

Notice of Project Change

Submission to:

Boston Redevelopment Authority



THE POINT, BOSTON, MA

Submission by:

Fenway Ventures Point Properties, LLC
a SAMUELS & ASSOCIATES entity

Prepared by:  *Vanasse Hangen Brustlin, Inc.*

In Association with :

Arquitectonica
Goulston & Storrs
Consentini Associates
McPhail Associates, Inc.

CBT Architects
RWDI
John Moriarty & Associates
McNamarra Salvia

December 4, 2014



Brian Golden, Acting Director & Executive Director/Secretary
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Re: Notice of Project Change
The Point
Brookline Avenue and Boylston Street, Boston, Massachusetts

Dear Director Golden:

Fenway Ventures Point Properties LLC, an affiliate of Samuels & Associates, is pleased to submit this Notice of Project Change for a proposed mixed-use project known as The Point (the "Project") to be located in Boston's Fenway neighborhood at the juncture of Boylston Street and Brookline Avenue on an approximately 0.6-acre triangular parcel at 176-200 Brookline Avenue and 1383-1395 Boylston Street (the "Project Site").

On February 15, 2013, the Proponent submitted an expanded Project Notification Form (PNF) for the Project pursuant to Article 80B, Large Project Review process under the Boston Zoning Code and Enabling Act ("Article 80"). On July 16, 2013, the BRA Board voted to approve the Project. Since then, the Proponent has re-evaluated the project program, specifically the housing unit mix. This Notice of Project Change (NPC) is being submitted to describe the design evolution that has occurred over the past 15 months since the 2013 PNF. Design modifications occurred as a result of the further development of the program, specifically the introduction of home ownership units, which resulted in building design changes, including a change in building height (the "Project Change", or "Project"). This NPC also presents updated environmental impact analyses, infrastructure needs, as well as urban design and other aspects of the Project, in order to inform city agencies, and neighborhood residents about the changes to the Project, its potential impacts, and the mitigation measures proposed to address those potential impacts in support of the Article 80 review process.

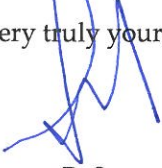
The Project Site, located within the Gateway Development Area of the Fenway Neighborhood District, presents a unique opportunity to advance the planning goals established by the community and the City as part of the Fenway rezoning effort. The Fenway zoning has long sought to encourage the development of architecturally distinctive "civic landmarks" at the major entrances to the Fenway neighborhood. The Project represents a major step in the realization of that goal. The Project continues to aim to create the sense of a gateway into the Fenway neighborhood from the west. With its prominent position and distinctive architectural design, the Project will enhance the corner of Boylston Street and Brookline Avenue and create a new neighborhood landmark. The improved public realm along Boylston Street and Brookline Avenue will address the need for better pedestrian connections

and permeability, as well as facilitate accessibility between the existing residential neighborhood, Landmark Center, the Emerald Necklace, nearby institutions, the Longwood Medical Area, and Fenway Park.

We are grateful to the Fenway neighborhood and the City officials who have continued to provide us with input over the months and years on this exciting redevelopment opportunity. We believe that the architectural character, the retail and residential opportunities, and the public realm improvements offered by the Project represent a major step forward in the revitalization of the Fenway community.

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

Very truly yours,



Steven B. Samuels

Enclosures

cc: Mr. Peter Sougarides, Samuels & Associates
Ms. Leslie Cohen, Samuels & Associates
Ms. Melissa Schrock, Samuels & Associates
Ms. Heather Campisano, Boston Redevelopment Authority
Ms. Lauren Middleton-Pratt, Boston Redevelopment Authority
Mr. Jonathan Greeley, Boston Redevelopment Authority
Mr. Douglas M. Husid, Esq., Goulston & Storrs
Mr. Mark Junghans, Vanasse Hangen Brustlin, Inc.

Notice of Project Change

The Point

Boston,
Massachusetts

Submitted to **Boston Redevelopment Authority**

Proponent **Fenway Ventures Point Properties LLC,
a Samuels & Associates entity**
333 Newbury Street
Boston MA 02115

Prepared by **Vanasse Hangen Brustlin, Inc.**
99 High Street
Boston, MA
In association with:
Arquitectonica Architects
CBT Architects
Goulston & Storrs
Cosentini Associates
John Moriarty & Associates
McNamara Salvia
McPhail Associates, Inc.
RWDI

December 2014

Table of Contents

Chapter 1: Project Change Description

Introduction and Project Background.....	1-1
Project Context and Existing Site Conditions	1-2
Project Context	1-2
Existing Site Conditions	1-3
Project Change Description.....	1-4
Building Design	1-4
Open Space and Amenities	1-5
Streetscape Improvements/Pedestrian Ways and Bicycle Facilities	1-5
Public Transit, Vehicle Access and Circulation/Traffic Improvements, and Parking.....	1-6
Utilities	1-7
Project Phasing and Schedule.....	1-7
Regulatory Controls, Approvals, and Permits.....	1-8
Anticipated State and Local Permits and Other Approvals.....	1-8
Department of Conservation and Recreation.....	1-8
Zoning Controls.....	1-8
Planned Development Area (PDA)	1-9
City of Boston Article 80 - Large Project Review	1-10
Public Outreach	1-13
Summary of Project Benefits	1-14

Chapter 2: Urban Design

Introduction	2-1
Height and Massing	2-2
Views and Vistas	2-2
Public Realm and Accessibility.....	2-2

Chapter 3: Environmental Protection

Introduction	3-1
Wind.....	3-1
Shadow	3-2
Solar Glare.....	3-2
Green Building Design/Sustainability.....	3-3
Regulatory Context	3-4
Sustainable Sites (SS)	3-5
Water Efficiency (WE).....	3-6



Energy and Atmosphere (EA)	3-7
Potential Energy Saving Measures	3-8
Materials and Resources (MR)	3-9
Indoor Environmental Quality (IEQ)	3-9
Innovation in Design (ID)	3-10
Regional Priority Credits	3-12
Boston Green Building Credits	3-12
Tenant Guidelines	3-12
Climate Change Preparedness and Resiliency	3-13
Addressing Sea Level Rise	3-13
Building Resiliency	3-14
Addressing Extreme Weather Conditions	3-15

Chapter 4: Infrastructure Systems

Introduction	4-1
Sanitary Sewer	4-2
Domestic Water Demand	4-2

ATTACHMENTS

A: Trip Generation Assessment

B: Accessibility Checklist

C: Wind Supporting Documentation

D: Climate Change Preparedness Checklist

List of Tables

Table No.	Title	Page No.
1-1	Project Change Summary	1-4
1-2	Additional List of Permits and Approvals Anticipated for the Project Change.....	1-8
1-3	Zoning Code Dimensional Regulations and Project Dimensions for Project Change.....	1-9
1-4	Development Review Components Evaluation for Project Change.....	1-10

List of Figures

***Note:** All figures are located at the end of each section.

Figure No.	Description
1.1	Site Location Map
1.2	Project Area Context
1.3	Existing Conditions
1.4	Existing Site Photographs
1.5	Proposed Conditions
1.6	Project Rendering
2.1a	Ground Floor Plan
2.1b	Second Floor Plan
2.1c	Third Floor Plan
2.1d	Typical Apartment Floor Plan (Floors 4 - 17)
2.1e	Amenity and MEP Interstitial Floor Plan (Floor 18)
2.1f	Typical Condominium Floor Plan (Floors 19-27)
2.1g	Typical Penthouse Floor Plan (Floors 28 - 29)
2.1h	Rooftop Amenity Floor Plan (Floor 30)
2.1i	Roof Level Floor Plan
2.2a	West Building Elevation
2.2b	East Building Elevation
2.2c	South Building Elevation
2.2d	North Building Elevation



2.3a	Building Cross Section
2.3b	Building Longitudinal Section
2.4	Plan and Massing Diagrams
2.5	Proposed Site Access and Circulation
3.1a	Shadow Impacts - March 21
3.1b	Shadow Impacts - June 21
3.1c	Shadow Impacts - September 21
3.1d	Shadow Impacts - December 21
3.2	Preliminary LEED Scorecard
4.1	Existing Utilities



1

Project Change Description

Introduction and Project Background

On February 15, 2013, Samuels & Associates, through its subsidiary, Fenway Ventures Point Properties LLC (the “Proponent”), submitted an expanded Project Notification Form (PNF) pursuant to Article 80B, Large Project Review process under the Boston Zoning Code and Enabling Act (“Article 80”) on The Point project (the “2013 PNF Project”). On July 16, 2013, the BRA Board voted to approve 2013 PNF Project. Since then, the Proponent has re-evaluated the project program, specifically the housing unit mix in an effort to respond to changing market conditions. This Notice of Project Change (NPC) is being submitted to describe the design evolution that has occurred over the past 15 months since the 2013 PNF. Design modifications occurred as a result of the further development of the program, specifically the introduction of home ownership units, which resulted in building design changes, including a change in building height (the “Project Change”, or “Project”). This NPC also provides an update to analysis of traffic/transportation, potential environmental impacts, infrastructure needs, as well as urban design and other aspects of the changes to the Project, in order to inform city agencies and neighborhood residents about the changes to the Project, its potential impacts, and the mitigation measures proposed to address those potential impacts in support of the Article 80 review process.

The Point consists of the redevelopment of an approximately 0.6-acre triangular site at the juncture of Boylston Street and Brookline Avenue in Boston’s Fenway neighborhood (the “Project Site”). Redevelopment of the Project Site consists of construction of a new residential building, with retail on the first and second floors, in addition to residential amenities, mechanical space, and other accessory uses and facilities. As previously proposed, the Project Change continues to expand on the recent mixed use developments in the Fenway and the transformation from industrial uses to neighborhood uses along Boylston Street with a compelling and iconic building design featured at the gateway to the Fenway area. Overall, the Project Change continues to enhance the architectural character, urban design, retail vitality, and pedestrian experience with new street level activity at this key entrance to the community. The Project Change also continues to generate numerous positive neighborhood benefits, such as increased housing opportunities, including home ownership units, additional shopping opportunities, upgrading of the urban fabric, and significantly improved pedestrian walkways and streetscape. The city and the region as a whole will benefit from job creation, housing, and additional city and state tax revenues associated with the Project.



The existing conditions at the Project Site are remnants of the automotive industry of the 1920's and the more recent development of 'service' uses (e.g., fast food establishments and convenience retail). Today, however, the project area is greatly influenced by its proximity to Fenway Park, the Landmark Center retail district, and various institutions, such as Emmanuel College and the Longwood Medical and Academic Area (LMA), as well as the residential neighborhood south of Boylston Street. These surrounding land uses have greatly contributed to the success of the recent Fenway district developments by Samuels & Associates at Trilogy, 1330 Boylston Street, and The Van Ness (the mixed use redevelopment of 1325 Boylston Street as part of the previously referred to "Fenway Triangle Mixed Use Project" or "Boylston West"). These catalytic developments have set the stage for the continued transformation of the underutilized parcels remaining along Boylston Street and Brookline Avenue. The Point aims to elegantly define the western edge of this vibrant and diverse neighborhood, provide new area housing, including home ownership units and retail opportunities, and reinforce the Fenway's position as one of Boston's exceptional locations.

Sustainability continues to be integrated throughout the Project as it aims to use land efficiently through the revitalization of an underutilized site in a dense urban setting, promote the use of alternative modes of transportation, encourage pedestrian activity and improve water quality. Due to the location of the Project Site in a dense established urban neighborhood with access to public transportation and available services in close proximity, many of the residents and their guests, as well as retail employees and customers, will use alternative means of transportation to/from the Project. Additionally, in accordance with Article 37 – Green Buildings of the Boston Zoning Code, the Proponent intends to incorporate state-of-the-art sustainable features into the design of the Project, where feasible and reasonable, so that the building could achieve the minimum certification level ("Certified") under the U.S. Green Building Council (USGBC) Leadership in Environmental and Energy Design (LEED®) Green Building Rating System, or "LEED certifiable."¹ Chapter 3, *Environmental Protection* of this NPC provides an updated LEED Scorecard and narrative description of compliance with Article 37.

The following chapter provides an overview of existing site conditions and describes the Project Change, including an updated comprehensive list of required permits and approvals, and other regulatory controls, including compliance with Article 80B, Large Project Review. This chapter also provides a summary of public benefits and other positive impacts anticipated as a result of the Project Change.

Project Context and Existing Site Conditions



Project Context

The Project Site is a triangular block totaling 0.6 acres located at the corner of Brookline Avenue and Boylston Street in the Fenway neighborhood of Boston, Massachusetts. Refer to Figure 1.1 for a site location map. Boylston Street borders the Project Site to the south and connects the Sears Rotary to the west with Downtown Boston to the east. Brookline Avenue borders the Project Site to the north connecting Brookline Village to the west with Kenmore Square to the east. The Project Site has an important relationship with the Emerald



¹ LEED "certifiable" indicates that a building meets the energy reduction requirements under the most appropriate LEED building rating system, but has not officially registered with the USGBC to become certified.

Necklace and Park Drive, located to the east, west and south of the Project Site. This long, linear district is comprised of the Back Bay Fens, the Muddy River, Olmsted (Leveret) Park, Jamaica Pond and the Arborway. The Fenway Park baseball stadium is located approximately 1/3-mile east of the Project Site down Brookline Avenue. Refer to Figure 1.2 for an aerial image of the site and neighborhood context.

Boylston Street is an important vehicular connector serving the Fenway neighborhood and linking downtown to the Longwood Medical Area and the City of Brookline to the west. This street has seen increased pedestrian activity resulting from recent residential and commercial developments, such as 1330 Boylston Street and Trilogy. Brookline Avenue is of a more intimate scale and is defined by the historical automotive industry buildings of the 1920's. It is grounded at the west by the retail and office uses at Landmark Center and to the east by Fenway Park. The Project proposes to retain and enhance the pedestrian link between Brookline Avenue and Boylston Street, connecting residential, commercial and business uses in the immediate vicinity.

In general, the land uses surrounding the Project Site consist of a varying mix of building typologies, sizes and heights. Some buildings, specifically along Brookline Avenue, are remnants of the automotive industry of the 1920's while others include brick residential structures built after 1930, late-20th century low-rise commercial buildings, free-standing single-story restaurants, and surface parking lots. More recently, the project area has been greatly influenced by its proximity to Fenway Park, the Landmark Center retail district, various institutions, such as Emmanuel College and the Longwood Medical and Academic Area (LMA) as well as the residential neighborhood south of Boylston Street. These surrounding land uses have resulted in several successful large mixed use developments by Samuels & Associates (most notably Trilogy, 1330 Boylston Street, and The Van Ness) significantly expanding market rate and affordable housing, office, and retail opportunities. These developments have set the context for the continued transformation of the remaining underutilized parcels with 'service' uses (e.g., fast food establishments, low-end retail, gas stations/automotive servicing) along Boylston Street and Brookline Avenue.



Existing Site Conditions

Figure 1.3 shows the existing conditions site plan. The existing conditions at the Project Site are vestiges of the automotive industry of the 1920's, traces of which continue to be visible along Brookline Avenue. The approximately 25,191-square foot (0.60-acre) triangular parcel is completely built-out with three connected one-story brick buildings totaling approximately 20,150 square feet (176-184 Brookline Avenue, 200 Brookline Avenue, and 1387 Boylston Street) and some surface parking and loading/service areas. These buildings were all constructed in the early 1900s. The most recent commercial tenants of the existing buildings have included a D'Angelo sandwich shop, ACE tickets, TOMB interactive adventure, a liquor store, office space, band rehearsal space and storage space in the basement. Refer to Figure 1.4 for photographs of the existing site.

There are approximately 27 parking spaces currently on-site (15 surface spaces and 12 below-grade spaces). Surface spaces along Boylston Street adjacent to the existing building structure (where no formal sidewalk exists) are used primarily by patrons of the existing establishments. The below-grade parking spaces are accessible by a ramp off of Boylston Street.

The Project Site is currently well served by infrastructure, some of which was recently upgraded, and is in close proximity to public transit (MBTA Green Line, the Framingham/Worcester Commuter Rail Line, and multiple bus routes).



Project Change Description

The 2013 PNF Project included construction of a new 22-story mixed use building totaling approximately 320,900 square feet of Gross Floor Area (GSF) with first and second floor retail and residential lobby and service space, 320 residential units on the upper floors and amenity space, including an outdoor pool deck at the roof level. The Project Change consists of a 30-story mixed use building totaling approximately 390,460 GSF with additional residential units (350 units) and less retail space (approximately 20,000 square feet) than previously proposed. The Project continues to include a two-story retail base with residential on the upper levels. As previously proposed, the retail base is suitable for retail and/or restaurant uses designed to human scale in order to activate and invigorate the street edge and welcome pedestrian activity. Table 1-1 below summarizes the Project Change. Figure 1.5 presents the updated proposed condition plan.

Table 1-1
Project Change Summary

Use	2013 PNF Program	Current Program	Change	% Change
Residential	320 units (280,400 GSF)	350 units (370,460 sf)	+30 units (+90,600 sf)	10%
Retail	40,500 sf	20,000 sf ¹	-20,500 gs	-51%
TOTAL	320,900 GSF	390,460 GSF	+69,560 GSF	22%

GSF Gross Square Feet

¹ May include an approximately 9,000-square foot restaurant with additional space available for outdoor seasonal dining.

The residential component is anticipated to include approximately 350 units with a mix of studio, one-, two-, and/or three-bedroom layouts served from dedicated ground-floor lobbies. Both residents and retail customers will utilize existing parking capacity at the adjacent Trilogy Garage accessible from existing driveways on Brookline Avenue and Kilmarnock Street. A subsurface pedestrian connection(s) between the Project and Trilogy to connect residential uses of both of these buildings at the second level. In addition, a potential new elevated glass walkway over the shared driveway will be evaluated by the Proponent. The potential transparent pedestrian connection will contribute to a more lively and active street life.

The Project Change will continue to create the sense of a gateway into the Fenway neighborhood from the west. With its prominent position and distinctive architectural design, the Project will enhance the corner of Boylston Street and Brookline Avenue and create a new neighborhood landmark. The improved public realm along Boylston Street and Brookline Avenue will address the need for better pedestrian connections and permeability, as well as facilitate accessibility between the existing residential neighborhood, Landmark Center, the Emerald Necklace, nearby institutions, the Longwood Medical Area, and Fenway Park.



Building Design

The overall goal of the building architecture continues to provide a compelling and iconic structure at the gateway to the Fenway neighborhood, while remaining compatible with the surrounding mix of uses. The vibrant mixed-use building will contribute to the long term revitalization of the Fenway district by building on the momentum generated by the neighboring, larger-scale, recent mixed-use developments and by creating new residential and retail activities and public realm improvements.



The proposed residential tower above the retail continues to be set back on the north and on the south. The residential building massing is broken into three slender bars with the middle bar stepping out towards the junction of Boylston Street and Brookline Avenue. The lower levels of the retail base are positioned towards the streetscape reinforcing an activated pedestrian realm and enhancing pedestrian interaction and attraction along storefronts. Refer to Figure 1.6 for a rendering of the Project.



Open Space and Amenities

Through the continued elimination of the pedestrian island at the juncture of Boylston Street and Brookline Avenue, or “the point”, the Project Change continues to propose a new public open space at this location (“The Point Plaza”). Additionally, as previously proposed, the new open space at the southeast corner of the Project Site along Boylston Street provides the opportunity to become an outdoor dining area for a restaurant that will add character and diversity to the urban texture along this important thoroughway. Refer to Figure 1.5 for the conceptual design of these two ground-level public open spaces and Chapter 2, *Urban Design* of this NPC for further details. These areas were included with plans prepared for Public Improvement Commission (PIC) and Boston Public Works Department (PWD) review, which were previously approved. In addition, a rooftop terrace with pool deck and other residential amenities are included as part of the Project, as previously proposed.



Streetscape Improvements/Pedestrian Ways and Bicycle Facilities

A number of public realm and site access improvements are included as part of the Project, as previously proposed. The existing surface parking, which currently impedes a continuous sidewalk on Boylston Street, will be eliminated and all sidewalks adjacent to the Project Site will be reconstructed in coordination with the city’s Boylston Street Improvement Project led by the Boston Transportation Department (BTD) and Complete Street Guidelines, where applicable, including the incorporation of green infrastructure (i.e., trees, infiltration basins, paving materials and permeable surfaces), bike accommodations, and improved pedestrian facilities. This same approach will be carried through to the Brookline Avenue frontage. Streetscape improvements are expected to include street trees and other landscaping (using species resilient to wind, desiccation, and scorch will be considered, as appropriate to the design), new curbing and sidewalks, new signage, street furniture and ornamental street lighting to enhance the pedestrian environment and insure public safety. The final design will be coordinated with and reviewed by the Boston Public Works Department (BPWD) and BTD.

The existing mid-block connection between Brookline Avenue and Boylston Street will be maintained and upgraded as a pedestrian-friendly path along the eastern edge the Project Site (Figure 1.5). A potential new elevated glass walkway over the shared driveway will be evaluated by the Proponent. This potential transparent pedestrian connection will contribute to a more lively and active street life. In addition, the pedestrian wind mitigation elements in this area of the Project Site have been incorporated into the building design, as discussed further in Chapter 3, *Environmental Protection*.

To reduce potential congestion on local roadways caused by servicing the building, an off-street/on-site loading dock internal to the building will be provided as part of the Project and will be accessed via the mid-block connection shared with Trilogy between Brookline Avenue and Boylston Street. The Project also



proposes a designated on-street residential drop-off adjacent to the Project Site on Brookline Avenue for vehicles that cannot be accommodated on-site.

The Proponent agrees that it is important to provide adequate bicycle storage for residents, retail tenants, and visitors. In accordance with the BTD agreement, short-term bicycle storage (16 spaces) will also be provided at street level for building users. Bicycle racks will also be installed in a secure bike facility in the building for residents for use by routine bicycle commuters. Given the significant space constraints of such as small urban site, the Proponent may provide additional long-term bicycle storage spaces at Trilogy, which will be connected to the Project, as previously described.



Public Transit, Vehicle Access and Circulation/Traffic Improvements, and Parking

Public Transit

As reported previously in the 2013 PNF, the Project Site is well served by the Massachusetts Bay Transportation Authority's (MBTA) public transportation services. Customers, employees, and residents will be able to take advantage of the various public transit connections easily accessible from the Project Site, including the MBTA Green Line and numerous bus routes. Access to the Green Line's Fenway Station on the D Branch behind the Landmark Center is a short walk to the north. The Green Line's B and C Branches can also be accessed, less than half a mile away, in Kenmore Square. The Framingham/Worcester Commuter Rail Line is accessible at Yawkey Station to the north of Brookline Avenue. Additionally, five local bus routes serve Brookline Avenue and stop adjacent to the Project Site. Three additional route connections are provided at the Sear's Rotary, including the cross-town CT2 and CT3 limited-stop routes. Connections can be made to the Route 57 bus serving Brighton Center at Kenmore Station. The local Route 55 is also nearby and serves Kilmarnock Street to the south of Boylston Street.

Vehicle Access and Circulation

The removal of the channelized right-turn lane from Boylston Street to Brookline Avenue was originally envisioned by the City of Boston as part of their *Fenway-Longwood-Kenmore Transportation and Pedestrian Safety Action Plan* to improve the pedestrian realm at the Sear's Rotary. With the Project, and as part of the aforementioned plan, the channelized right-turn will be removed; however, the three approach lanes on Boylston Street will be maintained and the corner radius is being designed such that passenger vehicles will still be able to turn right from Boylston Street onto Brookline Avenue. Currently, the amount of right-turning traffic represents less than one percent of the morning peak hour traffic and two percent of the evening peak hour traffic on the westbound Boylston Street approach. The traffic model that was developed for the Project as part of the 2013 PNF included an assessment of this change. The Proponent believes that the pedestrian benefits gained by removing the channelized turn area outweigh any potential traffic impacts.

As previously proposed, the area between the proposed building and the Trilogy building will provide an off-street loading area for the Project. Access will be provided via the shared Trilogy driveway on Brookline Avenue. To facilitate truck maneuvering, a new curb cut providing one-way egress for trucks to Boylston



Street will be provided. It is envisioned that this curb cut will be flush with the sidewalk to re-enforce that the Boylston Street frontage is a pedestrian zone. Trucks will be required to make a right-turn only onto Boylston Street. The Project also proposes a designated on-street residential drop-off adjacent to the Project Site on Brookline Avenue. The design goal of the off-street loading area is to design a loading dock on a constrained site footprint that would offer some flexibility for drivers so that trucks would not load/unload on Boylston Street or Brookline Avenue. The loading dock design allows for smaller delivery vehicles to exit directly to Brookline Avenue. Only larger trucks will need to exit the driveway to Boylston Street. It is expected that larger trucks will be primarily move-in and move-out vehicles. These vehicles will occur infrequently and should have a minimal impact to the Longwood Medical and Academic Area.

Parking

As previously proposed, the Project Change includes no new parking and will utilize parking spaces at the existing Trilogy Garage via the existing driveways on Brookline Avenue and Kilmarnock Street will serve the Project. A connection to the new building via a potential pedestrian walkway connecting the Project to Trilogy at the second level will be evaluated by the Proponent, as well as a three-level subsurface pedestrian connection to the Trilogy Garage. The Trilogy Garage was constructed with excess capacity intended for the Project. It is the Proponent's experience that the Trilogy building has shown that the percentage of residents owning cars is limited and, of those that do own cars, almost all choose the convenience of parking in the subterranean garage over street parking. The Proponent expects this will also be the case for the residents of the Project. Any additional parking demands will be met in other area garages owned by the Proponent or its affiliates in the neighborhood.



Utilities

The Project lies at the intersection of Boylston Street and Brookline Avenue which are major local utility corridors and, as a result, the Project Site is very well served by utility infrastructure. Connections to major utility are available along the site frontage. The Proponent has worked with the Boston Water and Sewer Commission (BWSC) and private utility agencies on previous projects in the neighborhood coordinating services and network improvements.



Project Phasing and Schedule

The Project will be constructed in a single phase scheduled to begin in Spring 2015. The duration of constructed is estimated to be 26 to 28 months with a completion date of Fall 2017.



Regulatory Controls, Approvals, and Permits



Anticipated State and Local Permits and Other Approvals

Table 1-1 of the 2013 PNF listed the anticipated permits and approvals from state and local governmental agencies that were expected to be required for the Project at the time the 2013 PNF was filed. Table 1-2 below lists the additional state and local permits and approvals that may be required in connection with the Project Change based on the information currently available. It is possible that not all of these permits or actions will be required, or that additional permits or actions may be needed.

Table 1-2
Additional List of Permits and Approvals Anticipated for the Project Change

Agency/Department	Permit/Approval/Action
Commonwealth of Massachusetts¹	
Massachusetts Historical Commission (MHC)	Review of a Project Notification Form (PNF) update
City of Boston	
Boston Redevelopment Authority (BRA)	Notice of Project Change under Article 80 Large Project Review Recommendation of BZC Text Amendment Approval Recommendation of PDA Amendment Approval
Boston Zoning Commission	Approval of BZC Text Amendment Approval of PDA Amendment
Boston Civic Design Commission (BCDC)	Schematic Design Review of Revised Plans
Boston Parks and Recreation Department	Update on Construction within 100 feet of Park or Parkway



Department of Conservation and Recreation

The Project complies with the height restrictions for projects adjacent to parkways. City of Boston Ordinance 7-4.10 establishes a maximum height of seventy (70) feet for buildings constructed on land that “abuts on and has an entrance into and is within a distance of one hundred (100) feet from” certain designated parkways. The designated parkways include some, but not all, of the roadways under DCR jurisdiction in the Fenway area. The parkways closest to the project that are subject to the height restrictions under Section 7-4.10 are the Riverway (including Park Drive) from Brookline Avenue to Beacon Street and The Fens. The project surveyor confirmed that the proposed building is more than 100 feet from each of these designated parkways. In addition, the Project does not include any curb cuts onto the designated parkways or onto any other roadway under DCR jurisdiction.



Zoning Controls

Reference is made to Table 1-2 of the 2013 PNF, which presented a comparison of the Project’s proposed uses, dimensions, parking, loading and design elements with the use, dimensional, parking, loading, and design



requirements of the underlying zoning, including Article 66 of the Code. The Project Change is consistent with the Proposed Design outlined in Table 1-2 of the 2013 PNF except, as set forth in Table 1-3 below.

Table 1-3
Zoning Code Dimensional Regulations and Project Dimensions for Project Change

Category	Existing PDA	Pending PDA Amendment	Proposed Design
Permitted Uses (partial list)	Multi-family; Restaurant; Bank; Bar; General Retail Business; Local Retail Business; Small Take-Out Restaurant; Large Take-Out Restaurant; Accessory Offices; Accessory Services for Apartment Residents; Accessory Swimming Pool; Ancillary Uses.	No Change	No Change
Floor Area Ratio (FAR)	7.0 FAR as of right; 12.0 FAR for projects that comply with Large Project Review	7.0 FAR as of right; 15.5 FAR for projects that comply with Large Project Review	15.5 FAR
Maximum Building Height	135 feet as of right; 270 feet for projects that comply with Large Project Review	135 feet as of right; 340 feet for projects that comply with Large Project Review	340 feet
Parking Spaces	No new parking. Shared parking with adjacent Trilogy project is contemplated	No Change	No Change
Off-Street Loading Bays	Three (3) bays, two of which are active and one trash collection area	No Change	No Change
Minimum Front Yard Setback	None	No Change	No Change
Minimum Side Yard Setback	None	No Change	No Change
Minimum Rear Yard Setback	None	No Change	No Change
Minimum Lot Size	None	No Change	No Change
Minimum Lot Width	None	No Change	No Change
Minimum Lot Frontage	None	No Change	No Change
Minimum Usable Open Space per Dwelling Unit (D.U.)	None	No Change	No Change



Planned Development Area (PDA)

The Proponent intends to seek approval for a third amendment to the Development Plan for Planned Development Area No. 56 (the “Trilogy PDA”) for the Project Change, as currently allowed under Section 3 1A.a of the Code and as allowed under Section 66-27 of Article 66. The Trilogy PDA, which first will be submitted in draft form to the BRA, will set forth the dimensional requirements applicable to the Project Change and will, if approved, supersede underlying zoning requirements for the Project Site. Pursuant to Section 80C of the Code, the approval process for the amendment of the Trilogy PDA requires a public hearing and approval by both the BRA and the Boston Zoning Commission.



City of Boston Article 80 - Large Project Review

The Proponent commenced Large Project Review under Article 80 of the Code with the filing of a Letter of Intent with the BRA on May 3, 2012, that indicated the Proponent's intent to file a PNF in connection with the Project as previously proposed. A copy of this letter was provided as Appendix A of the PNF submitted on February 15, 2013. The PNF presented details about the Project and provided information and/or preliminary analysis of transportation, environmental protection, infrastructure, and other components of the Project, in order to inform the City agencies and neighborhood residents about the Project and its potential impacts and proposed mitigation. Following review of public and agency comments on the PNF, the Proponent submitted to the BRA clarification and more detailed information addressing public comments in Responses to Comments document. On July 16, 2013, the BRA Board voted to approve the 2013 PNF Project.

Since the filing of the PNF, the Proponent has re-evaluated the project program, specifically the residential unit mix. This resulted in modifications to the building design, including the addition of five residential stories, as described previously under 'Project Change Description' above. Thus, the Proponent prepared this NPC in order to disclose the changes in potential impacts associated with the Project Change. Table 1-4 below provides an overview of the impacts associated with the Project Change by key Article 80 component.

Table 1-4
Development Review Components Evaluation for Project Change

Development Review Component	Analysis Conducted for 2013 PNF (Yes/No)	Analysis Re-evaluated for Project Change (Yes/No)	Summary of Findings/Explanation
Urban Design	Yes	Yes	The Project Change represents an increase in building height of approximately 70 feet from 270 feet to 340 feet. The overall building design approach, including exterior materials have not changed. The public realm improvements have been advanced, including design concepts for The Point Plaza and shared driveway between the Project and Trilogy. Refer to Chapter 2, <i>Urban Design</i> for further details.
Transportation	Yes	No	The change in building program to increase the residential unit count from 320 to 350 units combined with the decrease in retail space (less 20,500 SF) results in 454 fewer project generated vehicle trips. Refer to Attachment A for the traffic generation assessment update.
Parking	Yes	No	The Project Change continues to include no new parking and will utilize parking spaces at the existing Trilogy Garage.
Environmental Protection			
Wind	Yes	Yes	The annual wind conditions are expected to be mainly suitable for sitting to walking with some increased wind activity expected immediately adjacent to the Project Site. The Proponent has worked closely with the design team and further wind tunnel tests have been conducted to confirm the effectiveness of the



Development Review Component	Analysis Conducted for 2013 PNF (Yes/No)	Analysis Re-evaluated for Project Change (Yes/No)	Summary of Findings/Explanation
			modifications to improve the comfort conditions around the building and on-site. Refer to Chapter 3, <i>Environmental Protection</i> for further details.
Shadow	Yes	Yes	Based on the revised shadow study, the Project Change does not introduce a significant amount of new shadow. The majority of new shadows continue to be along the portions of Brookline Avenue within the vicinity of the Project Site and on existing building rooftops. There continues to be no negative impact on the Back Bay Fens west of the Project Site. Refer to Chapter 3, <i>Environmental Protection</i> for further details.
Daylight	Yes	No	The previous desired density and massing of the Project necessitated obstructing a large portion (approximately 80 percent) of daylight at the Project Site. Therefore, it can be expected that by increasing building height the obstructed daylight would increase slightly. The Project Change continues to propose a varied massing that lessens the impact on daylight as compared to a build option that would use a uniform massing. And, pedestrian enjoyment of the urban experience along Boylston Street and Brookline Avenue will be improved through public realm improvements where the net effect of the Project will be a substantial enhancement of the public realm in this area.
Solar Glare	Yes	No	The updated building massing is expected to have very similar Solar Glare characteristics to the previously reviewed and approved building. The facade composition and alignment is equivalent to the 2013 PNF, but extended vertically by approximately 70 feet. The previous solar glare study results indicated that the upper reaches of the building have less of an impact on the pedestrian environment than the lower reaches of the building.
Air Quality	Yes	No	The microscale ("hot spot") air quality analysis conducted for the 2013 PNF Project demonstrated that the Project would be well below the state and federal criteria for CO, PM10, and PM2.5. Since the Project Change is projected to generate less vehicular traffic than the 2013 PNF Project, it can be assumed that it would also fall below the air quality significant impact thresholds.
Water Quality	Yes	No	The proposed stormwater design continues to address stormwater treatment following the MassDEP phosphorous treatment guidelines. The stormwater management design has been reviewed by the BWSC and they issued a letter stating the design meets the requirements as set forth in GCOD.



Development Review Component	Analysis Conducted for 2013 PNF (Yes/No)	Analysis Re-evaluated for Project Change (Yes/No)	Summary of Findings/Explanation
Flood Hazard	Yes	No	The Project Site is located outside of the 100-year floodplain, approximately 80 feet from any Coastal, Velocity or Flood Zone, or Area Prone to Flooding, and 300 feet from a water source (the Muddy River).
Groundwater/Geo-technical	Yes	No	<p>As previously analyzed, groundwater levels are not expected to be impacted as part of the planned construction due to stormwater infiltration proposed for the Project. Rather, groundwater levels in portions of the Project Site may increase due to stormwater infiltration proposed for the Project, in accordance with the GCOD.</p> <p>The foundation construction will include the installation of deep end-bearing piles and/or rock-socketed drilled shafts to support the proposed building, as previously proposed.</p>
Solid and Hazardous Waste	Yes	No	There is no known subsurface contamination requiring notification to the MassDEP. Any on-site hazardous materials, including asbestos containing materials identified in the existing buildings or encountered during construction will be handled in accordance with federal, state, and local regulations. Regarding solid waste during operations, the building will include recycling receptacles/space at each residential floor level and at the loading dock for collection. Retail tenants will utilize disposal services that recycle waste off-site.
Noise	Yes	No	The noise assessment conducted for the 2013 PNF demonstrated that the Project would not generate noise levels that exceed the City's noise criteria during the daytime and nighttime period, respectively. The rooftop mechanical equipment continues to be been strategically located on the roof in a mechanical room (Level 31). Additionally, during the selection process of the rooftop mechanical equipment, the Proponent will select equipment (including any necessary mitigation measures) that would result in sound levels that do not exceed the maximum sound levels determined in this evaluation. Since majority of the service and loading activities will be serviced on-site and within the proposed building, noise impacts to the sensitive receptor locations will be negligible.
Temporary Construction Impacts	Yes	No	The Proponent is committed to developing and implementing a detailed Construction Management Plan.
Rodent Control Post-Construction	Yes	No	The Proponent is committed to implementing a post-construction rodent control program.
Sustainability/Green Building	Yes	Yes	<p>The LEED Scorecard has been updated based on the Project Change, in accordance with Article 37.</p> <p>Refer to Chapter 3, <i>Environmental Protection</i> for further details.</p>



Development Review Component	Analysis Conducted for 2013 PNF (Yes/No)	Analysis Re-evaluated for Project Change (Yes/No)	Summary of Findings/Explanation
Infrastructure Systems	Yes	Yes	Chapter 4, <i>Infrastructure</i> provides updated sewer and water calculations based on the changes to the development program.
Historical, Architectural, Archaeological and Cultural Resources	Yes	Yes	Impacts to historic resources have been re-considered based on changes in wind and shadow conditions as a result of the Project Change. Refer to Chapter 4, <i>Environmental Protection</i> for further details.

Public Outreach

The Proponent has a long history of working with the Fenway Neighborhood through development of the Trilogy, 1330 Boylston Street, and The Van Ness projects as well as through participation in the planning process leading to the new Article 66 of the Boston Zoning Code for the Fenway Neighborhood District.

The filing of the Letter of Intent on May 3, 2012 commenced the IAG nomination process conducted by the BRA. The Proponent and its development team has continued to meet with numerous city and state agency officials, representatives of the local community, local neighborhood associations, property owners and other interested parties during the entire project planning phase. Since the filing of the PNF, the Proponent has held the following community meetings:

- **Boston Redevelopment Authority** - The Proponent has met with the BRA Planning and Design staff on multiple occasions to review the Project Change, including the contents/analyses included in this NPC at a meeting held on September 16, 2014.
- **Fenway Civic Association** - The Proponent has held three recent meetings with the Fenway Civic Association, including one at which the project architect presented the building design.
- **Fenway Community Development Corporation (CDC)** - The Proponent met with CDC staff to discuss the Project Change.
- **Audubon Circle Neighborhood Association (ACNA)** – The Proponent attended a meeting of the ACNA at which the Proponent gave an overall summary of the Project Change and presented the building design.
- **Emerald Necklace Conservancy** – The Proponent presented a summary of the Project Change.

As part of the Article 80 review process for the NPC, the Proponent is committed to maintaining an open dialogue with all interested parties. Proponent will continue to work with the neighborhood, including the Fenway Civic Association, the Fenway CDC, Audubon Circle Neighborhood Association, the Red Sox organization, and other neighborhood representatives through the review and evaluation of this proposal. Additionally, the public will have the opportunity to review this NPC, which is available on the BRA website for public viewing and a hardcopy of which is available upon request.



Summary of Project Benefits

As previously presented in the 2013 PNF, Project-related benefits generally include the revitalization of an underutilized urban site and efficient use of land (achieving the goals of the Fenway area planning initiatives put in place in 2004), promotion of alternative modes of transportation, improved water quality, housing creation and job opportunities, expanded retail options and additional tax revenues. By replacing an underutilized commercial building in a dense urban setting, the Project will substantially contribute to improving the pedestrian and retail vitality, as well as the urban design and architectural character of the Fenway neighborhood. Specific public benefits include:

Site and Public Realm Improvements

- Redevelop an underutilized urban site into a vibrant transit- and pedestrian-oriented mixed-use development.
- Significantly improve the aesthetic character of the Project Site, which currently consists of a collection of low-story commercial uses.
- Introduce high-quality and iconic architecture to provide a transformative effect for the neighborhood.
- Provide for a project design that was carefully developed to meet the unique needs of a gateway area of the Fenway Neighborhood and complement the urban design characteristics of the surrounding area.
- Improve the urban design characteristics and aesthetic character of the Project Site and its surroundings through the enhancement of the public realm.
- Encourage pedestrian activity through new retail and residential uses creating liveliness along Brookline Avenue and Boylston Street as an extension of the Fenway neighborhood.
- Promote the use of alternative modes of transportation, encourage pedestrian activity, and improve water quality.
- Provide for appropriate building scale and size at the pedestrian realm.
- Enhance the streetscape with the use of signage, street furniture, lighting, and landscaping.
- Provide an outdoor seating area for potential restaurant occupancy at the south-east corner of the Project Site along Boylston Street to enhance street life and character and add diversity to the urban texture.
- Provide a public space at the western end of Project Site by closing the existing traffic channel and creating a new public plaza containing seating, landscaping elements, and public art as part of a planned district-wide public art strategy.
- Provide a pedestrian-friendly passage through the existing shared driveway between the Project and the neighboring Trilogy building by significantly upgrading the streetscape and providing pedestrian safety elements as well as an architecturally-integrated translucent trellis feature to mitigate wind.



Transportation Improvements

- Provide no new parking by connecting to the existing three-level underground parking garage at Trilogy (the “Trilogy Garage”) allowing for the Project to utilize existing garage driveways on Brookline Avenue and Kilmarnock Street.
- Enhance pedestrian safety and circulation through improved/upgraded sidewalks and street crossings, and improved illumination of pedestrian walkways.
- Balance the vehicular traffic with the pedestrian and bicyclist demands in the neighborhood by incorporating the City’s Boylston Street reconstruction plans on the Project Site, including improved sidewalk spaces and on-site bicycle storage.
- Provide new transit-accessible retail and residential uses, thus reducing single-occupancy vehicle trips to the Project Site.
- Accommodate service and loading operations off-street/on-site and internal to the building with a new one-way right turn only egress driveway from the shared Trilogy driveway to allow trucks to exit to Boylston Street.
- Provide new bicycle facilities (in coordination with BTM), including on-site bike storage for retail customers and employees as well as covered/secure bike storage for residents.
- Provide new traffic signal conduit, interconnect cable, and advance system detection on the Project’s Boylston Street frontage.
- Implement a substantial Transportation Demand Management (TDM) Plan to encourage the use of alternate transportation and discourage single-occupancy vehicle trips.
- Reconstruct the sidewalk at the intersection of Brookline Avenue and Boylston Street to eliminate the channelized right-turn lane and reduce pedestrian crossing points.
- Eliminate existing surface parking, which currently impedes a continuous sidewalk on Boylston Street.
- Construct all sidewalks adjacent to the Project Site in coordination with the City’s Boylston Street Improvement Project led by the Boston Transportation Department (BTM) and Complete Street Guidelines, where applicable, including the incorporation of green infrastructure (i.e., trees, infiltration basins, paving materials and permeable surfaces), bike accommodations, and improved pedestrian facilities. This same approach will be carried through to the Brookline Avenue frontage.

Environmental Improvements

- Mitigate for increases in wind at the pedestrian level primarily through the use of localized mitigation measure, including a combination of trees/landscaping, solid walls and canopies, and porous screens, fences, and canopies.
- Incorporate state-of-the-art sustainable features (i.e., energy- and water-efficient building systems) into the design of each component of the Project (retail and residential), where feasible and reasonable, in accordance the City’s Green Building policies and procedures.
- Off-set impervious area through Low Impact Design (LID) elements (stormwater infiltration systems) to promote the infiltration of stormwater runoff into the ground, in accordance with the GCOD and



MassDEP Stormwater Management Policy; thereby improving water quality and reducing the rate and quantity of stormwater discharged to the drainage system and the Charles River.

- Reduce stormwater runoff and "urban heat island" effect of the building through the installation of a green roof system on the 2-story retail roof areas.
- Consider building design (i.e., façade materials, height, and massing) to mitigate the potential for collision of passing birds.
- Use "night-sky friendly" site lighting fixtures.

Infrastructure Improvements

- Utilize the existing adequate infrastructure capacity requiring no major infrastructure upgrades.
- Upgrade on-site drainage system resulting in reduced rates and quantities of stormwater discharged to the BWSC stormwater drainage system and, ultimately, the Charles River Basin.

Economic and Community Benefits

- Enhance the economy within the Fenway by providing new job opportunities and a source of customers for local retail and service establishments.
- Create 350 to 400 construction jobs in all trades.
- Create approximately 200 new transit-accessible employment opportunities (permanent part-time and full-time jobs).
- Increase annual property tax revenue for the City of Boston.
- Provide approximately 350 new housing units, including homeownership units in close proximity to downtown Boston, a portion of which will be set aside as affordable housing (as noted below).
- Provide a \$100,000 contribution to Ramler Park.
- The Proponent will submit a Boston Residents Construction Plan, in accordance with the Boston Jobs Policy.

Affordable Housing

- To effectuate the Proponent's affordable housing commitment, the Proponent will finalize an affordable housing agreement with the BRA for an affordable housing contribution that will comply with the Mayor's Executive Order on Inclusionary Development, as well as Section 66-28.1 of the Code, to the extent applicable, by creating affordable units within the Point Building, creating affordable units off-site, making a contribution to the Inclusionary Development Program fund, and/or providing public realm community benefits.

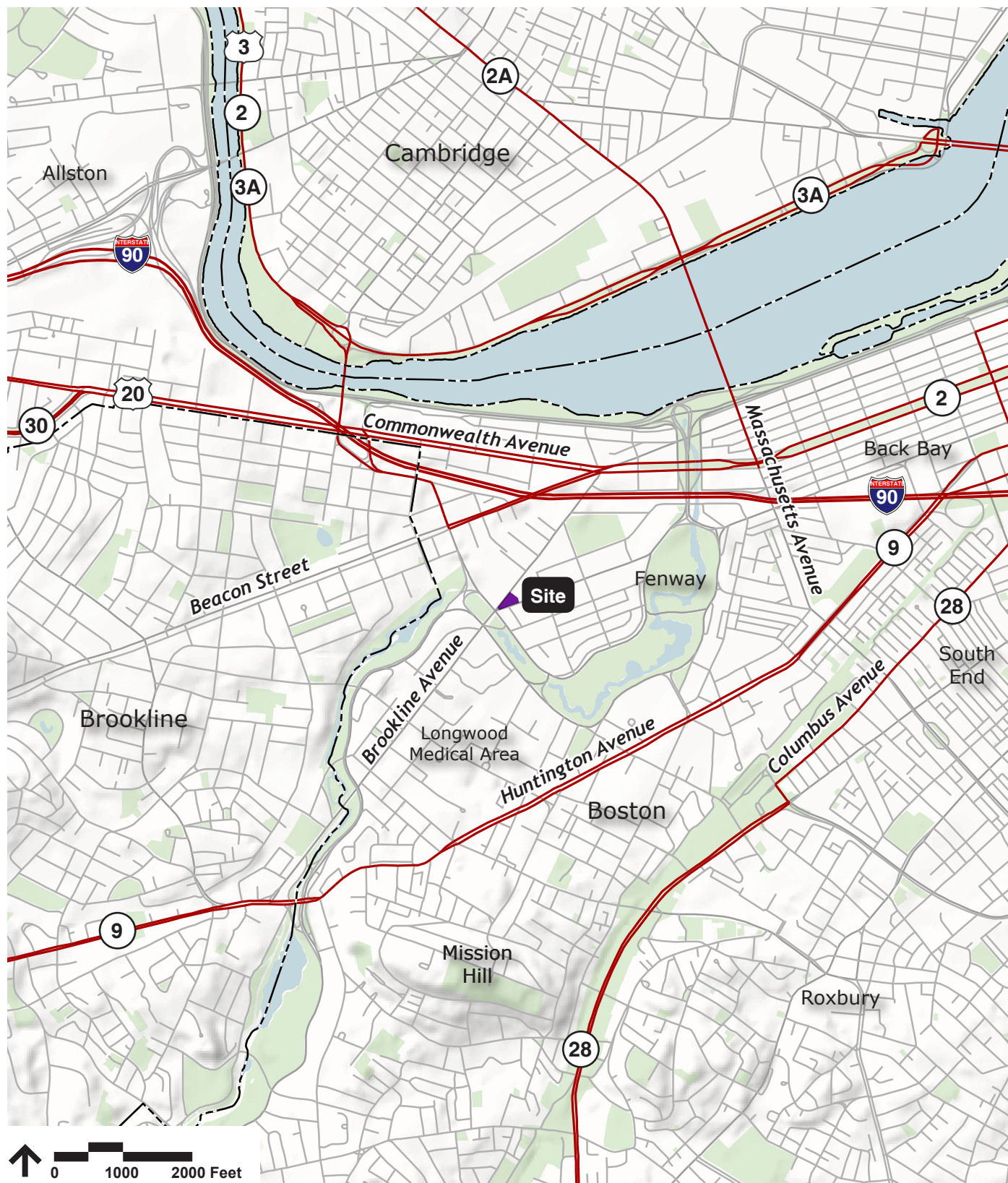


Figure 1.1
Site Location Map

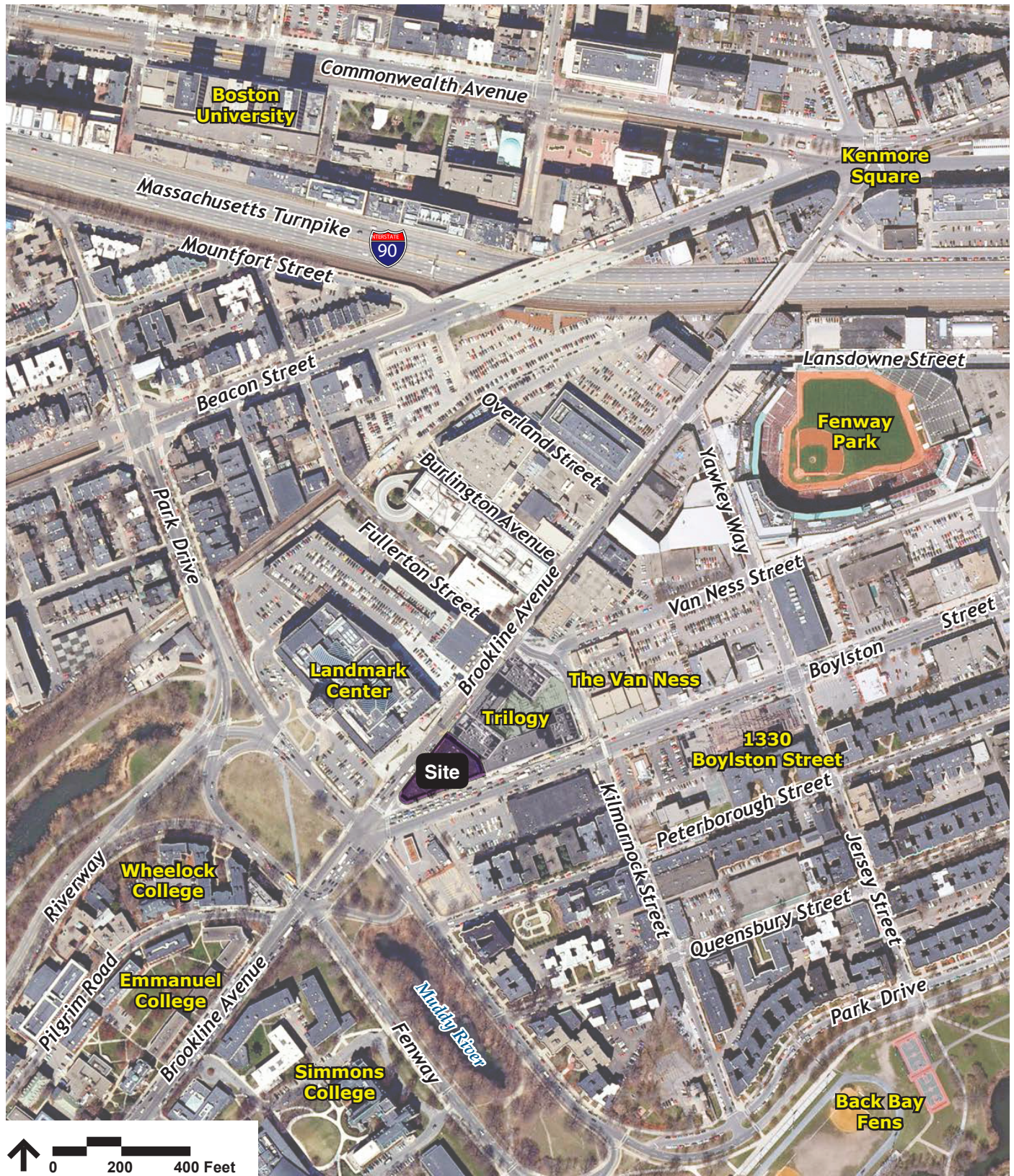


Figure 1.2
Project Area Context

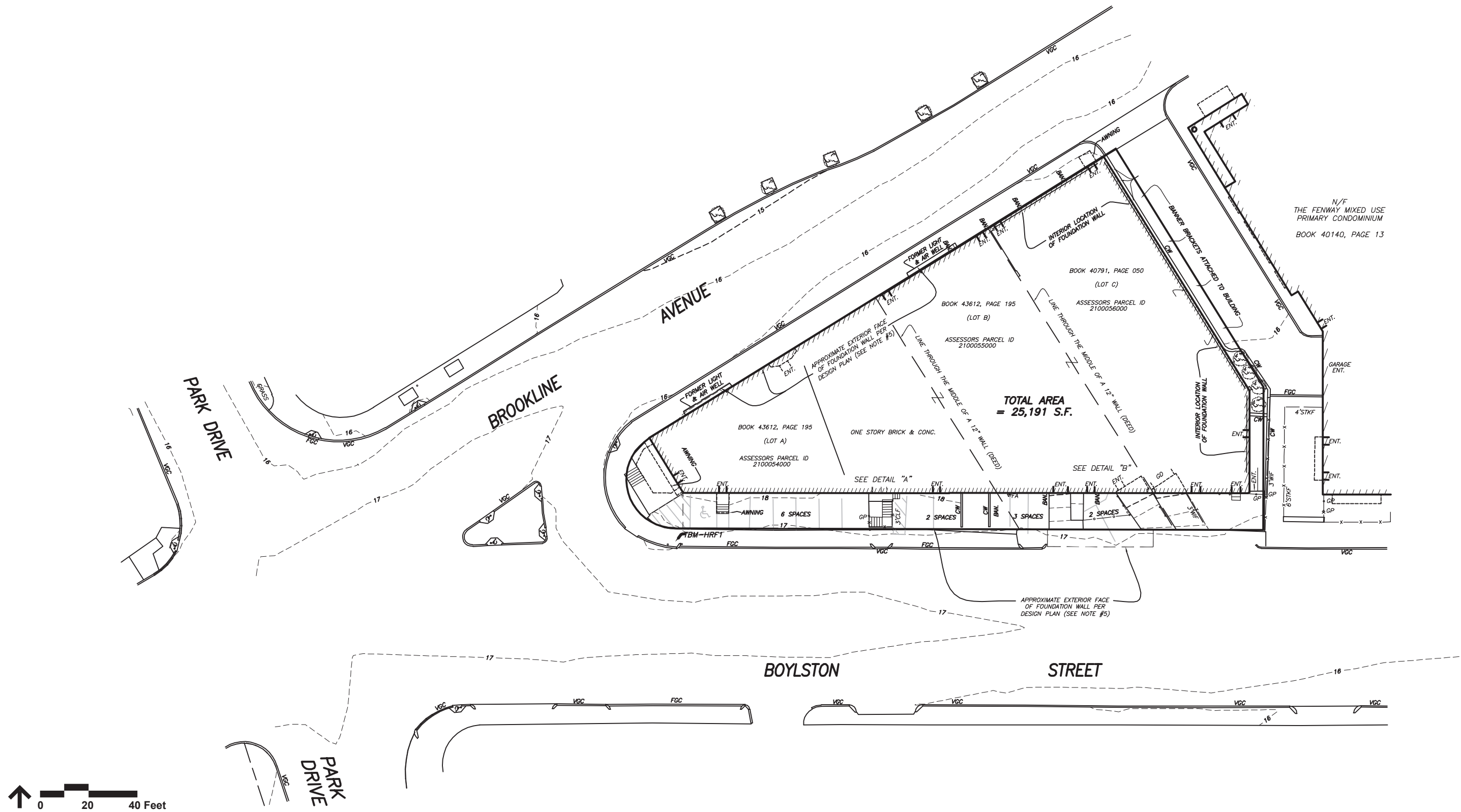


Figure 1.3
Existing Conditions Site Plan



Corner of Brookline Avenue and Park Drive looking Southeast



Brookline Avenue Landmark Center sidewalk looking Southwest



Boylston Street project sidewalk looking East



Corner of Boylston Street and Park Drive looking Northeast



Boylston Street Shaw's sidewalk looking Northwest



Boylston Street project sidewalk looking West

Figure 1.4
Existing Site Photographs



Figure 1.5
Proposed Conditions



Figure 1.6
Project Rendering - Street Level View from
Sears Rotary



2

Urban Design

Introduction

The urban design strategies of the Project have largely grown out of and evolved from input from the local Fenway community groups as well as the BRA. Through zoning changes following a neighborhood visioning process and the development of new mixed-use projects in the neighborhood (Trilogy, 1330 Boylston Street, and the Fenway Triangle Mixed Use Project), the primary objective of creating a diverse urban village has been furthered.

The overall concept of the Project remains the same as presented previously in Chapter 2, *Urban Design* of the PNF. The design approach originates from the Project Site's prominent location at the junction of Brookline Avenue and Boylston Street – the two major vehicular thoroughfares in the Fenway neighborhood. The design goal of the Project continues to be to create an iconic landmark to mark the entrance of the Fenway neighborhood invigorating the pedestrian realm with both residential and commercial activity. The Project continues to include a two-story retail base designed to human scale in order to activate and invigorate the street edge and welcome pedestrian activity. Figures 2.1a-i present the updated floor plans.

As previously proposed, at both the retail and residential levels, glazed surfaces are maximized, while a solid band concept is utilized to relate to the material character of the neighborhood while simultaneously enhancing the Project's unique architectural presence. At the sidewalk level retail and residential lobbies create a rich and varied streetscape, while the faceted treatment of the façade reduces the building to human scale and enhances pedestrian interaction and attraction along storefronts. Above the podium at the residential tower, the setback of the different masses and the faceted geometry lends itself to a slender and sleek look, creating a distinctive Fenway Neighborhood landmark. Refer to Figures 2.2a-d and Figure 2.3 for the updated building elevations and section, respectively.

The Project represents an extension of the City's urban revitalization strategies for the Fenway neighborhood, which have most recently focused on the revitalization of Boylston Street. 1330 Boylston Street, Trilogy, and The Van Ness have successfully created a new vibrant streetscape along both Boylston Street and Brookline Avenue. By strengthening the sense of a gateway and creating a new landmark, the Project proposes to expand upon the commercial growth of Boylston Street and carry over retail and commercial activity from the Landmark Center to Brookline Avenue. The Project also aims to strengthen pedestrian circulation and street



life between Boylston Street and Brookline Avenue. An off-street/on-site loading dock accessed via the service driveway on the eastern edge of the Project between Brookline Avenue and Boylston Street is still proposed as part of the Project to reduce potential congestion on local roadways caused by servicing the building. Additionally, no new parking will be constructed as part of the Project as a shared parking arrangement with Trilogy is anticipated, which will also reduce congestion and pedestrian conflicts. A transparent, elevated walkway at the second level spanning the driveway between the Project and Trilogy, which will contribute to a more lively and active street life, will be considered by the Proponent. At the southeast corner of the Project Site, a potential outdoor seating area for restaurant occupancy may expand existing outdoor dining opportunities at Trilogy along Boylston Street.

Height and Massing

The Project Change represents an increase in building height of approximately 70 feet from 270 feet to 340 feet. As presented in Figure 2.4, the building geometry has remained generally the same. The Proponent and the design team have continued to carefully consider the urban fabric around the Project and have worked hard to develop a design that is both contextually sensitive and visually compelling. In this regard, the tower portion continues to be set back from the street on both the Boylston Street and Brookline Avenue, creating a comfortable pedestrian environment. The horizontal frame elements of the tower facade make reference to the cornice line along Boylston Street, helping to ground it in the surrounding context.

Views and Vistas

The proposed building will continue to be visible along Brookline Avenue and Boylston Street, creating new vistas and building lines in the District. The building celebrates its prominent corner position and, as it steps from this corner, channels well-defined vistas along Boylston Street and Brookline Avenue toward the Emerald Necklace. Figure 1.6 presents a view of the Project from the Sears Rotary across the Emerald Necklace.

Public Realm and Accessibility

The Project Change continues to expand upon the growing developments in the Fenway area and positive growth along Boylston Street and Brookline Avenue. The proposed updated site design greatly improves pedestrian and vehicular circulation and access from what exists today, and has been designed to meet ADA requirements to support the inclusion of people with disabilities. A key public realm improvement, The Point Plaza (an urban public open space at the intersection of Boylston Street, Brookline Avenue, and Park Drive), will be at-grade so persons with disabilities will have full access to this open space. The Point Plaza has been designed as an open plaza that allows for safe pedestrian refuge and circulation. The conceptual design includes street tree plantings and site furnishings that are consistent with the neighborhood plan and the Boylston Street corridor design (Figure 1.5). And, as part of a future public arts campaign planned for the District, the Proponent plans to integrate public art into this new public space to complete the Boylston Street corridor. Additionally, the proposed open space at the southeast corner of the Project Site along Boylston



Street could become an at-grade outdoor dining area for a restaurant and will add character and diversity to the urban texture. The conceptual design for the pedestrian-friendly path incorporates colored and textured paving throughout to create a human-scaled setting. Bollards will be incorporated to create a safe environment by separating pedestrian and vehicular circulation.

While the study area intersections and sidewalks on Boylston Street, Kilmarnock Street, and Brookline Avenue are in generally good condition with accessible ramps, striped crosswalks, and pedestrian signals, there is no formal or ADA-compliant sidewalk adjacent to the Project Site along the Boylston Street frontage. All sidewalks adjacent to the Project Site will be improved in accordance with the City of Boston's Boylston Street Improvement Project, which meet accessibility requirements, and the Complete Street guidelines, where applicable. The streetscapes will be enhanced with new signage, street furniture, lighting, permeable paving at the furnishing zone, and landscaping, invigorating pedestrian circulation and commercial activity between Boylston Street and Brookline Avenue. Both the Brookline Avenue and Boylston Street sidewalks will have a consistent street tree and street light spacing adjacent to the proposed building. Sand based structural soils and irrigation will be provided in areas adjacent to the street trees below the sidewalks.

The proposed sidewalk width along Boylston Street ranges from approximately 12 feet to 22 feet and 11 feet to 18 feet along Brookline Avenue. Additionally, a new 6 feet to 11 feet wide pedestrian walkway along the shared driveway between the Project and Trilogy connecting Brookline Avenue and Boylston Street will be open to the public and ADA-compliant. Figure 2.5 illustrates the site access and circulation. For further details regarding project accessibility, refer to Attachment B for the completed Article 80 Accessibility Checklist.

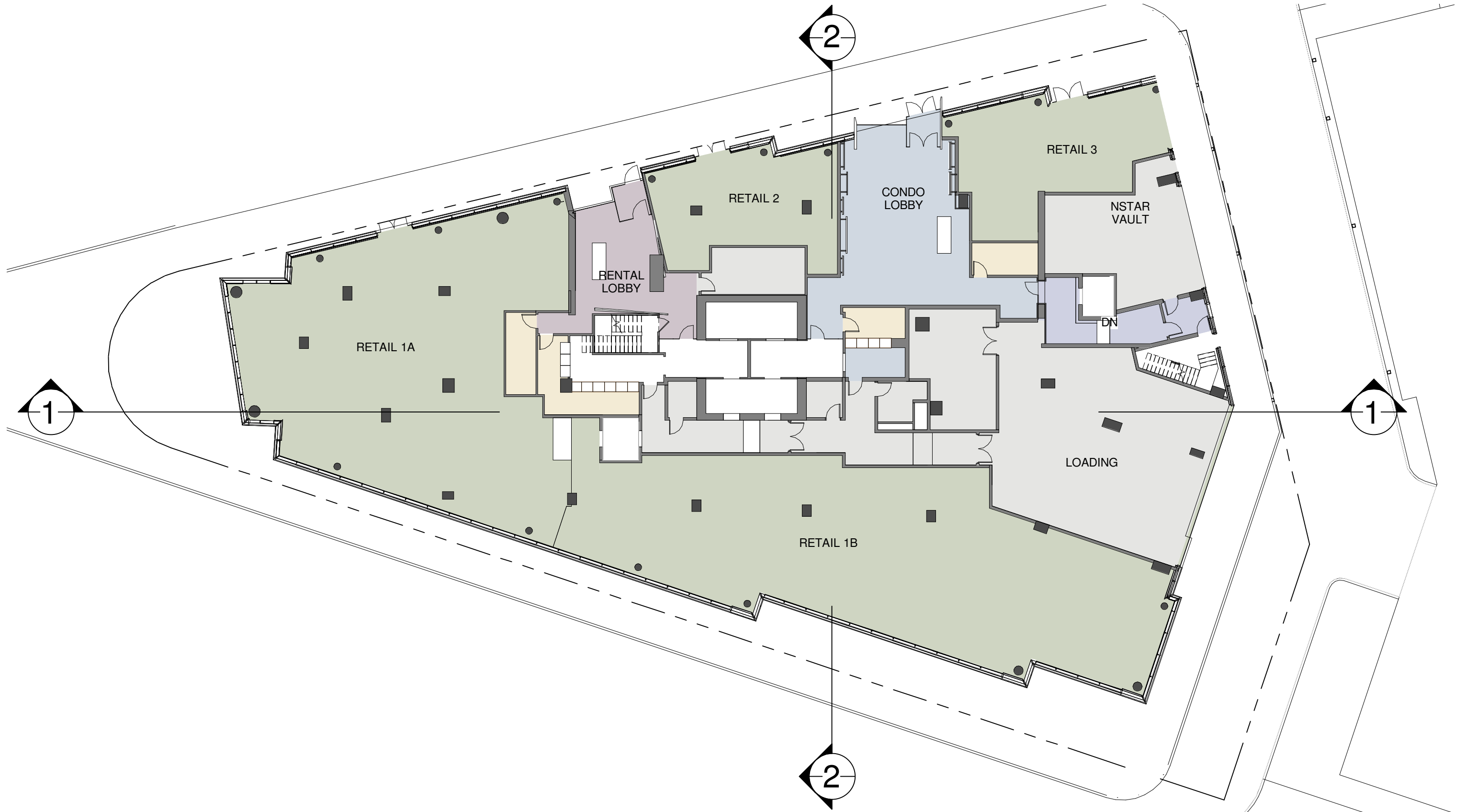


Figure 2.1a
Ground Floor Plan

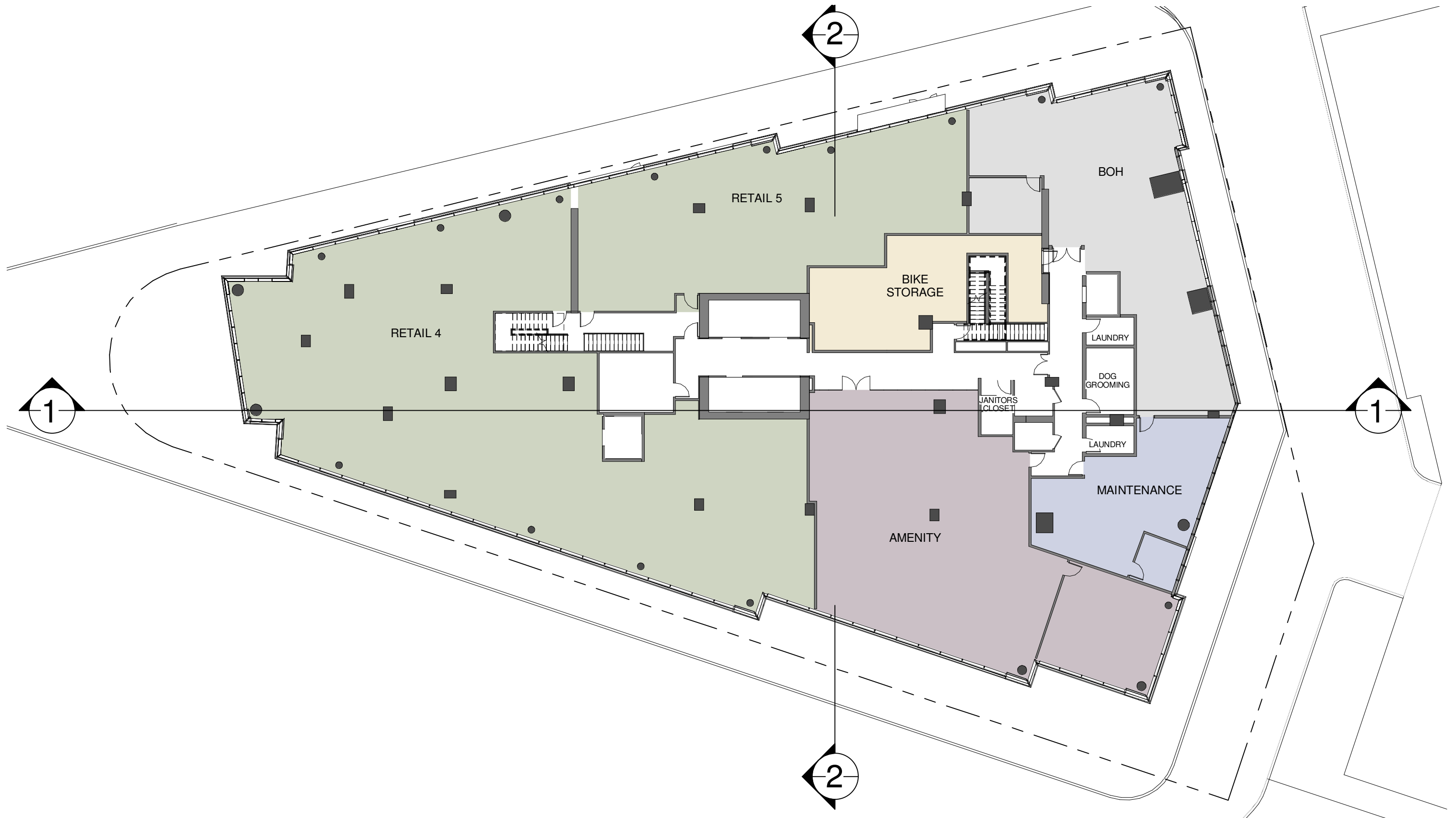


Figure 2.1b
Second Floor Plan

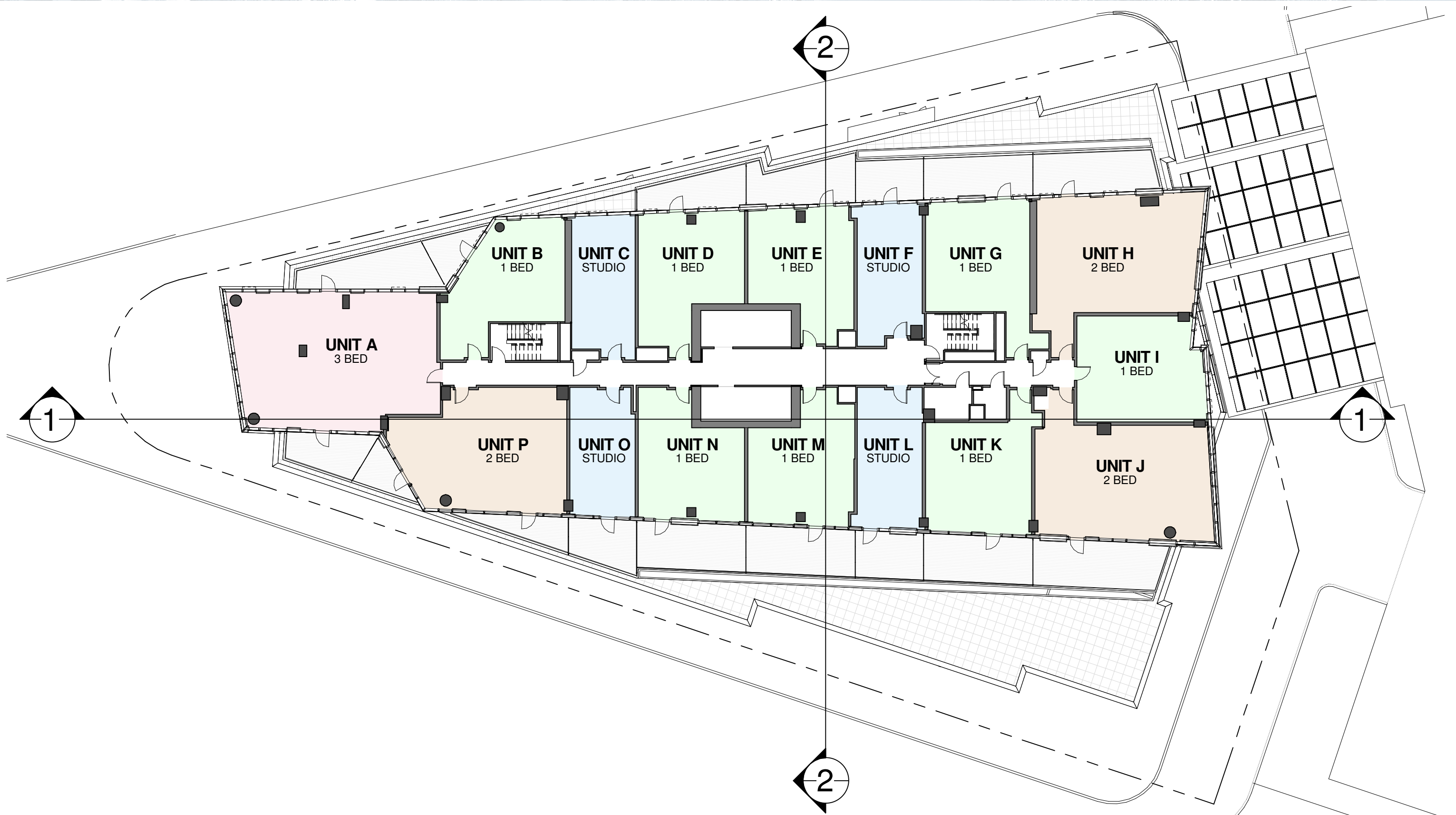


Figure 2.1c
Third Floor Plan

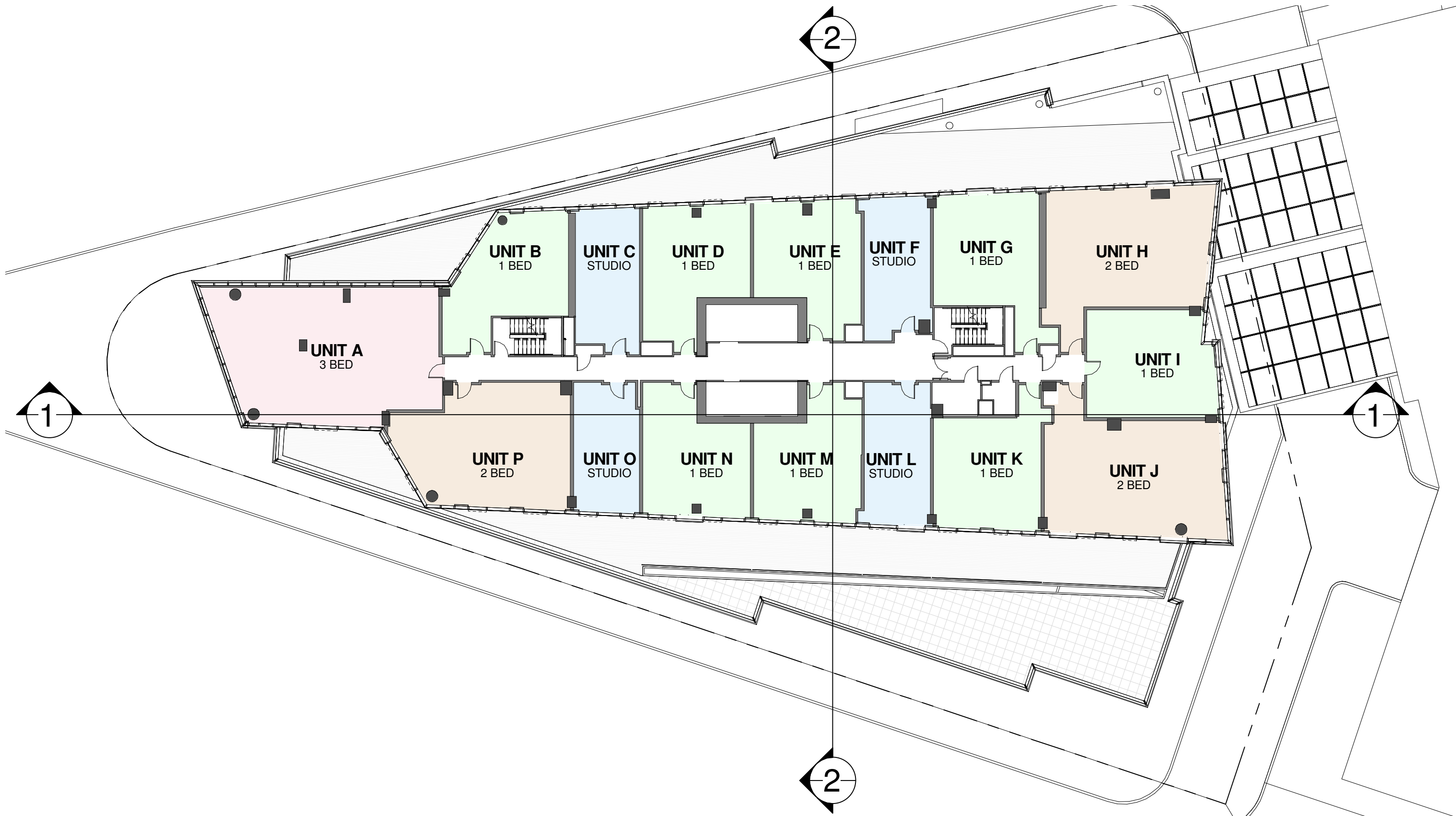


Figure 2.1d
Typical Apartment Floor Plan (Floors 4-17)

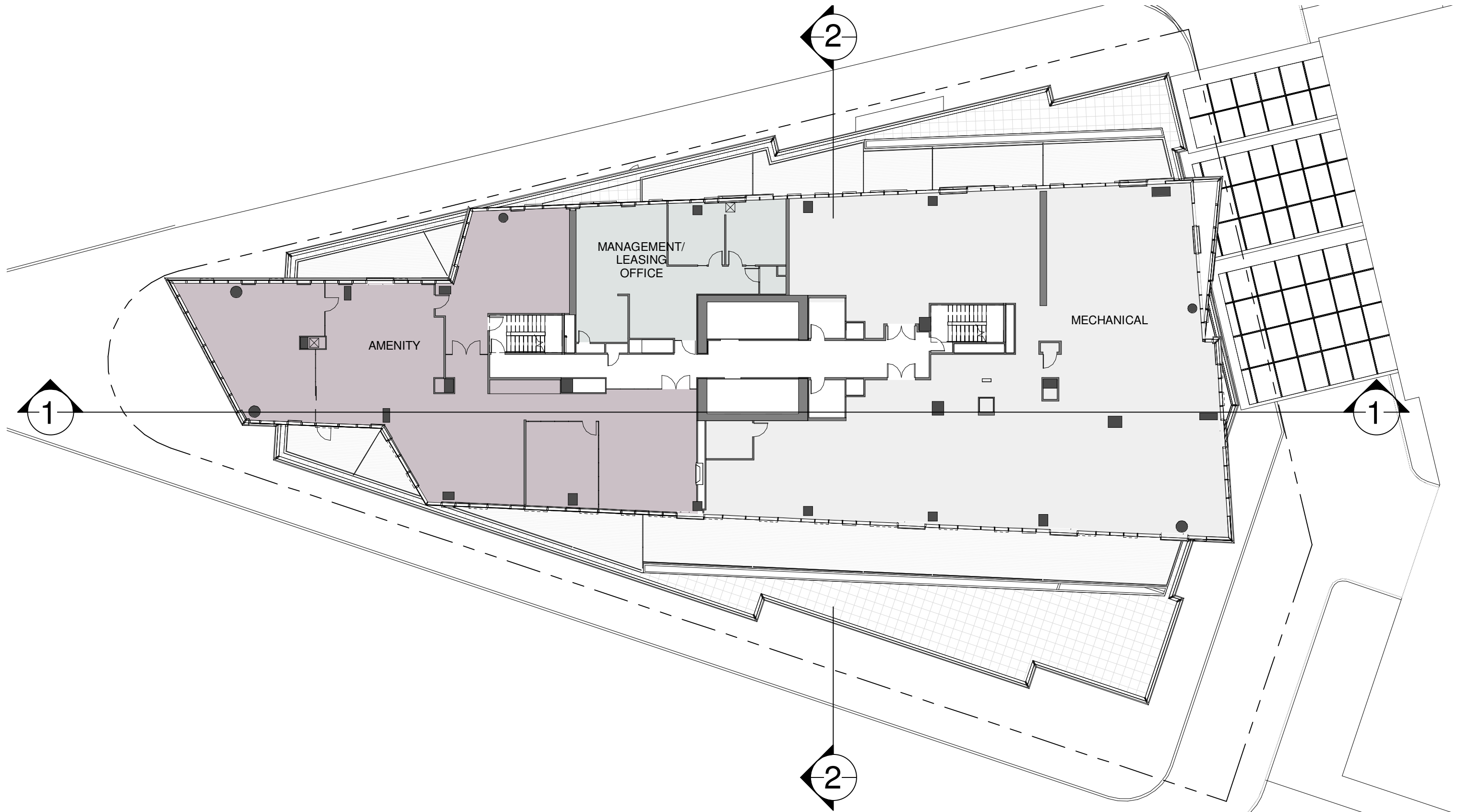


Figure 2.1e
Amenity and MEP Interstitial Floor Plan (Floor 18)

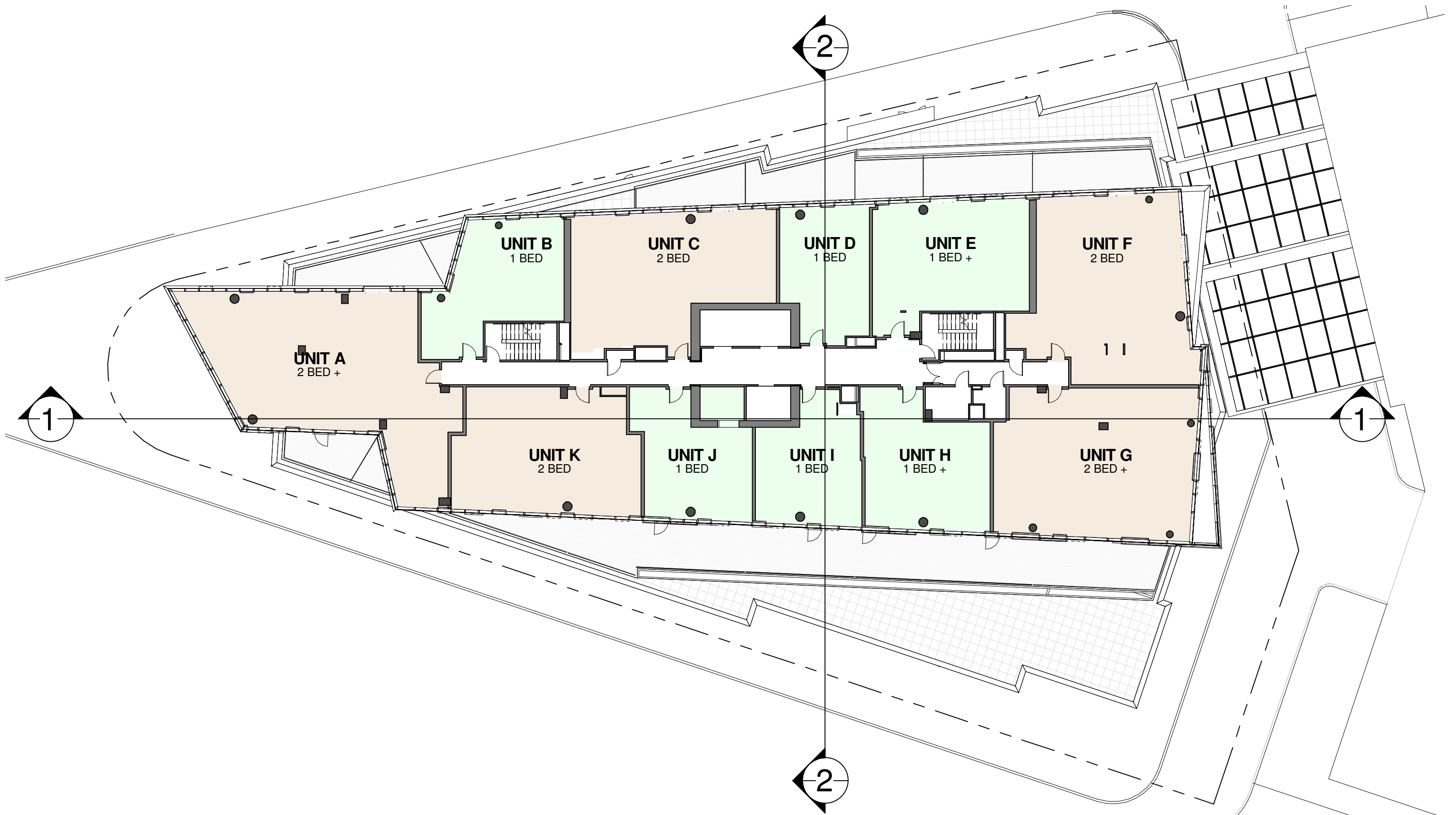


Figure 2.1f
Typical Condominium Floor Plan (Floors 19-27)

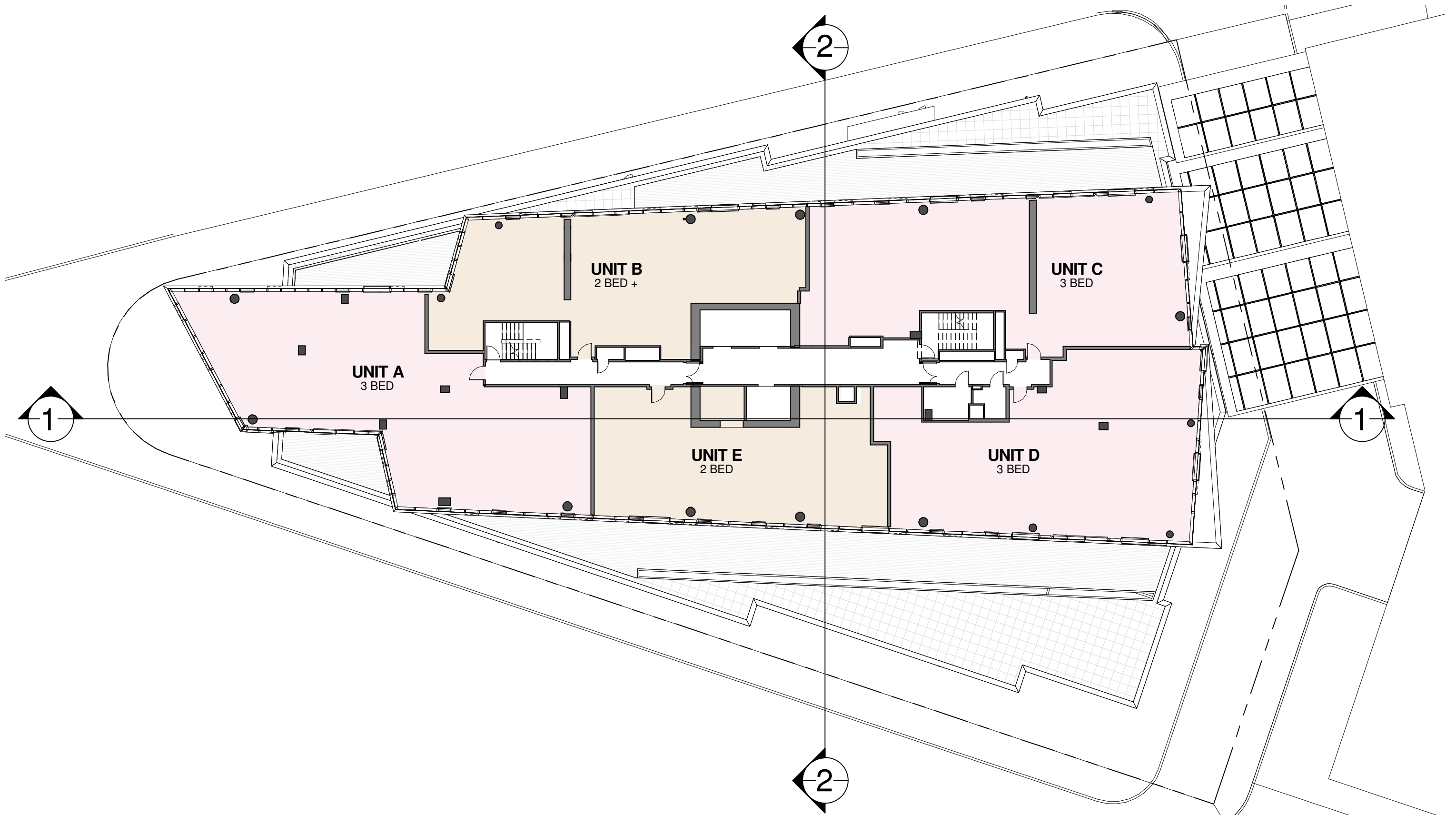


Figure 2.1g
Typical Penthouse Floor Plan (Floors 28-29)

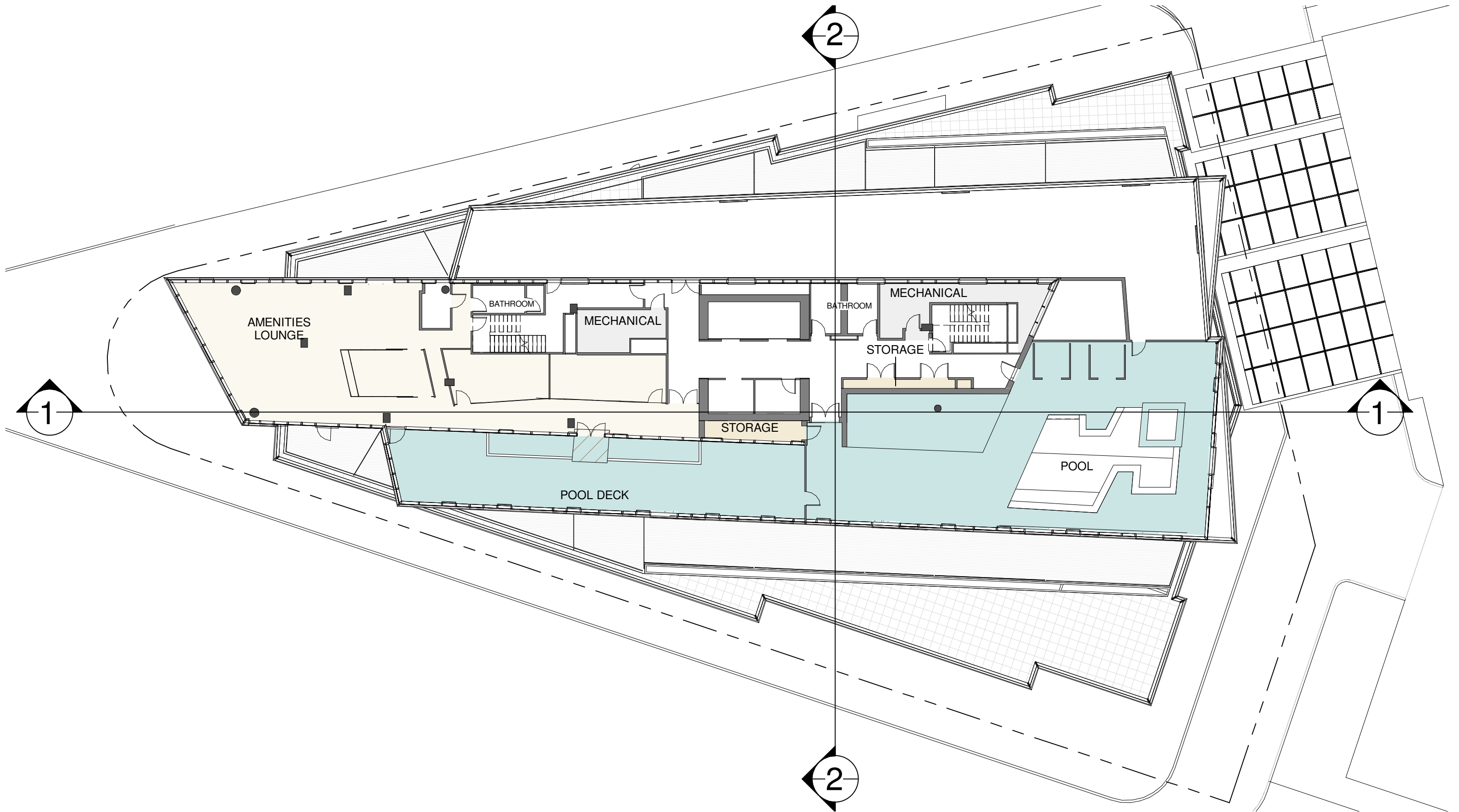


Figure 2.1h
Rooftop Amenity Floor Plan (Floor 30)

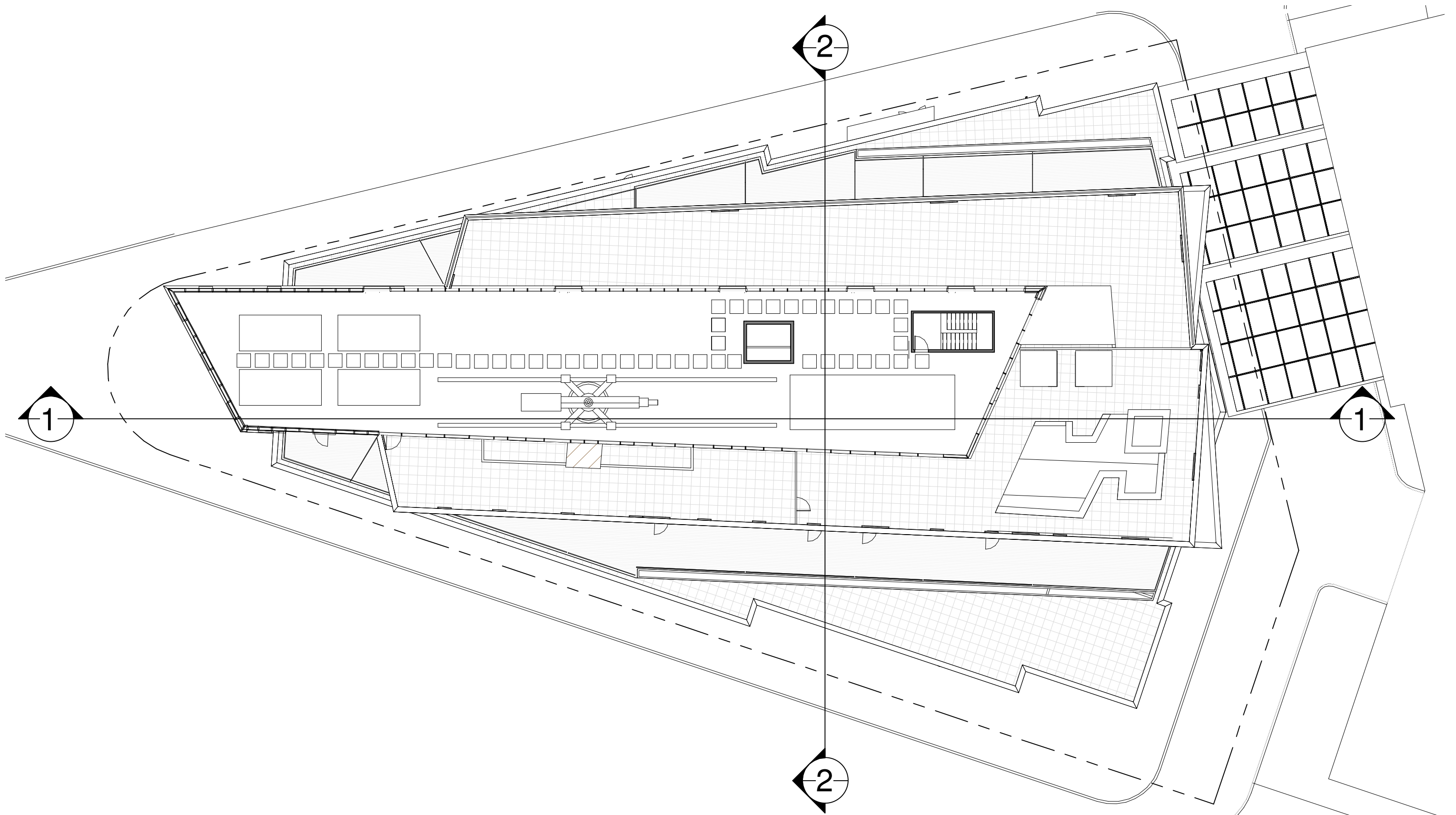


Figure 2.1i
Roof Level Floor Plan



Figure 2.2a
West Building Elevation

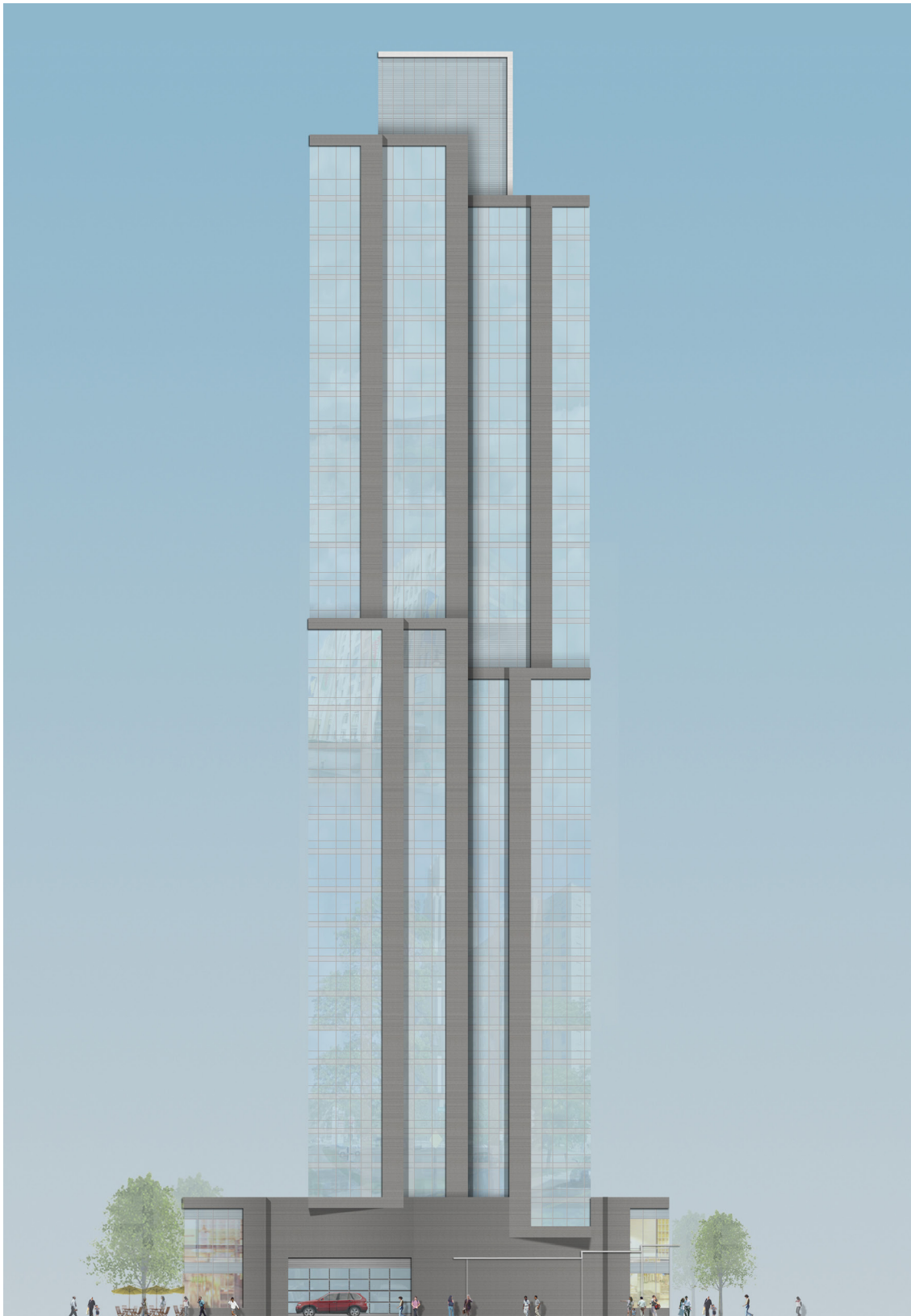


Figure 2.2b
East Building Elevation

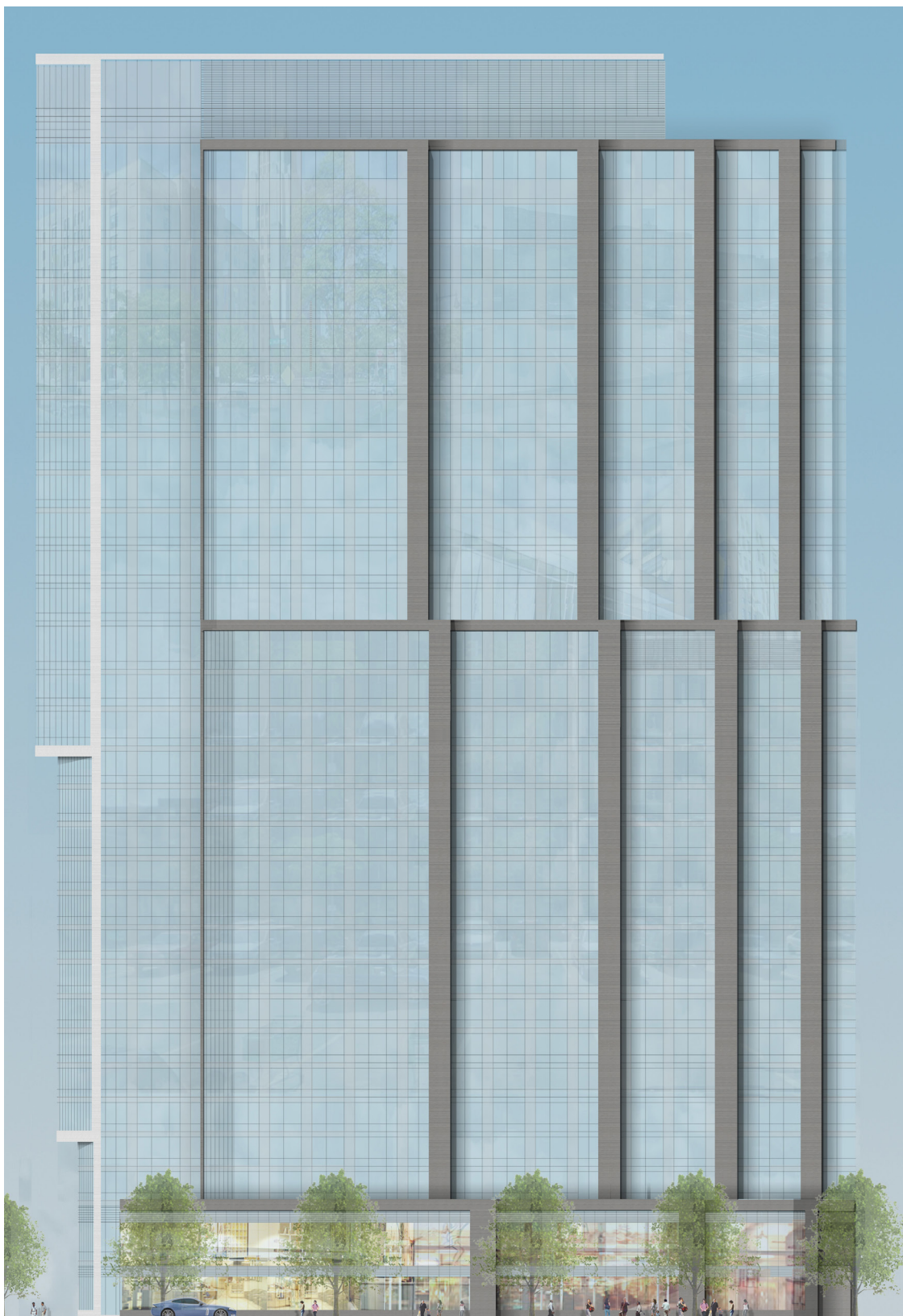


Figure 2.2c
South Building Elevation

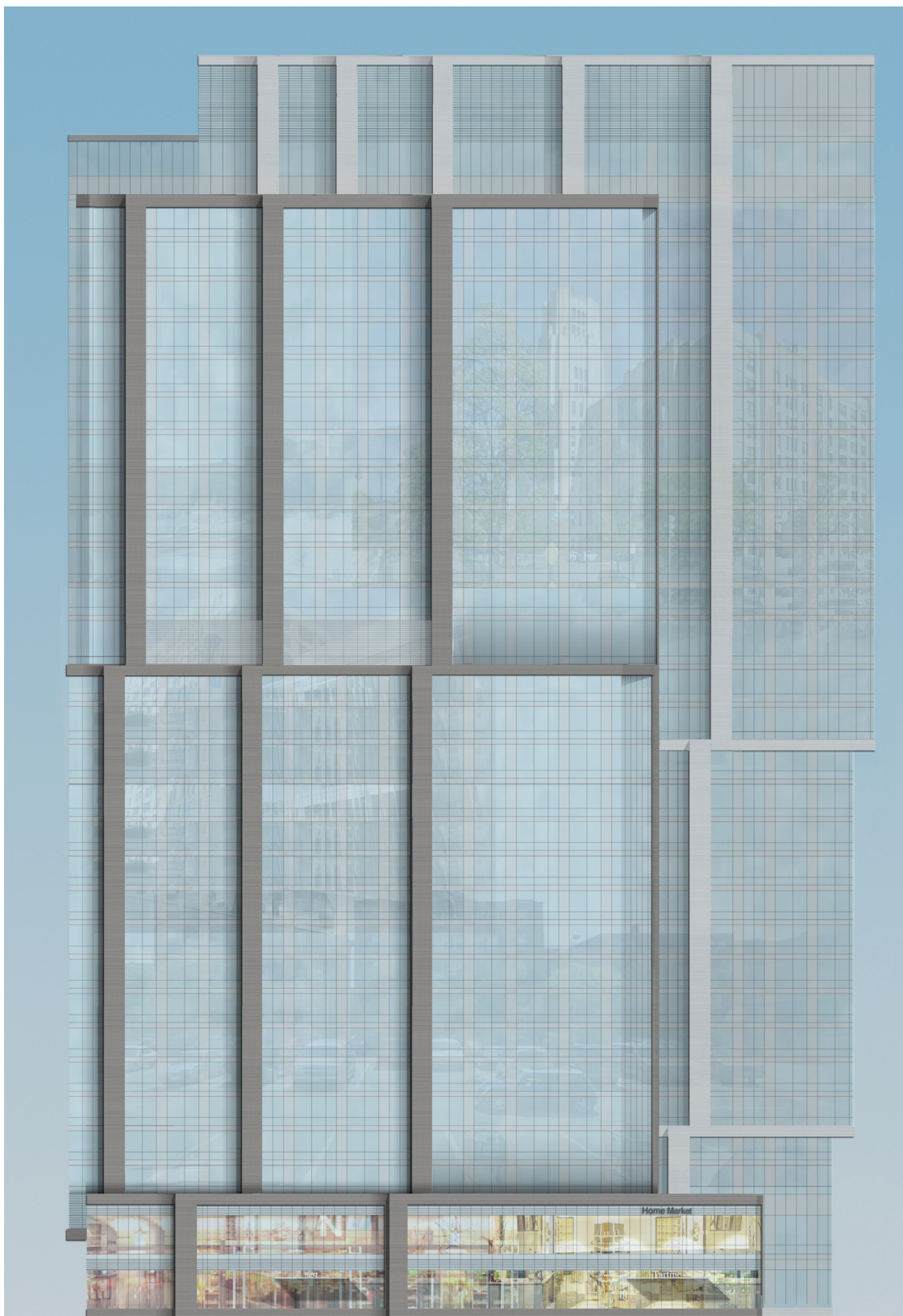


Figure 2.2d
North Building Elevation

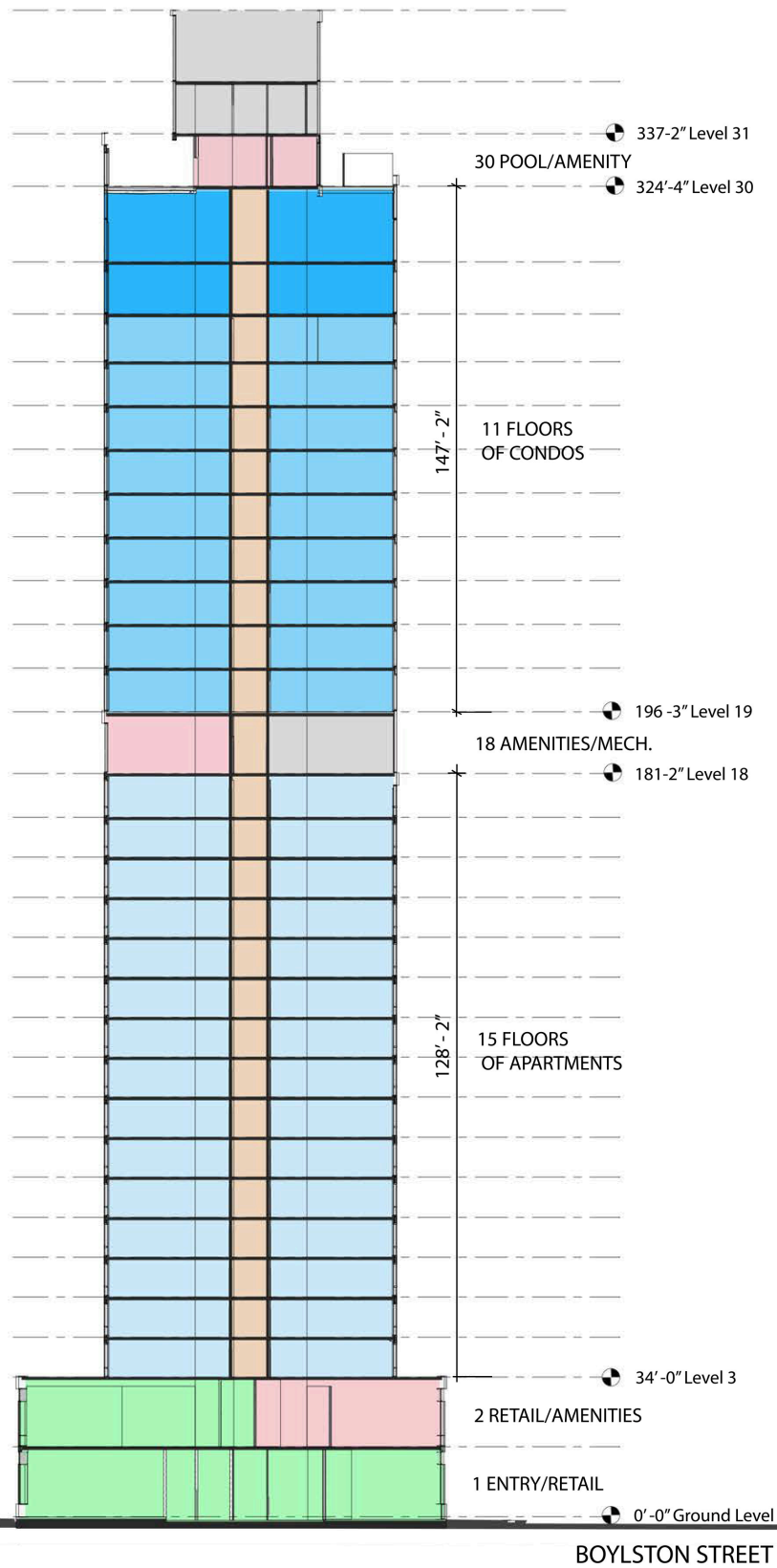


Figure 2.3a
Building Cross Section

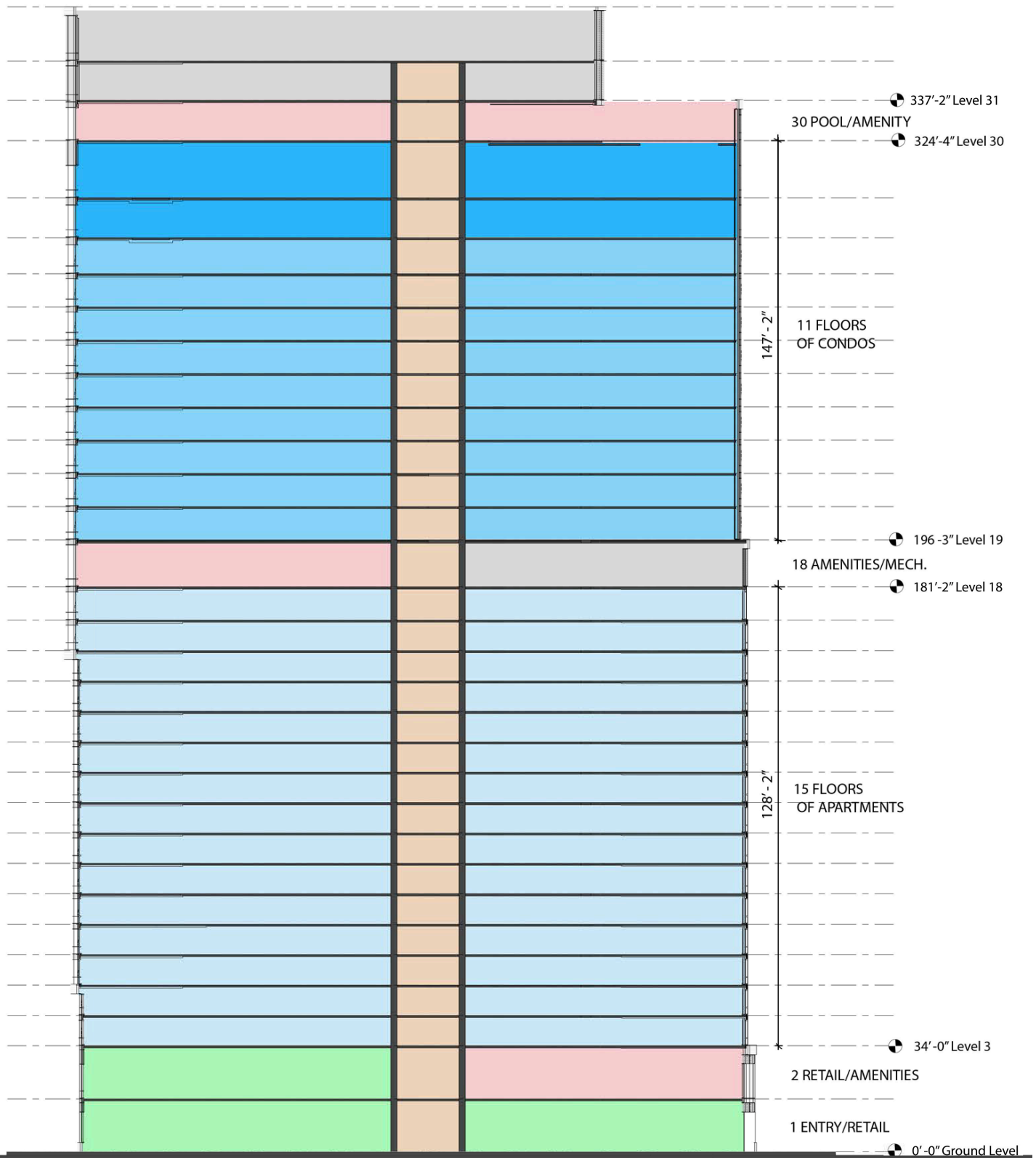


Figure 2.3b

Building Longitudinal Section

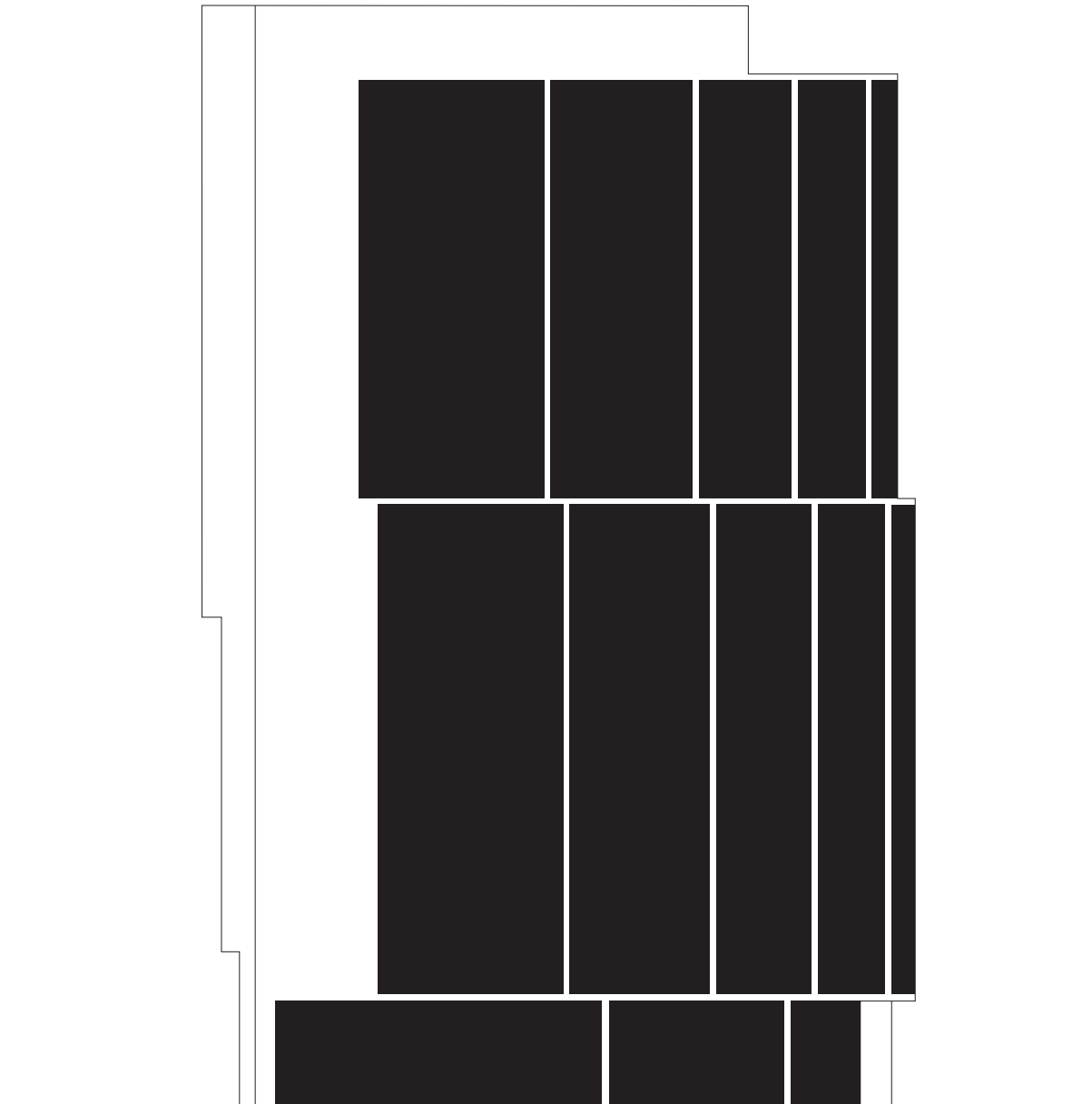
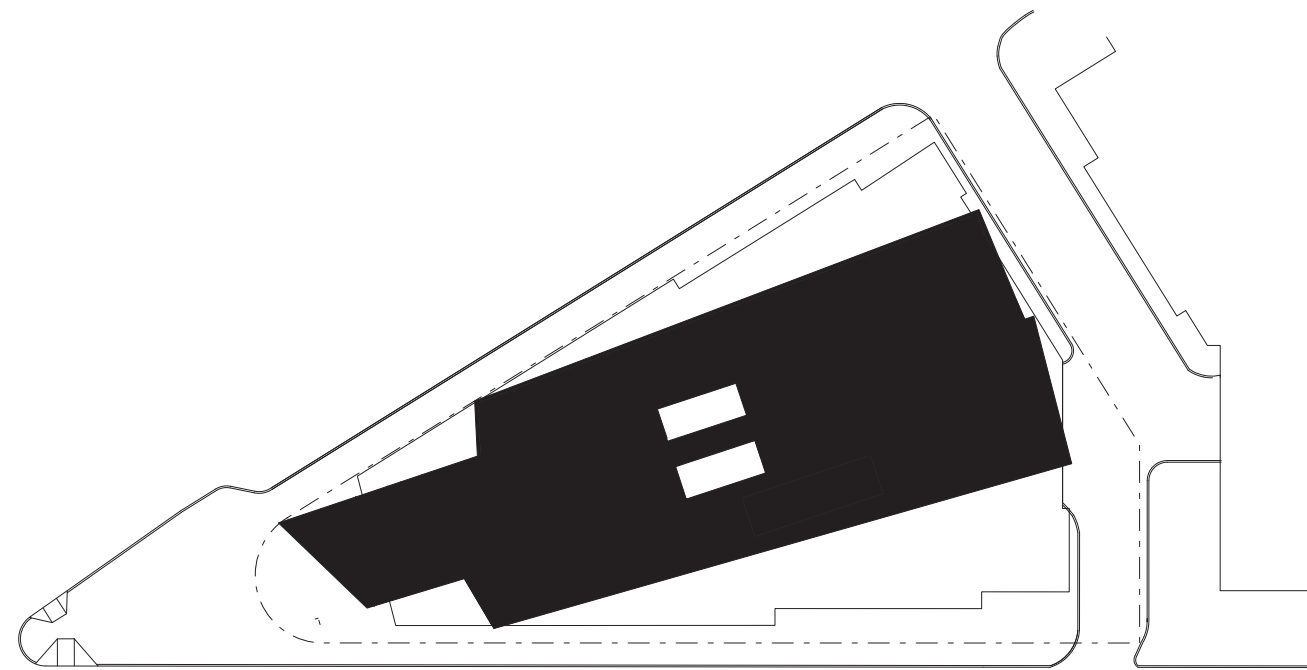


Figure 2.4
Plans and Massing Diagrams



Figure 2.5
Proposed Site Access and Circulation



3

Environmental Protection

Introduction

This chapter presents the findings from the supplemental revised environmental impact analyses based on the Project Change, including wind, shadows, and solar glare. This chapter also provides an update to the sustainable design approach, in accordance with Article 37, and a new discussion related to climate change preparedness and resiliency. While all environmental impact categories were initially considered in the 2013 PNF, in accordance with Article 80, several were not further evaluated in this NPC because the proposed changes to building design would not materially affect these impact categories. (Refer to Table 1-4 for a list of the impact categories and how they were addressed previously in the 2013 PNF where the Project Change is not significant enough to warrant re-running analyses.)

The Proponent is highly committed to environmental stewardship and sustainable design strategies in the Project. The Project will revitalize an underutilized urban site by using land efficiently, promote the use of alternative modes of transportation, encourage pedestrian activity, improve regional air and water quality, and include state-of-the-art building design and technologies to reduce demand on water and energy resources and create healthy and comfortable spaces for occupants.

This chapter presents the results of the revised wind and shadow studies, qualitatively describes anticipated changes to solar glare conditions, and describes the sustainable design elements proposed as part of the Project, at this time of project planning and early stages of conceptual design. Additionally, utilizing the best available science and all reasonable projections, this chapter aims to identify changes in the climate and environment and how such changes will affect the Project. Climate change conditions considered include, sea-level rise and extreme weather events, such as higher temperatures, more frequent and longer extreme heat events, more frequent and longer droughts, more severe freezing rain and heavy rainfall events, and increased wind gusts.

Wind

Updated wind tunnel tests were conducted to evaluate pedestrian-level wind conditions on and around the proposed development based on the Project Change, which includes the addition of six floors (five residential



floors and one mechanical floor). Two scenarios were considered for the updated wind tests: the No Build Condition (absence of the Project, which now includes the Muddy River improvements and the proposed Landmark Center project); and the Build Condition. The Proponent has worked closely with the design team to run wind tunnel tests to confirm the effectiveness of mitigation strategies improving the comfort conditions around the proposed building and Project Site. The updated wind study is enclosed herein as Attachment C.

As with the 2013 PNF Project, the effects during the winter months, when the winds come primarily from the northwest, were the most notable. When compared to the previously conducted wind tests, the annual mean wind conditions around the proposed development are expected to continue to be suitable for walking or better on an annual basis. Some increased wind activity is expected adjacent to the Project Site, however, wind conditions at these locations are expected to be mitigated through the use of mitigation strategies very similar to what was developed with the previous building design scheme, primarily through the use of localized mitigation measures, including a combination of solid walls and canopies, porous screens, fences, canopies and landscaping.

Wind conditions for the Project Change are similar to the approved project. The Build Condition for pedestrian wind conditions is illustrated in Figure 3b in Attachment C of this NPC. There are no Dangerous conditions detected annually or seasonally (Figure 3b and Table of Attachment C). In addition, all points show acceptable level of effective wind gusts at the pedestrian level under the updated Build Condition (Figure 4b of Attachment C).

The Project continues to have no negative impact on the Back Bay Fens public open space across Park Drive. When compared to the 2013 PNF Project, the updated pedestrian wind conditions are slightly improved from a Walking to Sitting or Standing levels of comfort throughout the park and along Park Drive. Also off-site, Location 86 along Peterborough Street is no longer expected to be Uncomfortable with unacceptable wind gusts as it is improved to suitable for walking with the Project.

The pedestrian environment along the shared driveway, specifically Location 13, is no longer expected to have unacceptable gust wind speeds due to the refinement of the proposed solid canopy that runs from Brookline Avenue down the shared driveway between the Project and the Trilogy building.

The Point Plaza (Location 6) is improved from a comfort level of Uncomfortable to Walking compared to the 2013 PNF Project.

In general, the Boylston Street corridor near the Project continues to be suitable for walking, sitting or standing. In the areas along the south face of the proposed building where outdoor cafés are proposed, future conditions are predicted as sitting which is consistent with this proposed use. The pedestrian wind conditions along Brookline vary by a few miles per hour when compared to the 2013 PNF, or improve depending on the specific location.

Shadow

This section describes the anticipated new shadows within roads and sidewalks in the project area during various times of the year as a result of the Project Change. Shadows are to be expected when replacing a low-



density, suburban-style development pattern with urban buildings of varying heights. Both the No-Build and Build Conditions were updated based on recently approved Landmark Center Redevelopment project and the Project Change. In general, the overall length of the shadows have increased due to the increase in building height; however, the results demonstrate the increase in new shadow is negligible. As with the previous building design, the majority of new shadows are along the portions of Brookline Avenue within the vicinity of the Project Site and there is no negative impact on the Back Bay Fens public open space. Under almost all conditions, the net new shadow extends over existing building rooftops. Build Condition shadows are unchanged for June 21 at 9AM and 6PM, and September 21 at 6PM. Refer to Figures 3.1a-d for the updated shadow study results.

The presence of these new shadows is consistent with the urban environment and planning objectives of the neighborhood, and when combined with the Proponent's proposed enhancements to the public realm in the area, are not likely to discourage the use of sidewalks or public areas in the vicinity of the Project Site. It is anticipated that the neighborhood will benefit from the Project because it will draw more pedestrian traffic to it and the surrounding area, thus enhancing commercial and recreational activities within the neighborhood.

Solar Glare

A comprehensive Solar Glare study was performed for the previously reviewed and approved building the results of which were presented in the 2013 PNF. This study demonstrated that the previously approved building geometry with the selected glazing system complied with the typical city code ordinance on glare as relates to building facades with large glazing surfaces. In addition, the study showed that the solar heat reflected from the building surfaces would not impact the cooling load of the building itself or the adjacent buildings. The updated building massing is expected to have very similar Solar Glare characteristics to the previously reviewed and approved building massing. The results also indicated that the upper reaches of the building have less of a Solar Glare impact on the pedestrian environment than the lower reaches of the building. The facade composition and alignment is equivalent, but extended vertically by approximately 70 feet.

The Solar Glare study was utilized to test the solar performance of the proposed glazing system properties, such as reflectance. As a result, the study establishes a maximum reflectance that must be adhered to in order to meet performance goals. This is balanced with the energy system facet of the building design, which utilizes internal heat gain as a factor. The building is currently in the Design Development stage. Once the envelope design is completed, the Proponent will submit an updated Solar Glare assessment to the BRA with the project Construction Documents verifying compliance with the performance standards established in the 2013 PNF Solar Glare study.

Green Building Design/Sustainability

This section provides an update of the sustainable design elements proposed as part of the Project to demonstrate that the Project will meet the requirements of Article 37 of the Boston Zoning Code – Green Buildings. In accordance with Article 37, the Proponent intends to incorporate state-of-the-art sustainable design features into the Project, where feasible and reasonable, so that the building could achieve LEED Silver



using the Leadership in Energy and Environmental Design (LEED) Green Building Rating System. Each component of the development has unique requirements based on its use type and users (i.e., lighting) and at this early stage of the design process, specific building system specifications have not yet been determined. System design solutions will be developed in an effort to achieve the targeted LEED credits.

The Proponent is deeply committed to building a livable, sustainable community in Fenway. The proposed mixed-use, transit-oriented development aims to revitalize an underutilized urban site by using land efficiently, promoting the use of alternative modes of transportation, encouraging pedestrian activity, and improving air and water quality on the Project Site. The Proponent will also strive for reduced energy and water consumption of the building. Strategies for achieving these goals include controlling the quality of stormwater leaving the Project Site, reducing the amount of potable water used for plumbing and irrigation through highly efficient fixtures and irrigation systems, sourcing building refrigerants with low ozone depleting and global warming potential and properly ventilating the building for occupant health and safety. The Project will incorporate energy conservation measures such as efficient lighting and HVAC systems to reduce building energy consumption over a less efficient building of similar size and function. The final design and construction of the Project will create a sustainable building to promote the internal building environmental quality for the residents, customers, and employees, enhance the surrounding neighborhood locally, and reduce environmental impacts globally. Following construction, the Proponent will develop tenant manuals for both the retail tenants and residential property management in an effort to further encourage sustainability through operations and the life of the building.

Since the filing of the PNF project design has progressed and additional LEED credits have been determined to be achievable. The updated LEED Scorecard presented as Figure 3.2 is tracking 55 'yes' points for a Silver rating and 19 'maybe' points, which will continue to be evaluated. This represents a noteworthy increase in LEED points compared to the 45 'yes' points (for a Certified rating) assumed in the PNF.

The design team for the Project includes several LEED Accredited Professionals (AP), including the Sustainability Consultant, Rebecca Rice, with NORESO. Ms. Rice's responsibilities include meeting with the Proponent, the project design team, and the Construction Manager early in project design to identify the environmental design goals and issues, and to discuss the potential applicable LEED credits based on conceptual design. As design progresses, Ms. Rice will track sustainability goals and achievements using the LEED Scorecard as an accounting tool tracking towards a LEED Silver designation for the building. Other team members with LEED accreditation include the project architect, Emil Gosselin, with CBT Architects, and the mechanical engineer, Robert Leber, P.E., LEED AP, Senior Vice President with Cosentini Associates, Inc. The Proponent and project design team has and will continue to evaluate and incorporate sustainable design and energy conservation as the design process continues.



Regulatory Context

Massachusetts Stretch Energy Code

As part of the Green Communities Act of 2008, Massachusetts developed an optional building code that gives cities and towns the ability to choose stronger energy performance in buildings than the state building code



(the “Stretch Energy 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 (both residential and commercial) and for major residential renovations or additions in municipalities that adopt it.

In 2010, the City of Boston was designated a Green Community under the Green Communities Designation and Grant Program—an initiative of the DOER. In order to be designated a Green Community and, therefore, eligible for grant money available annually, communities are required to meet five rigorous qualification criteria one of which includes minimizing life-cycle costs, such as adopt and implement the Stretch Energy Code. The goal of the grant program is for a municipality to use grant money to assist residents, businesses, and the municipality departments/facilities reduce energy use or install renewable energy systems. For the City of Boston, the Stretch Energy Code was adopted and became mandatory on July 1, 2011.

The Stretch Energy Code applies to both residential and commercial buildings and, specifically, for new commercial buildings over 5,000 square feet in size, including multi-family residential buildings over three (3) stories. The Stretch Energy Code offers a streamlined and cost effective route to achieving approximately 20 percent better energy efficiency than the state’s base energy code by either meeting the performance standard of 20 percent better than ASHRAE 90.1-2007, or using a prescriptive energy code. The current building design achieves an estimated 25 percent energy savings compared to the baseline building design, which surpasses the Stretch Energy Code requirement.

The Proponent and design team are aware that on July 1, 2014 the IECC2012 and ASHRAE standard 90.1-2010 become the new baseline energy code option, and expect a concurrency period through the end of 2014 under which projects can continue to comply with the stretch code by demonstrating a 20 percent improvement over ASHRAE 90.1-2007. This change, if and when approved, is expected to make the state building energy code about as stringent as the current adopted Stretch Energy Code in terms of energy savings. It is expected that the Stretch Energy Code will be updated to work with the new baseline energy code and require additional energy reductions beyond ASHRAE standard 90.1-2010.

Article 37 – Green Buildings of the Boston Zoning Code

Through Article 37 – Green Buildings, the City of Boston encourages buildings to decrease energy and water use and cost, improve the efficiency and useful life of building systems and infrastructure, and reduce the burdens imposed by buildings on city services, the environment, and public health. The stated purposes of the article are as follows: “The purposes of this article are to ensure that major building projects are 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.

An interdisciplinary committee, the “Boston Interagency Green Building Committee,” consisting of at least one representative of city agencies, including the BRA, BED, BTB, the Inspectional Services Department and the Mayor’s Office advises the BRA on a proposed project’s compliance with the provisions of the article.



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 LEED certifiable project. In order to be eligible for the Boston Green Building Credits, a project must meet the following Boston Public Health Commission prerequisites:

- Retrofit of all diesel construction vehicles, from the United States Environmental Protection Agency approved retrofit technologies, as applicable, or contribution of a comparable amount to the Air Pollution Control Commission Abatement Fund;
- An outdoor construction management plan including provisions for wheel washing, site vacuuming, truck covers and anti-idling signage; and
- Integrated pest management plan.

One point may be awarded for a project for each of the following four Boston Green Building Credit categories: Modern Grid; Historic Preservation; Groundwater Recharge; and Modern Mobility. These credits were developed by the City and are intended to address local issues unique to development within Boston.



Sustainable Sites (SS)

- **Construction Activity (SS Prerequisite 1).** This prerequisite is achievable. An erosion and sedimentation control plan for all construction activities will be developed and enforced.
- **Site Selection (SS Credit 1).** This credit is achievable. The Project Site has previously been completely developed, is located in an urban area and, meets all of the criteria for this credit.
- **Development Density (SS Credit 2).** This credit is achievable. The Project meets all of the criteria of this credit under Option 2 – Community Connectivity.
- **Brownfield Redevelopment (SS Credit 3).** This credit may be achievable if asbestos abatement is required prior to demolition activity.
- **Alternative Transportation (SS Credits 4.1, 4.2, 4.3, 4.4).** Credits 4.1, 4.2, and 4.4 are achievable. Public transportation, including rapid transit and multiple bus routes are within ½-mile and ¼-mile walk from the Project Site, respectively. The Project will provide bicycle storage for both the retail and residential tenants in accordance with LEED criteria. Under SSc4.4, the Project meets the criteria of Case 2, Residential Projects – Option 1 because it will provide no new parking. Credit 4.3 (preferred parking for low-emitting and fuel-efficient vehicles) is achievable if a 20 percent discount for parking passes is made available to all building occupants driving a low-emitting/fuel-efficient vehicle (defined by achieving a score of 40 or better according to the American Council for an Energy Efficient Economy’s annual vehicle rating guide).
- **Stormwater Design (SS Credits 6.1 & 6.2).** This credits may be achievable. The Site is currently completely impervious. Mechanical units are proposed for the project which would treat stormwater for TSS and surface areas not directed to these units will be flowing to a permeable paver strip for treatment. Achievement of this credit will be confirmed as the design progresses.
- **Heat Island Effect –Non-Roof (SS Credit 7.1).** This credit is achievable with the addition of new concrete and light colored pavers. This credit will be confirmed based on the final site and building design.



- **Heat Island Effect – Roof (SS Credit 7.2).** This credit is achievable by specifying high reflectance roof materials for at least 75 percent of the roof area. Areas with white TPO roof membrane will contribute positively to credit achievement and light colored roof pavers ($SRI \geq 78$ for low-sloped roof areas) will be specified to the extent possible. Additionally, as currently designed, the roof over the 2-story retail podium is anticipated to be a green roof system using sedum planting material. Installation of a sedum roof will ameliorate the "urban heat island" effect by absorbing less heat than a conventional building roof material. As most of the roof areas are either visible and/or accessible by building residents, the design team will continue to evaluate the roof surface as the design evolves.
- **Light Pollution Reduction – (SS Credit 8).** This credit may be achievable. The project lighting engineer has confirmed the lighting zone for the Project (LZ-4 High) so that light spill allowance is 0.60 footcandles at the site boundary and 0.01 footcandles 15 feet beyond the site boundary. Occupancy sensors in spaces with envelope openings will comply with interior lighting requirements; however, a photometric plan must be run to determine if the LEED light trespass requirements can be met.



Water Efficiency (WE)

- **Water Use Reduction (WE Prerequisite 1; WE Credit 3).** This prerequisite and the WE credits are achievable. Appropriate low-flow and low-consumption plumbing fixtures for the apartment units are anticipated to achieve a reduction in water usage of 30 to 35 percent over the baseline. The reduction in water usage will be determined during final design.
- **Water Efficient Landscaping (WE Credit 1).** This credit is likely achievable. Irrigation for the proposed landscaped area will be reduced by 50% over a baseline. Strategies for achieving this credit include specifying native or adaptive plantings for the landscape design, using drip over spray irrigation and selecting an irrigation system with a high controller efficiency.
- **Innovative Wastewater Technologies (WE Credit 2).** This credit will not be pursued as composting toilets is the most common strategy for achieving this point and is not appropriate for the project at this time. The site is not sized appropriately for an onsite wastewater treatment system.



Energy and Atmosphere (EA)

- **Fundamental Commissioning (EA Prerequisite 1).** This prerequisite is achievable. Commissioning of the mechanical and electric building systems will be conducted.
- **Minimum Energy Performance (EA Prerequisite 2)/ Optimize Energy Performance (EA Credit 1).** This prerequisite and credit is achievable. The energy code utilized for the Project will be the required Massachusetts Stretch Energy Building Code, which is more stringent than ASHRAE Standard 90.1-2007. Based on preliminary building energy modeling run at this stage of conceptual design, the overall energy cost savings is estimated to be approximately 16 percent for three LEED points (Figure 3.2). (The Project will comply with the Stretch Energy Code with an overall energy use savings of approximately 25 percent.) Measures to further optimize energy efficiency will continue to be investigated further as building systems are evaluated and selected. Refer to the section 'Description of Energy Saving Measures' below for further details.



- **Refrigerant Management (EA Prerequisite 3).** This prerequisite is achievable. Non-CFC-based refrigerants will be utilized for the Project.
- **On-Site Renewable Energy (EA Credit 2).** Various on-site renewable energy alternatives were evaluated for the Project; however, this credit is not achievable. Due to the tight urban nature of the Project Site, the majority of the rooftop space is being used to provide outdoor amenity and green space for the building's residents. The rest of the roof space is required for building mechanical equipment as well as a Building Maintenance Unit, or BMU, for cleaning the windows, which is required due to the building height. It was determined that any rooftop area available for solar PV would not be large enough to meet the minimum credit requirement for 1 point (i.e., at least 1 percent of total annual energy cost from an on-site renewable energy source). Solar hot water for heating the rooftop pool was also considered, but deemed infeasible due to building shading and other factors that would limit the amount of sun that could be harvested. On-site wind was considered, but was deemed not cost-effective for the Project.
- **Enhanced Commissioning (EA Credit 3).** This credit is achievable. An independent commissioning authority will be brought onboard to perform design reviews and re-commission the building systems after occupancy.
- **Enhanced Refrigerant Management (EA Credit 4).** This credit is achievable. Air conditioning equipment refrigerant options will be evaluated to optimize the balance between ozone-depletion and global warming/greenhouse gas production effects.
- **Measurement & Verification (EA Credit 5).** One point under this credit is achievable by providing building-level metering for energy and water consumption. The Project will commit to sharing this data with the U.S. Green Building Council (USGBC) for five years from the date of occupancy.
- **Green Power (EA Credit 6).** The Proponent may consider purchasing Green-e certified renewable energy credits equal to 35% of the building's electricity usage for at least 2 years in order to achieve this credit.

Potential Energy Saving Measures

The following are descriptions of each Energy Conservation Measure (ECM) incorporated to the Proposed Design model and evaluated for impact on overall building energy performance. All ECMs are incorporated into the current design.

Window Glazing

The building's fenestration is superior to ASHRAE 90.1-2007 minimum requirements. The proposed design uses double glazing with an improved U-value and solar heat gain coefficient for the curtain wall assemblies that far exceed the performance of a standard glazing system. This high performance glass lowers the building's heat gain/loss to the exterior environment and improves HVAC system performance.

Heat Pump Units

The main residential system type is a water loop heat pump. By rejecting/withdrawing heat from the water loop, the design HVAC system outperforms the baseline comparison system. These units are connected to



condensing boilers as well as high-efficiency cooling towers with variable speed drives which increase energy savings during the cooling season.

Condensing Hot Water Boilers

Condensing hot water boilers were selected to reduce the fuel needed to temper the water loop. These boilers are more efficient than the standard hot water system by using the exhaust gas to preheat the return water.

Low-Flow Fixtures and Condensing Hot Water Heaters

Domestic hot water savings will be realized in residential units through the use of high-efficiency lavatory faucets, kitchen faucets, and showerheads. The energy savings assumes compliance with LEED prerequisite WEp1, Water Use Reduction. Condensing heaters were selected to further reduce the quantity of fuel required to heat domestic hot water. These heaters are significantly more efficient than the standard domestic hot water system because they use the exhaust gas to preheat the return water.

Heat Recovery Wheels

Total energy enthalpy wheels with desiccant coating were selected for the corridor ventilation air intake. The enthalpy wheels pre-cool and dehumidify the outdoor air during the cooling season and pre-heat and humidity during the heating season. This results in a decrease in the cooling and heating loads for this system.

Lighting Power Reductions

A high-efficiency lighting design will reduce lighting power consumption while still providing the same amount of light through the use of high efficiency lamps and fixtures. LEDs will likely be incorporated in some areas of the building and occupancy sensors will be incorporated into the design as well, to reduce energy consumed in vacant areas.



Materials and Resources (MR)

- **Storage and Collection of Recyclables (MR Prerequisite 1).** This prerequisite is achievable. Facilities are expected to be provided at each residential floor level for collection of recyclable materials for removal.
- **Construction Waste Management (MR Credits 2.1, 2.2).** These credits are achievable. The Construction Manager will implement a waste management plan that will seek to divert at least 75 percent of construction and demolition waste material removed from the site from landfills through recycling and salvaging. This credit pursued aggressively is an opportunity to gain an exemplary performance credit of 95 percent construction waste recycling (see the Innovation in Design credits below).
- **Recycled Content (MR Credits 4.1, 4.2).** Two points under this credit are expected to be achievable. Project specifications will encourage provision and tracking of materials with recycled content where practical.



- **Regional Materials (MR Credits 5.1, 5.2).** Two points under this credit are expected to be achievable. Project specifications will encourage provision and tracking of materials that have been manufactured and extracted/harvested within 500 miles of the Project Site.
- **Rapidly Renewable Materials (MR Credit 6).** This credit is achievable. Project specifications will encourage provision and tracking of materials and products that are made from plants that are typically harvested within a 10-year or shorter cycle.
- **Certified Wood (MR Credit 7).** This credit is achievable. Project Specifications will encourage provision and tracking of wood building components that are certified in accordance with the Forest Stewardship Council's principles and criteria.



Indoor Environmental Quality (IEQ)

- **Minimum IAQ Performance (IEQ Prerequisite 1).** This prerequisite is achievable. The ventilation code utilized for the Project will be ASHRAE Standard 62.1-2007, as required by the present Massachusetts Building Code. Natural Ventilation will be incorporated in residential units.
- **Environmental Tobacco Smoke Control (IEQ Prerequisite 2).** This prerequisite is achievable. The Proponent intends to designate the entire building as a non-smoking facility.
- **Outdoor Air Delivery Monitoring (IEQ Credit 1).** This credit may be achievable through the installation of CO₂ monitors and an airflow monitoring device on the ERVs. The Project will have a constant volume system providing continuous air to the mechanically ventilated spaces. This credit will be evaluated and determined through final design.
- **Increased Ventilation (IEQ Credit 2).** This credit will not be pursued because the energy penalty associated with providing 30 percent more ventilation air than required by ASHRAE 62.1 2007.
- **Construction IAQ Management Plan –During Construction (IEQ Credit 3.1).** This credit is achievable. An Indoor Air Quality Management plan will be implemented during the construction phase, per the requirements of this credit.
- **Construction IAQ Management Plan– Before Occupancy (IEQ Credit 3.2).** This credit will not be pursued due to the negative impact a building flush-out or IAQ testing would have on the project schedule.
- **Low-Emitting Materials (IEQ Credits 4.1 - 4.4).** These credits are achievable. Project specifications will encourage provision and tracking of adhesives, sealants, paint, and carpet with low VOC content limits, as prescribed by the respective applicable standards. Additionally, composite wood products with no added urea-formaldehyde will be specified.
- **Indoor Chemical and Pollutant Source Control (IEQ Credit 5).** This credit is achievable. A permanent entryway system is expected to be installed at high-volume building entrances to prevent air contaminants from entering the building. Housekeeping and laundry areas are expected to be separated and exhausted to outside to comply with the requirements of this credit. Air handling units are expected to be provided with appropriate filtration to meet the credit.



- **Controllability of Systems (IEQ Credits 6.1, 6.2).** These credits are achievable. Individual lighting and temperature controls in the residential areas of the building will meet the minimum requirements of these credits. For retail spaces, providing individual lighting and thermal comfort controls in office and administrative spaces (per the LEED BD+C Retail Supplement) will be encouraged through tenant guidelines for fit-out.
- **Thermal Comfort - Design (IEQ Credit 7.1).** This credit is expected to be achievable. The building envelope and HVAC systems are expected to be designed to meet the requirements of ASHRAE 55-2004.
- **Thermal Comfort – Verification (IEQ Credit 7.2).** This credit may be achievable and will be evaluated closer to building occupancy.
- **Daylight and Views (IEQ Credits 8.1, 8.2).** These credits may be achievable. Based on conceptual design, daylight exposure and views are expected to be maximized and will continue to be evaluated in detail during final design to determine compliance with the credit requirements.



Innovation in Design (ID)

The PNF previously reported that the Project was tracking two ID credits that are no longer applicable: Energy Star Appliances; and Building Downsizing. Since the USGBC is constantly changing how they respond to credits and raising the bar on the ID credits, the project team finds that ID points that were accepted on projects previously may not be accepted now due to various LEED Addenda issued in the meantime. The USGBC is now ruling if you get credit for a strategy in the rating system itself (i.e., if the Project is pursuing SS4.4 with the parking in Trilogy) the Project cannot also achieve a parking credit as an ID point. Similarly, if operational energy efficiencies, such as from the installation of ENERGY STAR appliances are accounted for in the energy model under EAc1, additional ID points cannot be achieved for that energy conservation measures. It is for these reasons that the project design team has pursued other ID credits, as described further below.

Low Mercury Lamps

This credit is achievable through specifying lamps and light fixtures so that the overall average of mercury in lamps does not exceed 90 picograms per lumen hour for at least 90% of all fixtures.

Green Cleaning Policy

This credit is achievable by providing an operation policy for green cleaning that meets the requirements of LEED for Existing Buildings, Operations and Maintenance (EQp3), including quantitative goals and performance metrics for cleaning products and equipment, guidelines for safe handling and storage of cleaning chemicals, strategies for promoting and improving hand hygiene, standard cleaning procedures for protecting vulnerable building occupants, and documenting the program's approved and prohibited chemicals and practices.



Integrated Pest Management

This credit is achievable by providing a plan for integrated pest management that meets the requirements of LEED for Existing Buildings, Operations and Maintenance (EQc3.6), including designing a plan for integrated pest management (IPM), and implementing it 100% of the time. This approach to pest management limits the negative impacts that conventional pest management often has on the health of building occupants and uses the least-toxic means of pest management possible.

Exemplary Performance for Alternative Transportation (SSc4.1)

This credit will be met by going beyond the requirements of SSc4.1 and building on a site within ¼-mile of at least two bus stops with access to four or more bus lines and a frequency of service of at least 200 rides per day.

Exemplary Performance for Construction Waste Management (MRc2)

An additional point may be achievable for Exemplary Performance under MRc2, MRc4, or MRc5. As stated previously under MRc2, the Construction Manager will implement a waste management plan that will seek to divert at least 75 percent of construction and demolition waste material removed from the Project Site from landfills through recycling and salvaging. This credit may be pursued aggressively in order to divert/recycle a minimum of 95 percent of the construction waste. This credit will be determined during construction. Alternatively, the project design may result in total materials cost with a higher amount of recycled content and/or regional materials, which will be determined through final design as materials are purchased.

LEED Accredited Professional (ID Credit 2)

This credit is achievable. As discussed previously, the project team includes multiple LEED Accredited Professionals.



Regional Priority Credits

The concept of Regional Priority Credits (RPCs) was introduced in the LEED 2009 rating systems to incentivize the achievement of credits that address geographically specific environmental priorities. RPCs are not new LEED credits, but are existing credits that USGBC chapters and regional councils have designated as being particularly important for their areas and are achieved in the form of a bonus point. The RPCs that may be achievable for the Project are as follows:

- SSc3: Brownfield Redevelopment;
- SSc6.1: Stormwater Design Quantity Control;
- SSc7.2: Heat Island Effect, Roof; and



- SSc7.1: Heat Island Effect, Non-Roof.



Boston Green Building Credits

The PNF previously reported that the Project would likely achieve two of the four available Boston Green Building credits (Appendix A of Article 37): the Groundwater Recharge and Modern Mobility credits. As design progressed, it has been determined that while the Project is located within the GCOD and will include an infiltration system that holds one-inch of site runoff and utilize a leaching bed to infiltrate captured stormwater flows, this system does not meet the more stringent requirements of the Groundwater Recharge credit. Similarly, based on the final TAPA, the Project does not fully comply with the prerequisites and does not meet the specific TDM requirements of the Modern Mobility credit.



Tenant Guidelines

The Proponent will attach to tenant leases (both retail and residential) an exhibit with information on the sustainable/green building features of the Project and how the tenant can participate/support sustainability through their operations and/or use of the leased space. A Retail Tenant Guidelines document will include information on the sustainable aspects of the site and the base retail spaces, and will further encourage the retail tenant(s) to make their build-out as sustainable as possible. This could include recommending utilization of the LEED for Commercial Interiors (CI) rating system criteria as guidance. The Retail Tenant Guidelines may describe the LEED-CI rating program and identify aspects of the core/shell design that could be targeted to make LEED-CI certification easier for the retail tenant(s) to achieve. A Residential Tenant Guidelines will include information on the sustainable aspects of the site and the base residential units/buildings, including education on installed energy star appliances and a copy of the 'No Smoking' policy. These guidelines will further encourage the residential tenant(s) to support the sustainable features, such as tips/measures to reduce energy use, coordinate carpooling to work with other tenants, and City of Boston recycling information.

Climate Change Preparedness and Resiliency

This section discusses the approach to preparing for changes in climate change, in accordance with Appendix 7 of Article 80 of the Code. The required Climate Change Resiliency and Preparedness Checklist has been completed for the Project and is provided in Attachment D of this NPC.



Addressing Sea Level Rise

The Proponent and project team are aware of and share the concerns being discussed within the planning and design community regarding future sea level rise. The primary concern is the potential risk faced by buildings near the Boston waterfront in years to come. According to the Intergovernmental Panel on Climate Change (IPCC), if sea level continues to rise at the current rate, the sea level in Massachusetts as a whole will rise by one foot by the year 2100 and using a high emissions scenario, sea level rise could reach as much as six feet.



According to the FEMA Flood Insurance Rate Map (City of Boston, Map Numbers 25025C0076G and 25025C0078G), the Project Site is located outside of the 100-year floodplain, approximately 80 feet from any Coastal, Velocity or Flood Zone, or Area Prone to Flooding, and 300 feet from a water source (the Muddy River).

The primary preparedness goals of the Project are to:

1. Provide for basic needs such as safety, drinking water, habitable temperature, functioning stairs and elevators; and
2. Resist damage, protect occupants and allow building occupation to get back online quickly after a storm, also known as 'rapid re-occupation.'

The following summarizes how potential sea level rise/flooding has been incorporated in the Project Site and building design.

Site Design

The Project Site has been designed to manage and infiltrate stormwater runoff. An innovative sub-slab retention/infiltration system that retains site runoff while providing treatment and peak flow mitigation will be installed. The current design provides the required volume and utilizes a gravity driven leaching bed to achieve infiltration, per the requirements of the GCOD. In addition, sidewalks will be sloped toward tree pits and/or permeable paver strips to capture stormwater and minimize local flooding. The tree pits will be sized to manage this runoff and structural soil below sidewalk will be added to absorb rainwater. To mitigate exposure to sea level rise, all finish floor elevations will be located above the 100-year flood elevation.



Building Resiliency

Mechanical air handling and plumbing systems are located in interior spaces on a floor above ground level as protection from elements of the weather. Mechanical and electrical components located at the rooftop are designed for exterior installation with the use of:

- Galvanized metal components
- Weatherproof enclosures
- Heat-tracing freeze protection and weatherproofed insulation for piping exposed at the rooftop.

And, the building's emergency generator for use following a major storm event is located at the roof level.

The emergency electric power system for the building shall incorporate the following:

- A diesel-fired emergency generating unit complete with day tank and muffler, located within a walk-in type sound-attenuated weather-tight enclosure on the roof.
- An emergency power distribution feeder from the generator to the automatic transfer switch incorporated into the fire pump controller.



- Automatic transfer switches for emergency systems to supply power to loads including:
 - Egress lighting.
 - Fire alarm system.
- Automatic transfer switches for legally required standby systems to supply power to loads including:
- Fire fighters communications system (radio amplification system).
- Elevators (on the basis of one at a time per bank)
- Elevator machine room air-conditioning.
- Smoke control system fans.
- Communications systems
- Automatic transfer switches for optional standby systems to supply power to loads including:
 - HVAC cooling tower basin heaters
 - Heating system pumps
 - Condensate pumps
 - Heat tracing of mechanical and plumbing piping
 - Sump pumps
 - Sewage ejector pumps
 - Domestic water booster pumps
 - Parking access control equipment
 - Tele / data equipment
 - Tele / data room HVAC.

Non-mechanical strategies that will support building functionality and use during an extended interruption(s) of utility services and infrastructure have also been incorporated, including operable windows for natural ventilation.



Addressing Extreme Weather Conditions

As a result of climate change, the Northeast is expected to experience more frequent and intense storms. The IPCC has also predicted that in Massachusetts the number of days with temperatures greater than 90°F will increase from 5 to 20 days. To prepare for this, the Project will minimize the heat island effect by installing street trees and other landscaping, utilize light-colored paving materials on the pedestrian-oriented hardscape and a reflective rooftop membrane to absorb less heat, and incorporation of vegetated rooftop materials on a portion of the lower rooftop above the retail space.



To minimize the Project's susceptibility to drought, the landscape design is anticipated to incorporate regionally appropriate robust native and adaptive vegetation that will require minimal irrigation. The Project will also incorporate low-flow fixtures to conserve potable water.

To minimize the Project's impact on Climate Change, the Project's energy performance is anticipated to be approximately 25 percent above the ASHRAE 90.1-2007 baseline standard, which will help reduce GHG emissions associated with building energy sources that contribute to global warming.



Figure 3.1a
Shadow Impacts - March 21

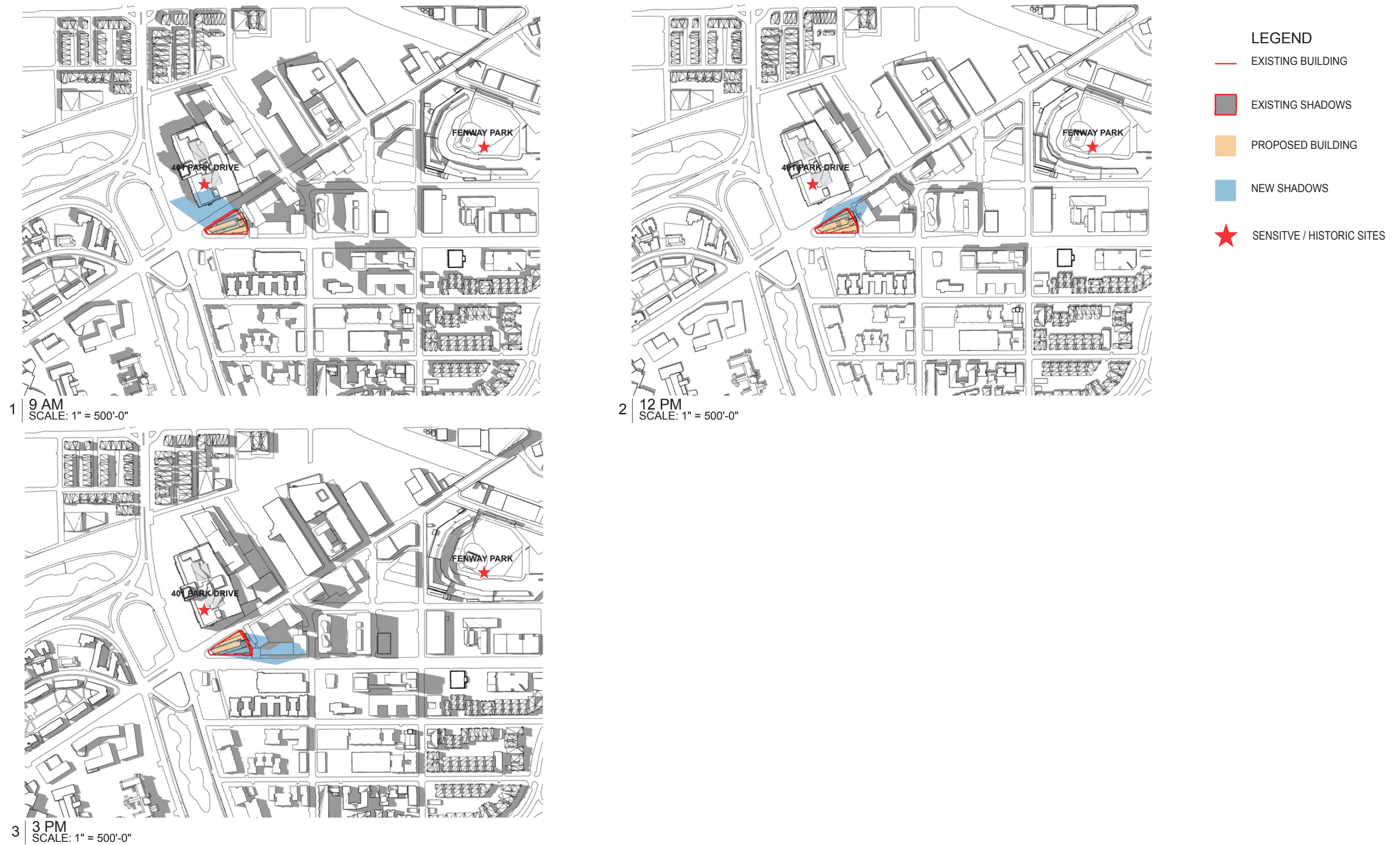


Figure 3.1b
Shadow Impacts - June 21

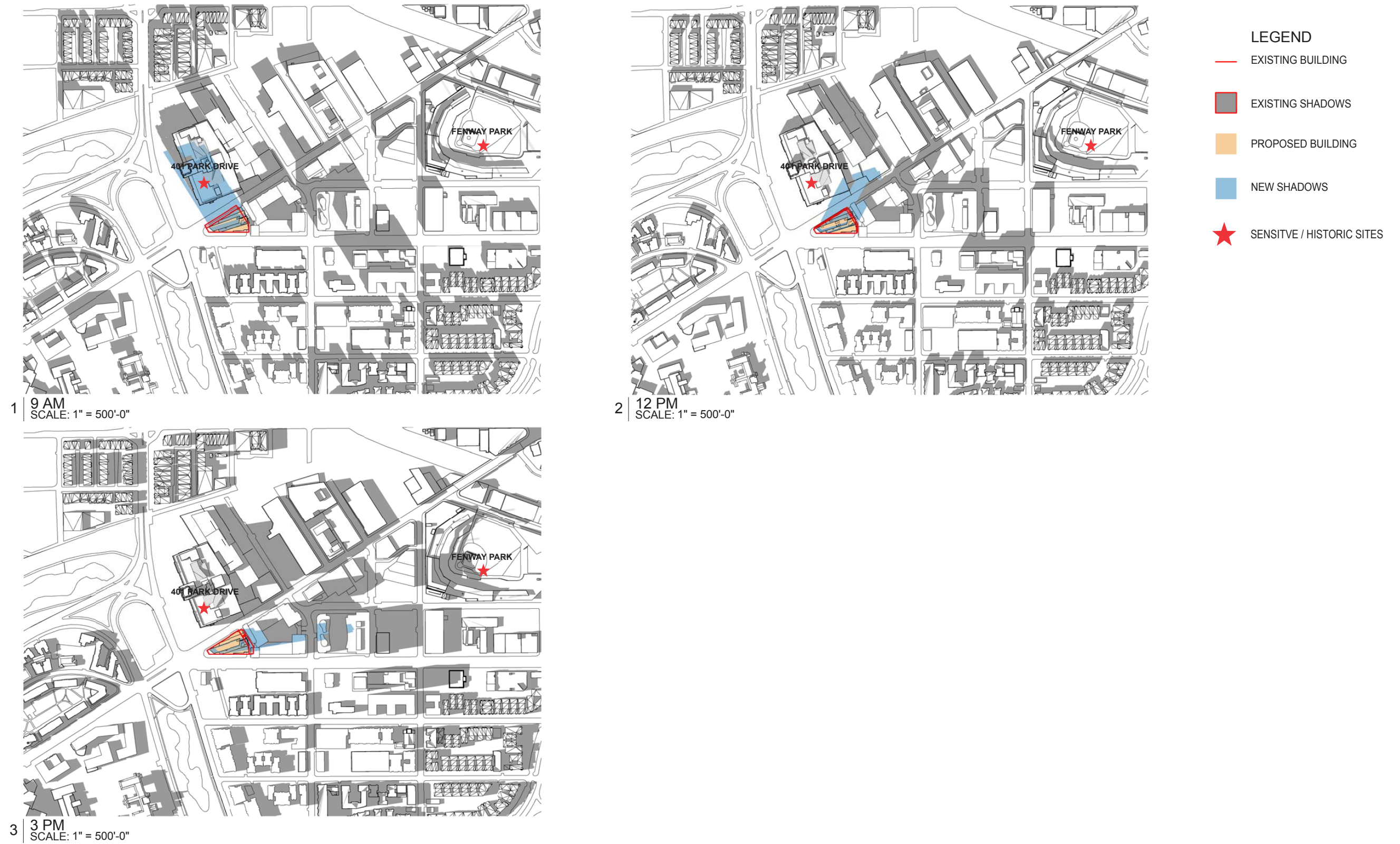


Figure 3.1c
Shadow Impacts - September 21

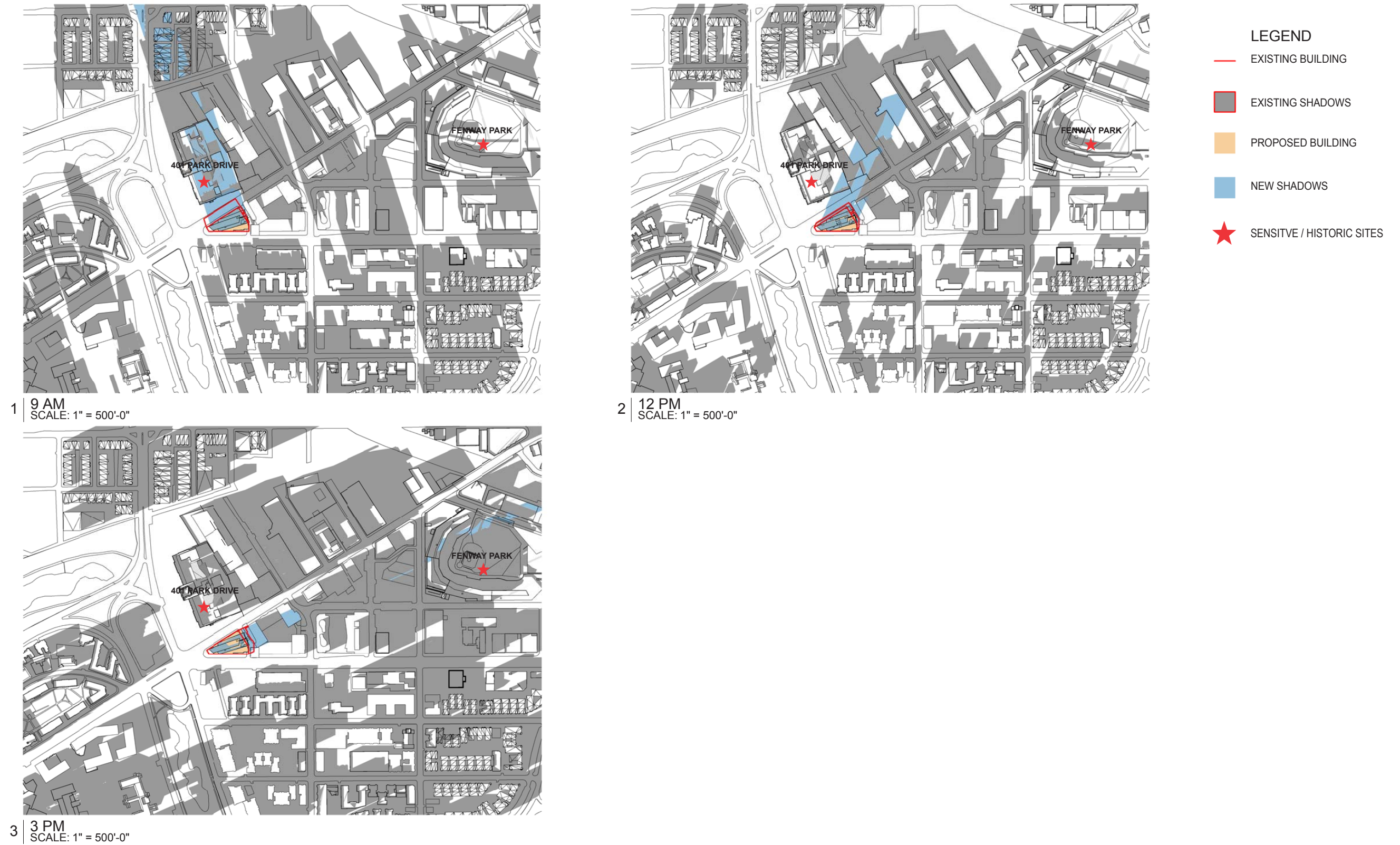


Figure 3.1d
Shadow Impacts - December 21



LEED 2009 for New Construction and Major Renovations

Project Checklist

The Point, Boston, MA 02215

Draft September 2014

20 4 2 Sustainable Sites Possible Points: 26

Y	?	N			
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
1			Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
	1		Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
3			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
		1	Credit 5.1	Site Development—Protect or Restore Habitat	1
		1	Credit 5.2	Site Development—Maximize Open Space	1
	1		Credit 6.1	Stormwater Design—Quantity Control	1
	1		Credit 6.2	Stormwater Design—Quality Control	1
1			Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
	1		Credit 8	Light Pollution Reduction	1

4 3 3 Water Efficiency Possible Points: 10

Y			Prereq 1	Water Use Reduction—20% Reduction	
2	2		Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
2	1	1	Credit 3	Water Use Reduction	2 to 4

6 4 25 Energy and Atmosphere Possible Points: 35

Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
3		16	Credit 1	Optimize Energy Performance	1 to 19
		7	Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
	2		Credit 4	Enhanced Refrigerant Management	2
1		2	Credit 5	Measurement and Verification	3
	2		Credit 6	Green Power	2

7 1 6 Materials and Resources Possible Points: 14

Y			Prereq 1	Storage and Collection of Recyclables	
		3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
2			Credit 4	Recycled Content	1 to 2
2			Credit 5	Regional Materials	1 to 2
	1		Credit 6	Rapidly Renewable Materials	1
1			Credit 7	Certified Wood	1

10 3 2 Indoor Environmental Quality Possible Points: 15

Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
	1		Credit 1	Outdoor Air Delivery Monitoring	1
		1	Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
		1	Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
	1		Credit 7.2	Thermal Comfort—Verification	1
	1		Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1

5 1 Innovation and Design Process Possible Points: 6

1			Credit 1.1	Innovation in Design: Low Mercury Lamps	1
1			Credit 1.2	Innovation in Design: Green Cleaning Policy	1
1			Credit 1.3	Innovation in Design: Integrated Pest Management	1
1			Credit 1.4	Innovation in Design: Exemplary Performance SSc4.1	1
	1		Credit 1.5	Innovation in Design: Exemplary Performance for MRc2, 4 or 5	1
1			Credit 2	LEED Accredited Professional	1

3 1 Regional Priority Credits Possible Points: 4

1			Credit 1.1	Regional Priority: SSc3	1
	1		Credit 1.2	Regional Priority: SSc6.1	1
1			Credit 1.3	Regional Priority: SSc7.2	1
1			Credit 1.4	Regional Priority: SSc7.1	1

55 17 38 Total Possible Points: 110

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

Figure 3.2
Preliminary LEED Scorecard

4

Infrastructure Systems

Introduction

The following chapter provides an update to the Project capacity needs and potential impacts on utilities due to the Project Change. As discussed in Chapter 5, *Infrastructure Systems* of the PNF, the Project Site is well-served by existing infrastructure systems. Refer to Figure 4.1 of this document for the existing utilities.

Based on initial investigations and consultations with the appropriate agencies and utility companies, all existing infrastructure systems are adequately sized to accept the incremental increase in demand associated with the development and operation of the Project. The final design will adhere to all applicable protocols and design standards ensuring that the proposed building is properly supported by and properly uses city infrastructure. Since the PNF filing, the Proponent has developed the proposed utility design further and submitted site plans to Boston Water and Sewer Commission (BWSC) for Site Plan Review. BWSC provided review comments and the team has been working with BWSC to address the comments. No capacity issues in the existing city systems were identified by BWSC. The team is waiting for test pit results on the existing utilities to finalize the utility design.

As previously proposed, the Project will incorporate stormwater management and treatment systems that will improve water quality, reduce runoff volume and control peak rates of runoff in comparison to existing conditions. The Project includes a retention/infiltration system that retains site runoff while providing treatment and peak flow mitigation while providing opportunities for groundwater recharge. The system takes an innovative approach by utilizing areas under the building slab to locate retention/infiltration facilities. As demonstrated in the PNF, the current design is sized to meet Article 32 requirements retaining the equivalent of an inch of runoff over the Project Site. The current design utilizes proprietary mechanical units and a series of precast infiltration galleys to achieve infiltration, per the Boston Zoning Code Article 32, Groundwater Conservation Overlay District (GCOD). The proposed stormwater design also addresses stormwater treatment following the MassDEP phosphorous treatment guidelines. The stormwater design has been reviewed by the Boston Water and Sewer Commission. They have issued a letter stating the design meets the requirements as set forth in GCOD.

A portion of the roof over the 2-story retail will include a green roof system using sedum planting material, which will further enhance the stormwater management system by reducing runoff through water absorption by the plant and soil materials. The streetscape design also includes landscape features that promote



stormwater infiltration. The project streetscape design incorporates the City of Boston's Boylston Street Improvement Project design and includes street trees and a permeable paver strip within the furnishing zones on Boylston Street and Brookline Avenue. The proposed stormwater measures will be designed in accordance with DEP's Massachusetts that Stormwater Management Handbook.

National Grid and NSTAR own and operate underground power services in both Boylston Street and Brookline Avenue. Potential natural gas and electricity connections for the Project could be made from either public street. The change to the overall building load will be minimal given the size of the building and, therefore, the size, or basic capacity, of the services to the building are not expected to be significantly different from what was reported in the 2013 PNF. In addition, telephone and telecommunications will be provided from Verizon and Comcast facilities, respectively, both provided in Brookline Avenue. The configurations of these proposed services will be developed in coordination with the respective service providers as the Project design progresses.

The following sections re-describe the existing sanitary sewer and domestic water demand infrastructure, and provide updated calculations based on the changes to the development program, as presented in Table 1-1 of this NPC.

Sanitary Sewer

BWSC record drawings show there is a MWRA Sewer, a 66-inch collector sewer along the Riverway and Fenway. The sewers adjacent BWSC-owned and -maintained sewer lines serving the Project Site convey flow to this sewer. These lines include the 15-inch line along the site frontage in Brookline Avenue, a 24-inch by 31-inch line in Brookline Avenue and a 32-inch by 42-inch line in Boylston Street. Existing site uses generate approximately 1,442 gallons per day of wastewater.

Based upon sewage generation rates outlined in the DEP Sewer Connection and Extension Regulations, 310 CMR 15.203.f, the Project is estimated to generate between approximately 54,350 and 62,500 gallons per day (if a 400-seat restaurant is constructed) of sanitary sewage. The Proponent will work with BWSC to develop a plan to reduce infiltration and inflow (I/I) into the sanitary sewer system. The Proponent intends to contribute to BWSC's on-going I/I removal project and program fund at a rate of four to one.

Domestic Water Demand

The BWSC owns and maintains the water mains in the vicinity of the Project Site. BWSC record drawings show the streets surrounding the Project Site are serviced by southern low service pipes. These pipes range in size from a 12-inch main and a 48-inch main in Brookline Avenue, to 16-inch main on Boylston Street. The installation dates and materials of these pipes also vary, from pit-cast iron ("PCI") pipe installed in 1905 and ("WS") welded steel installed in 1935 to a PCI pipe installed in 1896. The pipes have been relined by BWSC between 1990 and 1995. The existing water infrastructure provides a high level of service and diversity to the Fenway neighborhood. Additionally, currently five fire hydrants are in close proximity to the Project Site.



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 DEP Sewer Connection and Extension Regulations, 310 CMR 15.203.f, the Project will require between approximately 59,800 and 68,800 gallons of water per day.

As discussed previously in Chapter 3, *Environmental Protection* of this NPC, appropriate low-flow and low-consumption plumbing fixtures for the apartment units are anticipated to achieve a reduction in water usage of 30 to 35 percent over the baseline, in compliance with Article 37 of the Boston Zoning Code (LEED “certifiable”). The reduction in water usage will be determined during final design. In addition, the irrigation system for the proposed landscaped area will be designed to reduce water use by 50 percent over a baseline design. Strategies for achieving this credit include specifying native or adaptive plantings for the landscape design, using drip over spray irrigation and selecting an irrigation system with a high controller efficiency.

New water connections will be designed in accordance with BWSC design standards and requirements. Water services to 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 conform to BWSC and Boston Fire Department (BFD) requirements. The Proponent will provide for the connection of the meter to the BWSC’s automatic meter reading system. Fire protection connections on the Project Site will also need approval of the BFD.

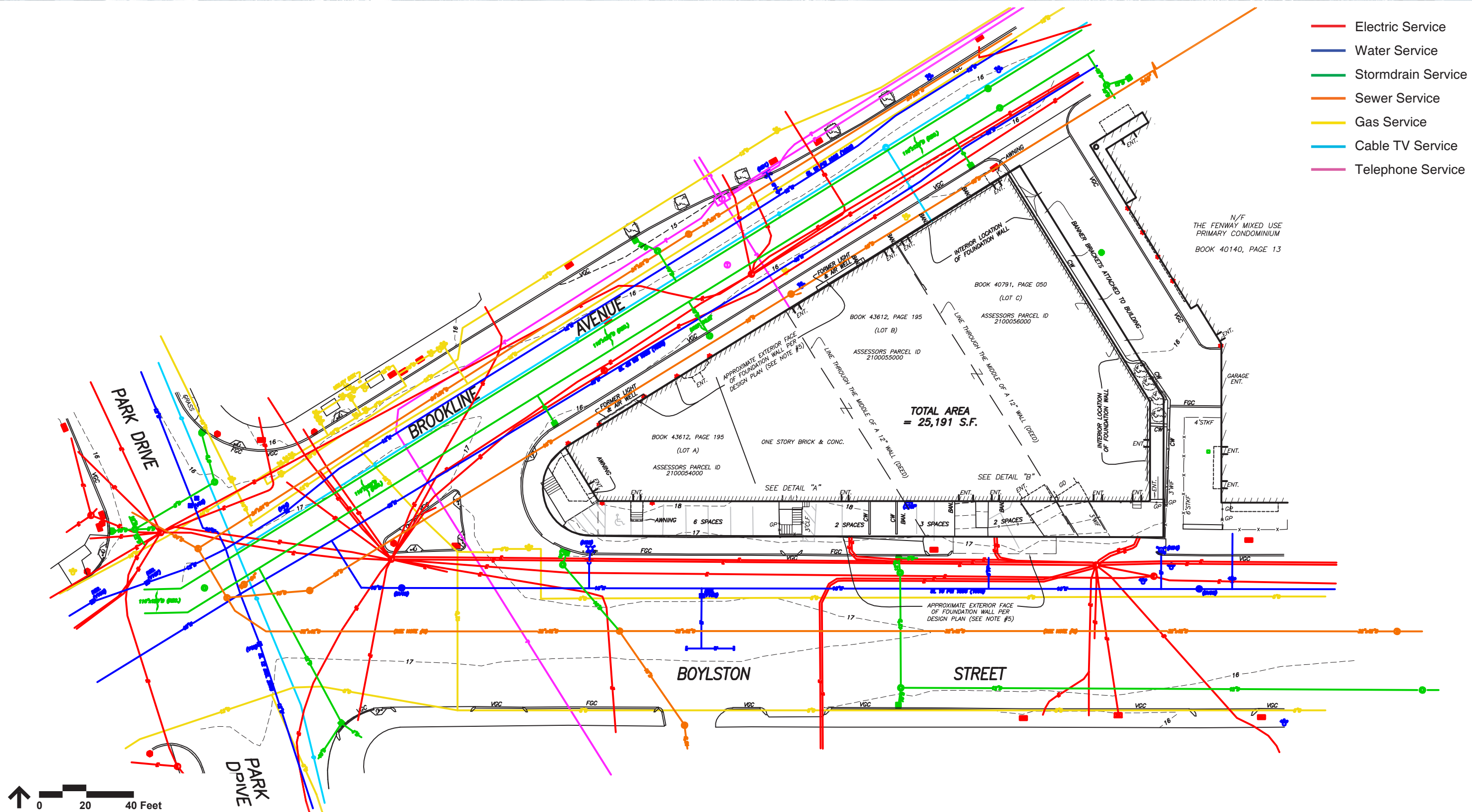


Figure 4.1
Existing Infrastructure

Attachment A: Trip Generation Assessment



Vanasse Hangen Brustlin, Inc.

99 High Street, 10th Floor
Boston, Massachusetts 02110
617 728-7777
FAX 617 728-7782

Memorandum

To: Ms. Leslie Cohen
Samuels and Associates

Date: August 21, 2014

Project No.: 11381.00

From: Ellen Donohoe

Re: The Point
Alternative Building Program
Traffic Assessment

OVERVIEW

Vanasse Hangen Brustlin, Inc. (VHB) has conducted an additional transportation trip generation assessment for Samuels and Associates' Point Project in Boston's Fenway neighborhood. The Point prepared a detailed traffic study as part of the Boston Redevelopment Authority's (BRA) Article 80 review process. This traffic study included 320 residential units and 40,500 square feet of retail space. Samuels and Associates is currently reconfiguring the building to potentially include 351 residential units but decrease the amount of retail to 20,000 square feet.

Table 1 provides a summary of the approved and current building program for the Point Project.

Table 1: Program Summary

	<u>Approved Program</u>	<u>Current Program</u>
Residential	320 units	351 units
Retail	40,500 sf	20,000 sf

Vehicle Trip Generation Estimate

Trip generation for the proposed Project was estimated using the Institute of Transportation Engineer's (ITE) trip generation data with adjustments made to account for the urban characteristics of the area, including Boston Transportation Department (BTD) mode splits as presented in the Expanded Project Notification Form (PNF) dated February 15, 2013. Table 2 provides a comparison of the previously approved project vehicle trips and the trips generated by the current building program.

Table 2
Vehicle Trip Generation Comparison (Adjusted Vehicle Trips)

	<u>Expanded PNF</u>	<u>Current Program</u>	<u>Change (Vehicle Trips)</u>
AM Peak Hour Trips			
In	13	11	-2
<u>Out</u>	<u>31</u>	<u>32</u>	<u>1</u>
Total	44	43	-1
PM Peak Hour Trips			
In	45	39	-6
<u>Out</u>	<u>34</u>	<u>26</u>	<u>-8</u>
Total	79	65	-14
Daily			
In	471	387	-84
<u>Out</u>	<u>471</u>	<u>387</u>	<u>-84</u>
Total	942	774	-168

Note: Trip generation based on Expanded PNF methodology.

Based on ITE Trip Generation rates and BTM mode share data for the area, peak hour project-generated vehicle trips are expected to decrease with the change in building program. The loss of approximately 20,500 square feet of retail space significantly reduces the Project's impacts to traffic during the evening peak hour. Residents in the Fenway have a 21 percent vehicle mode share resulting in few additional residential vehicle trips during the peak hours as a result of the new additional residential units compared to the previous retail space. During a typical weekday, the Project is expected to generate approximately -168 fewer vehicle trips over the course of the day.

The Massachusetts Environmental Policy Act (MEPA) requires unadjusted trips to be taken into account when looking at their review thresholds. The unadjusted daily trips are provided in Table 3. As shown, the change in program results in approximately -454 fewer daily unadjusted vehicle trips.

Table 3
Unadjusted Vehicle Trip Generation Comparison

	<u>Draft PIR</u>	<u>Current Program</u>	<u>Change (Vehicle Trips)</u>
Daily Trips	3,434	2,980	-454

Note: Trip generation based on Expanded PNF methodology.

Overall, the change in building program to increase the residential unit count from 320 to 351 units combined with the decrease in retail space (less 20,500 SF), results in fewer project generated vehicle trips.

Please call if you have any questions or comments.

Attachment B: Accessibility Checklist

Accessibility Checklist

(to be added to the BRA Development Review Guidelines)

In 2009, a nine-member Advisory Board was appointed to the Commission for Persons with Disabilities in an effort to reduce architectural, procedural, attitudinal, and communication barriers affecting persons with disabilities in the City of Boston. These efforts were instituted to work toward creating universal access in the built environment.

In line with these priorities, the Accessibility Checklist aims to support the inclusion of people with disabilities. In order to complete the Checklist, you must provide specific detail, including descriptions, diagrams and data, of the universal access elements that will ensure all individuals have an equal experience that includes full participation in the built environment throughout the proposed buildings and open space.

In conformance with this directive, all development projects subject to Boston Zoning Article 80 Small and Large Project Review, including all Institutional Master Plan modifications and updates, are to complete the following checklist and provide any necessary responses regarding the following:

- improvements for pedestrian and vehicular circulation and access;
- encourage new buildings and public spaces to be designed to enhance and preserve Boston's system of parks, squares, walkways, and active shopping streets;
- ensure that persons with disabilities have full access to buildings open to the public;
- afford such persons the educational, employment, and recreational opportunities available to all citizens; and
- preserve and increase the supply of living space accessible to persons with disabilities.

We would like to thank you in advance for your time and effort in advancing best practices and progressive approaches to expand accessibility throughout Boston's built environment.

Accessibility Analysis Information Sources:

1. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
 - a. http://www.ada.gov/2010ADASTandards_index.htm
2. Massachusetts Architectural Access Board 521 CMR
 - a. <http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/aab/aab-rules-and-regulations-pdf.html>
3. Boston Complete Street Guidelines
 - a. <http://bostoncompletestreets.org/>
4. City of Boston Mayors Commission for Persons with Disabilities Advisory Board
 - a. <http://www.cityofboston.gov/Disability>
5. City of Boston – Public Works Sidewalk Reconstruction Policy
 - a. http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf
6. Massachusetts Office On Disability Accessible Parking Requirements
 - a. www.mass.gov/anf/docs/mod/hp-parking-regulations-mod.doc
7. MBTA Fixed Route Accessible Transit Stations
 - a. http://www.mbta.com/about_the_mbta/accessibility/

Project Information

Project Name:	The Point
Project Address Primary:	200 Brookline Avenue
Project Address Additional:	1387 Boylston Street
Project Contact (name / Title / Company / email / phone):	Melissa Schrock/Development Manager/Samuels & Associates mschrock@samuelsre.com 617 603 5415

Team Description

Owner / Developer:	Fenway Ventures Point Properties, LLC
Architect:	Arquitectonica CBT Architects
Engineer (building systems):	Cosentini
Sustainability / LEED:	The Green Engineer
Permitting:	VHB
Construction Management:	John Moriarty Associates

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:

Other: Notice of Project Change

Article 80 | ACCESSIBILITY CHECKLIST

Building Classification and Description

What are the principal Building Uses - select all appropriate uses?

Residential – One to Three Unit	Residential - Multi-unit, Four +	Institutional	Education
Commercial	Office	Retail	Assembly
Laboratory / Medical	Manufacturing / Industrial	Mercantile	Storage, Utility and Other
First Floor Uses (List) Retail Residential Lobby Loading/Service Mechanical Rooms			

What is the Construction Type – select most appropriate type?

Wood Frame	Masonry	Steel Frame	Concrete
------------	---------	-------------	-----------------

Describe the building?

Site Area:	25,191 SF	Building Area:	approx. 390,000 GSF
Building Height:	Approximately 340 feet	Number of Stories:	30 stories
First Floor Elevation:	+17 feet, 6 inches	Are there below grade spaces:	Yes

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 existing conditions at the Project Site are remnants of the automotive industry of the 1920's and the more recent development of 'service' uses (e.g., fast food establishments and convenience retail). However, the surrounding area has recently changed greatly due to Fenway district developments by Samuels & Associates at Trilogy, 1330 Boylston Street, and The VanNess. These catalytic developments have set the stage for the continued transformation of the

Article 80 | ACCESSIBILITY CHECKLIST

List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter rail, subway, bus, etc.

underutilized parcels remaining along Boylston Street and Brookline Avenue. The Point aims to elegantly define the western edge of this vibrant and diverse neighborhood, provide new area housing and retail opportunities, and reinforce the Fenway's position as one of Boston's exceptional locations.

Access to the Green Line's Fenway Station on the D Branch behind the Landmark Center is a short walk (0.2 miles) to the north. The Green Line's B and C Branches can also be accessed, less than half a mile away, in Kenmore Square. The Framingham/Worcester Commuter Rail Line is accessible at Yawkey Station just 0.3-mile walk to the north of Brookline Avenue.

Five local bus routes serve Brookline Avenue and stop adjacent to the Project Site. Three additional route connections are provided at the Sear's Rotary (0.3-mile walk), including the cross-town CT2 and CT3 limited-stop routes. Connections can be made to the Route 57 bus serving Brighton Center at Kenmore Station. The local Route 55 is also nearby and serves Kilmarnock Street to the south of Boylston Street. Bus stops are located on both sides of Brookline Avenue directly to the east of the intersection. Crosswalks are provided across all approaches. Pedestrians are accommodated in concurrent pedestrian signal phases.

List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc.

The Project Site is in close proximity to various institutions, such as Simmons College, Emmanuel College and the Longwood Medical and Academic Area (LMA), as well as the residential neighborhood south of Boylston Street.

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.

The Project Site is in close proximity to Fenway Park and the Landmark Center retail district.

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?

At the study area intersections, sidewalks on Boylston Street, Kilmarnock Street, and Brookline Avenue are in generally good condition with accessible ramps, striped crosswalks and pedestrian signals. However, there is no formal or ADA compliant sidewalk adjacent to the Project Site along the Boylston Street frontage. Additionally, there are currently no continuous sidewalks that meet ADA standards on Van Ness Street. The VanNess, a Samuels & Associates development project

Article 80 | ACCESSIBILITY CHECKLIST

If yes above, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.

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.

Is the development site within a historic district? **If yes**, please identify.

currently under construction, includes construction of sidewalks adjacent to the Project Site on Van Ness Street, Boylston Street, and Kilmarnock Street.

The existing sidewalks and pedestrian ramps are constructed of concrete.

No, all adjacent sidewalks will be reconstructed as part of the Project, as described further below.

No, the Project Site is not within a 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 comfortably 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

If yes above, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector,

As part of the Project, existing surface parking that impedes a continuous sidewalk on Boylston Street will be eliminated. Sidewalks and pedestrian ramps adjacent to the Project Site will be reconstructed to meet current ADA requirements. The Project incorporates the City's vision for a more pedestrian friendly environment at the intersection of Brookline Avenue and Boylston Street adjacent to the Project Site. As planned, the channelized right-turn that exists today will be removed to create a pedestrian plaza, thus reducing the number of pedestrian crossing points and conflicts at the intersection. The project's streetscape design incorporates the Boston Complete Street Guidelines to define the different zones along Boylston Street and Brookline Avenue to create a design that is cohesive with the neighborhood.

The Project's streetscape design incorporated the City of Boston's Boylston Street Improvement Project into its design.

Article 80 | ACCESSIBILITY CHECKLIST

Residential, Industrial, Shared Street, Parkway, Boulevard.

What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.

The proposed sidewalk width along Boylston Street ranges from 12'-3" to 22'-4". On Boylston Street the proposed frontage zone ranges from 1' to 11', pedestrian zone is 7' and furnishing zone is 4'-3". The proposed sidewalk width along Brookline Avenue ranges from 11'-3" to 17'-9". On Brookline Avenue, the proposed frontage zone ranges from 0' to 6'-6", pedestrian zone is 7' and the furnishing zone is 4'-3".

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 frontage zone will consist of unit pavers. The pedestrian zone will consist of a 5' wide concrete sidewalk and 2' wide band of unit pavers. The furnishing zone will consist of tree pits, 2'-6" wide permeable paver strip, and unit pavers.

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?

The Project is partially located within City of Boston and Department of Conservation and Recreation right-of-way. The Proponent has already obtained a pedestrian easement from the City of Boston Public Improvement Commission for the portion of the Boylston Street sidewalk that is within City of Boston jurisdiction, and is working with DCR on the portion within their jurisdiction.

Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way?

The Project may include an approximately 9,000-square foot restaurant space. Potential outdoor seating areas at the southeast corner and western end of the Project Site would expand the existing outdoor dining opportunities at Trilogy along Boylston Street. The potential outdoor seating areas would be located on private property and within the frontage zone. The potential outdoor seating areas would not be located within the pedestrian zone.

If yes above, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be?

N/A

Proposed Accessible Parking:

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

Article 80 | ACCESSIBILITY CHECKLIST

What is the total number of parking spaces provided at the development site parking lot or garage?

No new parking is proposed as part of the Project. The adjacent Trilogy project was built with the expectation that excess parking spaces in the Trilogy Garage would be used by the Project in the future. These parking spaces will be connected to the proposed building via a below-grade connection to make them convenient for new residents and tenants. A pedestrian bridge at the second level may also be constructed. The Project will utilize the existing Trilogy driveways on Brookline Avenue and Boylston Street.

What is the total number of accessible spaces provided at the development site?

N/A

Will any on street accessible parking spaces be required? **If yes**, has the proponent contacted the Commission for Persons with Disabilities and City of Boston Transportation Department regarding this need?

No.

Where is accessible visitor parking located?

Accessible visitor parking is provided in the shared Trilogy Garage.

Has a drop-off area been identified? **If yes**, will it be accessible?

Yes, a drop-off/loading zone is proposed on Brookline Avenue in front of the residential lobby entrance.

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.

Refer to Figure 2.5 of the October 2014 Notice of Project Change for a site access and circulation diagram.

Circulation and Accessible Routes:

The primary objective in designing smooth and continuous paths of travel is to accommodate persons of all abilities that allow for universal access to entryways, common spaces and the visit-ability* of neighbors.

**Visit-ability – Neighbors ability to access and visit with neighbors without architectural barrier limitations*

Provide a diagram of the accessible route connections through the site.

Refer to Figure 2.5 of the NPC.

Article 80 | ACCESSIBILITY CHECKLIST

Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.

The entryways for the proposed building would be a flush condition.

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.

A private rooftop pool deck will be constructed for resident use. This space will be accessed via elevators internal to the building.

Has an accessible routes way-finding and signage package been developed? If yes, please describe.

No

Accessible Units: (If applicable)

In order to facilitate access to housing opportunities this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing choice.

What is the total number of proposed units for the development?

Approximately 350 units

How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?

Approximately 109 are for sale. Approximately 240 are for rent.

How many accessible units are being proposed?

5%, or 18 units

Please provide plan and diagram of the accessible units.

Accessible unit locations will be determined as project design progresses.

How many accessible units will also be affordable? If none, please describe reason.

A meaningful number of the accessible units will also be affordable. The unit locations will be determined as project design progresses.

Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility

No

Article 80 | ACCESSIBILTY CHECKLIST

impairments? Example: stairs at entry or step to balcony. If yes , please provide reason.	
Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor’s Commission for Persons with Disabilities Advisory Board?	The Disabilities Office reviewed the Project through the PIC process and wrote a letter of support.
Did the Advisory Board vote to support this project? If no , what recommendations did the Advisory Board give to make this project more accessible?	NA

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

Attachment C: Wind Supporting Documentation



CONSULTING ENGINEERS
& SCIENTISTS

Tel: 519.823.1311
Fax: 519.823.1316

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

The Point
Boston, MA

Draft Final Report

Pedestrian Wind Comfort Study

RWDI # 1401631
November 25, 2014

SUBMITTED TO

Melissa Schrock, AIA
Samuels & Associates
Development Manager
333 Newbury Street, Boston, MA 02115
mschrock@samuelsre.com

c/o Gordon H. Smith
Gordon H. Smith Corporation
200 Madison Avenue, 7th Floor
New York, NY 10016-3901
T: 212-696-0600
F: 212-532-8272
GHSCorp@GordonHSmithCorp.com

SUBMITTED BY

Saba Saneinejad, Ph.D.
Technical Coordinator
Saba.Saneinejad@rwdi.com

Derek Kelly, M,Eng., P.Eng.
Project Manager / Principal
Derek.Kelley@rwdi.com

Frank Kriksic, B.E.S., C.E.T., LEED AP
Project Director / Principal
Frank.kriksic@rwdi.com

This document is intended for the sole use of the party to whom it is addressed and may contain information that is privileged and/or confidential. If you have received this in error, please notify us immediately.

© RWDI name and logo are registered trademarks in Canada and the United States of America

TABLE OF CONTENTS

1. INTRODUCTION.....	1
2. OVERVIEW.....	1
3. METHODOLOGY.....	2
4. PEDESTRIAN WIND COMFORT CRITERIA.....	3
5. TEST RESULTS	3
5.1 Grade Locations (Locations 1 through 41, 43 through 68, 76 through 82 and 84 through 101) ..	4
5.1.1 No Build Configuration	4
5.1.2 Build Configuration	4
5.2 Above-Grade Locations (Locations 69 through 75 and 102 through 108, 42 and 83).....	4
5.2.1 No Build Configuration	4
5.2.2 Build Configuration	5
6. APPLICABILITY OF RESULTS	6

Tables

Table 1:	Pedestrian Wind Comfort and Safety Categories – Multiple Seasons
----------	--

Figures

Figure 1a:	Wind Tunnel Study Model – No Build Configuration
Figure 1b:	Wind Tunnel Study Model – Build Configuration
Figure 2a:	Directional Distribution of Winds – Spring and Summer
Figure 2b:	Directional Distribution of Winds – Fall and Winter
Figure 2c:	Directional Distribution of Winds – Annual
Figure 3a:	Pedestrian Wind Conditions – Mean Speed – No Build Configuration
Figure 3b:	Pedestrian Wind Conditions – Mean Speed – Build Configuration
Figure 4a:	Pedestrian Wind Conditions – Effective Gust Speed – No Build Configuration
Figure 4b:	Pedestrian Wind Conditions – Effective Gust Speed – Build Configuration

Appendices

Appendix A:	Drawing List for Model Construction
-------------	-------------------------------------

1. INTRODUCTION

A pedestrian wind comfort study was conducted on the proposed The Point development located in Boston, Massachusetts. The objective of the study was to assess the effect of the proposed development on local conditions in pedestrian areas around the study site and provide recommendations for minimizing adverse effects.

The study involved wind simulations on a 1:300 scale model of the proposed building and surroundings. These simulations were then conducted in RWDI's boundary-layer wind tunnel at Guelph, Ontario, for the purpose of quantifying local wind speed conditions and comparing to appropriate criteria for gauging wind comfort in pedestrian areas. A list of the drawings used for the construction of the model can be found in Appendix A. The criteria recommended by the Boston Redevelopment Authority (BRA) were used in this study. The present report describes the methods and presents the results of the wind tunnel simulations.

2. OVERVIEW

Major buildings, especially those that protrude above their surroundings, often cause increased local wind speeds at the pedestrian level. Typically, wind speeds increase with elevation above the ground surface, and taller buildings intercept these faster winds and deflect them down to the pedestrian level. The funneling of wind through gaps between buildings and the acceleration of wind around corners of buildings may also cause increases in wind speed. Conversely, if a building is surrounded by others of equivalent height, it may be protected from the prevailing upper-level winds, resulting in no significant changes to the local pedestrian-level wind environment. The most effective way to assess potential pedestrian-level wind impacts around a proposed new building is to conduct scale model tests in a wind tunnel.

The consideration of wind in planning outdoor activity areas is important since high winds in an area tend to deter pedestrian use. For example, winds should be light or relatively light in areas where people would be sitting, such as outdoor cafes or playgrounds. For bus stops and other locations where people would be standing, somewhat higher winds can be tolerated. For frequently used sidewalks, where people are primarily walking, stronger winds are acceptable. For infrequently used areas, the wind comfort criteria can be relaxed even further. The actual effects of wind can range from pedestrian inconvenience, due to the blowing of dust and other loose material in a moderate breeze, to severe difficulty with walking due to the wind forces on the pedestrian.

3. METHODOLOGY

Information concerning the site and surroundings was derived from: site photographs; information on surrounding buildings and terrain; site plans and elevations of the proposed development provided by the design team. The following configurations were simulated:

No Build Configuration: includes all existing surrounding buildings; and,

Build Configuration: includes the proposed development and all existing surroundings.

As shown in Figures 1a and 1b, the wind tunnel model included the proposed development and all relevant surrounding buildings and topography within a 1125 ft radius of the study site. The mean speed profile and turbulence of the natural wind approaching the modelled area were also simulated in RWDI's boundary layer wind tunnel. The scale model was equipped with 108 specially designed wind speed sensors that were connected to the wind tunnel's data acquisition system to record the mean and fluctuating components of wind speed at a full-scale height of 5 feet above grade in pedestrian areas throughout the study site. Wind speeds were measured for 36 wind directions, in 10 degree increments, starting from true north. The measurements at each sensor location were recorded in the form of ratios of local mean and gust speeds to the reference wind speed in the free stream above the model. The results were then combined with long-term meteorological data, recorded during the recent years (1994 to 2013) at Boston's Logan International Airport, in order to predict full scale wind conditions. The analysis was performed separately for each of the four seasons and for the entire year.

Figures 2a, 2b and 2c present "wind roses", summarizing the seasonal and annual wind climates in the Boston area, based on the data from Logan Airport. The left side wind rose in Figure 2a, for example, summarizes the spring (March, April, and May) wind data. In general, the prevailing winds at this time of year are from the west-northwest, northwest, west, south-southwest and southwest. In addition to these directions, strong winds are also prevalent from the northeast direction as indicated by the red and yellow color bands on the wind rose.

On an annual basis (Figure 2c) the most common wind directions are those between southwest and northwest. Winds from the east-southeast are also relatively common. In the case of strong winds, northeast, west, west-northwest and northwest are the dominant wind directions.

This study involved state-of-the-art measurement and analysis techniques to predict wind conditions at the study site. Nevertheless, some uncertainty remains in predicting wind comfort, and this must be kept in mind. For example, the sensation of comfort among individuals can be quite variable. Variations in age, individual health, clothing, and other human factors can change a particular response of an individual. The comfort limits used in this report represent an average for the total population. Also, unforeseen changes in the project area, such as the construction or removal of buildings, can affect the conditions experienced at the site. Finally, the prediction of wind speeds is necessarily a statistical procedure. The wind speeds reported are for the frequency of occurrence stated (one percent of the time). Higher wind speeds will occur but on a less frequent basis.

4. PEDESTRIAN WIND COMFORT CRITERIA

The BRA has adopted two standards for assessing the relative wind comfort of pedestrians. First, the BRA wind design guidance criterion states that an effective gust velocity (hourly mean wind speed +1.5 times the root-mean-square wind speed) of 31 mph should not be exceeded more than one percent of the time. The second set of criteria used by the BRA to determine the acceptability of specific locations is based on the work of Melbourne¹. This set of criteria is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing, or walking. The criteria are expressed in terms of benchmarks for the 1-hour mean wind speed exceeded 1% of the time (i.e., the 99-percentile mean wind speed). They are as follows:

BRA Mean Wind Criteria*

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

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

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

5. TEST RESULTS

Table 1 presents the mean and effective gust wind speeds for each season as well as annually. For each model configuration, Figures 3a and 3b graphically depict the mean wind speeds and Figures 4a and 4b depict the effective gust speeds at each wind measurement location based on the annual winds. Typically the summer and fall winds tend to be more comfortable than the annual winds while the winter and spring winds are less comfortable than the annual winds. The following summary of pedestrian wind comfort is based on the annual winds for each configuration tested, except where noted below in the text.

A total of 108 sensors were used in the model. Sensors represented by Locations 1 through 41, 43 through 68, 76 through 82 and 84 through 101 were on grade. Locations 42 and 83 were on the roof of two surrounding buildings. Locations 69 through 75 and 102 through 108 were on the Level 30, 31 and 3 terraces of the study building. Locations 69 through 75 and 102 through 108 will, therefore, not be applicable to the No Build configuration. Note that the placement of the wind measurement locations was

¹ Melbourne, W.H., 1978, "Criteria for Environmental Wind Conditions", Journal of Industrial Aerodynamics, 3 (1978) 241 - 249.

based on our experience and understanding of pedestrian usage of the site, and reviewed by members of the project team. The following summary of pedestrian wind comfort is based on the annual winds for each configuration tested, except where noted below in the text.

5.1 Grade Locations (Locations 1 through 41, 43 through 68, 76 through 82 and 84 through 101)

A wind comfort categorization of walking is considered appropriate for sidewalks. Lower wind speeds conducive to standing are preferred at building entrances.

5.1.1 No Build Configuration

As shown in Figure 3a, winds at all grade locations are comfortable for walking, standing or sitting, annually. Uncomfortable wind speeds exist at one location along Brookline Ave, to the northeast of the site (Location 34) and at two locations along Boylston Street, to the east of the site (Locations 50 and 82).

The effective gust criterion was met annually and seasonally at all locations (Figure 4a and Table 1).

5.1.2 Build Configuration

With the addition of The Point project, winds at most locations are expected to remain comfortable for walking or better on an annual basis. As shown in Figure 3b, conditions comfortable for sitting are expected at most locations around the perimeter of the building, including the main entrances (Locations 2, 3 and 4). Slightly higher wind conditions comfortable for standing, walking or uncomfortable are expected along the alley to the northeast of the building and at building corners (Locations 1, 6 and 12 through 16). Marginal uncomfortable conditions are expected along Brookline Ave, across the study building (Locations 25 and 29) and to the northeast of the site (Locations 37 through 39), along Boylston Street, across the study building (Location 61) and to the east of the site (Locations 46, 50 and 82) as well as at one location along Riverway to the southwest of the site (Location 92). However, there are no dangerous conditions detected annually or seasonally (Figure 3b and Table 1).

The effective gust criterion was met annually at all grade locations (Figure 4b).

5.2 Above-Grade Locations (Locations 69 through 75 and 102 through 108, 42 and 83)

Wind speeds comfortable for sitting or standing are desirable during the summer for podiums and roofs that are intended for passive activities of building users. For maintenance or mechanical spaces that are not anticipated to be used frequently, higher wind speeds are acceptable.

5.2.1 No Build Configuration

Wind conditions at two above-grade locations in the Build configuration (Locations 42 and 83) which are on the roof of two existing buildings to the east of the site (see Figure 3a), are expected to be comfortable for walking and sitting, respectively.

5.2.2 Build Configuration

With the addition of The Point project, annual wind condition at the above-grade sensor at Location 42 is expected to slightly increase, representing marginal uncomfortable conditions. Annual comfort conditions at Location 83 remain to be for sitting activities in the Build Configuration (Figure 3b).

As see in Figure 3b, wind conditions at Level 3 terrace (Locations 103 through 108) and Levels 30 and 31 terraces (Locations 69 to 75 and 102) are generally expected to be comfortable for standing to walking, annually, and generally comfortable for sitting or standing during summer (Table 1). During summer, conditions comfortable for walking are expected at Location 106, and uncomfortable conditions are expected at Location 70 (dangerous conditions, annually). High wind conditions at Location 106 is mainly due to prevailing winds from southwest and south-southwest directions being intercepted by the tall building façade and redirected down to terrace level. Installing a canopy along the south façade of the tower at Level 3 terrace, in particular at Location 106, will help to keep the winds away from the terrace level (see Image 1 for examples). Location 70 on Level 30 terrace is exposed to the winds approaching from west-northwest and northwest directions. We recommend installing local mitigation measures such as tall parapets (minimum 6 ft tall) along the west and north edge of this terrace can protect this location from the approaching winds (see Image 2 for examples).



Image 1: Examples of Canopies



Image 2: Examples of Tall Parapet

6. APPLICABILITY OF RESULTS

The results presented in this report pertain to the model of the proposed The Point development constructed using the architectural design drawings listed in Appendix A. Should there be any design changes that deviate from this list of drawings, the results presented may change. Therefore, if changes in the design are made, it is recommended that RWDI be contacted and requested to review their potential effects on wind conditions.

TABLES

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
1	A	Spring	12		Sitting	20		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	20		Acceptable
	B	Spring	21	+75%	Uncomfortable	29	+45%	Acceptable
		Summer	16	+45%	Walking	22	+29%	Acceptable
		Fall	20	+67%	Uncomfortable	27	+42%	Acceptable
		Winter	23	+77%	Uncomfortable	32	+52%	Unacceptable
		Annual	21	+75%	Uncomfortable	29	+45%	Acceptable
2	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	11		Sitting	18		Acceptable
3	A	Spring	12		Sitting	20		Acceptable
		Summer	11		Sitting	19		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	13		Standing	22		Acceptable
		Annual	12		Sitting	20		Acceptable
	B	Spring	12		Sitting	19		Acceptable
		Summer	11		Sitting	16	-16%	Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
4	A	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
5	B	Spring	11	-31%	Sitting	17	-29%	Acceptable
		Summer	9	-31%	Sitting	14	-30%	Acceptable
		Fall	11	-27%	Sitting	16	-30%	Acceptable
		Winter	11	-39%	Sitting	18	-31%	Acceptable
		Annual	11	-31%	Sitting	17	-29%	Acceptable
	A	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
6	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
	B	Spring	17	+70%	Walking	27	+69%	Acceptable
		Summer	13	+62%	Standing	20	+43%	Acceptable
		Fall	16	+78%	Walking	26	+73%	Acceptable
		Winter	19	+90%	Walking	30	+88%	Acceptable
		Annual	17	+70%	Walking	27	+80%	Acceptable
	A	Spring	8		Sitting	12		Acceptable
		Summer	7		Sitting	10		Acceptable
		Fall	8		Sitting	12		Acceptable
		Winter	9		Sitting	13		Acceptable
		Annual	8		Sitting	12		Acceptable
	B	Spring	11	+38%	Sitting	16	+33%	Acceptable
		Summer	9	+29%	Sitting	13	+30%	Acceptable
		Fall	10	+25%	Sitting	15	+25%	Acceptable
		Winter	10	+11%	Sitting	16	+23%	Acceptable
		Annual	10	+25%	Sitting	15	+25%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
8	A	Spring	12		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	17		Acceptable
	B	Spring	12		Sitting	20	+18%	Acceptable
		Summer	10	+11%	Sitting	16	+23%	Acceptable
		Fall	11		Sitting	19	+19%	Acceptable
		Winter	13		Standing	22	+16%	Acceptable
		Annual	12		Sitting	20	+18%	Acceptable
	A	Spring	9		Sitting	14		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	8		Sitting	13		Acceptable
	B	Spring	12	+33%	Sitting	20	+43%	Acceptable
		Summer	10	+43%	Sitting	15	+36%	Acceptable
		Fall	12	+50%	Sitting	19	+46%	Acceptable
		Winter	14	+56%	Standing	22	+47%	Acceptable
		Annual	12	+50%	Sitting	20	+54%	Acceptable
10	A	Spring	6		Sitting	9		Acceptable
		Summer	5		Sitting	8		Acceptable
		Fall	6		Sitting	9		Acceptable
		Winter	6		Sitting	9		Acceptable
		Annual	6		Sitting	9		Acceptable
	B	Spring	12	+100%	Sitting	19	+111%	Acceptable
		Summer	9	+80%	Sitting	14	+75%	Acceptable
		Fall	11	+83%	Sitting	18	+100%	Acceptable
		Winter	13	+117%	Standing	20	+122%	Acceptable
		Annual	12	+100%	Sitting	19	+111%	Acceptable
	A	Spring	8		Sitting	13		Acceptable
		Summer	6		Sitting	11		Acceptable
		Fall	7		Sitting	12		Acceptable
		Winter	8		Sitting	13		Acceptable
		Annual	7		Sitting	12		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria	Effective Gust Criteria
A – No Build	Comfortable for Sitting: ≤ 12 mph	Acceptable: ≤ 31 mph
B – Build with canopy and Screens on two sides	Comfortable for Standing: > 12 and ≤ 15 mph	Unacceptable: > 31 mph
At Loc 6	Comfortable for Walking: > 15 and ≤ 19 mph	
	Uncomfortable for Walking: > 19 and ≤ 27 mph	
	Dangerous Conditions: > 27 mph	

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
12	B	Spring	12	+50%	Sitting	19	+46%	Acceptable
		Summer	9	+50%	Sitting	15	+36%	Acceptable
		Fall	11	+57%	Sitting	18	+50%	Acceptable
		Winter	13	+62%	Standing	21	+62%	Acceptable
		Annual	12	+71%	Sitting	19	+58%	Acceptable
	A	Spring	13		Standing	19		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	13		Standing	18		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
13	B	Spring	17	+31%	Walking	23	+21%	Acceptable
		Summer	13		Standing	17		Acceptable
		Fall	16	+23%	Walking	22	+22%	Acceptable
		Winter	19	+36%	Walking	25	+19%	Acceptable
		Annual	17	+31%	Walking	23	+21%	Acceptable
	A	Spring	12		Sitting	21		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	12		Sitting	21		Acceptable
14	B	Spring	24	+100%	Uncomfortable	31	+48%	Acceptable
		Summer	18	+100%	Walking	24	+60%	Acceptable
		Fall	23	+92%	Uncomfortable	30	+58%	Acceptable
		Winter	27	+93%	Uncomfortable	34	+48%	Unacceptable
		Annual	24	+100%	Uncomfortable	31	+48%	Acceptable
	A	Spring	10		Sitting	16		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	15	+50%	Standing	21	+31%	Acceptable
		Summer	11	+22%	Sitting	16	+14%	Acceptable
		Fall	14	+40%	Standing	20	+25%	Acceptable
		Winter	16	+45%	Walking	23	+35%	Acceptable
		Annual	15	+50%	Standing	21	+31%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
15	A	Spring	15		Standing	21		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	16		Walking	22		Acceptable
		Annual	15		Standing	21		Acceptable
	B	Spring	18	+20%	Walking	24	+14%	Acceptable
		Summer	14		Standing	18		Acceptable
		Fall	17	+21%	Walking	22		Acceptable
		Winter	21	+31%	Uncomfortable	26	+18%	Acceptable
		Annual	18	+20%	Walking	24	+14%	Acceptable
16	A	Spring	18		Walking	26		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	26		Acceptable
	B	Spring	17		Walking	23	-12%	Acceptable
		Summer	13	-24%	Standing	18	-22%	Acceptable
		Fall	16	-11%	Walking	22	-12%	Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	17		Walking	23	-12%	Acceptable
17	A	Spring	14		Standing	19		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	13		Standing	18		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	14		Standing	19		Acceptable
	B	Spring	14		Standing	19		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	14		Standing	19		Acceptable
18	A	Spring	17		Walking	24		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
19	B	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	A	Spring	10		Sitting	15		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	11		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
20	B	Spring	11		Sitting	17	+13%	Acceptable
		Summer	9	+12%	Sitting	13		Acceptable
		Fall	10	+11%	Sitting	16	+14%	Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	A	Spring	8		Sitting	14		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	8		Sitting	14		Acceptable
		Annual	8		Sitting	13		Acceptable
21	B	Spring	12	+50%	Sitting	18	+29%	Acceptable
		Summer	9	+29%	Sitting	15	+36%	Acceptable
		Fall	11	+38%	Sitting	17	+31%	Acceptable
		Winter	12	+50%	Sitting	19	+36%	Acceptable
		Annual	11	+38%	Sitting	18	+38%	Acceptable
	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
22	A	Spring	14		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
23	A	Spring	10		Sitting	15		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	15	+50%	Standing	21	+40%	Acceptable
		Summer	12	+50%	Sitting	17	+42%	Acceptable
		Fall	14	+56%	Standing	20	+43%	Acceptable
		Winter	15	+50%	Standing	22	+38%	Acceptable
		Annual	14	+56%	Standing	21	+40%	Acceptable
24	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	18	+20%	Walking	26	+18%	Acceptable
		Summer	14	+17%	Standing	19	+12%	Acceptable
		Fall	17	+13%	Walking	25	+19%	Acceptable
		Winter	20	+18%	Uncomfortable	28	+17%	Acceptable
		Annual	18	+20%	Walking	26	+18%	Acceptable
25	A	Spring	18		Walking	26		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		Walking	26		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria	Effective Gust Criteria
A – No Build	Comfortable for Sitting: ≤ 12 mph	Acceptable: ≤ 31 mph
B – Build with canopy and Screens on two sides	Comfortable for Standing: > 12 and ≤ 15 mph	Unacceptable: > 31 mph
At Loc 6	Comfortable for Walking: > 15 and ≤ 19 mph	
	Uncomfortable for Walking: > 19 and ≤ 27 mph	
	Dangerous Conditions: > 27 mph	

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
26	B	Spring	20	+11%	Uncomfortable	29	+12%	Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	19	+12%	Walking	28	+12%	Acceptable
		Winter	21		Uncomfortable	31	+11%	Acceptable
		Annual	20	+11%	Uncomfortable	29	+12%	Acceptable
	A	Spring	17		Walking	25		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	17		Walking	25		Acceptable
27	B	Spring	15	-12%	Standing	23		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	14	-12%	Standing	22		Acceptable
		Winter	17	-11%	Walking	26		Acceptable
		Annual	15	-12%	Standing	23		Acceptable
	A	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	17		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
28	B	Spring	11	-15%	Sitting	19		Acceptable
		Summer	9		Sitting	16		Acceptable
		Fall	11		Sitting	19		Acceptable
		Winter	12	-14%	Sitting	20		Acceptable
		Annual	11	-15%	Sitting	19		Acceptable
	A	Spring	19		Walking	28		Acceptable
		Summer	17		Walking	24		Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	21		Uncomfortable	30		Acceptable
		Annual	19		Walking	28		Acceptable
	B	Spring	19		Walking	28		Acceptable
		Summer	17		Walking	25		Acceptable
		Fall	18		Walking	27		Acceptable
		Winter	20		Uncomfortable	30		Acceptable
		Annual	19		Walking	28		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
29	A	Spring	13		Standing	21		Acceptable
		Summer	11		Sitting	19		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	13		Standing	22		Acceptable
		Annual	12		Sitting	21		Acceptable
	B	Spring	22	+69%	Uncomfortable	31	+48%	Acceptable
		Summer	18	+64%	Walking	25	+32%	Acceptable
		Fall	20	+67%	Uncomfortable	29	+45%	Acceptable
		Winter	23	+77%	Uncomfortable	33	+50%	Unacceptable
		Annual	21	+75%	Uncomfortable	31	+48%	Acceptable
30	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	15	+36%	Standing	22	+29%	Acceptable
		Summer	13	+44%	Standing	19	+36%	Acceptable
		Fall	14	+40%	Standing	21	+31%	Acceptable
		Winter	14	+17%	Standing	21	+17%	Acceptable
		Annual	14	+27%	Standing	21	+24%	Acceptable
31	A	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	22		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	14		Standing	22		Acceptable
32	A	Spring	14		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
33	B	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	A	Spring	14		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
34	B	Spring	17	+21%	Walking	23		Acceptable
		Summer	15	+25%	Standing	20	+18%	Acceptable
		Fall	16	+23%	Walking	22	+16%	Acceptable
		Winter	17	+21%	Walking	23		Acceptable
		Annual	16	+23%	Walking	22	+16%	Acceptable
	A	Spring	22		Uncomfortable	29		Acceptable
		Summer	20		Uncomfortable	25		Acceptable
		Fall	21		Uncomfortable	27		Acceptable
		Winter	23		Uncomfortable	30		Acceptable
		Annual	21		Uncomfortable	28		Acceptable
35	B	Spring	15	-32%	Standing	23	-21%	Acceptable
		Summer	11	-45%	Sitting	17	-32%	Acceptable
		Fall	14	-33%	Standing	21	-22%	Acceptable
		Winter	17	-26%	Walking	24	-20%	Acceptable
		Annual	15	-29%	Standing	22	-21%	Acceptable
	A	Spring	18		Walking	26		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	16	-11%	Walking	24		Acceptable
		Summer	12	-25%	Sitting	19	-14%	Acceptable
		Fall	15	-12%	Standing	23		Acceptable
		Winter	16	-11%	Walking	26		Acceptable
		Annual	15	-12%	Standing	24		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
36	A	Spring	17		Walking	25		Acceptable
		Summer	13		Standing	21		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	15	-12%	Standing	23		Acceptable
		Summer	11	-15%	Sitting	18	-14%	Acceptable
		Fall	14	-12%	Standing	22		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	A	Spring	18		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	21	+17%	Uncomfortable	29	+16%	Acceptable
		Summer	16	+23%	Walking	22	+16%	Acceptable
		Fall	19	+19%	Walking	27	+17%	Acceptable
		Winter	22	+22%	Uncomfortable	31	+24%	Acceptable
		Annual	20	+18%	Uncomfortable	28	+17%	Acceptable
38	A	Spring	19		Walking	26		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	20		Uncomfortable	27		Acceptable
		Summer	17		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
39	A	Spring	13		Standing	21		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	21		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
40	B	Spring	21	+62%	Uncomfortable	29	+38%	Acceptable
		Summer	16	+45%	Walking	22	+22%	Acceptable
		Fall	20	+54%	Uncomfortable	28	+40%	Acceptable
		Winter	23	+64%	Uncomfortable	32	+45%	Unacceptable
		Annual	20	+54%	Uncomfortable	29	+38%	Acceptable
	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
41	B	Spring	16	+14%	Walking	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15	+15%	Standing	21		Acceptable
		Winter	17	+13%	Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	A	Spring	17		Walking	24		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	16		Walking	22		Acceptable
42	B	Spring	17		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	16		Walking	23		Acceptable
	A	Spring	16		Walking	23		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	20	+25%	Uncomfortable	28	+22%	Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	19	+19%	Walking	26	+13%	Acceptable
		Winter	22	+29%	Uncomfortable	31	+24%	Acceptable
		Annual	20	+25%	Uncomfortable	28	+22%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
43	A	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	14		Standing	19		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	14		Standing	20		Acceptable
44	A	Spring	9		Sitting	14		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10		Sitting	15		Acceptable
		Annual	9		Sitting	14		Acceptable
	B	Spring	15	+67%	Standing	23	+64%	Acceptable
		Summer	13	+86%	Standing	20	+67%	Acceptable
		Fall	14	+56%	Standing	22	+57%	Acceptable
		Winter	14	+40%	Standing	22	+47%	Acceptable
		Annual	14	+56%	Standing	22	+57%	Acceptable
45	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	10		Sitting	17		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable
	B	Spring	15	+36%	Standing	24	+33%	Acceptable
		Summer	13	+44%	Standing	20	+33%	Acceptable
		Fall	15	+50%	Standing	22	+29%	Acceptable
		Winter	15	+36%	Standing	24	+33%	Acceptable
		Annual	15	+50%	Standing	23	+35%	Acceptable
46	A	Spring	19		Walking	25		Acceptable
		Summer	17		Walking	22		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	19		Walking	25		Acceptable
		Annual	18		Walking	24		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
47	B	Spring	22		Uncomfortable	28	+12%	Acceptable
		Summer	19		Walking	24		Acceptable
		Fall	20		Uncomfortable	26		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	20		Uncomfortable	26		Acceptable
	A	Spring	15		Standing	22		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
48	B	Spring	16		Walking	23		Acceptable
		Summer	14		Standing	20	+11%	Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	22		Acceptable
	A	Spring	15		Standing	21		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	14		Standing	20		Acceptable
49	B	Spring	18	+20%	Walking	24	+14%	Acceptable
		Summer	15	+15%	Standing	21	+17%	Acceptable
		Fall	17	+21%	Walking	23	+15%	Acceptable
		Winter	18	+20%	Walking	24	+14%	Acceptable
		Annual	17	+21%	Walking	23	+15%	Acceptable
	A	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria	Effective Gust Criteria
A – No Build	Comfortable for Sitting: ≤ 12 mph	Acceptable: ≤ 31 mph
B – Build with canopy and Screens on two sides	Comfortable for Standing: > 12 and ≤ 15 mph	Unacceptable: > 31 mph
At Loc 6	Comfortable for Walking: > 15 and ≤ 19 mph	
	Uncomfortable for Walking: > 19 and ≤ 27 mph	
	Dangerous Conditions: > 27 mph	

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
50	A	Spring	22		Uncomfortable	30		Acceptable
		Summer	19		Walking	26		Acceptable
		Fall	21		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	22		Uncomfortable	29		Acceptable
	B	Spring	22		Uncomfortable	30		Acceptable
		Summer	20		Uncomfortable	26		Acceptable
		Fall	21		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	21		Uncomfortable	29		Acceptable
51	A	Spring	16		Walking	21		Acceptable
		Summer	13		Standing	17		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	16		Walking	22		Acceptable
		Annual	15		Standing	21		Acceptable
	B	Spring	16		Walking	21		Acceptable
		Summer	13		Standing	17		Acceptable
		Fall	15		Standing	20		Acceptable
		Winter	16		Walking	22		Acceptable
		Annual	15		Standing	20		Acceptable
52	A	Spring	15		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	15		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
53	A	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria	Effective Gust Criteria
A – No Build	Comfortable for Sitting: ≤ 12 mph	Acceptable: ≤ 31 mph
B – Build with canopy and Screens on two sides	Comfortable for Standing: > 12 and ≤ 15 mph	Unacceptable: > 31 mph
At Loc 6	Comfortable for Walking: > 15 and ≤ 19 mph	
	Uncomfortable for Walking: > 19 and ≤ 27 mph	
	Dangerous Conditions: > 27 mph	

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
54	B	Spring	16		Walking	24		Acceptable
		Summer	13	+18%	Standing	19		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17	+13%	Walking	24		Acceptable
		Annual	16	+14%	Walking	23		Acceptable
	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
55	B	Spring	16	+14%	Walking	25	+19%	Acceptable
		Summer	13	+18%	Standing	19	+12%	Acceptable
		Fall	15	+15%	Standing	23	+15%	Acceptable
		Winter	17	+21%	Walking	26	+18%	Acceptable
		Annual	16	+23%	Walking	24	+20%	Acceptable
	A	Spring	14		Standing	20		Acceptable
		Summer	13		Standing	17		Acceptable
		Fall	14		Standing	19		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	14		Standing	19		Acceptable
56	B	Spring	16	+14%	Walking	24	+20%	Acceptable
		Summer	14		Standing	20	+18%	Acceptable
		Fall	15		Standing	23	+21%	Acceptable
		Winter	17	+13%	Walking	25	+19%	Acceptable
		Annual	16	+14%	Walking	23	+21%	Acceptable
	A	Spring	11		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	12		Sitting	20	+11%	Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	20	+18%	Acceptable
		Winter	13		Standing	22	+16%	Acceptable
		Annual	12		Sitting	20	+11%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
57	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	14	+40%	Standing	22	+38%	Acceptable
		Summer	10	+25%	Sitting	16	+33%	Acceptable
		Fall	13	+44%	Standing	20	+33%	Acceptable
		Winter	15	+50%	Standing	24	+50%	Acceptable
		Annual	14	+56%	Standing	21	+40%	Acceptable
58	A	Spring	14		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	16	+14%	Walking	25	+25%	Acceptable
		Summer	13	+18%	Standing	19	+19%	Acceptable
		Fall	16	+23%	Walking	24	+26%	Acceptable
		Winter	18	+20%	Walking	28	+33%	Acceptable
		Annual	16	+23%	Walking	25	+25%	Acceptable
59	A	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	17	+42%	Walking	26	+44%	Acceptable
		Summer	14	+56%	Standing	20	+43%	Acceptable
		Fall	17	+55%	Walking	25	+47%	Acceptable
		Winter	19	+58%	Walking	28	+56%	Acceptable
		Annual	17	+55%	Walking	26	+53%	Acceptable
60	A	Spring	12		Sitting	20		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	18		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
61	B	Spring	13		Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13	+18%	Standing	20	+11%	Acceptable
		Winter	14	+17%	Standing	22		Acceptable
		Annual	13	+18%	Standing	21	+17%	Acceptable
	A	Spring	15		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable
62	B	Spring	21	+40%	Uncomfortable	31	+48%	Acceptable
		Summer	16	+33%	Walking	24	+41%	Acceptable
		Fall	20	+43%	Uncomfortable	30	+50%	Acceptable
		Winter	23	+44%	Uncomfortable	34	+48%	Unacceptable
		Annual	21	+40%	Uncomfortable	31	+48%	Acceptable
	A	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	13		Standing	18		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	13		Standing	19		Acceptable
63	B	Spring	18	+38%	Walking	27	+42%	Acceptable
		Summer	13	+30%	Standing	20	+33%	Acceptable
		Fall	16	+23%	Walking	25	+39%	Acceptable
		Winter	19	+27%	Walking	29	+32%	Acceptable
		Annual	17	+31%	Walking	26	+37%	Acceptable
	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	13	+18%	Standing	22	+29%	Acceptable
		Summer	10	+11%	Sitting	17	+21%	Acceptable
		Fall	13	+18%	Standing	20	+25%	Acceptable
		Winter	14	+17%	Standing	23	+28%	Acceptable
		Annual	13	+18%	Standing	21	+24%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
64	A	Spring	11		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	16	+45%	Walking	24	+41%	Acceptable
		Summer	12	+50%	Sitting	19	+46%	Acceptable
		Fall	15	+50%	Standing	22	+38%	Acceptable
		Winter	17	+42%	Walking	25	+39%	Acceptable
		Annual	16	+45%	Walking	23	+35%	Acceptable
65	A	Spring	14		Standing	19		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	13		Standing	18		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	18	+29%	Walking	27	+42%	Acceptable
		Summer	14	+27%	Standing	21	+40%	Acceptable
		Fall	17	+31%	Walking	25	+39%	Acceptable
		Winter	20	+33%	Uncomfortable	29	+38%	Acceptable
		Annual	18	+38%	Walking	26	+37%	Acceptable
66	A	Spring	10		Sitting	16		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	12	+20%	Sitting	20	+25%	Acceptable
		Summer	9	+29%	Sitting	15	+25%	Acceptable
		Fall	12	+33%	Sitting	19	+27%	Acceptable
		Winter	13	+30%	Standing	20	+25%	Acceptable
		Annual	12	+33%	Sitting	19	+27%	Acceptable
67	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	17		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria	Effective Gust Criteria
A – No Build	Comfortable for Sitting: ≤ 12 mph	Acceptable: ≤ 31 mph
B – Build with canopy and Screens on two sides	Comfortable for Standing: > 12 and ≤ 15 mph	Unacceptable: > 31 mph
At Loc 6	Comfortable for Walking: > 15 and ≤ 19 mph	
	Uncomfortable for Walking: > 19 and ≤ 27 mph	
	Dangerous Conditions: > 27 mph	

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
68	B	Spring	15	+36%	Standing	22	+22%	Acceptable
		Summer	12	+33%	Sitting	17	+21%	Acceptable
		Fall	14	+40%	Standing	21	+24%	Acceptable
		Winter	16	+33%	Walking	23	+28%	Acceptable
		Annual	14	+27%	Standing	21	+24%	Acceptable
	A	Spring	13		Standing	19		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	19		Acceptable
69	B	Spring	14		Standing	21	+11%	Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	15	+15%	Standing	22		Acceptable
		Annual	14	+17%	Standing	20		Acceptable
	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					
70	B	Spring	19		Walking	29		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	26		Acceptable
		Winter	21		Uncomfortable	31		Acceptable
		Annual	19		Walking	28		Acceptable
	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					
	B	Spring	29		Dangerous	38		Unacceptable
		Summer	22		Uncomfortable	28		Acceptable
		Fall	27		Uncomfortable	35		Unacceptable
		Winter	31		Dangerous	41		Unacceptable
		Annual	29		Dangerous	37		Unacceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
71	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					
	B	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
72	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					
	B	Spring	14		Standing	19		Acceptable
		Summer	10		Sitting	14		Acceptable
		Fall	13		Standing	18		Acceptable
		Winter	16		Walking	21		Acceptable
		Annual	14		Standing	19		Acceptable
73	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					
	B	Spring	19		Walking	27		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	26		Acceptable
74	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria	Effective Gust Criteria
A – No Build	Comfortable for Sitting: ≤ 12 mph	Acceptable: ≤ 31 mph
B – Build with canopy and Screens on two sides	Comfortable for Standing: > 12 and ≤ 15 mph	Unacceptable: > 31 mph
At Loc 6	Comfortable for Walking: > 15 and ≤ 19 mph	
	Uncomfortable for Walking: > 19 and ≤ 27 mph	
	Dangerous Conditions: > 27 mph	

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
	B	Spring	14		Standing	19		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	19		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	14		Standing	19		Acceptable
75	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					
	B	Spring	12		Sitting	16		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	12		Sitting	17		Acceptable
		Annual	11		Sitting	16		Acceptable
76	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	13		Standing	20		Acceptable
		Summer	9	-18%	Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	19		Acceptable
77	A	Spring	11		Sitting	16		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	10		Sitting	16		Acceptable
		Summer	8	-11%	Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria	Effective Gust Criteria
A – No Build	Comfortable for Sitting: ≤ 12 mph	Acceptable: ≤ 31 mph
B – Build with canopy and Screens on two sides	Comfortable for Standing: > 12 and ≤ 15 mph	Unacceptable: > 31 mph
At Loc 6	Comfortable for Walking: > 15 and ≤ 19 mph	
	Uncomfortable for Walking: > 19 and ≤ 27 mph	
	Dangerous Conditions: > 27 mph	

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
78	A	Spring	15		Standing	22		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	16		Walking	24		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17	+13%	Walking	26	+18%	Acceptable
		Annual	16	+14%	Walking	23		Acceptable
79	A	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	10	-23%	Sitting	16	-24%	Acceptable
		Summer	8	-20%	Sitting	14		Acceptable
		Fall	9	-25%	Sitting	15	-21%	Acceptable
		Winter	10	-33%	Sitting	17	-26%	Acceptable
		Annual	10	-23%	Sitting	16	-20%	Acceptable
80	A	Spring	15		Standing	20		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	13		Standing	18		Acceptable
		Winter	15		Standing	20		Acceptable
		Annual	14		Standing	19		Acceptable
	B	Spring	14		Standing	19		Acceptable
		Summer	10		Sitting	14		Acceptable
		Fall	12		Sitting	17		Acceptable
		Winter	14		Standing	19		Acceptable
		Annual	13		Standing	18		Acceptable
81	A	Spring	17		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
82	B	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	20	+11%	Uncomfortable	28	+12%	Acceptable
		Annual	18	+12%	Walking	25		Acceptable
	A	Spring	22		Uncomfortable	29		Acceptable
		Summer	16		Walking	21		Acceptable
		Fall	20		Uncomfortable	26		Acceptable
		Winter	22		Uncomfortable	29		Acceptable
		Annual	21		Uncomfortable	27		Acceptable
83	B	Spring	23		Uncomfortable	30		Acceptable
		Summer	17		Walking	22		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	23		Uncomfortable	30		Acceptable
		Annual	21		Uncomfortable	28		Acceptable
	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
84	B	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	11		Sitting	16		Acceptable
	A	Spring	13		Standing	20		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	20		Acceptable
	B	Spring	13		Standing	21		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	22		Acceptable
		Annual	12		Sitting	20		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
85	A	Spring	14		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	18	+29%	Walking	26	+24%	Acceptable
		Summer	14	+17%	Standing	20	+18%	Acceptable
		Fall	17	+21%	Walking	24	+20%	Acceptable
		Winter	20	+33%	Uncomfortable	29	+32%	Acceptable
		Annual	18	+29%	Walking	26	+24%	Acceptable
	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	18	+20%	Walking	26	+18%	Acceptable
		Summer	14	+17%	Standing	19	+12%	Acceptable
		Fall	17	+13%	Walking	25	+19%	Acceptable
		Winter	21	+24%	Uncomfortable	29	+21%	Acceptable
		Annual	18	+20%	Walking	26	+18%	Acceptable
87	A	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	17		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	16	+23%	Walking	24	+14%	Acceptable
		Summer	12	+20%	Sitting	19	+12%	Acceptable
		Fall	14	+17%	Standing	22	+16%	Acceptable
		Winter	17	+21%	Walking	26	+18%	Acceptable
		Annual	15	+15%	Standing	24	+20%	Acceptable
	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
89	B	Spring	11		Sitting	19	+19%	Acceptable
		Summer	9	+12%	Sitting	15	+15%	Acceptable
		Fall	11	+22%	Sitting	18	+20%	Acceptable
		Winter	12	+20%	Sitting	20	+18%	Acceptable
		Annual	11		Sitting	18	+12%	Acceptable
	A	Spring	11		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	12		Sitting	17		Acceptable
		Annual	11		Sitting	16		Acceptable
90	B	Spring	14	+27%	Standing	19	+19%	Acceptable
		Summer	11	+38%	Sitting	14	+17%	Acceptable
		Fall	13	+30%	Standing	18	+20%	Acceptable
		Winter	15	+25%	Standing	20	+18%	Acceptable
		Annual	14	+27%	Standing	19	+19%	Acceptable
	A	Spring	14		Standing	20		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
91	B	Spring	15		Standing	22		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	17	+21%	Walking	23	+15%	Acceptable
		Annual	15	+15%	Standing	21	+11%	Acceptable
	A	Spring	14		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	19	+36%	Walking	26	+30%	Acceptable
		Summer	15	+36%	Standing	21	+31%	Acceptable
		Fall	18	+38%	Walking	26	+37%	Acceptable
		Winter	20	+33%	Uncomfortable	28	+27%	Acceptable
		Annual	19	+36%	Walking	26	+30%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
92	A	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	23		Acceptable
	B	Spring	20	+25%	Uncomfortable	26	+13%	Acceptable
		Summer	15	+15%	Standing	20	+11%	Acceptable
		Fall	18	+12%	Walking	24		Acceptable
		Winter	22	+22%	Uncomfortable	29	+12%	Acceptable
		Annual	20	+18%	Uncomfortable	26	+13%	Acceptable
	A	Spring	15		Standing	21		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	16		Walking	23		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	16	+14%	Walking	22		Acceptable
94	A	Spring	14		Standing	21		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15	+15%	Standing	22		Acceptable
		Annual	15	+15%	Standing	21		Acceptable
	A	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
96	B	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14	+17%	Standing	21	+11%	Acceptable
		Annual	13	+18%	Standing	19		Acceptable
	A	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
97	B	Spring	19	+58%	Walking	27	+50%	Acceptable
		Summer	15	+50%	Standing	20	+33%	Acceptable
		Fall	18	+64%	Walking	25	+39%	Acceptable
		Winter	21	+75%	Uncomfortable	29	+53%	Acceptable
		Annual	19	+73%	Walking	26	+44%	Acceptable
	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	15		Acceptable
98	B	Spring	11		Sitting	17		Acceptable
		Summer	9	+12%	Sitting	13		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17	+13%	Acceptable
	A	Spring	9		Sitting	14		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	14		Acceptable
		Annual	8		Sitting	13		Acceptable
	B	Spring	9		Sitting	15		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9	+12%	Sitting	14		Acceptable
		Winter	9		Sitting	14		Acceptable
		Annual	9	+12%	Sitting	14		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
99	A	Spring	10		Sitting	15		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
	B	Spring	10		Sitting	15		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
100	A	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
101	A	Spring	18		Walking	26		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	17		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	18		Walking	26		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	17		Walking	25		Acceptable
102	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
103	B	Spring	14		Standing	20		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					
104	B	Spring	15		Standing	22		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	15		Standing	22		Acceptable
	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					
105	B	Spring	18		Walking	26		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	26		Acceptable
	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					
	B	Spring	15		Standing	25		Acceptable
		Summer	12		Sitting	20		Acceptable
		Fall	14		Standing	24		Acceptable
		Winter	16		Walking	27		Acceptable
		Annual	14		Standing	25		Acceptable
	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build
B – Build with canopy and
Screens on two sides
At Loc 6

Mean Wind Speed Criteria

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

Effective Gust Criteria

Acceptable: ≤ 31 mph
Unacceptable: > 31 mph

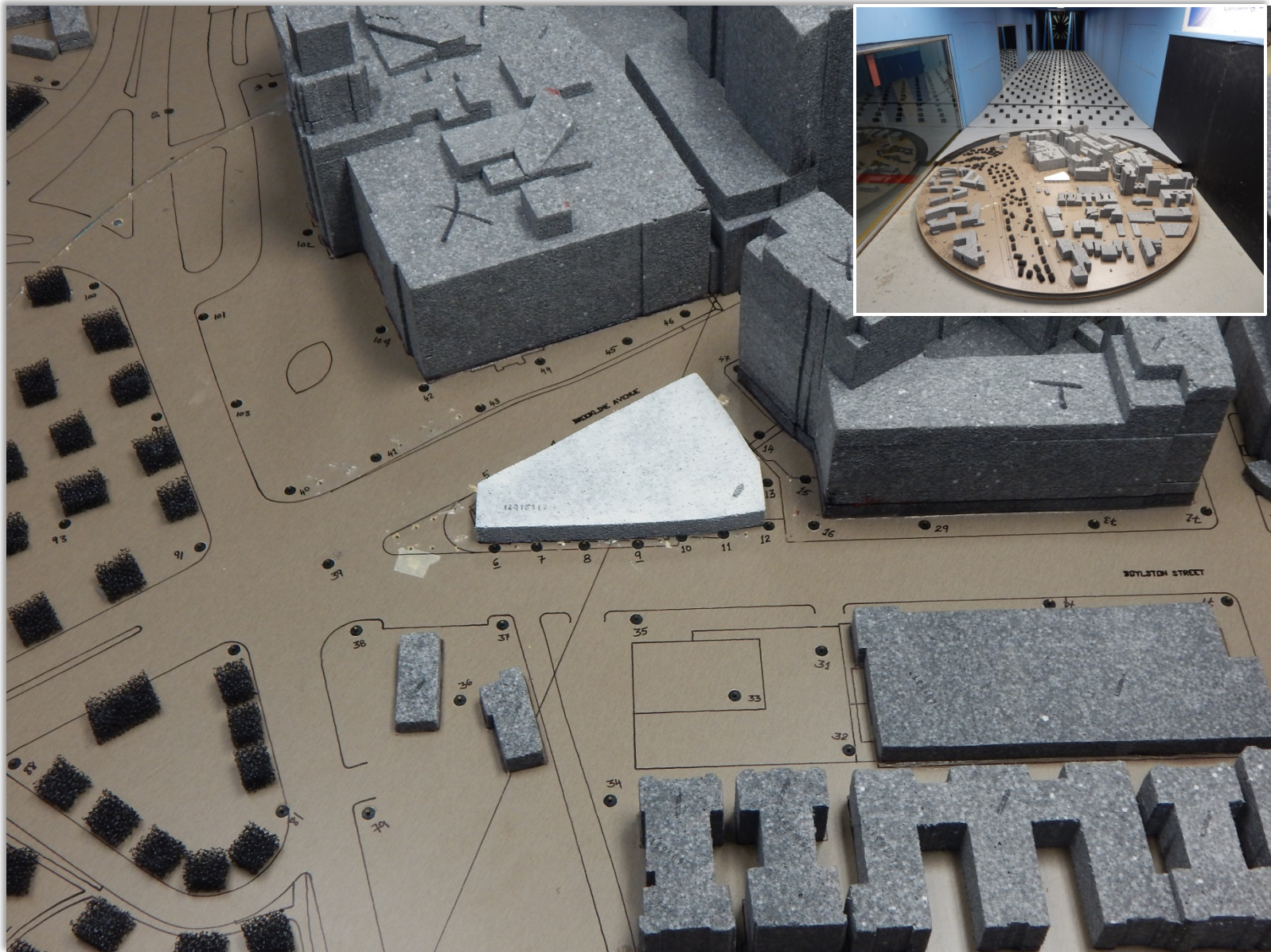
Table 1: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
106	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					
	B	Spring	18		Walking	26		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	17		Walking	25		Acceptable
107	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					
	B	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	12		Sitting	20		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	20		Acceptable
108	A	Spring	No Data Available					
		Summer	No Data Available					
		Fall	No Data Available					
		Winter	No Data Available					
		Annual	No Data Available					
	B	Spring	15		Standing	27		Acceptable
		Summer	13		Standing	24		Acceptable
		Fall	13		Standing	24		Acceptable
		Winter	13		Standing	23		Acceptable
		Annual	14		Standing	25		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria	Effective Gust Criteria
A – No Build	Comfortable for Sitting: ≤ 12 mph	Acceptable: ≤ 31 mph
B – Build with canopy and Screens on two sides	Comfortable for Standing: > 12 and ≤ 15 mph	Unacceptable: > 31 mph
At Loc 6	Comfortable for Walking: > 15 and ≤ 19 mph	
	Uncomfortable for Walking: > 19 and ≤ 27 mph	
	Dangerous Conditions: > 27 mph	

FIGURES



Wind Tunnel Study Model No Build Configuration

The Point – Boston, MA

Figure No. 1a

Project #1401631

Date: November 25, 2014





Wind Tunnel Study Model Build Configuration

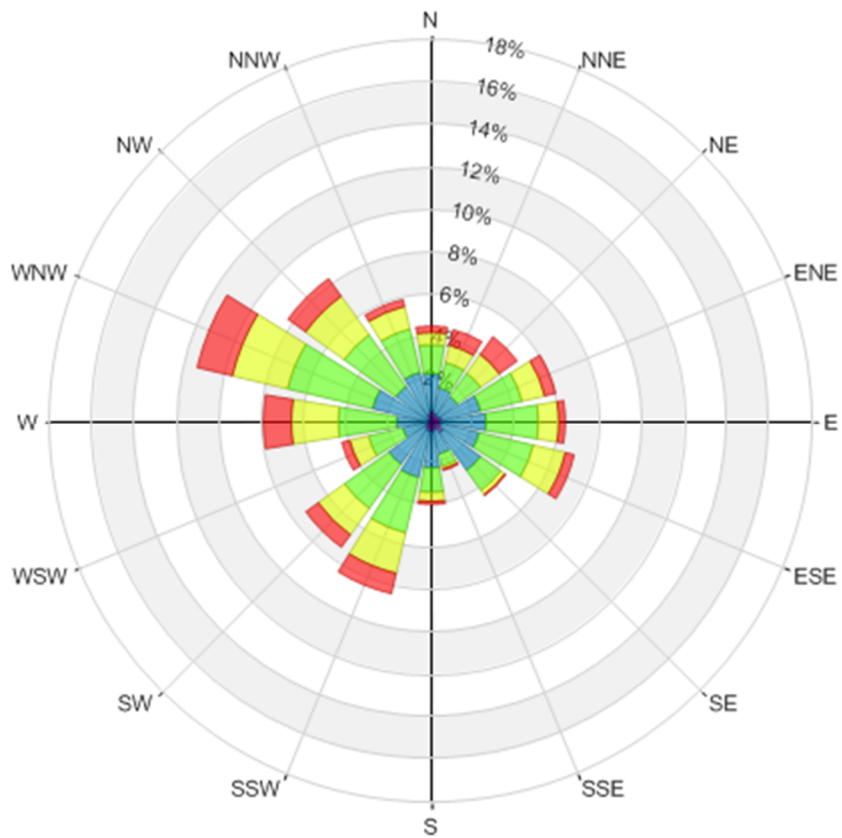
The Point – Boston, MA

Figure No. 1b

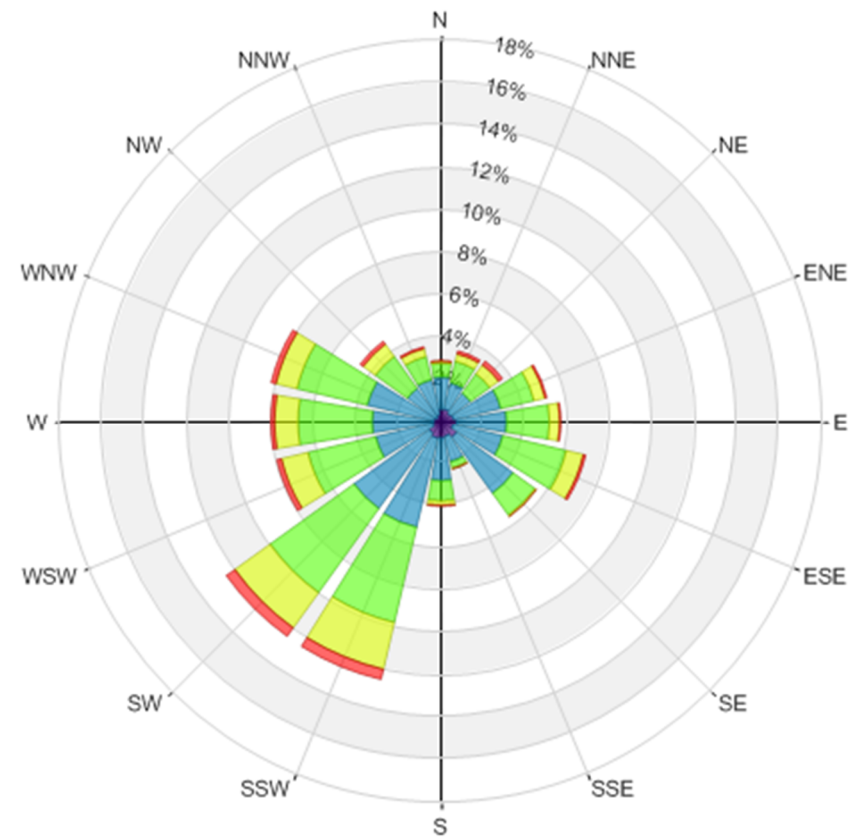
Project #1401631

Date: November 25, 2014





Spring
(March - May)



Summer
(June - August)

	Wind Speed (mph)	Probability (%)	
		Spring	Summer
	Calm	2.6	2.9
	1-5	6.4	9.2
	6-10	28.6	38.6
	11-15	32.8	34.7
	16-20	19.5	12.0
	>20	10.1	2.5

Directional Distribution (%) of Winds (Blowing From) **Boston Logan International Airport (1994 - 2013)**

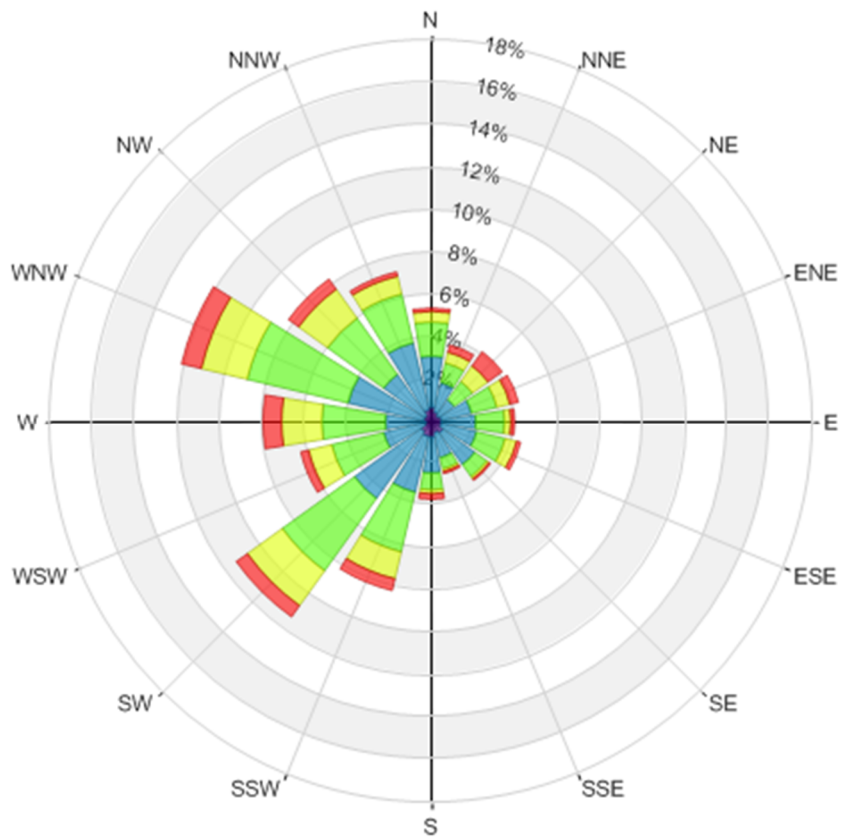
The Point – Boston, MA

Project #1401631

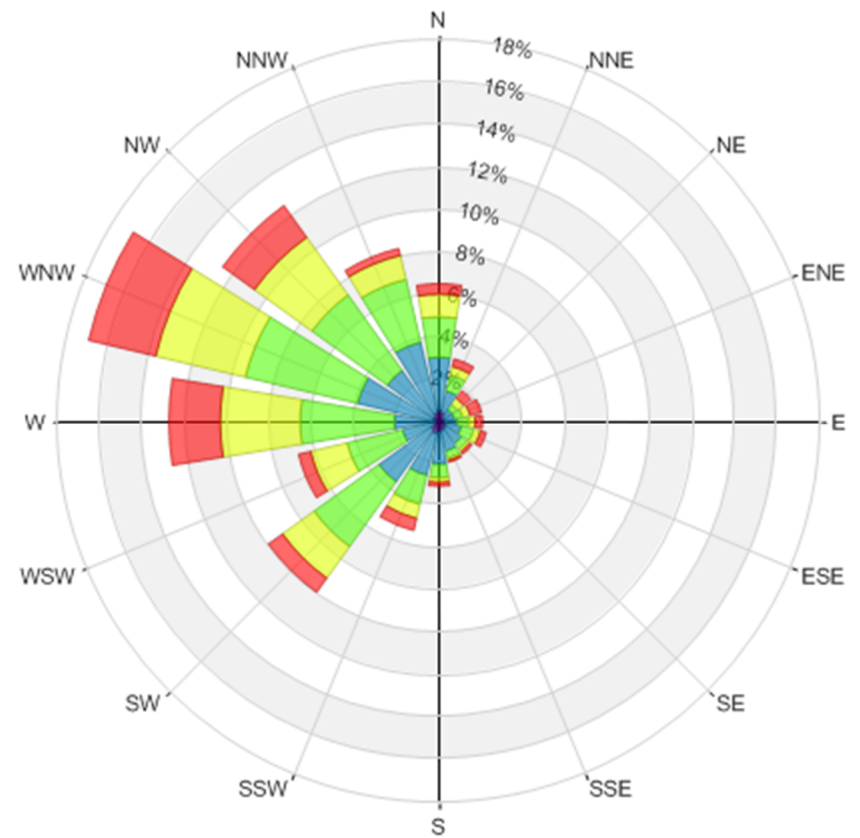
Figure No. 2a

Date: November 20, 2014





Fall
(September - November)



Winter
(December - February)

	Wind Speed (mph)	Probability (%)	
		Fall	Winter
	Calm	3.2	2.5
	1-5	8.1	6.1
	6-10	34.2	27.5
	11-15	32.8	31.0
	16-20	15.0	20.1
	>20	6.8	12.8

Directional Distribution (%) of Winds (Blowing From) **Boston Logan International Airport (1994 - 2013)**

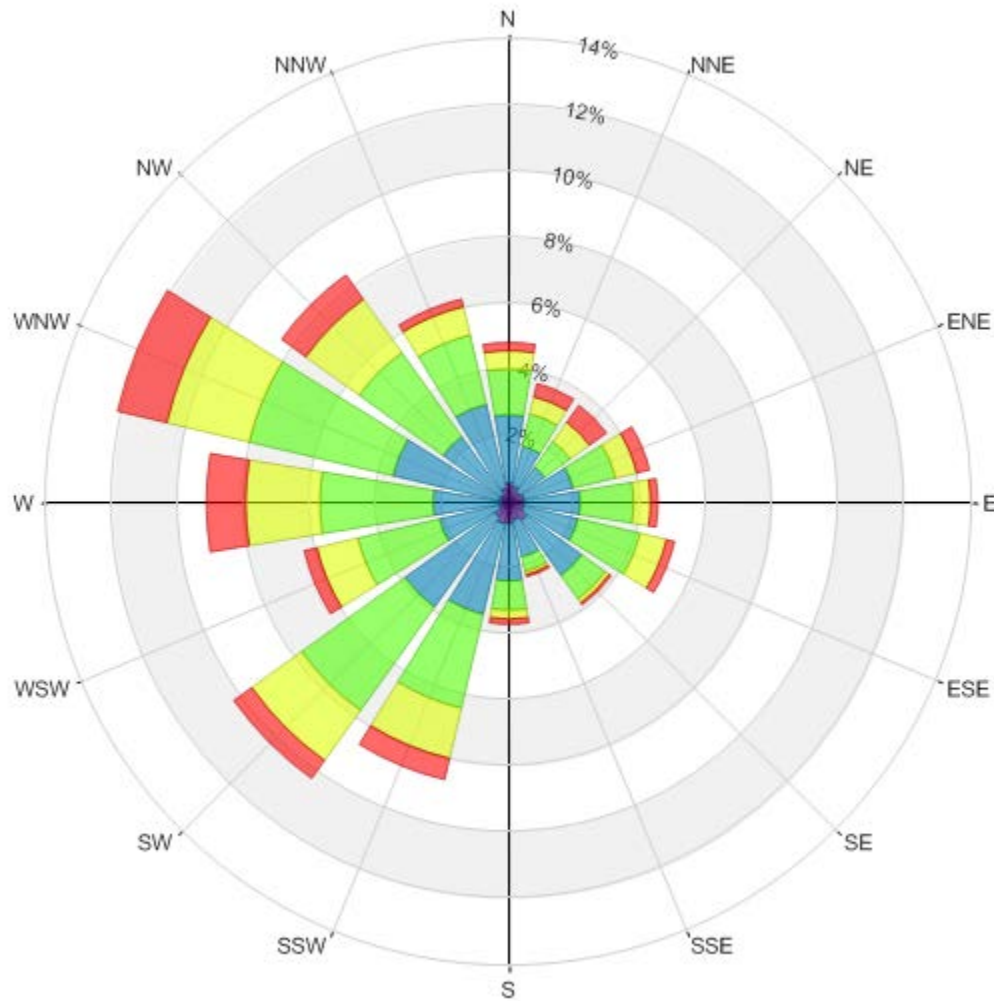
The Point – Boston, MA

Project #1401631

Figure No. 2b

Date: November 20, 2014





Annual Winds

**Wind Speed
(mph)**



Probability (%)

Calm	2.8
1-5	7.5
6-10	32.2
11-15	32.8
16-20	16.6
>20	8.0

**Directional Distribution (%) of Winds (Blowing From)
Boston Logan International Airport (1994 - 2013)**

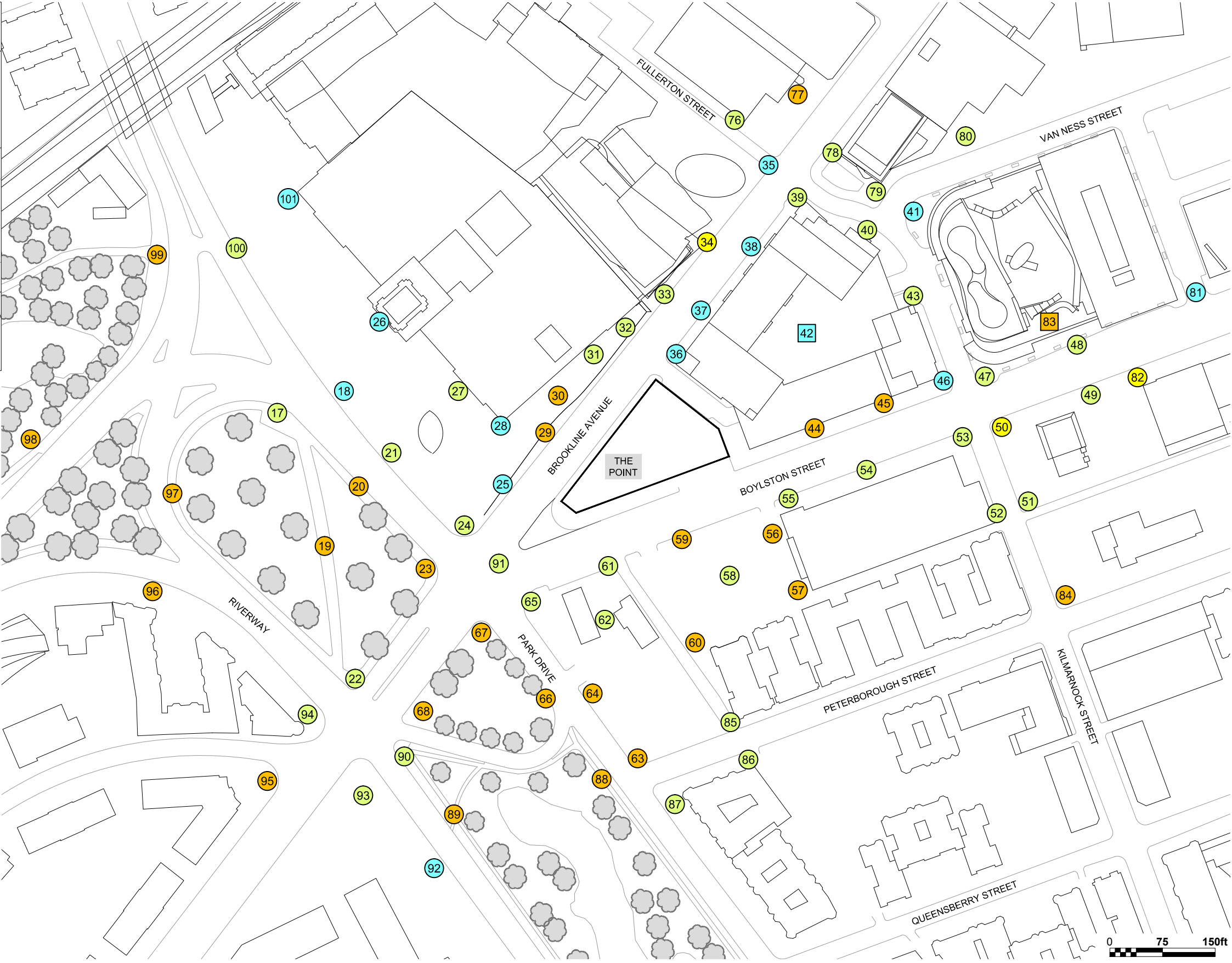
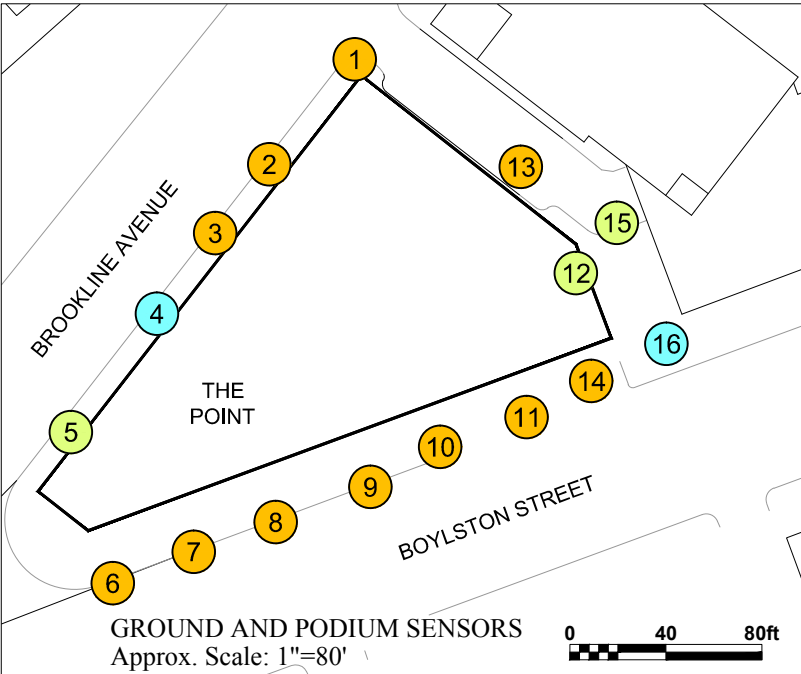
The Point – Boston, MA

Project #1401631

Figure No. 2c

Date: November 25, 2014





LEGEND:

COMFORT CATEGORIES:

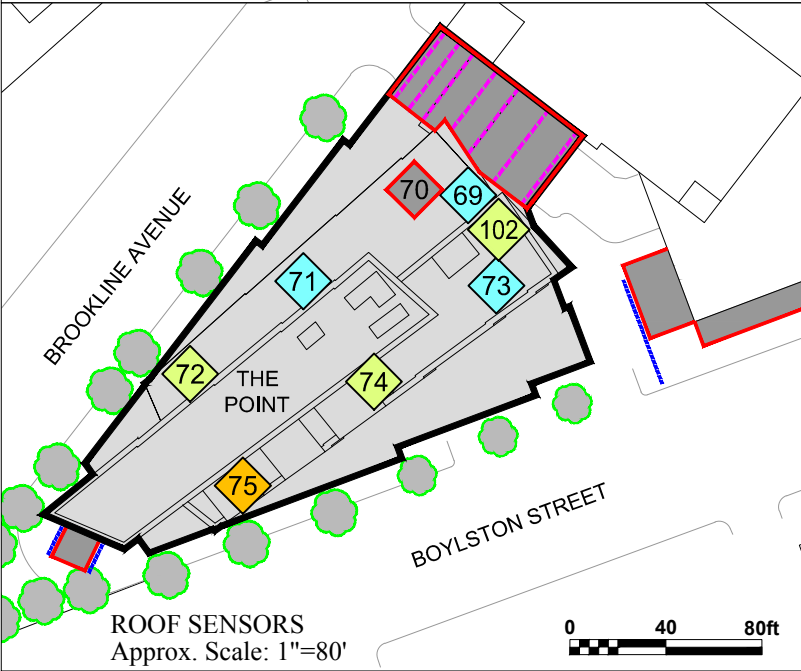
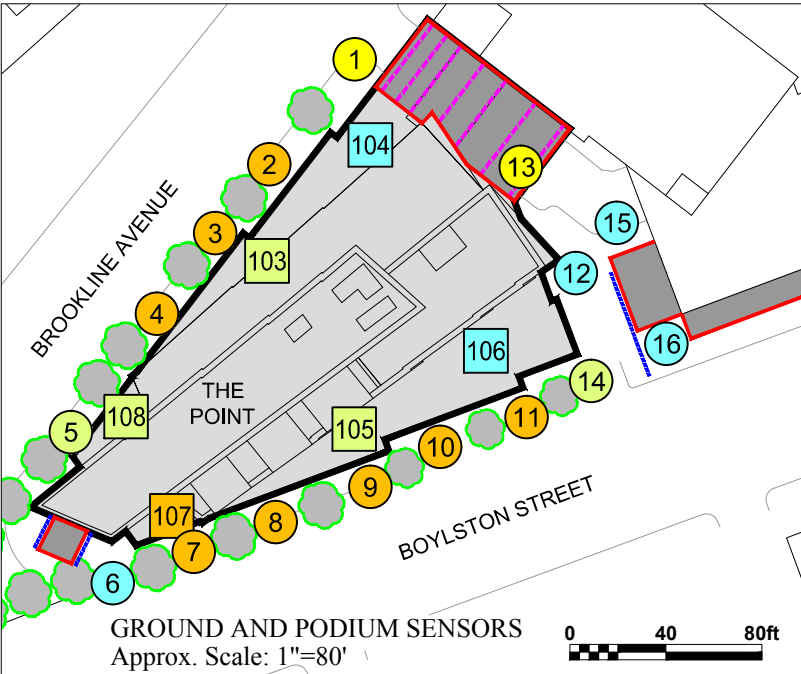
- Sitting — [Orange box]
- Standing — [Light Green box]
- Walking — [Light Blue box]
- Uncomfortable — [Yellow box]
- Dangerous — [Dark Grey box]

SENSOR LOCATION:

- Grade Level — [Circle]
- Podium Level — [Square]

Red line around sensor identifies unacceptable gust wind speeds. — [Red box]

Pedestrian Wind Conditions - Mean Speed - No Build Configuration Annual (January to December, 0:00 to 23:00)		True North 	Drawn by: ARM	Figure: 3a
The Point - Boston, MA			Approx. Scale: 1"=150'	
			Date Revised: Nov 19, 2014	
Project #1401631				



LEGEND:
SOLUTIONS:

- MARCESCENT LANDSCAPING
- 70% SOLID SCREEN WALL
- 70% SOLID SCREENS UNDERNEATH THE CANOPY
- SOLID CANOPY

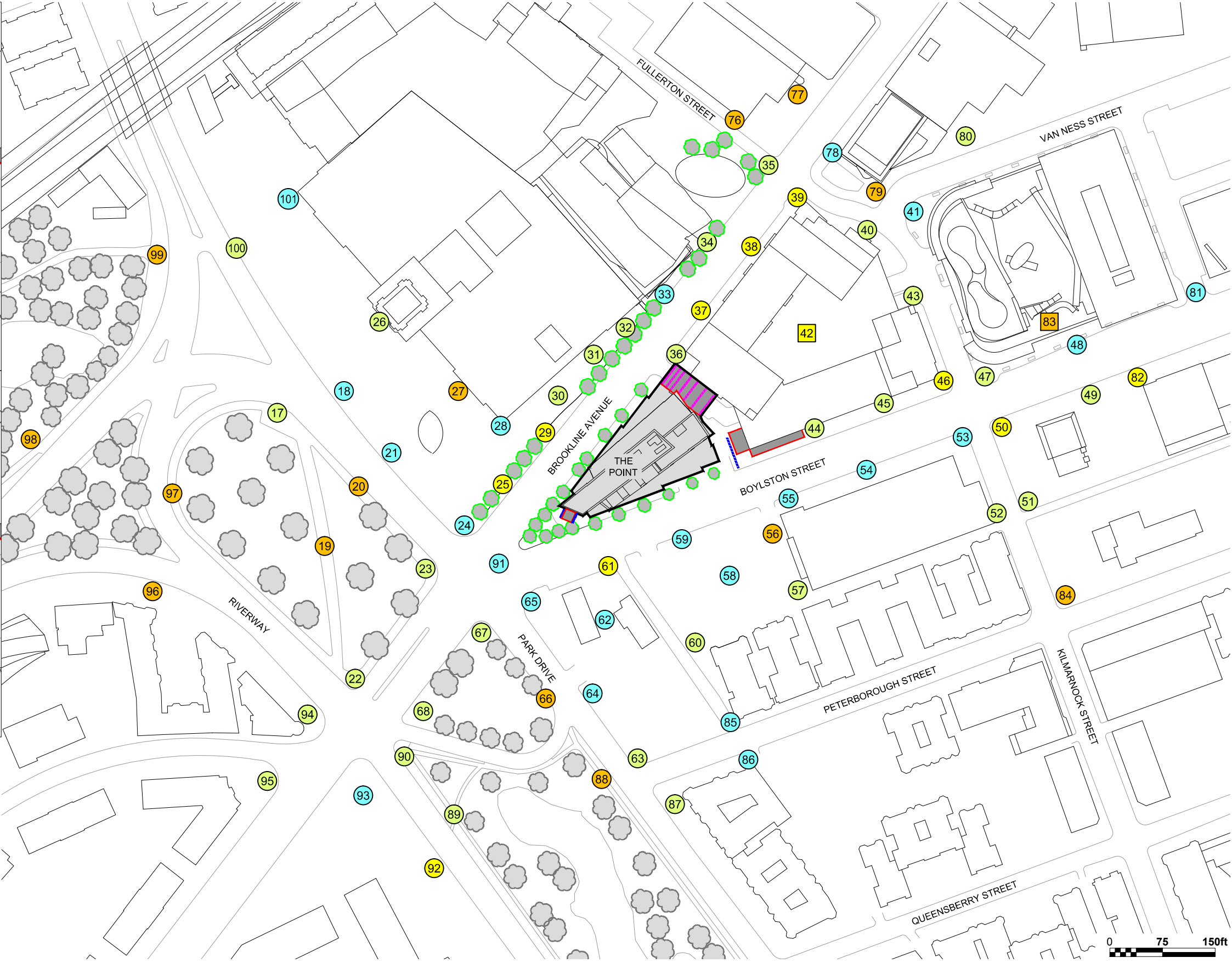
LEGEND:
COMFORT CATEGORIES:

- Sitting
- Standing
- Walking
- Uncomfortable
- Dangerous

SENSOR LOCATION:

- Grade Level
- Podium Level
- Roof Level

Red line around sensor identifies unacceptable gust wind speeds.



Pedestrian Wind Conditions - Mean Speed - Build Configuration
Annual (January to December, 0:00 to 23:00)

The Point - Boston, MA



Project #1401631

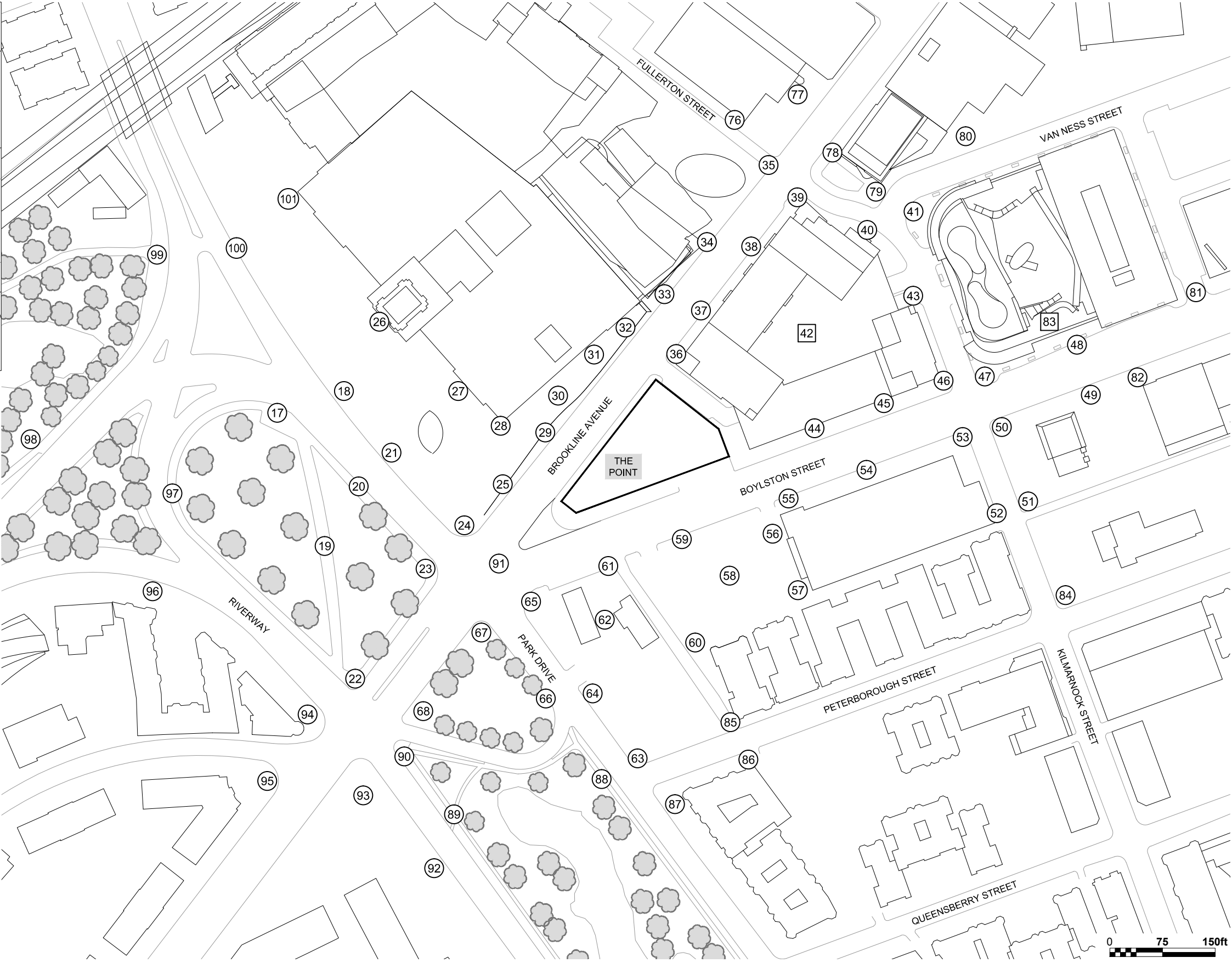
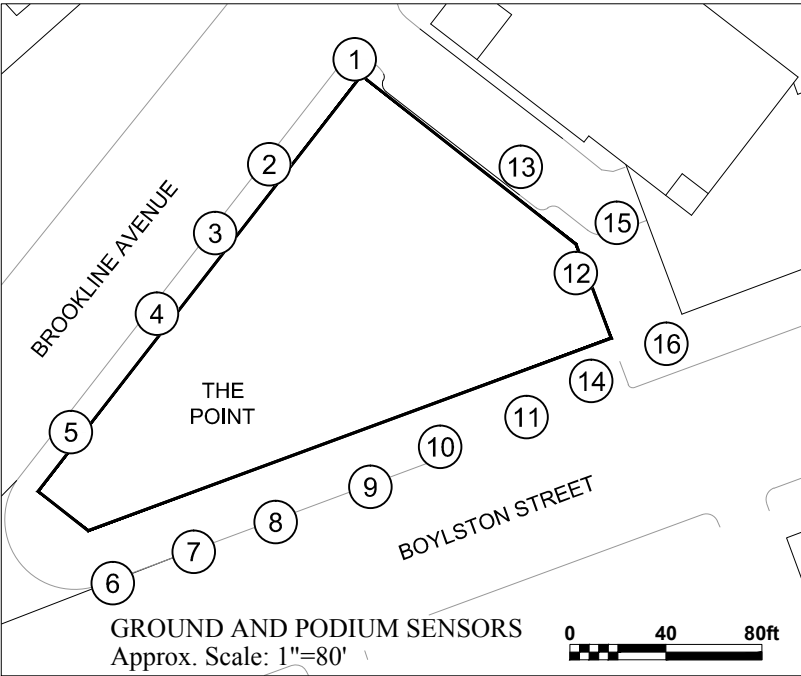
Drawn by: ARM

Figure: 3b

Approx. Scale: 1"=150'


Date Revised: Nov 19, 2014


RWDI




LEGEND:


EFFECTIVE GUST CATEGORIES:

Acceptable 

Unacceptable 

SENSOR LOCATION:

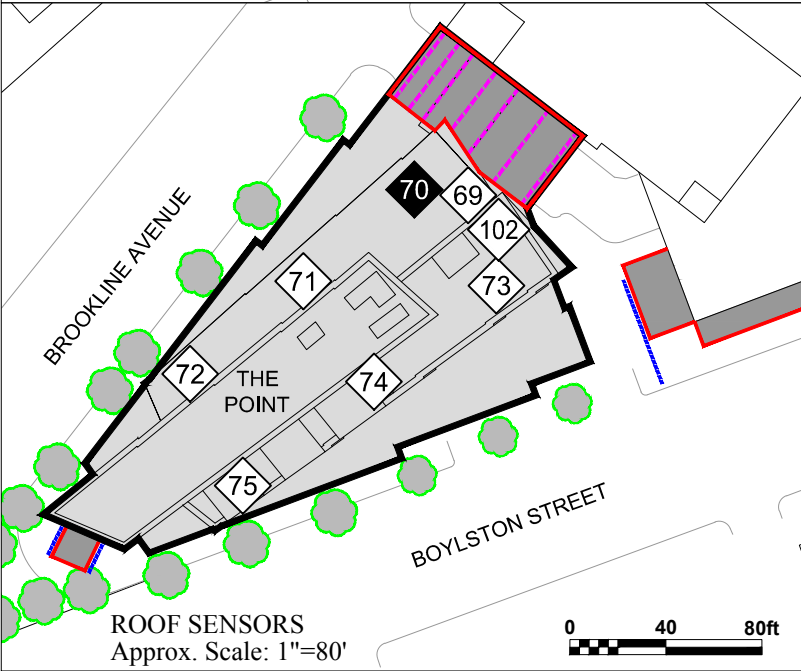
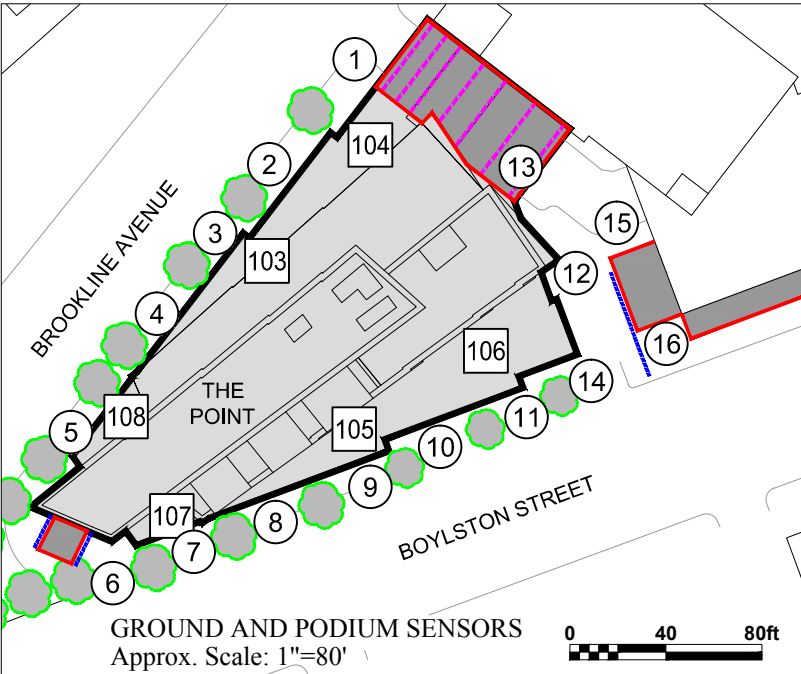
 Grade Level

 Podium Level

Pedestrian Wind Conditions - Effective Gust - No Build Configuration Annual (January to December, 0:00 to 23:00)			Drawn by: ARM	Figure: 4a
The Point - Boston, MA			Approx. Scale: 1"=150'	
			Date Revised: Nov 19, 2014	

Project #1401631

RWDI



LEGEND:
SOLUTIONS:

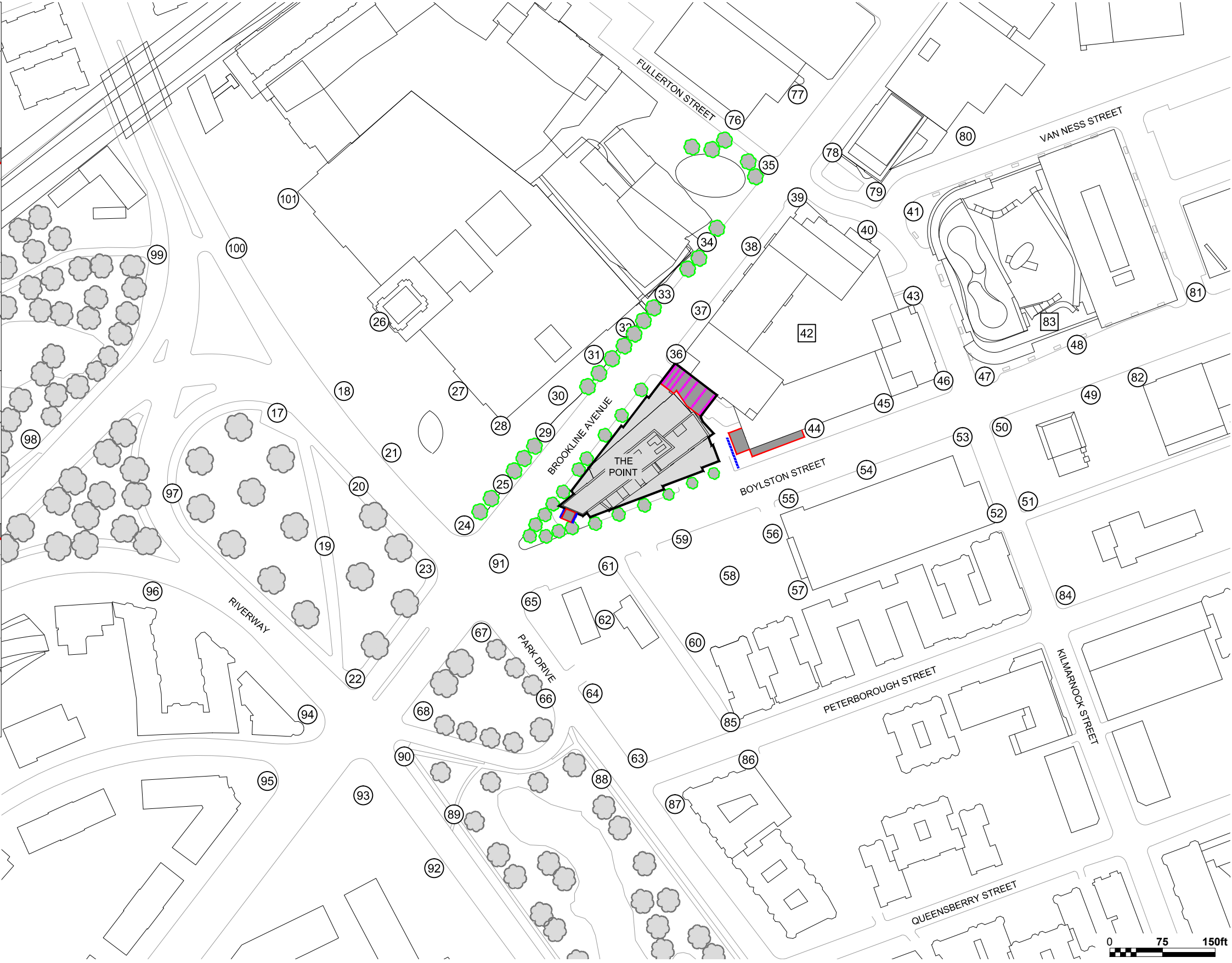
- MARCESCENT LANDSCAPING
- 70% SOLID SCREEN WALL
- 70% SOLID SCREENS UNDERNEATH THE CANOPY
- SOLID CANOPY

LEGEND:
EFFECTIVE GUST CATEGORIES:

Acceptable	White box
Unacceptable	Black box

SENSOR LOCATION:

- Grade Level (Circle)
- Podium Level (Square)
- Roof Level (Diamond)



Pedestrian Wind Conditions - Effective Gust - Build Configuration
Annual (January to December, 0:00 to 23:00)

The Point - Boston, MA



Project #1401631

Drawn by: ARM
Figure: 4b
Approx. Scale: 1"=150'
Date Revised: Nov 19, 2014

RWDI

APPENDIX A

APPENDIX A: DRAWING LIST FOR MODEL CONSTRUCTION

The drawings and information listed below were received from Samuels & Associates and were used to construct the scale model of the proposed The Point. Should there be any design changes that deviate from this list of drawings, the results may change. Therefore, if changes in the design area made, it is recommended that RWDI be contacted and requested to review their potential effects on wind conditions.

File Name	File Type	Date Received (dd/mm/yyyy)
136122_The-Point_Elevation-Elevation - Overall East Elevation	DWG File	9/18/2014
136122_The-Point_Elevation-Elevation - Overall North Elevation	DWG File	9/9/2014
136122_The-Point_Elevation-Elevation - Overall South Elevation	DWG File	9/9/2014
Elevation-Elevation - Overall West Elevation	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - Level 1	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - Level 2	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - Level 3	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - 4	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 5	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 6	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 7	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 8	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 9	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 11	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 12	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 13	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 14	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 15	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 16	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 17	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 18	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 19	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 20	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 21	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 22	DWG File	9/9/2014

File Name	File Type	Date Received (dd/mm/yyyy)
136122_The-Point_Overall Floor Plan - level 23	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 24	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 25	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 26	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 27	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 28	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 29	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 30	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - level 31	DWG File	9/9/2014
136122_The-Point_Overall Floor Plan - Roof	DWG File	9/9/2014
2014-10-16_ThePoint.rvt	Revit	10/16/2014

Attachment D:
Climate Change Preparedness & Resiliency
Checklist

Climate Change Preparedness and Resiliency Checklist for New Construction

In November 2013, in conformance with the Mayor's 2011 Climate Action Leadership Committee's recommendations, the Boston Redevelopment Authority adopted policy for all development projects subject to Boston Zoning Article 80 Small and Large Project Review, including all Institutional Master Plan modifications and updates, are to complete the following checklist and provide any necessary responses regarding project resiliency, preparedness, and to mitigate any identified adverse impacts that might arise under future climate conditions.

For more information about the City of Boston's climate policies and practices, and the 2011 update of the climate action plan, *A Climate of Progress*, please see the City's climate action web pages at <http://www.cityofboston.gov/climate>

In advance we thank you for your time and assistance in advancing best practices in Boston.

Climate Change Analysis and Information Sources:

1. Northeast Climate Impacts Assessment (www.climatechoices.org/ne/)
2. USGCRP 2009 (<http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts/>)
3. Army Corps of Engineers guidance on sea level rise (<http://planning.usace.army.mil/toolbox/library/ECs/EC11652212Nov2011.pdf>)
4. Proceeding of the National Academy of Science, "Global sea level rise linked to global temperature", Vermeer and Rahmstorf, 2009 (<http://www.pnas.org/content/early/2009/12/04/0907765106.full.pdf>)
5. "Hotspot of accelerated sea-level rise on the Atlantic coast of North America", Asbury H. Sallenger Jr*, Kara S. Doran and Peter A. Howd, 2012 ([http://www.bostonredevelopmentauthority.org/planning/Hotspot of Accelerated Sea-level Rise 2012.pdf](http://www.bostonredevelopmentauthority.org/planning/Hotspot%20of%20Accelerated%20Sea-level%20Rise%202012.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](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](#).

Climate Change Resiliency and Preparedness Checklist

A.1 - Project Information

Project Name:	The Point
Project Address Primary:	200 Brookline Avenue
Project Address Additional:	1387 Boylston Street
Project Contact (name / Title / Company / email / phone):	Melissa Schrock, Development Manager Samuels & Associates mschrock@samuelsre.com 617 603 5415

A.2 - Team Description

Owner / Developer:	Fenway Ventures Point Properties, LLC
Architect:	Arquitectonica CBT Architects
Engineer (building systems):	Cosentini
Sustainability / LEED:	The Green Engineer
Permitting:	VHB, Inc.
Construction Management:	John Moriarty Associates
Climate Change Expert:	The Green Engineer

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: Retail, Residential – Multi-unit/Four plus

List the First Floor Uses: Retail, residential lobby, mechanical rooms, loading and trash

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

Wood Frame	Masonry	Steel Frame	Concrete
------------	---------	-------------	----------

Describe the building?

Site Area:	25,191 SF (area within property line)	Building Area:	390,000 GSF
Building Height:	Approximately 340 feet	Number of Stories:	30 stories

First Floor Elevation (reference Boston City Base):

+17 feet, 3 inches

Are there below grade spaces/levels, if yes how many:

Yes. Minor utility space is on the B1 level, just below grade and a 3-level below- grade connection to the Trilogy garage is planned.

A.5 - Green Building

Which LEED Rating System(s) and version has or will your project use (by area for multiple rating systems)?

Select by Primary Use:	New Construction	Core & Shell	Healthcare	Schools
	Retail	Homes Midrise	Homes	Other
Select LEED Outcome:	Certified	Silver	Gold	Platinum

Will the project be USGBC Registered and / or USGBC Certified?

Registered: **Yes** / No

Certified: **Yes** / No

A.6 - Building Energy

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

Electric:	6,800 (kW)	Heating:	18,060 (MMBtu/hr)
What is the planned building Energy Use Intensity:	78.4 kBtu/SF	Cooling:	1,200 (Tons/hr)

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

Electric:	800 (kW)	Heating:	0 (MMBtu/hr)
		Cooling:	0 (Tons/hr)

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

Electrical Generation:	800 (kW)	Fuel Source:	No.2 Fuel Oil
System Type and Number of Units:	Combustion Engine	Gas Turbine	Combine Heat and Power
			1 (Units)

B - Extreme Weather and Heat Events

Climate change will result in more extreme weather events including higher year round average temperatures, higher peak temperatures, and more periods of extended peak temperatures. The section explores how a project responds to higher temperatures and heat waves.

B.1 - Analysis

What is the full expected life of the project?

Select most appropriate:	10 Years	25 Years	50 Years	75 Years
--------------------------	----------	----------	-----------------	----------

What is the full expected operational life of key building systems (e.g. heating, cooling, ventilation)?

Select most appropriate:	10 Years	25 Years	50 Years	75 Years
--------------------------	----------	-----------------	----------	----------

What time span of future Climate Conditions was considered?

Select most appropriate:	10 Years	25 Years	50 Years	75 Years
--------------------------	----------	----------	-----------------	----------

Analysis Conditions - What range of temperatures will be used for project planning – Low/High?

/ Deg.	Per ASHRAE, 1% weather Data for Boston low 12.4F and high 87.6F
--------	--

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

When weather conditions exceed the 1% criteria (i.e., less than 90 hours per year interior conditions may not be maintained)

Deg.	Days	Events / yr.
------	------	--------------

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

24 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?

43 Inches / yr.	6 in/hr Inches	1 Event / yr.
------------------------	-----------------------	----------------------

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

Peak Wind = 105 mph (3-second gust speed)	Hours = 6 to 12 (with the peak event happening once within the period)	Events / yr. = 0.02 events per year
--	---	--

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:	25%	In compliance with the MA Stretch Energy Code.
How is performance determined:	Whole Building Energy Model	

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

Select all appropriate:	High performance	High performance	Building day	EnergyStar equip.
-------------------------	-------------------------	-------------------------	---------------------	--------------------------

building envelop	lighting & controls	lighting	/ appliances
High performance HVAC equipment	Energy recovery ventilation	No active cooling	No active heating

Describe any added measures:

Condensing heaters were selected to further reduce the quantity of fuel required to heat domestic hot waters. These heaters are significantly more efficient than the standard domestic hot water system because they use the exhaust gas to preheat the return water.

Condensing water boilers are also selected to reduce fuel consumption. Variable frequency drives are used to reduce energy used on the cooling tower fans and building heat pump loop water pumps

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

Roof:	R = 30	Walls / Curtain Wall Assembly:	R = 20.8
Foundation:	R = N/A	Basement / Slab:	R = F-0.54
Windows: Retail:	U =0.57	Doors: Retail:	U =0.57
Residential:	U =0.39	Residential:	U =0.39

What specific measures will the project employ to reduce building energy demands on the utilities and infrastructure?

On-site clean energy / CHP system(s)	Building-wide power dimming	Thermal energy storage systems	Ground source heat pump
On-site Solar PV	On-site Solar Thermal	Wind power	None

Describe any added measures:

Will the project employ Distributed Energy / Smart Grid Infrastructure and /or Systems?

Select all appropriate:

Connected to local distributed electrical	Building will be Smart Grid ready	Connected to distributed steam, hot, chilled water	Distributed thermal energy ready
---	-----------------------------------	--	----------------------------------

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

Yes / No	If yes, for how long:	Days
If Yes, is building "Islandable?"		
If Yes, describe strategies:		
Current planning will provide generator backup for essential building function, such as life safety equipment. The diesel-fired emergency generator will be located on the roof with a sound-attenuated weather-tight enclosure. The generator's fuel supply will be accessible at street level for re-filling.		

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	Potable water for	Waste water	High Performance

Describe any added measures:

drinking / food preparation	sinks / sanitary systems	storage capacity	Building Envelop

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
Slope sidewalk towards permeable paver strips			

Describe other strategies:

What measures will the project employ to accommodate extreme storm events and high winds?

Select all appropriate:

Hardened building structure & elements	Buried utilities & hardened infrastructure	Hazard removal & protective landscapes	Soft & permeable surfaces (water infiltration)

Describe other strategies:

The wind study results indicate that the effects during the winter months when the winds come primarily from the northwest were the most notable. Mitigation measures proposed to alleviate high winds include a solid canopy and porous vertical screens at the building's westernmost façade and a pedestrian-level wind trellis over a portion of the shared driveway along the eastern end of the Project Site. The addition of trees along the north side of Brookline Avenue and at the west end of the Project Site at the juncture of Brookline Avenue and Boylston Street and street trees along all adjacent sidewalks will also serve to mitigate wind impacts.

The Project includes an innovative sub-slab retention/infiltration system that retains site runoff while providing treatment and peak flow mitigation. The current design provides the required volume and utilizes a gravity driven leaching bed to achieve infiltration, per the Boston Zoning Code Article 32, Groundwater Conservation Overlay District (GCOD). The proposed infiltration system also addresses stormwater treatment following the MassDEP phosphorous treatment guidelines. Also, a portion of the roof over the 2-story retail will include a green roof system using sedum planting material, which will further enhance the stormwater management system by reducing runoff through water absorption by the plant and soil materials. The stormwater measures will be designed in accordance with DEP's Massachusetts that Stormwater Management Handbook.

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 be susceptible to flooding now or during the full expected life of the building?

Describe site conditions?

Site Elevation – Low/High Points:

Building Proximity to Water:

Is the site or building located in any of the following?

Coastal Zone:

Flood Zone:

Velocity Zone:

Area Prone to Flooding:

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:

Future floodplain delineation updates:

What is the project or building proximity to nearest Coastal, Velocity or Flood Zone or Area Prone to Flooding?

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:

Frequency of storms:

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:

First Floor Elevation:

Will the project employ temporary measures to prevent building flooding (e.g. barricades, flood gates):

If Yes, to what elevation

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 1 st 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