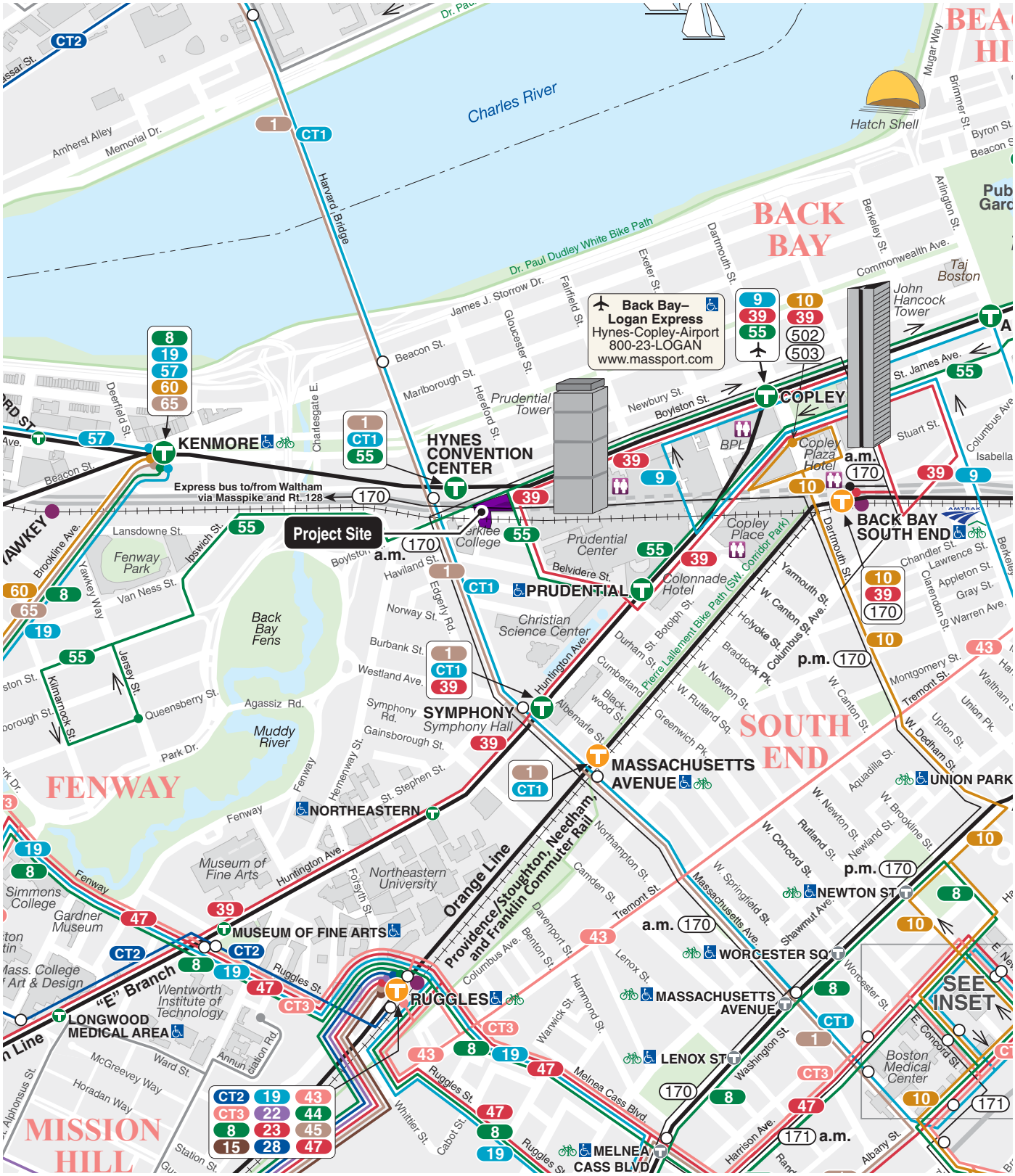
## 4.5 Transportation Demand Management

Consistent with the State and City's goals to reduce auto dependency, the Project will include a series of TDM measures to encourage alternative modes of transportation and discourage single-occupancy vehicle trips. The Project will benefit from nearby access to the MBTA subway (Green Line and Orange Line), commuter rail services, and bus service as well as the strong pedestrian and bicycle networks. This will provide a firm foundation for the implementation of TDM strategies to maximize use of non-auto modes and reduce single occupant vehicle travel. The TDM Plan for the Project will be documented in the forthcoming DPIR. TDM measures being considered include:

- Provide indoor bicycle storage spaces for building residents (1:1 space per residential unit ratio);
- Install additional bicycle racks at grade for general public use;
- Offer an on-site bicycle sharing program for residents;
- Provide electric vehicle charging stations;
- Designate an on-site Transportation Coordinator to oversee parking and loading operations as well as promote the use of alternative transportation measures and carpooling;

- Encourage retail tenants to provide on-site transit pass sales and subsidies to employees;
- Encourage retail tenants to join A Better City Transportation Management Association;
- Encourage the residential property managers to provide on-site pass sales to residents; and
- Provide transit information such as maps and schedules to new residents and tenants in an orientation package and in the residential lobbies.

All TDM measures will be reflected in the Transportation Access Plan Agreement to be executed between the Proponent and BTD.

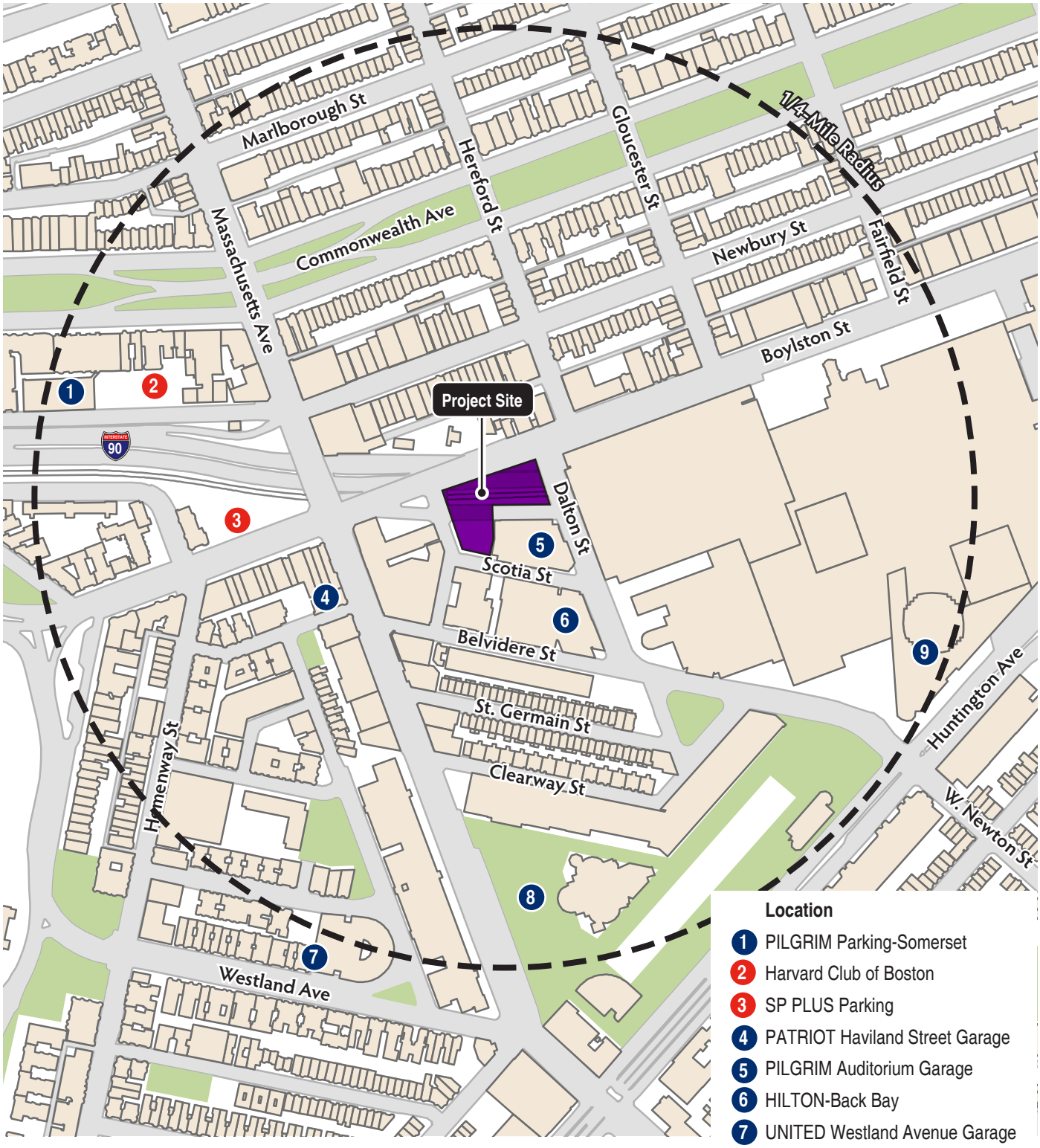



Source: MBTA

Existing Public Transportation

Figure 4.1

**1000 Boylston Street**
**Boston, Massachusetts**

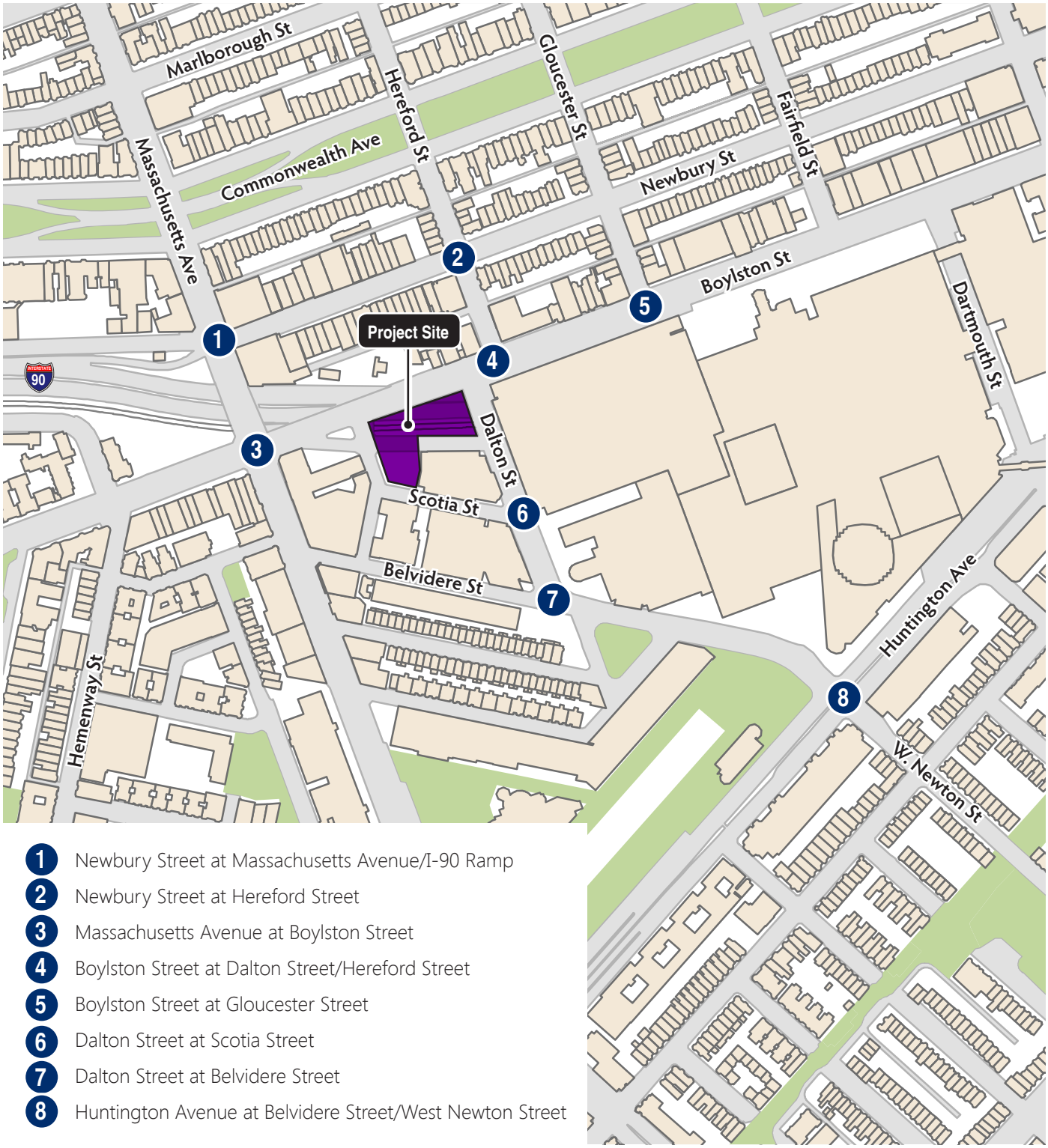



Source: BWSC Street Map

Off-Street Parking

Figure 4.2

**1000 Boylston Street**
**Boston, Massachusetts**




1. Newbury Street at Massachusetts Avenue/I-90 Ramp
2. Newbury Street at Hereford Street
3. Massachusetts Avenue at Boylston Street
4. Boylston Street at Dalton Street/Hereford Street
5. Boylston Street at Gloucester Street
6. Dalton Street at Scotia Street
7. Dalton Street at Belvidere Street
8. Huntington Avenue at Belvidere Street/West Newton Street

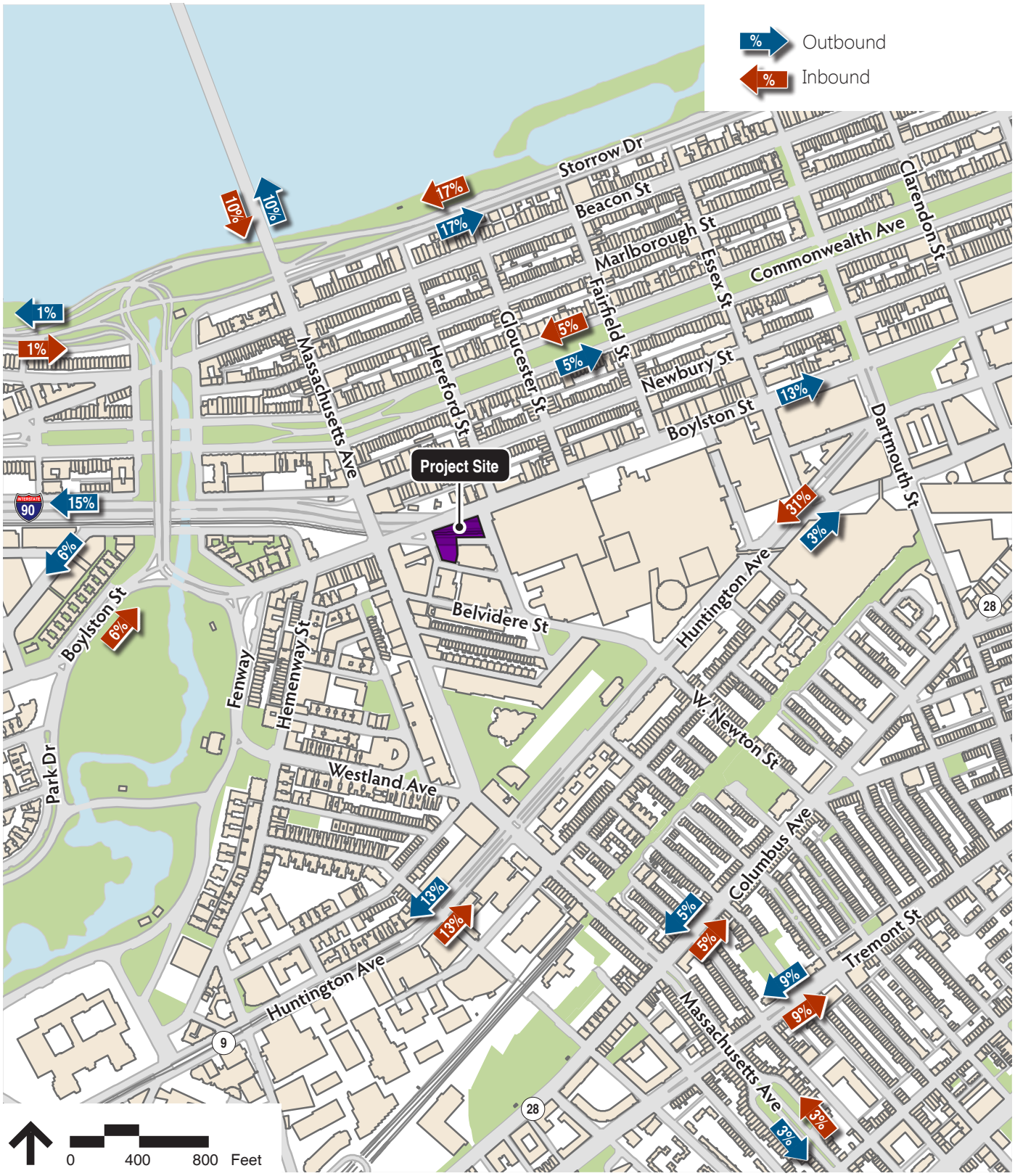
0 200 400 Feet

Source: BWSC Street Map

Proposed Traffic Study Area

Figure 4.3

**1000 Boylston Street**
**Boston, Massachusetts**




Source: BWSC Street Map

Residential Trip Distribution

Figure 4.4a

**1000 Boylston Street**
**Boston, Massachusetts**


Source: BWSC Street Map

Retail Trip Distribution

Figure 4.4b

**1000 Boylston Street**
**Boston, Massachusetts**

# 5

# Environmental Protection

This chapter describes the existing environmental conditions in the vicinity of the Project Site and the potential changes that may occur as a result of the Project. A goal of the Project is to better utilize the Project Site and complement adjacent uses while avoiding, minimizing, and/or mitigating potential adverse environmental impacts to the surrounding area to the greatest extent feasible. As discussed in more detail below, the Project-related impacts, which are to be expected in any development of this scale, are counterbalanced by the significant benefits for the adjacent neighborhoods and the City. Temporary construction-period impacts will be managed to minimize disruption to the surrounding neighborhoods.

In compliance with the BPDA Article 80 Development Review Guidelines, this Project will address potential environmental impacts in the following categories:

- Wind
- Shadow
- Daylight
- Solar Glare
- Air Quality
- Water Quality
- Flood Hazard
- Noise
- Solid and Hazardous Waste
- Groundwater/ Geotechnical
- Construction
- Rodent Control

Where the current state of the design allows, this PNF provides a full assessment of Project impacts; however, where additional information is needed, initial assessments are provided with an outline of the more detailed analyses to be addressed in the DPIR as public and agency input is received and design is further developed. The Proponent looks forward to working through the Article 80 process with the BPDA and the community to further refine the Project and its associated benefits.

## 5.1 Summary of Key Findings and Benefits

In summary, the initial key findings and benefits of the analyses of potential environmental impacts associated with the Project are as follows:

- Shadow – Shadow impacts have been minimized to the maximum extent practicable to avoid any noticeable effect on pedestrian use patterns.
- Daylight – The Project will result in a reduction in the visible skydome when viewed from adjacent sidewalks compared to existing conditions. Such changes

are consistent with the Project's urban context and will be offset by substantial improvements to the public realm that are anticipated to improve the overall pedestrian experience as compared to existing conditions.

- Water Quality – The Project will meet all applicable stormwater management standards to the extent practicable by implementing Best Management Practices to improve water quality.
- Flood Hazard – The Project Site is not located within a special flood hazard area and is not at high risk of inundation from sea level rise and flooding during its design life due to its location above the Turnpike and the MBTA commuter rail tracks.
- Noise – Based on preliminary design, the Project's operations will have no adverse noise impacts at nearby sensitive receptor locations and will not contribute to a violation of the City of Boston's noise standards.
- Solid and Hazardous Materials – The Project Site does not contain any known reported releases of oil or hazardous materials with the exception of the Scotia Parcel RTN3-27939. During previous environmental site assessment activities, elevated concentrations of metals were encountered in groundwater. A Response Action Outcome Statement (RAO) filed in October 2008 with MA DEP concluded a condition of No Significant Risk and no further action required. The site was closed under the MCP with no conditions. Soil and groundwater will be managed in accordance with all applicable regulations during construction and no related impacts are anticipated.
- Groundwater – The potential for groundwater impacts at the Project Site is limited by the small amount of terra firma affected; no actual impacts are anticipated due to the lack of substantive excavation proposed.
- Geotechnical – The geotechnical engineer and contractor will work closely together throughout excavation and foundation construction to avoid adverse impacts on adjacent structures and infrastructure during the installation of the foundation elements. Soil disturbance and vibration will be limited by low displacement foundation elements.
- Construction – The Project has been designed to avoid, minimize and mitigate potential construction-related impacts. The Project Team will work with the City to reduce potential construction period impacts.

Potential environmental impacts associated with wind and solar glare will be more fully described in the forthcoming DPIR.

## 5.2 Wind

The Project will require a quantitative (wind tunnel) analysis comparing existing and proposed conditions pursuant to the Section B.1 of the BPDA Development Review Guidelines because it includes one or more buildings greater than 150 feet high.

The Proponent has commenced a preliminary wind tunnel analysis and is aware of the potential "hot spots" for adverse pedestrian level wind conditions. The preliminary wind sensor Locations are shown in Figure 5.1.

The Proponent and design team will continue to work closely with the wind consultant to proactively incorporate wind mitigation techniques into the design of the buildings. A complete wind comfort study will be presented in the forthcoming DPIR.

## 5.3 Shadow

An analysis of Project-generated shadow impacts under the No-Build and Build Conditions is a requirement of the Article 80, Large Project Review (Section 80B-2(c) of the Code). The shadow analysis was prepared in accordance with the requirements of Section B.2 of the BPDA Development Review Guidelines.

In addition to the Large Project Review requirements set forth in Article 80 of the Code, the portion of the Project within the HAPC District, as a PDA, must comply with the HAPC District-specific shadow criteria, as set forth in Section 41-16(1) of the Code. This criteria requires the shadow analysis demonstrate that the portion of the Project within the HAPC District will not cast shadows for more than two hours between the hours of 8:00 a.m. and 2:30 p.m., on any day from March 21 through September 21 in any calendar year, on any portion of dedicated public parkland that either (a) is not cast in shadow during such period on such days by structures existing as of March 20, 1990, or (b) would not be cast in shadow during such period on such days by structures built to the as-of-right limits allowed Article 41, whichever structures cast the greater shadow.

### 5.3.1 Methodology

A shadow impact analysis was conducted at regular time intervals to investigate the effect that the Project will have throughout the year. In order to represent a variety of shadow conditions at various times of the day, and times of the year, three time intervals (9:00 AM, 12:00 PM, 3:00 PM) are represented for the Vernal Equinox (March 21st), Summer Solstice (June 21st), Autumnal Equinox (September 21st), and Winter Solstice (December 21st). 6:00PM was also run for June 21st and September 21st.

To meet the requirements of Article 41, the shadow study includes a spatial assessment of areas showing net new shadow lasting a duration equal to two hours or greater during the spring and summer months (March 21, June 21, and September 21) from 8:00 AM to 3:00 PM.

The shadow study takes into consideration Daylight Savings Time and, therefore, times are presented in Eastern Standard Time ("EST") and Eastern Daylight Time ("EDT"). The study shows both existing shadows in and around the Project Site, and the limited net new shadow impact of the Project. The shadow analysis focuses on public open spaces, historic resources, major pedestrian areas, sidewalks, and plazas

in the Project vicinity. Shadows were determined using the Boston altitude and azimuth data provided in Table 5-1 below.

**Table 5-1 Azimuth and Altitude Data**

| | | Solar Position | |
|---|---|---|---|
| **Date** | **Local Time** | ***Altitude**** | ***Azimuth**** |
| March 21 | 9:00 AM EST | 33.0 | 125.7 |
| | 12:00 PM EST | 48.0 | -176.9 |
| | 3:00 PM EST | 30.5 | -121.08 |
| June 21 | 9:00 AM EDT | 39.9 | 93.5 |
| | 12:00 PM EDT | 68.8 | 149.4 |
| | 3:00 PM EDT | 56.5 | -113.7 |
| | 6:00 PM EDT | 23.9 | -79.3 |
| September 21 | 9:00 AM EDT | 25.9 | 115.3 |
| | 12:00 PM EDT | 47.4 | 166.0 |
| | 3:00 PM EDT | 37.4 | -132.9 |
| | 6:00 PM EDT | 7.3 | -96.0 |
| December 21 | 9:00 AM EST | 14.2 | 141.9 |
| | 12:00 PM EST | 24.1 | -175.6 |
| | 3:00 PM EST | 10.0 | -135.1 |

* Altitude is measured up from the horizon
** Azimuth is measured in degrees clockwise from the North
EST Eastern Standard Time
EDT Eastern Daylight Time

The incremental impact of net new shadow cast by the Project is shown in dark blue in Figures 5.2 through 5.5, while existing shadows are shown in gray. For comparison purposes, this shadow analysis compares the shadow impact associated with the originally proposed West Building height of 398 feet to the currently proposed height of 566 feet. The results of the Article 41 spatial assessment are shown in various shades of blue in Figures 5.6a through 5.6c.

The shadow studies account for the full height of the buildings, including the mechanical space and equipment screen above last occupied floor totaling 620 feet for the West Building and 301 feet for the East Building. The previous building height of 398 feet did not account for the mechanical space or equipment.

### 5.3.2 Article 80 Shadow Study Results

The shadow impact analysis looked at net new shadow created by the Project during 14 time periods (Table 5-1). The incremental net new shadows produced are

consistent with the existing urban shadow patterns, and are not expected to have any material effect on pedestrian use patterns. The majority of net new shadows will land on existing buildings, creating minimal adverse effects on the pedestrian environment.

**Vernal Equinox (March 21)**

The future No-Build and net new shadows associated with the Project for March 21 are illustrated in Figures 5.2a-b. March 21 is the vernal equinox, when the length of daytime and nighttime are equal. The sun rises on March 21 at 6:45 AM EDT in the southeastern sky and sets at 6:57 PM EDT.

At 9:00 AM on the vernal equinox, net new shadow from the Project will be cast on buildings fronting Boylston Street, Newbury Street, Massachusetts Avenue and Commonwealth Avenue. Incremental net new shadow will be cast on a small section of the Commonwealth Mall west of Massachusetts Avenue.

At 12:00 noon, the Project will cast net new shadow across a portion of Boylston Street located north of the Project Site. The net new shadows cast by the West Building will cover the northern sidewalk of Newbury Street. Incremental net new shadow from the East Building will fall on the western sidewalk on Dalton Street.

At 3:00 PM, net new shadow from the proposed Project will extend northeast across Boylston Street toward the Hynes Convention Center. Incremental net new shadow will be cast on the northern and southern sidewalks on Boylston Street east of the Project Site.

**Summer Solstice (June 21)**

The future No-Build and net new shadows associated with the Project for June 21 are illustrated in Figures 5.3a-b. June 21 is the summer solstice and the longest day of the year. The sun rises at 5:08 AM EDT in the southeastern sky and sets at 8:25 PM EDT.

At 9:00 AM on the summer solstice, net new shadow from the Project will extend westward over portions of Boylston Street and Massachusetts Avenue. Incremental net new shadow will be cast on a small portion of the sidewalks on St. Cecilia Street, Boylston Street and Massachusetts Avenue.

At 12:00 noon, the Project will cast new shadow north across a portion of Boylston Street, including sidewalks. Net new shadow from the West Building will cover a small portion of Parcel 13 across Boylston Street from the Project Site and the sidewalk on the north side of Boylston Street.

At 3:00 PM, net new shadows from the Project will extend east over portions of Dalton Street, Cambria Street, the adjacent parking structure and onto the roof of the Hynes Convention Center. Incremental net new shadow will cover a small portion of the sidewalk along Dalton Street.

At 6:00 PM, shadows will extend south-eastward from the Project, but will fall mostly within areas of existing shadow. Small areas of net new shadow will fall on the Hynes

Convention Center as well as the adjacent parking garage structure and the Boston Sheraton, creating minimal net new shadow over the pedestrian environment.

**September 21**

The future No-Build and net new shadows associated with the Project on September 21 are depicted on Figures 5.4a-b. September 21 is the autumnal equinox and the daytime and nighttime hours are equal. The sun rises at 6:31 AM EDT in the southeastern sky and sets at 6:42 PM EDT. The shadows cast on this date are almost identical to those on March 21, the vernal equinox.

At 9:00 AM on the autumnal equinox, net new shadow from the Project will be cast on buildings fronting Boylston Street, Newbury Street, Massachusetts Avenue and Commonwealth Avenue. Incremental new shadow will be cast on a small section of the Commonwealth Mall west of Massachusetts Avenue.

At 12:00 noon, the Project will cast net new shadow across a portion of Boylston Street located north of the Project Site. The net new shadows cast by the West Building will cover the northern sidewalk of Newbury Street. Incremental net new shadow from the East Building will fall on the western sidewalk on Dalton Street.

At 3:00 PM, net new shadow from the Project will extend northeast across Boylston Street toward the Hynes Convention Center. Incremental net new shadow will be cast on the northern and southern sidewalks of Boylston Street east of the Project Site.

The sun sets at 6:42 PM on the autumnal equinox and, therefore, the majority of the project area will be in existing shadow at 6:00 PM. At this time, the Project will result in minimal net new shadow that extends over building rooftops.

**Winter Solstice (December 21)**

The future No-Build and net new shadows associated with the Project on December 21 are depicted on Figure 5.5. December 21 is the winter solstice and the shortest day of the year. The sun is at its lowest inclination above the horizon at each hour of the day. Even low buildings cast long shadows in northerly latitudes, such as Boston. The sun rises at 7:10 AM EST and sets at 4:15 PM EST in December.

At 9:00 AM on the winter solstice, the Project casts a shadow in a northwestern direction extending toward Boylston Street filling in gaps in the heavily shaded urban landscape. The net new shadow will cover a small portion of the south sidewalk on Boylston Street, as well as the eastern sidewalk along Massachusetts Avenue. A small portion of Storrow Drive and the Charles River Esplanade will be shaded from the West Building, but the majority of net new shadows will land on existing buildings, creating minimal adverse effects on the pedestrian environment.

At 12:00 noon, the Project will cast shadow in a northeastern direction extending toward Boylston Street. Net new shadow from the West Building will cover a portion of the northern sidewalk on Boylston Street and the northern sidewalk on Commonwealth Avenue. Incremental net new shadow from the West Building will be

cast on a small portion of the Commonwealth Mall. The majority of net new shadows will land on existing buildings, creating minimal net new shadow on the pedestrian environment.

At 3:00 PM, net new shadow from the Project will extend northeast across Boylston Street toward and over Dartmouth Street filling in gaps in the heavily shaded urban landscape. Incremental net new shadow will be cast on Boylston Street, Commonwealth Avenue, and the Commonwealth Mall, but the majority of net new shadows will land on existing buildings, creating minimal adverse effects on the pedestrian environment.

### 5.3.3 Article 41 Shadow Overlap Study Results

In addition to the Large Project Review requirements set forth in Article 80 of the Code, a project in a Planned Development Area in the HAPC District must comply with shadow criteria set forth in Section 41-16(1) of the Code. As demonstrated in Figures 5.6a-c, the Project will conform to the foregoing restrictions of Section 41-16(1) of the Code because it will not cast shadows on any portion of dedicated public parkland for more than two hours between 8:00 AM and 2:30 PM on any day in March 2, June 21, and September 21.

## 5.4 Daylight

The following section describes the anticipated effect on daylight coverage at the Site as a result of the Project. An analysis of the percentage of skydome obstructed under the No-Build and Build Conditions is a requirement of Article 80 (Section 80B-2(c)). The daylight analysis was prepared using the BRA's Daylight Analysis Program ("BRADA") and has been completed in accordance with the requirements of Article 80. The results of the analysis are presented in Figures 5.7a-d

### 5.4.1 Methodology

#### BRADA Software

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

The model inputs were taken from an existing conditions survey and schematic design plans prepared by the Project's architects. As described above, the BRADA software considers the relative reflectivity of building facades when calculating perceived daylight obstruction. Highly reflective materials are thought to reduce the

perceived skydome obstruction when compared to non-reflective materials. For the purposes of this daylight analysis, the building facades are considered non-reflective, resulting in a conservative estimate of daylight obstruction.

**Viewpoints**

The following viewpoints were used for this daylight analysis:

- Boylston Street – This viewpoint is located on the centerline of Boylston Street, centered on the northern side of the Project Site.
- St. Cecilia Street – This viewpoint is located on the centerline of St. Cecilia Street, centered along the western side of the Project Site.
- Scotia Street – This viewpoint is located on the centerline of Scotia Street, centered on the southern side of the Project Site.
- Dalton Street – This viewpoint is located on the centerline of Dalton Street, centered on the eastern side of the Project Site.

These points represent existing and proposed building façades when viewed from the adjacent public ways.

### 5.4.2 Daylight Analysis Findings

Under the Existing/No-Build Condition, the Site is undeveloped but a portion of the skydome is obstructed due to the existing six-story parking garage in close proximity to the study point. The existing skydome obstructed ranges, based on the viewpoint, from approximately zero percent at the Boylston Street and St. Cecilia Street study points to 77 percent on the Scotia Street study point and 30.5 percent at the Dalton Street study point. The existing above ground parking garage fronting Dalton Street is the only building contributing to the existing skydome obstruction.

Under the Proposed Conditions, the viewpoints along the four roadways are expected to experience an increase in skydome obstruction due to the increased height and massing of the new buildings, as would be expected when increasing the density of an urban site. The increase in skydome obstruction will be offset by substantial improvements to the public realm which are anticipated to improve the overall pedestrian experience as compared to existing conditions.

Table 5-2 presents the estimated skydome obstruction impacts associated with the Project, and this same information id depicted in Figures 5.7a-d.

**Table 5-2 Existing/No-Build and Build Daylight Conditions**

| Viewpoint | Existing/No-Build Daylight Obstruction | Build Daylight Obstruction |
|---|---|---|
| Boylston Street | 0% | 77% |
| St. Cecilia Street | 0% | 96.1% |
| Scotia Street | 77% | 87.4% |
| Dalton Street | 30.5% | 59.2% |

## 5.5 Solar Glare

The BPDA Development Review Guidelines require projects undergoing Large Project Review to analyze the potential impacts from solar glare on the following areas to identify the potential for visual impairment or discomfort due to reflective spot glare:

- Potentially affected key roadways;
- Public open spaces; and
- Pedestrian areas.

Furthermore, projects must consider the potential for solar heat buildup in any nearby buildings receiving reflective sunlight from the Project, if applicable.

A detailed review of these potential impacts on the Project area from solar glare will be included in the forthcoming DPIR.

## 5.6 Air Quality Microscale Analysis

This section presents an overview of and the results for the mobile source assessment conducted for the Project. The purpose of the air quality assessment is to demonstrate that the Project satisfies applicable regulatory requirements, and whether it complies with the 1990 Clean Air Act Amendments (CAAA) following the local and the U.S. Environmental Protection Agency (EPA) policies and procedures.

The air quality assessment conducted for this Project includes a qualitative localized (microscale), or "hot spot", analysis of local carbon monoxide (CO) concentrations. The microscale analysis evaluated potential CO impacts from vehicles traveling through congested intersections in the project area under the existing conditions, as well as considering site-specific impacts under the future conditions. The results from this evaluation were subject to the National Ambient Air Quality Standards (NAAQS).

### 5.6.1 Background

The CAAA resulted in states being divided into attainment areas and non-attainment areas, with classifications based upon the severity of their air quality problems. Air

quality control regions are classified and divided into one of three categories depending upon air quality data and ambient concentrations of pollutants: attainment areas, non-attainment areas and maintenance areas. Attainment areas are regions where ambient concentrations of a pollutant are below the respective NAAQS. Non-attainment areas are those where concentrations exceed the NAAQS. A maintenance area is an area that used to be non-attainment, but has demonstrated that the air quality has improved to attainment. After 20 years of clean air quality, maintenance areas can be re-designated to attainment. Projects located in a CO maintenance area are required to evaluate their CO concentrations with the NAAQS.

The Project is located in the City of Boston, which under the EPA designation is a CO Maintenance area. As such, CO concentrations need to be considered for this Project.

### 5.6.2 Air Quality Standards

The EPA has established the NAAQS to protect the public health. Massachusetts has adopted similar standards as those set by the EPA for CO. Table 5-3 presents the NAAQS for carbon monoxide.

**Table 5-3 National Ambient Air Quality Standards**

| | Primary Standards | | |
|---|---|---|---|
| **Pollutant** | **Level** | **Averaging Time** | **Form** |
| Carbon Monoxide | 9 ppm (10 mg/$m^3$) | 8-hour | Not to be exceeded more than once per year |
| | 35 ppm (40 mg/$m^3$) | 1-hour | |

Carbon monoxide emitted by motor vehicles, and the predominant source of air pollution anticipated from typical project developments is emissions from project-related motor vehicle traffic. A product of incomplete combustion, CO is a colorless and odorless gas that prevents the lungs from passing oxygen to the blood stream. Brief exposure to high levels of CO can also impair vision, physical coordination, and the perception of time. According to the EPA, 60 percent of CO emissions result from motor vehicle exhaust, while other sources of CO emissions include industrial processes, non-transportation fuel combustion and natural sources (i.e., wildfires).[1] In cities, as much as 95 percent of CO emissions may emanate from automobile exhaust.[2]

The Department of Environmental Protection (MassDEP) maintains a network of air quality monitors to measure background CO concentrations. Background concentrations are ambient pollution levels from all stationary, mobile, and area sources. Background CO concentrations are determined by choosing the maximum

[1] Environmental Protection Agency, *National Air Quality and Emissions Trends Report*, 1999, March 2001.
[2] Environmental Protection Agency, *National Air Quality and Emissions Trends Report*, 1999, March 2001.

of the second-highest annual values from the previous three years. The air quality monitor closest to the Project Site (Kenmore Square) indicated that for the years 2012-2014, the CO background values are 1.3 ppm for the 1-hour averaging time and 0.9 ppm for the 8-hour averaging time. These values are much less than the 1-hour and 8-hour NAAQS. The background values are presented in Table 5-4.

**Table 5-4 Air Quality Background Concentrations**

| | Background Concentrations | | NAAQS | |
|---|---|---|---|---|
| **Pollutant** | **Level** | **Averaging Time** | **Level** | **Averaging Time** |
| Carbon Monoxide | 0.9 ppm | 8-hour | 9 ppm | 8-hour |
| | 1.3 ppm | 1-hour | 35 ppm | 1-hour |

Monitoring Location: Kenmore Square, Boston, MA. Years 2012-2014.

The potential CO concentrations from motor vehicle traffic related to the Project will be considered in conjunction with these background concentrations to demonstrate that the Project will comply with the NAAQS Standards.

### 5.6.3 BPDA Development Review Guidelines

The BPDA Development Review Guidelines require a microscale analysis predicting localized carbon monoxide concentrations, including identification of any locations projected to exceed the NAAQS or MAAQS, for projects in which:

- Project traffic would impact intersections or roadway links currently operating at Level of Service (LOS) D, E, or F, or would cause LOS to decline to D,E, or F; or
- Project traffic would increase traffic volumes on nearby roadways by 10 percent or more (unless the increase in traffic volume is less than 100 vehicles per hour); or
- The Project will generate 3,000 or more new average daily trips (adt) on roadways providing access to a single location.

As discussed in the following sections, the Project will not exceed any of the foregoing thresholds and, accordingly, will not require a microscale analysis.

### 5.6.4 Traffic Data

The air quality study uses traffic data (volumes, delays, and speeds) developed for the analysis conditions based upon the traffic analysis. The traffic volumes and LOS for the study area were evaluated at both signalized and unsignalized intersections.

Signalized Intersections:

- Newbury Street at Massachusetts Avenue/I-90 Ramp
- Massachusetts Avenue at Boylston Street
- Boylston Street at Dalton Street/Hereford Street

› Boylston Street at Gloucester Street

› Huntington Avenue at Belvidere Street/W. Newton Street

Unsignalized Intersections:

› Newbury Street at Hereford Street

› Dalton Street at Scotia Street

› Dalton Street at Belvidere Street

The traffic study predicted Project generated trips and trip distribution. The Project is expected to generate 46 trips in the morning peak hour and 83 trips in the evening peak hour (Table 4-4). On a daily basis, the Project is expected to generate approximately 984 vehicle trips both entering and exiting. The impacts of the Project-generated traffic, if any, will be analyzed more fully in the DPIR. However, with low trip generation, localized air quality impacts from the Project are not expected to be substantial, and may be negligible.

### 5.6.5 Microscale Analysis

An evaluation of the traffic data, which was conducted in accordance with the BPDA Development Review Guidelines for determination of potential for CO impacts, preliminarily determined that a microscale analysis will not be required based on the following factors:

› Project traffic is not expected to impact intersections or roadway links currently operating at LOS D, E, or F, and is not expected to cause LOS to decline to D, E, or F. Project related vehicle trip generation rates are low and are not expected to cause impacts at the study area intersections. Detailed intersection analyses will be conducted in the DPIR.

› Project traffic would not increase traffic volumes on nearby roadways by 10 percent or more (the increase in traffic volume is less than 100 vehicles per hour). The Project is expected to generate 46 vehicle trips in the morning peak hour and 83 vehicle trips in the evening peak hour, an increase of fewer than 100 vehicles per hour (Table 4-4).

› The determination of new adt for purposes of the BPDA Development Review Guidelines is based on Adjusted adt, as distinguished from determination of new adt by MEPA which is based on Unadjusted adt. The Project will not generate 3,000 or more new adt on roadways providing access to a single location as determined by Adjusted adt. Based on the BPDA/BTD administrative practice, this determination is based on Adjusted adt, which is adjusted to reflect the fact that Boston benefits from an excellent public transit system and pedestrian access. The Project will generate 984 daily vehicle trips based on Adjusted adt, far less than the 3,000 adt threshold.

Under the BPDA Development Review Guidelines, the Project is not expected to cause or contribute to a violation of the NAAQS and a quantitative microscale analysis is not required. The Project's traffic impacts are minor compared to the

background traffic of the existing transportation network. Since CO emissions are directly correlated to vehicular traffic, it is probable that the Project will create similarly insignificant CO emissions when compared to the background concentrations and the NAAQS.

Violation of the CO standard set by the NAAQS has become increasingly infrequent. This is due to a number of factors. Primarily, the vehicular emission rates of CO have decreased and will continue to decrease with the passage of time due to newer, more controlled vehicles entering the fleet.[3] Additionally, the CO background concentration in Boston has decreased over time.[4]

Based on consideration of these three controlling factors for the determination of CO impact (Project traffic, background concentration, and emission rates), it is highly unlikely for CO impacts to exist or to be created with the introduction of the Project. The Project will generate minimal vehicular activity in the surrounding network. The CO emission rates of the fleet will decrease over time, and the background CO concentration is a relatively small 10 percent and four percent of the respective 1-hour and 8-hour NAAQS.

### 5.6.6 Summary of Findings

The air quality evaluation demonstrated that the Project would not result in adverse air quality impacts. This analysis, which evaluated the Project-related localized air quality impacts associated with Project-generated vehicles travelling through the study area, demonstrates that all existing and future car CO concentrations are expected to be below the NAAQS. The air quality study demonstrates that the Project conforms to the CAAA and the SIP because:

- No violation of the NAAQS are expected to be created;
- No increase in the frequency or severity of any existing violations (none of which are related to this development) are expected to occur; and
- No delay in attainment of any NAAQS would be expected to result due to the implementation of the proposed action.

Based upon the analysis presented and the conclusions summarized above, no significant adverse air quality impacts from the Project are anticipated.

## 5.7 Water Quality

The Project will comply with the MassDEP Stormwater Management Standards and will improve the quality of stormwater runoff from the Project Site and reduce its quantity compared to the existing condition. The Project will improve water quality by collecting and treating stormwater runoff through a series of structural Best

[3] "Transportation Air Quality Facts and Figures" *Vehicle Emissions,* Federal Highway Administration. January 2006. <https://www.fhwa.dot.gov/environment/air_quality/publications/fact_book/page15.cfm.>

[4] "Massachusetts Annual Air Quality Report" *Department of Environmental Protection, Bureau of Air and Waste, Division of Air and Climate Programs.* Multiple Years.

Management Practices (BMPs) designed to remove oil, floatables, and Total Suspended Solids (TSS). Clean runoff from the Project Site will be directed to recharge systems designed to infiltrate stormwater runoff in order to replenish groundwater and provide phosphorous removal. Chapter 6, *Infrastructure*, provides a complete description of the existing and proposed stormwater management systems, to the extent these systems are designed, and provides a summary of the Project's compliance with the MassDEP Stormwater Management Standards.

## 5.8 Flood Hazard

The Project Site is not located within a special flood hazard area, according to panel 25025C0077J of the Federal Emergency Management Agency's (FEMA) currently effective Flood Insurance Rate Map (FIRM). While the potential results of climate change, including rising sea levels and more frequent extreme storms, increase the probability of flooding, according to the Coastal Flood Exceedance maps included in the *MassDOT-FHWA Pilot Project Report: Climate Change and Extreme Weather, Vulnerability Assessments and Adaptation Options for the Central Artery*, the Project Site is not at high risk of inundation from sea level rise and flooding during its design life. This is primarily due to the Project's location above the Turnpike and the MBTA commuter rail tracks. Chapter 3, *Sustainability/Green Building Design and Climate Change Preparedness*, provides a more in-depth discussion of sea level rise and extreme flooding.

## 5.9 Noise

The noise impact assessment evaluated the potential noise conditions associated with the Project's operations, including building mechanical equipment and service activities. The following sections discuss noise fundamentals, City of Boston noise standards, noise analysis methodology, and existing and future noise conditions.

### 5.9.1 Noise Fundamentals

Noise is defined as unwanted or excessive sound. Sound becomes unwanted when it interferes with normal activities such as sleep, communication, work, or recreation. How people perceive sound depends on several measurable physical characteristics, which include the following:

- Intensity - Sound intensity is often equated to loudness.
- Frequency - Sounds are comprised of acoustic energy distributed over a variety of frequencies. Acoustic frequencies, commonly referred to as tone or pitch, are typically measured in Hertz. Pure tones have all their energy concentrated in a narrow frequency range.

Sound levels are most often measured on a logarithmic scale of decibels (dB). The decibel scale compresses the audible acoustic pressure levels which can vary from the threshold of hearing (zero dB) to the threshold of pain (120 dB). Because sound levels are measured in dB, the addition of two sound levels is not linear. Adding two

equal sound levels creates a 3 dB increase in the overall level. Research indicates the following general relationships between sound level and human perception:

A 3 dB increase is a doubling of acoustic energy and is the threshold of perceptibility to the average person. A 10 dB increase is a tenfold increase in acoustic energy but is perceived as a doubling in loudness to the average person. The human ear does not perceive sound levels from each frequency as equally loud. To compensate for this phenomenon in perception, a frequency filter known as A weighted [dB(A)] is used to evaluate environmental noise levels. Table 5-5 presents a list of common outdoor and indoor sound levels.

**Table 5-5 Common Outdoor and Indoor Sound Levels**

| Outdoor Sound Levels | Sound Pressure (μPa)* | | Sound Level dB(A)** | Indoor Sound Levels |
|---|---|---|---|---|
| | 6,324,555 | - | 110 | Rock Band at 5 m |
| Jet Over Flight at 300 m | | - | 105 | |
| | 2,000,000 | - | 100 | Inside New York Subway Train |
| Gas Lawn Mower at 1 m | | - | 95 | |
| | 632,456 | - | 90 | Food Blender at 1 m |
| Diesel Truck at 15 m | | - | 85 | |
| Noisy Urban Area—Daytime | 200,000 | - | 80 | Garbage Disposal at 1 m |
| | | - | 75 | Shouting at 1 m |
| Gas Lawn Mower at 30 m | 63,246 | - | 70 | Vacuum Cleaner at 3 m |
| Suburban Commercial Area | | - | 65 | Normal Speech at 1 m |
| | 20,000 | - | 60 | |
| Quiet Urban Area—Daytime | | - | 55 | Quiet Conversation at 1 m |
| | 6,325 | - | 50 | Dishwasher Next Room |
| Quiet Urban Area—Nighttime | | - | 45 | |
| | 2,000 | - | 40 | Empty Theater or Library |
| Quiet Suburb—Nighttime | | - | 35 | |
| | 632 | - | 30 | Quiet Bedroom at Night |
| Quiet Rural Area—Nighttime | | - | 25 | Empty Concert Hall |
| Rustling Leaves | 200 | - | 20 | |
| | | - | 15 | Broadcast and Recording Studios |
| | 63 | - | 10 | |
| | | - | 5 | |
| Reference Pressure Level | 20 | - | 0 | Threshold of Hearing |

Source: *Highway Noise Fundamentals*. Federal Highway Administration, September 1980.

* μPA – MicroPascals, which describe pressure. The pressure level is what sound level monitors measure.

** dB(A) – A-weighted decibels, which describe pressure logarithmically with respect to 20 μPa (the reference pressure level).

A variety of sound level indicators can be used for environmental noise analysis. These indicators describe the variations in intensity and temporal pattern of the sound levels. The following is a list of the most common sound level descriptors:

› L90 is the sound level which is exceeded for 90 percent of the time during the time period. The L90 is generally considered to be the ambient or background sound level.

› Leq is the A-weighted sound level, which averages the background sound levels with short-term transient sound levels and provides a uniform method for comparing sound levels that vary over time.

### 5.9.2 Methodology

The noise analysis evaluated the potential noise impacts associated with the Project's operations, which include mechanical equipment and loading/service activities. The noise analysis included measurements of existing ambient background sound levels and a qualitative evaluation of potential noise impacts associated with the proposed mechanical equipment (e.g., HVAC units, cooling tower, etc.) and loading/service activities. The study area was evaluated and sensitive receptor locations in the vicinity of the Project were identified and examined. The site layout and building design, as it relates to the loading area and management of deliveries at the Project Site, were also considered. The analysis considered sound level reductions due to distance, proposed building design, and obstructions from surrounding structures.

### 5.9.3 Receptor Locations

The noise analysis included an evaluation of the study area to identify nearby sensitive receptor locations, which typically include areas of sleep and areas of outdoor activities. The noise analysis identified sensitive receptor locations in the vicinity of the Project. As shown on Figure 5.8, the receptor locations include the following:

› R1 – Berklee College of Music;

› R2 – Residential units at 11 Belvidere Street;

› R3 – Boston Fire Department Ladder 15 and Engine 33 Firehouse; and

› R4 – Hilton Hotel.

These receptor locations, represent the most sensitive locations in the vicinity of the Project Site.

### 5.9.4 City of Boston Noise Impact Criteria

Under Chapter 40, Section 21 of the General Laws of the Commonwealth of Massachusetts and Title 7, Section 50 of the City of Boston Code, the Air Pollution Control Commission of the City of Boston has adopted Regulations for the Control of Noise in the City of Boston. These regulations establish maximum allowable sound levels based upon the land use affected by the proposed development. Table 5-6 summarizes the maximum allowable sound levels that should not be exceeded.

**Table 5-6 City of Boston Noise Standards by Zoning District**

| Land Use Zone District | Daytime (7:00 AM – 6:00 PM) | All Other Times (6:00 PM – 7:00 AM) |
|---|---|---|
| Residential | 60 dB(A) | 50 dB(A) |
| Residential/Industrial | 65 dB(A) | 55 dB(A) |
| Business | 65 dB(A) | 65 dB(A) |
| Industrial | 70 dB(A) | 70 dB(A) |

Source: Regulations for the Control of Noise in the City of Boston, Air Pollution Control Commission.

For a residential zoning district and institutional land uses, the maximum noise level generated by these uses may not exceed the applicable Residential Noise Standard. The residential land use noise standard is 60 dB(A) for daytime periods (7:00 AM to 6:00 PM) and 50 dB(A) for nighttime conditions (6:00 PM to 7:00 AM).

## 5.9.5 Existing Noise Conditions

A noise monitoring program was conducted to establish existing conditions. The existing sound levels were measured using a Type 1 sound analyzer (Larson Davis LxT). Measurements were conducted at three sensitive sensor receptor locations in the vicinity of the Project Site on December 16, 2015 and December 17, 2015. The measurements were conducted during a weekday daytime period between 1:00 PM and 3:00 PM and during the late night period between 2:30 AM and 4:30 AM. The measured sound level data composed mainly of noise from vehicles traveling on local roadways (Boylston Street) and the Turnpike, and mechanical equipment from nearby buildings.

The measured exterior sound levels range from approximately 64 dB(A) to approximately 66 dB(A) during the daytime period, and from approximately 56 dB(A) to approximately 62 dB(A) during the nighttime period. These sound levels are representative of all receptors in the study area and are typical of an active urban area. The result of the noise monitoring program indicates that the sound levels within the study area are currently above the City of Boston's daytime and nighttime standards of 60 dB(A) and 50 dB(A), respectively for a Residential District. The existing measured sound level data are presented in Table 5-7.

**Table 5-7 Existing Measured Sound Levels, dB(A)**

| | City of Boston Residential District Noise Criteria | | Measured L90 Sound Levels | |
|---|---|---|---|---|
| **Monitoring Location** | **Daytime** | **Nighttime** | **Daytime** | **Nighttime** |
| M1 – St. Cecilia Street/Scotia Street | 60 | 50 | **64** | **62** |
| M2 – St. Cecilia Street/Cambria Street | 60 | 50 | **66** | **56** |
| M3 – Boylston Street/Dalton Street | 60 | 50 | **64** | **56** |

Source: VHB, Inc.

Note: Refer to Figure 5.8 for monitoring locations.

Bold values exceed City of Boston noise standards.

### 5.9.6 Future Noise Conditions

The noise analysis evaluated the potential noise impacts associated with the Project's proposed mechanical equipment and loading/service activities. The analysis evaluated the potential sound level impacts at the nearby sensitive receptor locations

**Mechanical Equipment**

Since the Project is in the early stages of the design process, specific details related to the final selection of mechanical equipment were not confirmed at the time of the noise assessment. Based on preliminary design plans, the anticipated mechanical equipment associated with the Project may include the following:

- Boilers
- Air handling units
- Cooling towers
- Air condensing units
- Emergency generators

This mechanical equipment will be located within mechanical penthouses on the rooftop or in mechanical rooms within the proposed buildings. During the design and selection process, the appropriate low-noise mechanical equipment will be selected. Potential noise mitigation measures may include acoustical enclosures and/or acoustical silencers. Since existing ambient conditions exceed the City's criteria during both daytime and nighttime periods, the Project will incorporate the necessary noise attenuation measures for the Project's mechanical equipment to minimize the Project's contribution to the overall sound levels and potential impacts at the sensitive receptor locations.

In addition to being located in acoustical penthouses, the mechanical systems will be strategically located on the rooftop, utilizing the height of the buildings in providing noise attenuation. Noise attenuation could be achieved by the Project's building design as the heights of the proposed buildings range from up to approximately 283 feet and up to approximately 566 feet tall from grade to the top of the highest occupiable floor. The rooftops of the Project's buildings will serve as barriers and break the direct line of exposure between the noise sources and nearby receptors. As such, the sound levels associated with the Project's mechanical equipment are expected to be negligible and to comply with the City of Boston's noise standards at the surrounding sensitive receptor locations.

The Project is expected to install emergency generators for life safety purposes, such as emergency exit lighting. The Project will be required to adhere to Massachusetts Department of Environmental Protection's (MassDEP) regulations that require such equipment to be certified and registered when installed.

**Service Activities**

Deliveries and service activities associated with the Project are expected to consist of small delivery and service vehicles that are no larger than a single unit truck. Loading and service activities are expected to occur in a designated loading area at the lower level of the proposed building on the Scotia Parcel off Cambria Street (Figure 2.10). Three loading spaces (two for vehicles and one for a compactor) will be provided for service activities. The loading activities will be managed so that service and loading operations do not impact traffic on the adjacent roadways. Since loading activities will be enclosed and will be managed, potential noise impacts to nearby sensitive receptor locations are expected to be negligible and therefore adhere to the City's noise standards.

### 5.9.7 Conclusion of Noise Impact Assessment

The noise analysis determined that the sensitive receptor locations in the vicinity of the Project Site currently experience exterior sound levels exceeding the City of Boston's daytime and nighttime noise standards for a Residential District. The dominant noise source contributing to the existing sound levels in the study area is traffic traveling along local roadways and the Turnpike, and mechanical equipment from nearby buildings. The Project will be designed to incorporate abatement measures to minimize impacts on the proposed residential units.

With the proposed building equipment located within mechanical penthouses on the rooftops or enclosed within mechanical rooms, the sound levels associated with the Project are not expected to adversely impact nearby sensitive receptor locations. The Project has been designed such that the service area will be enclosed within the proposed building structure, therefore containing noise associated with the loading activities. Based on the preliminary design, the Project's operations will have no adverse noise impacts at nearby sensitive receptor locations and will not contribute to a violation of the City of Boston's noise standards.

## 5.10 Solid and Hazardous Waste

An Environmental Site Assessment was completed for the Scotia Parcel in 2008 as part of due diligence prior to acquisition of the property. The assessment included the advancement of test borings, installation of monitoring wells, and laboratory analysis of soil and groundwater samples. Research on environmental conditions relative to the potential presence of oil and hazardous materials has also been undertaken regarding Parcel 15, the Prudential Parcel and the Cambria Street Air Rights Parcel (collectively, the "Air Rights Parcels"). However, chemical testing of soil and groundwater for the Air Rights Parcels has not been undertaken due to access constraints.

At the Scotia Parcel, concentrations of chemical constituents in soil were either not detected or were below applicable reporting and background levels for urban fill soils. Analysis of groundwater identified concentrations of metals above applicable

reporting thresholds and the release was reported under RTN 3-27939. A Risk Characterization determined No Significant Risk existed at the site and a Class B-1 RAO was submitted to MA DEP in October 2008 to close the Project Site under the MCP.

Additional characterization of the environmental quality of soil and groundwater will be conducted at the appropriate stage of the design process to further evaluate site environmental conditions. Management of soil and groundwater will be in accordance with applicable local, state, and federal laws and regulations.

## 5.11 Groundwater/Geotechnical

This section describes subsurface soil and groundwater conditions, and planned foundation construction for the proposed development.

### 5.11.1 Subsurface Soil and Bedrock Conditions

The Project is located in the Back Bay neighborhood of Boston, which consists of man-made filled land created in the late 1800's. Site and subsurface conditions at the Project Site are based on results of test boring explorations and a geophysical testing program completed on the Scotia Parcel in 2008 and 2014. Although test borings have not been undertaken for the Project on the Air Rights Parcels, subsurface data available from previous projects has been compiled and reviewed.

The subsurface data generally indicates the following subsurface stratigraphy in order of increasing depth below the ground surface as presented in Table 5-8.

**Table 5-8 Subsurface Data**

| Stratum/Subsurface Unit | Depth to Top of Stratum (ft.)/Elevation[1] | Approximate Thickness (ft.) |
|---|---|---|
| Fill Soils | 0/El. 16 to 18 | 14 to 18 |
| Organic Soils | 14 to 18/El. -2.5 to -8.5 | 4 to 10 |
| Glacial Fluvial Sand | 22/El. -2 | 20 to 22 |
| Marine Clay | 45/El. -22 | 95 |
| Glacial Till | 140/El. -122 | 3 |
| Bedrock | 140 to 145/El. -125 to -130 | - |

1 - Elevations are measured from the Boston City Base (BCB) datum.

### 5.11.2 Groundwater

Groundwater levels at the Scotia Parcel were measured at depths of 13 to 16 feet below the ground surface corresponding to approximately between elevations 5.5 and 8.0 BCB. Groundwater levels are expected to be lower in the Air Rights Parcels where the ground surface is lower.

**Groundwater Conservation Overlay District (GCOD)**

The Project Site is located within the GCOD and, therefore, will be designed to comply with requirements of Article 32 of the Code. A stormwater infiltration/ groundwater recharge system will be designed and installed. Given the limited amount of terra firma, it is anticipated that a license will be requested from the Public Improvement Commission for maintenance of a portion of a recharge system beneath the city street. An Engineer Evaluation will also be prepared demonstrating no negative impacts from the Project to area groundwater levels.

### 5.11.3 Proposed Foundation Construction

Considering site subsurface conditions, limited locations for new foundations along the rail lines and Turnpike roadway, and the proposed building heights, deep foundations extending to bedrock are planned for support of new building columns. The deep foundations are currently anticipated to consist of rock socketed drilled shaft (caissons and Load Bearing Elements) with total lengths in the range of approximately 150 to 200 feet. Deep foundation construction will utilize drilling methods that do not generate vibrations. No pile driving is planned.

Since no below grade basement levels are planned, excavation for construction will be limited in depths needed to construct shallow pile caps and pits or below grade vaults. Temporary support of excavation will be installed where needed based on site constraints. A soldier pile and lagging system can be used for the shallow excavations.

Construction will be above area groundwater levels and no temporary or permanent groundwater pumping will be required. A geotechnical instrumentation and monitoring program will be developed prior to final design to monitor adjacent structures and mitigate potential impacts.

## 5.12 Construction

Impacts associated with the Project construction activities are temporary in nature and are typically related to truck traffic, air (dust), noise, stormwater runoff, solid waste, and vibration. The Proponent will develop a detailed Construction Management Plan ("CMP") for approval by BTD and MassDOT prior to construction. The CMP will address sub-phases and reflect the input of the regulatory authorities having jurisdiction over such plans, including the Boston Fire Department ("BFD"), BTD, and MassDOT. The CMP will include detailed information on construction activities, specific construction mitigation measures, and construction materials access and staging area plans to minimize impact on the surrounding neighborhood and the Turnpike.

Construction methodologies that ensure public safety and protect nearby residents will be employed. Techniques such as barricades, walkways, and signage will be used. Construction management and scheduling will minimize impacts on the surrounding environment and will include plans for construction worker commuting

and parking, routing plans for trucking and deliveries, and control of noise and dust. The following section generally describes the potential construction-period impacts and proposed CMP elements, which are subject to refinement and modification as the design of the Project progresses.

### 5.12.1 Construction Sequencing

As described in Chapter 1, *Project Description and General Information*, the Project includes construction of up to approximately 689,000 square feet (exclusive of above-grade parking) of development consisting of up to approximately 342 residential units and up to approximately 35,000 square feet of retail located along Boylston Street and St. Cecilia Street in the Back Bay neighborhood of Boston. The total construction duration is anticipated to be approximately 36 months with abatement activities starting upon completion of the permitting process followed by demolition and structure construction.

The Project will be erected with two tower cranes and supplemental assist cranes which will periodically be required. The work zone will be confined by fencing and jersey barriers as well as covered pedestrian walkways along Boylston Street and Dalton Street. A total of four construction hoists will be utilized for temporary man and material vertical movement and access.

Typical hours of construction are from 7:00 AM to 6:00 PM, Monday through Friday. There may be occasions where work on selected Saturdays is necessary. In addition, the Proponent will be required to coordinate with MassDOT with respect to the timing of deck construction and other work above the Turnpike. Any specific instances requiring work outside of typical hours of construction will be identified and necessary permits will be obtained from the City of Boston.

### 5.12.2 Site Preparation and Staging

Construction site access will be from either Boylston Street, or St. Cecilia Street via Boylston Street, to be determined as part of the final CMP. The construction area work zone will be confined by fencing and jersey barriers as well as covered pedestrian walkways along Boylston Street and Dalton Street. Pedestrian foot traffic along Scotia Street and Dalton Street will be temporarily diverted via temporary signage and crosswalks.

Prior to the start of construction, existing utilities will be surveyed and mapped. No excavations will be performed until Dig Safe has been notified, and utilities marked. Existing public and private infrastructure located within the public right-of-way will be protected during construction. The installation of proposed utilities within the public way will be in accordance with the MWRA, Boston Water and Sewer Commission ("BWSC"), Boston Public Works, Dig Safe, and the governing utility company requirements, as applicable. All necessary permits will be obtained before the commencement of the specific utility installation. Specific methods for constructing proposed utilities will be reviewed by BWSC as part of its Site Plan Review process.

### 5.12.3 Stormwater Runoff/Erosion Control

A federal National Pollutant Discharge Elimination System General Construction, or NPDES, Permit is not required because construction of the Project is not anticipated to disturb over one acre of land. An overall site-specific Stormwater Pollution Prevention Plan will be developed in accordance with local (BWSC) regulatory agency requirements.

During Project construction, Erosion and Sediment Control ("ESC") measures will be implemented to minimize the transport of Project Site soils to off-site areas and BWSC storm drain systems. The existing catch basins will be protected with filter fabric or silt sacks to provide for sediment removal from runoff. These ESC 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.

Other sediment controls, which will be implemented as needed during construction, will include the following:

- Staked hay bales and/or silt fence barriers will be installed at the base of stockpiled soils and at erosion-prone areas throughout the construction phase of the Project. The erosion controls will be maintained and replaced as necessary to assure their effectiveness;
- Where necessary, temporary sedimentation basins will be constructed to prevent the transport of sediment off-site;
- Measures to control dust will be implemented during construction. All debris will be properly contained on the Project Site; and
- Erosion controls will be maintained and replaced as necessary until the installation of pavement and the establishment of stabilized vegetation at the Project Site.

### 5.12.4 Pedestrian Safety and Access

Public safety is the primary consideration in all of Proponent's construction planning and building processes. Specific pedestrian crosswalks and re-routing measures will be taken to allow for adequate egress around the active construction zones.

The construction area work zone will be confined by fencing and jersey barriers as well as covered pedestrian walkways along Boylston Street and Dalton Street. Pedestrian foot traffic along Scotia Street and Dalton Street will be temporarily diverted via temporary signage and crosswalks.

A fenced lay down and work area will be established to separate construction activity from day-to-day pedestrian and vehicular traffic on the Site. Police detail will be provided, as required by the approved CMP.

### 5.12.5 Construction Traffic and Parking

Construction truck routes are expected to be Boylston Street, or St. Cecilia Street via Boylston Street, subject to the approved CMP. Best efforts will be made to schedule major deliveries on non-peak traffic hours. Signage will be prevalent throughout the Project Site and surrounding streets informing vehicular and construction truck traffic alike of detours, as needed. Also, a security detail will be utilized to safely direct and manage construction-related traffic as well as routine traffic. The intent of the construction truck route will be to minimize the impact of construction truck traffic in the Project area and on other nearby roadways.

**Construction Worker Parking**

Because the workforce will arrive and depart prior to peak commuter traffic periods, the workforce trips are not expected to have a large impact on the area's transportation system. Construction workers will be strongly encouraged to arrive at the Project Site via public transportation. There will be no construction parking available at the Project Site for the workforce.

### 5.12.6 Air Quality and Dust

Short-term air quality impacts from fugitive dust may be expected during the early phases of the Project Site preparation on the Scotia Parcel. The construction contract for the Project will require the contractor to reduce potential emissions and minimize air quality impacts. Mitigation measures are expected to include the use of wetting agents where needed on a scheduled basis, covered trucks, minimizing exposed construction debris stored on-site, monitoring construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized, locating aggregate storage piles away from areas having the greatest pedestrian activity where and when possible, and periodic cleaning of streets and sidewalks to reduce dust accumulations.

The State's anti-idling law will be enforced during construction of the Project with the installation of on-site anti-idling signage at loading and drop-off/pick-up/waiting areas. In addition, the Proponent is committed to meeting the requirements of the DEP State Revolving Fund (SRF) for diesel construction equipment. These require that all non-road diesel equipment rated 50 horsepower or greater that will be used on a construction site meet EPA's Tier 4 emission limits or be retrofitted with appropriate emission reduction equipment. Emission reduction equipment includes EPA-verified, CARB-verified or DEP-approved diesel oxidation catalysts or diesel particulate filters.

### 5.12.7 Construction Noise

Intermittent increases in noise levels will occur in the short-term during construction of the Project. Efforts will be made to minimize the noise impact of construction activities, including appropriate mufflers on all equipment such as air compressors and welding generators, maintenance of intake and exhaust mufflers, turning off

idling equipment, replacing specific operations and techniques with less-noisy ones, and scheduling equipment operations to synchronize the noisiest operations with times of highest ambient noise levels.

### 5.12.8 Construction Waste Management

The Construction Manager ("CM") will take an active role in regard to the processing and recycling of construction waste and will implement a Construction Waste Management Plan ("CWMP") for the Project. The CWMP will require the CM to contract with a licensed waste hauler that has off-site sorting capabilities. All construction debris will be taken off-site by the waste hauler, sorted as either recycled debris or waste debris and sent to the proper recycling center or waste facility. Construction debris will be wetted and covered to minimize air born dust particles. Prior to construction, in accordance with the LEED goals established (discussed in Chapter 3, *Sustainability/Green Building Design and Climate Change Preparedness*) construction and demolition debris will be diverted away from landfills and incineration facilities, and will be sought to reuse materials. A 90 to 95 percent recycling/diversion rate will be targeted based on recent construction projects.

The Proponent does not anticipate any asbestos-containing material or other contaminated material on site.

### 5.12.9 Odor and Rodent Control

The contractor will file a rodent extermination certificate as required with any building permit applications to the City. Rodent inspection, monitoring, and treatment will be carried out before, during, and at the completion of all construction work for the Project, in compliance with the City's requirements. Rodent extermination prior to work start-up will consist of treatment of areas throughout the Project Site. During the construction process, regular service visits will be made to maintain effective rodent control levels.

## 5.13 Rodent Control Post-Construction

During building operations, trash and solid waste removal will be handled by the building management. A service contract with a professional pest control firm will be maintained to address rodent/pest control during the operational phase of the Project, as needed. In addition, no open top dumpsters will be allowed as an additional precaution to deter infestation.

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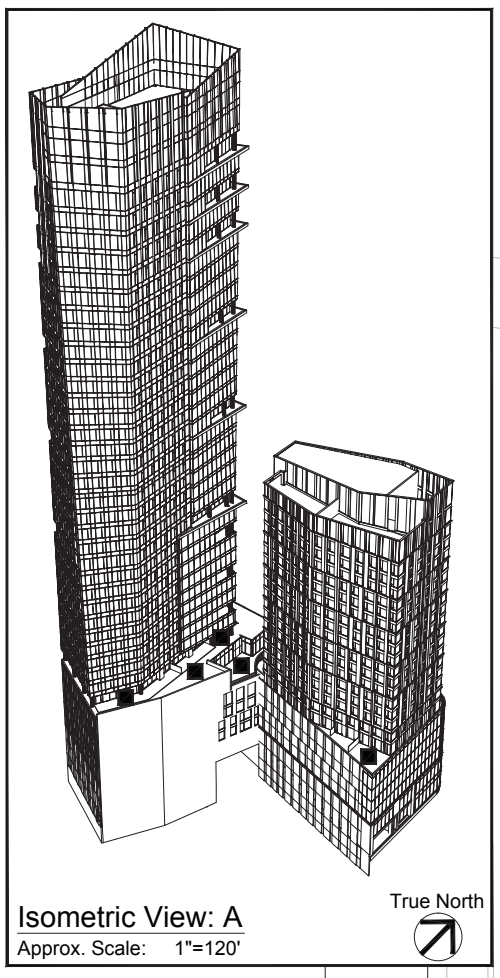
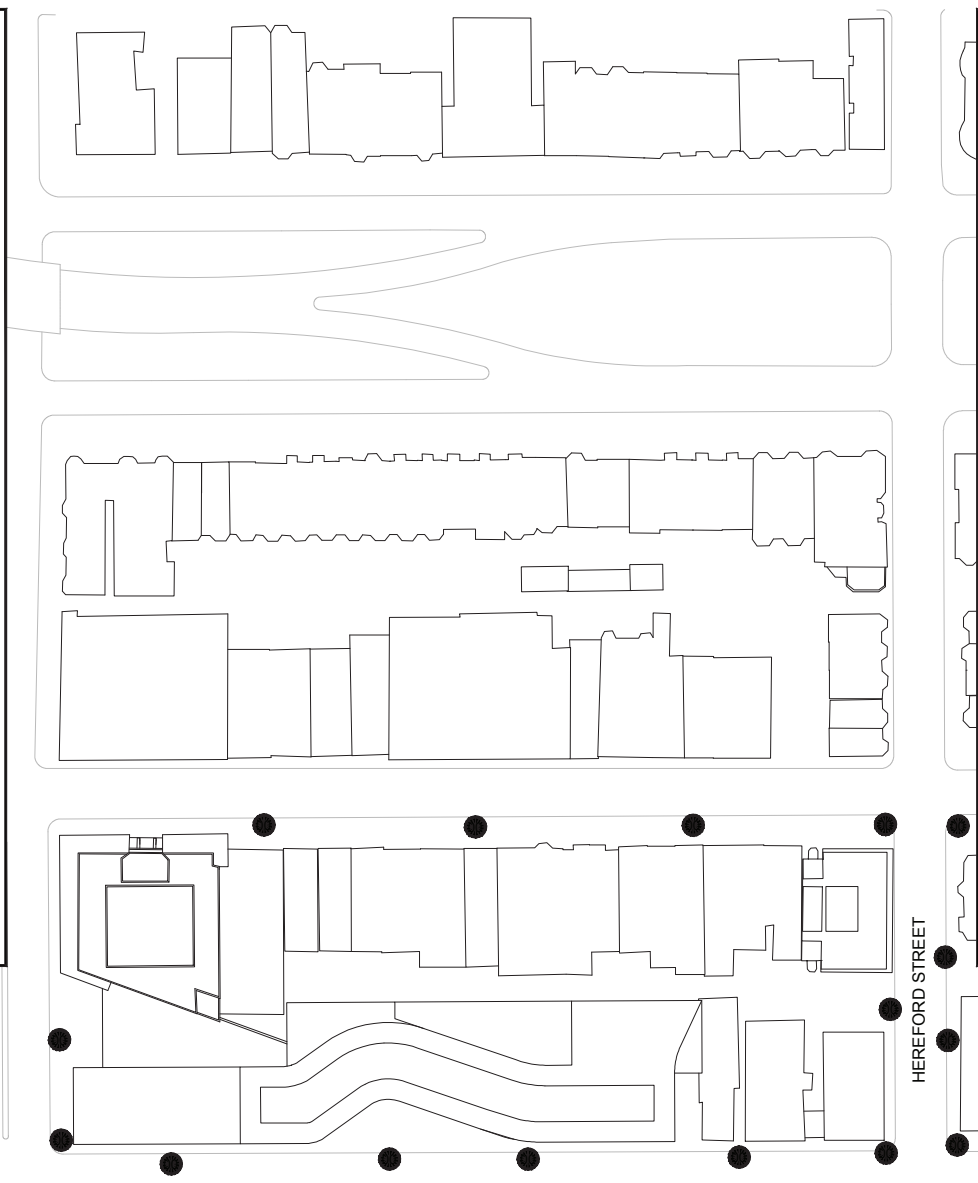
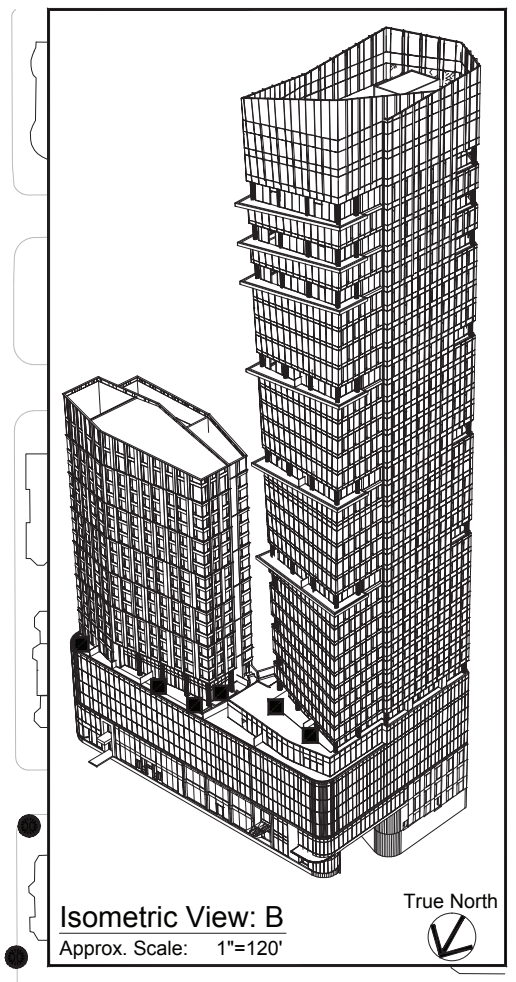


Isometric View: A

Approx. Scale: 1"=120'

True North





Isometric View: B

Approx. Scale: 1"=120'

True North

HEREFORD STREET

BOYLSTON STREET

BUILDING ABOVE REMOVED FOR CLARITY OF GRADE LEVEL SENSORS

CAMBRIA STREET

ST. CECILIA STREET

SCOTIA STREET

DALTON STREET

HYNES CONVENTION CENTER

MASSACHUSETTS AVENUE

BELVIDERE STREET

ST. GERMAIN STREET

CLEARWAY STREET

SHERATON CONVENTION CENTER

BELVIDERE STREET

DALTON STREET

GRADE LEVEL SENSOR

ROOF LEVEL SENSOR

0 60 120 Feet

Wind Sensor Location Plan

**1000 Boylston Street**
**Boston, Massachusetts**

Figure 5.1


**9 am - Proposed (566')**


**9 am - Designated (398')**


**12 pm - Proposed (566')**


**12 pm - Designated (398')**

0 400 800 Feet

Source Info

ELKUS | MANFREDI ARCHITECTS

Shadow Studies - March 21
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 5.2a


**3 pm - Proposed (566')**


**3 pm - Designated (398')**

PROJECT

NET NEW SHADOWS OF PROPOSED PROJECT (559')

NET NEW SHADOWS OF DESIGNATED PROJECT (398')

EXISTING SHADOWS

NATIONAL REGISTER OF HISTORIC PLACES

NATIONAL REGISTER OF HISTORIC PLACES DISTRICT

NATIONAL REGISTER OF HISTORICALLY INVENTORIED AREA

PUBLIC OPEN SPACE

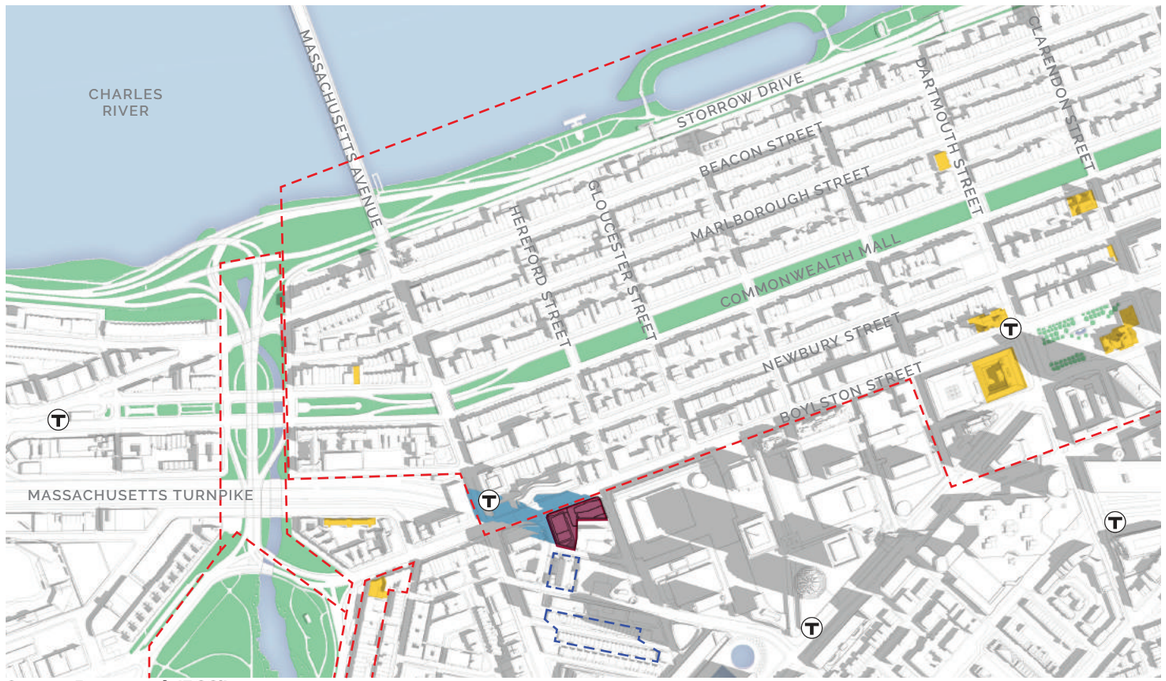
0 400 800 Feet

Source Info

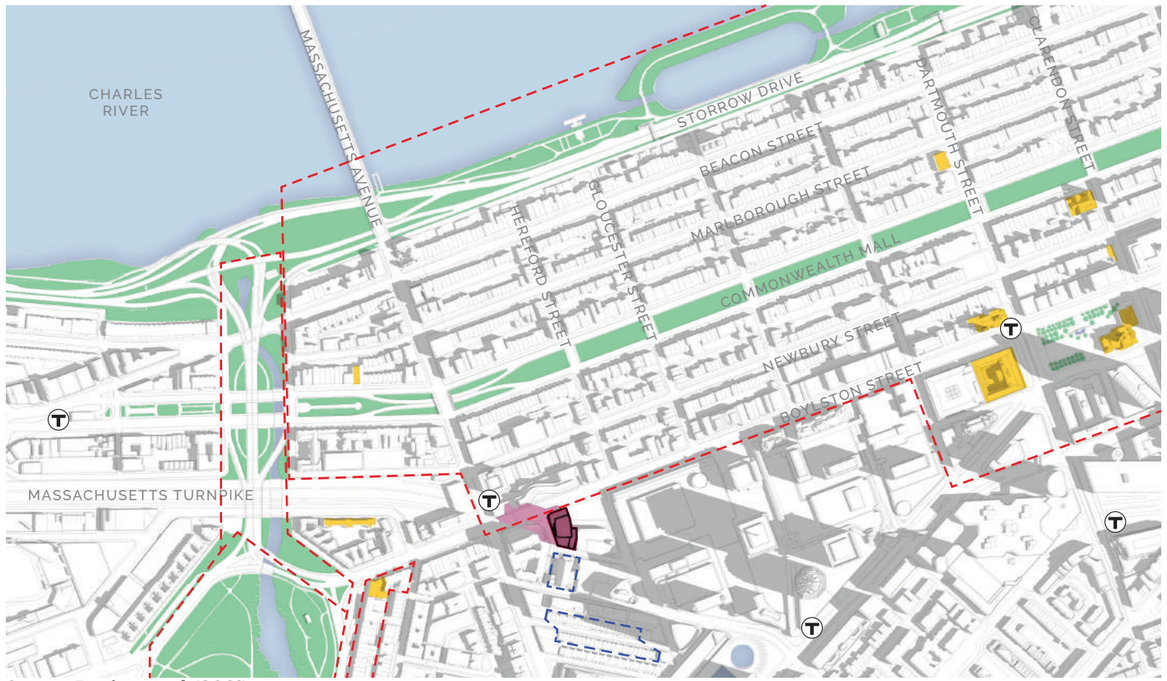
ELKUS | MANFREDI ARCHITECTS

Shadow Studies - March 21
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 5.2b

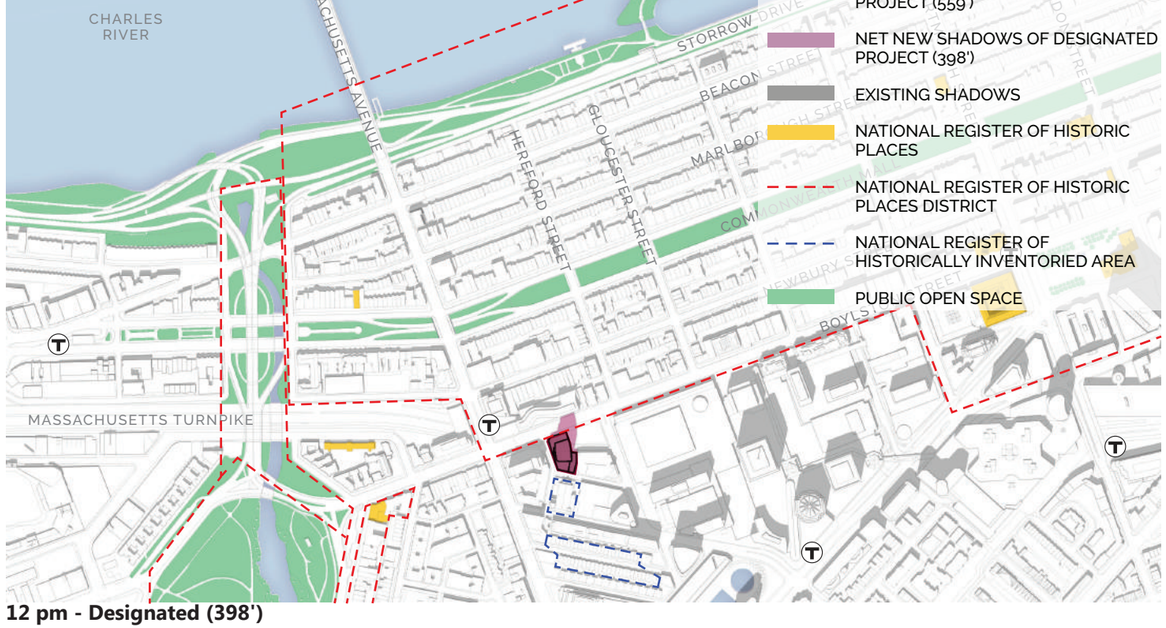



**9 am - Proposed (566')**




**9 am - Designated (398')**


**12 pm - Proposed (566')**




**12 pm - Designated (398')**

0 400 800 Feet

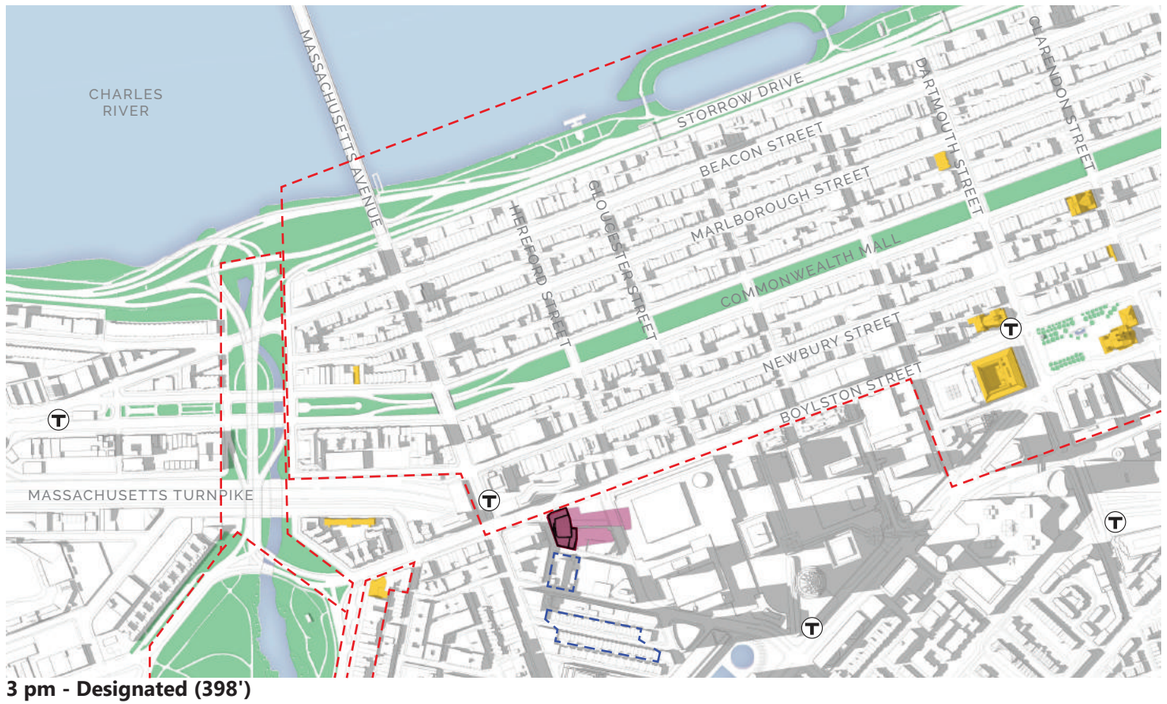
Source Info

ELKUS | MANFREDI ARCHITECTS

Shadow Studies - June 21
**1000 Boylston Street**
**Boston, Massachusetts**

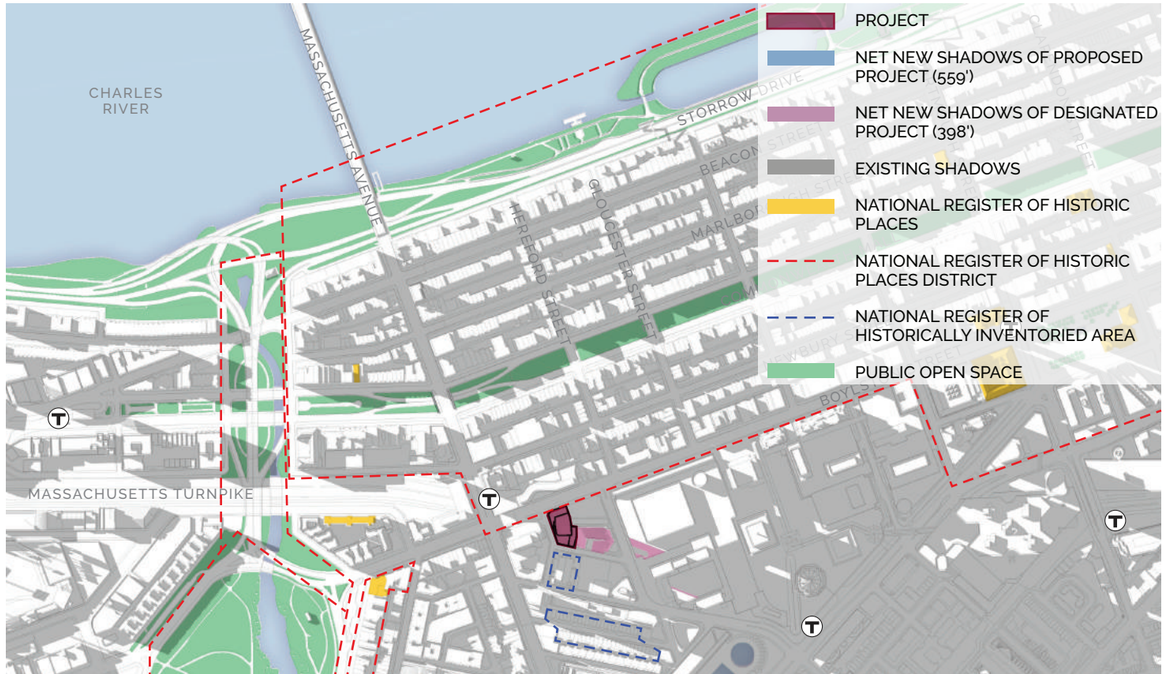
Figure 5.3a


**3 pm - Proposed (566')**




**3 pm - Designated (398')**


**6 pm - Proposed (566')**




**6 pm - Designated (398')**

0 400 800 Feet

Source Info

ELKUS | MANFREDI ARCHITECTS

Shadow Studies - June 21
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 5.3b


**9 am - Proposed (566')**


**9 am - Designated (398')**


**12 pm - Proposed (566')**


**12 pm - Designated (398')**

0 400 800 Feet

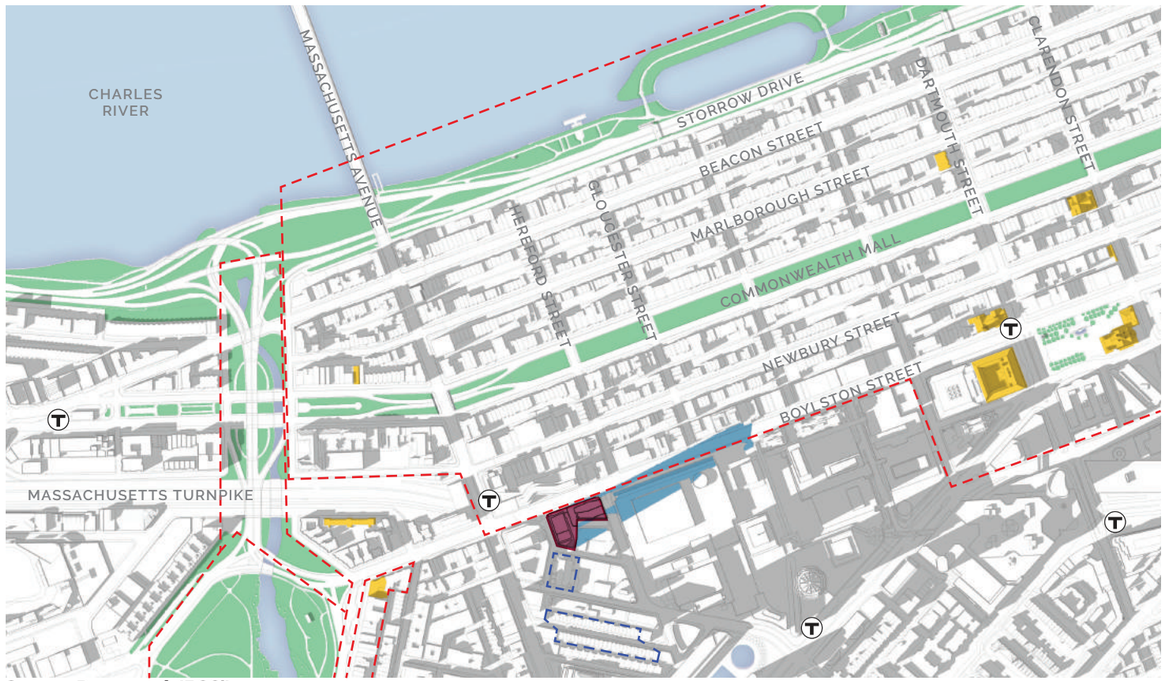
Source Info

ELKUS | MANFREDI ARCHITECTS

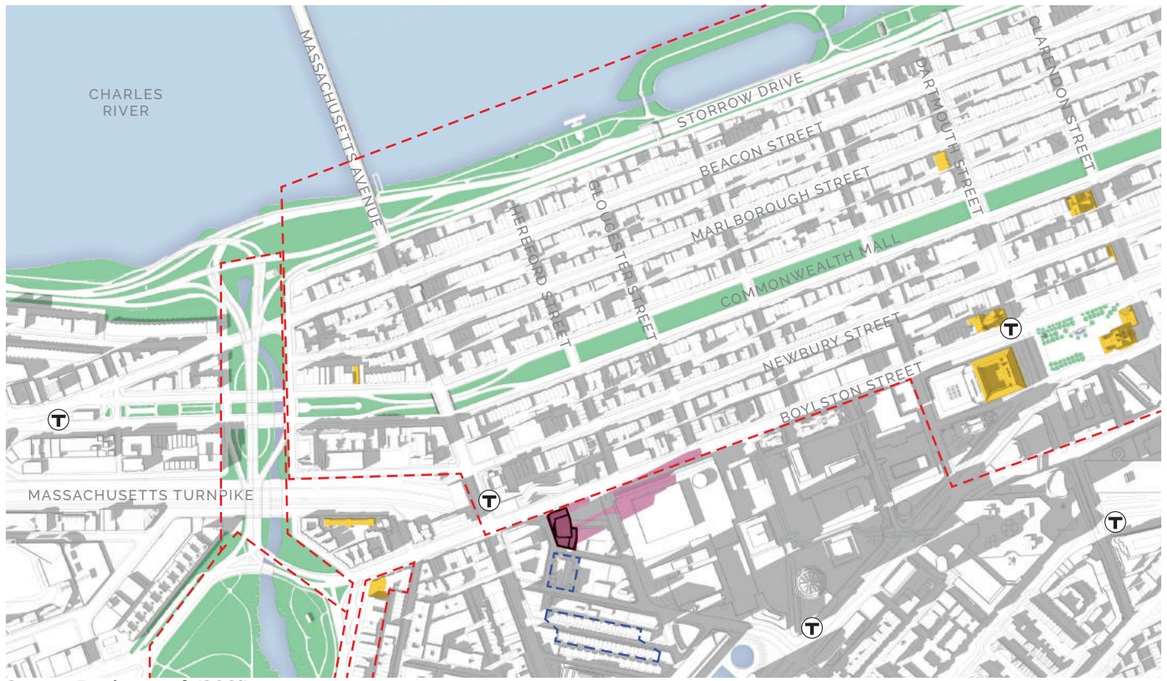
Shadow Studies - September 21

**1000 Boylston Street**
**Boston, Massachusetts**

Figure 5.4a

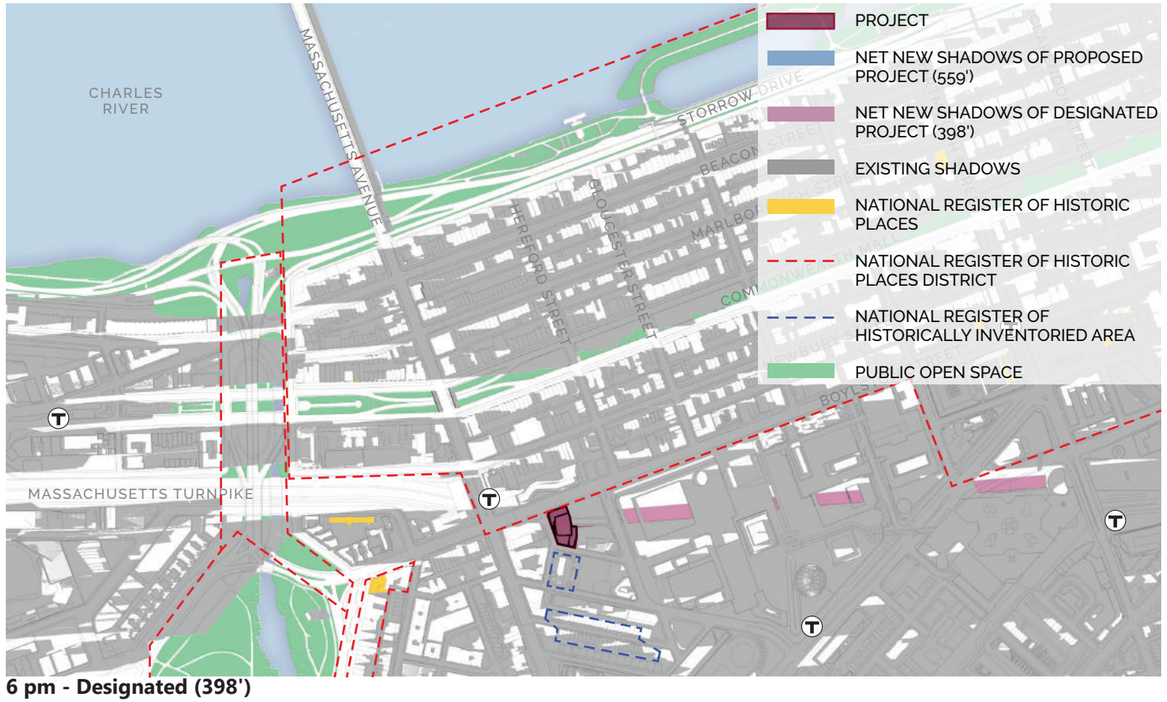



**3 pm - Proposed (566')**




**3 pm - Designated (398')**


**6 pm - Proposed (566')**




**6 pm - Designated (398')**

0 400 800 Feet

Source Info

ELKUS | MANFREDI ARCHITECTS

Shadow Studies - September 21

**1000 Boylston Street**
**Boston, Massachusetts**

Figure 5.4b


**9 am - Proposed (566')**


**9 am - Designated (398')**


**12 pm - Proposed (566')**


**12 pm - Designated (398')**

0 400 800 Feet

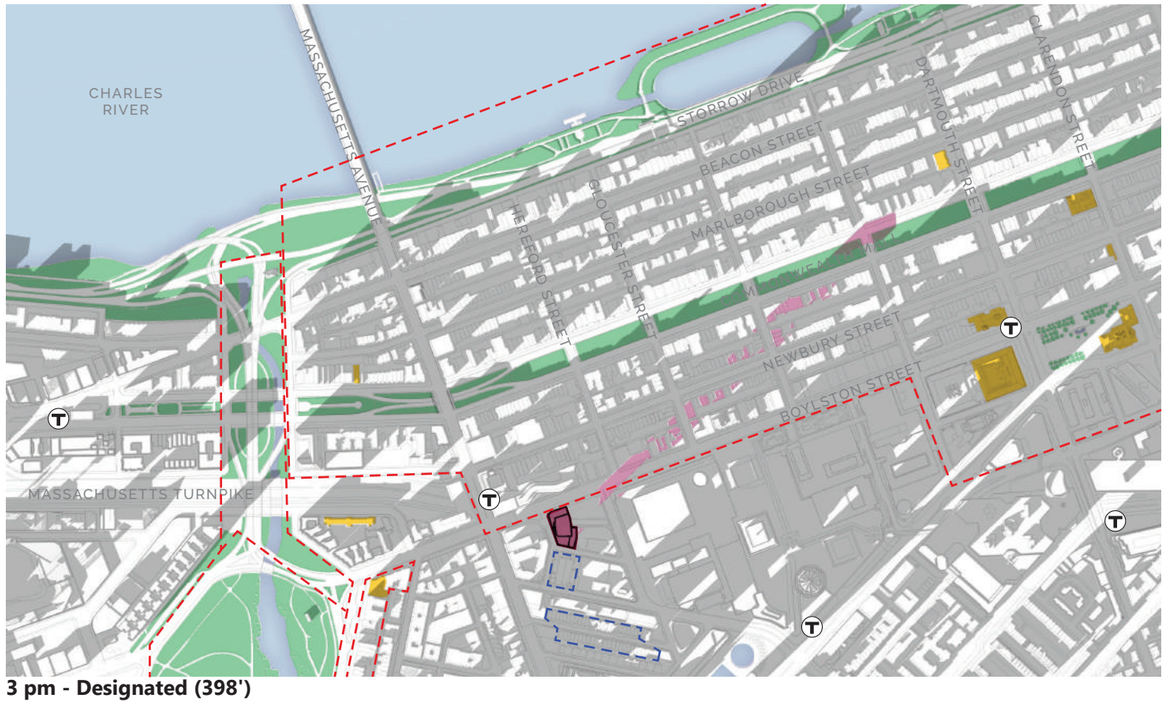
Source Info

ELKUS | MANFREDI ARCHITECTS

Shadow Studies - December 21
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 5.5a


**3 pm - Proposed (566')**




**3 pm - Designated (398')**

PROJECT

NET NEW SHADOWS OF PROPOSED PROJECT (559')

NET NEW SHADOWS OF DESIGNATED PROJECT (398')

EXISTING SHADOWS

NATIONAL REGISTER OF HISTORIC PLACES

NATIONAL REGISTER OF HISTORIC PLACES DISTRICT

NATIONAL REGISTER OF HISTORICALLY INVENTORIED AREA

PUBLIC OPEN SPACE

0 400 800 Feet

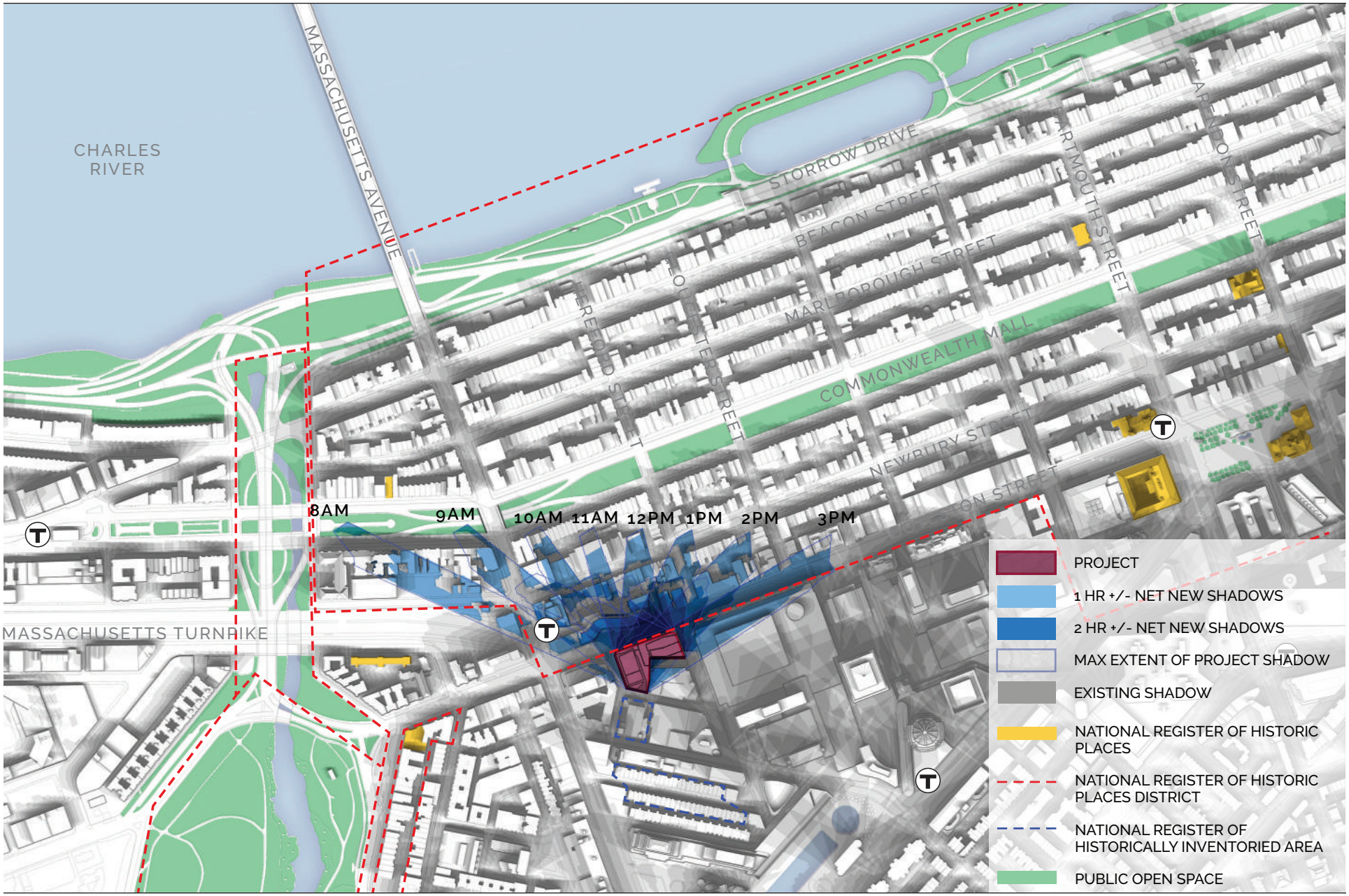
Source Info

ELKUS | MANFREDI ARCHITECTS

Shadow Studies - December 21

**1000 Boylston Street**
**Boston, Massachusetts**

Figure 5.5b



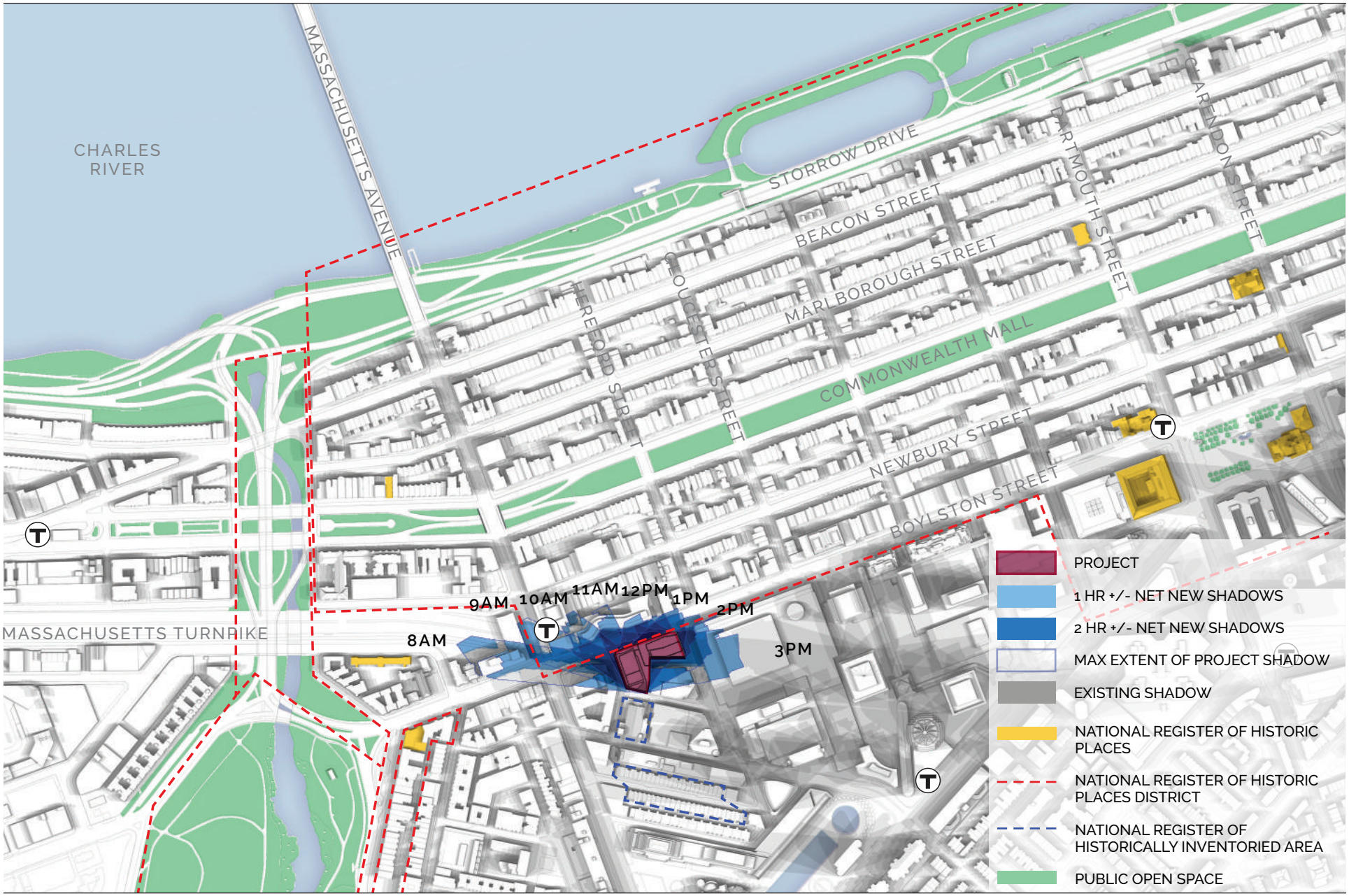

0 300 600 Feet

ELKUS | MANFREDI ARCHITECTS

Shadow Study - March 21 Overlap

**1000 Boylston Street**
**Boston, Massachusetts**

Figure 5.6a




0 300 600 Feet

ELKUS | MANFREDI ARCHITECTS

Shadow Study - June 21 Overlap

**1000 Boylston Street**
**Boston, Massachusetts**

Figure 5.6b


0 300 600 Feet

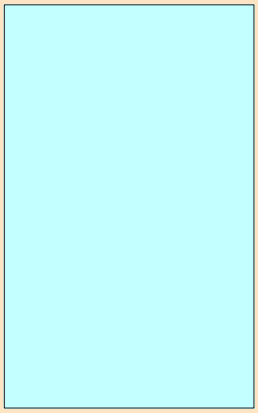
ELKUS | MANFREDI ARCHITECTS

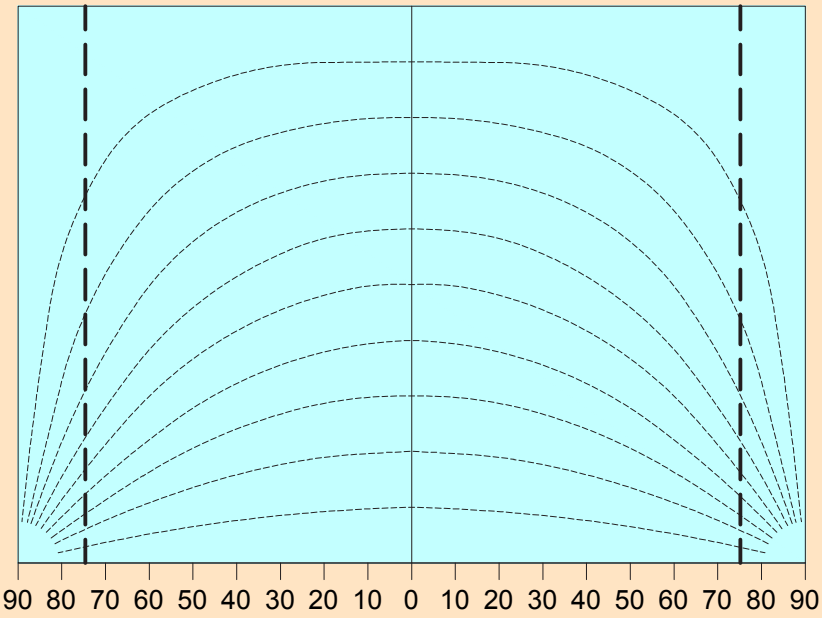
Shadow Study - September 21 Overlap Figure 5.6c

**1000 Boylston Street**
**Boston, Massachusetts**

**Existing**

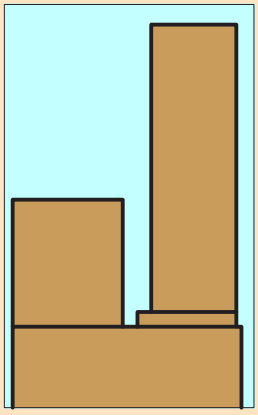
Obstruction of
Skyplane = 0.0%

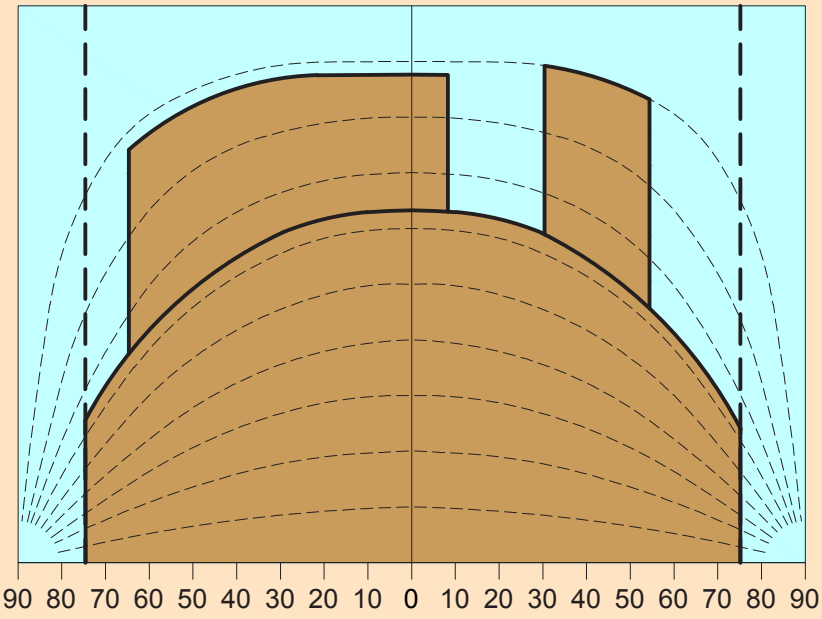





**Proposed**

Obstruction of
Skyplane = 77.0%



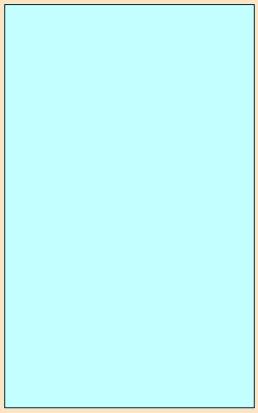


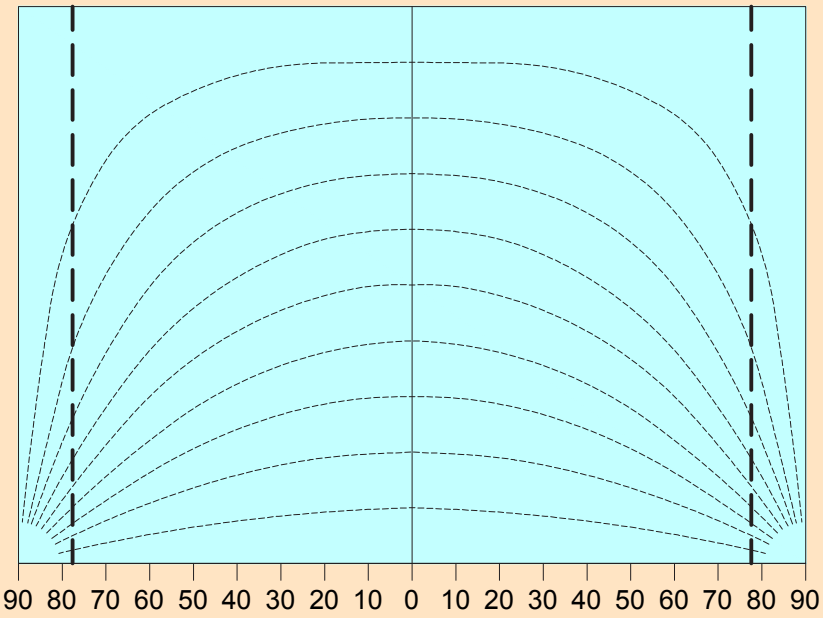

Daylight Analysis
Center of Boylston Street
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 5.7a

**Existing**

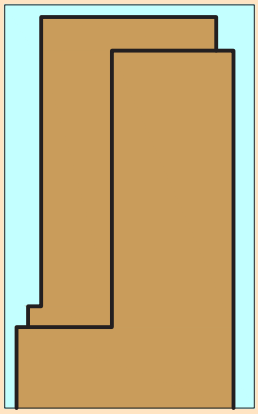
Obstruction of
Skyplane = 0.0%

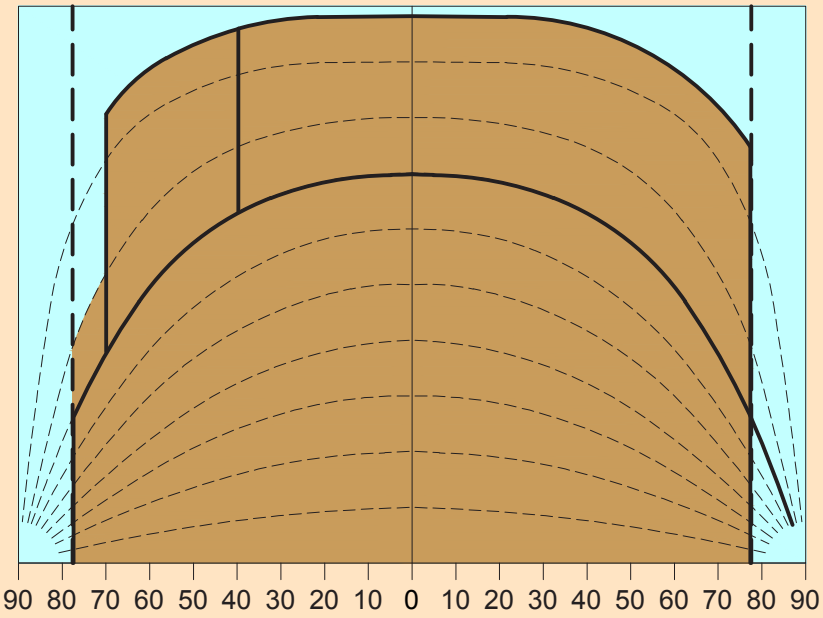





**Proposed**

Obstruction of
Skyplane = 96.1%



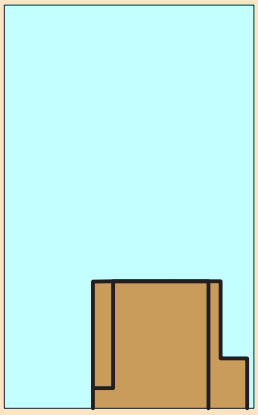


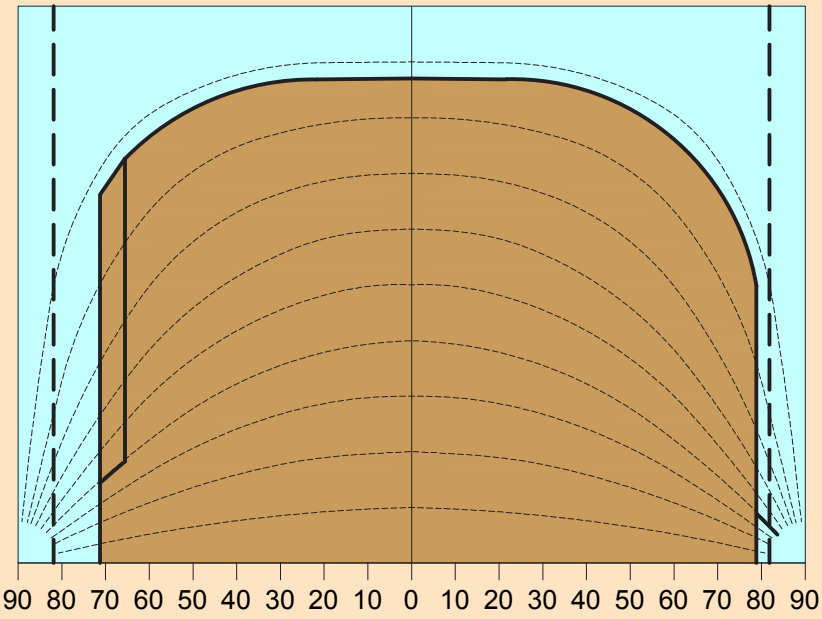

Daylight Analysis
Center of St. Cecilia Street
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 5.7b

**Existing**

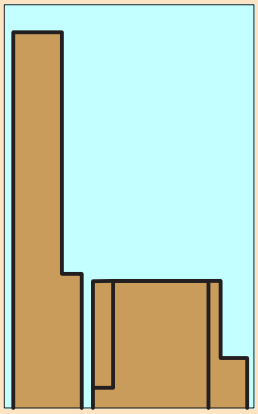
Obstruction of
Skyplane = 77.0%

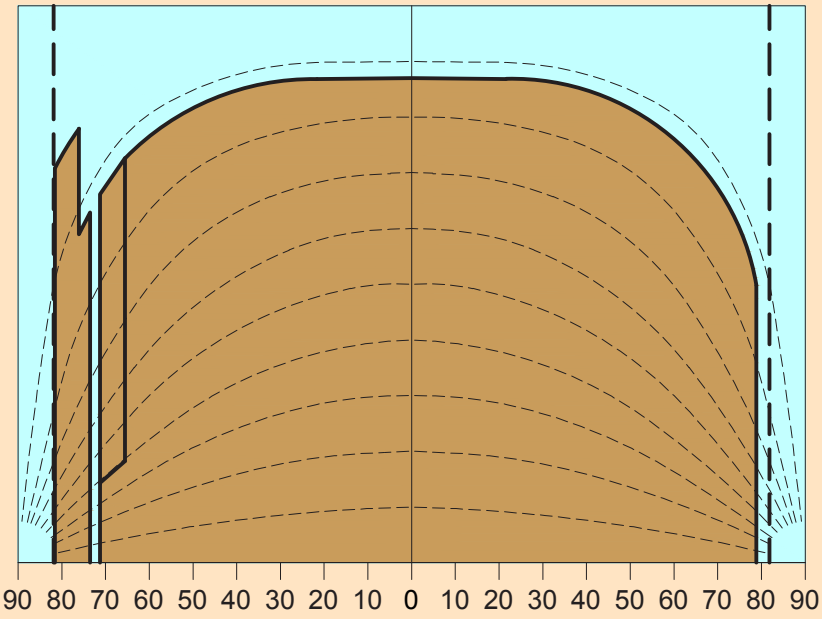





**Proposed**

Obstruction of
Skyplane = 87.4%



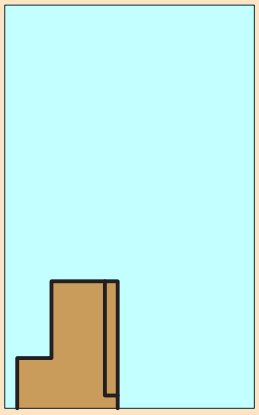


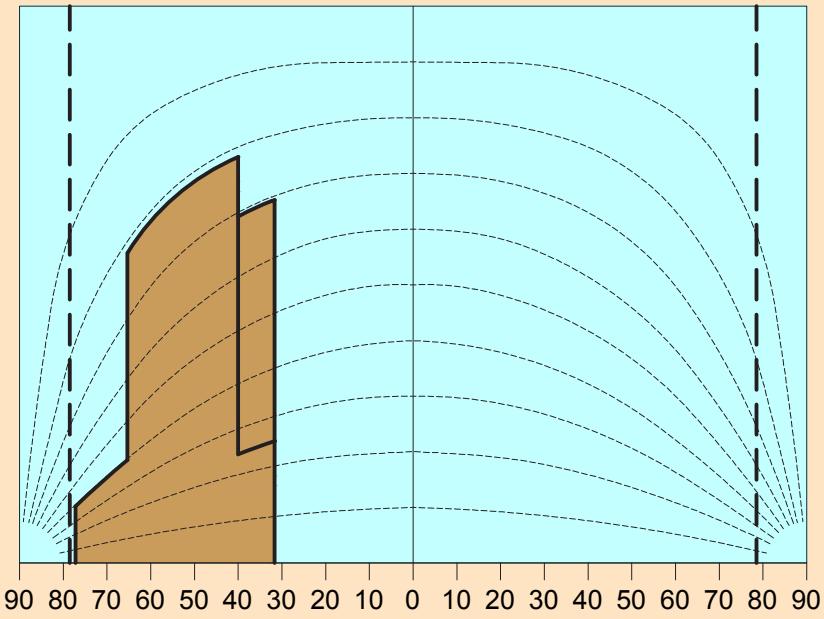

Daylight Analysis
Center of Scotia Street
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 5.7c

**Existing**

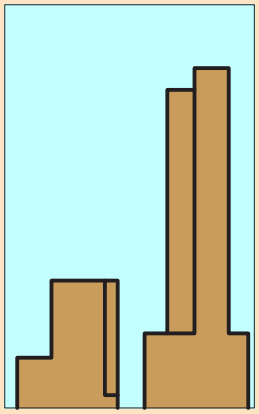
Obstruction of
Skyplane = 30.5%

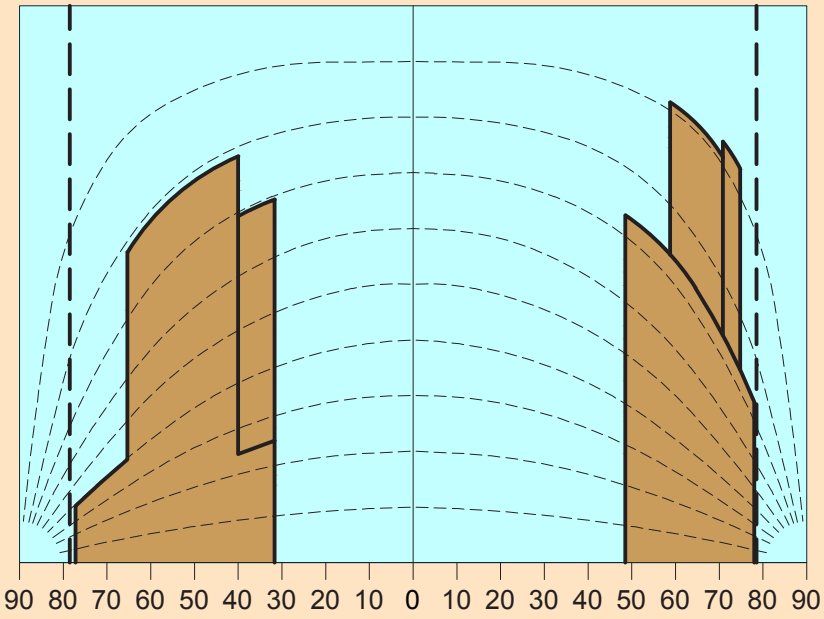





**Proposed**

Obstruction of
Skyplane = 59.2%






Daylight Analysis
Center of Dalton Street
**1000 Boylston Street**
**Boston, Massachusetts**

Figure 5.7d


Source: Google Earth

M# Monitoring Location

R# Receptor Location

Noise Monitoring and Receptor Locations Figure 5.8

**1000 Boylston Street**
**Boston, Massachusetts**

# 6

# Infrastructure

This chapter describes the infrastructure systems that will support the Project. The following utilities are evaluated: stormwater management, wastewater, domestic water and fire protection, natural gas, electricity and telecommunications. Chapter 3, *Sustainability/Green Building Design and Climate Change Preparedness,* discusses energy and water conservation measures being considered as part of the Project.

## 6.1 Summary of Key Findings and Benefits

The key impact assessment findings and benefits related to infrastructure systems include:

- On-site drainage will be treated and infiltrated before discharging to a BWSC-owned and maintained drainage infrastructure in St. Cecilia and Scotia Streets fronting the Project Site;
- The Project will not result in the introduction of any peak flows, pollutants, or sediments that would potentially impact the receiving waters of the local BWSC stormwater drainage system;
- The Project will comply with the 2008 MassDEP Stormwater Management Policy and Standards to the maximum extent practicable, and will improve the quality and quantity of site stormwater runoff compared to existing conditions;
- Groundwater will be recharged in accordance with the Groundwater Conservation Overlay District (GCOD);
- The Proponent will work with BWSC to install a new drainage line along Scotia Street, which is currently only served by a combined drain/sewer system;
- The Project Site is currently serviced by the BWSC for domestic and fire protection water and sanitary sewage conveyance;
- The Project is estimated to generate approximately 69,645 gallons per day of sanitary sewage and will require approximately 76,610 gallons of water per day;
- Appropriate low-flow and low-consumption plumbing fixtures will be installed in all residential units to achieve a reduction in water usage of 30 to 35 percent over the baseline in order to comply with Article 37 of the Boston Zoning Code.

## 6.2 Infrastructure Background

The Project is early in the design process. Based on design performed to date, it is anticipated that the Project will connect to existing city, state, and utility company systems in the adjacent public streets. As design progresses, all required engineering analyses will be conducted and the final design will adhere to all applicable protocols and design standards ensuring that the proposed buildings are properly supported by and properly use city, state, and utility company infrastructure. Detailed design of the Project's utility systems will proceed in conjunction with the design of the buildings and interior mechanical systems.

The systems discussed in this chapter include those owned or managed by BWSC, MassDOT, private utility companies, and on-site infrastructure systems. There will be close coordination among these entities and the Project engineers/architects during the construction process of the Project. Figure 6.1 shows the existing infrastructure at the Project Site.

### 6.2.1 Complexities Associated with Air-Rights Construction

The Project's location over the Turnpike and MBTA commuter rail tracks, as well as its main access points along the Boylston Street and Dalton Street bridges, introduce many complexities into the Project design, including infrastructure design. As shown on Figure 6.1, there is no infrastructure along Boylston Street and limited infrastructure along Dalton Street to which the Project can connect. For this reason, all utility services for the Project will connect to mains along St. Cecilia and Scotia Streets. These external services will connect through the Project Site to the Project buildings along Boylston and Dalton Streets via the overbuild above Cambria Street.

## 6.3 Regulatory Context

The following discusses the regulatory framework of utility connection reviews and standards. All connections will be designed and constructed in accordance with city, state, and federal standards. A complete list of the state and local permits anticipated associated with Project-related infrastructure is included in Chapter 1, *General Information and Project Description*. For the Project:

- BWSC Site Plan approval will be required for all water, sewer, and stormwater systems;
- MassDOT approval may also be required for stormwater systems;
- Sewer connection permit self-certification will be filed with MassDEP;
- The Boston Fire Department will review the Project with respect to fire protection measures such as siamese connections, hydrants, and standpipes;
- Design of the Project Site access, hydrant locations, and energy systems (gas and electric) will also be coordinated with the respective system owners;

- Where new utility connections are needed and existing connections are to be capped, the excavation will be authorized by the Boston Public Works Department (BPWD) through the street opening permit process, as required; and
- Additional information on the regulatory framework for each utility system is included in subsequent sections of this chapter.

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. As design progresses, updated information on the proposed utility connections will be provided to the BPDA if requested during the design review process.

## 6.4 Stormwater Management

The following section describes the stormwater management and infrastructure around the Project Site in the existing conditions and describes how this infrastructure will service the Project in the future.

### 6.4.1 Existing Drainage Conditions

Due to the varying grades, multiple parcels and the nature of the Air Rights Parcels, on-site drainage currently flows to multiple systems. These systems include BWSC's combined infrastructure along public city streets (Cambria and Scotia Streets) and MassDOT drainage infrastructure along the Turnpike and MBTA commuter rail tracks. However, all of the various collection systems flow towards the BWSC combined sewers beneath Dalton Street. According to BWSC maps, most of the stormwater is collected by the 54-inch combined sewer running in the northerly direction (Figure 6.1).

### 6.4.2 Proposed Drainage Conditions

Construction of the Project will incorporate stormwater management and treatment systems that will improve water quality and control peak rates of runoff in comparison to pre-development conditions. The current design of the Project incorporates a multi-step process to manage stormwater. Retention tanks will be used to control flow rates, stormwater treatment chambers/filters will improve water quality and reduce phosphorus loads, and injection wells within the sidewalk along the perimeter of the Podium building will provide infiltration to replenish groundwater. The injections wells will be subject to the City of Boston's Public Improvement Commission (PIC) approval and issuance of a MassDEP Underground Injection Control permit.

Due to the limited existing (exclusive) drainage infrastructure in the Project area, the Project will also work with BWSC to install a new drain line along Scotia Street. This new drain line will tie into existing BWSC infrastructure in Dalton Street. New drainage connections serving the Project are anticipated to connect to this new drain line.

The proposed stormwater system will comply with all applicable city and state guidelines and standards to the maximum extent practicable. Stormwater runoff calculations will be done for existing and proposed conditions for the 2-, 10-, and 100-year storm events. During construction, measures will be implemented to minimize water quality impacts and avoid impacts to abutting properties.

### 6.4.3 Compliance with the Groundwater Conservation Overlay District

The Project is located within the GCOD, as defined in Article 32 of the Zoning Code. This zoning article sets forth requirements promoting the infiltration of runoff from impervious site areas within the district for projects which exceed Article 32 thresholds. To meet the requirements of this Article, projects within the district must retain the first inch of runoff and utilize it to replenish the groundwater table. The current design provides the required volume and utilizes injection wells within the sidewalk to achieve infiltration despite site constraints.

The proposed infiltration system in concert with treatment chambers/filters will addresses stormwater treatment following the MassDEP phosphorous treatment guidelines. Stormwater measures will be designed in accordance with MassDEP's *Massachusetts Stormwater Management Handbook* to the maximum extent practicable.

### 6.4.4 Compliance with MassDEP Stormwater Standards

The Project will comply with the Massachusetts Stormwater Management Regulations to the maximum extent practicable consistent with its status as a Redevelopment Project as defined in Standard 7 of the regulations.

The Project has been designed to fully comply with the following standards:

- Standard 1 – All proposed stormwater conveyances for the Project will not discharge untreated stormwater directly to or cause erosion or scour to wetlands or receiving waters of the Commonwealth;
- Standard 2 – As a result of the improvements associated with the Project, the post-development peak discharge rates will not exceed the pre-development peak discharge rates;
- Standard 3 – Groundwater recharge will be provided through underground injection wells;
- Standard 4 – Stormwater runoff will be captured in a series of deep-sump hooded catch basins and/or directed to proprietary particle separators to provide 80% Total Suspended Solids (TSS) removal prior to discharging to the existing BWSC drainage systems;
- Standard 5 – The Project is not considered a land use with higher potential pollutant loads (LUHPPL). The proposed parking garage will be located above-grade and will drain via a gas/oil separator to the sanitary sewer system;

- Standard 6 – The Project is not located within and will not discharge untreated stormwater to a critical area, as defined by Standard 6;
- Standard 7 - The Project is considered a redevelopment project. The Project will comply with Stormwater Management Standards 1 through 6 to the maximum extent practicable and all other requirements of the Stormwater Management Standards and will thereby materially improve upon existing conditions;
- Standard 8 –Sediment and erosion controls will be incorporated as part of the design of this Project and employed during construction;
- Standard 9 – An operations and maintenance plan (O&M Plan), including long-term BMP operation requirements, will be prepared for the Project to ensure proper maintenance and functioning of the proposed stormwater management system. This O&M Plan will be prepared as part of the infrastructure design for the Project;
- Standard 10 – There will be no illicit connections associated with the Project.

## 6.5 Sanitary Sewage

The following sections describe the sanitary sewer infrastructure around the Project Site and describe how this infrastructure will service the Project.

### 6.5.1 Existing Sewer System

The BWSC owns and maintains the sanitary sewer lines in the vicinity of the Project Site. The infrastructure along Boylston Street, Dalton Street, Scotia Street, Cambria Street and St. Cecilia Street surrounds the Project Site, as shown in Figure 6.1, which includes:

- The West Side Interceptor, a 60-inch combined sewer along Dalton Street that transitions into a 57-inch by 66-inch combined sewer and then to a 72-inch combined sewer. This flows in a southerly direction and ultimately flows to the Deer Island Waste Water Treatment Plant.
- A 54-inch combined sewer along Dalton Street that transitions to a 44-inch by 68-inch combined sewer, which increases to 51-inch by 60-inch and flows in a northerly direction.
- A 10-inch sanitary sewer under Boylston Street, which connects to the West Side Interceptor.
- A 12-inch sanitary sewer, which runs under portions of Boylston Street, St. Cecilia Street, and Cambria Street. This connects to the 54-inch combined sewer along Dalton Street.
- A 12-inch sanitary sewer under Scotia Street, which connects to the 54-inch combined sewer along Dalton Street.

### 6.5.2 Proposed Sewage Flow and Connection

New sanitary connections serving the Project are anticipated to connect to sewer lines along St. Cecilia and/or Scotia Streets. The exact location and size of these connections will be determined as the design progresses. The Project will have a covered/enclosed parking garage and a loading dock. A gas/oil separator will treat the drainage from these vehicular areas before discharging to BWSC infrastructure. The Project will also have restaurants and/or coffee shops. Grease traps within the building will treat wastewater generated from commercial kitchens.

For the purposes of estimating the sewage flow rates, the overall gross square footage (including mechanical space) is assumed instead of the floor area ratio (FAR) square footage in order to present a conservative analysis. Generation rates from the Massachusetts State Environmental Code (Title 5) were used. The Project's approximately 342 residential units (up to approximately 567 bedrooms) are projected to generate an estimated 62,370 gallons per day of sewage. The proposed restaurant (170 seats within up to approximately 6,500 square feet) will generate approximately 5,950 gallons per day. The proposed retail use (up to approximately 26,500 square feet, including mechanical space) will generate approximately 1,630 gallons per day. The total generation for the Project is estimated to be approximately 69,645 gallons per day.

The calculations for the wastewater generation are presented in Table 6-1. At this stage of the design, options for potential sewer connections are being evaluated and will be coordinated with the BWSC.

**Table 6-1 Estimated Future Sewer Generation**

| Program Type | Units | Generation Rate | Sewer Generation (GPD) |
|---|---|---|---|
| Residential | 567 bedrooms | 110 gallons/bedroom | 62,370 GPD |
| Restaurant | 170 seats (6,500 sf) | 35 gallons/seat | 5,950 GPD |
| Retail | 26,500 sf | 50 gallons/sf | 1,325 GPD |
| **TOTAL** | | | **69,645 GPD** |

Note: Based on MassDEP 310 CMR 15.203 flow calculation factors
GPD = gallons per day; sf = square feet

Since the Project is expected to generate new wastewater flows of approximately 69,645 gallons per day, certain regulatory thresholds are triggered. The BWSC requires that new developments generating greater than 15,000 gallons per day of net new wastewater flow provide mitigation to offset clean flow inflow and infiltration (I/I) present in the collection system. I/I is the component of flows in sanitary sewer systems that does not come from wastewater generated by building. I/I includes groundwater infiltration from leaking/broken sewer infrastructure, as well as stormwater connections from roof leaders and drainage infrastructure. Following MassDEP and BWSC policy, projects that generate flows in excess of the 15,000-gallon threshold are responsible for mitigating I/I at a ratio of 4:1 relative to the net-new wastewater generated. This will result in a significant mitigation payment for the

Project. The Proponent is committed to working with BWSC to define the appropriate I/I mitigation.

## 6.6 Domestic Water and Fire Protection

The following sections describe the domestic water infrastructure around the Project Site and how this infrastructure will service the Project.

### 6.6.1 Existing Water Supply System

The BWSC owns and maintains the water mains in the vicinity of the Project Site (Figure 6.1). BWSC record drawings show that streets surrounding the Project Site are serviced by mostly southern low-service pipes. These vary in size and include: a 12-inch main in portions of Cambria Street, a 12-inch main in St. Cecilia Street, an 8-inch main in Scotia Street, and two 12-inch mains in Dalton Street. One of the mains in Dalton Street is a southern high service pipe which is out of service along Dalton Street Bridge due to leaking. The installation dates and materials of these pipes also vary, from pit-cast iron pipe installed in 1904 to 1919 (relined in 2011), cast iron cement lined installed in 1962 to 1965, and ductile iron cement lined installed in 2011. The existing water infrastructure provides a high level of service and diversity to the Back Bay neighborhood. Additionally, five fire hydrants are currently in close proximity to the Project Site.

### 6.6.2 Proposed Water Demand and Connection

New domestic water services and fire service laterals for the Project are anticipated to connect to existing lines along St. Cecilia Street. The exact location and size of proposed water connections will be determined as the design progresses.

Domestic water demand is based on estimated sewage generation with an added factor of 10 percent for consumption, system losses, and other use. Based upon sewage generation rates outlined in the MassDEP Sewer Connection and Extension Regulations, 310 CMR 15.203.f, the Project will require approximately 76,610 gallons per day. However, appropriate low-flow and low-consumption plumbing fixtures will be installed in all residential units to achieve a reduction in water usage of 30 to 35 percent over the baseline in order to comply with Article 37 of the Boston Zoning Code (as LEED "certifiable"), as discussed in Chapter 3, *Sustainability/Green Building Design and Climate Change Preparedness*. The Proponent will continue to consider and evaluate methods to conserve water as building design evolves.

New water connections will be designed in accordance with BWSC design standards and requirements. Water services to the new buildings will be metered in accordance with BWSC's Site Plan Requirements and Site Review Process. The review includes, but is not limited to, sizing of domestic water and fire protection services, calculation of meter sizing, backflow prevention design, and location of hydrants and siamese connections to ensure conformity with BWSC and BFD requirements. The Proponent will provide for the connection of the meter to BWSC's automatic

meter reading system. Fire protection connections on the Project Site will also need approval of the BFD.

## 6.7 Other Utilities

The following sections describe other utility infrastructure (natural gas, electrical, telephone and telecommunications) around the Project Site and describe how this infrastructure will service the Project.

### 6.7.1 Natural Gas Service

National Grid Energy ("NGrid") owns and operates the gas mains and services in the vicinity of the Project Site (Figure 6.1). Survey plans indicate an 8-inch main under Dalton Street, a 4-inch main within Cambria Street, a 6-inch main along St. Cecilia Street, and a 2-inch service beneath Scotia Street. The configuration of the proposed service will be developed with the utility company as the Project design progresses.

New natural gas service will be needed to serve the mixed-use residential apartments, condominiums, residential amenity areas, and commercial retail spaces. It is anticipated that the gas service will be supplied from the low pressure gas main in Stuart Street to a shared BWSC and NGrid meter room located within the Podium. The room will be adjacent to the foundation wall one level below grade level and support all NGrid requirements (to be determined) for internal meter assemblies. At this time, the Proponent anticipates one base building meter and an installation fabricated to benefit the possibility of at least three future restaurant meters.

The preliminary equipment selections require a peak gas demand of approximately 57,260 cubic feet/hour and a delivery pressure from NGrid of four (4) inches of water column at the discharge of the gas service meter assembly.

The estimated gas requirements for the proposed equipment is shown it Table 6-2.

**Table 6-2 Natural Gas Requirements for Proposed Equipment**

| Description | Quantity | Cubic Feet/Hour (CFH) | Total (CFH) |
|---|---|---|---|
| Rental Apartments | | | |
| HVAC Boilers | 2 | 3,250 | 6,500 |
| Domestic Water Heaters | 2 | 1,500 | 3,000 |
| Studio-Gas Cooktop-2 Burner | 31 | 25 | 775 |
| 1 Bedroom-Gas Cooktop-4 Burner | 71 | 40 | 2,840 |
| 2 Bedroom-Gas Cooktop-4 Burner | 46 | 40 | 1,840 |
| 3 Bedroom-Gas Cooktop-5 Burner | 18 | 55 | 990 |
| Studio Fire Places - Small | 31 | 30 | 930 |
| 1 Bedroom Fire Places - Small | 71 | 30 | 2,130 |
| 2 Bedroom Fire Places - Large A | 46 | 50 | 2,300 |
| 3 Bedroom Fire Places - Large B | 18 | 60 | 1,080 |

| Description | Quantity | Cubic Feet/Hour (CFH) | Total (CFH) |
|---|---|---|---|
| Condominium Residences | | | |
| HVAC Boilers | 4 | 2,750 | 11,000 |
| Domestic Water Heaters | 3 | 1,500 | 4,500 |
| Condo-Gas Cooktop Allowance | 105 | 60 | 6,300 |
| Condo-Fire Places Allowance | 105 | 90 | 9,450 |
| Amenity / Shell Space | | | |
| Pool Equipment (estimated) | 1 | 400 | 400 |
| Gas Fire Places {estimated) | 3 | 75 | 225 |
| Restaurant | 1 | 3,000 | 3,000 |
| **Total Connected Load** | | | **57,260** |

Notes: HVAC = heating, ventilation, and air conditioning

NGrid prefers to locate meters and regulators outside the building. However, due to the building and Project Site constraints, the Proponent is requesting NGrid's consideration, and special requirements, for an interior meter location.

The Project may require a gas booster pump to enhance the utility line pressure. Further information and gas booster request letters will follow as the design proceeds.

### 6.7.2 Electrical Service

Eversource owns and operates the electric facilities in the vicinity of the Project Site (Figure 6.1). Survey plans indicate underground power facilities along Dalton Street, Cambria Street, St. Cecilia Street, and Scotia Street along the frontage of the Project Site. Potential connections for the Project could be made from any of these public streets. Further into design of the Project, the Proponent's electrical engineer and civil engineer will coordinate with Eversource on future configurations of the power system and connections.

New electrical service will be needed to serve the mixed-use residential apartments, condominiums, residential amenity areas, and commercial retail spaces. The Project will include power, lighting, and fans for the Turnpike tunnel and parallel rail tunnel. Temporary service will be required beforehand. The Proponent anticipates that the electrical service will be supplied from Eversource. The transformer vault will be located at the southwest corner of the building at the corner of Scotia Street and St. Cecilia Street. At this time, the Proponent is anticipating five 4,000A, 480/277V, three-phase services, as shown in Table 6-3.

**Table 6-3 Electric Service Requirements**

| | Connected kVA | Demand kVA |
|---|---|---|
| East Building / Garage | 5819 | 1,791 |
| East Building HVAC | 1,490 | 1192 |
| West Building Residential / Garage | 6960 | 2,811 |
| West Building HVAC / Amenities | 2,089 | 1671 |
| Subtotal | 15,940 | 7,465 |
| MA Turnpike / Rail Tunnel | 1,050 | 840 |
| **Total** | **16,990** | **8,305** |

The preliminary equipment selections require a peak connected demand of approximately 8,064 thousand volt-amps (kVA).

### 6.7.3 Telephone Service

Verizon owns and operates the telephone facilities and services in the vicinity of the Project Site (Figure 6.1). Survey plans indicate that there are two manholes in St. Cecilia Street supporting laterals along St. Cecilia, Cambria, and Scotia Streets. The configuration of the proposed service will be developed with Verizon as the Project design progresses.

### 6.7.4 Telecommunication Service

Comcast and RCN each owns and operates telecommunications facilities and services in the vicinity of the Project Site. Survey plans indicate that cable is located in Dalton Street and along portions of Scotia Street. Telecommunications for the Project Site could be provided from either of these streets. The configuration of the proposed service will be developed with the providers as design progresses.

### 6.7.5 Protection of Utilities

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


Existing Utility Infrastructure

Figure 6.1

**1000 Boylston Street**
**Boston, Massachusetts**

# 7

# Historic Resources

This chapter identifies properties that are either in the Inventory of Historic and Archaeological Assets of the Commonwealth or listed in the National or State Registers of Historic Places that are located on, or are within close proximity to, the Project Site. This chapter also describes any effects the Project may have on these properties.

A search of the Massachusetts Historical Commission's ("MHC") Massachusetts Cultural Resource Information System ("MACRIS") database and mapping tool was completed to identify previously recorded above-ground and archaeological resources located on or within a ¼-mile radius of the Project Site. Figure 7.1 shows the location and the proximity of these resources.

## 7.1 Summary of Key Findings and Benefits

The key findings and benefits related to historic and cultural resources include:

- There are no designated or inventoried properties located on the Project Site;
- There are 37 recorded above-ground historic resources, including individual properties and areas/districts, located within a one-quarter mile radius of the Project Site;
- Twelve properties within a ¼-mile radius are listed in the National and/or State Registers, including seven historic districts and five individually designated buildings;
- An additional 25 individual buildings and two areas within the one-quarter mile radius have been inventoried;
- The south boundary of the Back Bay Historic District (National Register)/Back Bay Architectural District (Local Historic District) lies due north across Boylston Street from the Project Site; and
- The Project will span and cover undeveloped areas of the Turnpike, thereby knitting together the Back Bay and Fenway neighborhoods of the City.

## 7.2 Historic Context

Located across the railroad tracks from the 19th century Back Bay residential neighborhood, the Project Site was part of a mostly industrial area until the mid-20th century, when the Boston & Albany Railyard was redeveloped. Prior to

redevelopment, the north portion of the Project Site above the Turnpike contained tracks that ran through the railyard on the south side, which was depressed below street level; a series of sidings occupied much of the rest of the railyard. The south portion of the Project Site lining Cambria Street contained a series of one- to five-story commercial buildings, which by the 20th century were mostly occupied by carpenters, printers, and automobile-related businesses. At the sharply angled corner of St. Cecilia Street, a few buildings had storefronts on Boylston Street. For years, the expansive railyard was considered an obstacle to westward-trending development; however, in the 1960s the Project Site was adapted in response to the Turnpike expansion from Route 128. The former rail right-of-way became the Turnpike, while the tracks were moved to their current location immediately north of Cambria Street. The parking garage on the south side of Cambria Street and the open lawn within the Project Site were also constructed during this redevelopment. The transportation infrastructure remained below street level, as the railyard had been, and the east portion of the former railyard became the John B. Hynes Memorial Auditorium (rebuilt in 1988 as the Hynes Convention Center).

As a result, the Project Site is immediately surrounded by structures that were developed following the Turnpike extension, but this pocket is surrounded by an area that was developed much earlier. This wider area consists predominantly of blocks of brick rowhouses and large institutional buildings constructed in the late 19th century. Back Bay (the waterbody) to the north was filled beginning in 1857, with construction reaching Massachusetts Avenue in the 1880s. Although much of the neighborhood was residential, the block closest to the Project Site contained large police and fire department buildings, with stables fronting Newbury Street that became auto shops in the 20th century. The land-making and settlement of the Back Bay spurred nearby development in the late 19th and early 20th century. To the south of the Project Site is St. Cecilia Roman Catholic Church, which was dedicated in 1894 and built by a largely working-class community that served the wealthier residents of the Back Bay. The intersection of Boylston Street and Massachusetts Avenue, to the west of the Project Site, is home to a small commercial district as well as the early 20th century bank and theater buildings now used by the Berklee College of Music. North of Boylston Street is the entrance to the Hynes Convention Center MBTA subway station. Completed in 1914 for the Boylston Street Subway, the station initially contained a street-level station and a turn-around facility below ground. The upper station was demolished during the railyard redevelopment, leaving the underground subway station.

## 7.3 Historic Resources

On-site historic resources, historic resources in the Project Site vicinity, and archaeological resources are detailed below.

### 7.3.1 On-Site Resources

There are no designated or inventoried properties located on the Project Site, which is undeveloped. The north portion of the Project Site currently consists of open air above the Turnpike and the MBTA commuter rail tracks, which are below street level. The south portion of the Project Site includes a grass lawn at the southeast corner of the Cambria Street and St. Cecilia Street intersection, adjacent to a six-story concrete parking garage.

### 7.3.2 Historic Resources in Project Site Vicinity

The area surrounding the Project Site has been heavily documented, resulting in numerous listed and inventoried historic resources as listed in Table 7-1 and identified in Figure 7.1. Within a ¼-mile radius are seven National Register and/or State Register-listed districts, which are partially or wholly contained within the radius, as well as five individually-designated resources.

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

| Map No. | Resource Name | Location | MHC Inventory No. | Designation |
|---|---|---|---|---|
| BOS.BT | Back Bay Historic District | | BOS.BT | NRDIS 8/14/1973 |
| BOS.BW | Back Bay Architectural District | | BOS.BW | SR, LHD 9/3/1966 |
| BOS.BX | Commonwealth Ave. Mall | | BOS.BX | NRDIS 08/14/1973 |
| BOS.JD | Back Bay Fens, Section of | | BOS.JD | LL, NRDIS 12/08/1971 |
| BOS.IO | Olmstead Park System | | BOS.IO | NRDIS 12/8/1971 |
| BOS.JF | Fenway-Boylston St. Historic District | | BOS.JF | NRDIS 9/4/1984 |
| BOS.VI | St. Cecilia Roman Catholic Church Complex | | BOS.VI | N/A |
| BOS.ZR | Christian Science Center Complex | | BOS.ZR | SR, LL 7/14/2011 |
| BOS.ABB | St. Germain St, 8-65 | | BOS.ABB | N/A |
| 1 | Ayer, Frederick Mansion | 395 Commonwealth Ave | BOS.3663 | NHL 4/5/2005; NRIND 8/14/1973 |
| 2 | Fenway Studios Building | 30 Ipswich St | BOS.7500 | NHL 8/5/1998; NRIND 9/13/1978; PR 7/27/2000 |

**Table 7-1 Historic Resources in the Vicinity of the Project Site (continued)**

| Map No. | Resource Name | Location | MHC Inventory No. | Designation |
|---|---|---|---|---|
| 3 | Boylston Apartments | 780 Boylston St | BOS.2628 | N/A |
| 4 | Fenmore Apartments | 1109 Boylston St | BOS.7354 | N/A |
| 5 | Fenmore Apartments | 1111 Boylston St | BOS.7355 | N/A |
| 6 | Fenmore Apartments | 64 Charlesgate East | BOS.7356 | N/A |
| 7 | Church of the Redemption (Universalist) | 1103 Boylston St | BOS.7353 | N/A |
| 8 | State Street Trust Company Building | 1046-1050 Boylston St | BOS.2629 | N/A |
| 9 | State Street Trust Company Building | 130-132 Mass. Ave | BOS.7518 | N/A |
| 10 | Fenway Theater | 136 Mass. Ave | BOS.7519 | N/A |
| 11 | O'Reily, John Boyle Memorial | Boylston St | BOS.9274 | NRIND 12/08/1971 |
| 12 | Massachusetts Historical Society Building | 1154 Boylston St | BOS.7352 | NHL 10/15/1966; NRIND 10/15/1966; PR 6/27/1997 |
| 13 | Webber, John P. Row House | 12 Edgerly Rd | BOS.7371 | N/A |
| 14 | Webber, John P. Row House | 14 Edgerly Rd | BOS.7372 | N/A |
| 15 | Webber, John P. Row House | 16 Edgerly Rd | BOS.7373 | N/A |
| 16 | Webber, John P. Row House | 18 Edgerly Rd | BOS.7374 | N/A |
| 17 | Webber, John P. Row House | 20 Edgerly Rd | BOS.7375 | N/A |
| 18 | Webber, John P. Row House | 22 Edgerly Rd | BOS.7376 | N/A |
| 19 | Webber, John P. Row House | 24 Edgerly Rd | BOS.7377 | N/A |
| 20 | Webber, John P. Row House | 26 Edgerly Rd | BOS.7378 | N/A |
| 21 | Webber, John P. Row House | 28 Edgerly Rd | BOS.7379 | N/A |

**Table 7-1 Historic Resources in the Vicinity of the Project Site (continued)**

| Map No. | Resource Name | Location | MHC Inventory No. | Designation |
|---|---|---|---|---|
| 22 | Webber, John P. Row House | 30 Edgerly Rd | BOS.7380 | N/A |
| 23 | Smith, William H. Row House | 179 Mass. Ave | BOS.7522 | N/A |
| 24 | Smith, William H. Row House | 181 Mass. Ave | BOS.7523 | N/A |
| 25 | Mechanics – Prudential Subway Station | Huntington Ave | BOS.9020 | N/A |
| 26 | Thomas, David W. Row House | 57 Hemenway St | BOS.7477 | N/A |
| 27 | Thomas, David W. Row House | 59 Hemenway St | BOS.7478 | N/A |
| 28 | Thomas, David W. Row House | 61 Hemenway St | BOS.7479 | N/A |
| 29 | New Riding Club, The | 52 Hemenway St | BOS.7466 | NRIND 8/20/1987 |
| 30 | Bawford, A.J. Store | 58 Burbank St | BOS.15525 | N/A |
| 31 | Hemenway Chambers – Hotel Hemenway | 91 Westland Ave | BOS.7708 | N/A |
| 32 | Horticultural Hall | | BOS.7521 | NRIND 5/30/1975 |

Notes:
NRIND National Register of Historic Places, Individual Listing
NRDIS National Register of Historic Places, District
NHL National Historic Landmark
LHD Local Historic District (State Register of Historic Places)
LL Boston Local Landmark (State Register of Historic Places)
PR Preservation Restriction

**Back Bay Historic District (BOS.BT)/Back Bay Architectural District (BOS.BW)**

The entire north portion of the ¼-mile radius is occupied by the National Register-listed Back Bay Historic District, located directly north of the Project Site. The district is a largely residential area constructed during the late 19th century on newly-filled tidal flats on the south bank of the Charles River. While recognized for its dense concentration of complementary high-style brownstones arranged in a strict grid pattern, the district also boasts a number of institutional buildings, hotels, apartment buildings, and commercial buildings, as well as public spaces such as the Commonwealth Avenue Mall and Copley Square. The predominantly residential portion of the district has also been designated as a local historic district, the Back Bay Architectural District. Within the Back Bay Historic District is the National Register-listed Commonwealth Avenue Mall (BOS.BX). This is the centerpiece of the boulevard and an integral part of the Back Bay plan of 1858. The mall is 100 feet wide with ornamental trees and statuary, and forms a vital link in the public park system. Also located within the district is the Frederick Ayers Mansion (BOS.3663) at

395 Commonwealth Avenue. A National Historic Landmark, it was constructed between 1899 and 1902 and is the only one of three surviving residences designed by American artist and designer, Louis Comfort Tiffany.

**Olmsted Park System (BOS.IO)/Sections of Back Bay Fens (BOS.JD)**

At the west end of the one-quarter mile radius is the National Register-listed Olmsted Park System (BOS.IO), one of the first park systems created in the United States and which served as a model for other metropolitan areas. This park system created municipal open space throughout the City, rather than in just one large area, which enabled the City to be connected to the suburbs, and includes recreation space, Boston Common and Boston Public Garden, as well as other amenities. A large portion of the district has been designated as a Boston Landmark as well, the Sections of Back Bay Fens (BOS.JD) district. The district also contains the John Boyle O'Reily Memorial (BOS.9274) on Boylston Street, which is individually listed in the National Register. The work was designed by American sculptor Daniel Chester French and cast in 1896. O'Reily was a poet, patriot, and adventurer, born in Ireland but banished to West Australia for participating in the Fenian movement to free Ireland from British rule. He then made his way to Boston and became a leader in Boston's intellectual community.

**Fenway-Boylston Street Historic District (BOS.JF)**

Located just east of the Back Bay Fens is the Fenway-Boylston Street Historic District consisting of approximately 20 buildings located between Hemenway Street and the Back Bay Fens, south of Boylston Street. While most of the contributing resources to this National Register-listed district are rowhouses dating to the turn of the 20th century, the district also contains the Boston Medical Library, an early 20th century apartment house, and the 1899 Massachusetts Historical Society Building (BOS.7352), a National Historic Landmark.

**Christian Science Center Complex (BOS.ZR)**

The Christian Science Center Complex (BOS.ZR) is located two blocks south of the Project Site. The Boston Landmark-designated complex is historically and architecturally significant as an extraordinary example of the evolution of a religious complex, for its association with Mary Baker Eddy, the founder of the First Church of Christ, Scientist, and for its association with several distinguished architects and landscape architects over the span of nearly a century including Charles Brigham, Solon S. Beman, I. M. Pei, Araldo Cossutta, Hideo Sasaki and Stuart Dawson.

**Fenway Studios (BOS.7500)**

The Fenway Studios (BOS.7500), a National Historic Landmark located west of the Project Site near the Back Bay Fens, features an Arts and Crafts movement façade. The building was constructed in 1906 and is the only studio in the United States designed by artists, and still used by artists.

**New Riding Club (BOS.7466)**

Located southwest of the Project Site is the National Register-listed New Riding Club (BOS.7466. Located on Hemenway Street, it is a large-scale Tudor Revival style building designed c. 1890 by the Boston firm of Cummings and Sears. The club was built as a horse stable with clubhouse facilities, riding ring, and services for horses. Located next to the fashionable Fens neighborhood, the New Riding Club attracted an elite membership of Boston's socially prominent families.

**Horticultural Hall (BOS.7521)**

Located just south of the Christian Science Center Complex, at the edge of the one-quarter mile study area, is Horticultural Hall (BOS.7521). This 1901 Classical Revival building designed by Wheelwright and Haven is a cultural institution in the Back Bay area.

**Inventoried Properties**

South of the Project Site are two inventoried areas: the Saint Cecilia Roman Catholic Church Complex (BOS.VI); and the Saint Germain Street Area (#s 8-65) (BOS.ABB). Saint Cecilia Roman Catholic Church was built in the 1890s by a community of workers associated with the railroad, or in service to wealthy families of Commonwealth Avenue. Saint Germain Street is a well-preserved block of three-story brick row houses, a niche of 1890s residential development located between the modern commercial and institutional uses along Massachusetts Avenue.

Directly west of the Project Site are three individually inventoried properties. The State Street Trust Company Building (BOS.2629/BOS.7518), currently the Berklee College of Music, is a low-rise Classical Revival bank building with façades on Boylston Street and Massachusetts Avenue. It was designed by Allen and Collens, a firm known for its modern Gothic Revival work. The building was originally planned as the first stage in the construction of a six-story office building that was never executed. The Classical Revival Fenway Theater (BOS.7519), uptown Boston's first movie house, was constructed in 1914 to open at the same time as the nearby streetcar station (now Hynes Convention Center Station). It currently serves as Berklee's Performance Center. Further west on Boylston Street, adjacent to the Back Bay Fens, are the Fenmore Apartments (BOS.7354-7356). This brick complex, consisting of connected contiguous buildings, was constructed in 1914 in the Classical Revival style with elaborate limestone Beaux Arts-style center entrances. Next to the apartment complex is the Church of the Redemption (Universalist) (BOS.7353), a 1923 Neo-Gothic Revival style granite church that later served a Roman Catholic congregation.

To the southwest of the Project Site, there are several individual inventoried properties. Closest to the Project Site is a contiguous block referred to as the John P. Webber Row Houses (BOS.7371-7380), which consists of a group of Queen Anne/Classical Revival brick rowhouses constructed c. 1890**.** Across Massachusetts Avenue are the William H. Smith Row Houses (BOS.7522, BOS.7523), which were remodeled into commercial buildings. Also located in this area are the 1895

Georgian Revival David W. Thomas Row Houses on Hemenway Street (BOS.7477-7479). Located at the south edge of the one-quarter mile radius are the Hotel Chambers-Hotel Hemenway (BOS.7708), a 1900 Classical Revival brick apartment house with limestone detailing, and the A.J. Bawford Store (BOS.15525), constructed in 1915 and updated with a new storefront c. 1960.

At the west boundary of the ¼-mile radius are two inventoried properties. The Mechanics-Prudential Subway Station (BOS.9020) under Huntington Avenue was completed in 1941 for the Boston Transit Department to serve the nearby cultural institutions, and funding was largely provided by the Works Progress Administration. The 1964 Boylston Apartments (BOS.2628), part of the Prudential Center complex, is a high-rise apartment building of concrete with glass curtain walls throughout.

### 7.3.3 Archaeological Resources

There are no known archaeological resources within the Project Site that are listed in the State and National Registers or included in the Inventory. The entire Project Site was redeveloped in the 1960s and much of it is currently located over the Turnpike; therefore, it is unlikely that the Project will affect previously unidentified archaeological resources.

## 7.4 Potential Impacts to Historic Resources

### 7.4.1 Building Design/Public Realm

As described in Chapter 2, *Urban Design*, the Project has been designed to repair the discontinuity in the urban street wall left behind by the Turnpike extension through Boston, support the design of high-quality, continuous street frontage and enhance connectivity between the Back Bay and Fenway neighborhoods.

The Project will considerably enhance the architectural character of this area, which is frequented by local residents and visitors alike. The Project responds to the urban-scale design goals of the "high spine" planning strategy with the introduction of the East and West residential buildings. The Project respects the scale and character of the urban street wall and the Back Bay Architectural District by placing the lower-scale elements of the Project closest to Boylston Street and setting back the taller elements of the Project, as recommended in the Civic Vision.

At the street level, the Project includes significant, appropriately-scaled streetscape improvements, including creating street level retail, restaurant and lobby spaces as part of a new active streetscape along Boylston Street, where this highly-visible pedestrian environment is currently characterized by a vacant site comprised of both land and air rights above and adjacent to the Turnpike.

The Project is not expected to introduce materials that are incompatible with the current streetscape and skyline, as visible from these properties.

### 7.4.2 Shadows

A shadow impact analysis was conducted for the Project, consistent with both Section 80B-2(c) and Section 41-16(1) of the Code. The results of the shadow analysis are provided in Section 5.3 of Chapter 5, *Environmental Protection*. All shadow impacts have been minimized to the maximum extent practicable to avoid any noticeable effect on pedestrian use patterns and historic resources. Most new shadows will be concentrated to the north; therefore, proposed shadow impacts to historic properties are limited to the Back Bay National Register and Architectural Districts. Generally, the contributing buildings located directly across Boylston Street from the Project Site would receive approximately three to four hours daily of new shadows throughout the year. The majority of shadow impacts to the district would be limited to one additional hour of new shadows daily, with some buildings on Newbury Street and Massachusetts Avenue projected to have two additional hours. The extent of the one-hour shadow impacts increases northward as the year progresses.

### 7.4.3 Wind

As discussed in Section 5.2 of Chapter 5, *Environmental Protection*, the Proponent and project design team have commenced a quantitative wind analysis (wind tunnel) to compare existing and proposed pedestrian level wind conditions, pursuant to the Section B.1 of the BPDA Development Review Guidelines because the Project includes one or more buildings greater than 150 feet high. The Proponent and design team will continue to work closely with the wind consultant to proactively incorporate wind mitigation techniques into the design of the buildings. A complete wind comfort study will be presented in the forthcoming DPIR.

### 7.4.4 Geotechnical

As discussed in Section 5.11.3 of Chapter 5, *Environmental Protection,* the foundation design and construction methodology for the Project have taken into consideration the dense urban environment, abutting infrastructure and proximity to nearby historic resources. The geotechnical design and performance criteria are based on a thorough analysis of subsurface geotechnical conditions, as well as experience with successful implementation of projects that have protected nearby historic resources. To minimize ground movement, ground vibrations, and impact to groundwater levels, the Project will not use open deep excavation, pile driving, or long-term dewatering.

A preconstruction survey of abutting structures will be conducted to establish a baseline of geotechnical conditions. Throughout construction, ongoing instrumentation monitoring will evaluate movement, vibration and groundwater levels, and will ensure that performance criteria are being met. This will allow for early detection of potential impacts, modification to procedures and, where applicable, implementation of additional mitigation measures.

## 7.5 Regulatory Context

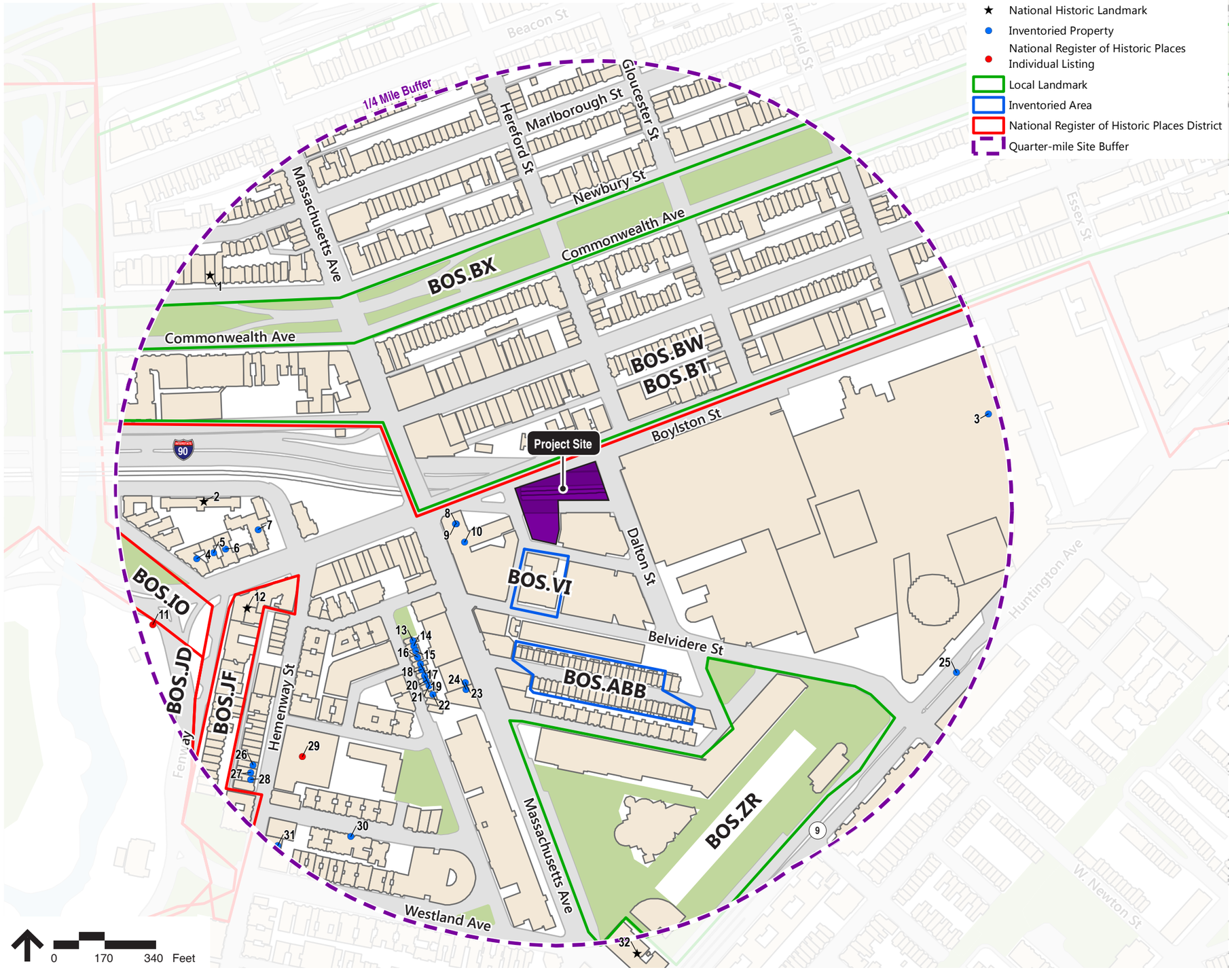
This Project is subject to review or opportunity for comment by both the Boston Landmarks Commission (BLC), and the MHC.

### 7.5.1 Boston Landmarks Commission Article 80 Review

Under the Article 80 review process, this PNF will be circulated for comment to all City agencies, including the BLC.

### 7.5.2 Massachusetts Historical Commission Review

The MHC has review authority over projects requiring any state or federal action, such as land transfers, funding, licensing, permitting, and/or approvals, in order to evaluate potential direct or indirect impacts to properties listed in, or eligible for listing in, the National and State Registers of Historic Places, in compliance with State Register Review requirements (M.G. L. Chapter 9, Sections 27-27c, as amended by Chapter 254 of the Acts of 1988) and Section 106 of the National Historic Preservation Act of 1966. The submittal of the MEPA ENF will initiate MHC's review of the Project. The Proponent will provide a copy of this PNF as part of the ENF to the MHC for additional context.




- ★ National Historic Landmark
- Inventoried Property
- National Register of Historic Places Individual Listing
- Local Landmark
- Inventoried Area
- National Register of Historic Places District
- Quarter-mile Site Buffer

## Individual Properties Within 1/4 Mile Of Site

| ID | Name |
|---|---|
| 1 | Ayer, Frederick Mansion |
| 2 | Fenway Studios Building |
| 3 | Boylston Apartments |
| 4 | Fenmore Apartments |
| 5 | Fenmore Apartments |
| 6 | Fenmore Apartments |
| 7 | Church of the Redemption (Universalist) |
| 8 | State Street Trust Company Building |
| 9 | State Street Trust Company Building |
| 10 | Fenway Theatre |
| 11 | O'Reily, John Boyle Memorial |
| 12 | Massachusetts Historical Society Building |
| 13 | Webber, John P. Row House |
| 14 | Webber, John P. Row House |
| 15 | Webber, John P. Row House |
| 16 | Webber, John P. Row House |
| 17 | Webber, John P. Row House |
| 18 | Webber, John P. Row House |
| 19 | Webber, John P. Row House |
| 20 | Webber, John P. Row House |
| 21 | Webber, John P. Row House |
| 22 | Webber, John P. Row House |
| 23 | Smith, William H. Row House |
| 24 | Smith, William H. Row House |
| 25 | Mechanics - Prudential Subway Station |
| 26 | Thomas, David W. Row House |
| 27 | Thomas, David W. Row House |
| 28 | Thomas, David W. Row House |
| 29 | New Riding Club, The |
| 30 | Bawford, A. J. Store |
| 31 | Hemenway Chambers - Hotel Hemenway |
| 32 | Horticultural Hall |

## Districts/Areas Within 1/4 Mile Of Site

| ID | Name |
|---|---|
| BOS.BW | Back Bay Architectural District |
| BOS.JD | Back Bay Fens, Sections of |
| BOS.BT | Back Bay Historic District |
| BOS.ZR | Christian Science Center Complex |
| BOS.BX | Commonwealth Avenue Mall |
| BOS.JF | Fenway - Boylston Street Historic District |
| BOS.IO | Olmsted Park System |
| BOS.VI | Saint Cecilia Roman Catholic Church Complex |
| BOS.ABB | Saint Germain Street, 8-65 |

Historic Resources

Figure 7.1

**1000 Boylston Street**
**Boston, Massachusetts**

# 8

# Project Certification

This PNF has been submitted to the Boston Redevelopment Authority, d/b/a Boston Planning & Development Agency, as required by Article 80B of the Zoning Code, on the 3rd of January, 2017.

**Proponent**
ADG Scotia II LLC

Adam J. Weiner
Managing Member

**Preparer**
VHB

Lauren DeVoe
Senior Environmental Planner

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# Appendix A: Letter of Intent

W

WEINER VENTURES

REAL ESTATE DEVELOPMENT & INVESTMENT

'16 NOV 14 PM 12:41:14

**ADG SCOTIA II LLC**
***c/o Weiner Ventures LLC***
***200 Clarendon Street, Floor 50***
***Boston, MA 02116***

BRA

November 14, 2016

**BY HAND**

Brian Golden, Director
Boston Redevelopment Authority
d/b/a Boston Planning & Development Agency ("**BPDA**")
Boston City Hall, 9th Floor
Boston, MA 02201

**Re: Letter of Intent under Executive Order of October 10, 2000 - 1000 Boylston Street Project, Boston, MA**

Dear Director Golden:

On behalf of ADG Scotia II LLC (the "**Proponent**") and in accordance with the Executive Order dated October 10, 2000, as amended April 3, 2001, relative to the provision of mitigation by development projects in Boston subject to Large Project Review as defined in Article 80 of the City of Boston Zoning Code (the "**Zoning Code**"), Weiner Ventures LLC is pleased to submit this Letter of Intent to file a Project Notification Form for the 1000 Boylston Street Project (the "**Project**").

In December 2000, the Boston Redevelopment Authority adopted a master plan for the lands owned and air rights held by the Massachusetts Department of Transportation ("**MassDOT**") entitled "A Civic Vision for Air Rights in Boston" which set forth guidelines for projects in the Extension Air Rights, including so-called Parcel 15. On March 4, 2013, MassDOT designated ADG Scotia II LLC as the developer for Parcel 15. Pursuant to such designation, MassDOT and ADG Scotia II LLC are parties to a Development Agreement, dated June 19, 2014, as amended March 17, 2015, and as it may further be amended.

The Proponent intends to develop approximately 685,000 square feet for condominium and rental residential uses with approximately 31,000 square feet of retail on a portion of the ground and second floors, and an above-grade parking garage with accessory parking for the uses in the Project. The Project will be developed on Parcel 15 and abutting land and air rights including property owned by Proponent bounded by Scotia and St. Cecilia Streets, property owned by Prudential Real Estate Investors bounded by Boylston Street and Dalton Streets, and air rights over a portion of Cambria Street owned by the City of Boston, to be conveyed to Proponent. The Project will require zoning relief under the Zoning Code.

Under the Mayor's Executive Order, the BPDA is to submit to the Mayor a recommendation for the appointment of an Impact Advisory Group ("**IAG**") to advise the BPDA with respect to mitigation, to be

appointed by the Mayor prior to the submission of the Project Notification Form. Since, as you know, a Citizen Advisory Committee ("**CAC**") was previously appointed in connection with the earlier MassDOT Request for Proposals and designation of ADG Scotia II LLC, we respectfully suggest that this CAC also serve as IAG under the Mayor's Executive Order.

The Proponent is very excited to be moving forward with this Project and we look forward to working with you, your staff, elected officials, community members and the CAC in the review of this Project.

Sincerely,

Adam Weiner
Managing Partner

cc: Mr. Jonathan Greeley
Ms. Lauren Shurtleff
Mr. Christopher Tracy

# Appendix B: BPDA Checklists

**Accessibility Checklist**

**Climate Change Preparedness and Resiliency Checklist**

# Accessibility Checklist

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: | **1000 Boylston Street Project** |
| Project Address Primary: | **1000 Boylston St. Boston, MA 02115** |
| Project Address Additional: | **N/A** |
| Project Contact (name / Title / Company / email / phone): | **Donny Levine / Project Manager / D. Levine Management LLC, donny@dlevinemanagement.com / (617)603-5447** |

| | |
|---|---|
| Owner / Developer: | **ADG Scotia II LLC, c/o Weiner Ventures** |
| Architect: | **Elkus Manfredi Architects** |
| Engineer (building systems): | **WSP Group** |
| Sustainability / LEED: | **WSP Group** |
| Permitting: | **VHB** |
| Construction Management: | **Suffolk Construction Co. Inc.** |

## 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 |

**Article 80 | ACCESSIBILTY CHECKLIST**

| | Laboratory / Medical | Manufacturing / Industrial | Mercantile | Storage, Utility and Other |
|---|---|---|---|---|
| First Floor Uses (List) | **Retail, residential lobby, parking garage access, building mechanical, residential service areas** | | | |

What is the Construction Type – select most appropriate type?

| ~~Wood Frame~~ | ~~Masonry~~ | **Steel Frame** | **Concrete** |
|---|---|---|---|

Describe the building?

| | | | |
|---|---|---|---|
| Site Area: | **40,955 SF** | Building Area: | **829,000 SF** |
| Building Height: | **579 Ft.** | Number of Stories: | **39 Flrs.** |
| First Floor Elevation: | **Scotia St:<br>EL= +20.00' BCB<br>Boylston St:<br>EL=+33.33' BCB** | Are there below grade spaces: | **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 Project is located in the Back Bay neighborhood of Boston. While the urban fabric of the Back Bay is generally consistent and continuous in its three- to five-story scale, the frontage along Boylston Street is much more varied, particularly on the south side. This east-west zone, along the southern edge of the Back Bay, is part of what has become known as the "High Spine". This zone is characterized by a continuous urban edge and a number of buildings over 250' in height including but limited to the two Hancock Towers, the Prudential Tower, 111 Huntington Avenue and the Project Site.**<br><br>**Boylston Street is an important and lively thoroughfare through the Back Bay. The pedestrian nature of the street is reinforced by the presence of retail, institutions such as the Boston Public Library and Trinity Church, and a well-developed street wall.** |
| List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter | **The Project Site is located within one-half mile to accessible public transportation services, including the MBTA Green and Orange lines, and local bus routes.** |

| | |
|---|---|
| rail, subway, bus, etc. | |
| List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc. | Educational facilities: Berklee College of Music, Boston Architectural College, Olin Center for Int. Study, Boston Latin, Kingsley Montessori School, The Newman School, The Learning Project Elementary School<br><br>Public Housing: West Newton Apartments - West Newton St.; Fredrick Douglass Senior/Disabled Apartments - 755 Tremont St.; Lenox Street Apartments |
| 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. | Yes, Back Bay Fens is located within a one-quarter mile radius to the west along Boylston St. and the Boston Public Library and Copley Square within a one-half mile radius to the east along Boylston St.<br><br>Additional surrounding related facilities include the Fenway Community Center, Peterborough Senior Center, Greater Boston YMCA, Prudential Center Shopping Mall and the Boston Public Library. |

## Surrounding Site Conditions – Existing:

This section identifies the current condition of the sidewalks and pedestrian ramps around the development site.

| | |
|---|---|
| Are there sidewalks and pedestrian ramps existing at the development site? | Yes |
| ***If yes above***, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site. | The existing sidewalks are cast-in-place concrete that are in fair-to-poor condition.<br><br>Cambria St: The north sidewalk of Cambria St. is too narrow for pedestrian use. The south sidewalk has cracking, level surfaces.<br><br>Scotia St: The north side of Scotia St. contains a below grade transformer vault; the sidewalk around the vault is cracked and uneven. The sidewalk becomes bituminous prior to east edge of Project Site along Scotia St.<br><br>St. Cecilia St.: The east sidewalk at Boylston St. includes large swaths of cracking at expansion joints that have been filled. |
| 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. | Sidewalks within Project's limit of work will be replaced and/or reconstructed. Sidewalks outside the project limit of work will remain, and have not been verified as compliant. |

| | |
|---|---|
| Is the development site within a historic district? **If yes,** please identify. | **No. The Project Site is not located within any existing historic district, but is adjacent to the Back Bay Historic District (National Register) and the Back Bay Architectural District (Local 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 | **It is the intent of the Proponent to incorporate the fundamental goals of the Complete Street Guidelines wherever possible.** |
| *If yes above*, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard. | **Downtown Commercial & Shared** |
| What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone. | **The total width of the sidewalks along Boylston St will be approximately 18'-0" will consist of:**<br>• **5'-0" Furniture Zone**<br>• **11'-0" pedestrian zone**<br>• **2'-0" Frontage Zone**<br><br>**Sidewalks width along St Cecilia's Street, Scotia Street and Dalton Street will vary from 6'-8" and 7'-6"** |
| 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? | **The proposed materials for the sidewalks will include a combination of concrete and granite. The proposed materials will be on both private property and the City of Boston pedestrian right-of-way.** |
| 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? | **Not at this time.** |
| **If yes above,** what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be? | |

## Proposed Accessible Parking:

See Massachusetts Architectural Access Board Rules and Regulations 521 CMR Section 23.00 regarding accessible parking requirement counts and the Massachusetts Office of Disability Handicap Parking Regulations.

| | |
|---|---|
| What is the total number of parking spaces provided at the development site parking lot or garage? | **240 Parking spaces are provided in an enclosed above-grade garage.** |
| What is the total number of accessible spaces provided at the development site? | **The planned number of accessible spaces is 7 (seven) including 2 (two) dedicated van accessible parking spaces.** |
| 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 on-street accessible parking spaces are anticipated to be required, and none are provided at this time.** |
| Where is accessible visitor parking located? | **The accessible visitor parking is located on levels 3, 4, and 5 of the parking garage.** |
| Has a drop-off area been identified? **If yes,** will it be accessible? | **Yes, the apartment and condo residential have separate accessible drop-off areas for two to three vehicles. The drop-off areas will not be dedicated as accessible parking however the path to the building will be an accessible route.** |
| 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. | **Please see figures attached.** |

**Article 80 | ACCESSIBILTY CHECKLIST**

## 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. | **Please see figures attached.** |
| Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator. | **West Building Entry: flush condition with elevator and stairs.**<br>**East Building Entry: flush condition with elevator and stairs.**<br>**Restaurant Entry: flush condition with elevator and stairs.**<br>**Retail Entry: flush condition with elevator, stairs and escalator.**<br>**Leasing office: flush condition**<br>**Parking ramp: flush condition with ramp – intended for vehicular entry only.**<br>**Employee entry: flush condition with ramp, elevator and stairs.** |
| 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. | **Yes, there will be a private roof terrace on Level 7 which is accessible via elevator. Floor transitions are flush conditions allowing inclusive access to all areas.** |
| Has an accessible routes way-finding and signage package been developed? **If yes,** please describe. | **No. At this early stage of design, accessible routes and way-finding signage packages have not yet been developed.** |

## 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? | **342 Units** |
| How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown? | **160 for sale units**<br>**182 rental units**<br>**The Project will establish affordable housing opportunities consistent with the Inclusionary Development Policy.** |

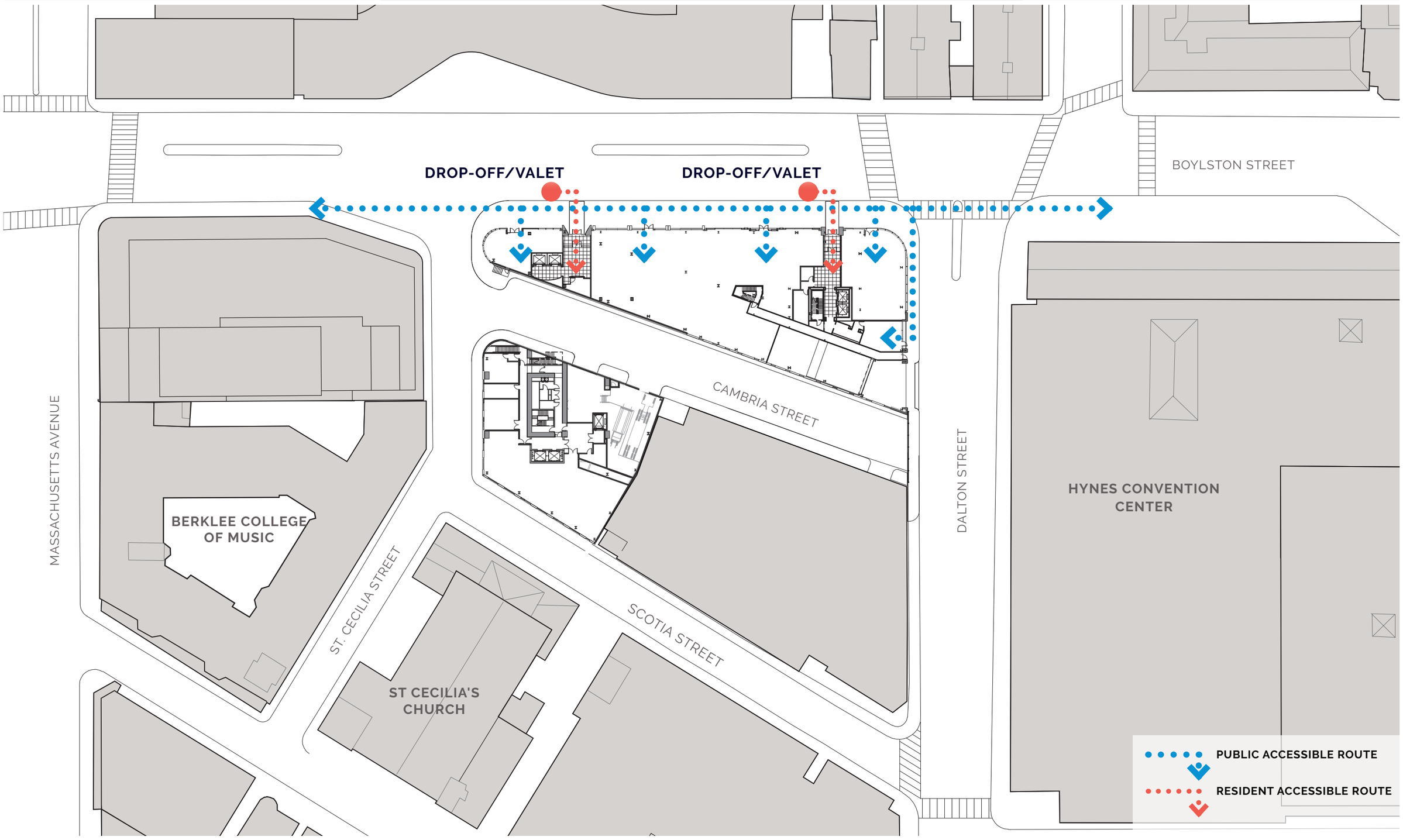
**Article 80 | ACCESSIBILTY CHECKLIST**

| | |
|---|---|
| How many accessible units are being proposed? | **The number of accessible units at the Project will be determined as the Project advances, however, as required by 521 CMR, it is anticipated that 5% of the rental units will be accessible and 2% will be accessible for visually and/or hearing impaired. All units will be adaptable for accessibility.** |
| Please provide plan and diagram of the accessible units. | **These details will be determined as the Project design advances** |
| How many accessible units will also be affordable? If none, please describe reason. | **It is anticipated that 5% of any on-site affordable units will be accessible.** |
| Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs at entry or step to balcony. **If yes,** please provide reason. | **No** |
| Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor's Commission for Persons with Disabilities Advisory Board? | **The Project has not yet presented the proposed plan to the City of Boston Mayor's Commission for Persons with Disabilities Advisory Board. The Project Team will meet with the Board as the Project design advances and is fully committed to delivering a Project that is ADA compliant.** |
| Did the Advisory Board vote to support this project? **If no,** what recommendations did the Advisory Board give to make this project more accessible? | **The Project has not yet been reviewed by the Advisory Board.** |

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

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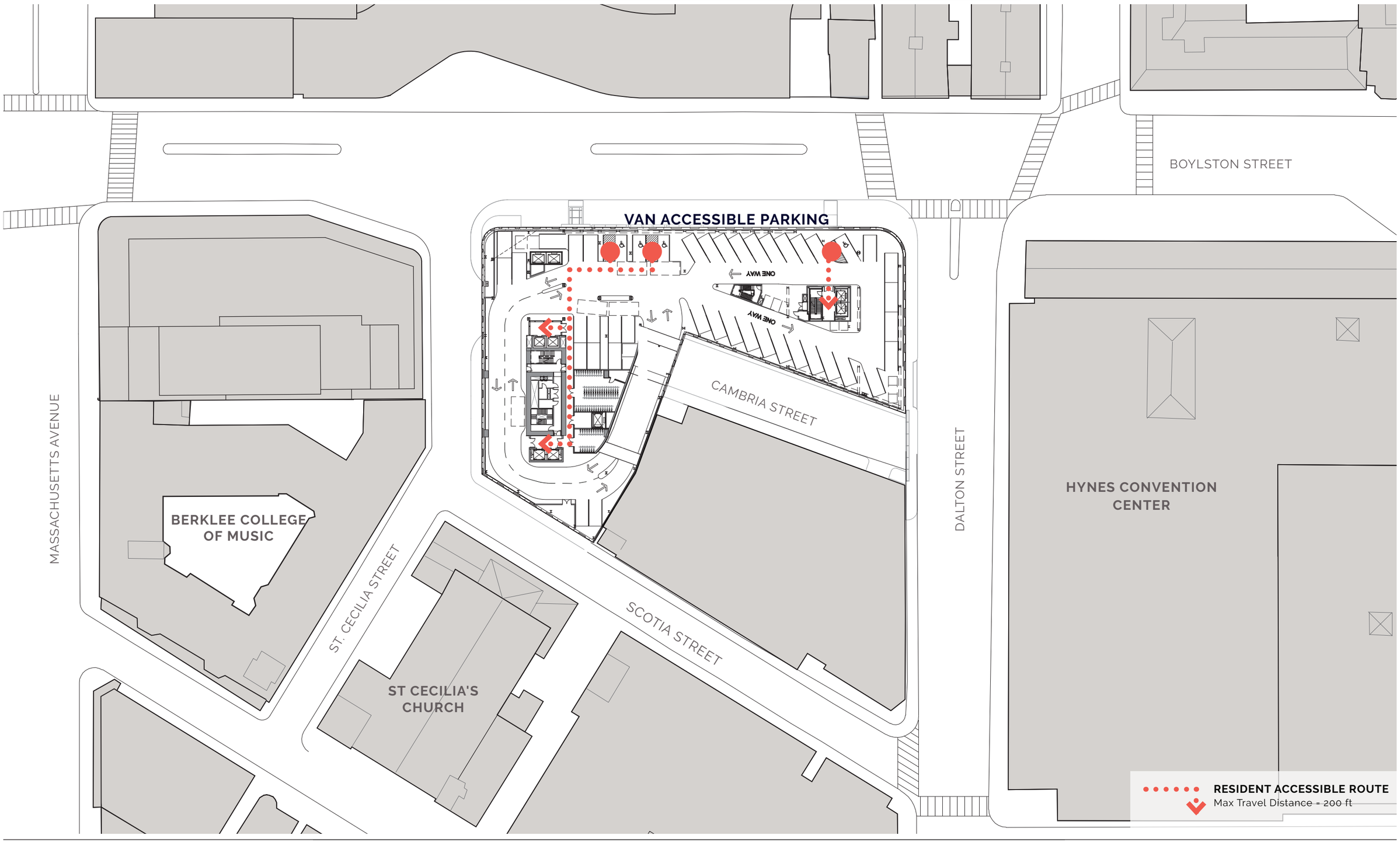
Source Info

ELKUS | MANFREDI ARCHITECTS

Accessibility Checklist
**1000 Boylston Street**
**Boston, Massachusetts**

Figure B.1




0 30 60 Feet

Source Info

ELKUS | MANFREDI ARCHITECTS

Accessibility Checklist
**1000 Boylston Street**
**Boston, Massachusetts**

Figure B.2

# 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: | 1000 Boylston Street Project |
| Project Address Primary: | 1000 Boylston Street |
| Project Address Additional: | N/A |
| Project Contact (name / Title / Company / email / phone): | Donny Levin, D. LEVINE MANAGEMENT LLC<br>donny@dlevinemanagement.com<br>857-990-3008 |

## A.2 - Team Description

| | |
|---|---|
| Owner / Developer: | ADG Scotia II LLC, c/o Weiner Ventures LLC |
| Architect: | Elkus Manfredi Architects |
| Engineer (building systems): | WSP Group |
| Sustainability / LEED: | WSP Group |
| Permitting: | VHB |
| Construction Management: | Suffolk Construction |
| Climate Change Expert: | VHB |

## A.3 - Project Permitting and Phase

At what phase is the project – most recent completed submission at the time of this response?

| | | | |
|---|---|---|---|
| **PNF** / Expanded PNF **Submission** | Draft / Final Project Impact Report Submission | BRA Board Approved | Notice of Project Change |
| Planned Development Area | BRA Final Design Approved | Under Construction | Construction just completed: |

## A.4 - Building Classification and Description

| | |
|---|---|
| List the principal Building Uses: | Residential and Retail |
| List the First Floor Uses: | Mechanical, Loading, Circulation, Retail |

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

| | | | |
|---|---|---|---|
| Wood Frame | Masonry | **Steel Frame** | **Concrete** |

Describe the building?

| | | | |
|---|---|---|---|
| Site Area: | 40,955 SF | Building Area: | 829,000 SF |
| Building Height: | 579 Ft. | Number of Stories: | 39 Flrs. |
| First Floor Elevation (reference Boston City Base): | Scotia St:<br>EL= +20.00' BCB<br>Boylston St:<br>EL=+33.33' BCB | Are there below grade spaces/levels, if yes how many: | No |

## 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 (version 4)** | 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 (under LEED 2009)*** | Certified: | ***Undecided*** |

## A.6 - Building Energy

What are the base and peak operating energy loads for the building?

| | | | |
|---|---|---|---|
| Electric: | ***8000*** *(kW)* | Heating: | ***13.2*** *(MMBtu/hr)* |
| What is the planned building Energy Use Intensity: | ***60*** *(kbut/SF or kWh/SF)* | Cooling: | ***917*** *(Tons)* |

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

| | | | |
|---|---|---|---|
| Electric: | ***1600*** *(kW)* | Heating: | ***None*** *(MMBtu/hr)* |
| | | Cooling: | ***None*** *(Tons)* |

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

| | | | | |
|---|---|---|---|---|
| Electrical Generation: | ***1600 KW*** *(kW)* | | Fuel Source: | ***Diesel*** |
| System Type and Number of Units: | **Combustion Engine** | Gas Turbine | Combine Heat and Power | *(2) (Units)* |

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## 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?

| | |
|---|---|
| *7º / 87ºF* | *Deg.* |

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

| | | |
|---|---|---|
| *0º / 95ºF Deg.* | *3 Days* | *1 Events / yr.* |

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

| | |
|---|---|
| **30 Days** | **1 Events / yr.** |

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

| | | |
|---|---|---|
| **44 Inches / yr.** | **7.88 Inches** | **0.01 Events / yr.** |

What Extreme Wind Storm Event characteristics will be used for project planning – Peak Wind Speed, Duration of Storm Event, and Frequency of Events per year?

| | | |
|---|---|---|
| *105 Peak Wind* | *3-second gusts* | *1/50 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: | **12 % (90.1-2013)** |
| How is performance determined: | eQuest Whole Building Energy Simulation |

What specific measures will the project employ to reduce building energy consumption?

| | | | | |
|---|---|---|---|---|
| Select all appropriate: | High performance building envelope | **High performance lighting & controls** | **Building daylighting** | **EnergyStar equip. / appliances** |
| | **High performance HVAC equipment** | **Energy recovery ventilation** | No active cooling | No active heating |
| Describe any added measures: | **Low-flow Domestic Hot Water Fixtures** | | | |

What are the insulation (R) values for building envelop elements?

| | | | |
|---|---|---|---|
| Roof: | *R = 30* | Walls / Curtain Wall Assembly: | *R = 25.6* |
| Foundation: | *R = 7.5* | Basement / Slab: | *R =10* |
| Windows: | *R =2.8 / U =0.36* | Doors: | *R = 1.25 / U =0.8* |

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** | Building will be Smart Grid ready | Connected to distributed steam, | Distributed thermal energy |

| | | | |
|---|---|---|---|
| **electrical** | | hot, chilled water | ready |

Will the building remain operable without utility power for an extended period?

| *Yes / **No*** | If yes, for how long: | *Days* |
|---|---|---|
| If Yes, is building "Islandable? | | |
| If Yes, describe strategies: | | |

Describe any non-mechanical strategies that will support building functionality and use during an extended interruption(s) of utility services and infrastructure:

| | | | | |
|---|---|---|---|---|
| Select all appropriate: | Solar oriented – longer south walls | Prevailing winds oriented | External shading devices | **Tuned glazing,** |
| | **Building cool zones** | **Operable windows** | **Natural ventilation** | Building shading |
| | Potable water for drinking / food preparation | Potable water for sinks / sanitary systems | Waste water storage capacity | High Performance Building Envelope |
| 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: | **Injection Wells** | | | |

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: | The building will have the strength to resist hurricane level winds that have a 3-second gust wind speed of 128 mph which translates to a 0.1% chance of recurrence per year (also known as a 700 year event). | | | |

## C - Sea-Level Rise and Storms

Rising Sea-Levels and more frequent Extreme Storms increase the probability of coastal and river flooding and enlarging the extent of the 100 Year Flood Plain. This section explores if a project is or might be subject to Sea-Level Rise and Storm impacts.

### C.1 - Location Description and Classification:

Do you believe the building to susceptible to flooding now or during the full expected life of the building?

| *Yes /* **No** |
|---|

Describe site conditions?

| | |
|---|---|
| Site Elevation – Low/High Points: | **Boston City Base Elev. 21' to 33'+/-** |
| Building Proximity to Water: | **1,400 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?

| |
|---|
| **1,350 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