THE DREW COMPANY

March 24, 2016

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

Attn: Mr. Phil Cohen

Re: **Fourth Notice of Project Change for Waterside Place Project, South Boston**

Dear Director Golden,

The Drew Company (the "Proponent") submits this Fourth Notice of Project Change (the "Fourth NPC") to the Boston Redevelopment Authority (the "BRA" or the "Authority") pursuant to Section 80A-6 of the Boston Zoning Code (the "Code") concerning Phase IB of the Waterside Place project. The proposed changes to Waterside Place will help advance the critical City goal of adding significant numbers of new housing units near major Seaport employers. Accordingly, the Proponent plans to change the Phase IB uses from a grocery store and innovation space to 312 apartments, including innovation housing, with a ground-floor retail component. Because the Proposed Project's impacts are not materially greater than those of the Previously Approved Project (as both terms are defined below), the Proponent respectfully requests a determination that no further review pursuant to the Article 80B Large Project Review process is required.

**Project Site**

Waterside Place Phase I, consisting of Phases IA and IB, is located on an approximately three-acre, parcel of land in the Seaport District of South Boston owned by the Massachusetts Port Authority ("Massport"). These parcels are bounded by Congress Street to the north, World Trade Center Avenue to the west, the Silver Line right of way to the south, and D Street to the east (the "Site") (see Figure 1-1 of the enclosed NPC). Developments located on these parcels are subject to long-term ground leases from Massport.

**Permitting History**

On June 21, 2007, pursuant to Sections 80B-5.4(c) (iv) and 80B-6 of the Code, the Authority voted to authorize the issuance of a Preliminary Adequacy Determination waiving further review and a Certification of Compliance in connection with Massport's Commonwealth Flats Development Area Parcels C1, C2, and C3, as well as Parcels D1 and D2. At that time, the project involved the construction of approximately 209 residential condominium units on the northern portion of this site, as well as an approximately 300-room hotel, and approximately 640,000 square feet of retail space, including retail shops, a grocery store, restaurants, an approximately 20,000 square foot visitor center, and a multi-level parking garage with approximately 2,350 spaces to be utilized by residents, employees, and visitors (the "Waterside Place Project"). The Authority issued a Preliminary Adequacy Determination waiving further review of the Waterside Place Project on November 2, 2007.

Due to the subsequent economic downturn, construction of the Waterside Place Project as initially contemplated never commenced. The developer then proposed to construct the Waterside Place Project in phases, beginning with Phase I on the Site. On June 30, 2010, a Notice of Project Change (the "First NPC") was submitted to the Authority concerning the revision of the Waterside Place Project, and specifying the components to be constructed in connection with Phase I. On August 3, 2010, the Boston Civic Design Commission voted to approve the design for Phase I of the Waterside Place Project. The issuance of a Determination under Section 80A-6.2 of the Code waiving further review of the NPC (the "First Determination") was approved by vote of the Authority on August 17, 2010. The First Determination was issued by the Director of the Authority on August 26, 2010.

The uses approved for Phase I were consistent with the uses for the northern portion of the Waterside Place Project as approved in 2007, with the exception of the addition of the innovation space described below. Overall, Phase I was approved to include approximately 376,300 square feet of gross floor area (not including parking), featuring approximately 234 rental apartment units, approximately 72,000 square feet of retail space, including a grocery store and pharmacy, approximately 185 parking spaces, and approximately 14,000 square feet of innovation space ("Phase I").

On November 4, 2011, a Second Notice of Project Change (the "Second NPC") was submitted to the Authority specifying that Phase I of the Waterside Place Project was to be completed in two sub-phases, Phase IA and IB. The Second NPC indicated that Phase IA would consist of 236 residential rental units to be constructed in a 19-story building of up to 250 feet in height. The NPC also stated that Phase IA would incorporate approximately 140 parking spaces, of which 70 would be above-grade, internal spaces (occupying approximately 29,000 square feet), with the remaining approximately 70 spaces consisting of exterior, surface spaces. The second NPC explained that Phase IA would also include approximately 17,000 square feet of ground-floor commercial space, to be dedicated primarily to retail and innovation uses.

On November 17, 2011, the Authority approved the issuance of a Determination under Section 80A-6.2 of the Code waiving further review of the Second NPC (the "Second Determination"). The Second Determination was issued by the Director of the Authority on March 8, 2012.

The Second NPC and the associated BRA Board memo and Cooperation Agreement also stated that the balance of Phase I, designated as "Phase IB," would consist of the remaining approximately 55,000 square feet of retail space, including a grocery store, 7,000 square feet of innovation space and approximately 115 parking spaces (representing the balance of the Phase I parking spaces, i.e., approximately 45 spaces, plus approximately 70 relocated former surface parking spaces) (collectively, the "Previously Approved Project").

On December 23, 2015, the Proponent filed a third Notice of Project Change (the "Third NPC"). The Third NPC focused on a narrow aspect of Phase I of the Waterside Place Project: it requested a change of use for a portion of the approximately 6,555 square-foot, ground-floor commercial space allocated as an Innovation Center in Phase 1A of the Waterside Place Project. Specifically, the Third NPC requested authorization to lease an approximately 2,600 square-foot area for a satellite nonprofit health center. On January 14, 2016, the Authority approved the issuance of a Determination under Section 80A-6.2 of the Code waiving further review of the Third NPC (the "Third Determination").

A Letter of Intent concerning the Fourth NPC was filed with the Authority on November 30, 2015.

**Project Description – Waterside Place Fourth NPC**

This Fourth NPC proposes a revised Phase IB (the "Proposed Project") consisting of a 23-story residential building of up to 250 feet in height, to be located at 501 Congress Street. The approximately 345,000 square-foot building (including above-grade parking) will contain approximately 312 rental apartments, approximately 84 parking spaces on the second level, and approximately 2,000 square feet of ground level retail space. Apartment units will range in size from studios to three-bedrooms. The project will also include approximately 34 innovation units. Vehicular and pedestrian access will be off of Congress Street.

The planned construction start for the Proposed Project is fourth quarter 2016. The Proponent anticipates that the building will open in late 2018.

**Mitigation and Public Benefits**

The Proposed Project will yield a number of public benefits and mitigation measures, including but not limited to:

- Provision of approximately 312 new units of rental apartment housing, consisting of 278 units of conventional market-rate and affordable apartment units and 34 innovation units.

- Improvements to the public realm, sidewalks, and streetscapes at this central location within the South Boston Seaport District.

- Compliance with Article 37 by achieving a level of design that is LEED certified.

- Creation of approximately 20 permanent and over 800 construction jobs.

- Provision of a substantial monetary contribution to the creation of affordable housing in the City of Boston via a Housing Contribution Grant.

- Advancement of the goals of the Seaport Public Realm Plan by enhancing the 24/7 vitality of the South Boston Waterfront and contributing to the City's use mix goal for the South Boston Waterfront.

**Affordable Housing Contribution**

In connection with the Proposed Project, the Proponent proposes to meet its affordable housing obligation through providing both on-site affordable housing units and a monetary contribution. 22 of the 312 residential units within the Proposed Project will be created as on-site affordable housing (the "Affordable Units"). The Affordable Units will be made affordable to households earning less than or equal to seventy percent (70%) of the Area Median Income as determined by the U.S. Department of Housing and Urban Development. The Proponent proposes to meet the balance of its affordable housing obligation by providing a monetary contribution in the amount of $4,300,000 to the Inclusionary Development Program Fund.

**Conclusion and Request for Approval**

Code Section 80A-6, Project Changes and Lapse of Time, governs the Notice of Project Change process applicable to projects that have previously undergone review pursuant to Article 80 of the Code. Code Section 80A-6 makes clear that further development review is only required in situations where there has been a "material change in a Proposed Project or project phase, [or] any lapse of time, that is subject to review under this Article pursuant to Section 80B-2 . . . ."

Neither of these potential bases for further review of Phase IB of the Waterside Place Project applies under the circumstances. No lapse of time has taken place. Nor has any material change been proposed concerning Phase IB. The impacts of the Proposed Project have been analyzed and summarized in the attached report. This comprehensive report includes summaries of the following topics: transportation, infrastructure, wind, shadow, daylight, solar glare, urban design, sustainable design and design elements related to climate change and accessibility. As the report documents, the overall impacts of Phase IB, as advanced through the design development process,

remain consistent with those approved in connection with the Second NPC. In particular, the Proponent notes that the vehicular traffic projected to be generated by the Proposed Project is far below that initially anticipated when the Waterside Place Project was first approved in 2007.

New rental housing is urgently needed within Boston. The proposed changes will allow the City to further this important objective. The overall impacts of the NPC Project will not increase materially with the change from the Previously Approved Project to the NPC Project. Therefore, consistent with the finding required for approval of a project change pursuant to Article 80A-6, no factor "significantly increases those impacts of the Proposed Project . . . that are within the scope of the required review [so as to] warrant resubmission of the PNF." The Proponent therefore submits that issuance of a revised Adequacy Determination for the Proposed Project is appropriate.

Sincerely,

John E. Drew
President and CEO

cc:
Kristin Kara, BRA
James Doolin, Massport
Juan Carlos Loveluck, Massport

NOTICE OF PROJECT CHANGE

# Waterside Place Phase IB

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

Submitted by:
**The Drew Company**
2 Seaport Lane, Floor 9
Boston, MA 02210

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

In Association with:
**CBT Architects**
**Dain, Torpy, Le Ray, Wiest & Garner, P.C.**
**Vanasse Hangen Brustlin, Inc.**

March 24, 2016

Epsilon
ASSOCIATES INC.

NOTICE OF PROJECT CHANGE

# Waterside Place Phase IB

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


Submitted by:
**The Drew Company**
2 Seaport Lane, Floor 9
Boston, MA 02210

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

In Association with:
**CBT Architects**
**Dain, Torpy, Le Ray, Wiest & Garner, P.C.**
**Vanasse Hangen Brustlin, Inc.**


March 24, 2016

Epsilon
ASSOCIATES INC.

Table of Contents

# Table of Contents

## Table of Contents (Continued)



## List of Appendices



## List of Figures

## List of Figures (Continued)



## List of Tables

# Chapter 1.0

General Information / Project Description

# 1.0 GENERAL INFORMATION / PROJECT DESCRIPTION

## 1.1 Introduction

This Fourth Notice of Project Change (NPC) is being submitted by The Drew Company (the "Developer") to provide information on the proposed changes to Phase IB of the Waterside Place Project proposed for the Seaport District of South Boston.

Waterside Place Phase I, comprised of Phases IA and IB (together "Phase I"), is located on an approximately three-acre parcel of land in the Seaport District of South Boston owned by the Massachusetts Port Authority ("Massport"). These parcels, as shown on Figure 1-1, are bounded by Congress Street to the north, World Trade Center Avenue to the west, the Silver Line right-of-way to the south, and D Street to the east (the "Site"). Developments located on these parcels are subject to long term ground leases from Massport.

Both Phase IA and IB were the subject of an earlier Notice of Project Change (NPC) and approved by the Boston Redevelopment Authority (BRA) in November 2011. Phase IA was completed in 2014 (the "Phase IA Project"). Phase IB included retail and parking uses. As described in this NPC, Waterside Place Phase IB (the "Phase IB Project") is now proposed to include a 312-unit residential building with parking and ground floor retail. The primary program changes to the Project are a) the amount of retail has been reduced and b) residential uses have been added. The Phase IB Project will continue to provide parking for tenants on the second level.

This NPC is being submitted to provide the BRA a review of the permitting history for the Waterside Place Project and Phase I, a description of proposed changes to the Phase IB Project, and a description of the potential environmental impacts of the Phase IB Project. This NPC also is being submitted to request confirmation by the BRA that no further review of the Project is required. A Letter of Intent for this Project was filed with the BRA on November 30, 2015.

## 1.2 Waterside Place Project History

In February 2007, the Developer submitted a Draft Project Impact Report (DPIR) for the Waterside Place Project which involved the construction of approximately 209 residential condominium units on the northern portion of this site, as well as an approximately 300-room hotel, and approximately 640,000 square feet (sf) of retail space, including retail shops, a grocery store, restaurants, an approximately 20,000 sf visitor center, and a multi-level parking garage with approximately 2,350 spaces to be utilized by residents, employees, and visitors (the "Waterside Place Project"). On June 21, 2007, pursuant to Sections 80B-5.4(c) (iv) and 80B-6 of the Boston Zoning Code (the "Code"), the BRA Board voted to authorize the issuance of a Preliminary Adequacy Determination waiving further review and a Certification of Compliance in connection with Massport's Commonwealth Flats Development Area (CFDA) Parcels C1, C2, and C3, as well as Parcels D1 and D2 (see

Figure 1-2 for the CFDA). The BRA issued a Preliminary Adequacy Determination waiving further review of the Waterside Place Project on November 2, 2007.

Because of the economic downturn, construction of the Waterside Place Project as initially contemplated never commenced. The developer then proposed to construct the Waterside Place Project in phases, beginning with Phase I on the Site. On June 30, 2010, an NPC was submitted to the BRA concerning the revision of the Waterside Place Project, and specifying the components to be constructed in connection with Phase I. On August 3, 2010, the Boston Civic Design Commission voted to approve the design for Phase I of the Waterside Place Project. The issuance of a Determination under Section 80A-6.2 of the Code waiving further review of the NPC (the "First Determination") was approved by vote of the BRA Board on August 17, 2010. The First Determination was issued by the Director of the BRA on August 26, 2010.

The uses approved for Phase I in 2010 were consistent with the uses for the northern portion of the Waterside Place Project as approved in 2007, with the exception of the addition of the innovation space described below. Overall, Phase I was approved to include approximately 376,300 sf[1] of gross floor area,[2] featuring approximately 234 rental apartment units, approximately 72,000 sf of retail space, including a grocery store and pharmacy, approximately 185 parking spaces, and approximately 14,000 sf of innovation space.

On November 4, 2011, a Second NPC was submitted to the BRA specifying that Phase I of the Waterside Place Project was to be completed in two sub-phases, Phase IA and IB. The Second NPC stated that Phase IA would consist of 236 residential rental units to be constructed in a 19-story building of approximately 248 feet in height. The NPC also stated that Phase IA would incorporate approximately 140 parking spaces, of which 70 would be above-grade, internal spaces (occupying approximately 29,000 sf), with the remaining approximately 70 spaces consisting of exterior, surface spaces. The second NPC indicated that Phase IA would also include approximately 17,000 sf of ground-floor commercial space, to be dedicated primarily to retail and innovation uses. The issuance of a Determination under Section 80A-6.2 of the Code waiving further review of the Second NPC was approved by vote of the BRA Board on November 17, 2011. The First Determination was issued by the Director of the BRA on March 8, 2012.

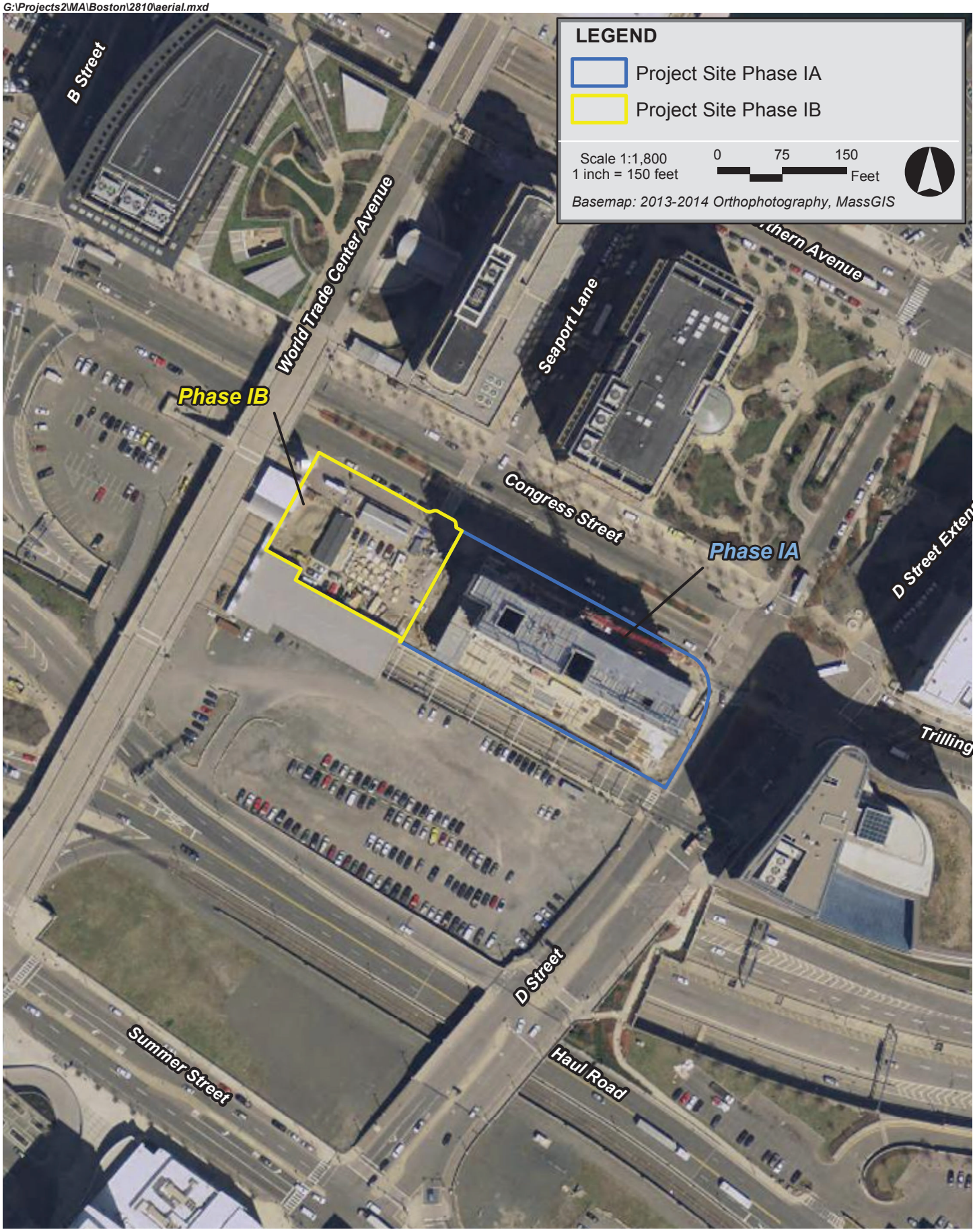
The Second NPC, and subsequent 2011 BRA Board memo and March 2012 Cooperation Agreement, stated that the balance of Phase I (i.e., Phase IB) would consist of the remaining approximately 55,000 sf of retail space, including a grocery store, 7,000 sf of innovation

---

1 Square footage does not include parking.

2 All square footage figures concerning Phase I and its sub-phases are intended to refer to gross floor area as defined per Article 2A of the Code.

G:\Projects2\MA\Boston\2810\aerial.mxd




**Waterside Place Phase IB Boston, Massachusetts**

Epsilon ASSOCIATES INC.

**Figure 1-1**
*Aerial Locus Map*

Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division


**Waterside Place Phase IB Boston, Massachusetts**

Epsilon ASSOCIATES INC.

**Figure 1-2**

*Commonwealth Flats Development Area*

space and approximately 115 parking spaces (representing the balance of the Phase I parking spaces, i.e., approximately 45 spaces, plus approximately 70 relocated former surface parking spaces).

A Third NPC was submitted to the BRA on December 2015 and approved by the BRA Board on January 14, 2016. The Third NPC addressed a change of use for part of the innovation space in Phase 1A. As reflected in the Third NPC, approximately 2,500 sf of space which was initially designated as innovation space in Phase 1A will now be occupied by a neighborhood health clinic.

## 1.3 Phase IB Project Description

The Phase IB Project will be a 23-story residential apartment building, to be located at 501 Congress Street, which is currently used for surface parking (see Figure 1-1). The approximately 345,000 sf[3] building will contain 312 rental apartments, approximately 84 parking spaces on the second level and approximately 2,000 sf of ground level retail space. Apartment units will range in size from studios to three-bedrooms, and the Project will include 34 innovation units. Vehicular and pedestrian access will be off of Congress Street. Tenant parking will also be available in Massport's planned Seaport Transportation Center (STC), to be located immediately south of the Phase IB Project Site. One of the access points for the STC will be off of Congress Street via a ramp, which will be partially located within the Waterside Place Phase IB structure. The STC is anticipated to provide parking for both Phase IA and Phase IB.

Table 1-1 shows the comparison of Phase IB as included in the Second NPC and the currently proposed Phase IB Project.

**Table 1-1 Phase IB Program Comparison**

| *Project Element* | *Phase IB Approximate Program* | |
|---|---|---|
| | *2011 NPC* | *Currently Proposed* |
| Residential | N/A | 312 units |
| Retail | 62,000 sf | 2,000 sf |
| Parking | 115 spaces | 84 spaces |
| Total SF (including parking) | 107,000 sf | 345,000 sf |

The Phase IB Project is located in the Seaport District, a rapidly changing area of Boston with a number of new residential and commercial buildings recently constructed, under

[3] Total square footage includes parking.

construction or approved. Not only will the Project provide housing options for workers in nearby buildings, but also provide housing adjacent to a Silver Line station, providing access to Downtown and the greater Boston region.

Figures 1-3 to 1-12 include a site plan, ground floor and second floor plans, a section, elevations and perspectives of the Phase IB Project.

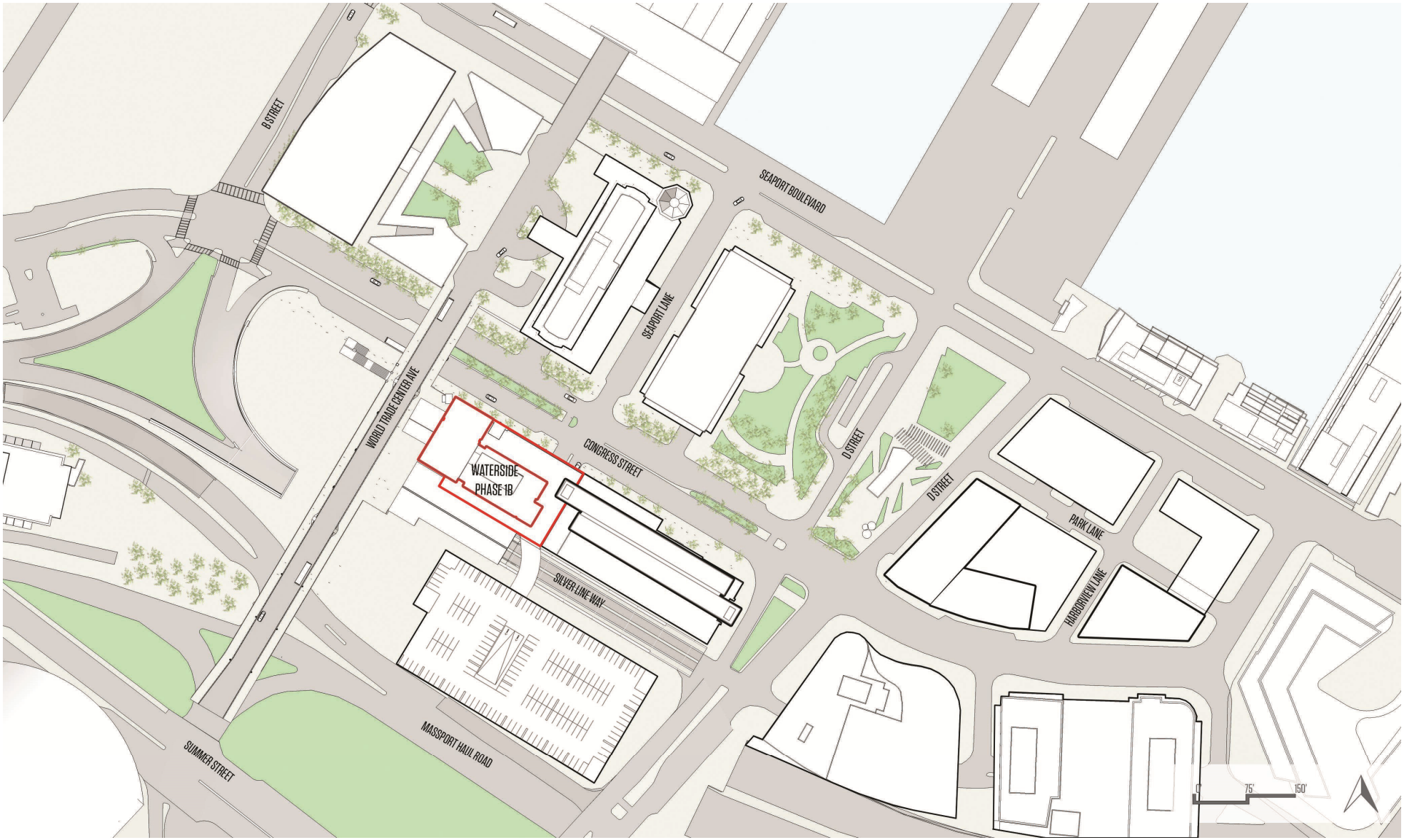
## 1.4 Mitigation and Public Benefits

The Phase IB Project will include a number of mitigation measures and provide public benefits, including:

- Provision of approximately 312 new units of conventional rental apartment housing, consisting of both market-rate and affordable apartment units.
- Creation of approximately 34 innovation units.
- Improvements to the public realm, sidewalks, and streetscapes at this central location within the South Boston Seaport District.
- Compliance with Article 37 by achieving a level of design that is LEED certified.
- Creation of approximately 20 permanent and over 800 construction jobs.
- Provision of 22 on-site affordable housing units made affordable to households earning less than or equal to 70% of the Area Median Income as determined by the U.S. Department of Housing and Urban Development, as well as a monetary contribution in the amount of $4,300,000 to the Inclusionary Development Program Fund.
- Contribution to the costs of providing signalization at the intersection of Congress Street and Seaport Lane/Project Site driveway.
- Incorporation of stormwater management and treatment systems that will improve water quality, reduce runoff volume and control peak rates of runoff in comparison to existing conditions.
- Advancement of the goals of the Seaport Public Realm Plan by enhancing the 24/7 vitality of the South Boston Waterfront and contributing to the City's use mix goal for the South Boston Waterfront.

## 1.5 Schedule

The planned construction start for the Phase IB Project is the fourth quarter of 2016, with the anticipated opening in late 2018.




**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 1-3**

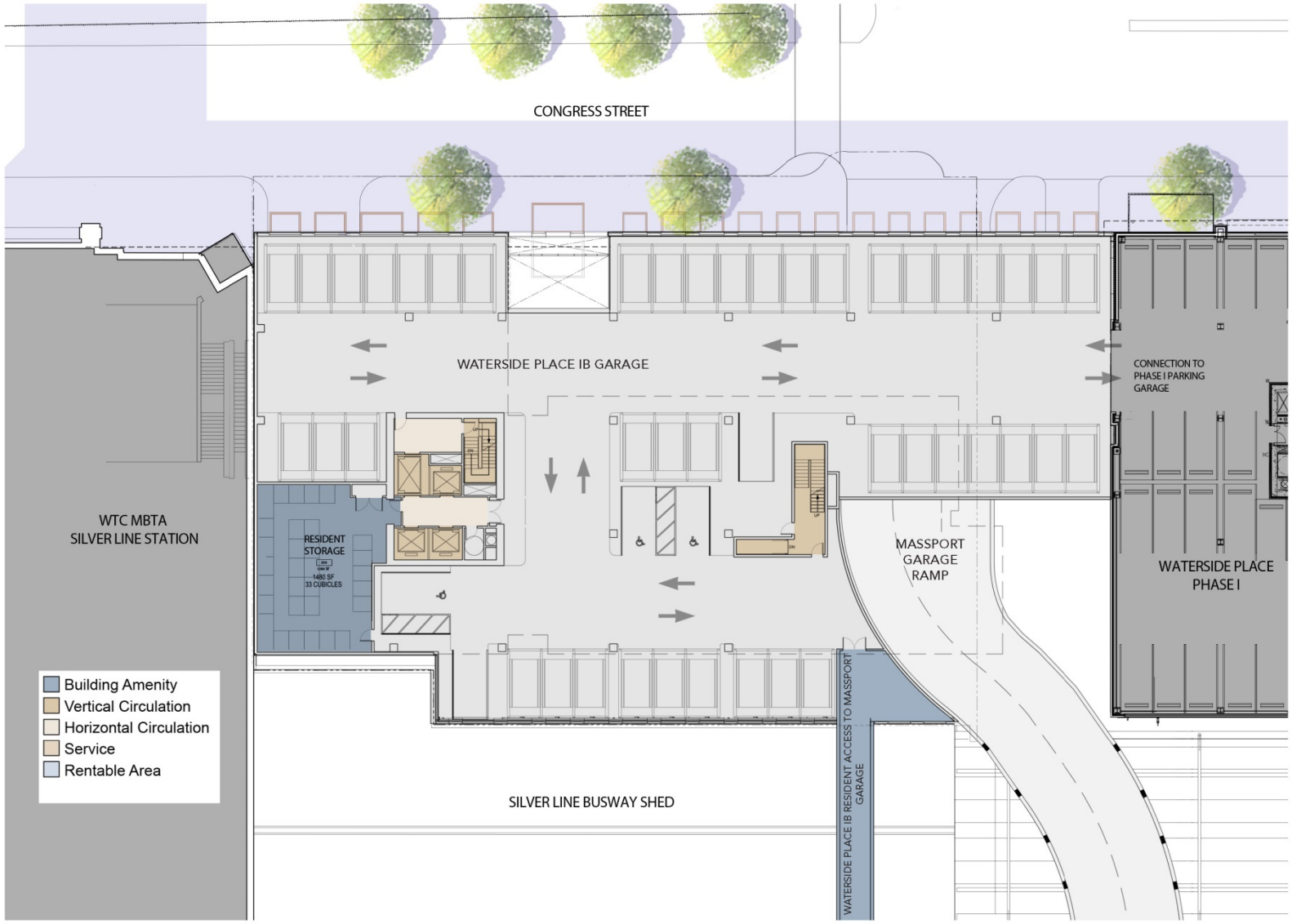
*Site Plan*


**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 1-4**

*Ground Floor Plan*

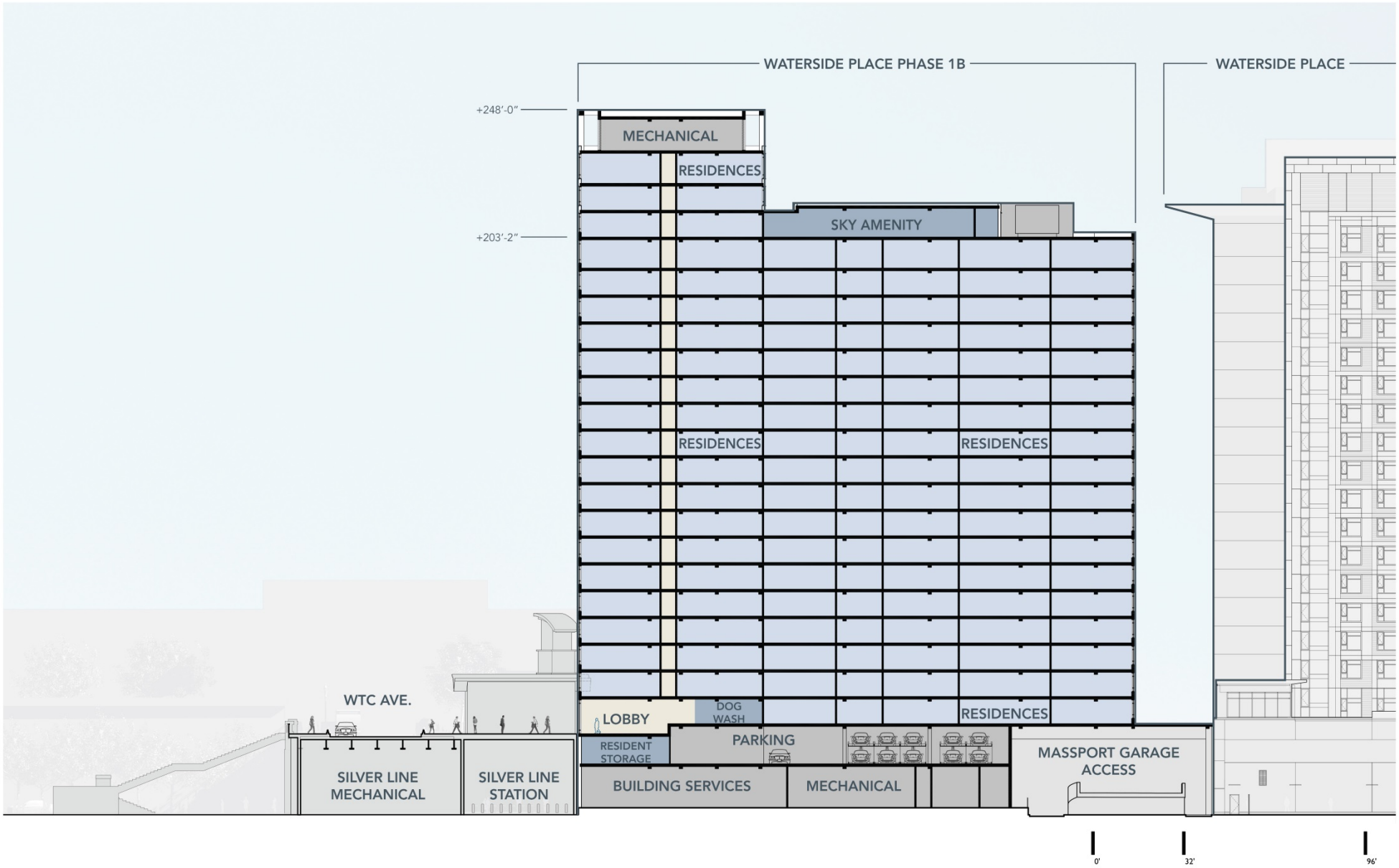



**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 1-5**

*Second Floor Plan*

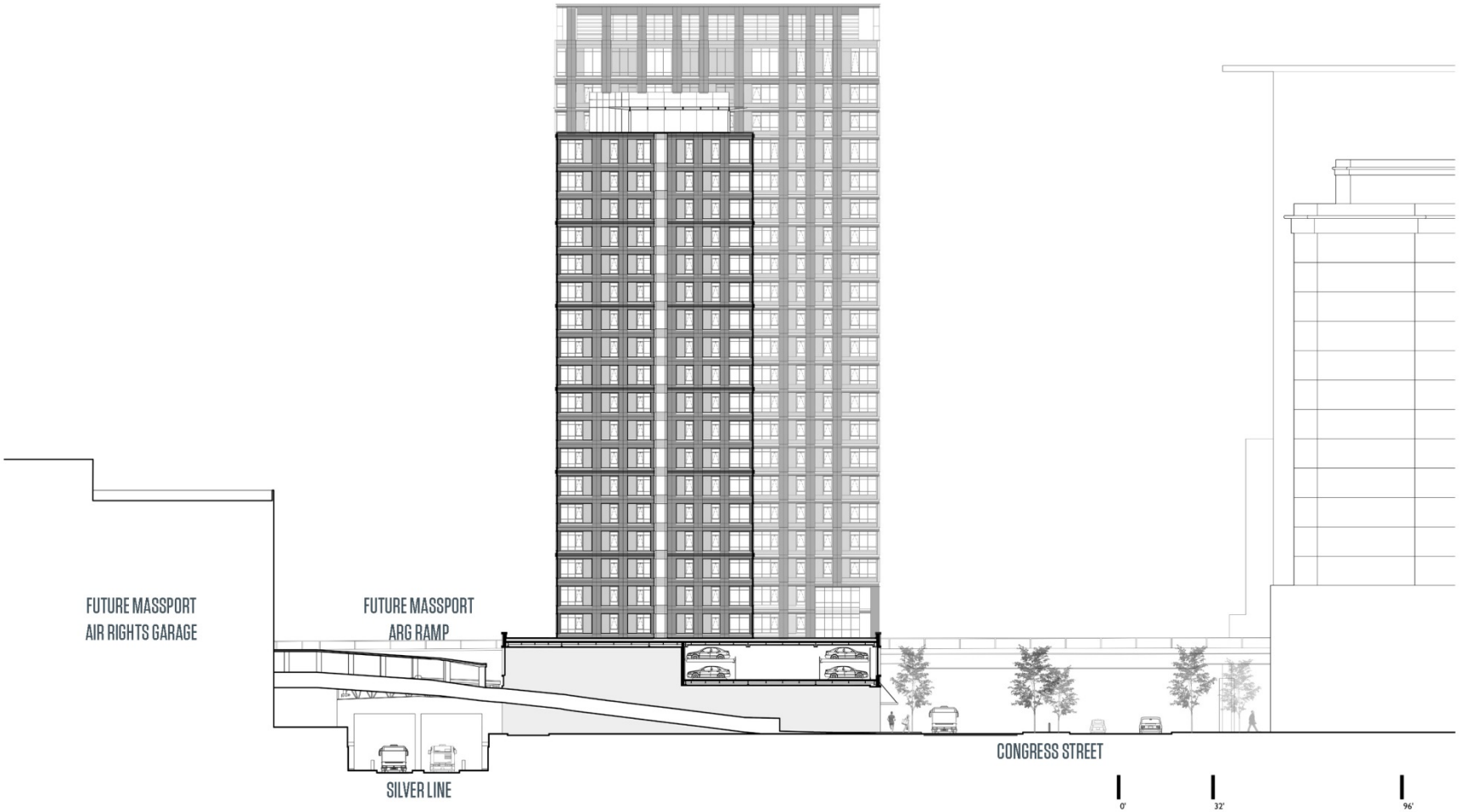



**Waterside Place Phase IB  Boston, Massachusetts**

cbt

**Figure 1-6**

*Section*

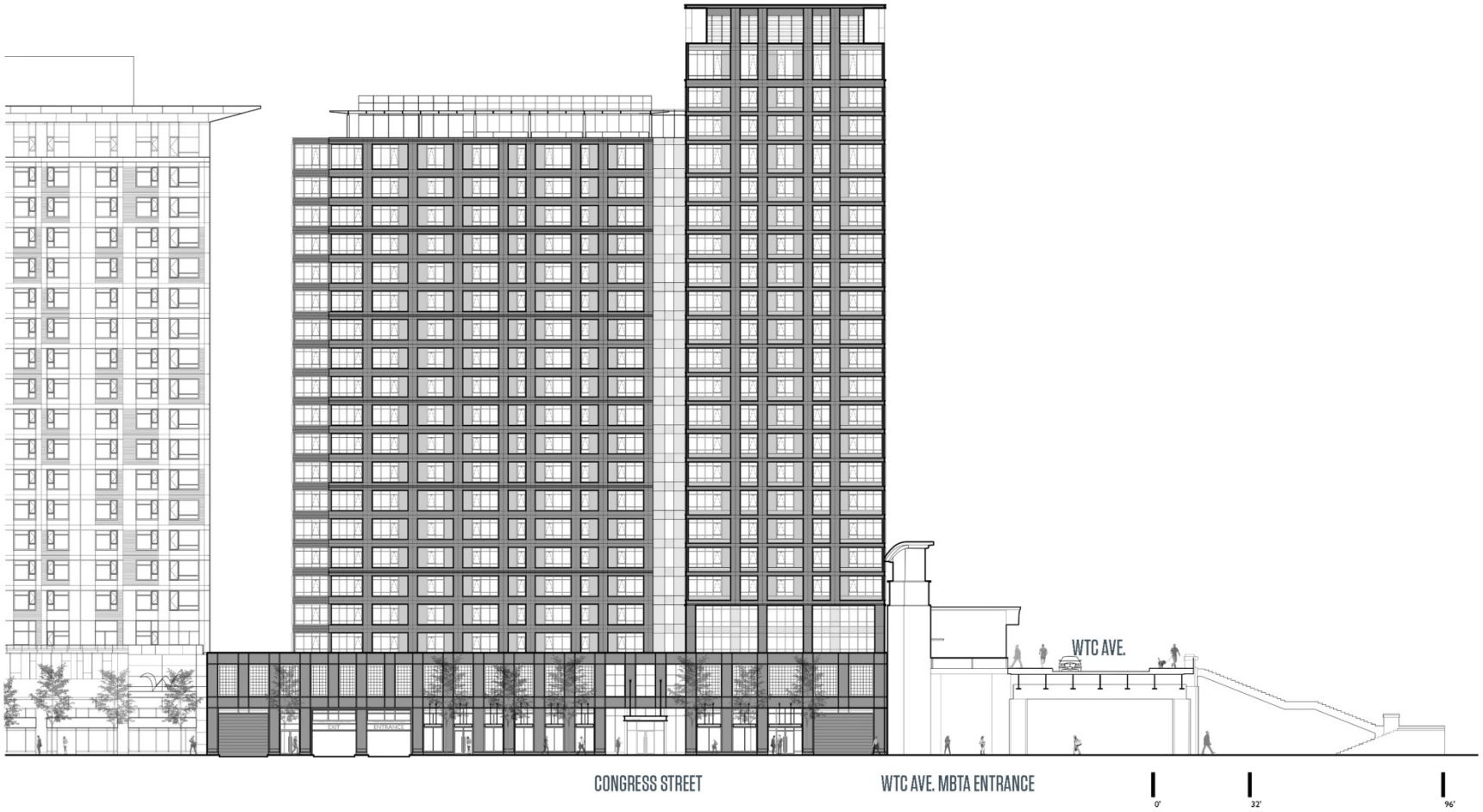



**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 1-7**

*East Elevation*

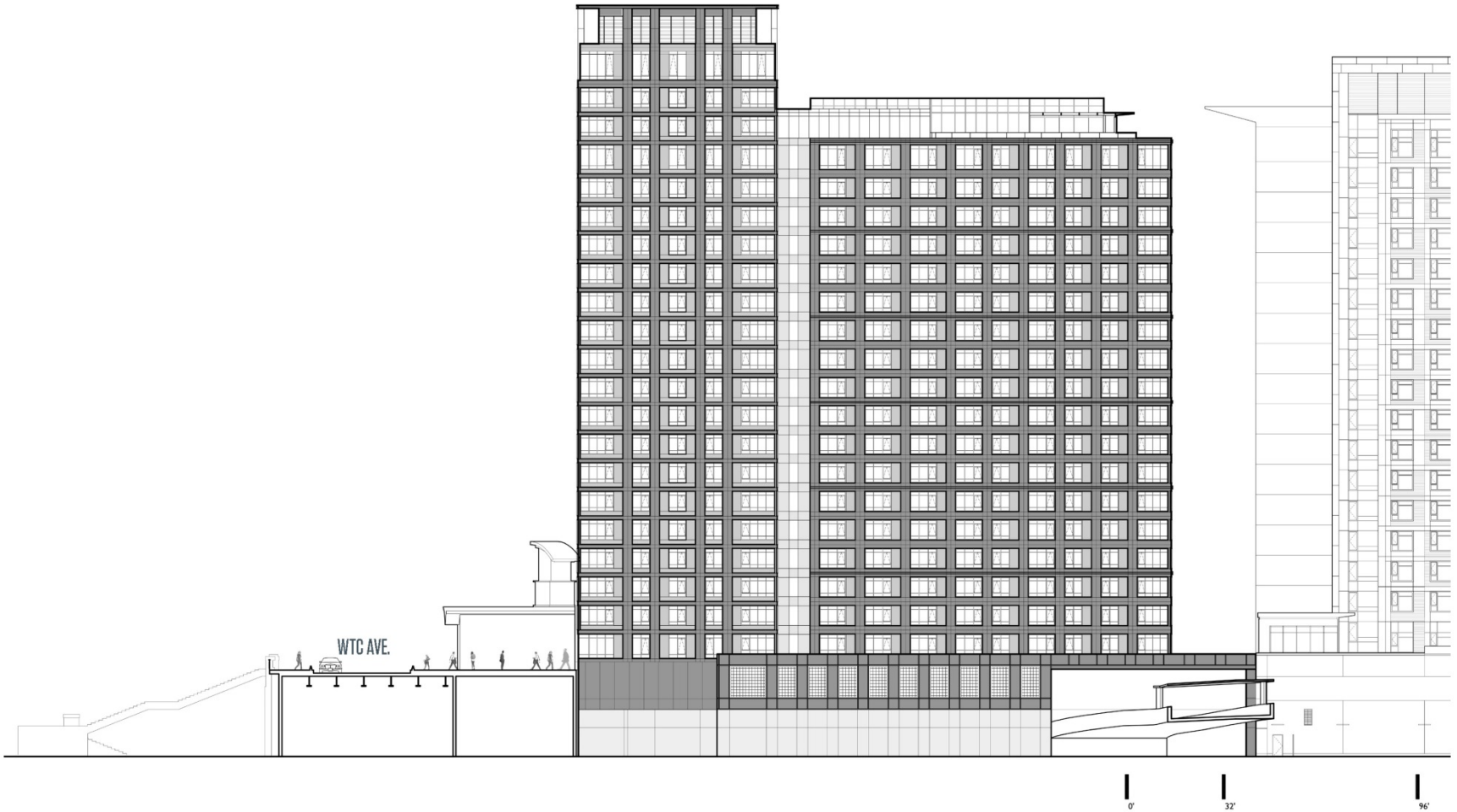



**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 1-8**

*North Elevation*

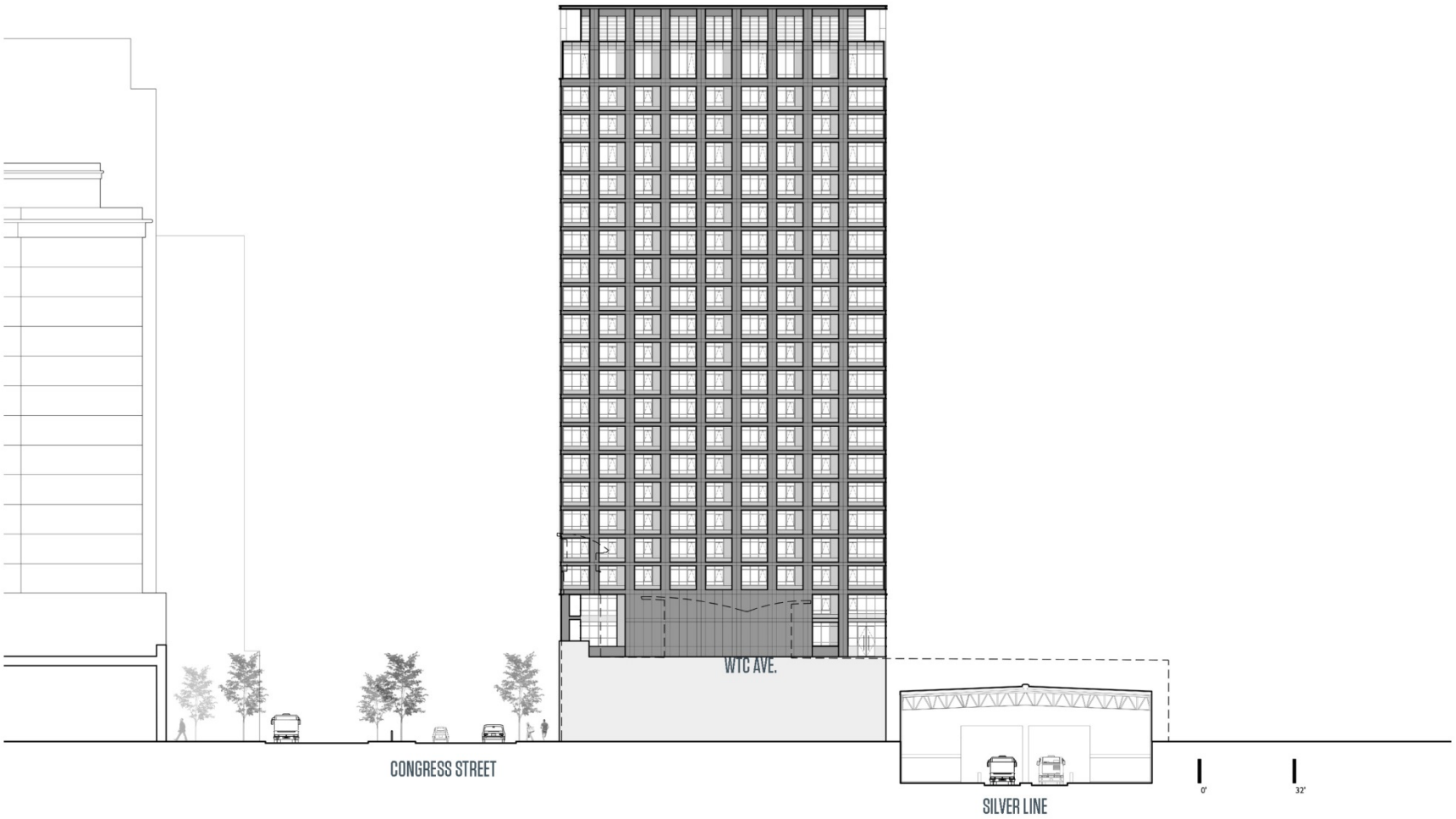



**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 1-9**

*South Elevation*




**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 1-10**

*West Elevation*


**Waterside Place Phase IB  Boston, Massachusetts**

cbt

**Figure 1-11**

*Waterside Place Phase IB from Congress Street*


**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 1-12**

*Waterside Place Phase IB from Seaport Lane*

# Chapter 2.0

## Development Review Component

# 2.0 DEVELOPMENT REVIEW COMPONENT

## 2.1 Transportation

Since the filing of the DPIR, the Phase IB Project has evolved to include more residential space and less retail space, resulting in a decrease in the number of daily vehicle trips projected for the Project Site. Trip generation is estimated based on data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual*. It should be noted that these unadjusted trips do not reflect actual trips when adjusted to account for the Site's setting in an urban area where many users will choose to walk, bike or use transit instead of vehicles. The program outlined in the 2010 NPC was estimated to generate 4,650 unadjusted daily vehicle trips. As built, the Phase IA Project is estimated to generate 2,305 unadjusted daily vehicle trips, while the Phase IB Project is estimated to generate 2,163 unadjusted daily vehicle trips. Overall, Phase I (total Phase IA and Phase IB) is estimated to generate 4,468 unadjusted daily vehicle trips, a decrease of an estimated 182 unadjusted daily vehicle trips.

The Phase IB Project includes 84 parking spaces in an above-grade parking garage. It is also anticipated that tenants will park in the future Seaport Transportation Center.

A significant number of trips likely will be by walking, bicycling or transit. The Phase IB Project is located in the Seaport District with jobs and amenities, and is next to the World Trade Center Station on the MBTA Silver Line with service to Downtown, Logan International Airport, South Boston, South End and Dudley Square. The Phase IB Project will also include secure bicycle racks for residents and visitors.

## 2.2 Wind

### *2.2.1 Introduction*

A pedestrian wind study was conducted by Rowan Williams Davies & Irwin Inc. (RWDI) on the proposed Waterside Place Phase IB development. The objective of the study was to assess the effect of the proposed development on local conditions in pedestrian areas around the study site.

The study involved wind simulations on a 1:400 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. The criteria recommended by the BRA were used in this study. The present report describes the methods and presents the results of the wind tunnel simulations.

### *2.2.2 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.

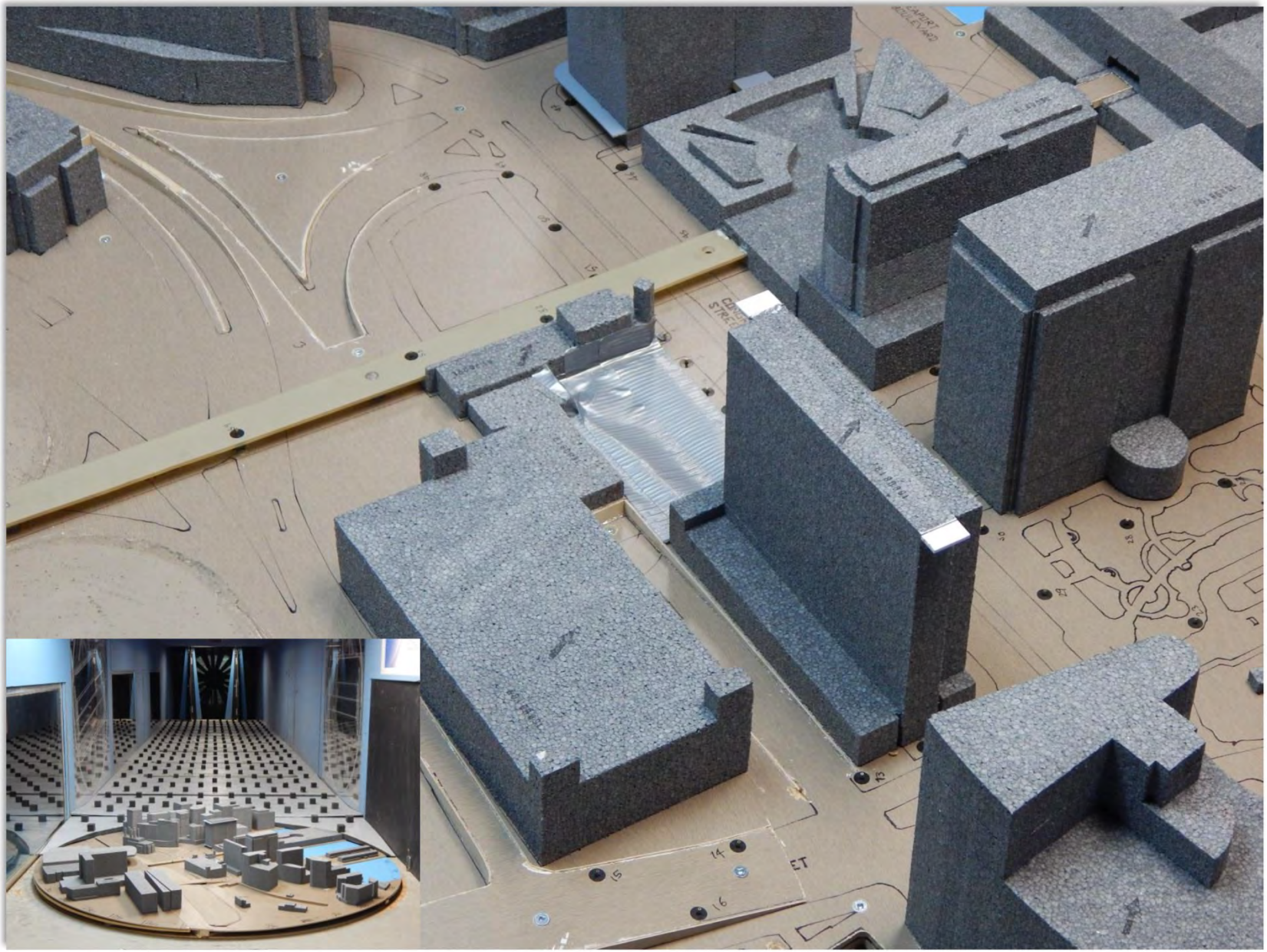
The consideration of wind in planning outdoor activity areas is important since high winds in an area tend to deter pedestrian use. For example, winds should be light or relatively light in areas where people would be sitting, such as outdoor cafes or playgrounds. For bus stops and other locations where 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.

### *2.2.3 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 BRA approved buildings; and
- Build Configuration: includes the proposed Phase IB Project development and all existing and BRA approved surroundings. The Massport Seaport Transportation Center is also included, although it is not yet completed and has yet to receive approvals from the City of Boston.

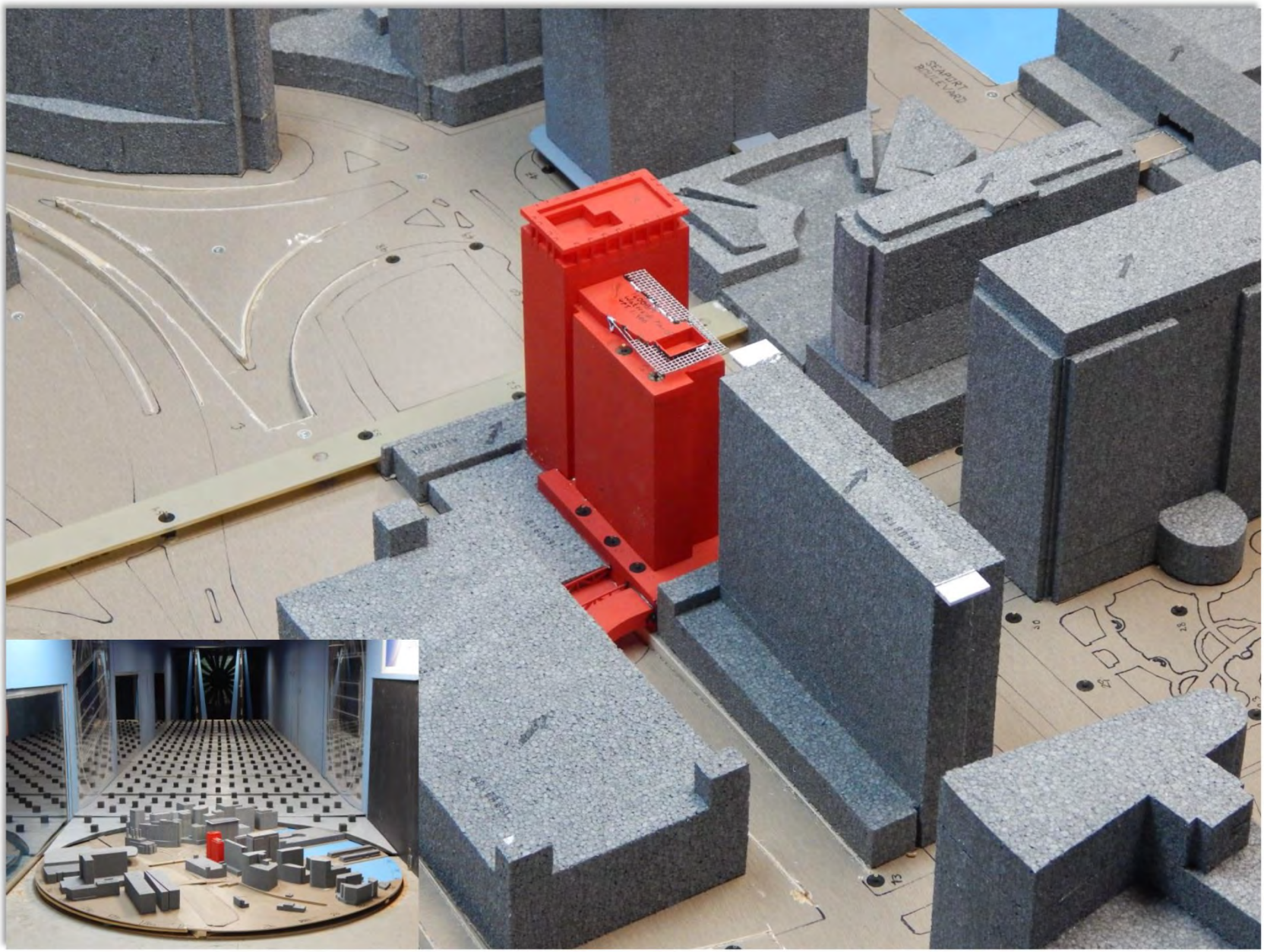
As shown in Figures 2-1 and 2-2, the wind tunnel model included the proposed development and all relevant surrounding buildings and topography within a 1,600 foot radius of the study site. The mean speed profile and turbulence of the natural wind approaching the modeled area were also simulated in RWDI's boundary layer wind tunnel. The scale model was equipped with 54 specially designed wind speed sensors that were connected to the wind tunnel's data acquisition system to record the mean and fluctuating



**Waterside Place Phase IB Boston, Massachusetts**

**Figure 2-1**

*Wind Tunnel Study Model – No-Build*



**Waterside Place Phase IB Boston, Massachusetts**

**Figure 2-2**

*Wind Tunnel Study Model – Build*

components of wind speed at a full-scale height of 5 feet above grade in grade level 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 years 1983 to 2012 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.

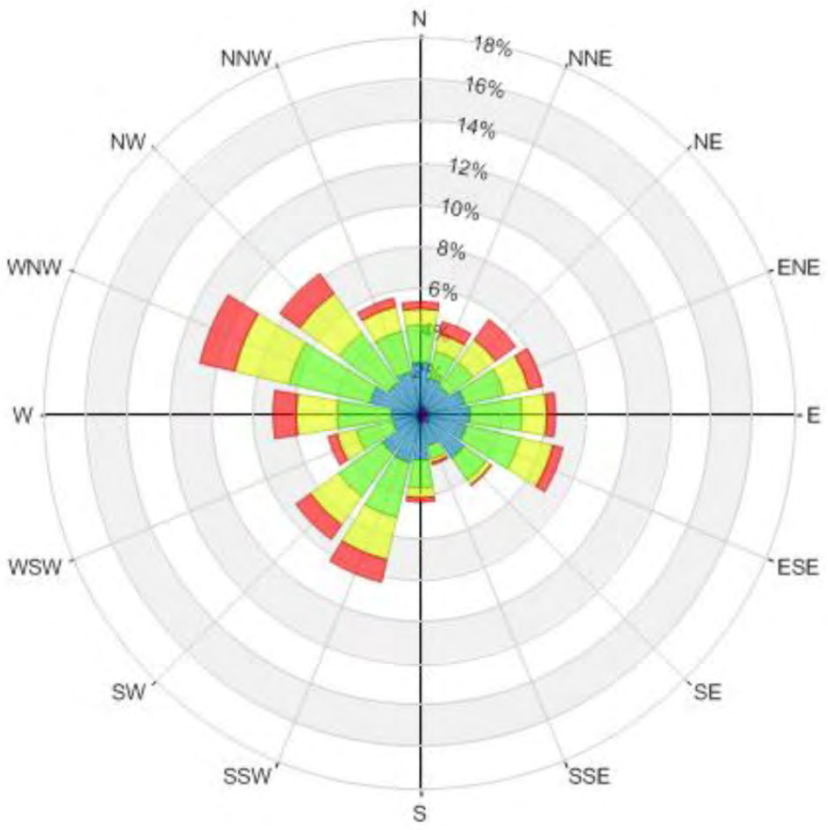
Figures 2-3 to 2-5 present "wind roses", summarizing the seasonal and annual wind climates in the Boston area, based on the data from Logan International Airport. The left side wind rose in Figure 2-3, for example, summarizes the spring (March, April, and May) wind data. In general, the prevailing winds 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 2-5) 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.

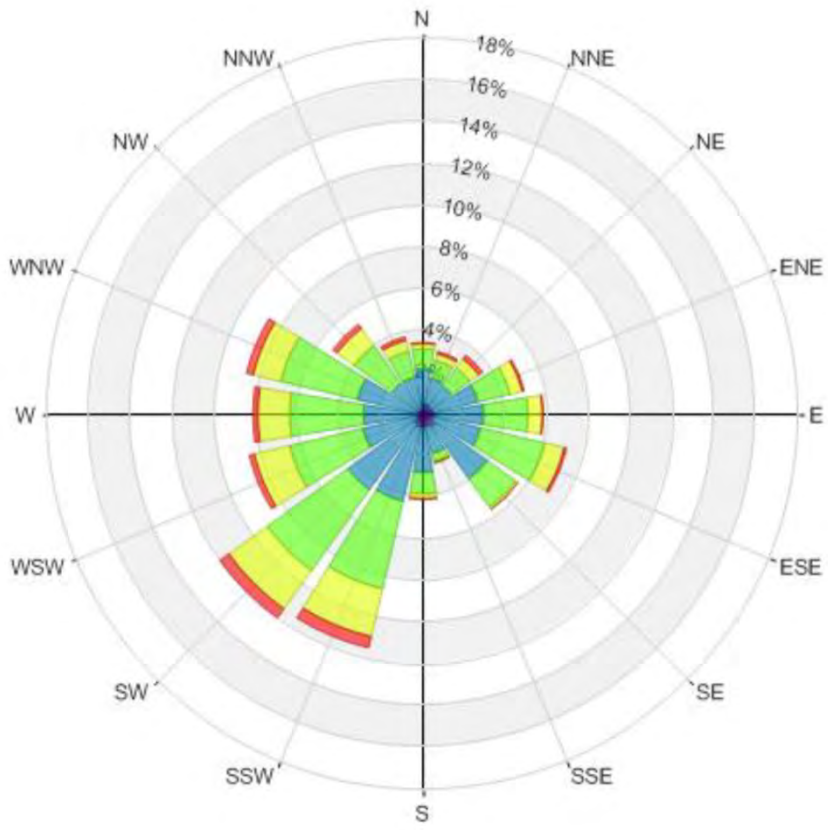
This study involved state-of-the-art measurement and analysis techniques to predict wind conditions at the study site. Nevertheless, some uncertainty remains in predicting wind comfort, and this must be kept in mind. For example, the sensation of comfort among individuals can be quite variable. Variations 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 Phase IB 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.

### *2.2.4 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

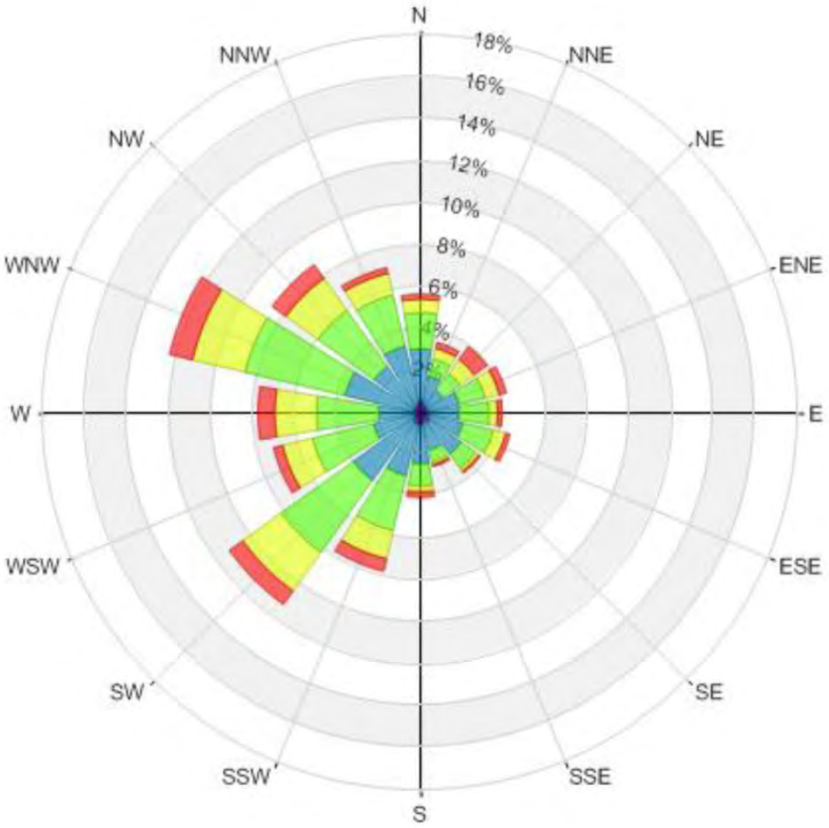



Spring
(March - May)

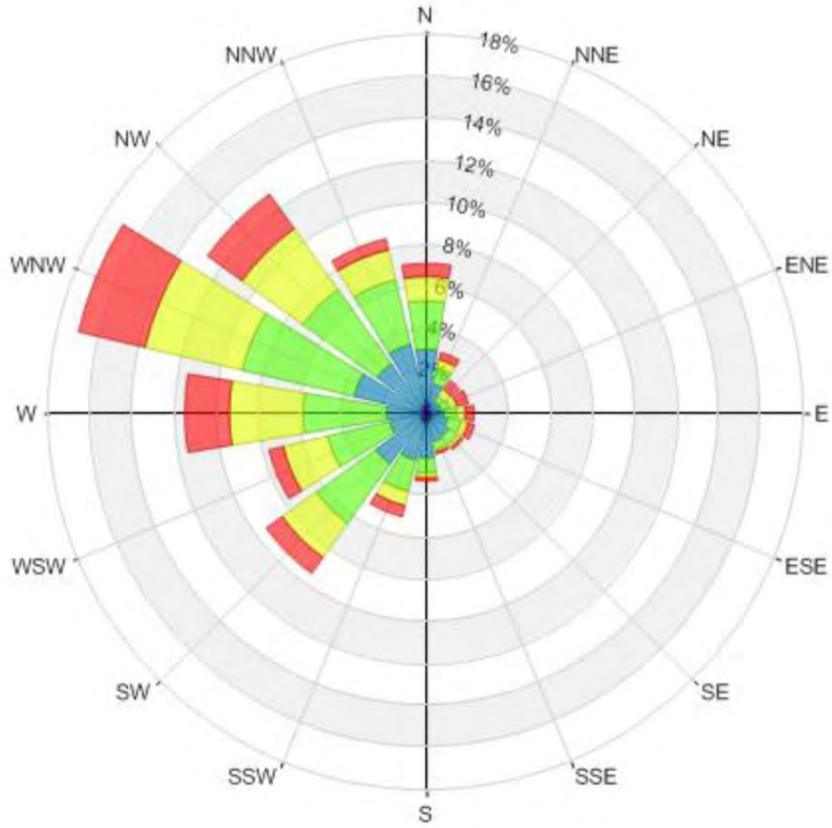



Summer
(June - August)

| Wind Speed (mph) | Probability (%) Spring | Summer |
|---|---|---|
| Calm | 2.0 | 2.1 |
| 1-5 | 5.5 | 7.4 |
| 6-10 | 27.5 | 36.6 |
| 11-15 | 33.5 | 36.4 |
| 16-20 | 20.7 | 14.6 |
| >20 | 10.8 | 3.0 |

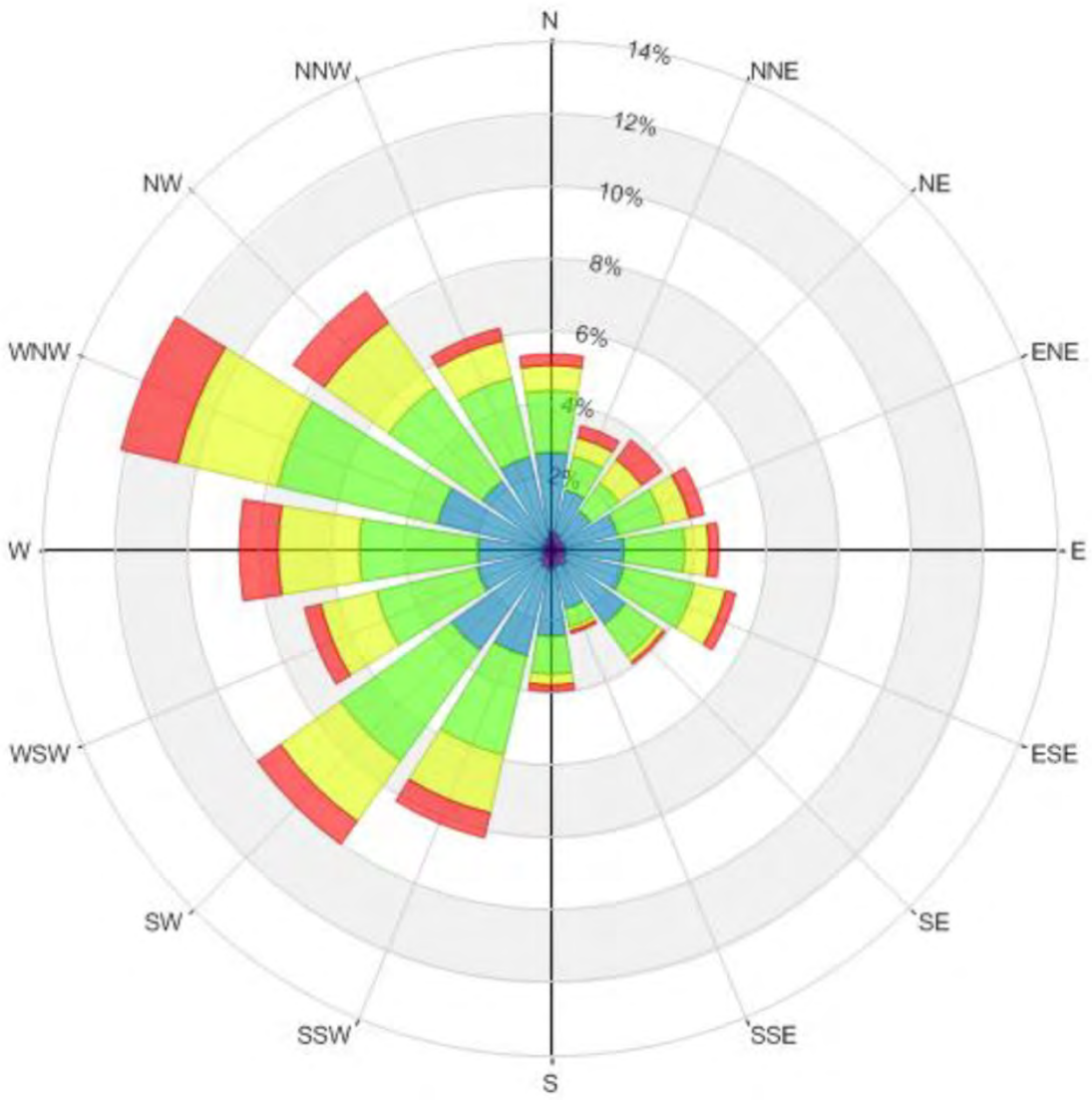



Fall
(September - November)




Winter
(December - February)

| Wind Speed (mph) | Probability (%) Fall | Winter |
|---|---|---|
| Calm | 2.3 | 1.8 |
| 1-5 | 6.9 | 5.3 |
| 6-10 | 32.7 | 26.1 |
| 11-15 | 33.9 | 31.8 |
| 16-20 | 16.8 | 21.8 |
| >20 | 7.3 | 13.2 |




Annual Winds

| Wind Speed (mph) | Probability (%) |
|---|---|
| Calm | 2.0 |
| 1-5 | 6.3 |
| 6-10 | 30.8 |
| 11-15 | 33.9 |
| 16-20 | 18.5 |
| >20 | 8.6 |

**Waterside Place Phase IB Boston, Massachusetts**

**Figure 2-5**

*Directional Distribution (%) of Winds (Blowing From) Boston Logan International Airport (1973-2011)*

determine the acceptability of specific locations is based on the work of Melbourne[1]. 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 one-hour mean wind speed exceeded one percent of the time (i.e., the 99-percentile mean wind speed). They are as follows:

Table 2-1 Boston Redevelopment Authority Mean Wind Criteria*

| *Level of Comfort* | *Wind Speed* |
|---|---|
| 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.

### *2.2.5 Test Results*

Appendix A includes a table of the mean and effective gust wind speeds for each season as well as annually. Figures 2-6 to 2-9 graphically depict the wind comfort conditions 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 in the text below.

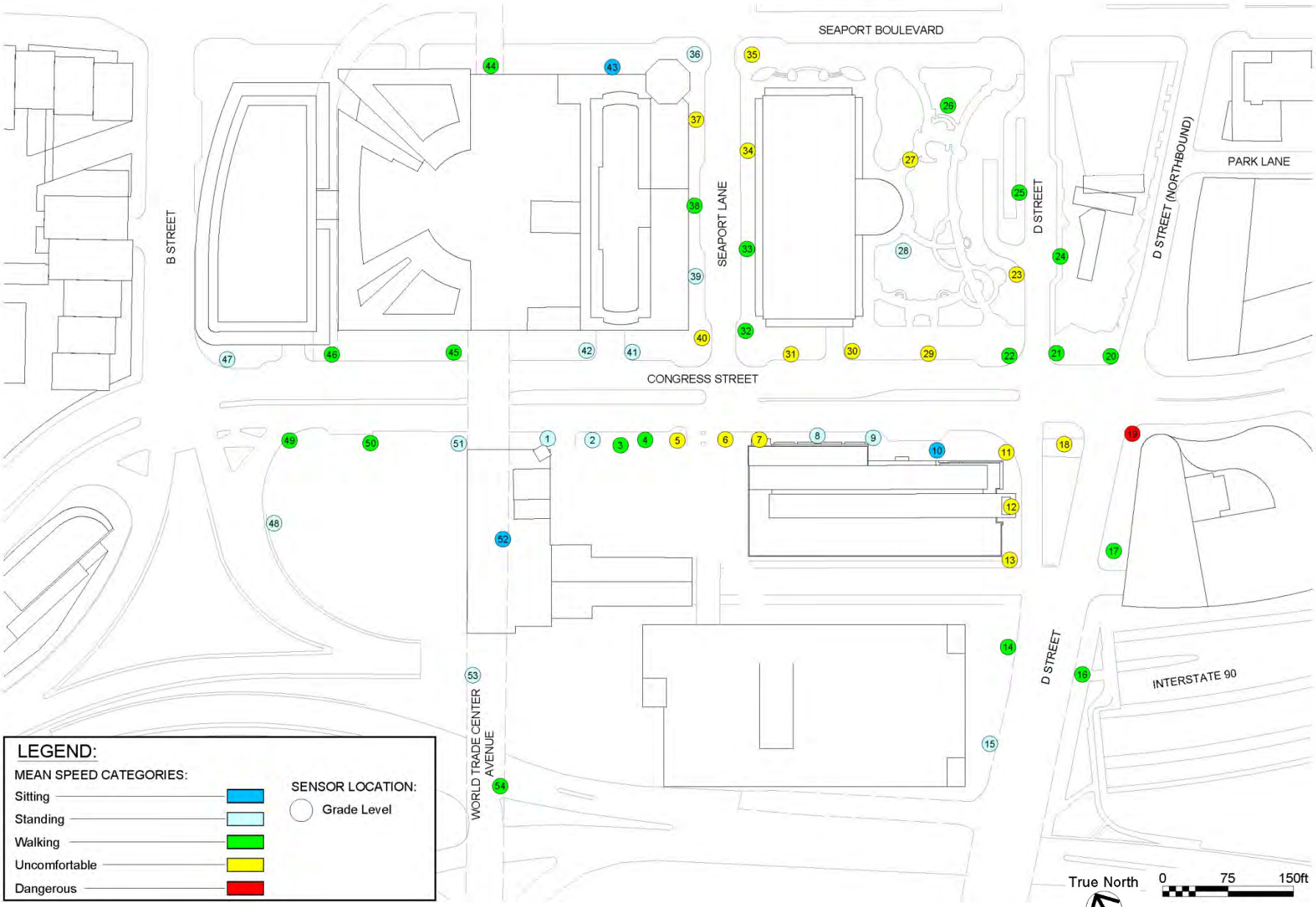
A wind comfort categorization of walking is considered appropriate for sidewalks. Lower wind speeds conducive to standing are preferred at building entrances.

#### 2.2.5.1 No Build Configuration

As shown in Figure 2-6, winds at most grade locations are comfortable for walking or better, annually. Uncomfortable wind speeds exist at a number of locations along Congress Street, Seaport Lane and D Street. Conditions referred to as "dangerous", as categorized by Melbourne, are shown for the No Build configuration at one location at the southeast corner of the intersection of Congress and D Streets (Location 19 in Figure 2-6) annually. During the spring and winter seasons, Location 19 and two locations along Congress Street (Locations 7 and 30) are categorized as "dangerous" under the No Build configuration.

The effective gust criterion was met annually at all but six locations along Congress Street to the east of the Phase IB Project Site (Locations 6, 7, 11, 18, 19 and 30 in Figure 2-8).

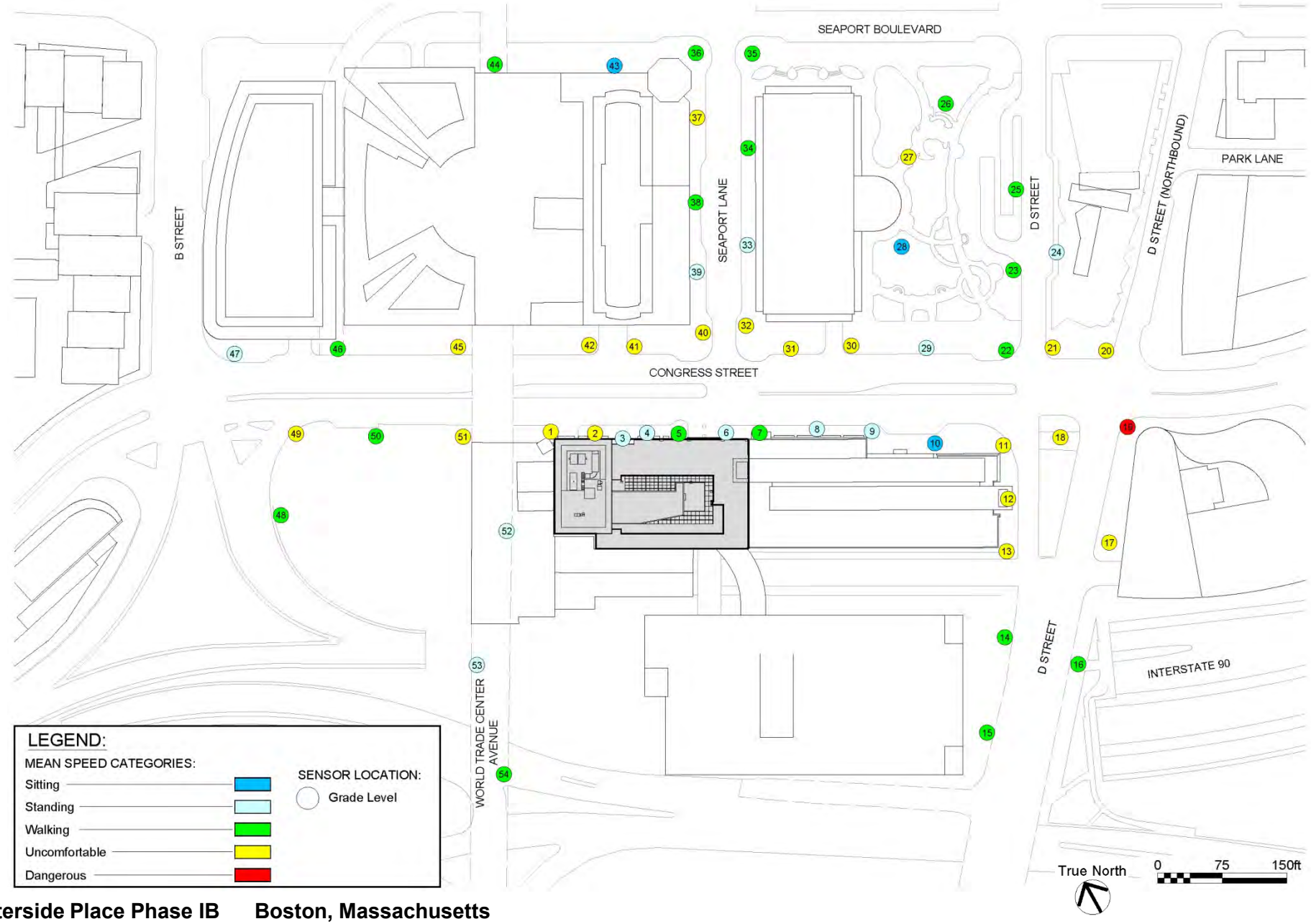
[1] Melbourne, W.H., 1978, "Criteria for Environmental Wind Conditions", Journal of Industrial Aerodynamics, 3 (1978) 241 - 249.




**Waterside Place Phase IB Boston, Massachusetts**

**Figure 2-6**

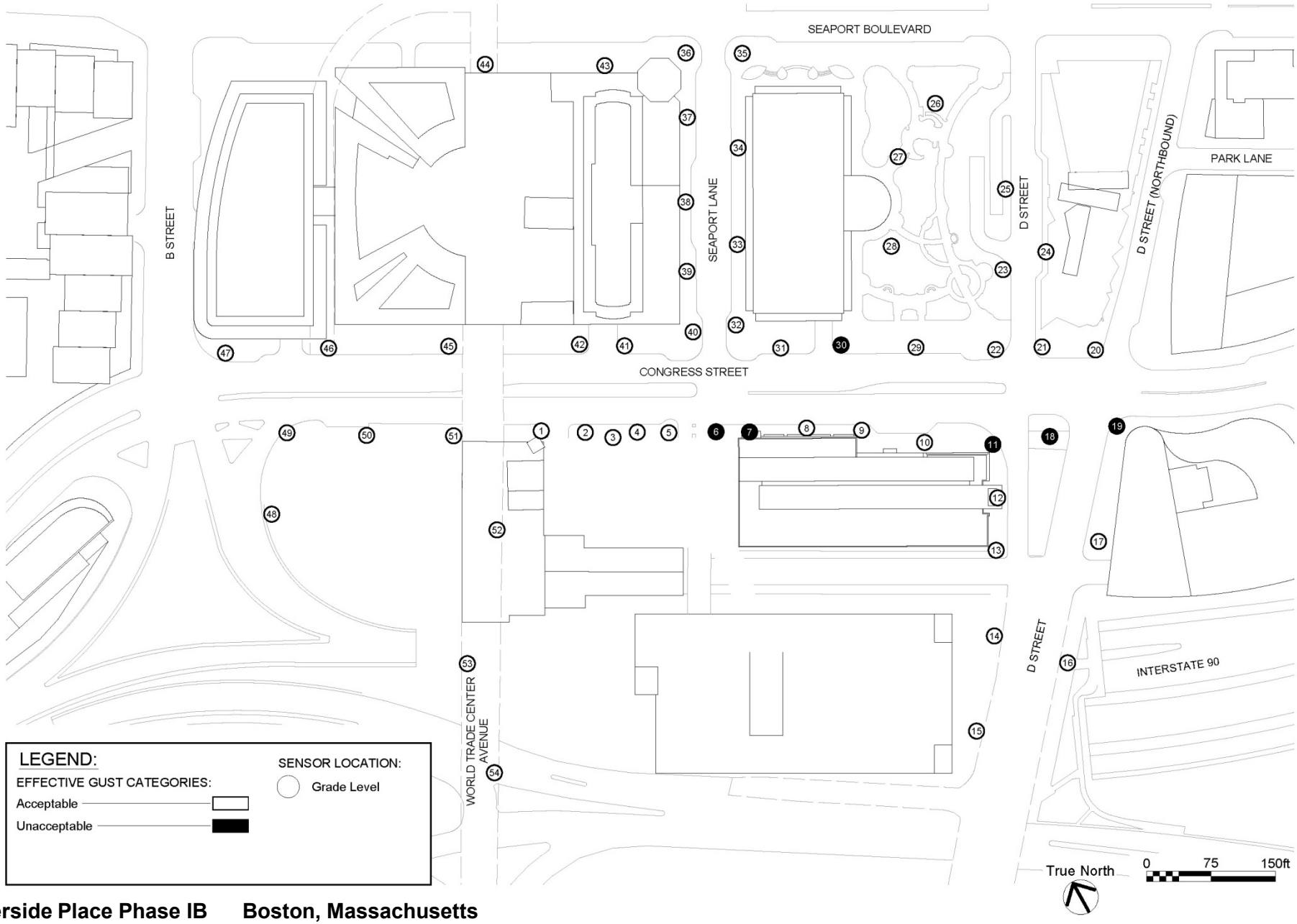
*Pedestrian Wind Conditions – Mean Speed – No Build*




**Waterside Place Phase IB Boston, Massachusetts**

**Figure 2-7**

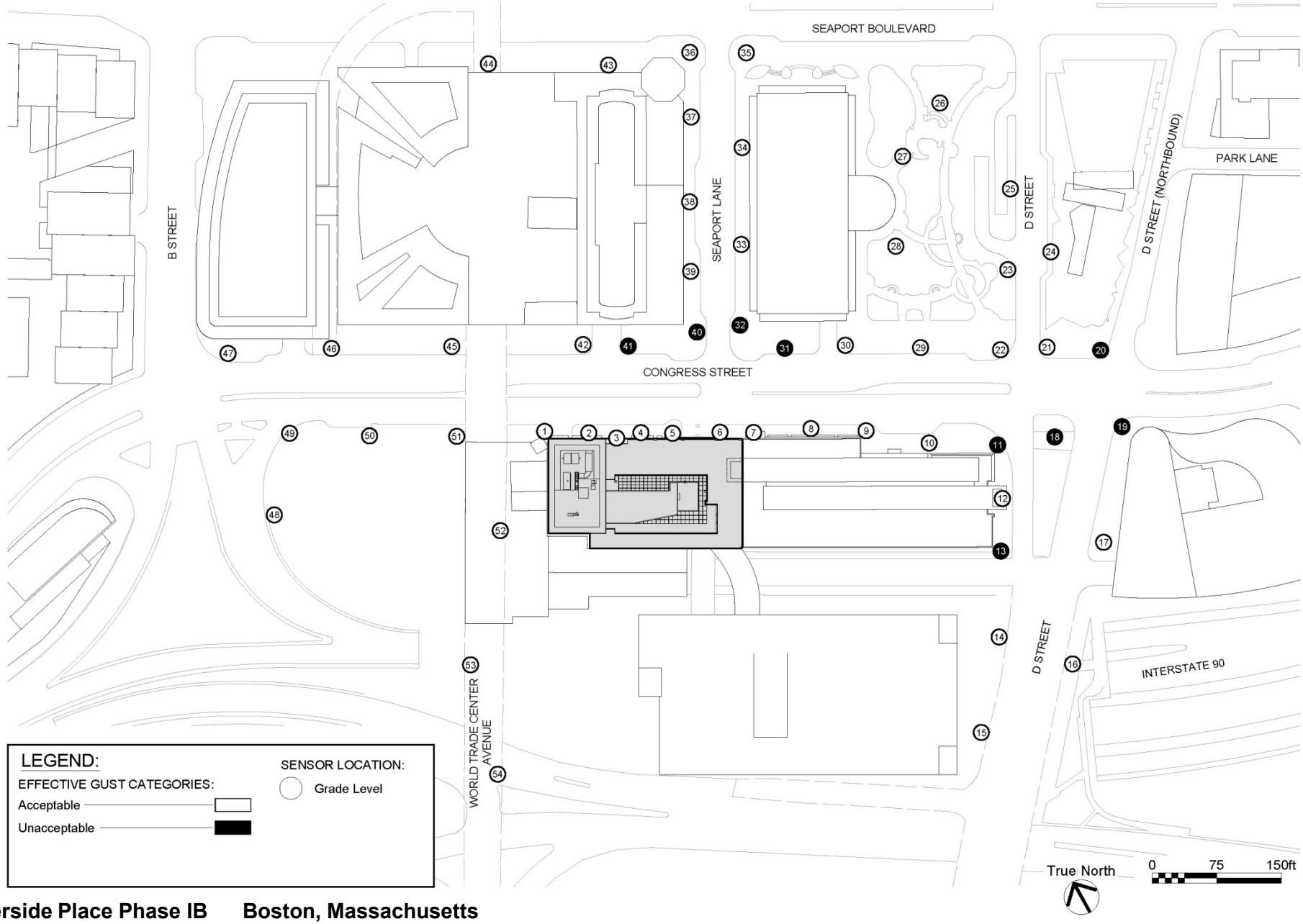
*Pedestrian Wind Conditions – Mean Speed – Build*




**Waterside Place Phase IB Boston, Massachusetts**

**Figure 2-8**

*Pedestrian Wind Conditions – Effective Gust – No Build*




**Waterside Place Phase IB Boston, Massachusetts**

**Figure 2-9**

*Pedestrian Wind Conditions – Effective Gust – Build*

#### 2.2.5.2 Build Configuration

With the addition of the proposed development, more comfortable conditions are expected at most locations along the south side of Congress Street at the locations of the entrances to the building (Locations 3, 4 and 6), where standing conditions are expected, which are ideal (Figure 2-7). Uncomfortable and walking conditions are predicted at two of the retail entrances (Locations 2 and 5 in Figure 2-7). These conditions are mainly the result of exposure to the prevailing winds from the northeast and west-northwest directions. Measures to mitigate these winds, such as wind screens or planters will be evaluated as the design progresses.

For Seaport Lane to the north, the proposed development provides some blockage from southwesterly winds and back pressures for the northeast winds. As a result, lower wind speeds are expected along Seaport Lane. However, higher wind speeds are predicted in general along Congress Street (east and west of the Phase IB Project Site). As shown for the No Build conditions, uncomfortable wind conditions are expected at a number of locations along Congress Street, Seaport Lane and D Street. During the winter season, the existing conditions at Locations 7 and 30 will improve. Conditions categorized by Melbourne as "dangerous" remain as they were under the No Build configuration at the intersection of D and Congress Streets annually (Location 19 in Figure 2-7), and during the winter at Location 18.

The effective gust criterion on an annual basis was met at 45 of 54 locations studied. Of the six new locations exceeding the gust criteria, five of the locations have exceedences of 2 miles per hour or less than the criteria. With the inclusion of existing street trees not included in the wind tunnel, it is expected that wind conditions would be improved along Congress Street. The existing street trees are located in the middle of Congress Street and on the north side of Congress Street to the north of the Phase IB Project Site, as well as at the pedestrian isle at the intersection of D and Congress Streets. Additional measures, such as screening or additional landscaping at the Site, will be studied as the design progresses to further minimize wind impacts to the pedestrian environment.

## 2.3 Shadow

### *2.3.1 Introduction and Methodology*

A shadow impact analysis was conducted to investigate shadow impacts from the Phase IB Project during three time periods (9:00 a.m., 12:00 noon, and 3:00 p.m.) during the summer solstice (June 21), autumnal equinox (September 21), vernal equinox (March 21), and the winter solstice (December 21). In addition, shadow studies were conducted for the 6:00 p.m. time period during the summer solstice and autumnal equinox.

The shadow analysis presents the existing shadow and new shadow that would be created by the Phase IB Project, illustrating the incremental impact of the Project. The analysis focuses on nearby open spaces and sidewalks adjacent to and in the vicinity of the Project Site. Shadows have been determined using the applicable Altitude and Azimuth data for Boston. Figures showing the net new shadow from the Project are provided in Figures 2-10 to 2-23.

The analysis shows that new shadow will be cast onto streets and sidewalks in the surrounding area. No new shadow will be cast onto nearby open spaces during 12 of the 14 time periods studied.

### *2.3.2 Results*

#### Vernal Equinox (March 21)

At 9:00 a.m. during the vernal equinox, shadows will be cast to the west, with new shadow from the Phase IB Project cast across a minor portion of Congress Street and its southern sidewalk, as well as a portion of World Trade Center Avenue and its sidewalks. At 12:00 p.m., shadows will be cast to the north, with new shadow cast across Congress Street and its sidewalks, and a portion of World Trade Center Avenue and its sidewalks. At 3:00 p.m., new shadow will be cast to the northeast, with new shadow cast across Congress Street and its sidewalks and Seaport Lane and its sidewalks.

During the time periods studied on March 21, no new shadow will be cast from the Phase IB Project onto nearby open spaces.

#### Summer Solstice (June 21)

At 9:00 a.m. during the summer solstice, shadows will be cast to the west, with new shadow from the Phase IB Project limited to a portion of World Trade Center Avenue and its sidewalks and the parking lot to the west of the Site. At 12:00 p.m., shadows will be cast to the north, with new shadow limited to a small portion of Congress Street and its southern sidewalk. At 3:00 p.m., shadows will be cast to the northeast, with new shadow cast across a portion of Congress Street and its sidewalks, and Seaport Lane and its sidewalks. At 6:00 p.m., shadows will be cast to the east, with new shadow cast across portions of Congress Street and its sidewalks.

During the time periods studied on June 21, no new shadow will be cast from the Phase IB Project onto nearby open spaces.

### Autumnal Equinox (September 21)

At 9:00 a.m. during the autumnal equinox, shadows will be cast to the west, with new shadow from the Phase IB Project cast across a minor portion of Congress Street and its southern sidewalk, as well as a portion of World Trade Center Avenue and its sidewalks. At 12:00 p.m., shadows will be cast to the north, with new shadow cast across Congress Street and its sidewalks, and a portion of World Trade Center Avenue and its eastern sidewalk. At 3:00 p.m., new shadow will be cast to the northeast, with new shadow cast across Congress Street and its sidewalks and Seaport Lane and its sidewalks. At 6:00 p.m., new shadow will be cast across minor areas of Eastport Park and South Boston Maritime Park, as well as minor portions of Congress Street, Northern Avenue, and their sidewalks.

### Winter Solstice (December 21)

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

At 9:00 a.m., during the winter solstice, shadows will be cast to the northwest, with new shadow from the Phase IB Project cast across Congress Street and its sidewalks, portions of World Trade Center Avenue, B Street, East Service Road, and their sidewalks, as well as the parking lot to the east of Seaport West. At 12:00 p.m., shadows will be cast to the north, with new shadow cast across Congress Square and its sidewalks and World Trade Center Avenue and its sidewalks, as well as the rooftop open spaces on 30 World Trade Center Avenue. At 3:00 p.m., shadows will be cast to the northeast, with new shadow cast across portions of Congress Street, Northern Avenue, Seaport Lane and their sidewalks, as well as the watersheet between World Trade Center and Fish Pier.

## *2.3.3 Conclusions*

New shadow from the Phase IB Project will generally be cast onto surrounding streets and sidewalks. No new shadow from the Phase IB Project will be cast onto nearby open spaces during 12 of the 14 time periods studied. New shadow will be cast across Eastport Park and South Boston Maritime Park during only one of the 14 time periods studied, and across the open spaces on the roof of 30 World Trade Center Avenue during one of the 14 time periods studied. New shadow will be cast onto the watersheet during one of the 14 time periods studied.


**Waterside Place Phase IB  Boston, Massachusetts**

cbt

**Figure 2-10**

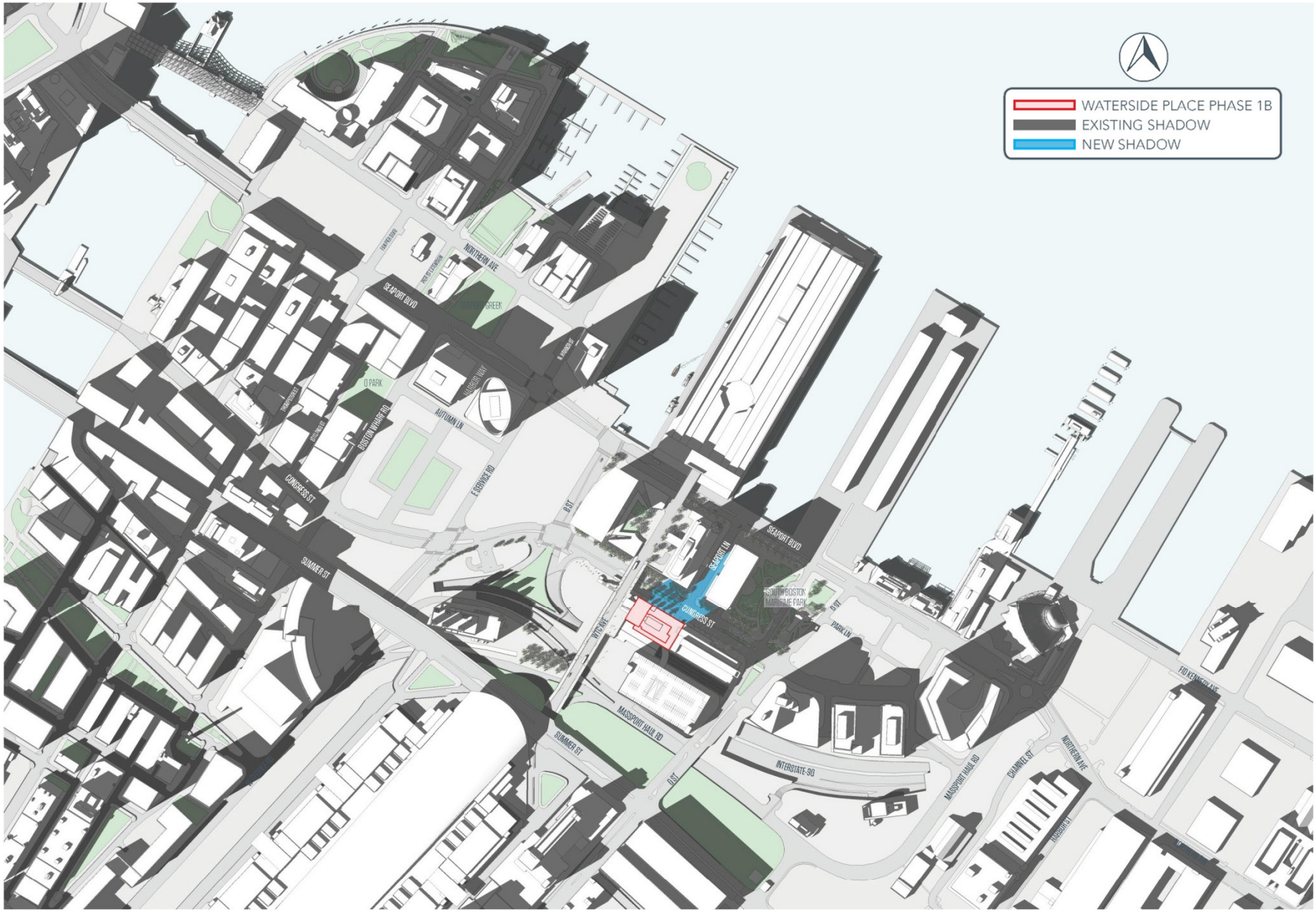
*Shadow Study: March 21, 9:00am*


**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 2-11**

*Shadow Study: March 21, 12:00pm*




**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 2-12**

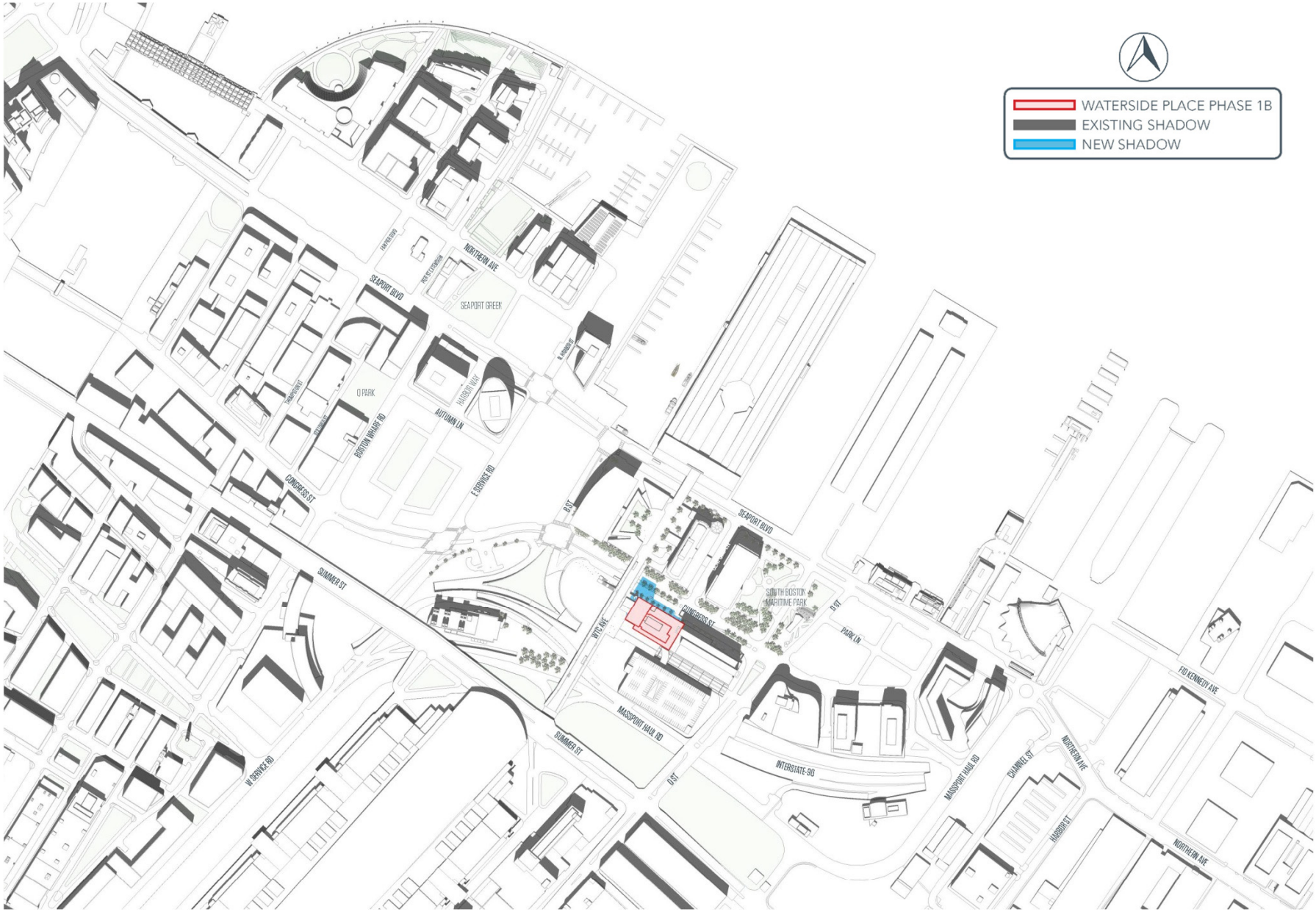
*Shadow Study: March 21, 3:00pm*


**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 2-13**

*Shadow Study: June 21, 9:00am*




**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 2-14**

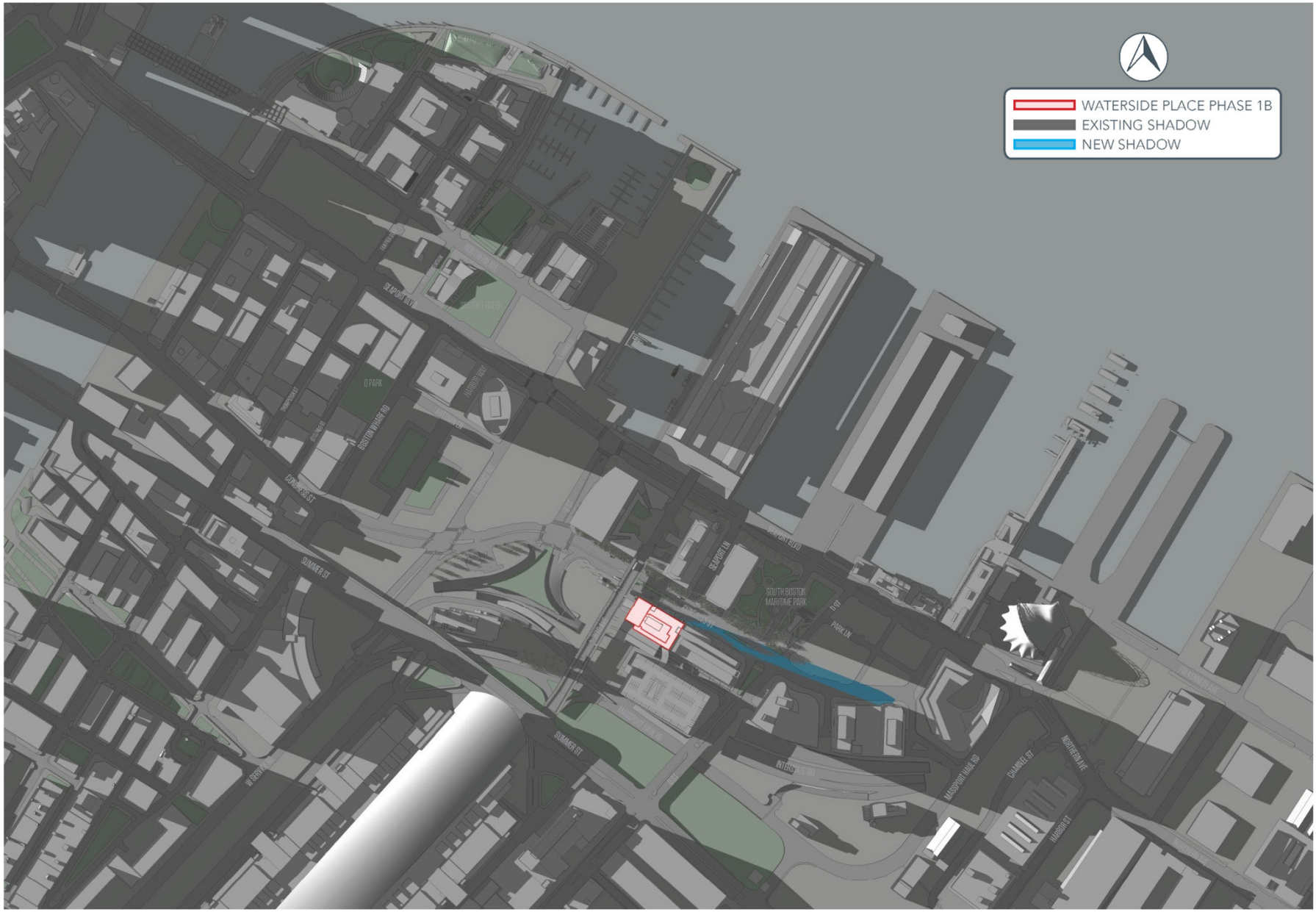
*Shadow Study: June 21, 12:00pm*


**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 2-15**

*Shadow Study: June 21, 3:00pm*




**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 2-16**

*Shadow Study: June 21, 6:00pm*


**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 2-17**

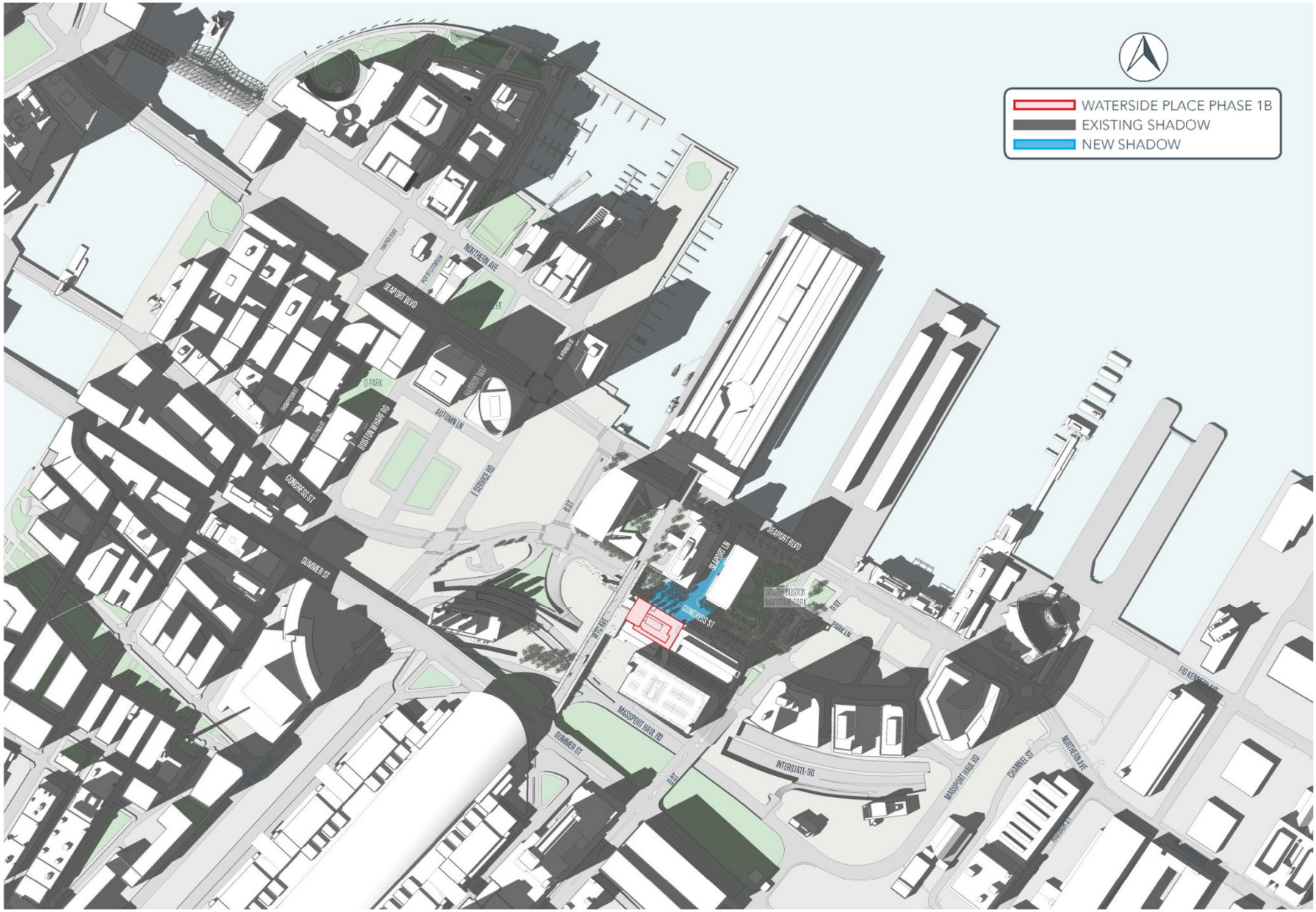
*Shadow Study: September 21, 9:00am*


**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 2-18**

*Shadow Study: September 21, 12:00pm*

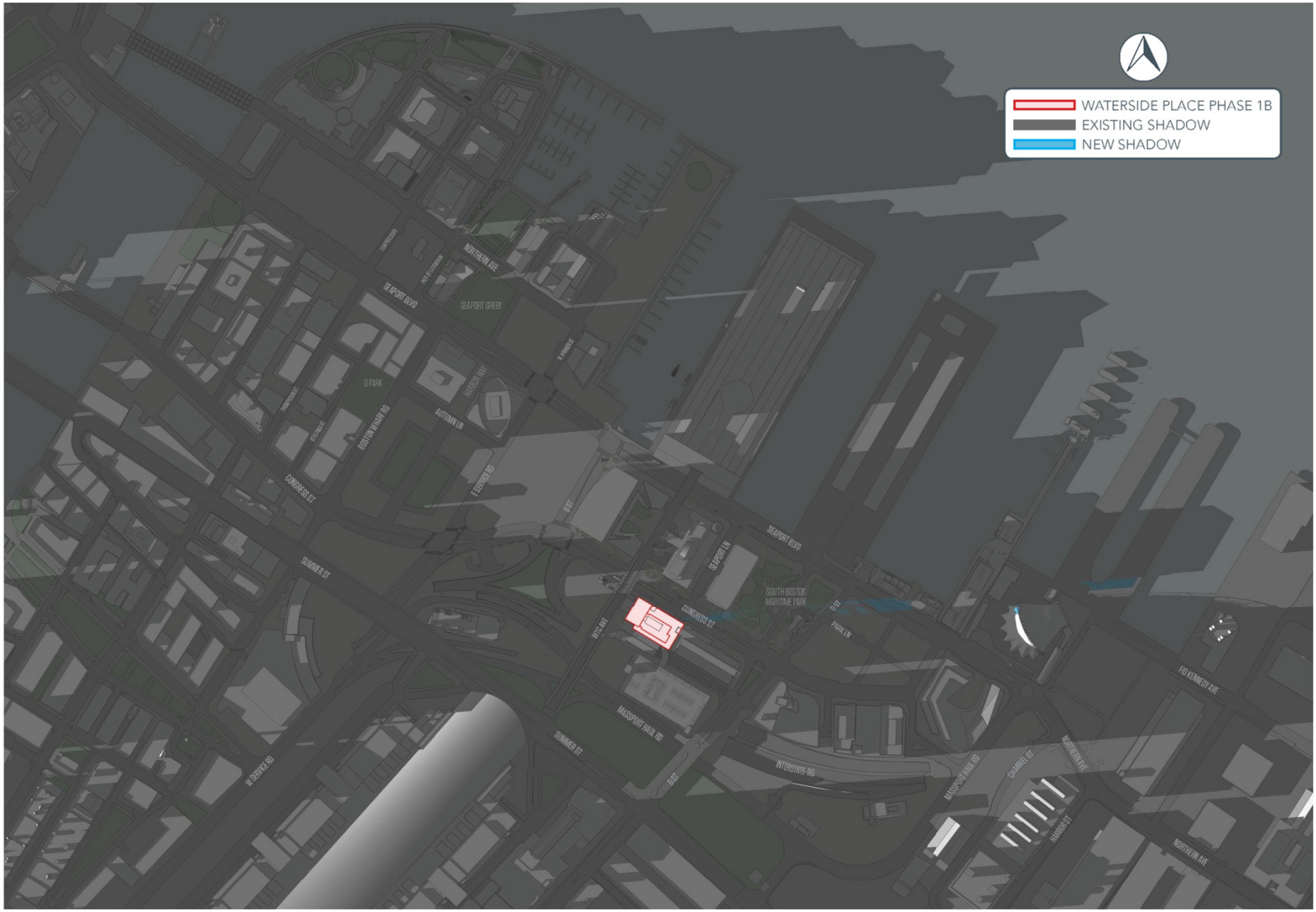



**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 2-19**

*Shadow Study: September 21, 3:00pm*




**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 2-20**

*Shadow Study: September 21, 6:00pm*


**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 2-21**

*Shadow Study: December 21, 9:00am*


**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 2-22**

*Shadow Study: December 21, 12:00pm*


**Waterside Place Phase IB Boston, Massachusetts**

cbt

**Figure 2-23**

*Shadow Study: December 21, 3:00pm*

## 2.4 Daylight

### *2.4.1 Introduction*

The purpose of the daylight analysis is to estimate the extent to which a proposed project will affect the amount of daylight reaching the streets and the sidewalks in the immediate vicinity of a project site.

Because the Phase IB Project Site is currently a surface parking lot, the proposed Phase IB Project will increase daylight obstruction; however, the resulting conditions will be typical of the surrounding area.

### *2.4.2 Methodology*

The daylight analysis was performed using the Boston Redevelopment Authority Daylight Analysis (BRADA) computer program.[2] This program measures the percentage of sky-dome that is obstructed by a project and is a useful tool in evaluating the net change in obstruction from existing to build conditions at a specific site.

Using BRADA, a silhouette view of the building is taken at ground level from the middle of the adjacent city streets or pedestrian ways centered on the proposed building. The façade of the building facing the viewpoint, including heights, setbacks, corners and other features, is plotted onto a base map using lateral and elevation angles. The two-dimensional base map generated by BRADA represents a figure of the building in the "sky dome" from the viewpoint chosen. The BRADA program calculates the percentage of daylight that will be obstructed on a scale of 0 to 100 percent based on the width of the view, the distance between the viewpoint and the building, and the massing and setbacks incorporated into the design of the building; the lower the number, the lower the percentage of obstruction of daylight from any given viewpoint.

The analysis compares three conditions for the Phase IB Project: Existing Condition; Proposed Condition; and the context of the area.

Two viewpoints were chosen to evaluate daylight obstruction for the Existing and Proposed Conditions. Two area context points were considered to provide a basis of comparison to existing conditions in the surrounding area. The viewpoints and area context viewpoints were taken from the following locations and are shown on Figure 2-24.

- **Viewpoint 1:** View from Congress Street facing south toward the Phase IB Project Site.

[2] Method developed by Harvey Bryan and Susan Stuebig, computer program developed by Ronald Fergle, Massachusetts Institute of Technology, Cambridge, MA, September 1984.

- **Viewpoint 2:** View from World Trade Center Avenue facing east toward the Phase IB Project Site.

- **Area Context Viewpoint (AC1):** View from Congress Street facing north toward Seaport West.

- **Area Context Viewpoint (AC2):** View from Congress Street facing south toward Phase IA Project.

### *2.4.3 Daylight Analysis Results*

The results for each viewpoint under each alternative condition are described in Table 2-2. Figures 2-25 and 2-26 illustrate the BRADA results for each analysis and are located at the end of this section.

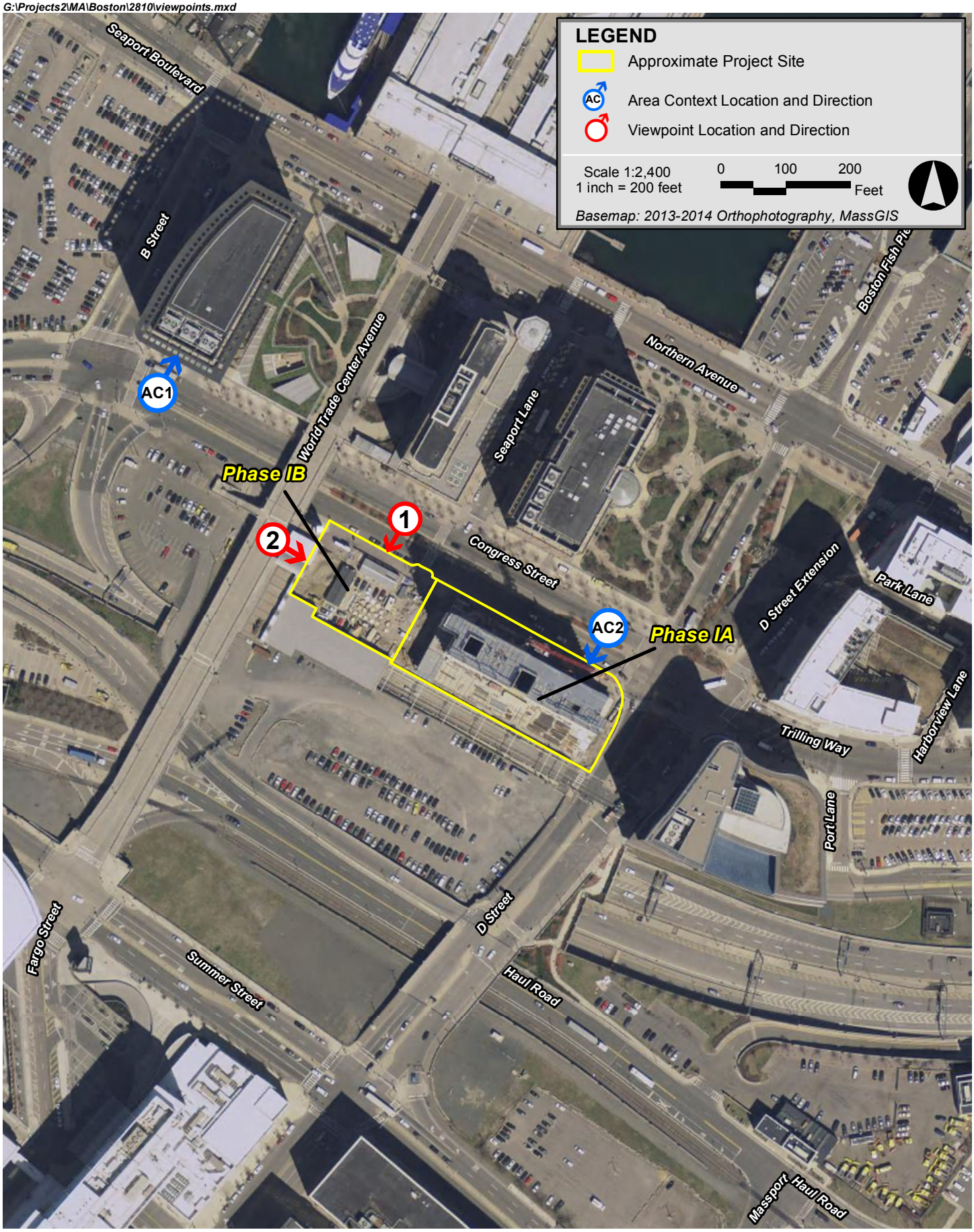
**Table 2-2 Daylight Obstruction Values**

| *Viewpoint Locations* | | *Existing Conditions* | *Proposed Conditions* |
|---|---|---|---|
| Viewpoint 1 | View from Congress Street facing south toward the Phase IB Project Site | 0% | 43.4% |
| Viewpoint 2 | View from World Trade Center Avenue facing east toward the Phase IB Project Site | 9.1% | 53.0% |
| *Area Context Points* | | | |
| AC1 | View from Congress Street facing north toward Seaport West | 85.4% | N/A |
| AC2 | View from Congress Street facing south toward the Phase IA Project | 57.4% | N/A |

#### *Congress Street – Viewpoint 1*

Congress Street runs along the northern edge of the Phase IB Project Site. Viewpoint 1 was taken from the center of Congress Street facing directly south toward the Phase IB Project Site. Since the Site is currently a surface parking lot, the development of the proposed Phase IB Project would result in an increased daylight obstruction, 43.4%. However, the daylight obstruction value is less than the daylight obstruction value from Congress Street looking south at the Phase IA Project.

G:\Projects2\MA\Boston\2810\viewpoints.mxd

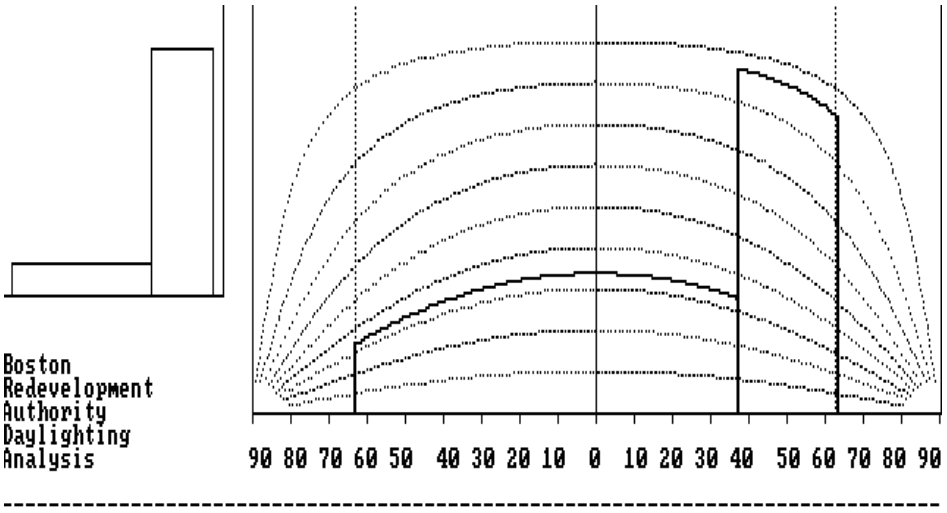



**Waterside Place Phase IB Boston, Massachusetts**

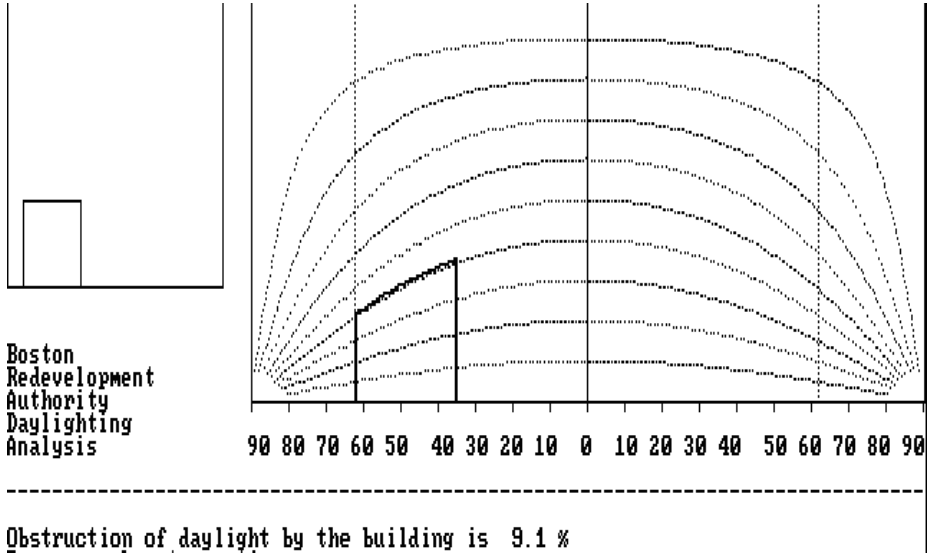
Epsilon ASSOCIATES INC.

**Figure 2.4-1**
*Viewpoint Locations*

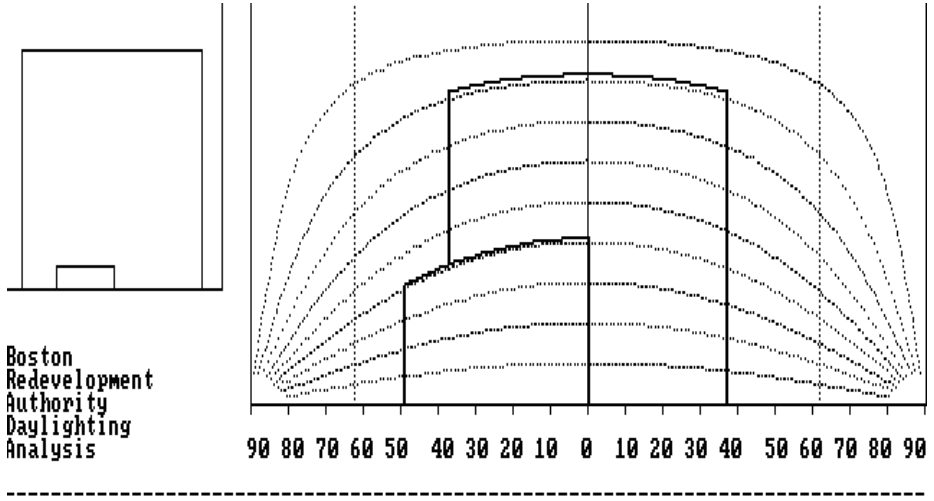
# 0% Daylight Obstruction




**Viewpoint 1 (Existing)**: View from the center of Congress Street facing south toward the Project Site




**Viewpoint 2 (Existing)**: View from the center of World Trade Center Avenue facing east toward the Project Site




**Viewpoint 1 (Proposed)**: View from the center Congress Street facing south toward the Project Site

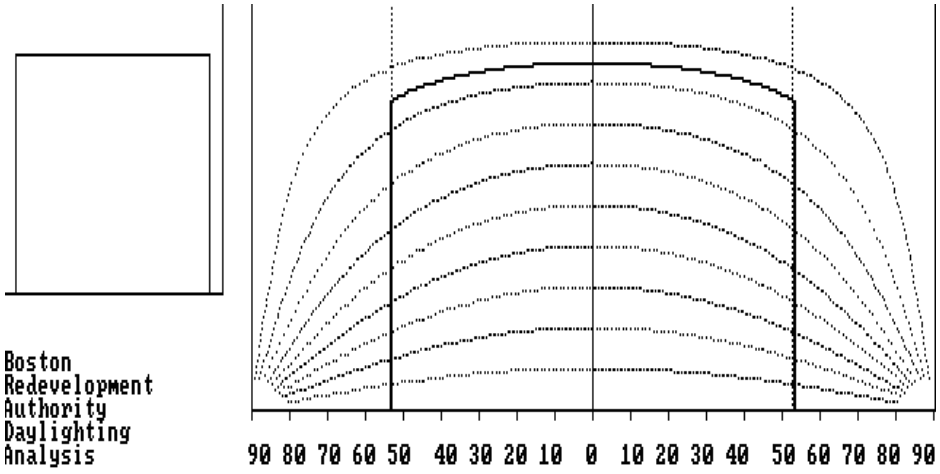
**Viewpoint 2 (Proposed)**: View from the center of World Trade Center Avenue facing east toward the Project Site

**Waterside Place Phase IB** **Boston, Massachusetts**

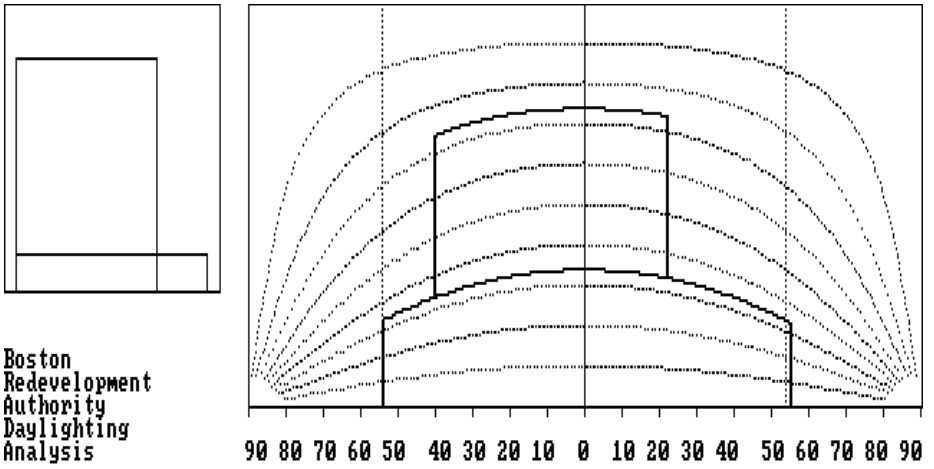
Epsilon ASSOCIATES INC.

**Figure 2-25**

*Daylight Analysis: Existing and Proposed Conditions*




**AC1**: View from the center of Congress Street facing north toward Seaport West




**AC2**: View from the center of Congress Street facing south toward Waterside Place 1A

*World Trade Center Avenue – Viewpoint 2*

World Trade Center Avenue is an elevated street that runs above the western edge of the Phase IB Project Site. Viewpoint 2 was taken from the center of World Trade Center Avenue looking east toward the Phase IB Project Site. The development of the Phase IB Project will result in a daylight obstruction value of 53.0%, compared to 9.1% in the existing condition. While this is an increase over existing conditions, the daylight obstruction value is lower than the Area Context viewpoints.

*Area Context Viewpoints*

The Phase IB Project area is primarily characterized by mixed-use buildings with commercial and residential uses, with retail and restaurant uses on the ground floor. The Phase IB Project Site is located in a dense area of Boston with a number of high-rises in the vicinity. To provide a larger context for comparison of daylight conditions, obstruction values were calculated for two Area Context Viewpoints described above and shown in Figure 2-24. The daylight obstruction values ranged from 57.4% for AC2 to 85.4% for AC1.

## 2.5 Solid and Hazardous Waste

The Phase IB Project will generate solid waste typical of residential developments. Solid waste generated by residents will be collected and disposed of off-site by a licensed contractor. The Proponent will implement a recycling program throughout the Phase IB Project, and residents will be encouraged to recycle. Recycled materials are expected to include newspaper, plastics, glass, cardboard, cans, and bottles.

With the exception of household hazardous wastes typical of residential developments (e.g., cleaning fluids and paint), the Phase IB Project will not involve the generation, use, transportation, storage, release, or disposal of potentially hazardous materials.

As discussed in the DPIR, a Phase I Environmental Site Assessment was completed in 2004 which did not disclose the presence of evidence for Recognized Environmental Conditions. If necessary, off-site disposal of soils from the Site will be performed in accordance with Massachusetts Department of Environmental Protection (MassDEP) policies.

## 2.6 Geotechnical/Groundwater

The geotechnical and groundwater conditions were described in the DPIR. The foundation construction is anticipated to be similar to the foundation used for Phase IA.

## 2.7 Air Quality

The changes to the Phase IB Project will result in 182 fewer unadjusted daily vehicle trips for Phase I (Phase IA and Phase IB, together) than the uses previously proposed for Phase IB

(as described in Section 2.1); therefore, air quality impacts from transportation are anticipated to be less than for the previously proposed uses.

The Phase IB Project's stationary sources, if required, will be permitted through the MassDEP's Environmental Results Program (ERP) which requires an analysis of the emergency generator if it is greater than 37 kilowatts, or boilers if they have individual estimated heat inputs within the 10 to 40 MMBtu/hour ERP range.

## 2.8 Noise

The DPIR included an analysis of the Phase IB Project's mechanical equipment in regard to noise impacts, and concluded that the previously proposed project, with appropriate mitigation, will not introduce significant outdoor mechanical equipment noise into the surrounding community. The Phase IB Project will include appropriate measures to ensure compliance with the City of Boston Zoning District Noise Standards and the MassDEP Noise Policy.

## 2.9 Flood Hazard Zones

The most current version of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for this area (25025C0081J, Revised March 16, 2016) shows that the Phase IB Project Site is located outside of the 100-year flood zone area. Due to the Phase IB Project's location in the Seaport District and the potential for future impacts related to sea level rise, the Phase IB Project will incorporate measures to make the building resilient to future impacts related to sea level rise. See Section 2.12 for more information.

## 2.10 Construction

The Proponent prepared a Construction Management Plan (CMP) for the Phase IA Project, and will have a similar plan for the Phase IB Project that will be approved by Massport and BTD prior to the commencement of construction. The CMP will include details regarding construction schedule, construction staging, public safety, worker parking, truck routes and deliveries, construction air quality, construction noise, and construction waste.

## 2.11 Sustainable Design

The Phase IB Project team is committed to developing a building that is sustainably designed, energy efficient, environmentally conscience and healthy for the residents and employees. The following is a preliminary outline of the Phase IB Project team's approach to achieving a LEED v2009 Gold Certifiable building for the Phase IB Project.

There are seven categories in the LEED certification guidelines: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Innovation in Design Process and the additional Regional Priority Credits. The Phase IB Project is targeting several credits which span the seven categories and will enable

the Phase IB Project to meet the requirements is described below. The Phase IB Project is currently anticipating reaching the LEED NC Gold Certification level with 61 credit points as shown on the LEED checklist on the following page.

### *Sustainable Sites*

The Phase IB Project Site is in a dense urban neighborhood close to public transportation options. It is adjacent to the MBTA World Trade Center Silver Line station and near several bus lines. There are lobby, retail, office and utility spaces on the ground floor.

Prerequisite 1 Construction Activity Pollution Prevention

The Construction Manager will compile and submit an Erosion and Sedimentation Control (ESC) Plan for construction activities related to the demolition of existing and the construction of new buildings specific to the Phase IB Project. The ESC Plan will conform to the erosion and sedimentation requirements of the 2003 EPA Construction General Permit.

Credit 1 Site Selection

The Phase IB Project Site is located on a previously developed parcel in the Seaport District at the corner of Congress Street and World Trade Center Avenue.

Credit 2 Development Density and Community Connectivity

The Phase IB Project Site is in Seaport District; the surrounding community is replete with services including hotels, restaurants, shops, and attractions. In addition the waterfront is a short walk away.

Credit 3 Brownfield Redevelopment

The Phase IB Project Site may be classified as a Brownfield or contaminated site and will be assessed for hazardous materials.

Credit 4.1 Alternative Transportation, Public Transportation Access

The Silver Line World Trade Center MBTA station is located adjacent to the Phase IB Project Site. Several MBTA bus routes stop less than a 0.25 mile of the Phase IB Project Site.

Credit 4.2 Alternative Transportation, Bicycle Storage and Changing Rooms

Covered bike racks will be located within the building footprint in the floor of the new building. There will be space for one bicycle per residential unit, as required by BTD, far in excess of the LEED requirement.

# LEED 2009 for New Construction and Major Renovations

Project Checklist

## 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 |

## Water Efficiency — Possible Points: 10

| Y | | | | | |
|---|---|---|---|---|---|
| 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 | 2 | | Credit 3 | Water Use Reduction | 2 to 4 |

## Energy and Atmosphere — Possible Points: 35

| Y | | | | | |
|---|---|---|---|---|---|
| Y | | | Prereq 1 | Fundamental Commissioning of Building Energy Systems | |
| Y | | | Prereq 2 | Minimum Energy Performance | |
| Y | | | Prereq 3 | Fundamental Refrigerant Management | |
| 5 | 2 | 12 | Credit 1 | Optimize Energy Performance | 1 to 19 |
| | 1 | 6 | Credit 2 | On-Site Renewable Energy | 1 to 7 |
| 2 | | | Credit 3 | Enhanced Commissioning | 2 |
| 2 | | | Credit 4 | Enhanced Refrigerant Management | 2 |
| 2 | 1 | | Credit 5 | Measurement and Verification | 3 |
| | 2 | | Credit 6 | Green Power | 2 |

## Materials and Resources — Possible Points: 14

| Y | | | | | |
|---|---|---|---|---|---|
| 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 |

## Indoor Environmental Quality — Possible Points: 15

| Y | | | | | |
|---|---|---|---|---|---|
| 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 |

## Innovation and Design Process — Possible Points: 6

| | | | | | |
|---|---|---|---|---|---|
| 1 | | | Credit 1.1 | Innovation in Design: for SS c4.1 | 1 |
| 1 | | | Credit 1.2 | Innovation in Design: for SS c7.1 | 1 |
| | 1 | | Credit 1.3 | Innovation in Design: TBD | 1 |
| | 1 | | Credit 1.4 | Innovation in Design: TBD | 1 |
| | 1 | | Credit 1.5 | Innovation in Design: TBD | 1 |
| 1 | | | Credit 2 | LEED Accredited Professional | 1 |

## Regional Priority Credits — Possible Points: 4

| | | | | | |
|---|---|---|---|---|---|
| | 1 | | Credit 1.1 | Regional Priority: forSS c3 Brownfield Redevelopment | 1 |
| 1 | | | Credit 1.2 | Regional Priority: for SS c6.1 Stormwater Quantity | 1 |
| 1 | | | Credit 1.3 | Regional Priority: for SS c7.1 Heat island Effect - Non-roof | 1 |
| 1 | | | Credit 1.4 | Regional Priority :for SS c7.2 Heat island Effect - Roof | 1 |

## Total — Possible Points: 110

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

Credit 4.3 Alternative Transportation, Low-Emitting & Fuel-Efficient Vehicles

The new parking garage located on the second floor will have designated preferred parking spaces for Low Emitting and Fuel-Efficient Vehicles representing 5% of the total vehicle capacity of the parking structure.

Credit 4.4 Alternative Transportation Parking Capacity

The Phase IB Project will provide infrastructure to promote ride sharing.

Credit 6.1 Stormwater Design, Quantity Control and Credit 6.2 Stormwater Design, Quality Control

The stormwater management plan will be designed in accordance with Boston Water Sewer Commission requirements.

Credit 7.1 Heat Island Effect, Non-Roof

The Phase IB Project places 100% of parking in a parking structure on the second floor, within the building footprint.

Credit 7.2 Heat Island Effect, Roof

The roofs will be a high-albedo material to help minimize solar heat gain and urban heat island effects.

Credit 8 Light Pollution Reduction

The building will use interior and exterior lighting technologies and strategies to maintain safe light levels and minimize lighting pollution.

### *Water Efficiency*

The Phase IB Project will specify low-flow and high-efficiency plumbing fixtures to achieve a minimum of 20% water savings above the water use baseline.

Prerequisite 1 Water Use Reduction, 20% Reduction

Through the use of low-flow and high-efficiency plumbing fixtures, the Phase IB Project will implement water use reduction strategies that use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting Energy Policy Act of 1992 fixture performance requirements.

Credit 1.1 Water Efficient Landscaping, Reduce by 50% and Credit 1.2 Water Efficient Landscaping, No Potable Use or No Irrigation

The Phase IB Project will not have a permanent irrigation system. The roof top and patio planter boxes will have drought tolerant plant materials that may require occasional watering by hand.

Credit 3 Water Use Reduction

Specified fixtures will include high-efficiency toilets, low-flow lavatory and kitchen faucets and ultra low-flow shower heads. The Phase IB Project is targeting an overall water savings of 30% above the calculated baseline.

### *Energy and Atmosphere*

The building systems will be designed to optimize energy performance and will not use refrigerants that are harmful to the environment. The building is located in Boston and must meet the criteria of the Stretch Code provisions of the State Energy Code. The Proponent will engage a Commissioning Agent to confirm the building systems are installed and function as intended and designed.

Prerequisite 1 Fundamental Commissioning of the Building Energy Systems

A third-party Commissioning Agent will be engaged by the Proponent for purposes of providing both basic and enhanced commissioning services for the building energy related systems including HVAC & R, lighting and domestic hot water systems. The Commissioing Agent will verify the building systems are installed, calibrated and perform to the Proponent's Phase IB Project requirements.

Prerequisite 2 Minimum Energy Performance

The building performance rating will demonstrate a minimum of a 20% improvement (20% less energy consumption) when compared to the baseline building performance when calculated using the rating method in Appendix G of ANSI/ASHREA/IESNA Standard 90.1-2007

Prerequisite 3 Fundamental Refrigerant Management

The specifications for refrigerants used in the building HVAC & R systems will not permit the use of CFC-based refrigerants.

Credit 1 Optimize Energy Performance

The designed building systems will target an energy cost savings of 20% over a baseline building. The team will develop a whole building energy model to demonstrate the expected performance rating of the designed building systems and to calculate cost savings.

Credit 3 Enhanced Commissioning

The Commissioning Agent will be part of the Phase IB Project team from early on in the design process. The Commissioning Agent's role will include reviewing the Proponent's project requirements, creating distributing and implementing a commissioning plan, and performing a design review of the design development and construction documents.

Credit 4 Enhanced Refrigerant Management

Long life, high-efficiency mechanical equipment will be specified for the HVAC systems, and the refrigerants specified for the systems will have low Ozone-depletion and Global warming potentials.

Credit 5 Measurement and Verification

The building will have a M&V Plan to evaluate building and/or energy system performance.

*Materials and Resources*

Throughout the construction phase of the Phase IB Project, the contractor will endeavor to divert Construction and Demolition waste from area landfills as much as possible, and to procure materials that have recycled content and/or are extracted, processed and/or manufactured regionally.

Prerequisite 1 Storage and Collection of Recyclables

Storage of collected recyclables will be accommodated in the ground level of the building in the area of the loading dock. There will be a recycling program and adequate storage for collected recyclable materials within the building, including temporary storage areas on each floor.

Credits 2.1 and 2.2 Construction Waste Management

Prior to the start of construction, the construction manager will prepare a Construction Waste Management plan; they will endeavor to divert as much demolition debris and construction waste from area landfills as possible. The minimum acceptable diversion rate will be 75%.

Credits 4.1 Recycled Content

The Phase IB Project specifications will require materials to include pre- and/or post-consumer recycled content. During construction, materials submittals will include a document indicating the percentage of both pre- and post-consumer recycled content. The construction manager will track the recycled content for each material with a project target to achieve 20% recycled-content materials based on overall project materials costs.

Credit 5.1 Regional Materials

The Phase IB Project specifications will indicate materials to be extracted, harvested, recovered and manufactured within a 500-mile radius of the job site. The Project team has a goal to have 20% of the materials specified and used will be regional materials. The construction manager will track the source location for each material with a project target to achieve 20% regional materials based on overall project materials costs.

Credit 6.1 Rapidly Renewable Materials

The design will include rapidly renewable building materials and products.

Credit 7.1 Certified Wood

The Phase IB Project will establish a project goal for FSC-certified wood products and identify suppliers that can achieve this goal.

*Indoor Environmental Quality*

Prerequisite 1 Minimum IAQ Performance

The building mechanical systems will be designed to meet or exceed the requirements of ASHRAE Standard 61.1-2007 sections 4 through 7 and/or applicable building codes.

Prerequisite 2 Environmental Tobacco Smoke (ETS) Control

The building will be a non-smoking environment.

Credit 3.1 Construction IAQ Management Plan (during construction)

The construction manager will develop an Indoor Air Quality Management Plan for the construction and pre-occupancy phases of the Phase IB Project to meet/exceed the recommended Control Measures of the SMACNA IAQ Guidelines for Occupied buildings Under Construction 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter3). Absorptive materials stored on Site will be protected from moisture damage.

Credit 3.2 Construction IAQ Management Plan (before occupancy)

After the completion of construction and prior to occupancy, the Proponent will conduct either baseline indoor air quality testing or a full building flush-out to demonstrate contaminant maximum concentrations are not exceeded.

Credits 4.1-4.4 Low Emitting Materials

The Phase IB Project specifications will set VOC limits for adhesive and sealants, paints and coatings, and flooring systems.

Credit 5 Indoor Chemical and Pollutant Source Control

The Phase IB Project team will design to minimize and control the entry of pollutants into the building and to contain chemical use areas.

Credit 6.1 Controllability of Systems, Lighting

It is the intent of the design to provide individual lighting controls for regularly occupied spaces. The controls may include vacancy/occupancy sensors and/or day light dimming controls. Multi occupant user spaces will have multi-level lighting controls for modifying light levels as necessary for the various uses.

Credit 6.2 Controllability of Systems, Thermal Comfort

It is the intent of the design to provide individual temperature controls for regularly occupied spaces.

Credit 7.1 Thermal Comfort Design

The building HVAC design will be in compliance with ASHRAE 55.

### *Innovation & Design Processes*

The team has identified several possible ID credits which are listed below, (limited to 6 ID credits total):

Credit 1.1 Exemplary Performance for SSc4.1

The Phase IB Project Site is located next to the MBTA World Trade Center Silver Line station and within 0.5 mile of existing multiple bus lines.

Credit 1.2 Exemplary Performance for SSc7.1

The Phase IB Project places 100% of parking under cover.

Credit 2 LEED Accredited Professional (required ID credit for LEED certification)

A LEED AP will provide administrative services to oversee the LEED credit documentation Process.

### *Regional Priority Credits*

Regional Priority Credits, (RPC) are established LEED credits designated by the USGBC to have priority for a particular area of the country. When a project team achieves one of the designated RPCs, an additional credit is awarded to the project. RPCs applicable to the Boston area include: SSc3, SSc6.1 SSc7.1, SSc7.2, EAc2 and MRc1.1. The Phase IB Project anticipates three RPCs: SSc6.1-Stormwater Quantity, SSc7.1-Heat Island Effect, Non-Roof and SSc7.2 – Heat Island Effect, Roof.

## 2.12 Climate Change Resilience

Projects subject to Article 80, Large Project Review are required to complete the Climate Change Preparedness Checklist. Climate change conditions considered include sea level rise, higher maximum and mean temperatures, more frequent and longer extreme heat events, more frequent and longer droughts, more severe rainfall events, and increased wind events.

The expected life of the Phase IB Project is anticipated to be approximately 50 years. Therefore, the Proponent planned for climate change conditions projected at a 50 year time span. A copy of the completed checklist is included in Appendix B. Given the preliminary level of design, the responses are also preliminary and may be updated as the Phase IB Project design progresses.

### *Extreme Heat Events*

The Intergovernmental Panel on Climate Change (IPCC) has predicted that in Massachusetts the number of days with temperatures greater than 90°F will increase from the current five-to-twenty days annually, to thirty-to-sixty days annually[3]. The Phase IB Project design will incorporate a number of measures to minimize the impact of high temperature events, including:

- New street trees;
- Installing operable windows where possible;
- Using Energy Recovery Ventilation to reduce cooling loads; and

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

- High-albedo roofing materials to minimize the heat island effect.

Energy modeling for the Phase IB Project has not yet been completed; however, as indicated on the LEED Checklist, the Proponent will strive to reduce the Phase IB Project's overall energy demand and GHG emissions that contribute to global warming. The Phase IB Project's proposed TDM program will also help to lessen fossil fuel consumption.

### *Sea Level Rise*

According to the IPCC, if the sea level continues to rise at historic rates, the sea level in Massachusetts as a whole will rise by one foot by the year 2100. However, using a high emissions scenario of climate change, sea level rise (SLR) could reach approximately six feet by 2100. As described in "Climate Change and Extreme Weather Vulnerability Assessments and Adaptation Options for the Central Artery" recently released by MassDOT (the "MassDOT Report"), "one of the challenges presented by the wide range of SLR projections is the inability to assign likelihood to any particular [SLR] scenario."[4] To be conservative, in the year 2070, SLR could be as high as approximately four feet, resulting in a mean higher high water (MHHW) level of approximately 15.2 feet Boston City Base (BCB). The elevation of the first floor is approximately 17 feet BCB, with flood proofing extended to approximately 23.3 feet BCB.

Alone, MHHW of approximately 15.2 feet BCB would have no impact on the Phase IB Project Site; however, as shown in the MassDOT Report, combined with storm surge at the right tide, flooding would be anticipated to occur at the Phase IB Project Site.[5] The storms in the Boston area that could create these flood conditions would be Nor'easters and tropical storms. Currently, hurricanes occur less frequently than Nor'easters; however, in the future according to the MassDOT Report, it is anticipated that there will be roughly the same number of tropical storms impacting the Boston area as Nor'easters. In addition, the intensity of storms is anticipated to increase. The risks of each type of storm differ: hurricanes are typically shorter in duration, but are more intense and create a larger storm surge; Nor'easters are longer in duration, but create a smaller storm surge. For this reason, a hurricane would need to impact Boston within a short window to create flooding as shown in the MassDOT Report, while Nor'easters are more likely to create flooding given that they have a higher probability of impacting the area during the rising tide and high tide.

The MassDOT Report shows that by 2070, the Site is anticipated to have a 20% to 50% annual chance of flooding by at least 2 inches, with the highest probability on the

---

[4] Massachusetts Department of Transportation, et al. "MassDOT-FHWA Pilot Project Report: Climate Change and Extreme Weather Vulnerability Assessments and Adaptation Options for the Central Artery." November 2015.

[5] The MassDOT Report, funded by the Federal Highway Administration, studied the impact of sea level rise and future storm impacts related to climate change on the Central Artery in Boston. As part of this project, a hydrodynamic model was developed for Boston Harbor, including inland areas that cover portions of Boston, including the Phase IB Project Site. This model is able to provide site-specific information about the risk of potential future flooding in the years 2030, 2070 and 2100 related to storm events, in particular Nor'easters and tropical cyclones (i.e., hurricanes).

northeastern side of the Site. By 2070, the 100-year flood is anticipated to have a flood level between 2.5 to 3.5 feet across the Site, with the higher level on the northeastern side of the Site.

As part of the Phase IB Project's resiliency strategy and in order to comply with the Massport Floodproofing Design Guidelines and performance standards for new buildings, the Project has incorporated a number of floodproofing strategies into the design of the project.

The Project design will Dry Floodproof all critical building infrastructure equipment rooms including the transformer vault, main electric room, fire pump room, fire command room, and the emergency generator fuel oil storage by elevating these spaces 4 feet above grade and the ground floor. Additionally, these spaces will also receive a water-tight 5-foot high knee-wall surrounding each space with removable flood gates at each door opening to bring the floodproofing capacity of these critical infrastructure rooms up to the 100-year FEMA Design Flood elevation of 17'-0". The Project will also include water-tight utility conduits, wastewater and stormwater backflow prevention, and resilient ground floor construction.

### *Rain Events*

As a result of climate change, the Northeast is expected to experience more frequent and intense storms. To mitigate, the Proponent will take measures to minimize stormwater runoff and protect the Phase IB Project's mechanical equipment. These measures include:

- Infiltration galleries and rooftops with vegetated areas;
- Locating critical mechanical and electrical equipment at the highest elevation possible to prevent exposure to flood waters; and
- Wastewater and stormwater back flow prevention.

### *Drought Conditions*

Under the high emissions scenario, the occurrence of droughts lasting one to three months could go up by as much as 75% over existing conditions by the end of the century. To minimize the Phase IB Project's susceptibility to drought conditions, the landscape design is anticipated to incorporate native and adaptive plant materials and a reduction in potable water use for irrigation when compared to a mid-summer baseline. Aeration fixtures and appliances will be chosen for water conservation qualities, conserving potable water supplies.

## 2.13 Urban Design

### *2.13.1 Program*

Located on the South Boston Waterfront, Waterside Place Phase IB will play a pivotal role in defining the character of one of Boston's most rapidly-developing neighborhoods. Situated between the World Trade Center and the Boston Convention and Exhibition Center as well as among many restaurants, bars, and hotels, this residential tower will build on the successes of the adjacent Waterside Place to bring both vitality and a sense of community to the area.

At approximately 248 feet and 23 stories tall, Waterside Place Phase IB will introduce 312 new units to the Boston housing market. With a healthy mix of studio, one-bedroom, two-bedroom, and three-bedroom apartments, the Phase IB Project's diversity of housing options will attract a wide range of residents from young professionals and families, to empty-nesters and retirees.

The South Boston waterfront offers a wide range of activities, such as waterfront dining, artistic adventures, picnics in the park, and open-air concerts. From the Blue Hills Bank Pavilion and Harpoon Brewery to the HarborWalk, South Boston Maritime Park and the Institute of Contemporary Art, the waterfront neighborhood is bustling with art, culture and activity. With many more attractions and basic services coming to the district, Waterside Place Phase IB will support community growth and a sense of permanency.

While the South Boston Waterfront has a vibrant night life, it is also a catalyst for creativity and innovation. Just down the street from Waterside Place Phase IB, District Hall sets a new precedent for innovation centers. This unique civic space offers open workspace, class rooms, gathering spaces, and symposiums designed to encourage the exchange of new ideas and inspire a sense of place and community. The area is also home to a number of forward-thinking firms such as Vertex and Zipcar as well as finance leaders like John Hancock, Fidelity, and PricewaterhouseCoopers.

By bolstering the area's inventory of residential units, the Phase IB Project will increase the ability of the South Boston Waterfront to become a live, work, and play community. In addition to over 300 residential units, it will also offer approximately 2,000 square feet of ground floor retail space to serve the community, and approximately 84 parking spaces to accommodate the new residents. The new residents who will live at the Phase IB Project will join those already in the Phase IA Project in adding to the demand for local neighborhood retail services and amenities in the Seaport area, and will add to the vitality of the neighborhood while being able to access employers, retailers, and recreation opportunities without need use of a car.

The Phase IB Project will also strive to uphold the city's commitment to sustainability by targeting LEED Gold certification. In addition to using environmentally responsible

materials and conserving water and energy, the Phase IB Project will prioritize climate change preparedness by locating all critical operational equipment and spaces within designated zones of the building that will be protected from projected floodplain and storm surge impacts (see Section 2.12). This will ensure that the Phase IB Project and community it supports remain active and resilient, even in the case of an extreme weather event.

### *2.13.2 Public Realm*

Situated adjacent to an MBTA Silver Line station and at the intersection of Congress Street and World Trade Center Avenue, the raised roadway that links Summer Street and the BCEC to the World Trade Center, Waterside Place Phase IB will activate a centrally-located and currently under-utilized site to strengthen the urban fabric of the neighborhood. Notably, the Phase IB Project will replace an existing parking lot with an attractive and active street wall along Congress Street. Specifically, the Phase IB Project will feature a residential lobby, leasing office and retail store front along this critical neighborhood corridor. Such ground floor uses will encourage pedestrian activity and create a lively, engaging streetscape.

Due to significant site constraints on the remaining three sides of the plot, the Phase IB Project will also accommodate one loading dock and entrances to two, separate parking garages along Congress Street. The garage entrance will include an entrance to the Seaport Transportation Center and an entrance to the existing Phase IA Project garage and proposed Phase IB Project garage. However, these elements will be carefully consolidated and located to minimize any impacts on pedestrian activity. Façade treatments will also be used to disguise the presence of these service elements, prioritizing the visual and physical experiences of pedestrians.

The Phase IB Project will also engage the elevated World Trade Center Avenue with a second residential lobby. This lobby will provide residents with access to the adjacent Silver Line World Trade Center Station while adding activities to the currently isolated World Trade Center Avenue. The corner of the building will also include a fitness center along this street edge, adding greater visual interest and activity to both Congress Street and World Trade Center Avenue.

### *2.13.3 Massing*

The Phase IB Project's massing strategy strives to create a distinct identity while capitalizing on view opportunities for residents and guests. Inherent in the Site is also a unique opportunity to create an elegant urban marker for the South Boston Waterfront as most of the surrounding landscape is low rise in nature such as the Central Artery Tunnel entrances and exits as well as the MBTA Silver Line station.

The Phase IB Project's L-shaped floor plate will create a distinct identity at both the neighborhood and city scales while respecting the FAA height restrictions applicable to the

Site. The tower's form will also provide an efficient floorplate that steps back from the street edge. Slender in nature, Waterside Place Phase IB will allow Congress Street to remain airy and inviting throughout the day. The dissimilar heights of the tower's two arms will further provide varying scale to Congress Street while elegantly proportioning the overall development.

The taller portion of the tower will be positioned at the corner of Congress Street and World Trade Center Avenue to act as an urban anchor. The top of this tower arm will be architecturally articulated to create a legible identity for the building as viewed from Downtown Boston.

By positioning the taller of the two arms on the west side of the Site, the taller tower will protect the rooftop terrace on the adjoining arm of the tower from prevailing winds. Finally, the tower's position on top of the podium is carefully calculated to maximize views through the existing fabric to Boston Harbor and Downtown Boston.

Graceful in its simplicity and proportions, the building's L-shaped form will add depth and diversity to the South Boston Waterfront skyline.

## 2.14 Historic Resources

The Phase IB Project Site does not contain, nor is it adjacent to, any historical resources.

## 2.15 Infrastructure

### *2.15.1 Introduction*

The following chapter provides an update to the Phase IB Project capacity needs and potential impacts on utilities due to the Phase IB Project. The Phase IB Project Site is well-served by existing infrastructure systems.

Based on initial investigations and consultations with the appropriate agencies and utility companies, it is expected that all existing infrastructure systems are adequately sized to accept the demand with the development and operation of the Phase IB 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 and Massport owned infrastructure. Since the DPIR, the Proponent has advanced the proposed utility design and had initial meetings with the Boston Water and Sewer Commission (BWSC) and Eversource. BWSC provided design guidelines and the team has been working with BWSC to meet such requirements. No capacity issues in the existing city systems were identified by BWSC.

### *2.15.2 Drainage/Stormwater Management*

The Phase IB 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 Phase IB Project includes a stormwater management system that complies with MassDEP's stormwater management handbook. The proposed system takes an innovative approach by utilizing areas under the building slab to locate retention/infiltration facilities. The current design is sized to meet BWSC requirements retaining the equivalent of an inch of runoff over the Phase IB Project Site area. The current design anticipates the use of perforated PVC pipe within crushed stone underneath the building to achieve infiltration, which will be submitted to the BWSC for review and approval.

A portion of the roof will include a green roof system which will further enhance the stormwater management system by reducing runoff through water absorption by the plant and soil materials. The Phase IB Project's streetscape design incorporates both Massport Design Guidelines as well as the City of Boston's Complete Streets design parameters and includes street trees and a permeable paver strip within the furnishing zones in Congress Street. The proposed stormwater measures will be designed in accordance with MassDEP's Stormwater Management Handbook.

### *2.15.3 Sanitary Sewer*

BWSC record drawings and existing conditions plans show there is a 12-inch sanitary sewer main in Congress Street. The existing Site, consisting primarily of surface parking, does not currently generate wastewater.

For the purposes of estimating the sewage flow rates, the overall gross square footage (including mechanical space) is assumed instead of the FAR square footage in order to present a conservative analysis. Based on generation rates from the Massachusetts State Environmental Code (Title 5) for residential units and retail space, the Phase IB Project is estimated to generate approximately 41,230 gallons per day 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.

### *2.15.4 Domestic Water Demand*

The BWSC owns and maintains the water mains in the vicinity of the Phase IB Project Site. BWSC record drawings and existing conditions plans show the streets surrounding the Phase IB Project Site are serviced by both southern high and southern low service pipes. Adjacent to the Site in Congress Street is a 12-inch ductile iron southern low service main as well as a 16-inch ductile iron southern high service main. Both mains were installed in 1995 according to BWSC record drawings. Currently, two fire hydrants are in close proximity to the Phase IB 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 MassDEP System Sewage Flow Design Criteria, 310 CMR 15.203, the Phase IB Project will require approximately 45,353 gallons of water per day.

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.

New water connections will be designed in accordance with BWSC design standards and requirements. Water services to the new building will be metered in accordance with BWSC's Site Plan Requirements and Site Review Process. The review includes, but is not limited to, sizing of domestic water and fire protection services, calculation of meter sizing, backflow prevention design, and location of hydrants and Siamese connections conforming 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 Phase IB Project Site will also need approval of Massport Fire Rescue and BFD. The Proponent will request record hydrant flow test information from the BWSC to aid in the preliminary water design. In addition, the Proponent will request new hydrant flow tests on the main to which the Proponent intends on connecting.

### *2.15.5 Utilities*

#### 2.15.5.1 Natural Gas Service

National Grid owns and operates the existing gas infrastructure in the vicinity of the Phase IB Project Site. Existing conditions plans indicate an 8-inch main in Congress Street as well as two gas services extending to the Site, both stubbed for future use. The Proponent will coordinate with National Grid the best means of obtaining a system connection for the building. The Phase IB Project is anticipated to utilize natural gas for the central domestic hot water heaters, heating boilers, fire places and amenity grills for an estimated 16,000 MBH total connected load. As the building energy system design is developed, the Proponent will work with National Grid to ensure adequate capacity is available to serve the Phase IB Project.

#### 2.15.5.2 Electrical Service

Eversource owns and operates the existing electrical facilities in the vicinity of the Phase IB Project Site which are located along the Phase IB Project frontage in Congress Street. An existing manhole is expected to supply power with a new ductbank feeding the building.

The estimated electrical demand load for the Phase IB Project is approximately 8,800 Kilo Volt Amperes (kVA) serving residential units, retail, and common areas. Energy conservation measures will be an integral part of the Phase IB Project-related infrastructure design. The buildings will employ energy-efficient and water-conservation features for mechanical, electrical, architectural, and structural systems, assemblies, and materials, where feasible and reasonable. The base configuration of the proposed building will meet

the Massachusetts Stretch Energy Code. Mechanical and HVAC systems will be installed to the current industry standards, and full cooperation with the local utility providers will be maintained during design and construction.

#### 2.15.5.3 Telecommunications

Massport owns the telecom facilities (manholes and ducts) in the vicinity of the Phase IB Project Site; however, they allow Verizon to run their service through them. Existing conditions plans indicate that there is existing telecom infrastructure in Congress Street with stubbed services to the Phase IB Project Site. The configuration of the proposed service will be developed with Verizon as the Phase IB Project design progresses.

#### 2.15.5.4 Protection of Utilities

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

# Appendix A

Wind

RWDI
CONSULTING ENGINEERS & SCIENTISTS

**Table 1:** Mean Speed and Effective Gust 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 | 17 | | Walking | 25 | | Acceptable |
| | | Summer | 13 | | Standing | 19 | | Acceptable |
| | | Fall | 15 | | Standing | 22 | | Acceptable |
| | | Winter | 16 | | Walking | 25 | | Acceptable |
| | | Annual | 15 | | Standing | 23 | | Acceptable |
| | B | Spring | 23 | +35% | Uncomfortable | 33 | +32% | Unacceptable |
| | | Summer | 18 | +38% | Walking | 25 | +32% | Acceptable |
| | | Fall | 22 | +47% | Uncomfortable | 31 | +41% | Acceptable |
| | | Winter | 24 | +50% | Uncomfortable | 34 | +36% | Unacceptable |
| | | Annual | 22 | +47% | Uncomfortable | 31 | +35% | Acceptable |
| 2 | A | Spring | 16 | | Walking | 25 | | Acceptable |
| | | Summer | 13 | | Standing | 19 | | Acceptable |
| | | Fall | 15 | | Standing | 23 | | Acceptable |
| | | Winter | 16 | | Walking | 25 | | Acceptable |
| | | Annual | 15 | | Standing | 23 | | Acceptable |
| | B | Spring | 21 | +31% | Uncomfortable | 31 | +24% | Acceptable |
| | | Summer | 16 | +23% | Walking | 23 | +21% | Acceptable |
| | | Fall | 19 | +27% | Walking | 29 | +26% | Acceptable |
| | | Winter | 22 | +38% | Uncomfortable | 32 | +28% | Unacceptable |
| | | Annual | 20 | +33% | Uncomfortable | 29 | +26% | Acceptable |
| 3 | A | Spring | 20 | | Uncomfortable | 28 | | Acceptable |
| | | Summer | 14 | | Standing | 21 | | Acceptable |
| | | Fall | 18 | | Walking | 26 | | Acceptable |
| | | Winter | 19 | | Walking | 28 | | Acceptable |
| | | Annual | 18 | | Walking | 26 | | Acceptable |
| | B | Spring | 17 | -15% | Walking | 24 | -14% | Acceptable |
| | | Summer | 12 | -14% | Sitting | 19 | | Acceptable |
| | | Fall | 15 | -17% | Standing | 23 | -12% | Acceptable |
| | | Winter | 17 | -11% | Walking | 25 | -11% | Acceptable |
| | | Annual | 15 | -17% | Standing | 23 | -12% | Acceptable |
| 4 | A | Spring | 20 | | Uncomfortable | 29 | | Acceptable |
| | | Summer | 15 | | Standing | 22 | | Acceptable |
| | | Fall | 19 | | Walking | 27 | | Acceptable |
| | | Winter | 20 | | Uncomfortable | 29 | | Acceptable |
| | | Annual | 19 | | Walking | 27 | | Acceptable |
| | B | Spring | 16 | -20% | Walking | 24 | -17% | Acceptable |
| | | Summer | 12 | -20% | Sitting | 19 | -14% | Acceptable |
| | | Fall | 14 | -26% | Standing | 23 | -15% | Acceptable |
| | | Winter | 16 | -20% | Walking | 25 | -14% | Acceptable |
| | | Annual | 15 | -21% | Standing | 24 | -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

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 |

RWDI
CONSULTING ENGINEERS & SCIENTISTS

**Table 1:** Mean Speed and Effective Gust Categories – Multiple Seasons

| BRA Criteria | | | Mean Wind Speed | | | Effective Gust Wind Speed | | |
|---|---|---|---|---|---|---|---|---|
| Loc. | Config. | Season | Speed(mph) | %Change | RATING | Speed(mph) | %Change | RATING |
| 5 | A | Spring | 24 | | Uncomfortable | 33 | | Unacceptable |
| | | Summer | 17 | | Walking | 24 | | Acceptable |
| | | Fall | 22 | | Uncomfortable | 30 | | Acceptable |
| | | Winter | 23 | | Uncomfortable | 33 | | Unacceptable |
| | | Annual | 22 | | Uncomfortable | 30 | | Acceptable |
| | B | Spring | 16 | -33% | Walking | 26 | -21% | Acceptable |
| | | Summer | 13 | -24% | Standing | 20 | -17% | Acceptable |
| | | Fall | 15 | -32% | Standing | 24 | -20% | Acceptable |
| | | Winter | 17 | -26% | Walking | 27 | -18% | Acceptable |
| | | Annual | 16 | -27% | Walking | 25 | -17% | Acceptable |
| 6 | A | Spring | 27 | | Uncomfortable | 36 | | Unacceptable |
| | | Summer | 21 | | Uncomfortable | 28 | | Acceptable |
| | | Fall | 25 | | Uncomfortable | 33 | | Unacceptable |
| | | Winter | 27 | | Uncomfortable | 36 | | Unacceptable |
| | | Annual | 25 | | Uncomfortable | 34 | | Unacceptable |
| | B | Spring | 16 | -41% | Walking | 25 | -31% | Acceptable |
| | | Summer | 12 | -43% | Sitting | 19 | -32% | Acceptable |
| | | Fall | 14 | -44% | Standing | 23 | -30% | Acceptable |
| | | Winter | 16 | -41% | Walking | 25 | -31% | Acceptable |
| | | Annual | 15 | -40% | Standing | 23 | -32% | Acceptable |
| 7 | A | Spring | 28 | | Dangerous | 36 | | Unacceptable |
| | | Summer | 20 | | Uncomfortable | 26 | | Acceptable |
| | | Fall | 25 | | Uncomfortable | 33 | | Unacceptable |
| | | Winter | 26 | | Uncomfortable | 35 | | Unacceptable |
| | | Annual | 25 | | Uncomfortable | 33 | | Unacceptable |
| | B | Spring | 21 | -25% | Uncomfortable | 31 | -14% | Acceptable |
| | | Summer | 16 | -20% | Walking | 23 | -12% | Acceptable |
| | | Fall | 19 | -24% | Walking | 28 | -15% | Acceptable |
| | | Winter | 21 | -19% | Uncomfortable | 30 | -14% | Acceptable |
| | | Annual | 19 | -24% | Walking | 28 | -15% | Acceptable |
| 8 | A | Spring | 16 | | Walking | 26 | | Acceptable |
| | | Summer | 12 | | Sitting | 20 | | Acceptable |
| | | Fall | 15 | | Standing | 24 | | Acceptable |
| | | Winter | 16 | | Walking | 27 | | Acceptable |
| | | Annual | 15 | | Standing | 25 | | Acceptable |
| | B | Spring | 15 | | Standing | 24 | | Acceptable |
| | | Summer | 12 | | Sitting | 19 | | Acceptable |
| | | Fall | 14 | | Standing | 23 | | Acceptable |
| | | Winter | 16 | | Walking | 25 | | Acceptable |
| | | Annual | 15 | | Standing | 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

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 |

RWDI
CONSULTING ENGINEERS & SCIENTISTS

**Table 1:** Mean Speed and Effective Gust Categories – Multiple Seasons

| BRA Criteria | | | Mean Wind Speed | | | Effective Gust Wind Speed | | |
|---|---|---|---|---|---|---|---|---|
| Loc. | Config. | Season | Speed(mph) | %Change | RATING | Speed(mph) | %Change | RATING |
| 9 | A | Spring | 16 | | Walking | 25 | | Acceptable |
| | | Summer | 12 | | Sitting | 20 | | Acceptable |
| | | Fall | 15 | | Standing | 24 | | Acceptable |
| | | Winter | 16 | | Walking | 26 | | Acceptable |
| | | Annual | 15 | | Standing | 24 | | Acceptable |
| | B | Spring | 16 | | Walking | 25 | | Acceptable |
| | | Summer | 12 | | Sitting | 20 | | Acceptable |
| | | Fall | 15 | | Standing | 24 | | Acceptable |
| | | Winter | 16 | | Walking | 26 | | Acceptable |
| | | Annual | 15 | | Standing | 24 | | Acceptable |
| 10 | A | Spring | 11 | | Sitting | 18 | | Acceptable |
| | | Summer | 10 | | Sitting | 15 | | Acceptable |
| | | Fall | 11 | | Sitting | 18 | | Acceptable |
| | | Winter | 12 | | Sitting | 19 | | Acceptable |
| | | Annual | 11 | | Sitting | 18 | | Acceptable |
| | B | Spring | 10 | | Sitting | 17 | | Acceptable |
| | | Summer | 9 | | Sitting | 14 | | Acceptable |
| | | Fall | 10 | | Sitting | 16 | -11% | Acceptable |
| | | Winter | 11 | | Sitting | 18 | | Acceptable |
| | | Annual | 10 | | Sitting | 17 | | Acceptable |
| 11 | A | Spring | 25 | | Uncomfortable | 34 | | Unacceptable |
| | | Summer | 18 | | Walking | 26 | | Acceptable |
| | | Fall | 23 | | Uncomfortable | 32 | | Unacceptable |
| | | Winter | 24 | | Uncomfortable | 34 | | Unacceptable |
| | | Annual | 23 | | Uncomfortable | 32 | | Unacceptable |
| | B | Spring | 26 | | Uncomfortable | 35 | | Unacceptable |
| | | Summer | 19 | | Walking | 27 | | Acceptable |
| | | Fall | 24 | | Uncomfortable | 32 | | Unacceptable |
| | | Winter | 25 | | Uncomfortable | 34 | | Unacceptable |
| | | Annual | 24 | | Uncomfortable | 32 | | Unacceptable |
| 12 | A | Spring | 22 | | Uncomfortable | 31 | | Acceptable |
| | | Summer | 19 | | Walking | 27 | | Acceptable |
| | | Fall | 21 | | Uncomfortable | 30 | | Acceptable |
| | | Winter | 22 | | Uncomfortable | 31 | | Acceptable |
| | | Annual | 21 | | Uncomfortable | 30 | | Acceptable |
| | B | Spring | 23 | | Uncomfortable | 32 | | Unacceptable |
| | | Summer | 20 | | Uncomfortable | 28 | | Acceptable |
| | | Fall | 22 | | Uncomfortable | 31 | | Acceptable |
| | | Winter | 23 | | Uncomfortable | 33 | | Unacceptable |
| | | Annual | 22 | | Uncomfortable | 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

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 |

RWDI
CONSULTING ENGINEERS & SCIENTISTS

**Table 1:** Mean Speed and Effective Gust Categories – Multiple Seasons

| BRA Criteria | | | Mean Wind Speed | | | Effective Gust Wind Speed | | |
|---|---|---|---|---|---|---|---|---|
| Loc. | Config. | Season | Speed(mph) | %Change | RATING | Speed(mph) | %Change | RATING |
| 13 | A | Spring | 22 | | Uncomfortable | 32 | | Unacceptable |
| | | Summer | 18 | | Walking | 26 | | Acceptable |
| | | Fall | 21 | | Uncomfortable | 31 | | Acceptable |
| | | Winter | 23 | | Uncomfortable | 33 | | Unacceptable |
| | | Annual | 21 | | Uncomfortable | 31 | | Acceptable |
| | B | Spring | 23 | | Uncomfortable | 33 | | Unacceptable |
| | | Summer | 19 | | Walking | 27 | | Acceptable |
| | | Fall | 22 | | Uncomfortable | 31 | | Acceptable |
| | | Winter | 24 | | Uncomfortable | 34 | | Unacceptable |
| | | Annual | 22 | | Uncomfortable | 32 | | Unacceptable |
| 14 | A | Spring | 20 | | Uncomfortable | 29 | | Acceptable |
| | | Summer | 15 | | Standing | 22 | | Acceptable |
| | | Fall | 18 | | Walking | 27 | | Acceptable |
| | | Winter | 20 | | Uncomfortable | 29 | | Acceptable |
| | | Annual | 18 | | Walking | 27 | | Acceptable |
| | B | Spring | 20 | | Uncomfortable | 29 | | Acceptable |
| | | Summer | 15 | | Standing | 22 | | Acceptable |
| | | Fall | 18 | | Walking | 27 | | Acceptable |
| | | Winter | 19 | | Walking | 28 | | Acceptable |
| | | Annual | 18 | | Walking | 27 | | Acceptable |
| 15 | A | Spring | 16 | | Walking | 24 | | Acceptable |
| | | Summer | 12 | | Sitting | 18 | | Acceptable |
| | | Fall | 14 | | Standing | 22 | | Acceptable |
| | | Winter | 15 | | Standing | 23 | | Acceptable |
| | | Annual | 15 | | Standing | 22 | | Acceptable |
| | B | Spring | 18 | +12% | Walking | 25 | | Acceptable |
| | | Summer | 12 | | Sitting | 19 | | Acceptable |
| | | Fall | 16 | +14% | Walking | 23 | | Acceptable |
| | | Winter | 16 | | Walking | 24 | | Acceptable |
| | | Annual | 16 | | Walking | 23 | | Acceptable |
| 16 | A | Spring | 20 | | Uncomfortable | 29 | | Acceptable |
| | | Summer | 15 | | Standing | 22 | | Acceptable |
| | | Fall | 18 | | Walking | 26 | | Acceptable |
| | | Winter | 20 | | Uncomfortable | 29 | | Acceptable |
| | | Annual | 18 | | Walking | 27 | | Acceptable |
| | B | Spring | 21 | | Uncomfortable | 30 | | Acceptable |
| | | Summer | 15 | | Standing | 23 | | Acceptable |
| | | Fall | 19 | | Walking | 27 | | Acceptable |
| | | Winter | 21 | | 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

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 |

RWDI
CONSULTING ENGINEERS & SCIENTISTS

**Table 1:** Mean Speed and Effective Gust Categories – Multiple Seasons

| BRA Criteria | | | Mean Wind Speed | | | Effective Gust Wind Speed | | |
|---|---|---|---|---|---|---|---|---|
| Loc. | Config. | Season | Speed(mph) | %Change | RATING | Speed(mph) | %Change | RATING |
| 17 | A | Spring | 20 | | Uncomfortable | 27 | | Acceptable |
| | | Summer | 15 | | Standing | 21 | | Acceptable |
| | | Fall | 18 | | Walking | 25 | | Acceptable |
| | | Winter | 20 | | Uncomfortable | 28 | | Acceptable |
| | | Annual | 19 | | Walking | 26 | | Acceptable |
| | B | Spring | 21 | | Uncomfortable | 28 | | Acceptable |
| | | Summer | 16 | | Walking | 22 | | Acceptable |
| | | Fall | 19 | | Walking | 26 | | Acceptable |
| | | Winter | 22 | | Uncomfortable | 29 | | Acceptable |
| | | Annual | 20 | | Uncomfortable | 27 | | Acceptable |
| 18 | A | Spring | 25 | | Uncomfortable | 36 | | Unacceptable |
| | | Summer | 22 | | Uncomfortable | 31 | | Acceptable |
| | | Fall | 25 | | Uncomfortable | 35 | | Unacceptable |
| | | Winter | 27 | | Uncomfortable | 38 | | Unacceptable |
| | | Annual | 25 | | Uncomfortable | 36 | | Unacceptable |
| | B | Spring | 27 | | Uncomfortable | 38 | | Unacceptable |
| | | Summer | 23 | | Uncomfortable | 32 | | Unacceptable |
| | | Fall | 26 | | Uncomfortable | 36 | | Unacceptable |
| | | Winter | 28 | | Dangerous | 39 | | Unacceptable |
| | | Annual | 26 | | Uncomfortable | 37 | | Unacceptable |
| 19 | A | Spring | 28 | | Dangerous | 39 | | Unacceptable |
| | | Summer | 24 | | Uncomfortable | 33 | | Unacceptable |
| | | Fall | 27 | | Uncomfortable | 38 | | Unacceptable |
| | | Winter | 31 | | Dangerous | 43 | | Unacceptable |
| | | Annual | 28 | | Dangerous | 39 | | Unacceptable |
| | B | Spring | 28 | | Dangerous | 39 | | Unacceptable |
| | | Summer | 23 | | Uncomfortable | 32 | | Unacceptable |
| | | Fall | 27 | | Uncomfortable | 37 | | Unacceptable |
| | | Winter | 31 | | Dangerous | 43 | | Unacceptable |
| | | Annual | 28 | | Dangerous | 39 | | Unacceptable |
| 20 | A | Spring | 20 | | Uncomfortable | 31 | | Acceptable |
| | | Summer | 17 | | Walking | 27 | | Acceptable |
| | | Fall | 19 | | Walking | 31 | | Acceptable |
| | | Winter | 21 | | Uncomfortable | 33 | | Unacceptable |
| | | Annual | 19 | | Walking | 31 | | Acceptable |
| | B | Spring | 23 | +15% | Uncomfortable | 34 | | Unacceptable |
| | | Summer | 21 | +24% | Uncomfortable | 29 | | Acceptable |
| | | Fall | 23 | +21% | Uncomfortable | 33 | | Unacceptable |
| | | Winter | 24 | +14% | Uncomfortable | 36 | | Unacceptable |
| | | Annual | 23 | +21% | Uncomfortable | 33 | | 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

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:** Mean Speed and Effective Gust Categories – Multiple Seasons

| BRA Criteria | | | Mean Wind Speed | | | Effective Gust Wind Speed | | |
|---|---|---|---|---|---|---|---|---|
| Loc. | Config. | Season | Speed(mph) | %Change | RATING | Speed(mph) | %Change | RATING |
| 21 | A | Spring | 19 | | Walking | 29 | | Acceptable |
| | | Summer | 17 | | Walking | 25 | | Acceptable |
| | | Fall | 18 | | Walking | 28 | | Acceptable |
| | | Winter | 19 | | Walking | 29 | | Acceptable |
| | | Annual | 18 | | Walking | 28 | | Acceptable |
| | B | Spring | 23 | +21% | Uncomfortable | 32 | +10% | Unacceptable |
| | | Summer | 20 | +18% | Uncomfortable | 29 | +16% | Acceptable |
| | | Fall | 22 | +22% | Uncomfortable | 31 | +11% | Acceptable |
| | | Winter | 23 | +21% | Uncomfortable | 33 | +14% | Unacceptable |
| | | Annual | 22 | +22% | Uncomfortable | 31 | +11% | Acceptable |
| 22 | A | Spring | 19 | | Walking | 28 | | Acceptable |
| | | Summer | 16 | | Walking | 24 | | Acceptable |
| | | Fall | 18 | | Walking | 26 | | Acceptable |
| | | Winter | 18 | | Walking | 27 | | Acceptable |
| | | Annual | 18 | | Walking | 26 | | Acceptable |
| | B | Spring | 20 | | Uncomfortable | 29 | | Acceptable |
| | | Summer | 17 | | Walking | 25 | | Acceptable |
| | | Fall | 19 | | Walking | 27 | | Acceptable |
| | | Winter | 19 | | Walking | 28 | | Acceptable |
| | | Annual | 19 | | Walking | 27 | | Acceptable |
| 23 | A | Spring | 22 | | Uncomfortable | 31 | | Acceptable |
| | | Summer | 19 | | Walking | 26 | | Acceptable |
| | | Fall | 22 | | Uncomfortable | 30 | | Acceptable |
| | | Winter | 23 | | Uncomfortable | 33 | | Unacceptable |
| | | Annual | 22 | | Uncomfortable | 31 | | Acceptable |
| | B | Spring | 20 | | Uncomfortable | 29 | | Acceptable |
| | | Summer | 17 | -11% | Walking | 24 | | Acceptable |
| | | Fall | 19 | -14% | Walking | 28 | | Acceptable |
| | | Winter | 20 | -13% | Uncomfortable | 29 | -12% | Acceptable |
| | | Annual | 19 | -14% | Walking | 28 | | Acceptable |
| 24 | A | Spring | 17 | | Walking | 25 | | Acceptable |
| | | Summer | 14 | | Standing | 20 | | Acceptable |
| | | Fall | 16 | | Walking | 24 | | Acceptable |
| | | Winter | 18 | | Walking | 27 | | Acceptable |
| | | Annual | 16 | | Walking | 24 | | Acceptable |
| | B | Spring | 15 | -12% | Standing | 23 | | Acceptable |
| | | Summer | 12 | -14% | Sitting | 19 | | Acceptable |
| | | Fall | 14 | -12% | Standing | 22 | | Acceptable |
| | | Winter | 15 | -17% | Standing | 24 | -11% | Acceptable |
| | | Annual | 15 | | Standing | 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

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:** Mean Speed and Effective Gust Categories – Multiple Seasons

| BRA Criteria | | | Mean Wind Speed | | | Effective Gust Wind Speed | | |
|---|---|---|---|---|---|---|---|---|
| Loc. | Config. | Season | Speed(mph) | %Change | RATING | Speed(mph) | %Change | RATING |
| 25 | A | Spring | 19 | | Walking | 28 | | Acceptable |
| | | Summer | 15 | | Standing | 23 | | Acceptable |
| | | Fall | 18 | | Walking | 27 | | Acceptable |
| | | Winter | 20 | | Uncomfortable | 29 | | Acceptable |
| | | Annual | 18 | | Walking | 27 | | Acceptable |
| | B | Spring | 18 | | Walking | 26 | | Acceptable |
| | | Summer | 14 | | Standing | 21 | | Acceptable |
| | | Fall | 17 | | Walking | 25 | | Acceptable |
| | | Winter | 18 | | Walking | 27 | | Acceptable |
| | | Annual | 17 | | Walking | 25 | | Acceptable |
| 26 | A | Spring | 19 | | Walking | 26 | | Acceptable |
| | | Summer | 15 | | Standing | 21 | | Acceptable |
| | | Fall | 18 | | Walking | 25 | | Acceptable |
| | | Winter | 20 | | Uncomfortable | 28 | | Acceptable |
| | | Annual | 18 | | Walking | 26 | | Acceptable |
| | B | Spring | 18 | | Walking | 26 | | Acceptable |
| | | Summer | 14 | | Standing | 20 | | Acceptable |
| | | Fall | 17 | | Walking | 24 | | Acceptable |
| | | Winter | 19 | | Walking | 27 | | Acceptable |
| | | Annual | 18 | | Walking | 25 | | Acceptable |
| 27 | A | Spring | 23 | | Uncomfortable | 32 | | Unacceptable |
| | | Summer | 17 | | Walking | 24 | | Acceptable |
| | | Fall | 21 | | Uncomfortable | 29 | | Acceptable |
| | | Winter | 23 | | Uncomfortable | 32 | | Unacceptable |
| | | Annual | 21 | | Uncomfortable | 30 | | Acceptable |
| | B | Spring | 22 | | Uncomfortable | 31 | | Acceptable |
| | | Summer | 16 | | Walking | 23 | | Acceptable |
| | | Fall | 20 | | Uncomfortable | 28 | | Acceptable |
| | | Winter | 22 | | Uncomfortable | 31 | | Acceptable |
| | | Annual | 20 | | Uncomfortable | 29 | | Acceptable |
| 28 | A | Spring | 13 | | Standing | 21 | | Acceptable |
| | | Summer | 10 | | Sitting | 16 | | Acceptable |
| | | Fall | 13 | | Standing | 20 | | Acceptable |
| | | Winter | 13 | | Standing | 21 | | Acceptable |
| | | Annual | 13 | | Standing | 20 | | Acceptable |
| | B | Spring | 13 | | Standing | 21 | | Acceptable |
| | | Summer | 10 | | Sitting | 17 | | Acceptable |
| | | Fall | 12 | | Sitting | 20 | | Acceptable |
| | | Winter | 14 | | 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

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 |

RWDI
CONSULTING ENGINEERS & SCIENTISTS

**Table 1:** Mean Speed and Effective Gust 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 | 22 | | Uncomfortable | 31 | | Acceptable |
| | | Summer | 19 | | Walking | 27 | | Acceptable |
| | | Fall | 21 | | Uncomfortable | 30 | | Acceptable |
| | | Winter | 23 | | Uncomfortable | 33 | | Unacceptable |
| | | Annual | 21 | | Uncomfortable | 31 | | Acceptable |
| | B | Spring | 16 | -27% | Walking | 25 | -19% | Acceptable |
| | | Summer | 13 | -32% | Standing | 21 | -22% | Acceptable |
| | | Fall | 15 | -29% | Standing | 24 | -20% | Acceptable |
| | | Winter | 16 | -30% | Walking | 26 | -21% | Acceptable |
| | | Annual | 15 | -29% | Standing | 24 | -23% | Acceptable |
| 30 | A | Spring | 26 | | Uncomfortable | 35 | | Unacceptable |
| | | Summer | 23 | | Uncomfortable | 29 | | Acceptable |
| | | Fall | 25 | | Uncomfortable | 34 | | Unacceptable |
| | | Winter | 28 | | Dangerous | 36 | | Unacceptable |
| | | Annual | 26 | | Uncomfortable | 34 | | Unacceptable |
| | B | Spring | 21 | -19% | Uncomfortable | 30 | -14% | Acceptable |
| | | Summer | 16 | -30% | Walking | 24 | -17% | Acceptable |
| | | Fall | 19 | -24% | Walking | 29 | -15% | Acceptable |
| | | Winter | 21 | -25% | Uncomfortable | 32 | -11% | Unacceptable |
| | | Annual | 20 | -23% | Uncomfortable | 30 | -12% | Acceptable |
| 31 | A | Spring | 23 | | Uncomfortable | 31 | | Acceptable |
| | | Summer | 19 | | Walking | 25 | | Acceptable |
| | | Fall | 22 | | Uncomfortable | 30 | | Acceptable |
| | | Winter | 24 | | Uncomfortable | 32 | | Unacceptable |
| | | Annual | 22 | | Uncomfortable | 30 | | Acceptable |
| | B | Spring | 21 | | Uncomfortable | 32 | | Unacceptable |
| | | Summer | 18 | | Walking | 27 | | Acceptable |
| | | Fall | 21 | | Uncomfortable | 31 | | Acceptable |
| | | Winter | 22 | | Uncomfortable | 34 | | Unacceptable |
| | | Annual | 21 | | Uncomfortable | 32 | | Unacceptable |
| 32 | A | Spring | 17 | | Walking | 26 | | Acceptable |
| | | Summer | 14 | | Standing | 21 | | Acceptable |
| | | Fall | 16 | | Walking | 25 | | Acceptable |
| | | Winter | 18 | | Walking | 27 | | Acceptable |
| | | Annual | 17 | | Walking | 26 | | Acceptable |
| | B | Spring | 23 | +35% | Uncomfortable | 32 | +23% | Unacceptable |
| | | Summer | 19 | +36% | Walking | 27 | +29% | Acceptable |
| | | Fall | 22 | +38% | Uncomfortable | 31 | +24% | Acceptable |
| | | Winter | 24 | +33% | Uncomfortable | 35 | +30% | Unacceptable |
| | | Annual | 22 | +29% | Uncomfortable | 32 | +23% | 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

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:** Mean Speed and Effective Gust Categories – Multiple Seasons

| BRA Criteria | | | Mean Wind Speed | | | Effective Gust Wind Speed | | |
|---|---|---|---|---|---|---|---|---|
| Loc. | Config. | Season | Speed(mph) | %Change | RATING | Speed(mph) | %Change | RATING |
| 33 | A | Spring | 19 | | Walking | 27 | | Acceptable |
| | | Summer | 17 | | Walking | 23 | | Acceptable |
| | | Fall | 18 | | Walking | 26 | | Acceptable |
| | | Winter | 20 | | Uncomfortable | 28 | | Acceptable |
| | | Annual | 18 | | Walking | 26 | | Acceptable |
| | B | Spring | 14 | -26% | Standing | 23 | -15% | Acceptable |
| | | Summer | 12 | -29% | Sitting | 20 | -13% | Acceptable |
| | | Fall | 14 | -22% | Standing | 22 | -15% | Acceptable |
| | | Winter | 15 | -25% | Standing | 24 | -14% | Acceptable |
| | | Annual | 14 | -22% | Standing | 23 | -12% | Acceptable |
| 34 | A | Spring | 22 | | Uncomfortable | 31 | | Acceptable |
| | | Summer | 17 | | Walking | 24 | | Acceptable |
| | | Fall | 21 | | Uncomfortable | 29 | | Acceptable |
| | | Winter | 22 | | Uncomfortable | 31 | | Acceptable |
| | | Annual | 21 | | Uncomfortable | 29 | | Acceptable |
| | B | Spring | 19 | -14% | Walking | 27 | -13% | Acceptable |
| | | Summer | 13 | -24% | Standing | 20 | -17% | Acceptable |
| | | Fall | 17 | -19% | Walking | 25 | -14% | Acceptable |
| | | Winter | 17 | -23% | Walking | 25 | -19% | Acceptable |
| | | Annual | 17 | -19% | Walking | 25 | -14% | Acceptable |
| 35 | A | Spring | 22 | | Uncomfortable | 31 | | Acceptable |
| | | Summer | 17 | | Walking | 25 | | Acceptable |
| | | Fall | 21 | | Uncomfortable | 30 | | Acceptable |
| | | Winter | 23 | | Uncomfortable | 33 | | Unacceptable |
| | | Annual | 21 | | Uncomfortable | 30 | | Acceptable |
| | B | Spring | 18 | -18% | Walking | 27 | -13% | Acceptable |
| | | Summer | 14 | -18% | Standing | 21 | -16% | Acceptable |
| | | Fall | 17 | -19% | Walking | 25 | -17% | Acceptable |
| | | Winter | 19 | -17% | Walking | 28 | -15% | Acceptable |
| | | Annual | 17 | -19% | Walking | 26 | -13% | Acceptable |
| 36 | A | Spring | 13 | | Standing | 22 | | Acceptable |
| | | Summer | 11 | | Sitting | 18 | | Acceptable |
| | | Fall | 13 | | Standing | 21 | | Acceptable |
| | | Winter | 14 | | Standing | 24 | | Acceptable |
| | | Annual | 13 | | Standing | 22 | | Acceptable |
| | B | Spring | 17 | +31% | Walking | 27 | +23% | Acceptable |
| | | Summer | 15 | +36% | Standing | 24 | +33% | Acceptable |
| | | Fall | 17 | +31% | Walking | 27 | +29% | Acceptable |
| | | Winter | 19 | +36% | Walking | 30 | +25% | Acceptable |
| | | Annual | 17 | +31% | Walking | 27 | +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

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 |

RWDI
CONSULTING ENGINEERS & SCIENTISTS

**Table 1:** Mean Speed and Effective Gust Categories – Multiple Seasons

| BRA Criteria | | | Mean Wind Speed | | | Effective Gust Wind Speed | | |
|---|---|---|---|---|---|---|---|---|
| Loc. | Config. | Season | Speed(mph) | %Change | RATING | Speed(mph) | %Change | RATING |
| 37 | A | Spring | 25 | | Uncomfortable | 31 | | Acceptable |
| | | Summer | 18 | | Walking | 23 | | Acceptable |
| | | Fall | 23 | | Uncomfortable | 28 | | Acceptable |
| | | Winter | 24 | | Uncomfortable | 30 | | Acceptable |
| | | Annual | 23 | | Uncomfortable | 29 | | Acceptable |
| | B | Spring | 23 | | Uncomfortable | 29 | | Acceptable |
| | | Summer | 17 | | Walking | 21 | | Acceptable |
| | | Fall | 21 | | Uncomfortable | 26 | | Acceptable |
| | | Winter | 22 | | Uncomfortable | 28 | | Acceptable |
| | | Annual | 21 | | Uncomfortable | 27 | | Acceptable |
| 38 | A | Spring | 21 | | Uncomfortable | 27 | | Acceptable |
| | | Summer | 16 | | Walking | 21 | | Acceptable |
| | | Fall | 19 | | Walking | 25 | | Acceptable |
| | | Winter | 21 | | Uncomfortable | 28 | | Acceptable |
| | | Annual | 19 | | Walking | 26 | | Acceptable |
| | B | Spring | 19 | | Walking | 26 | | Acceptable |
| | | Summer | 15 | | Standing | 20 | | Acceptable |
| | | Fall | 17 | -11% | Walking | 23 | | Acceptable |
| | | Winter | 19 | | Walking | 26 | | Acceptable |
| | | Annual | 18 | | Walking | 24 | | Acceptable |
| 39 | A | Spring | 16 | | Walking | 22 | | Acceptable |
| | | Summer | 12 | | Sitting | 17 | | Acceptable |
| | | Fall | 14 | | Standing | 21 | | Acceptable |
| | | Winter | 16 | | Walking | 23 | | Acceptable |
| | | Annual | 15 | | Standing | 21 | | Acceptable |
| | B | Spring | 15 | | Standing | 22 | | Acceptable |
| | | Summer | 12 | | Sitting | 17 | | Acceptable |
| | | Fall | 14 | | Standing | 21 | | Acceptable |
| | | Winter | 15 | | Standing | 23 | | Acceptable |
| | | Annual | 14 | | Standing | 21 | | Acceptable |
| 40 | A | Spring | 22 | | Uncomfortable | 30 | | Acceptable |
| | | Summer | 17 | | Walking | 24 | | Acceptable |
| | | Fall | 20 | | Uncomfortable | 28 | | Acceptable |
| | | Winter | 22 | | Uncomfortable | 31 | | Acceptable |
| | | Annual | 21 | | Uncomfortable | 29 | | Acceptable |
| | B | Spring | 24 | | Uncomfortable | 34 | +13% | Unacceptable |
| | | Summer | 21 | +24% | Uncomfortable | 29 | +21% | Acceptable |
| | | Fall | 23 | +15% | Uncomfortable | 33 | +18% | Unacceptable |
| | | Winter | 26 | +18% | Uncomfortable | 36 | +16% | Unacceptable |
| | | Annual | 24 | +14% | Uncomfortable | 34 | +17% | 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

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:** Mean Speed and Effective Gust Categories – Multiple Seasons

| BRA Criteria | | | Mean Wind Speed | | | Effective Gust Wind Speed | | |
|---|---|---|---|---|---|---|---|---|
| Loc. | Config. | Season | Speed(mph) | %Change | RATING | Speed(mph) | %Change | RATING |
| 41 | A | Spring | 15 | | Standing | 24 | | Acceptable |
| | | Summer | 12 | | Sitting | 19 | | Acceptable |
| | | Fall | 14 | | Standing | 22 | | Acceptable |
| | | Winter | 15 | | Standing | 24 | | Acceptable |
| | | Annual | 14 | | Standing | 23 | | Acceptable |
| | B | Spring | 24 | +60% | Uncomfortable | 33 | +38% | Unacceptable |
| | | Summer | 21 | +75% | Uncomfortable | 28 | +47% | Acceptable |
| | | Fall | 23 | +64% | Uncomfortable | 32 | +45% | Unacceptable |
| | | Winter | 26 | +73% | Uncomfortable | 35 | +46% | Unacceptable |
| | | Annual | 24 | +71% | Uncomfortable | 32 | +39% | Unacceptable |
| 42 | A | Spring | 13 | | Standing | 21 | | Acceptable |
| | | Summer | 11 | | Sitting | 17 | | Acceptable |
| | | Fall | 13 | | Standing | 20 | | Acceptable |
| | | Winter | 14 | | Standing | 22 | | Acceptable |
| | | Annual | 13 | | Standing | 20 | | Acceptable |
| | B | Spring | 22 | +69% | Uncomfortable | 29 | +38% | Acceptable |
| | | Summer | 19 | +73% | Walking | 25 | +47% | Acceptable |
| | | Fall | 21 | +62% | Uncomfortable | 28 | +40% | Acceptable |
| | | Winter | 22 | +57% | Uncomfortable | 30 | +36% | Acceptable |
| | | Annual | 21 | +62% | Uncomfortable | 28 | +40% | Acceptable |
| 43 | A | Spring | 13 | | Standing | 19 | | Acceptable |
| | | Summer | 9 | | Sitting | 14 | | Acceptable |
| | | Fall | 12 | | Sitting | 17 | | Acceptable |
| | | Winter | 12 | | Sitting | 18 | | Acceptable |
| | | Annual | 12 | | Sitting | 17 | | Acceptable |
| | B | 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 |
| 44 | A | Spring | 20 | | Uncomfortable | 28 | | Acceptable |
| | | Summer | 14 | | Standing | 20 | | Acceptable |
| | | Fall | 17 | | Walking | 25 | | Acceptable |
| | | Winter | 18 | | Walking | 26 | | Acceptable |
| | | Annual | 17 | | Walking | 25 | | Acceptable |
| | B | Spring | 20 | | Uncomfortable | 28 | | Acceptable |
| | | Summer | 14 | | Standing | 20 | | Acceptable |
| | | Fall | 17 | | Walking | 25 | | Acceptable |
| | | Winter | 18 | | Walking | 26 | | Acceptable |
| | | Annual | 18 | | Walking | 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 | Comfortable for Standing: | > 12 and ≤ 15 mph | Unacceptable: | > 31 mph |
| | Comfortable for Walking: | > 15 and ≤ 19 mph | | |
| | Uncomfortable for Walking: | > 19 and ≤ 27 mph | | |
| | Dangerous Conditions: | > 27 mph | | |

RWDI
CONSULTING ENGINEERS & SCIENTISTS

**Table 1:** Mean Speed and Effective Gust Categories – Multiple Seasons

| BRA Criteria | | | Mean Wind Speed | | | Effective Gust Wind Speed | | |
|---|---|---|---|---|---|---|---|---|
| Loc. | Config. | Season | Speed(mph) | %Change | RATING | Speed(mph) | %Change | RATING |
| 45 | A | Spring | 18 | | Walking | 26 | | Acceptable |
| | | Summer | 14 | | Standing | 22 | | Acceptable |
| | | Fall | 16 | | Walking | 24 | | Acceptable |
| | | Winter | 17 | | Walking | 25 | | Acceptable |
| | | Annual | 17 | | Walking | 24 | | Acceptable |
| | B | Spring | 22 | +22% | Uncomfortable | 29 | +12% | Acceptable |
| | | Summer | 16 | +14% | Walking | 24 | | Acceptable |
| | | Fall | 19 | +19% | Walking | 26 | | Acceptable |
| | | Winter | 21 | +24% | Uncomfortable | 28 | +12% | Acceptable |
| | | Annual | 20 | +18% | Uncomfortable | 27 | +12% | Acceptable |
| 46 | A | Spring | 17 | | Walking | 25 | | Acceptable |
| | | Summer | 14 | | Standing | 21 | | Acceptable |
| | | Fall | 16 | | Walking | 24 | | Acceptable |
| | | Winter | 17 | | Walking | 26 | | Acceptable |
| | | Annual | 16 | | Walking | 24 | | Acceptable |
| | B | Spring | 18 | | Walking | 25 | | Acceptable |
| | | Summer | 15 | | Standing | 21 | | Acceptable |
| | | Fall | 17 | | Walking | 24 | | Acceptable |
| | | Winter | 18 | | Walking | 26 | | Acceptable |
| | | Annual | 17 | | Walking | 24 | | Acceptable |
| 47 | A | Spring | 15 | | Standing | 27 | | Acceptable |
| | | Summer | 13 | | Standing | 24 | | Acceptable |
| | | Fall | 14 | | Standing | 25 | | Acceptable |
| | | Winter | 14 | | Standing | 24 | | Acceptable |
| | | Annual | 14 | | Standing | 25 | | Acceptable |
| | B | Spring | 15 | | Standing | 26 | | Acceptable |
| | | Summer | 13 | | Standing | 23 | | Acceptable |
| | | Fall | 14 | | Standing | 24 | | Acceptable |
| | | Winter | 14 | | Standing | 24 | | Acceptable |
| | | Annual | 14 | | Standing | 24 | | Acceptable |
| 48 | A | Spring | 16 | | Walking | 25 | | Acceptable |
| | | Summer | 13 | | Standing | 21 | | Acceptable |
| | | Fall | 15 | | Standing | 24 | | Acceptable |
| | | Winter | 16 | | Walking | 25 | | Acceptable |
| | | Annual | 15 | | Standing | 24 | | Acceptable |
| | B | Spring | 19 | +19% | Walking | 28 | +12% | Acceptable |
| | | Summer | 15 | +15% | Standing | 22 | | Acceptable |
| | | Fall | 18 | +20% | Walking | 26 | | Acceptable |
| | | Winter | 19 | +19% | Walking | 28 | +12% | Acceptable |
| | | Annual | 18 | +20% | 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

A – No Build
B – Build

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 |

RWDI
CONSULTING ENGINEERS & SCIENTISTS

**Table 1:** Mean Speed and Effective Gust Categories – Multiple Seasons

| BRA Criteria | | | Mean Wind Speed | | | Effective Gust Wind Speed | | |
|---|---|---|---|---|---|---|---|---|
| Loc. | Config. | Season | Speed(mph) | %Change | RATING | Speed(mph) | %Change | RATING |
| 49 | A | Spring | 17 | | Walking | 27 | | Acceptable |
| | | Summer | 14 | | Standing | 21 | | Acceptable |
| | | Fall | 15 | | Standing | 24 | | Acceptable |
| | | Winter | 17 | | Walking | 27 | | Acceptable |
| | | Annual | 16 | | Walking | 25 | | Acceptable |
| | B | Spring | 22 | +29% | Uncomfortable | 30 | +11% | Acceptable |
| | | Summer | 16 | +14% | Walking | 23 | | Acceptable |
| | | Fall | 20 | +33% | Uncomfortable | 28 | +17% | Acceptable |
| | | Winter | 21 | +24% | Uncomfortable | 30 | +11% | Acceptable |
| | | Annual | 20 | +25% | Uncomfortable | 28 | +12% | Acceptable |
| 50 | A | Spring | 18 | | Walking | 26 | | Acceptable |
| | | Summer | 14 | | Standing | 21 | | Acceptable |
| | | Fall | 16 | | Walking | 24 | | Acceptable |
| | | Winter | 18 | | Walking | 26 | | Acceptable |
| | | Annual | 17 | | Walking | 24 | | Acceptable |
| | B | Spring | 20 | +11% | Uncomfortable | 28 | | Acceptable |
| | | Summer | 15 | | Standing | 22 | | Acceptable |
| | | Fall | 19 | +19% | Walking | 26 | | Acceptable |
| | | Winter | 20 | +11% | Uncomfortable | 29 | +12% | Acceptable |
| | | Annual | 19 | +12% | Walking | 27 | +12% | Acceptable |
| 51 | A | Spring | 15 | | Standing | 23 | | Acceptable |
| | | Summer | 12 | | Sitting | 18 | | Acceptable |
| | | Fall | 14 | | Standing | 22 | | Acceptable |
| | | Winter | 16 | | Walking | 24 | | Acceptable |
| | | Annual | 15 | | Standing | 22 | | Acceptable |
| | B | Spring | 21 | +40% | Uncomfortable | 29 | +26% | Acceptable |
| | | Summer | 16 | +33% | Walking | 22 | +22% | Acceptable |
| | | Fall | 19 | +36% | Walking | 27 | +23% | Acceptable |
| | | Winter | 21 | +31% | Uncomfortable | 30 | +25% | Acceptable |
| | | Annual | 20 | +33% | Uncomfortable | 27 | +23% | Acceptable |
| 52 | A | Spring | 12 | | Sitting | 20 | | Acceptable |
| | | Summer | 10 | | Sitting | 16 | | Acceptable |
| | | Fall | 11 | | Sitting | 19 | | Acceptable |
| | | Winter | 13 | | Standing | 21 | | Acceptable |
| | | Annual | 12 | | Sitting | 20 | | Acceptable |
| | B | Spring | 15 | +25% | Standing | 24 | +20% | Acceptable |
| | | Summer | 14 | +40% | Standing | 20 | +25% | Acceptable |
| | | Fall | 15 | +36% | Standing | 22 | +16% | Acceptable |
| | | Winter | 16 | +23% | Walking | 24 | +14% | Acceptable |
| | | Annual | 15 | +25% | Standing | 23 | +15% | 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

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 |

RWDI
CONSULTING ENGINEERS & SCIENTISTS

**Table 1:** Mean Speed and Effective Gust Categories – Multiple Seasons

| BRA Criteria | | | Mean Wind Speed | | | Effective Gust Wind Speed | | |
|---|---|---|---|---|---|---|---|---|
| Loc. | Config. | Season | Speed(mph) | %Change | RATING | Speed(mph) | %Change | RATING |
| 53 | A | Spring | 16 | | Walking | 23 | | Acceptable |
| | | Summer | 12 | | Sitting | 18 | | Acceptable |
| | | Fall | 14 | | Standing | 22 | | Acceptable |
| | | Winter | 15 | | Standing | 23 | | Acceptable |
| | | Annual | 14 | | Standing | 22 | | Acceptable |
| | B | Spring | 15 | | Standing | 23 | | Acceptable |
| | | Summer | 12 | | Sitting | 18 | | Acceptable |
| | | Fall | 14 | | Standing | 22 | | Acceptable |
| | | Winter | 15 | | Standing | 24 | | Acceptable |
| | | Annual | 14 | | Standing | 22 | | Acceptable |
| 54 | A | Spring | 18 | | Walking | 27 | | Acceptable |
| | | Summer | 14 | | Standing | 21 | | Acceptable |
| | | Fall | 17 | | Walking | 26 | | Acceptable |
| | | Winter | 19 | | Walking | 30 | | Acceptable |
| | | Annual | 18 | | Walking | 27 | | Acceptable |
| | B | Spring | 18 | | Walking | 27 | | Acceptable |
| | | Summer | 14 | | Standing | 21 | | Acceptable |
| | | Fall | 17 | | Walking | 26 | | Acceptable |
| | | Winter | 19 | | Walking | 30 | | Acceptable |
| | | Annual | 18 | | Walking | 27 | | 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

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 |

# Appendix B

Climate Change Checklist

# Climate Change Preparedness and Resiliency Checklist for New Construction

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

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

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

## Climate Change Analysis and Information Sources:

1. Northeast Climate Impacts Assessment (www.climatechoices.org/ne/)
2. USGCRP 2009 (http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts/)
3. Army Corps of Engineers guidance on sea level rise (http://planning.usace.army.mil/toolbox/library/ECs/EC11652212Nov2011.pdf)
4. Proceeding of the National Academy of Science, "Global sea level rise linked to global temperature", Vermeer and Rahmstorf, 2009 (http://www.pnas.org/content/early/2009/12/04/0907765106.full.pdf)
5. "Hotspot of accelerated sea-level rise on the Atlantic coast of North America", Asbury H. Sallenger Jr*, Kara S. Doran and Peter A. Howd, 2012 (http://www.bostonredevelopmentauthority.org/planning/Hotspot of Accelerated Sea-level Rise 2012.pdf)
6. "Building Resilience in Boston": Best Practices for Climate Change Adaptation and Resilience for Existing Buildings, Linnean Solutions, The Built Environment Coalition, The Resilient Design Institute, 2103 (http://www.greenribboncommission.org/downloads/Building_Resilience_in_Boston_SML.pdf)

## Checklist

Please respond to all of the checklist questions to the fullest extent possible. For projects that respond "Yes" to any of the D.1 – Sea-Level Rise and Storms, Location Description and Classification questions, please respond to all of the remaining Section D questions.

Checklist responses are due at the time of initial project filing or Notice of Project Change and final filings just prior seeking Final BRA Approval. A PDF of your response to the Checklist should be submitted to the Boston Redevelopment Authority via your project manager.

**Please Note:** When initiating a new project, please visit the BRA web site for the most current Climate Change Preparedness & Resiliency Checklist.

## A.1 - Project Information

| | |
|---|---|
| Project Name: | **Waterside Place Phase 1B** |
| Project Address Primary: | **501 Congress Street Boston, MA** |
| Project Address Additional: | |
| Project Contact (name / Title / Company / email / phone): | **Hank Suominen, Senior Development Project Manager, Commercial Construction Consulting, Inc., 313 Congress Street, Boston, MA 02210,** 617-312-6800, hsuominen@c3boston.com |

## A.2 - Team Description

| | |
|---|---|
| Owner / Developer: | **The Drew Company** |
| Architect: | **CBT Architects** |
| Engineer (building systems): | **WSP** |
| Sustainability / LEED: | |
| Permitting: | **Epsilon Associates** |
| Construction Management: | **Suffolk Construction Company** |
| Climate Change Expert: | |

## A.3 - Project Permitting and Phase

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

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

## A.4 - Building Classification and Description

| | |
|---|---|
| List the principal Building Uses: | **Residential Apartments** |
| List the First Floor Uses: | ***Retail, lobby, offices, utility spaces*** |

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

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

Describe the building?

| | | | |
|---|---|---|---|
| Site Area: | ***26,681** SF* | Building Area: | ***313,842** SF* |
| Building Height: | ***240** Ft.* | Number of Stories: | ***23** Flrs.* ***Plus Mechanical Penthouse*** |
| First Floor Elevation (reference Boston City Base): | ***17.0** Elev.* | Are there below grade spaces/levels, if yes how many: | *No* |

## A.5 - Green Building

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

| | | | | |
|---|---|---|---|---|
| Select by Primary Use: | ***New Construction*** | 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* | Certified: | *Yes* |

## A.6 - Building Energy

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

| | | | |
|---|---|---|---|
| Electric: | ***2500*** *(kW)* | Heating: | ***8*** *(MMBtu/hr)* |
| What is the planned building Energy Use Intensity: | ***50*** *(kbut/SF or kWh/SF)* | Cooling: | ***600*** *(Tons/hr)* |

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

| | | | |
|---|---|---|---|
| Electric: | ***400*** *(kW)* | Heating: | ***0.5*** *(MMBtu/hr)* |
| | | Cooling: | ***10*** *(Tons/hr)* |

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

| | | | | |
|---|---|---|---|---|
| Electrical Generation: | ***500*** *(kW)* | | Fuel Source: | ***Diesel*** |
| System Type and Number of Units: | **1** Combustion Engine | Gas Turbine | Combine Heat and Power | ***1*** *(Units)* |

---

## B - Extreme Weather and Heat Events

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

## B.1 - Analysis

What is the full expected life of the project?

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

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

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

What time span of future Climate Conditions was considered?

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

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

| |
|---|
| *8/ 91 Deg.* |

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

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

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

| | |
|---|---|
| *30-90 Days* | *1 Events / 5yr.* |

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

| | | |
|---|---|---|
| *45 Inches / yr.* | *6.4 Inches/24 hr* | *1 Events /10yr.* |

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

| | | |
|---|---|---|
| *105 mph Peak Wind* | *10 Hours* | *1 Events / 4yr.* |

## 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 %* |
| How is performance determined: | Energy Model with ASHRAE 90.1-2007 baseline |

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

| | | | | |
|---|---|---|---|---|
| Select all appropriate: | *High performance building envelop* | *High performance lighting & controls* | Building day lighting | *EnergyStar equip. / appliances* |
| | *High performance HVAC equipment* | *Energy recovery ventilation* | No active cooling | No active heating |
| Describe any added measures: | Variable Speed Pumping systems, condensing boilers, energy recovery | | | |

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

| | | | |
|---|---|---|---|
| Roof: | *R = 25* | Walls / Curtain Wall Assembly: | *R =13* |
| Foundation: | *R = 10.6* | Basement / Slab: | *R =19* |
| Windows: | *R = / U =0.36* | Doors: | *R = / U =0.036* |

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 | Building will be | Connected to | Distributed |

| | | | |
|---|---|---|---|
| distributed electrical | Smart Grid ready | distributed steam, hot, chilled water | thermal energy ready |

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

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

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

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

What measures will the project employ to reduce urban heat-island effect?

| | | | | |
|---|---|---|---|---|
| Select all appropriate: | High reflective paving materials | Shade trees & shrubs | ***High reflective roof materials*** | ***Vegetated roofs*** |
| Describe other strategies: | | | | |

What measures will the project employ to accommodate rain events and more rain fall?

| | | | | |
|---|---|---|---|---|
| Select all appropriate: | On-site retention systems & ponds | ***Infiltration galleries & areas*** | vegetated water capture systems | ***Vegetated roofs*** |
| Describe other strategies: | | | | |

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

| | | | | |
|---|---|---|---|---|
| Select all appropriate: | ***Hardened building structure & elements*** | Buried utilities & hardened infrastructure | Hazard removal & protective landscapes | Soft & permeable surfaces (water infiltration) |
| Describe other strategies: | | | | |

---

## C - Sea-Level Rise and Storms

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

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

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

| |
|---|
| *Yes* |

Describe site conditions?

| | |
|---|---|
| Site Elevation – Low/High Points: | *Boston City Base* ***17.0*** *Elev.( Ft.)* |
| Building Proximity to Water: | ***560*** *Ft.* |

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

| | | | |
|---|---|---|---|
| Coastal Zone: | *Yes* | Velocity Zone: | *No* |
| Flood Zone: | *No* | Area Prone to Flooding: | *No* |

Will the 2013 Preliminary FEMA Flood Insurance Rate Maps or future floodplain delineation updates due to Climate Change result in a change of the classification of the site or building location?

| | | | |
|---|---|---|---|
| 2013 FEMA Prelim. FIRMs: | *Yes / No* | Future floodplain delineation updates: | *Yes / No* |

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

| |
|---|
| ***320*** *Ft.* |

***If you answered YES to any of the above Location Description and Classification questions, please complete the following questions.*** ***Otherwise you have completed the questionnaire; thank you!***

## C - Sea-Level Rise and Storms

This section explores how a project responds to Sea-Level Rise and / or increase in storm frequency or severity.

### C.2 - Analysis

How were impacts from higher sea levels and more frequent and extreme storm events analyzed:

| | | | |
|---|---|---|---|
| Sea Level Rise: | ***3.92*** *Ft.* | Frequency of storms: | ***2*** *per year* |

### C.3 - Building Flood Proofing

Describe any strategies to limit storm and flood damage and to maintain functionality during an extended periods of disruption.

What will be the Building Flood Proof Elevation and First Floor Elevation:

| | | | |
|---|---|---|---|
| Flood Proof Elevation: | *Boston City Base* ***23.3*** *Elev.( Ft.)* | First Floor Elevation: | *Boston City Base* ***17.0*** *Elev. ( Ft.)* |

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

| | | | |
|---|---|---|---|
| | ***Yes*** | If Yes, to what elevation | *Boston City Base* ***23.3*** *Elev. ( Ft.)* |
| If Yes, describe: | **Removable door barriers** | | |

What measures will be taken to ensure the integrity of critical building systems during a flood or severe storm event:

| | | | |
|---|---|---|---|
| **Systems located above 1st Floor.**<br>**- Elevated 1st floor** | **Water tight utility conduits** | **Waste water back flow prevention** | **Storm water back flow prevention** |

Were the differing effects of fresh water and salt water flooding considered:

| |
|---|
| *No* |

Will the project site / building(s) be accessible during periods of inundation or limited access to transportation:

| | | | |
|---|---|---|---|
| *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?

| | |
|---|---|
| *No* | |
| If Yes, describe: | |

Will the building remain occupiable without utility power during an extended period of inundation:

| | | |
|---|---|---|
| *No* | If Yes, for how long: | *days* |

Describe any additional strategies to addressing sea level rise and or sever storm impacts:

| |
|---|
| **Raised concrete floor level and creating perimeter curbs at ground level critical MEP spaces** |

## 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** | **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: | *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*** | Solar PV | Solar Thermal | Clean Energy / CHP System(s) |
| | | Potable water storage | Wastewater storage | ***Back up energy systems & fuel*** |
| Describe any specific or additional strategies: | | | | |

Thank you for completing the Boston Climate Change Resilience and Preparedness Checklist!

For questions or comments about this checklist or Climate Change Resiliency and Preparedness best practices, please contact: John.Dalzell.BRA@cityofboston.gov

# Appendix C

Accessibility Checklist

# Accessibility Checklist

(to be added to the BRA Development Review Guidelines)

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

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

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

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

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

## Accessibility Analysis Information Sources:

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

**Article 80 | ACCESSIBILTY CHECKLIST**

## Project Information

| | |
|---|---|
| Project Name: | Waterside Place Phase 1B |
| Project Address Primary: | 501 Congress Street Boston, MA |
| Project Address Additional: | |
| Project Contact (name / Title / Company / email / phone): | Hank Suominen, Senior Development Project Manager, Commercial Construction Consulting, Inc., 313 Congress Street, Boston, MA 02210, 617-312-6800, hsuominen@c3boston.com |

## Team Description

| | |
|---|---|
| Owner / Developer: | The Drew Company |
| Architect: | CBT Architects |
| Engineer (building systems): | WSP |
| Sustainability / LEED: | |
| Permitting: | Epsilon Associates |
| Construction Management: | Suffolk Construction Company |

## Project Permitting and Phase

At what phase is the project – at time of this questionnaire? NPC

| | | |
|---|---|---|
| PNF / Expanded PNF Submitted | Draft / Final Project Impact Report Submitted | BRA Board Approved |
| BRA Design Approved | Under Construction | Construction just completed: |

**Article 80 | ACCESSIBILTY CHECKLIST**

## Building Classification and Description

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

| | | | | |
|---|---|---|---|---|
| | ***Residential – One to Three Unit*** | Residential - Multi-unit, Four + | Institutional | Education |
| | Commercial | Office | Retail | Assembly |
| | Laboratory / Medical | Manufacturing / Industrial | Mercantile | Storage, Utility and Other |
| First Floor Uses (List) | *Retail, lobby, offices, utility spaces* | | | |

What is the Construction Type – select most appropriate type?

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

Describe the building?

| | | | |
|---|---|---|---|
| Site Area: | *26,681 SF* | Building Area: | *313,842 SF* |
| Building Height: | *240 Ft.* | Number of Stories: | *23 Flrs.*<br>*Plus Mechanical Penthouse* |
| First Floor Elevation: | *17 Elev.* | Are there below grade spaces: | *No* |

## Assessment of Existing Infrastructure for Accessibility:

This section explores the proximity to accessible transit lines and proximate institutions such as, but not limited to hospitals, elderly and disabled housing, and general neighborhood information. The proponent should identify how the area surrounding the development is accessible for people with mobility impairments and should analyze the existing condition of the accessible routes through sidewalk and pedestrian ramp reports.

| | |
|---|---|
| Provide a description of the development neighborhood and identifying characteristics. | The proposed building site is located in the center of the Seaport District. The Seaport District has several hotels, many restaurants and attractions. The South Boston Waterfront has numerous development projects under construction including new office towers and residential buildings. |

| | |
|---|---|
| List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter rail, subway, bus, etc. | The World Trade Center Silver Line station is adjacent to the proposed building and the station building is fully accessible. Multiple bus lines are available in front of the proposed building. |
| List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc. | None |
| Is the proposed development on a priority accessible route to a key public use facility? List the surrounding: government buildings, libraries, community centers and recreational facilities and other related facilities. | No |

## Surrounding Site Conditions – Existing:

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

| | |
|---|---|
| Are there sidewalks and pedestrian ramps existing at the development site? | Yes |
| ***If yes above***, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site. | There is an existing bituminous sidewalk along Congress Street and a concrete accessible ramp in relatively bad condition crossing Congress Street at the northeast corner of the 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. | No |
| Is the development site within a historic district? **If yes,** please identify. | No |

### Surrounding Site Conditions – Proposed

This section identifies the proposed condition of the walkways and pedestrian ramps in and around the development site. The width of the sidewalk contributes to the degree of comfort and enjoyment of walking along a street. Narrow sidewalks do not support lively pedestrian activity, and may create dangerous conditions that force people to walk in the street. Typically, a five foot wide Pedestrian Zone supports two people walking side by side or two wheelchairs passing each other. An eight foot wide Pedestrian Zone allows two pairs of people to comfortable pass each other, and a ten foot or wider Pedestrian Zone can support high volumes of pedestrians.

| | |
|---|---|
| Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? See: www.bostoncompletestreets.org | Yes, and per Massport Design Guidelines. |
| *If yes above*, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard. | The sidewalk most closely resembles Downtown Mixed-use. |
| What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone. | Frontage = 0', Pedestrian = 10.75', Furnishing = 4'. |
| 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? | Pedestrian zone will be concrete sidewalk, furnishing zone will be pavers and tree pits. All zones will be within a Massport-owned leased parcel. |
| 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? | Area is not subject to PIC jurisdiction as it is within Massport-owned land. |
| Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? | No |
| If yes above, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be? | |

## Proposed Accessible Parking:

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

| | |
|---|---|
| What is the total number of parking spaces provided at the development site parking lot or garage? | 71 Parking spaces on the second floor garage level |
| What is the total number of accessible spaces provided at the development site? | 3 Accessible parking spaces on the second floor garage level |
| 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? | Within the parking garage located at Floor 2 of the proposed building |
| Has a drop-off area been identified? **If yes,** will it be accessible? | See attached garage accessible route diagram for accessible drop off area. |
| Include a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations. Please include route distances. | See attached garage accessible route diagram. |

**Article 80 | ACCESSIBILTY CHECKLIST**

## Circulation and Accessible Routes:

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

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

| | |
|---|---|
| Provide a diagram of the accessible route connections through the site. | See attached accessible route diagram. |
| Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator. | All public areas of circulation through the building will be level, on multiple floors accessed by elevator. |
| Are the accessible entrance and the standard entrance integrated? | They are the same entrance. |
| 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. | TBD |
| Has an accessible routes way-finding and signage package been developed? If yes, please describe. | TBD |

## 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? | Approx. 312 apartments total, still in the design process |
| How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown? | All apartments will be for rent, Market Value vs. affordable breakdown TBD. |
| How many accessible units are being proposed? | 5% of the total number of units will be accessible “Group 2” units, in compliance with Massachusetts Regulation 521CMR |

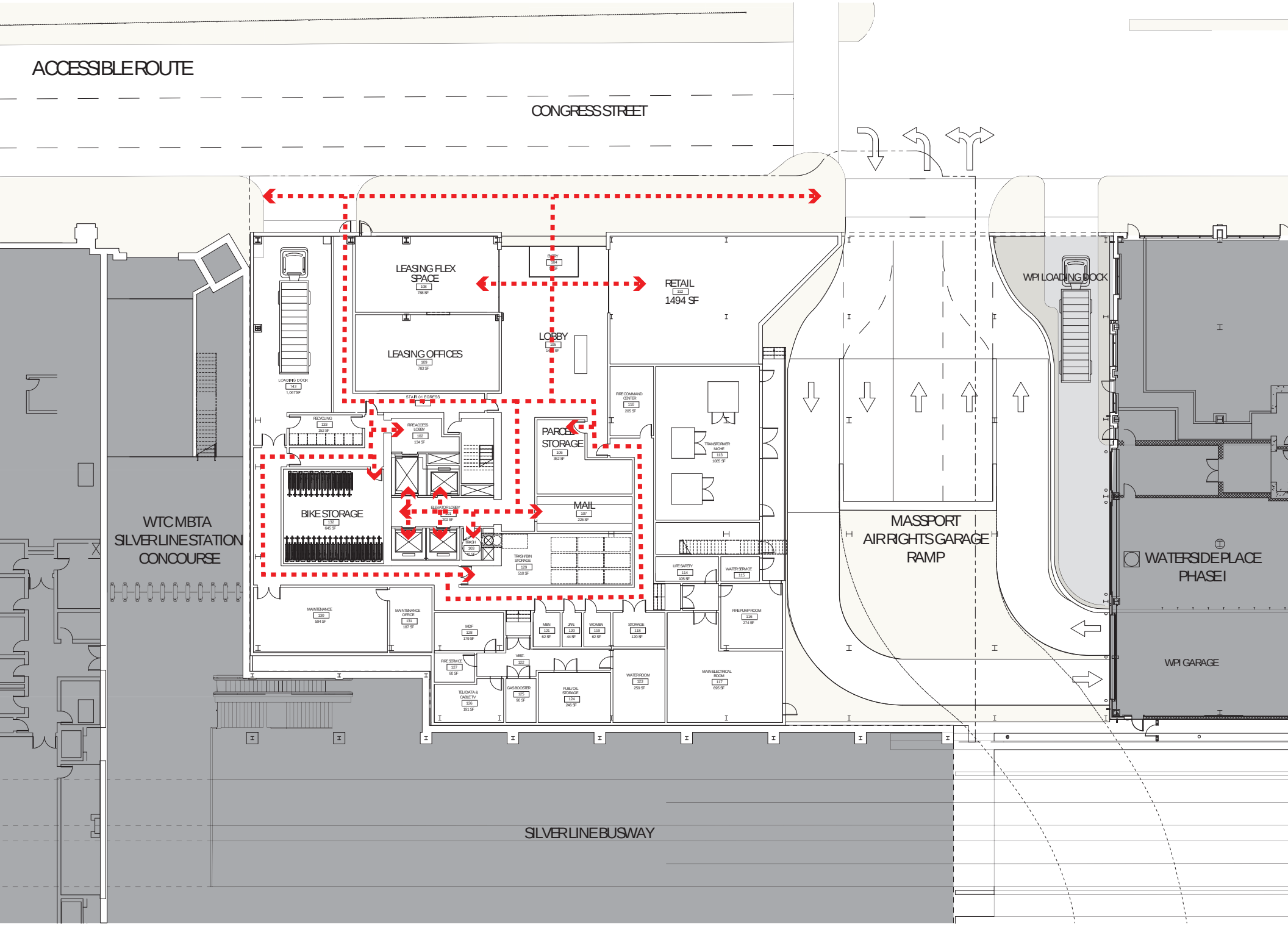
**Article 80 | ACCESSIBILTY CHECKLIST**

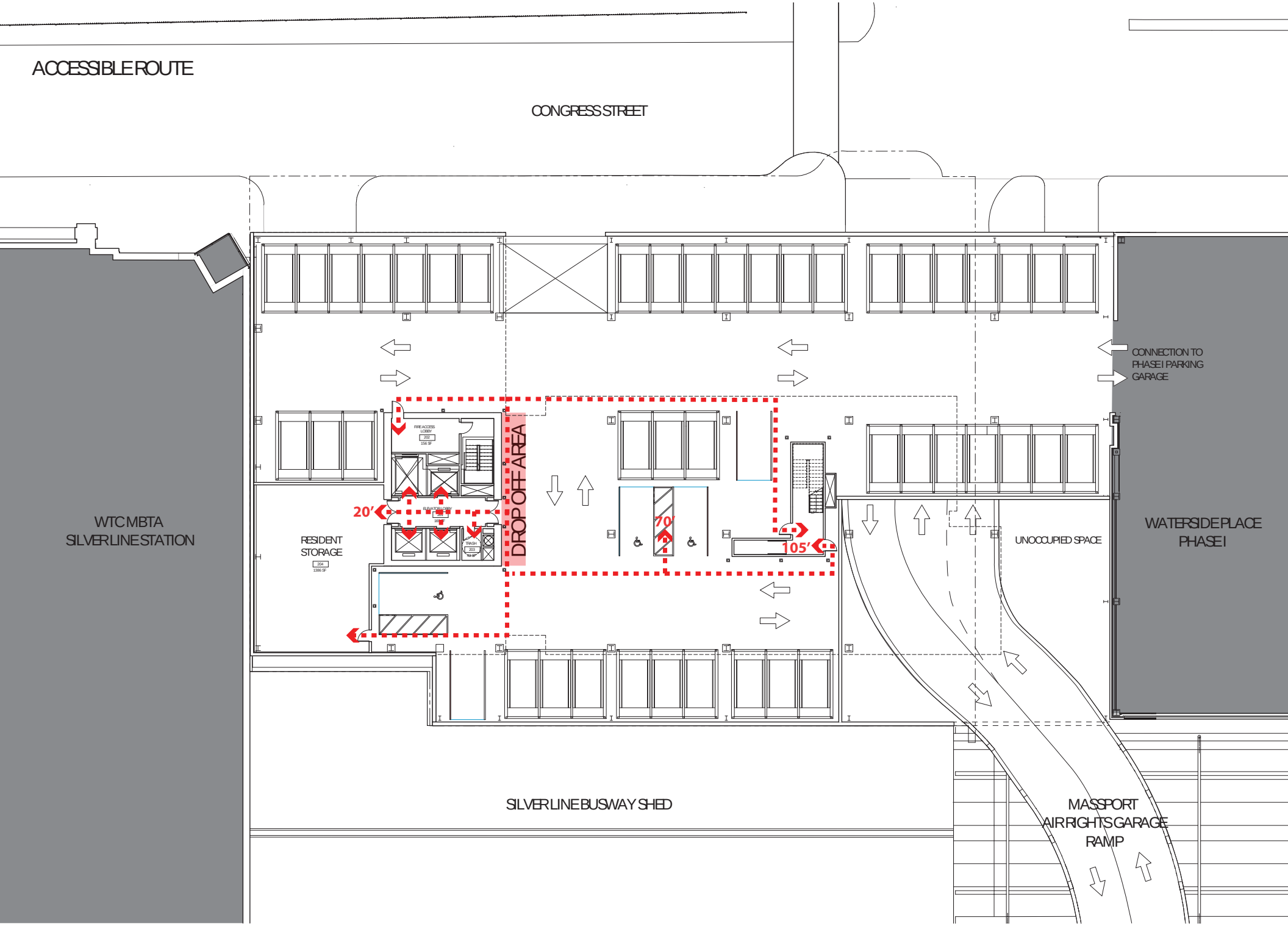
| | |
|---|---|
| Please provide plan and diagram of the accessible units. | TBD |
| How many accessible units will also be affordable? If none, please describe reason. | TBD |
| Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs at entry or step to balcony. **If yes,** please provide reason. | No. |
| Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor's Commission for Persons with Disabilities Advisory Board? | Not yet |
| Did the Advisory Board vote to support this project? **If no,** what recommendations did the Advisory Board give to make this project more accessible? | Not yet |

Thank you for completing the Accessibility Checklist!

For questions or comments about this checklist or accessibility practices, please contact:

kathryn.quigley@boston.gov | Mayors Commission for Persons with Disabilities


ACCESSIBLE ROUTE
CONGRESS STREET
LEASING FLEX SPACE
LEASING OFFICES
LOBBY
RETAIL
1494 SF
PARCEL STORAGE
MAIL
BIKE STORAGE
WTC MBTA SILVER LINE STATION CONCOURSE
MASSPORT AIR RIGHTS GARAGE RAMP
WPI LOADING DOCK
WATERSIDE PLACE PHASE I
WPI GARAGE
SILVER LINE BUSWAY


ACCESSIBLE ROUTE
CONGRESS STREET
WTC MBTA
SILVER LINE STATION
RESIDENT
STORAGE
204
1386 SF
FIRE ACCESS
LOBBY
202
156 SF
ELEVATOR LOBBY
TRASH
203
20'
DROP OFF AREA
70'
105'
CONNECTION TO
PHASE I PARKING
GARAGE
UNOCCUPIED SPACE
WATERSIDE PLACE
PHASE I
SILVER LINE BUSWAY SHED
MASSPORT
AIR RIGHTS GARAGE
RAMP