THE HYM INVESTMENT GROUP, LLC

SUFFOLK DOWNS
Phase 1 Project

Expanded Project Notification Form

DECEMBER 5, 2017

PREPARED BY
vhb

SUBMITTED TO
Boston Planning &
Development Agency

PROPONENT
The McClellan Highway
Development Company, LLC
c/o The HYM Investment Group, LLC
One Congress Street, 11th floor
Boston, MA 02114

IN ASSOCIATION WITH
DLA Piper
CBT Architects
Beals and Thomas, Inc.
Stoss Landscape Urbanism
LimnoTech
ARUP
SourceOne
Vertex
Haley & Aldrich

THE
HYM
INVESTMENT GROUP, LLC

December 5, 2017

Brian P. Golden, Director
Boston Planning and Development Agency
One City Hall Square
Boston, MA 02201

Re: **Suffolk Downs Redevelopment – Phase 1 Project**
Boston, MA

Dear Director Golden:

The HYM Investment Group, LLC ("HYM"), on behalf of The McClellan Highway Development Company, LLC ("MHDC" and together with HYM, collectively the "Proponent"), is pleased to submit the enclosed expanded Project Notification Form ("Phase 1 EPNF") for the construction of an approximately 520,000 square foot, two-building complex that constitutes the initial phase (the "Phase 1 Project") of a master plan project (the "Master Plan Project") for the creation of a new transit-oriented mixed-use community at the former Suffolk Downs horse racing facility located at 525 McClellan Highway in East Boston and Revere (the "Site"). The Phase 1 EPNF is being submitted to the Boston Planning and Development Agency ("BPDA") pursuant to Article 80 of the Boston Zoning Code (the "Boston Code").

The Phase 1 Project is located in the Suffolk Downs Economic Development Area of the East Boston Neighborhood District, which is governed by Article 53 of the Boston Code. The Boston Code identifies the Suffolk Downs Economic Development Area as a Special Study Overlay Area, and establishes the Boston portion of the Site as a potential location for a Planned Development Area ("PDA"). The Site was also recently identified in the Boston 2030 Plan as a key site for Boston's future growth and targeted for a new mixed-use development district.

The Site has also been identified by the City of Boston as its preferred potential location for Amazon's second corporate headquarters ("Amazon HQ2"). The Phase 1 Project is a critical component to the City of Boston's efforts to be selected for the Amazon HQ2 project. One of the requirements of the RFP issued by Amazon is for at least 500,000 square feet of office space that can be occupied by the end of 2019. In order to deliver the Phase 1 Project by 2019 and to unlock the substantial economic benefits of Amazon HQ2, the Proponent is requesting an expedited review and approval process for the Phase 1 Project. In particular, the Proponent is requesting that the BPDA, after reviewing the EPNF, together with public and agency comments, consider waiving further review of the Phase 1 Project pursuant to the Article 80B process.

Given the size of the Site, the location of the Phase 1 Project, and the immediate proximity of the MBTA Suffolk Downs Blue Line Station, we believe that the impacts of the Phase 1 Project on the surrounding neighborhood will be minimal, especially in light of the opportunities it will create. All vehicle access for the Phase 1 Project will be from Tomasello Road and via its existing access points to McClellan Highway (Route 1A) and Winthrop Avenue. The Phase 1 Project will not result in a net increase in parking on the Site. The Phase 1 Project will contain approximately 520 structured parking spaces, and an equal number of existing parking spaces on the Site will be removed from service when the Phase 1 Project is constructed. The Phase 1 Project will comply with all current applicable zoning requirements other than building height, for which zoning relief will be required. The Proponent is committing to design the Phase 1 Project to meet the standards for a LEED Gold building.

In order to allow the BPDA to consider expedited review for the Phase 1 Project, the Phase 1 EPNF contains extensive information that is typically not provided until later in the Article 80 process, such as a full traffic study, a full drainage study, and detailed technical evaluations of the Phase 1 Project for greenhouse gas impacts, energy utilization, climate change resiliency, and environmental impacts. As noted in the Phase 1 EPNF, the Proponent has met with the Boston Water and Sewer Commission to confirm that adequate water and sewer infrastructure exists to serve the Phase 1 Project.

As you know, we have separately filed a joint Expanded Project Notification Form/Expanded Environmental Notification Form ("Master Plan EENF/EPNF") for the entire Master Plan Project. The Master Plan EENF/EPNF, which was submitted on November 30, 2017, describes the Master Plan Project, of which the Phase 1 Project is the initial phase. The Master Plan EENF/EPNF and the Phase 1 EPNF will each be reviewed by the BPDA.

The Proponent will publish notice of submission of the Phase 1 EPNF, as required by Section 80A-2(3) coincident with the filing of this Phase 1 EPNF. Requests for copies of the Phase 1 EPNF should be directed to Lauren DeVoe at 617-607-0091 or via e-mail at ldevoe@vhb.com.

We look forward to working with you and your staff in your continuing review of the Phase 1 Project and Master Plan Project.

Sincerely,

Thomas N. O'Brien
The McClellan Highway Development Company, LLC
c/o The HYM Investment Group, LLC
One Congress Street, 11th Floor
Boston, MA 02114

Suffolk Downs Redevelopment Phase 1 Project

Boston, Massachusetts

SUBMITTED TO **Boston Redevelopment Authority, d/b/a Boston Planning and Development Agency**
One City Hall Square, 9th Floor
Boston, MA 02201

PROPONENT **The McClellan Highway Development Company, LLC**
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In association with:

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CBT Architects	SourceOne
Beals and Thomas, Inc.	Vertex
Stoss Landscape Urbanism	Haley & Aldrich
LimnoTech	

December 5, 2017

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APPENDICES

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Project Description and General Information

In accordance with Article 80B of the City of Boston Zoning Code and Enabling Act (the "Boston Code"), The McClellan Highway Development Company, LLC ("MHDC", or the "Proponent"), an affiliate of The HYM Investment Group, LLC ("HYM"), respectfully submits this Expanded Project Notification Form ("EPNF") for construction of an initial phase (the "Phase 1 Project") of a larger master plan project (the "Master Plan Project") for the creation of a new transit-oriented mixed-use community at the former Suffolk Downs horse racing facility located at 525 McClellan Highway in East Boston and Revere (the "Master Plan Project Site"). Refer to Figure 1.1 for a site location map.

The Master Plan Project Site has been identified by the City of Boston as a good potential location for Amazon's second corporate headquarters ("Amazon HQ2"), and the Phase 1 Project is proposed to meet Amazon's initial requirements respecting its development timetable. As part of its Request for Proposals ("RFP") for the Amazon HQ2, Amazon is seeking an initial approximately 500,000-square foot office building or buildings, and related infrastructure and open space improvements, to be delivered by the end of 2019. The Phase 1 Project includes an approximately 520,000-gross square foot office building with supporting corporate uses/amenities and up to 520 structured parking spaces, as well as related infrastructure and open space improvements. To meet Amazon's proposed schedule, the Proponent is seeking issuance of a Scoping Determination waiving further review on the Phase 1 Project by the BPDA pursuant to Section 80B-5.3(d) of the Boston Code.[1]

The Proponent has separately filed a joint Expanded Project Notification Form/Expanded Environmental Notification Form (the "Master Plan EENF/EPNF") for the entire Master Plan Project, submitted both to the BPDA pursuant to Section 80B-5 of the Boston Code and the Commonwealth of Massachusetts Secretary of the Executive Office of Energy and Environmental Affairs ("EEA") to initiate review under the Massachusetts Environmental Policy Act ("MEPA", M.G.L. c. 30, s.s. 61-62I) on November 30, 2017. The Master Plan EENF/EPNF was also submitted to the City of Revere for review in connection with its planning and zoning review of the portions

[1] Pursuant to Section 80B-5.3(d), the BPDA may authorize the Director to waive further review in the Scoping Determination if, upon review of the EPNF, and any additional materials and comments received by the BPDA, the BPDA finds that such EPNF adequately describes the impacts of the Phase 1 Project.

of the Master Plan Project located in Revere. The Master Plan EENF/EPNF and this EPNF for the Phase 1 Project will both be reviewed by the BPDA.

For context, this chapter provides a high-level overview of the Master Plan Project (which as noted is also being reviewed by the BPDA pursuant to the Master Plan EENF/EPNF), and then describes the existing site conditions, proposed redevelopment program and elements, and regulatory context associated with the Phase 1 Project. A summary of public benefits, agency and community outreach efforts, the identity of the development team, and the Proponent's request for the BPDA to waive further review of the Phase 1 Project in connection with the proposal to Amazon for its second headquarters campus made by the City of Boston and the City of Revere is also provided.

1.1 Master Plan Project Overview

Strategically located within the urban fabric of East Boston and Revere, the approximately 161-acre former Suffolk Downs thoroughbred horse racing facility owned by the Proponent is one of the largest development sites in the Northeast. The Master Plan Project Site provides the unique opportunity for a new transit-oriented mixed-use neighborhood with the ability to evolve with the ever-changing needs of the community and market conditions.

Overall, the Master Plan Project consists of approximately 11 million square feet ("MSF") of development in Boston (which equates to an approximately 2.3 floor area ratio) and approximately 5.5 MSF in Revere (which equates to an approximately 2.5 floor area ratio), all within many buildings to be constructed individually or in development groups over a 15- to 20-year period. In addition, as noted, the Master Plan Project Site has been identified by the City of Boston and the City of Revere as a great potential location for Amazon's second corporate headquarters. The Master Plan Project Site represents an extraordinary economic development opportunity for Boston, Revere, and the region with or without Amazon.

The proposed conceptual redevelopment plan, or Master Plan Project, involves redevelopment of the approximately 161-acre underutilized Master Plan Project Site, which is comprised of approximately 109 acres in East Boston and approximately 52 acres in Revere. Existing facilities at the Master Plan Project Site include the clubhouse, grandstand, thoroughbred horse racing track (the "race track") with infield, a vacant administration building, maintenance buildings, horse barns (many of which are dilapidated and in danger of falling) and extensive surface parking areas. The Boston portion of the Master Plan Project Site, including the Phase 1 Project Site is in the Suffolk Downs Economic Development Area ("EDA") of the East Boston Neighborhood District, which is governed by Article 53 of the Boston Code. The Boston Code identifies the Suffolk Downs EDA as a Special Study Overlay Area, and establishes the Boston portion of the Master Plan Project Site as a potential location for a Planned Development Area ("PDA"). The Master Plan Project Site was also recently identified as one of the future growth areas for Boston in the *Imagine Boston 2030*[2] city-wide plan and has long been thought of as a key area for economic development by the City of Revere.

Redevelopment of the Master Plan Project Site provides a unique opportunity to create additional housing, spur economic development, and improve connections between several adjoining neighborhoods. As outlined in the Master Plan Project EENF/EPNF, MHDC proposes that the Master Plan Project include various improvements and benefits for the area and City of Boston and the City of Revere, as follows:

- Development of a new neighborhood with an active, lively, and appropriate mix of uses (including residential, retail, office, lab, hotel, parking and other uses), connected and supported by new publicly-accessible open space and neighborhood retail, and civic spaces;
- Provision of an extensive approximately 40-acre publicly-accessible open space system, which will incorporate existing wetland features and both active and passive recreation areas;
- Incorporation of extensive ground-floor retail, including retail set within two retail squares, Belle Isle Square and Beachmont Square, and a connecting “Main Street” retail district;
- Construction of a new district attractive to employers of growing industries, which will enhance and expand job creation and economic opportunity;
- Incorporation of various kinds of housing to meet the needs of surrounding neighborhoods, including townhomes, apartments, condominiums, and senior housing;
- Application of transit-oriented-development (”TOD”) principles, through integration of the two existing adjacent MBTA Blue Line stations and alternative travel modes, including new bicycle paths, bicycle parking and public bikeshare stations, such as Hubway;
- Development of improved connections to adjacent neighborhoods of East Boston and Revere through the Master Plan Project Site, including along new open space and pedestrian and bicycle pathways; and
- Incorporation of forward-thinking climate change resiliency strategies intended to address predicted sea level rise and other impacts of climate change.

1.2 Master Plan Project Site History and Background

Once a coastal marshland, the Master Plan Project Site was originally filled through the early 20th century to accommodate a speculative residential development that was never realized. Instead, the Master Plan Project Site became a thoroughbred

[2] http://imagine.boston.gov/

horse racing complex in the 1930s. In its heyday in the 1930s, 40s and 50s, races typically attracted as many as 40,000 daily spectators and contained as many as 12,000 parking spaces. Since then, the race track complex has remained in continuous use to this date drawing as many as 24,000 spectators for horse races and other events. As such, the Master Plan Project Site avoided many of the historical industrial uses that occupied similar urban lands in Boston in the 20th century. However, given its historical high traffic destination and its location near Boston's downtown urban core, Suffolk Downs is directly and heavily served by existing mass transit, highways, open space and utility infrastructure networks. Today, while the Master Plan Project Site is set within the urban fabric of East Boston and Revere, large portions of the Master Plan Project Site are not publicly-accessible and are essentially cut-off from the surrounding neighborhoods.

The horse racing track and stable operations at the Master Plan Project Site are planned to cease at the time that construction commences for the first building on the Master Plan Project Site as part of the Phase 1 Project. With the anticipated closure of the existing horse racing complex, the Master Plan Project Site is perfectly positioned and ready for its next evolution and redevelopment that is fitting for the 21st Century.

1.2.1 Previous Redevelopment Plans

In November 2011, Governor Deval Patrick signed into law Chapter 194 of the Acts of 2011: An Act Establishing Expanded Gaming in the Commonwealth with the goal of economic investment and job creation in the Commonwealth. The Massachusetts Gaming Commission ("MGC") worked to fulfill its mandate to expand gaming by offering up to three gaming licenses within three separate geographic locations, one of which included the Boston metro area. To compete for the license, Sterling Suffolk Racecourse, LLC, MHDC's predecessor as owner of the Master Plan Project Site, filed an ENF in January 2013 and, subsequently, a DEIR/EPNF in September 2013 for review of the proposed Caesar's Resort at Suffolk Downs project. At the time of the initial filings, the proposed project included two host communities—Boston and Revere—requiring the casino proponent to negotiate agreements with both. As part of the public review process, it was concluded that the casino project would have one host community—Revere—and that casino facilities would be planned for the Revere portion of the Master Plan Project Site only. Therefore, to document the change in site and project changes to accommodate gaming facilities solely within Revere, a Notice of Project Change ("NPC") was filed in January 2014 by a new proponent, Mohegan Sun Massachusetts ("MSM"). The revised casino development consisted of an approximately 965,000-square foot gaming facility. On March 28, 2014, the MEPA office issued a scope for a Supplemental DEIR ("SDEIR") for the study of reduced potential environmental impacts based on the project changes described in the NPC. In response, MSM filed a SDEIR in June 2014. Subsequent to the successful completion of MEPA, the MGC chose another competing bid for the casino and, therefore, the casino project did not move forward. Eventually, Sterling Suffolk Racecourse, LLC sold the Suffolk Downs property to MHDC in May 2017.

1.3 Master Plan Site Context and Existing Conditions

The Master Plan Project Site is currently home to the Suffolk Downs race track facility, which opened in 1935 and remains New England's only operating thoroughbred race track. Most of the original structures still exist on-site, as described more fully below in Section 1.3.1.

As shown in Figure 1.2, the western side of the Master Plan Project Site is bordered by land that includes a retail shopping center, properties containing fuel storage tanks owned by Irving Oil Terminals Inc. and Global Petroleum (the "oil tank farm"), and McClellan Highway (Route 1A). Winthrop Avenue is located along the northern boundary of the Master Plan Project Site. The neighborhood north of Winthrop Avenue is Crescent Beach, which in turn borders Revere Beach and the Atlantic Ocean; the Master Plan Project Site is located less than one mile from the beach and ocean. Washburn Avenue, the MBTA Blue Line, and Bennington Street (which connects East Boston to the City of Revere and is a route for access to the Town of Winthrop (via Saratoga Street, Route 145) lie east of the Master Plan Project Site. Waldemar Avenue and the Orient Heights residential neighborhood of East Boston are located immediately south of the Master Plan Project Site.

Beyond Bennington Street, to the east, lies the Belle Isle Reservation where the Massachusetts Department of Conservation and Recreation ("DCR") manages a natural area with pathways, benches, and an observation tower; the reservation is part of the 241-acre Belle Isle Marsh, the last remaining salt marsh in Boston.

1.3.1 Existing Site Conditions

Figure 1.3 presents an aerial image of the existing site conditions. The approximately 161-acre Master Plan Project Site consists of a race track, a vacant administration building, a clubhouse, grandstand, maintenance buildings, horse barns (many of which are dilapidated and in danger of falling) and supporting space for horse handlers and other support staff, as well as site access ways and extensive surface parking. The race track consists of a one-mile oval racing surface with an infield and surrounding open space, which is not available as a community amenity since the race track is not accessible for public use.

Figures 1.4, and 1.5a through 1.5b present photographs of current site conditions. Sales Creek crosses the Master Plan Project Site along the East Boston and Revere municipal border line and connects portions of the Revere watershed with the coastal Belle Isle Marsh, which is within walking distance of the Master Plan Project Site. Sales Creek is primarily a manmade drainage channel that runs from approximately the northwest corner of the Master Plan Project Site through the northern portion of the race track infield and continues east of the Master Plan Project Site and connects to the Belle Isle Inlet and the Rumney Marshes Area of Critical Environmental Concern (“ACEC”). The portion of the Master Plan Project Site north of Sales Creek includes stables used as part of the race track facilities.

There is also an existing pond on the Master Plan Project Site, originally constructed in the 1930s (the “infield pond”), as well as other wetlands resource areas. These wetland resources will be preserved and integrated into the proposed open space system that is planned as part of the Master Plan Project, providing an open space oasis within the new urban district of the Master Plan Project.

The main access points to the Master Plan Project Site are from Route 1A to the west, via Tomasello Road (aka and referred to herein as Tomasello Drive), which is a private way, as well as via Winthrop Avenue at the north end of the Master Plan Project Site. A secondary access from McClellan Highway (Route 1A) is available via Furlong Drive, which provides access to the retail shopping center located northwest of the Master Plan Project Site. Two mass transit stops on the MBTA Blue Line (the Suffolk Downs and Beachmont stations) currently serve the Master Plan Project Site. Refer to Chapter 4, *Transportation*, for a description of existing vehicular site access and circulation, and public transit.

1.3.2 Master Plan Project Site Metes and Bounds

Refer to Appendix B for the description of the metes and bounds of the Master Plan Project Site and accompanying site survey plan.

1.4 Master Plan Project Description

As previously described, the Master Plan Project Site straddles the cities of Boston and Revere, and has already been designated by both cities for major mixed-use development. The Master Plan Project offers a dynamic mix of uses on the Master Plan Project Site, including, commercial uses (office, lab, innovation/business incubator space), residential uses, street front retail, as well as an extensive open space system.

The Master Plan Project has been planned to have a strong and interconnected urban design framework that offers the potential to connect to the surrounding neighborhoods and has the ability to incorporate the proposed mix of uses.

The following sections describe the Master Plan Project's guiding principles, proposed development programs and uses, building design approach, including sustainable elements, key site improvements, and timing.

1.4.1 Master Plan Project Guiding Principles & Aspirations

The following are the key goals and objectives of the Master Plan Project:

- Create a vibrant mixed-use, walkable community;
- Provide a variety of housing types, including townhomes, apartments, condominiums, and senior housing to meet the needs of surrounding neighborhoods;
- Provide sufficient publicly-accessible open space that preserves existing open space areas and enhances those areas with both active and passive spaces;
- Activate the public realm with open space amenities and extensive ground-floor retail aimed at serving the on-site users and complementing existing retail in the surrounding neighborhoods;
- Enhance and expand job creation and economic opportunity by providing employment opportunities near new and existing residential areas;
- Leverage the proximity to public transit to limit traffic impacts and provide easy access to workplaces and entertainment venues in other Boston neighborhoods; and
- Approach sustainability and resilience district-wide with forward-thinking climate change resiliency strategies, as well as specific measures for individual building development through the incorporation of green building design.

1.4.2 Master Plan Project Proposed Development Program

The proposed Master Plan Project offers a dynamic mix of uses on the Master Plan Project Site, encouraging commercial and innovation uses, diversity of residential uses, creative retail and business incubator/innovation space, as well as parks and community spaces. The Master Plan Project will be anchored at the two existing MBTA Blue Line stations and then will radiate through the Master Plan Project Site along a network of new streets, neighborhood retail districts and open spaces.

Given the scale of the Master Plan Project Site, the Master Plan Project is a long-term development that will be implemented in phases over a period of 15-20 years. The Master Plan Project is, therefore, being conceived with an overall development program that provides a degree of flexibility to balance different residential and commercial uses as development proceeds. For planning purposes, the Master Plan Project has been presented in the Master Plan Project EENF/EPNF with two programs, both having the same total floor area, but with different mixes of uses. Refer to Table 1-1 below for further details on each of these development programs. Figures 1.6a and 1.6b present the Master Plan Project Programs A and B, respectively.

Table 1-1 Master Plan Project Development Program Options

Use/Element	Program A	Program B
Commercial Office	Up to 8.0 MGSF	Up to 5.25 MGSF
Residential	Up to 7.45 MGSF (±7,500 units)	Up to 10.4 MGSF (±10,000 units)
Retail	550,000 GSF	Up to 450,000
Hotel	500,000 GSF (±830 Rooms)	Up to 400,000 (±670 rooms)
Total[1]	**16,500,000**	**16,500,000**

GSF Gross Square Feet, as defined in the applicable zoning codes.

1 Represents a not-to-exceed/maximum build-out; to be developed in multiple buildings each of which can be developed together or independently of the others and in differing sequences. Depending on market conditions or other factors, uses may be allocated to different buildings, or reallocated as applicable, while remaining consistent with the overall proposed mix of uses, site-wide improvements and mitigation commitments to be established through the MEPA, Boston Article 80, and Revere zoning review processes. The flexibility of sequencing is critical to the Master Plan Project's ability to respond to market conditions.

Program A is essentially a "pro-commercial" program that includes up to 8.0 MSF of commercial office space and up to 7.45 MSF of residential space (7,500 units). Program B is a "pro-residential" program with less commercial office space (up to 5.25 MSF) and more residential space (up to 10.4 MSF, or approximately 10,000 units). The two programs also include retail and hotel space totaling up to 1.05 MSF in Program A and 0.85 MSF in Program B. The amount of commercial office space in Program A was sized to meet the full Amazon requirement as outlined in the Amazon HQ2 RFP.

These two programs are intended to be illustrative of end points on a spectrum, and the actual mix of uses when the Master Plan Project is completed will likely fall somewhere between the two. The two program options are being used for planning purposes to allow for an analysis of the different impacts of commercial and residential space and the development of conservative mitigation plans that will allow for future flexibility based on analysis of the most impactful scenario with respect to each potential impact.

1.4.3 Phase 1 Project Proposed Development Program

As is well known, Amazon has issued a RFP for a city to host Amazon HQ2, and the City of Boston, with the support of the City of Revere, has identified Suffolk Downs as a desirable potential site for Amazon HQ2 in its response to the RFP. Suffolk Downs appears to be the only location in single-ownership within the Boston metropolitan area that can accommodate Amazon's stated desire for up to 8.0 MSF of office space with direct access to public transportation and proximity to an international airport. The requirements identified in the Amazon HQ2 RFP also include the availability of a building or buildings with approximately 500,000 SF of office space that can be occupied by the end of 2019. To meet this requirement, the Proponent has identified a location for an initial office building in the southeastern corner of the Boston portion of the Master Plan Project Site adjacent to the Suffolk Downs MBTA Blue Line station (the "Phase 1 Project Site"). Table 1-2 below summarizes the proposed development program for Phase 1 Project as the initial phase of the Amazon HQ2 campus.

Table 1-2 Phase 1 Project Development Program

Use/Element	Size
Commercial Office	520,000 GSF[1]
Structured Parking	Up to 520 spaces

GSF Gross Square Feet, as defined in the applicable zoning codes.
1 In the form of two approximately 260,000-GSF buildings and excludes approximately 215,000-GSF of structured parking a portion of which will be below-grade.

The Phase 1 Project Site currently contains a portion of the Suffolk Downs race track and infield, as well as other previously disturbed areas, including landscaped areas, the infield pond, and portions of an internal driveway. The Phase 1 Project will utilize existing roadways and can be constructed without compromising the planning and approval process for development on the balance of the Master Plan Project Site. The building design and site-wide improvements for the construction of the Phase 1 Project have been further advanced than other aspects of the Master Plan Project. The proposed site plan is shown in Figure 1.7. In summary, the Phase 1 Project will consist of:

- Two approximately 260,000-gross square foot office buildings with supporting corporate uses/amenities;
- Approximately 520 structured parking spaces (520 of the existing surface parking spaces will be taken out of service and no net new parking spaces will result from the Phase 1 Project);
- Approximately 12 acres of existing open space to remain as-is and an additional approximately 1.2 acres of open space to be improved by the Phase 1 Project, including improved pedestrian access to the Suffolk Downs MBTA station;
- New internal access driveway that connects the Phase 1 Project Site to Tomasello Drive (private roadway);
- Utility improvements/upgrades resulting in improved water quality through an upgraded drainage system;
- Pedestrian facilities, including an on-site accessible walkway to the MBTA Suffolk Downs station; and
- Bicycle facilities, including on-site long- and short-term bicycle storage in accordance with the City of Boston Bicycle Guidelines and a new Hubway public bikeshare station.

No Phase 1 Project construction will take place within wetland resource areas with the exception of Land Subject to Coastal Storm Flowage ("LSCSF") (some work in the previously disturbed buffer zone is also required).

1.4.4 Master Plan Project Elements

Open Space Network

The Master Plan Project has been planned to reconnect East Boston and Revere with an approximately 40-acre publicly-accessible open space network that represents approximately 25 percent of the overall Master Plan Project Site area. Key open spaces elements proposed include:

- An approximately 15-acre central common;
- A landscaped amphitheater;
- Active and passive recreation areas;
- Playgrounds;
- Dog parks; and
- Several neighborhood plazas.

As described more fully in Chapter 2, *Urban Design*, the open space network will incorporate existing wetland features on the Master Plan Project Site and offer a diversity of experiences including active, passive, recreational ecological, environmental, and programmed uses. The Master Plan Project Site and its open space network will be porous and open to the public and the neighbors.

The vibrant future publicly-accessible open spaces, plazas, and recreation proposed as part of the open space network will attract and benefit not just users on-site, but also those from the surrounding neighborhoods. Furthermore, the Master Plan Project will be integrated into the local urban fabric through a robust bicycle path network and walkable neighborhood streets. The publicly-accessible open space system, including pedestrian and bicycle pathways also sets up strong relationship with and will seek to provide connections to adjacent neighborhoods in East Boston and Revere and to the surrounding regional assets, such as the East Boston Greenway, Belle Isle Marsh, Constitution Beach and Revere Beach.

Sustainability and Resiliency

Given its scale, redevelopment of the Master Plan Project Site presents a unique opportunity to incorporate sustainable design and climate change resiliency elements in a comprehensive/district-wide manner from the early planning stages. Sustainability is a key theme for the Master Plan Project, including the Phase 1 Project, as it proposes to redevelop an underutilized urban site, use land efficiently by increasing density as a mixed-use TOD, and encourages non-automobile and low carbon modes of transportation.

The Phase 1 Project and Master Plan Project expect to exceed requirements for compliance with Article 37 of the Boston Code by demonstrating that early design elements would meet the Leadership in Energy and Environmental Design (“LEED”) version 4 green building rating system (“LEEDv4”), or equivalent requirements necessary to be LEED certifiable. The buildings in Revere will meet comparable LEED environmental standards. As demonstrated in Chapter 3, *Sustainability/Green Building and Climate Change Resiliency*, based on preliminary energy modeling, the Phase 1 Project will exceed the current Stretch Energy Code requirement for energy efficiency and result in stationary source greenhouse gas (“GHG”) emissions reductions. The Proponent is committed to design the future Master Plan Project buildings to meet and/or exceed the current Stretch Energy Code (to be demonstrated in the subsequent DEIR/DPIR filing).

The Master Plan Project Site will be designed to address anticipated climate change impacts, including more frequent extreme weather events and future sea level rise, with an elevated street system and infrastructure network. The approximately 40-acre open space system will be designed and configured to help mitigate these climate change challenges. As discussed more fully in Chapter 3, *Sustainability/Green Building and Climate Change Resiliency*, and Chapter 7, *Infrastructure*, the Master Plan Project Site already has access to existing infrastructure to facilitate resilient Master Plan Project Site utility infrastructure with water and sewer connections from two separate municipal systems and access to two independent electrical power grids.

Healthy Community Design

The Master Plan Project will include a welcoming and well-designed bicycle and pedestrian system to encourage sustainable modes of transportation, promote health and wellness, and enhance social interactions and idea sharing within the mixed-use community. Multiple public bikeshare stations will be incorporated throughout the Master Plan Project Site, to connect cyclists to destinations on-site and beyond.

Two on-site publicly-accessible walking and biking loops, each over one-mile long, will link the open space network and promote unique opportunities for health and wellness. By providing easy access to the outdoors, a key design goal of the Master Plan Project is to encourage community members to lead active and healthy lifestyles while also engaging them in the larger outdoor environment.

Master Plan Project Site Access/Circulation

Two important retail squares at the Suffolk Downs and Beachmont MBTA Blue Line Stations called Belle Isle Square and Beachmont Square, respectively will create pedestrian-friendly access to the stations with active retail uses, multi-modal transportation opportunities, including bicycle stations encouraging public transit usage to and from the Master Plan Project Site.

As it is built-out, the Master Plan Project will provide for significant enhancements to the key vehicular access points. Primary vehicular access to the Master Plan Project Site will continue to be provided by Tomasello Drive, a privately-owned roadway through the site, with connections to Route 1A and Winthrop Avenue (Route 145/Revere Beach Parkway). Widening of Tomasello Drive and Route 1A will also be implemented as part of the Master Plan improvements. Tomasello Drive at Route 145 (Revere Beach Pkwy/Winthrop Avenue) will provide additional access connections. To the east of the Tomasello Drive/Winthrop Avenue access, a right-turn in/right-turn out access driveway is proposed to provide access to the northern end of the Master Plan Project Site. To the east of the right-turn in/right-turn out access driveway a full-access signalized access driveway is proposed, which will facilitate access to the retail corridor and the “spine road” that runs north/south on the Master Plan Project Site. As a secondary access opportunity, Furlong Drive, a public way from Route 1A to the Shops at Suffolk Downs, will both provide a connection between Route 1A and Tomasello Drive via a publicly-accessible driveway through the shopping plaza.

Parking

The majority of the parking spaces constructed to support the Master Plan Project will be provided in structured parking facilities, with only limited on-street parking provided to support street front retail uses. To utilize parking more efficiently and reduce the parking garage footprint on-site, parking for commercial uses will be made available on a shared basis for use by residents, hotel guests, shoppers, and other visitors. These commercial garages are largely vacant in the evenings, night and weekends and can accommodate additional residential, hotel and retail parking, as needed.

A more comprehensive parking analysis that quantifies shared parking will be developed and included in the DEIR/DPIR to clearly demonstrate how the projected parking needs of the Master Plan Project will be met in the future.

1.4.5 Anticipated Master Plan Build-Out

The Master Plan Project will be developed in stages over a range of approximately 15 to 20 years depending on market conditions. Although specific phasing is not proposed herein, the Proponent anticipates that build out of the Master Plan Project Site will include early development near the two MBTA Blue Line stations, which are “front doors” of the Master Plan Project Site, it being understood that flexibility of sequencing is critical.

Amazon HQ2 and the Phase 1 Project

As discussed previously, the requirements identified in the Amazon HQ2 RFP include the availability of a building or buildings with approximately 500,000 SF of office space that can be occupied by the end of 2019. To satisfy this requirement, the

Proponent will need to commence building construction of the Phase 1 Project around February of 2018.

Master Plan

The designs for future buildings will be developed based on the finally approved Master Plan Project. It is expected that the Master Plan Project will accommodate a variety of build-out scenarios. Each of the proposed buildings can be developed together with or independently of, and in differing sequences with, the others and the mix of uses presented in Table 1-1 allows the Master Plan Project to remain responsive to evolving market conditions.

Depending on market conditions or other factors, uses are to be allocated to different buildings, while complying with the Master Plan Project's use and dimensional limitations and requirements for site-wide amenities and improvements and mitigation commitments, all of which will be established through the MEPA process, the City of Boston Article 80 review process and City of Revere rezoning and development review processes. The flexibility of sequencing is critical to the Master Plan Project's ability to respond to market conditions.

1.5 Summary of Public Benefits

This section summarizes the many anticipated public benefits, looking first at the public benefits associated with the Phase 1 Project and then looking at the public benefits associated with the Master Plan Project.

1.5.1 Phase 1 Project Public Benefits

- Potential to unlock the extraordinary public benefits, and economic development and activity associated with the larger Amazon HQ2 development and discussed further below in Section 1.5.2.
- Approximately 12 acres of existing open space to remain as-is and an additional approximately 1.2 acres of open space to be improved through completion of the Phase 1 Project, including improved pedestrian access to the Suffolk Downs MBTA station.
- Incorporate sustainable and high-performance building strategies into the design of the Phase 1 Project to achieve a LEEDv4 certifiable Gold level.
- The Phase 1 Project will exceed the Stretch Energy Code requirement for 10 percent energy efficiency above code. Preliminary energy modeling indicates a 25 percent energy usage savings and 23 percent reduction in stationary source GHG emissions for the Phase 1 Project.
- The portions of the permanent roadway to be constructed with Phase 1 Project will be designed approximately 40-inches above the 100-year FEMA flood elevation and the finished floor elevation of the buildings will be raised to

account for sea level rise and localized storm surge associated throughout the anticipated life of the buildings.

- The Phase 1 Project stormwater management system will be designed to address potential increases in storm intensity due to climate change in accordance with recent BWSC guidance to convey and detain the 10-year and 100-year design storm increased rainfall depths (6.0 and 8.8 inches, respectively).
- Encourage the use of alternative modes of transportation, including public transit and bicycling, through:
  - Enhanced on-site pedestrian access to the MBTA Suffolk Downs station;
  - On-site bicycle storage; and
  - Installation of a Hubway public bikeshare station.
- Contribute approximately $4.2 million in linkage payments for the creation of affordable housing and job training programs
- Create approximately 400 new construction jobs and approximately 2,500 new permanent jobs.

1.5.2 Master Plan Project Public Benefits

Community Benefits

- Transform an underutilized urban site into a new dynamic mixed-use neighborhood anchored by quality public transit and open space that responds to surrounding uses.
- Enhance job creation and economic development through the incorporation of commercial uses, including an innovation center, office, lab, retail and hotel uses.
- Materially increase housing units in the area which is key priority for the Boston portion of the Master Plan Project Site, as noted in the *Housing Boston 2030* plan.[3]
- Provide a range of housing types (i.e., varying sizes) that will serve a broader set of households (i.e., empty nesters, seniors, families and singles).
- Increase affordable housing by up to nearly 1,000 units through the implementation of Boston’s inclusionary housing programs.
- Provide an expansive approximately 40-acre publicly-accessible open space network, designed to create connections to adjacent neighborhoods in East Boston and Revere and to the surrounding regional assets, such as the East Boston Greenway, Belle Isle Marsh, Constitution Beach and Revere Beach, which open space network represents approximately 25 percent of the overall Master Plan Project Site area.

3 https://www.boston.gov/sites/default/files/housing_a_changing_city-boston_2030_full_plan_1.pdf

Public Use and Enjoyment

- Provide public access to an expansive open space network.
- Create multi-functional open spaces that provide relaxing and restorative places to walk, run, and recreate.
- Offer a new network of walking and bicycle environment throughout the Master Plan Project Site, as well as an opportunity to connect to regional systems, including the East Boston Greenway and Revere Beach Parkway.
- Create new retail areas which are anticipated to activate the Master Plan Project Site and encourage increased public use and enjoyment.

Urban Design and Public Realm

- Connect the Master Plan Project Site to the adjacent surrounding neighborhoods through a new framework of the new on-site open space and street networks.
- Provide a pedestrian- and bicycle-friendly environment with accommodations integrated throughout the Master Plan Project Site.
- Activate the public realm, including three distinct neighborhood retail districts, a landscaped amphitheater, dog-friendly open spaces and playgrounds.
- Provide ground-level amenities with local restaurants and on-site retail able to spill out onto adjacent sidewalks and open space areas, which development will also augment the market for already existing retail and restaurants in the surrounding neighborhoods.

Transportation

- Improve connections and transportation access through a cohesive fabric of new urban streets, walking paths, and bicycle connections.
- Create a true TOD community by locating a dense mix of uses immediately adjacent to two public transit stops.
- Create retail squares near the Suffolk Downs and Beachmont MBTA Blue Line stations with multi-modal transportation opportunities, including Hubway bicycle stations, encouraging the use of alternative transportation modes to access the Master Plan Project Site.
- Emphasize walk-ability and bike-ability and proximity to mass transit to further reduce the Master Plan Project’s overall environmental impact.
- Address potential long-term transportation infrastructure needs in the Master Plan Project Site area through the identification of feasible improvements capable of minimizing the Master Plan Project’s potential transportation impacts.
- Provide for significant enhancements to the key vehicular access points as the Master Plan Project is built-out.

- Provide mostly structured parking facilities with only limited on-street parking provided to support street front retail uses.
- Utilize a shared parking approach within the planned commercial parking to accommodate the parking needs of different uses (residential, hotel, and retail) to use parking more efficiently and reduce the parking garage footprints on-site.

Resiliency

- Proactively plan for the effects of future climate change for anticipated increases in sea level rise and storm surge, precipitation, and extreme temperatures.
- Major portions of the Master Plan Project Site will be raised and re-graded to provide protection against storm surge and potential sea level rise impacts.
- A network of open spaces will be strategically designed to accommodate potential flooding impacts associated with sea level rise to provide further protection to the nearby buildings and areas outside the Master Plan Project Site.
- The stormwater management system will be integrated into the open space network and will be designed to address potential increases in storm intensity due to climate change in accordance with recent BWSC guidance to convey and detain the 10-year and 100-year design storm increased rainfall depths (6.0 and 8.8 inches, respectively).

Environment/Sustainability

Green Building Design

- Exceed compliance with Article 37 of the Boston Code for the Master Plan Project by designing future buildings to be LEED certifiable Silver.
- Design buildings in Revere to generally meet the same LEED certifiable standards as buildings in Boston.

Energy Conservation/GHG Emissions Reductions

- Incorporate energy conservation measures for the Master Plan Project building typologies (office, multi-family residential, hotel and retail) that aim to exceed the Stretch Energy Code requirement for energy efficiency and result in stationary source GHG emissions reductions.

Water Quality/Stormwater Management and Conservation

- Materially improve the quality of stormwater runoff on the approximately 161-acre Master Plan Project Site, which currently has very limited stormwater pollution prevention measures, by treating for the first inch of rainfall through the incorporation of several stormwater best management practices.
- Mitigate peak stormwater runoff rates up to and including the 100-year design storm.

- Mitigate peak stormwater runoff rates up to and including the 100-year design storm.
- Evaluate potential application of low-impact development techniques and stormwater quality enhancement features, such as biofiltration, green roofs, and reuse of runoff for landscape irrigation, as design progresses.
- Incorporate low-flow plumbing fixtures and other water conservation and reuse techniques to reduce overall water usage and wastewater generation.
- Reduce water use demand for irrigation needs through a combination of efficient system design, water reuse, and drought-tolerant plantings.
- End the Concentrated Animal Feeding Operations ("CAFO") associated with the existing thoroughbred race track. Ending the horse stabling operations will have a positive impact on the water quality of the surrounding streams and wetlands.

Wetlands Resources

- Incorporate existing heavily-disturbed wetland resources, particularly Sales Creek and the infield pond, into the proposed extensive approximately 40-acre open space system with enhanced public access.
- Ensure that current on-site wetlands continue to maintain historic flows and functionality.
- Plan and design future Master Plan Project development to retain existing on-site open space areas.

Infrastructure

- Provide for sufficient Inflow/Infiltration mitigation, as required by each municipality, to mitigate potential capacity issues in the regional wastewater collection system.
- Protect public water supply through backflow protection to mitigate cross-contamination concerns.

Extraordinary Economic Benefits

- Over the term of the Master Plan Project's development, create approximately 14,000 new construction jobs and approximately 25,000 to 50,000 new permanent jobs.
- Create substantial net new annual real estate tax revenue for both Boston and Revere, as well as state sales and business tax revenue for the Commonwealth.

1.6 Phase 1 Project Regulatory Context

This section lists the anticipated permits and approvals as well as the local planning and regulatory controls applicable to the Phase 1 Project. The Proponent will continue to meet with state agencies and other stakeholders, as needed, through the ongoing MEPA/Boston/Revere review process pursuant to this EPNF and the Master Plan Project EENF/EPNF.

1.6.1 Anticipated Permits/Approvals

Table 1-3 below presents a preliminary list of anticipated reviews and approvals of the Phase 1 Project by governmental agencies based on currently available information. It is possible that some of the listed reviews and approvals will not be required, or that additional reviews or approvals that will be required are not listed below.

Table 1-3 Anticipated Phase 1 Project Permits and Approvals

Agency/Department	Permit/Approval/Action
Federal	
U.S. Environmental Protection Agency	National Pollutant Discharge Elimination System ("NPDES") and Construction General Permit
Federal Aviation Administration	Determination of Non-Hazard to Air Navigation
State	
Executive Office of Energy and Environmental Affairs	Massachusetts Environmental Policy Act Review; Determination for Public Benefit review for landlocked tidelands (if required)
Massachusetts Department of Environmental Protection	Superseding Orders of Conditions (if required)
Massachusetts Department of Transportation	Vehicular Access Permit
Massachusetts Water Resources Authority	Temporary Construction Site Dewatering Permit (if required)
Massachusetts Historical Commission	Determination of No Adverse Impact (if necessary)
Massachusetts Bay Transportation Authority	Agreement for improvements (i.e., signage, landscaping) at the Suffolk Downs MBTA station (if required)
City of Boston	
Boston Planning and Development Agency	Article 80B Large Project Review Adequacy Determination and Related Agreements Zoning Relief Development Impact Project Agreement Certificate of Compliance and Consistency
Boston Zoning Commission	Zoning Relief
Boston Civic Design Commission	Project Design Review
Boston Conservation Commission	Order of Conditions (under the Wetland Protection Act)
Boston Fire Department	Permits and Approvals for Fuel Storage, Fire Safety Equipment, Alarm System, Sprinkler, Standpipe, Smoke Control and Hydrant
Boston Transportation Department	Construction Management Plan Street Opening/Closing, and Street Lighting Transportation Access Plan Agreement

Agency/Department	Permit/Approval/Action
Boston Water and Sewer Commission	Sewer Connection and Cross Connection and Extension Permits Water Permit Hydrant Permit Site Plan Approval
Boston Public Safety Commission	Fuel Storage License and Garage Permit
Inspectional Services Department	Building Permits Foundation Permits Electrical and Gas Permits
Boston Employment Commission	Boston Residents Construction Employment Plan

1.6.2 Federal

Federal Aviation Administration

All projects subject to Federal Aviation Administration ("FAA") jurisdiction are subject to requirements respecting issuance of Determinations of Non-Hazard to Air Navigation from the FAA. The Phase 1 Project will comply with all requirements of the FAA.

U.S. Environmental Protection Agency

The Phase 1 Project, will comply with all requirements of the US Environmental Protection Agency in accordance with the NPDES and Construction General Permit ("CGP"), to approve a Storm Water Pollution Prevention Plan ("SWPPP").

1.6.3 Commonwealth of Massachusetts

The Proponent has held numerous meetings with various elected officials and state agencies prior to the filing of the Master Plan EENF/EPNF and this EPNF for the Phase 1 Project, including:

› MEPA Office
› Department of Environmental Protection ("DEP")
› Department of Transportation ("DOT")
› Massachusetts Bay Transit Authority ("MBTA")
› Massachusetts Water Resources Authority ("MWRA")
› Massachusetts Port Authority ("Massport")

As listed in Table 1-3, the state approvals anticipated for the Phase 1 Project include:

1. A DOT Access Permit (if required);
2. A MWRA Temporary Dewatering Permit (if required);
3. a Chapter 91 Public Benefits Determination (if required);

4. Possible DEP Superseding Order of Conditions given a Local Order of Conditions is required, but highly unlikely; and
5. Possible agreement with the MBTA if any improvements, such as landscaping and/or signage are to be made at the Suffolk Downs MBTA Blue Line station.

The subsequent technical chapters include sufficient information/analysis to demonstrate the Phase 1 Project will adequately meet performance standards for these required state permits and approvals.

1.6.4 City of Boston

The Proponent has held numerous meetings with various elected officials and City of Boston departments prior to of the filing of the Master Plan EENF/EPNF and this EPNF for the Phase 1 Project, including:

- Mayor Walsh
- BPDA
- Boston Water and Sewer Commission ("BWSC")
- Boston Transportation Department ("BTD")
- Boston Conservation Commission
- Boston Public Works Department ("BPWD")
- Boston Environment Department ("BED")
- Boston Police Department ("BPD")

Boston Planning and Development Agency ("BPDA") / Boston Zoning Commission ("BZC")

The Phase 1 Project, will comply with all requirements of the BPDA and Boston Zoning Commission in connection with issuance of the required permits and approvals. For the Master Plan Project, MHDC intends to seek approval of a Planned Development Area ("PDA") approved by the BPDA and the BZC to establish a new zoning overlay district and substitutes for the use, dimensional, parking and loading requirements otherwise applicable to the Master Plan Project Site.

Prior to approval of any zoning relief, including a PDA, both the Phase 1 Project and the Master Plan Project will be required to undergo Large Project Review under Article 80 of the Boston Code. Under Article 80B of the Boston Code, which governs Large Project Review, a public review process is required at the early design stage, for projects that add 50,000 square feet or more of gross floor area (or 100,000 square feet or more for rehabilitation work or change in use). Large Project Review begins with the filing of this EPNF with the BPDA, after which there is a public and agency comment period,

The Phase 1 Project is expected to commence prior to completion of the PDA Development Plan process, and will therefore involve additional zoning relief. The

Phase 1 Project is expected to comply with the by-right zoning requirements of the Suffolk Downs EDA with the exception of height limitations. While the proposed height will be within the limits being proposed for the PDA, expedited zoning relief will be needed to allow for the issuance of a building permit for a building of this height prior to completion of the full Article 80 and PDA development plan approval process. This relief is needed prior to completion of the PDA Development Plan process and could be granted as an amendment to the Suffolk Downs EDA zoning, allowing for the Phase 1 Project zoning relief. The Proponent will request a Scoping Determination waiving (for the Phase 1 Project only) the requirement of further review as permitted under Boston Code Section 80B-5.3(d). As contemplated by Section 80B-5.3(d), the waiver of further review may, if necessary, be conditioned on subsequent review of schematic design plans by the BPDA and Boston Civic Design Commission ("BCDC").

As noted above, MHDC will enter into agreements reflecting the various mitigation commitments made during the Article 80 process, including a Development Impact Project Agreement for housing and employment impact exaction payments for the Phase 1 Project as required by Section 80B-7 (Development Impact Project Exactions) of the Boston Code.

Following completion of the Article 80 process, the design development and construction documents for the project are subject to BPDA review and approval, and MHDC will enter into agreements, including with the BPDA and the Boston Transportation Department, reflecting various mitigation commitments made during the Article 80 process. An agreement for compliance with the City of Boston's construction employment policies are also required. Under the Boston Code, the Commissioner of Inspectional Services will only issue a building permit for a project subject to Large Project Review after the Director of the BPDA has issued a Certification of Compliance pursuant to Section 80B-6 of the Boston Code, which is a finding that the construction plans and specifications for the project comply with the terms of the Final Adequacy Determination, agreements executed with City agencies, and other provisions of the Boston Code.

Boston Civic Design Commission

The Phase 1 Project will comply with all requirements related to review of the Phase 1 Project design by the BCDC. Under Article 28 of the Boston Code, the BCDC is authorized to review the schematic designs of large-scale development projects (gross floor area over 100,000 square feet) and projects of special significance as determined by the BCDC (projects located near areas of special historic significance or designated landmark districts or projects visually prominent from significant open space or public right-of-way, among others). The purpose of the BCDC review is to assist and advise city officials with the design review of projects that affect the public realm, and to provide a forum for the general public and the professional design community to participate in the shaping of the city's physical environment. The BCDC review is advisory to the BPDA and the Mayor of Boston. The procedure for BCDC review is more particularly set out in Section 28-13 through 28-16 of the Boston Code.

Boston Transportation Department

As noted above, MHDC will enter into agreements reflecting various mitigation commitments made during the Master Plan EENF/EPNF Article 80 process. It is expected that these will include a Transportation Access Plan Agreement and an agreement respecting a Construction Management Plan with the BTD. MHDC will also seek BTD permits and approvals for curb cuts, street opening/closing, and street lighting. The Phase 1 Project will comply with all applicable requirements of BTD.

Boston Public Safety Commission

The Phase 1 Project will comply with all applicable requirements of the Boston Public Safety Commission, which is expected to approve Fuel Storage Licenses and Garage Permits in connection with individual buildings and parking structures for the Phase 1 Project.

Boston Water and Sewer Commission

The Phase 1 Project will comply with all requirements of the Boston Water and Sewer Commission, which is expected to approve Sewer Connections and Cross Connections and Extension Permits, Water Permits, Hydrant Permits, and Site Plan Approvals in connection with the Master Plan Project.

Boston Inspectional Services Department

The Phase 1 Project will comply with all requirements of the Boston Inspectional Services Department, which is expected to issue Building Permits, Demolition Permits, Foundation Permits, Electrical and Gas Permits in connection with the Master Plan Project.

Boston Conservation Commission

The Phase 1 Project Site includes wetland areas and any construction within the Phase 1 Project Site will be subject to certain requirements under the Massachusetts Wetlands Protection Act (the "WPA"). Review under the WPA will be conducted by the Boston Conservation Commission.

The Phase 1 Project includes work within the 100-foot buffer area, but does not include any work within jurisdictional wetlands resource areas, except Land Subject to Coastal Storm Flowage. The existing resource areas and buffer zones to wetland resource areas are heavily disturbed or have been altered by the previous uses The WPA requires that an Order of Conditions be obtained from the Boston Conservation Commission for work associated with the Phase 1 Project that is within WPA jurisdiction.

Boston Fire Department

Permits and approvals for Fuel Storage, Fire Safety Equipment, Alarm System, Sprinkler, Standpipe, Smoke Control and Hydrant, and asbestos removal (if necessary) require review of various aspects of the Master Plan Project including garage layout and life safety systems and are typically sought when construction drawings and specifications are available for review by the Boston Fire Department. The Phase 1 Project will comply with all requirements of the Boston Fire Department in connection with issuance of such permits and approvals as necessary.

Article 25 Flood Hazard District

Section 25 of the Boston Code establishes the Flood Hazard District, a zoning overlay district which includes all special flood hazard areas within the City of Boston as established by FEMA on the latest Flood Insurance Rate Maps and associated Flood Insurance Study. Development within these areas must comply with applicable federal, state, and local regulations.

1.7 Community Outreach

The Proponent is committed to maintaining an open dialogue with all interested parties as part of the local review and approval process for the Phase 1 Project and the Master Plan Project. The Proponent has engaged early in a highly public and transparent process to inform city and state agencies, elected officials, community representatives, and the general public about the Master Plan Project and Phase 1 Project.

To date, the Proponent has held dozens of meetings with various civic organizations, community representatives, elected officials, municipal departments and state agencies, including but not limited to those listed below. In addition, three BPDA-sponsored public meetings were held on November 15th,18th and 28th to further introduce the Master Plan and Phase 1Project.

Public review and engagement for the Master Plan Project will continue as part of the joint MEPA/Article 80 review process, as well as the City of Revere rezoning process. In addition, the BPDA-established Impact Advisory Group ("IAG") will continue to have an opportunity to give input on behalf of the community during the Article 80-B, Large Project Review for the Phase 1 Project, as required.

Local Community Organizations

- Boston Harbor Now
- Save the Harbor Save the Bay
- Walk Boston
- A Better City (ABC)

City of Boston Community Organizations

- Jeffries Point Neighborhood Association
- Orient Heights Abutters and Neighborhood Council
- Eagle Hill Civic Association
- Maverick Association of Residents
- Gove Street Citizens
- Waldemar Avenue Residents
- East Boston Harborview Association
- East Boston Main Streets
- East Boston Chamber of Commerce
- East Boston Social Centers
- East Boston Neighborhood Health Center
- East Boston Greenway

City of Revere

- Beachmont Neighborhood
- Friends of the Belle Isle Marsh
- Beachmont Improvement Committee

1.8 Project Proponent and Development Team

The Proponent and applicant, The McClellan Highway Development Company, LLC, is an affiliate of The HYM Investment Group, LLC. HYM is a Boston-based real estate firm with extensive experience developing some of the area's largest and most complex mixed-use districts and neighborhoods.

The following lists the key members of the development team for the Master Plan and Phase 1 Project (the "Project Team"):

Proponent	The McClellan Highway Development Company, LLC c/o The HYM Investment Group, LLC Thomas N. O'Brien tobrien@hyminvestments.com Douglas J. Manz dmanz@hyminvestments.com Michael L. Barowsky mbarowsky@hyminvestments.com Canan C. Safar csafar@hyminvestments.com

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1.9 Legal Information

1.9.1 Legal Judgments or Actions Pending Concerning the Proposed Project

To the Proponent's knowledge, there are no legal judgments or actions pending concerning the Phase 1 Project, except that the Master Plan Project Site is subject to a consent decree entered into by the prior owner for wastewater discharges associated with the horse racing and stabling operations, which discharges will be terminated when construction begins on the Phase 1 Project Site. The consent decree is filed in the U.S. District Court for the District of Massachusetts on August 22, 2012 in United States of America v. Sterling Suffolk Racecourse, LLC ("SSR"), Civil Action No. 12-11556, as amended (the "EPA Consent Decree"). The EPA Consent Decree requires the prior owner, SSR, to pay certain penalties, maintain certain pollution-control systems and measures on the Master Plan Project Site related to the CAFO located there, and report to certain government agencies on SSR's compliance with the EPA Consent Decree. Under agreements between the Proponent and SSR, SSR is responsible for compliance with the EPA Consent Decree and future closure of the CAFO in accordance with the EPA Consent Decree. To Proponent's knowledge SSR is in compliance with all such obligations.

1.9.2 History of Tax Arrears on Property Owned in Boston by the Applicant

There is no known history of tax arrears on property owned by the Proponent in the City of Boston.

1.9.3 Site Control/Public Easements

The Proponent owns fee title to the Phase 1 Project Site and acquired the property by virtue of a deed dated as of May 26, 2017 and recorded with the Suffolk County Registry of Deeds on May 30, 2017 in Book 57996, Page 314 and filed with the Suffolk Registry District of the Land Court as Document No. 870416. The property is legally described on the exhibits provided in Appendix B. The Proponent is not aware of any public easements into, through or affecting the Phase 1 Project Site other than typical utility easements, cross-easement agreements with abutting property owners, minor encroachment easements with abutters, and adjacent public rights of way, easements and rights granted to the Commonwealth of Massachusetts related to certain ownership rights near and related to Sales Creek.

1.10 Request to Waive Further Review of Phase 1 Project

As mentioned previously, the Proponent is requesting a Scoping Determination Waiving Further Review pursuant to Section 80B-5.3(d) of the Boston Code, to permit the commencement of construction of approximately 520,000 gross square feet of office space (in the form of two approximately 260,000-square foot buildings with up to 520 structured parking spaces), and associated infrastructure and site improvements (i.e., the Phase 1 Project. The BPDA may authorize the Director to waive further review in the Scoping Determination waiving further review pursuant to Section 80B-5.3(d) of the Boston Code if, after reviewing this EPNF, and any additional materials and comments received by the BPDA, the BPDA finds that this EPNF adequately describes the impacts of the Phase 1 Project. The Phase 1 Project is identified in Figure 1.7.

The Phase 1 Project is proposed within the Phase 1 Project Site, in the southeastern corner of the Boston portion of the Master Plan Project Site, immediately adjacent to the Suffolk Downs MBTA station. The Phase 1 Project Site currently contains a portion of the Suffolk Downs race track and infield, as well as other previously disturbed areas and a jurisdictional resource area regulated under the WPA (Bank and LSCSF). Construction activities are anticipated within the buffer zone, but no construction is anticipated within jurisdictional resource area in connection with the Phase 1 Project, with the exception of LSCSF.

1.10.1 Purpose of Request to Waive Further Article 80 Review

Amazon’s requirements for the selection of Amazon HQ2 include a requirement for 500,000-SF of office space that can be occupied in December 2019 as the initial phase of the larger approximately eight million-square foot Amazon HQ2 project. In order to meet this requirement, construction will need to commence in or about February 2018, and the permitting and construction of the Phase 1 Project will therefore need to proceed on a fast-track basis while the comprehensive master planning process for the Master Plan Project is ongoing. If the Proponent is required to undergo an extended project review process with respect to the Phase 1 Project, it will not be possible to deliver the required approximately 500,000 square feet of office space on schedule and the Boston area will likely be removed from consideration by Amazon as a potential site for the Amazon HQ2 development, eliminating the considerable and extraordinary economic development opportunity (approximately 50,000 new jobs in a leading global "new economy" company) for the region and the Commonwealth. The Phase 1 Project alone is estimated to create approximately 400 temporary jobs and approximately 2,500 permanent jobs.

An extended project review process would impose an undue hardship on the Proponent and on the cities of Boston and Revere, each of which is eager to be considered for the Amazon HQ2 project and its many benefits. State and City officials have indicated that they are willing to consider significant incentives in connection with the Amazon HQ2 project, including financial incentives and streamlined permitting, which, in turn, will result in the generation of much needed jobs and revenue for the region for many years to come. Extended Article 80 review would result in undue and unnecessary hardship to the Proponent, the State, and the City of Boston, which can be avoided by a Scoping Determination waiving further review pursuant to Section 80B-5.3(d) of the Boston Code.

1.10.2 Summary of Insignificant Impacts

The Phase 1 Project will not result in significant environmental impacts. The Proponent has identified a suitable location for the Phase 1 Project, within a previously developed site in the Boston portion of the Master Plan Project Site, adjacent to the Suffolk Downs MBTA Blue Line station, allowing future Amazon employees to have exceptional access to public transportation via the Blue Line. This location, to be developed through initial development respecting an area encompassing approximately 25 acres of the approximately 161-acre Project Site, on land at the periphery (southeast corner) of the Master Plan Project Site, will not compromise the master planning process. The development of the Phase 1 Project will have limited net incremental impacts. All race track and off-track betting operations will cease before the Phase 1 Project opens, thereby mitigating impacts of the Phase 1 Project's operations. The Phase 1 Project will utilize existing roadways on the Master Plan Project Site and will not require construction within any jurisdictional wetland resource areas, except for filling in LSCSF, undertaken to address Phase 1 Project resiliency. There will be no net increase in parking spaces as existing parking spaces will be removed from service to compensate for new parking spaces to be constructed in the building.

The principal areas of potential environmental inquiry under Article 80 for the Phase 1 Project are transportation, sustainability/green building, energy conservation and GHG emissions, climate change resiliency, wind, shadow, daylight, solar glare, air quality, water quality/stormwater management, flood hazard, wetlands and waterways, noise, solid and hazardous materials, groundwater, geotechnical, construction, historic resources and infrastructure. As summarized below and detailed in the supporting chapters of this EPNF, the Phase 1 Project will not have negative impacts in these areas.

Transportation

The traffic and transit analysis results for the Phase 1 Project presented in Chapter 4, *Transportation*, demonstrate that the Phase 1 Project-related vehicle traffic and transit trips can be handled by the existing roadway and public transit networks, respectively. The location of the Phase 1 Project Site adjacent to the Suffolk Downs MBTA Blue Line station makes it a suitable location for transit-oriented development resulting in far less single-occupancy vehicles traveling to the Phase 1 Project Site than an office building not accessible by public transit. The number of estimated new transit trips (summarized below) will not cause the MBTA Blue Line to meet or exceed any capacity thresholds that would not otherwise be exceeded under 2024 No-Build Condition. Most of the Phase 1 Project-generated transit ridership is in the non-critical, or reverse commute, direction.

The Phase 1 Project is projected to generate approximately 1,492 adjusted daily vehicle trips, including approximately 359 new vehicle trips (334 entering and 25 exiting) during the weekday morning peak hour and 308 new trips (31 entering and 277 exiting) during the weekday evening peak hour. Slightly lower transit trips are expected for the Phase 1 Project than the number of vehicles trips (approximately 1,176 daily, including 283 new transit trips [263 entering and 20 exiting] during the weekday morning peak hour and approximately 242 new trips [24 entering and 218 exiting] during the weekday evening peak hour).

Vehicle access to the Phase 1 Project Site will continue to be served by Tomasello Drive with connecting access to Route 1A and North Shore Road. Based on the safety review and traffic analysis presented in Section 4.2.7 of Chapter 4, *Transportation*, mitigation measures proposed at the intersections of Route 1A at Tomasello Drive, and Winthrop Avenue at Tomasello Drive will address Phase 1 Project-related impacts, as well as existing deficiencies.

To further encourage the use of alternative modes of transportation, the Proponent is committed to installing a Hubway public bike share station within the Phase 1 Project Site, as well as a number of TDM measures. Refer to Chapter 4, *Transportation*, for a complete discussion of the proposed transportation mitigation for the Phase 1 Project.

Parking

The Phase 1 Project will provide approximately 520 structured parking spaces. Approximately 520 existing surface parking spaces associated with the Suffolk Downs race track and existing off-track betting operations will be taken off-line as part of the Phase 1 Project (as shown on Figure 1.7), resulting in no net new parking spaces.

Sustainable Design/Green Building

The Phase 1 Project will exceed the City of Boston Article 37 green building requirements by targeting a LEED Gold certifiable development using the LEEDv4 for Core & Shell Developments ("LEED-CS") rating system.

Energy Conservation and Greenhouse Gas Emissions

The Phase 1 Project will be designed and operated to achieve energy efficiency resulting in reduced stationary source GHG emissions. Based on the building energy model, the Phase 1 Project will reduce energy use by approximately 25 percent, which equates to approximately 23 percent reduction in stationary source CO_2 emissions when compared to a base case. Refer to Chapter 3, *Sustainability/Green Building and Climate Change Resiliency* for additional information on the building energy optimization measures proposed for the Phase 1 Project.

Climate Change Resiliency/Flood Hazard

The Phase 1 Project Site will be designed to be resilient to both coastal and inland flooding and will implement measures to reduce climate impacts such as increased heat and precipitation. Additionally, the buildings will be designed to account for increased temperatures, as described more fully in Chapter 3, *Sustainability/Green Building and Climate Change Resiliency*). Planting, reflective materials and stormwater management measures will be implemented to reduce other future climate impacts.

Wind

Based on the preliminary computer model results, the Phase 1 Project is not anticipated to generate any unsafe wind conditions around the Phase 1 Project Site or nearby public spaces. Although some increased wind speeds may be experienced along the corners of the Phase 1 Project buildings, these impacts will be mitigated by either locating entrances, pick-up/drop-offs, outdoor cafes, etc., away from the building corners, and/or incorporating canopies, recessed entrances, windscreens, planters, etc., as necessary. These mitigation measures will be evaluated as the Phase 1 Project design advances to ensure a comfortable and safe environment surrounding the Phase 1 Project Site.

Shadow

Given the Phase 1 Project Site location, shadows generated by the Phase 1 Project will not adversely impact existing public open spaces. On-site open spaces are oriented to provide unshaded areas during the daytime. Refer to Section 5.2 of Chapter 5, *Environmental Protection*, for the full shadow study for the Phase 1 Project.

Daylight

Under the Existing/No-Build Condition, the skydome is assumed to be unobstructed, despite the presence of an existing tree line which separates the Phase 1 Project Site from Bennington Street and the Suffolk Downs MBTA Blue Line Station to the east. Therefore, this analysis presents a more conservative estimate of daylight obstruction. Notwithstanding this conservative approach, the obstruction of skydome as a result of the Phase 1 Project is anticipated to be minimal (approximately 10 percent) due to the existing setback from Bennington Street. The location and massing of the Phase 1 Project buildings limit visible skydome obstruction along Bennington Street while maximizing the accessibility of the Phase 1 Project Site to the Suffolk Downs MBTA Blue Line Station.

Solar Glare

The exterior building materials have not yet been finalized for the Phase 1 Project, however, it is not anticipated that highly-reflective glass will be employed in any of the building facades. The Phase 1 Project will be designed to minimize the potential for solar glare that could adversely impact traffic safety along nearby roadways and solar heat gain in nearby buildings through the consideration of low/non-reflecting exterior building materials as design progresses.

Air Quality

No significant adverse air quality impacts from the Phase 1 Project are anticipated on a local level (microscale) or regional level (mesoscale) given the Phase 1 Project is not expected to generate a significant amount of vehicular traffic, as discussed above.

Stormwater Management/Water Quality

The Phase 1 Project will result in approximately six acres of new impervious area associated mostly with the new building and new paving for the access road and pedestrian walkways. The Phase 1 Project Site is almost entirely pervious (dirt race track and landscaped infield) with the exception of an on-site driveway.

The Phase 1 Project will include a stormwater management system designed to mitigate potential impacts to the existing watershed from the newly developed area. Proposed stormwater management measures will control peak runoff rates, provide water quality treatment, promote groundwater recharge, and sediment removal. The elements of the Phase 1 Project stormwater management system are described further in Chapter 7, *Infrastructure*.

Wetlands and Waterways

The Phase 1 Project will not have any significant impact on wetland areas. The Phase 1 Project includes work within the 100-foot buffer area, but does not include any work within jurisdictional wetlands resource areas, except LSCSF. .

Noise

The noise assessment presented in Section 5.9 of Chapter 5, *Environmental Protection*, demonstrates that the Phase 1 Project will comply with City of Boston noise regulations. Based on preliminary design, the Phase 1 Project's operations will have no adverse noise impacts at nearby sensitive receptor locations.

Solid and Hazardous Materials

No regulated impacts to groundwater have been identified within the Phase 1 Project Site and none are anticipated based on the history of the property and the results of groundwater testing completed for the Phase 1 Project Site, as well as the larger Project Site. The Phase 1 Project Site was filled prior to the original development of the race course in the 1930s. The urban fill was previously determined to be a background condition and was addressed in a Response Action Outcome ("RAO") Statement submitted to DEP in February 1998. The RAO statement concluded there was No Significant Risk to human health, public welfare, safety, and the environment. Urban fill and other hazardous materials discovered during construction activities will be handled in accordance with federal and state regulations.

Groundwater/Geotechnical

Proposed stormwater management measures will control peak runoff rates, provide water quality treatment, promote sediment removal, as well as promote groundwater recharge.

Foundations for new buildings planned in the Phase 1 Project Site will consist of end bearing piles driven to glacial till or bedrock with consideration of a partial level of below grade parking. Because the Phase 1 Project is to be supported on deep foundations with limited below grade excavation, the impacts to adjacent properties due to foundation installation activities will be limited.

Construction

Phase 1 Project construction will not require demolition of existing structures, thus, significantly reducing construction waste. To mitigate temporary construction impacts, a construction management plan will be prepared for review by the City. All work will be completed in compliance with state and federal regulations.

Historic Resources

Construction of the Phase 1 Project will not create an adverse effect on any historic resources listed in the National or State Registers of Historic Places. The Phase 1 Project is sited in the southeastern corner of the Master Plan Project Site and will include construction within a small portion of the Suffolk Downs race track (Figure 1.7). As described in Chapter 6, *Historic Resources*, the Suffolk Downs complex is listed in the Inventory of Historic and Archaeological Assets of the Commonwealth. The race track is identified as a contributing element to the history of the Suffolk Downs complex. Retention of the race track is not feasible to meet the programmatic requirements of the Phase 1 Project, nor is retention of the race track feasible in connection with the future redevelopment of the Master Plan Project Site. Appropriate recognition honoring the history of the Master Plan Project Site, including signage and display of pictures and memorabilia, will be included in the Phase 1 Project and the Master Plan Project.

Infrastructure

The Phase 1 Project is estimated to generate approximately 39,000 gallons per day of sanitary sewage and use approximately 43,000 gallons per day of potable water. The Phase 1 Project buildings will include low-flow and low-consumption plumbing fixtures. In addition, the reuse of roof runoff will be considered for irrigation to reduce potable water usage.

As discussed in Chapter 7, *Infrastructure*, adequate infrastructure facilities and services are available within the area to serve the Phase 1 Project, including water supply, sanitary sewer, and drainage systems. Gas, electric, telephone and telecommunications utilities are also located proximate to the Phase 1 Project Site. The Proponent will continue to work with the utility providers to verify demands and serviceability to the Phase 1 Project.

1.10.3 Conclusion

The Phase 1 Project will not result in significant environmental impacts. The Phase 1 Project is located within a previously developed site and has been designed to improve the environment, not damage it, because adequate measures to avoid, minimize, and mitigate the potential Phase 1 Project-related impacts will be employed, as necessary. Based on this and the above evaluation, the Proponent respectfully requests the BPDA to issue a Scoping Determination waiving further review pursuant to Section 80B-5.3(d) of the Boston Code.

Source: ArcGIS World Topo Map

Project Site

Figure 1.1

Locus Map

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Source BING

Project Site
Phase 1 Project Site
Town Line

Figure 1.2
Project Site Context

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Source BING

Project Site

Phase 1 Project Site

Town Line

Figure 1.3

Existing Conditions

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Source:
Digital orthophotograph, MassGIS 2014.

Figure 1.4

Existing Site Photographs
Key Map

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Prepared by Beals and Thomas, Inc.

1 Suffolk Downs MBTA Blue Line Station (October 20, 2017)

2 Project Site entrance looking north at the intersection of Tomasello Drive with Route 1A (October 20, 2017)

3 View looking east down Tomasello Drive (October 20, 2017)

4 Track and infield (October 20, 2017)

5 Grandstand building from Tomasello Drive (October 20, 2017)

6 Vacant former administration building from surface parking lot (October 20, 2017)

Source:
Photographs taken by Beals and Thomas, Inc.

Figure 1.5a

Existing Site Photographs

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

7 Grandstand building from surface parking lot (October 20, 2017)

8 Eastern property boundary along Washburn Avenue (October 20, 2017)

9 View westerly from intersection of Winthrop Avenue and Revere Beach Parkway to the Project Site entrance at the intersection of Tomasello Drive with Winthrop Avenue (October 20, 2017)

10 Typical view of barns and stable area (January 6, 2017)

11 Sales Creek within infield (July 13, 2017)

12 View of the infield pond (May 25, 2017)

Source:
Photographs taken by Beals and Thomas, Inc.

Figure 1.5b

Existing Site Photographs

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Figure 1.6a

Conceptual Master Plan Project - Program A

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Commercial
Residential
Retail
Hotel
Mixed-use
Urban Square

Figure 1.6b

Conceptual Master Plan Project - Program B

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

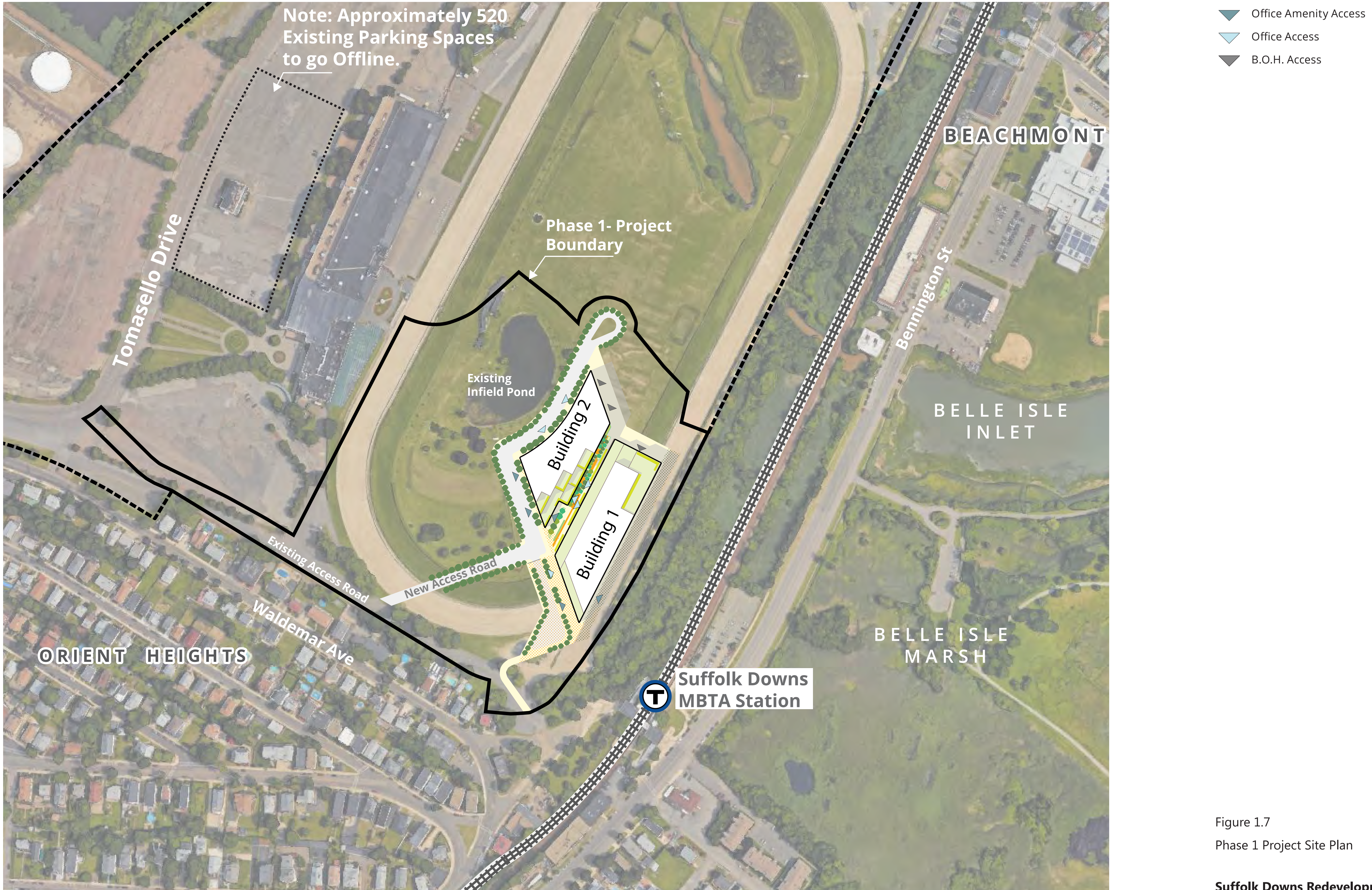

Figure 1.7

Phase 1 Project Site Plan

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

2

Urban Design

This chapter addresses the urban design approach for the Phase 1 Project. For the larger context, Section 2.4 provides an overview of the Master Plan Project framework for which the Phase 1 Project fits within, and the urban design approach for the Master Plan Project Site. Section 2.2 discusses the urban design approach specific to the Phase 1 Project.

The Phase 1 Project is located in the southeastern corner of the Master Plan Project Site adjacent to the Suffolk Downs MBTA Blue Line Station (Figure 1.7) with views of the existing race track and infield, as well as Belle Isle Marsh. The Phase 1 Project takes advantage of these assets while providing a welcoming and pleasant experience for both pedestrians and building occupants with enhanced access to the Suffolk Downs MBTA Blue Line Station. The Phase 1 Project unlocks the potential for the development of Belle Isle Square – one of the three distinct neighborhood retail districts proposed (and discussed below) as part of the Master Plan Project.

2.1 Summary of Key Findings and Benefits of the Master Plan Including the Phase 1 Project

Redevelopment of the Master Plan Project Site offers a unique opportunity to create a new mixed-use neighborhood anchored by quality public transit and an extensive open space network that integrates the surrounding natural resources. The Master Plan Project, including the Phase 1 Project, has been planned to have a strong urban design framework that connects to the surrounding context and has the flexibility to adapt to different programs.

The key findings and benefits Master Plan Project, which includes the Phase 1 Project, related to urban design include:

› **A Dynamic Mixed-Use Program** – The Master Plan Project offers a dynamic mix of uses that aim to encourage commercial and innovation uses, a variety of housing types, street front neighborhood retail, as well as an extensive publicly-accessible open space network.

› **Creation of Multiple Neighborhoods** – The Master Plan Project provides different styles of living for a diverse population, including families, empty nesters, seniors, and younger workers, including recent graduates. The planned new neighborhoods respond to the existing context of Orient Heights, Winthrop Avenue, Beachmont, the Belle Isle Marsh, and the East Boston Greenway while also reinforcing the framework of the new on-site open space and street networks.

- **Expansive Publicly-Accessible Open Space Network** – The conceptual master plan has been designed to reconnect East Boston and Revere with an approximately 40-acre publicly-accessible open space network that represents approximately 25 percent of the Master Plan Project Site. The open space network allows for the creation of multi-functional open spaces that provide relaxing and restorative places to walk, run, and recreate while also serving to manage stormwater and to be resilient to future climate change impacts.
- **Improved Connections and Transportation Access** – The mix of uses will be interspersed throughout the Master Plan Project Site to create a cohesive fabric of new urban streets, walking paths, and bicycle accommodations and connections. Two important retail squares, adjacent to the Suffolk Downs and Beachmont MBTA Blue Line stations, will provide for pedestrian-friendly access to public transit and create multi-modal transportation opportunities, including bicycle stations, which encourage the use of alternative transportation modes to access the Master Plan Project Site.
- **Public Realm Activation** – Key community amenities will be incorporated throughout the Master Plan Project Site to activate the public realm, including three distinct neighborhood retail districts, a landscaped amphitheater, and active and passive recreation areas (including dog-friendly open spaces and playgrounds). Additionally, ground-level amenities are planned, with local restaurants and on-site retail able to spill out onto adjacent sidewalks and open space areas, which will support already existing retail and restaurants in the surrounding neighborhoods.
- **Healthful Living** – The Proponent recognizes that the built and natural environments in which people live, work, and play greatly influence our health and well-being. Therefore, the Master Plan Project is planned with an extensive walking and bicycling network throughout the Master Plan Project Site.

2.2 Phase 1 Project Proposed Design

The Phase 1 Project is located adjacent to the Suffolk Downs MBTA Blue Line Station and along the southern boundary of the Master Plan Project Site and the MBTA Blue Line corridor with views to the existing infield of the race track and Belle Isle Marsh. The Phase 1 Project takes advantage of these assets while providing a welcoming and pleasant experience for both pedestrians and building occupants with enhanced access to Suffolk Downs Station. The Phase 1 Project includes two buildings – Building 1 and Building 2 – that share a central north-south open-air walkway that presents an opportunity for relaxation, collaboration and innovation for office tenants (Figure 2.1).

Approximately 215,000 SF of internalized structured parking space is provided as part of these two buildings, accommodating up to approximately 520 parking spaces. Building 1 and Building 2 are connected by a single below-grade level of parking. Building 2 accommodates three additional levels of above-grade parking (Figure 2.2a through 2.2c).

Both Building 1 and Building 2 are approximately 120 feet in height and each holds approximately 260,000 SF of office space, of which a total of 20,000 SF are office amenities for activating public realm (Figure 2.3). Table 2-1 below provides a summary of the Phase 1 Project program.

Table 2-1 Phase 1 Project Development Program

Use/Element	Size
Commercial Office	520,000 GSF[1]
Structured Parking	Up to 520 spaces

GSF Gross Square Feet, as defined in the applicable zoning codes.
1 In the form of two approximately 260,000-GSF buildings and excludes approximately 215,000-GSF of structured parking a portion of which will be below-grade.

The northern side of the Phase 1 Project is provided with a view and access to the existing infield while the southern side is provided with views to Belle Isle Marsh on the upper levels and the adjacency to Suffolk Downs MBTA Blue Line Station. By providing two buildings versus one larger building, the west side of the parcel is broken down into two 230-foot long facades, providing a more appropriate scale for those strolling down from and to the Suffolk Downs MBTA Blue Line Station.

Along the open-air walkway, which is designed to provide a more intimate experience, the massing of both buildings incrementally steps away from the walkway as the building gets taller and a series of outdoor terraces are generated These terraces are adequately sized to accentuate the intimate nature of this area and are visually connected to create a sense of community. Furthermore, by terracing the massing, more daylight gets into both the open-air walkway and inside the buildings, making the entire space feel more open and inviting.

The building design of the Phase 1 Project works well with the overall Master Plan Project framework by creating a well-defined street wall along future public ways and a strong base, middle, and top to human scale, while allowing for future flexibility. The proposed pedestrian passageway between the two Phase 1 Project buildings aims to break up the massing, and create a safe and active urban space by animated ground floors and building terraces. The design of the buildings also aims to establish a strong presence along a portion of the proposed central common reinforcing its curved design, while still maintaining flexibility.

2.2.1 Phase 1 Project Open Space

The open space proposed as part of the Phase 1 Project is designed to tie directly into the 40-acre open space network. Active recreation and views to existing landscape features, such as Belle Isle Marsh, and future features such as the 15-acre central common, are prioritized and dictate the orientation of the buildings.

The Phase 1 Project open space includes a total of approximately 13.2 acres of publicly accessible open space comprised of three key components as described below:

- Approximately 12 acres of existing open space will be made accessible to the public. The existing open space, which is currently not accessible to the public, includes the infield pond, portions of the grassy infield area and the race track. The infield and race track allow for active recreation and pedestrian access into the open space from the Phase 1 Project buildings and drive.
- Approximately 0.4 acres of open spaces will be improved in association with the construction of a pedestrian walkway between and around the two buildings. The walkway between the two buildings is designed as an open space element that provides connectivity through the block and between the buildings, but also provides opportunities for seating and landscaping elements which will provide a much more intimate experience. This walkway is activated both by lobby entrances, as well as a row of small incubator office spaces. This open space corridor will link the two buildings physically and visually.
- Approximately 0.8 acres of public realm improvements connecting the Phase 1 Project Site to the Suffolk Downs MBTA Blue Line Station.

The Phase 1 Project open space program has been designed to assume Phase 1 may exist as stand-alone office buildings and will be superseded by the open space program for the Master Plan Project.

2.2.2 Phase 1 Project Public Realm Improvements

As shown in Figure 1.7, the Phase 1 Project is limited to only a small portion of the Master Plan Project’s proposed roadway network and public realm. As such, the Phase 1 Project streetscape design approach will be similar overall to the larger Master Plan Project approach, discussed in Section 2.3, in terms of the quality of the public realm area and focus on pedestrian-friendly streets and universal accessibility throughout. The primary area of focus in the public realm will be the link between the infield open space and the Suffolk Downs MBTA Blue Line Station, as well as landscapes and areas of public access immediately adjacent to the proposed buildings. As such, the proposed internal access drive and public realm will be fully accessible, safe, and designed to enhance connectivity between key elements including the central common and the Suffolk Downs MBTA Blue Line Station.

The Phase 1 Project will include a new site drive, which will provide additional vehicular and pedestrian access along the eastern border of the open space and will be designed as a landscaped boulevard. Both newly planted and existing trees will be utilized to provide shade and create a comfortable pedestrian environment along the roadway from the Master Plan Project Site entrance to the Phase 1 Project buildings and along the open space.

2.3 Master Plan Project Site Urban Context

As shown in Figure 2.4, the Master Plan Project Site is uniquely positioned between the thriving neighborhoods of Orient Heights in East Boston and Beachmont in Revere, as well as being in close proximity to other neighborhoods of both East Boston and Revere. It is also situated in the corridor between two great urban beaches: Revere Beach and Constitution Beach. East of the Master Plan Project Site, on the other side of the MBTA Blue Line tracks and Bennington Street, is the Belle Isle Marsh Reservation, which is an extraordinary natural and open space resource for the Master Plan Project Site and surrounding area.

One of the Master Plan Project Site's greatest strengths is its two direct connections to the MBTA Blue Line - Beachmont and Suffolk Downs stations. Using the Blue Line, the Master Plan Project Site is just five minutes from Logan Airport and 11 minutes from State Street, in the heart of Boston's financial district. The Blue Line also offers connections to South Station and its commuter rail lines via the Silver Line, and to North Station and Back Bay Station and their respective commuter rail lines via the Orange Line.

The Master Plan Project Site is also directly served by Route 1A, a major north/south state highway, which provides direct connections southbound via the two Boston Harbor Tunnels to Interstate 93 (North-South Highway Corridor) and Interstate 90 (East-West Highway Corridor). In addition, Route 1A provides connections to Route 16, Route 1 and Revere Beach Parkway.

Urban design challenges related to the Master Plan Project Site include an oil tank farm to the west and the MBTA Blue Line train tracks to the east, both of which limit access to the Master Plan Project Site. The Master Plan Project Site is also subject to potential risk of coastal flooding from projected sea level rise given its proximity to Belle Isle Marsh and Chelsea Creek.

2.4 Master Plan Planning Principles and Design Goals

The following are key goals and objectives of the Master Plan and Phase 1 Project:

- Create a vibrant mixed-use, walkable community;

- Provide a variety of housing types, including townhomes, apartments, condominiums, and senior housing to meet the needs of Boston and Revere residents;
- Provide sufficient publicly-accessible open space that preserves existing natural resources, and includes both active and passive spaces;
- Activate the public realm with open space amenities and extensive ground-floor retail aimed at serving the on-site users and complementing existing retail in the surrounding neighborhoods;
- Enhance and expand job creation and economic opportunity by providing employment opportunities near new and existing residential areas;
- Leverage the proximity to public transit to limit traffic impacts and provide easy access to workplaces and entertainment venues in other Boston neighborhoods;
- Approach sustainability and resilience district-wide with forward-thinking climate change resiliency strategies, as well as specific measures for individual development through the incorporation of green building design.

2.5 Master Plan Framework and Urban Design Approach Overview

The Master Plan Project has been planned around the goals of connectivity and accessibility for this currently unconnected site. The conceptual design of the Master Plan Project is arranged around a strong open space and public realm framework that provides an opportunity to reconnect the East Boston and Revere neighborhoods surrounding the Master Plan Project Site. Approximately 40 acres of open space, which represents approximately 25 percent of the Master Plan Project Site, is designed to provide a contiguous network of open spaces that offer a diversity of experiences, including ecological, environmental, active, passive, and recreational, as well as programmed uses (Figure 2.5). The Master Plan Project Site and its public space will be porous, connected, and open to the public and the community. The publicly-accessible open space network also sets up a strong relationship and potential connectivity to surrounding regional assets, such as the East Boston Greenway and Revere Beach.

The Master Plan Project responds sensitively to surrounding context, particularly to the Orient Heights neighborhood, which shares the south-west boundary with the Master Plan Project Site. A series of townhomes are planned along the lower edge of Orient Heights to create a scale transition of mid-rise housing. The orientation of the massing for these buildings will allow for continued views to the sky and to the 15-acre central common. Refer to Figures 2.6a and 2.6b for a rendering and massing strategy of the Master Plan Project, respectively.

Surrounding the open space armature is a Main Street Retail District that runs through the middle of the Master Plan Project Site linking the Beachmont and

Suffolk Downs MBTA Blue Line Stations (Figure 2.7). Along the Main Street corridor are a series of nodes that create opportunities for creation of public squares and plazas, including two important transit-oriented squares called Belle Isle Square and Beachmont Square are proposed in proximity to the Suffolk Downs and Beachmont MBTA Blue Line Stations, respectively. The key goal of these urban squares is to create lively pedestrian-friendly access to the stations with active retail uses and multi-modal transportation opportunities, including bicycle Hubway stations to encourage public transit usage to and from the Master Plan Project Site.

This formation of the Main Street Retail District and the open space system forms the important master plan framework around which three distinct neighborhoods will be created to offer different urban experiences based on proximity to the public realm and surrounding context and live and work building typologies. These neighborhoods respond to the existing context of Orient Heights, Winthrop Avenue, and Beachmont while also responding to the new framework of the on-site open space and street networks. A series of pedestrian, bicycle and vehicular connections will link these on-site neighborhoods to the open space and retail districts as well as McClellan Highway (Route 1A) and Winthrop Avenue (Figure 2.8).

2.5.1 Master Plan Project Uses

Within the Master Plan Project framework, a series of urban block clusters are set up to create a community environment where pedestrian walkways and open spaces create opportunities for interaction and play. This organization also provides for flexibility respecting development of individual blocks as they evolve through time, while still upholding overall urban design and master plan principals. The residential and commercial uses will be interspersed throughout the clusters to ensure a dynamic mixed-use environment that is woven together in a cohesive fabric of new urban streets, walking paths, open spaces and bicycle connections. Up to 10,000 housing units of a variety of unit types and sizes are proposed as part of the Master Plan Project. Units will be designed to attract a wide variety of residents, from families to empty nesters, younger workers, including recent graduates, and multi-generational households. The commercial component of the Master Plan Project is proposed to accommodate Amazon’s entire eight million square-foot commercial office requirement (Program A). Under either Program A or B, commercial uses will be located on portions of the Master Plan Project Site that include areas adjacent to the two existing MBTA Blue Line stations, with such uses radiating through the Master Plan Project Site along a network of new streets, neighborhood retail districts, and open spaces.

Street-level retail is a core element of the Master Plan Project. Up to approximately 550,000 SF of retail is proposed, which will create and include three distinct neighborhood retail districts. These planned districts, as described above, are:

1. Beachmont Square (adjacent to the MBTA Beachmont station on the Blue Line);
2. Belle Isle Square (adjacent to the MBTA Suffolk Downs station on the Blue Line); and
3. A Main Street Retail District (located in the heart of the Master Plan Project Site).

The retail space is planned to generally be located on the ground floor of mixed-use buildings in order to create a lively streetscape and a true live-work-shop-play environment (Figure 2.9). Hotel space with up to approximately 835 rooms is proposed as part of the Master Plan Project. These accommodations will support the office and residential uses for both business travelers and other visitors from out of town. Furthermore, the surrounding innovative retail, restaurants, and nightlife planned as part of the Master Plan Project will appeal to visitors and provide ample entertainment during their stay.

2.5.2 Height and Massing Strategy

The height and massing strategy for the Master Plan Project has been developed keeping in mind the scale of adjacent neighborhoods and transitions, to allow for access to sunlight to public spaces, creating appropriately scaled development and maximizing views for all buildings while creating privacy. The height strategy shown in Figure 2.10 also responds to the FAA height limits given the proximity of Boston-Logan International Airport.

2.5.3 Open Space Network

The approximately 40-acre open space network is designed to provide a contiguous network of open spaces that offer a diversity of experiences including ecological, environmental, active, passive, recreational and programmed uses. Key open spaces within the development will include an approximately 15-acre central common, landscaped amphitheater, passive and active recreational areas, playgrounds, dog runs and several neighborhood plazas. This new open space network will incorporate existing wetland features on the Master Plan Project Site and will seek to provide connections via community paths to Revere Beach, Belle Isle Marsh, the East Boston Greenway and other nearby open spaces. The vibrant publicly-accessible open space, plazas, and recreation spaces provided in this new development will therefore attract and benefit not just on-site users but also those from the wider neighborhood. The open space within the Phase 1 Project will directly tie into the 40-acre open space network when completed.

2.5.4 Public Realm Improvements

The creation of a vibrant, public realm is at the core of the Master Plan Project. This is achieved through pedestrian-friendly and publicly accessible streetscapes, a diverse network of outdoor open spaces, including access to existing and new landscape amenities, active recreation and community programming, as well as a thriving mixed-use neighborhood with retail, food and beverage amenities.

The conceptual master plan proposes a network of four primary types of streets, including: a landscaped parkway/boulevard; interior streets designed to the BTD Complete Streets Guidelines; 'green spines' that will be designed to act as part of the stormwater strategy, in addition to supporting the circulation and urban accessibility strategy; and a pedestrian-only active strip or 'sporty spine' (Figure 2.11).

2.5.5 Adaptability of the Master Plan Project

The Master Plan Project is set up to be highly flexible and adaptable to allow for changes in program and how the Master Plan Project Site is built out over time. The Master Plan Project framework is centered around a robust urban structure of open spaces and a street network that creates a series of clusters of activity. Such organization allows for flexibility to develop a varying mix of uses while still upholding the overall urban design and Master Plan Project principles. To this end, the same overall plan has the ability to accommodate a variety of different mixes of uses, including either of those presented in Programs A and B (Table 1-1 of Chapter 1, *Project Description and General Information*). Similarly, the overall height strategy remains the same while principles of shaping the massing apply to all uses.

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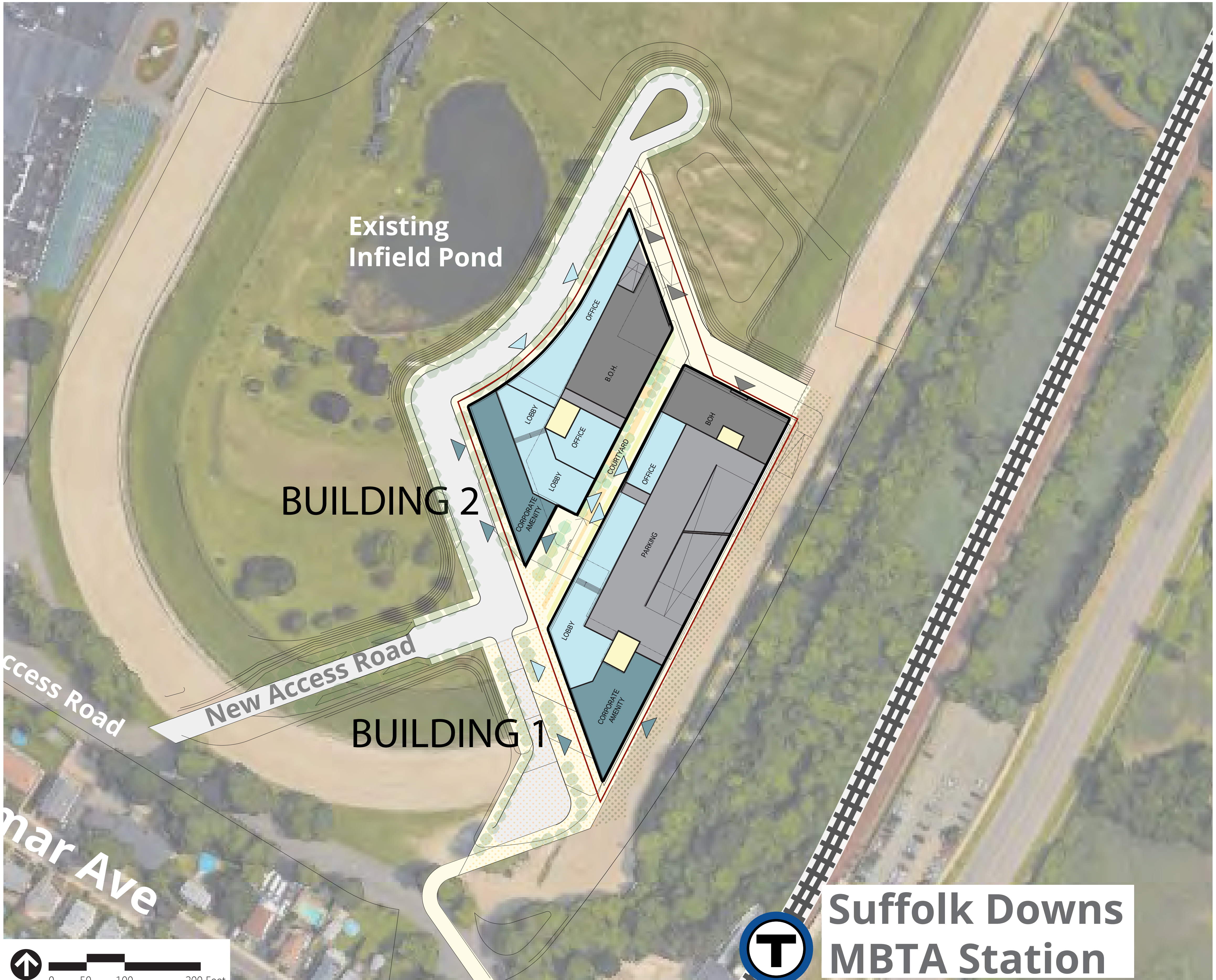


- Office Amenity
- Office
- B.O.H.
- Parking
- Core

Figure 2.1

Phase 1 Project Ground Floor Plan

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

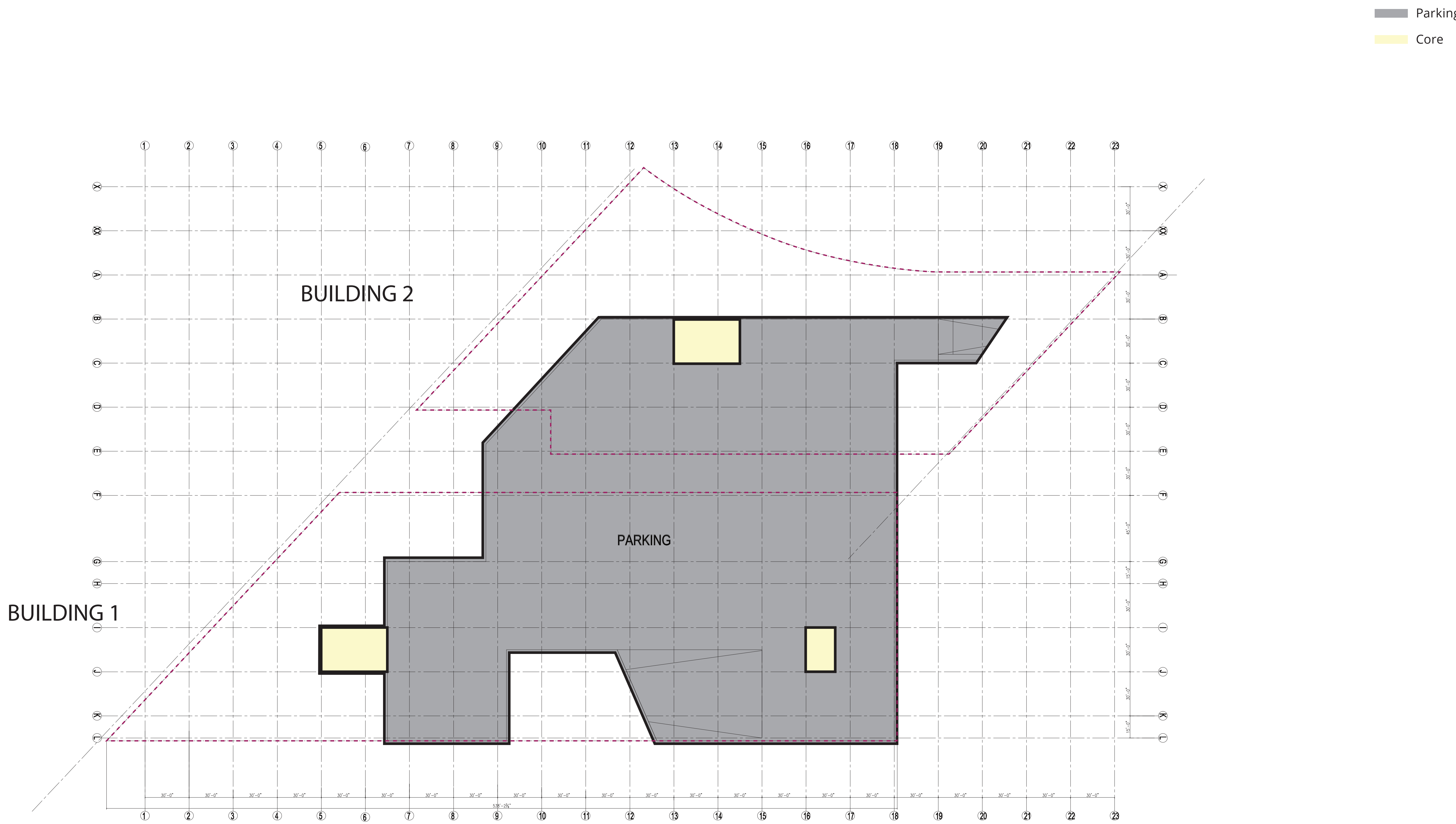


Figure 2.2a

Phase 1 Project Basement Parking

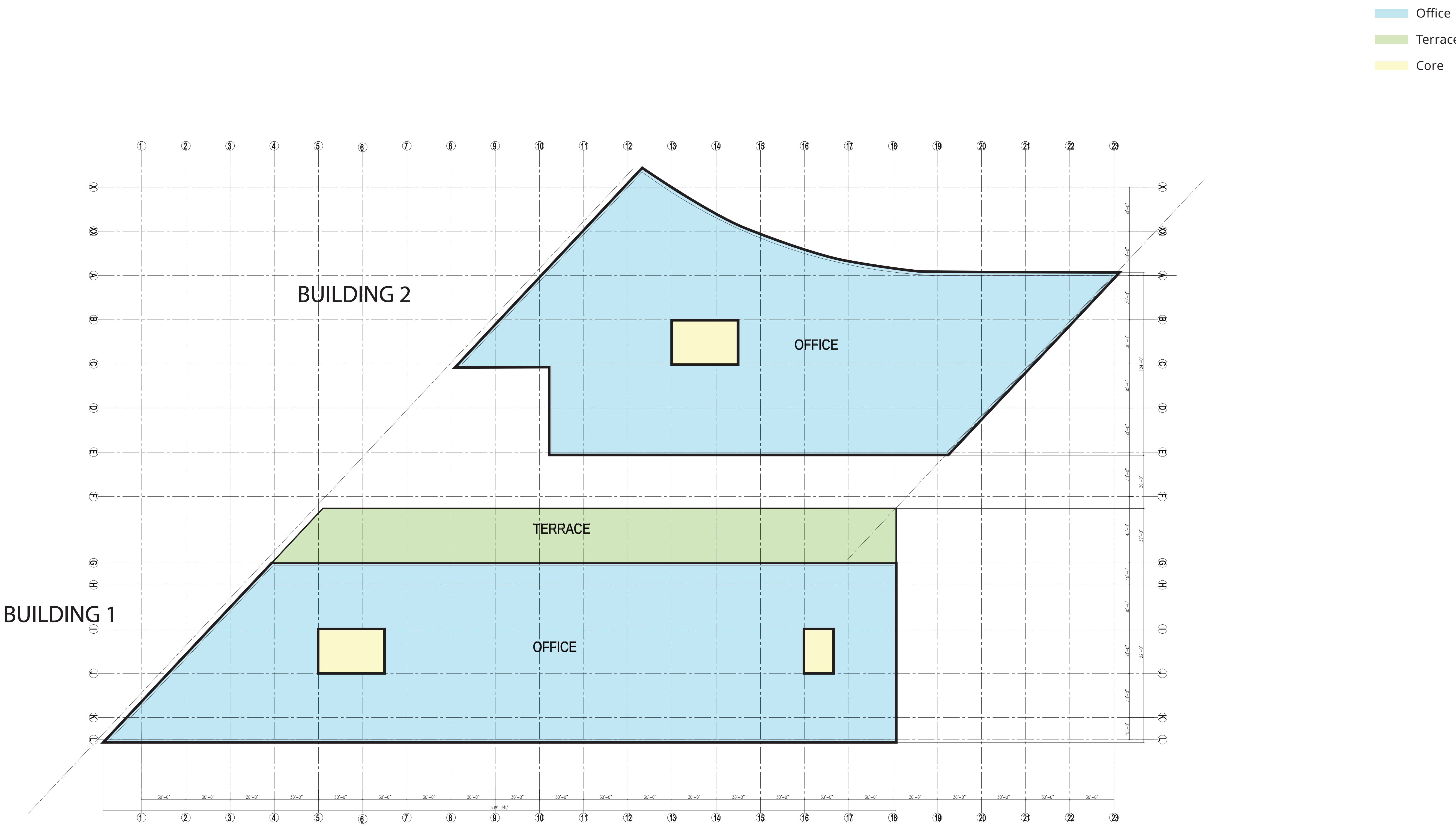


Figure 2.2b

Phase 1 Project Office Le el 3 Plan

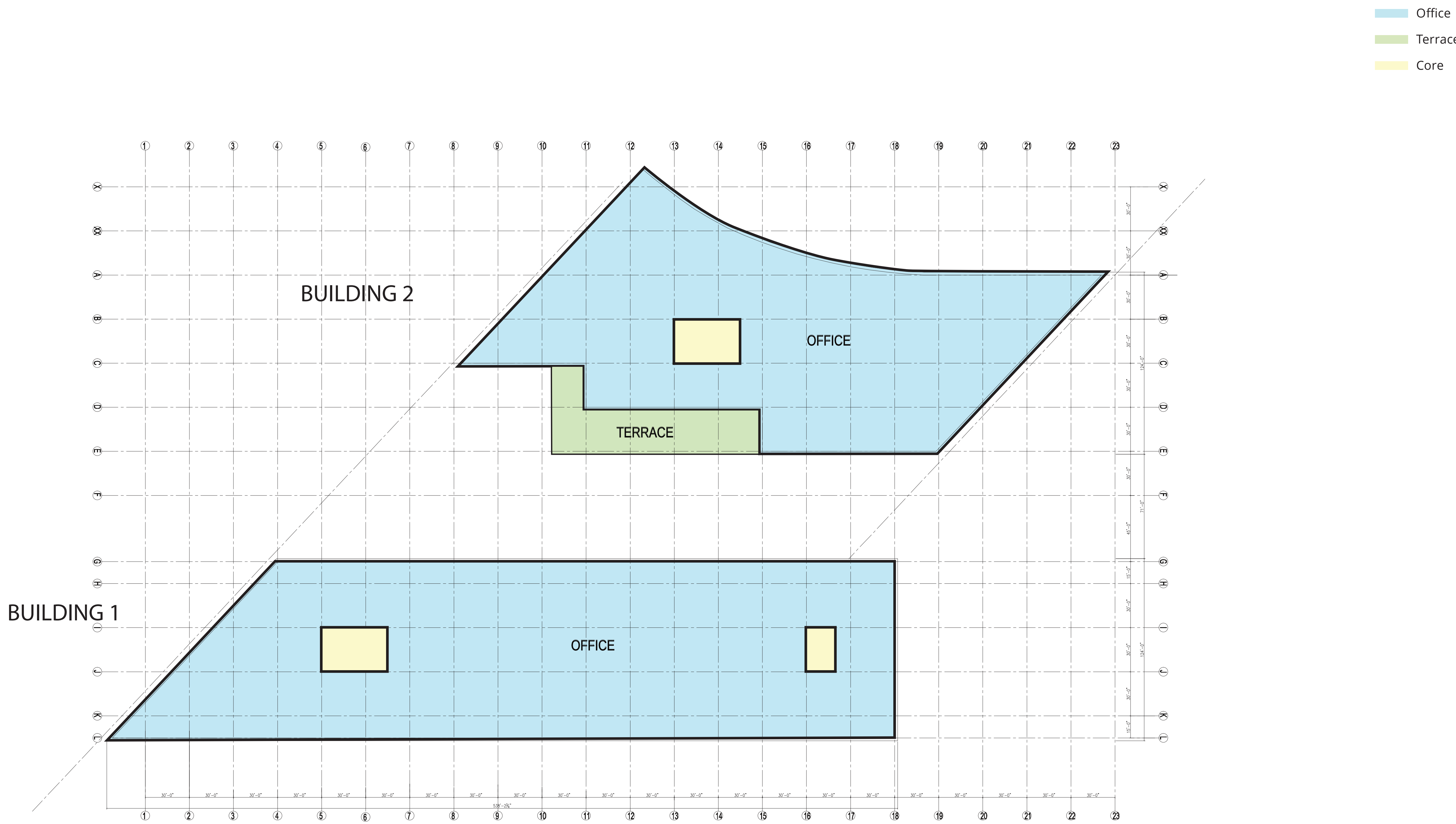
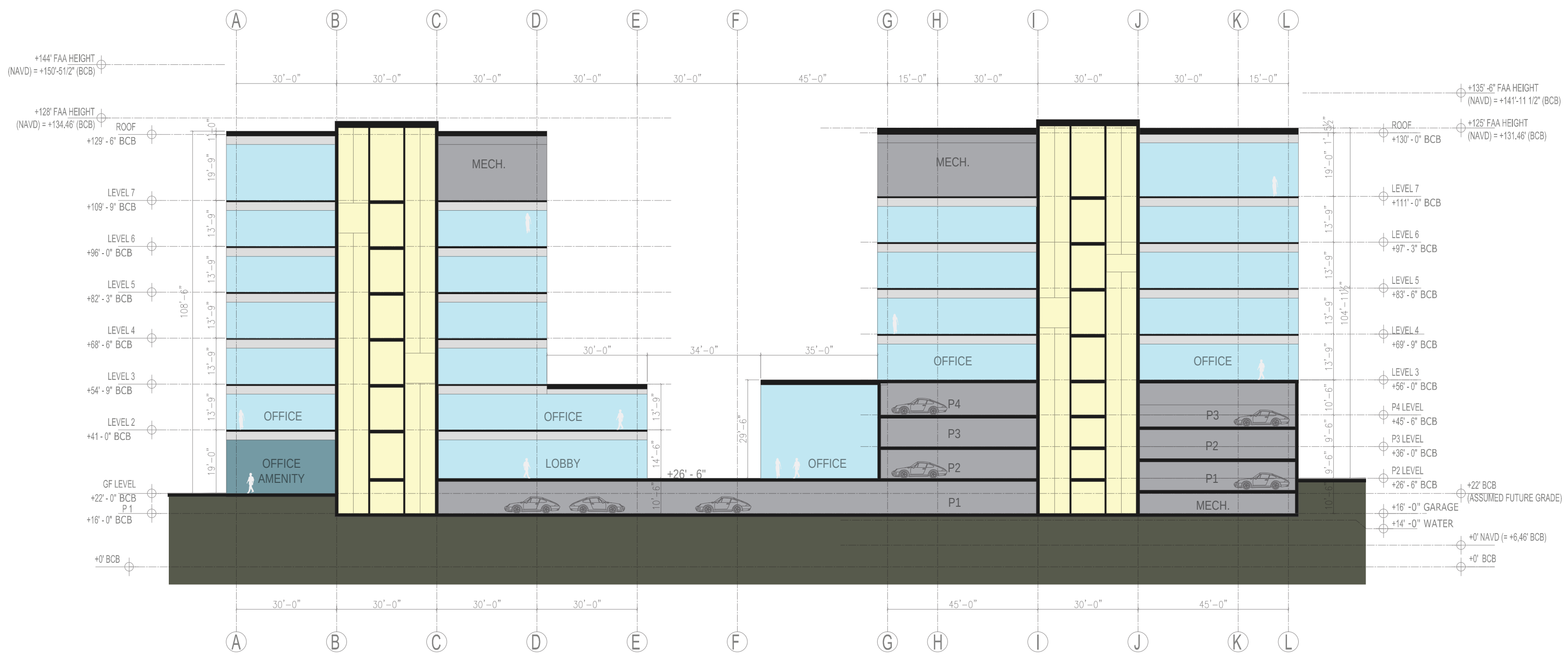


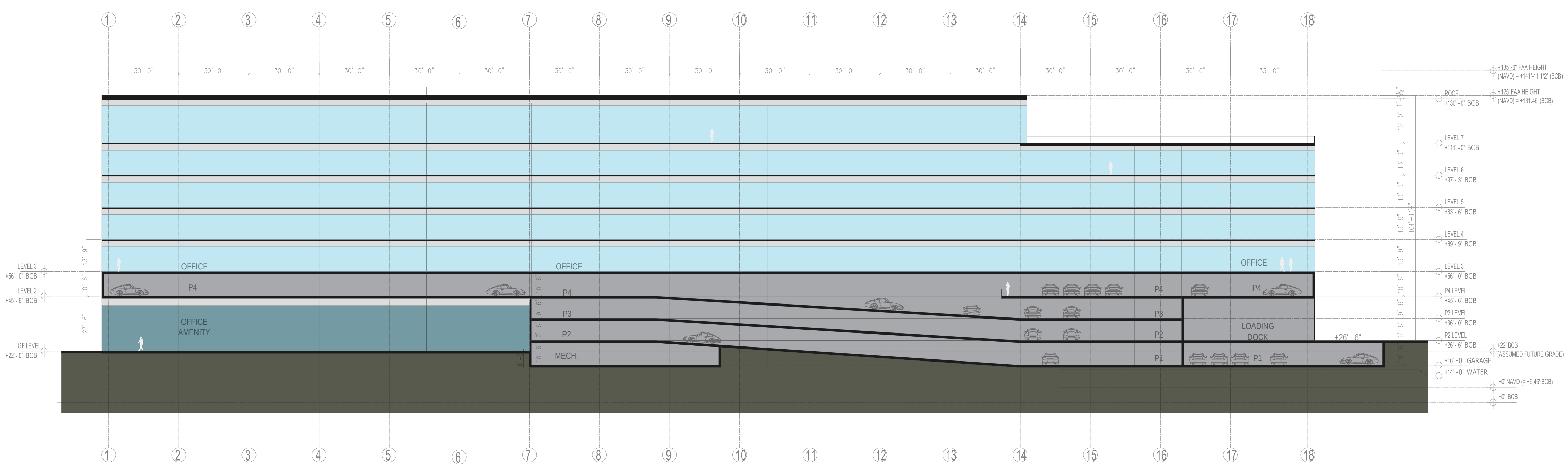
Figure 2.2c

Phase 1 Project Office ypical Floor Plan

Office Amenity
Office
B.O.H.
Parking
Core



BUILDING 2 OPEN-AIR WALKWAY BUILDING 1



BUILDING 1

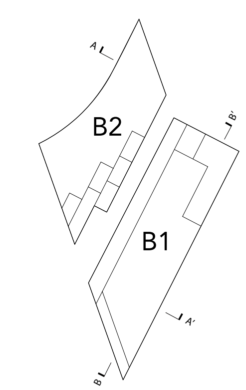


Figure 2.3

Phase 1 Project Building Sections

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Figure 2.4

Urban Context

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

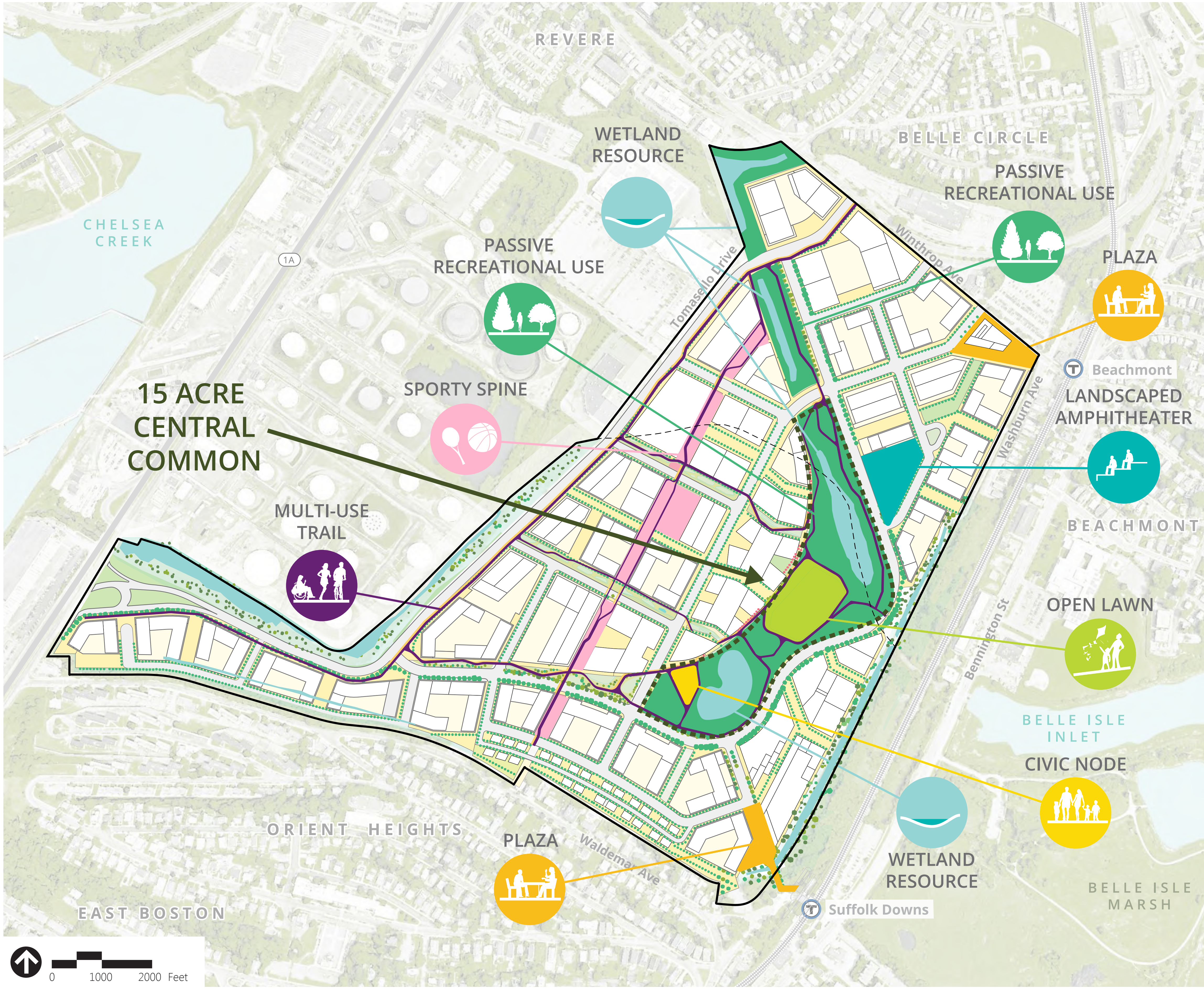


Figure 2.5

Open Space Program

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Figure 2.6a

Master Plan Project Aerial Rendering From Revere Beach

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Figure 2.6b

Building Massing Strategy

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Open Space
Main Street Retail
Urban Square

Figure 2.7

Main Street Retail District

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

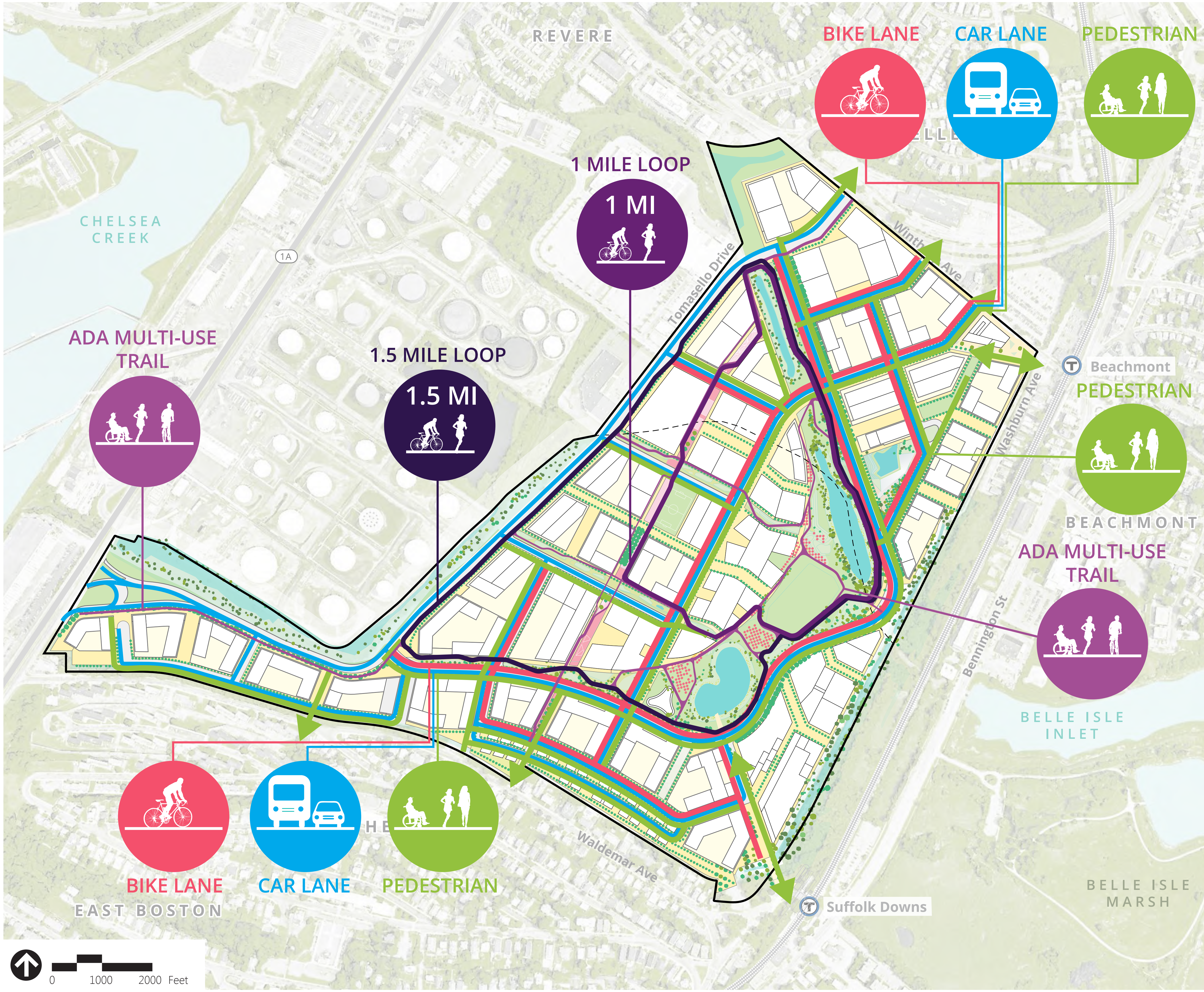


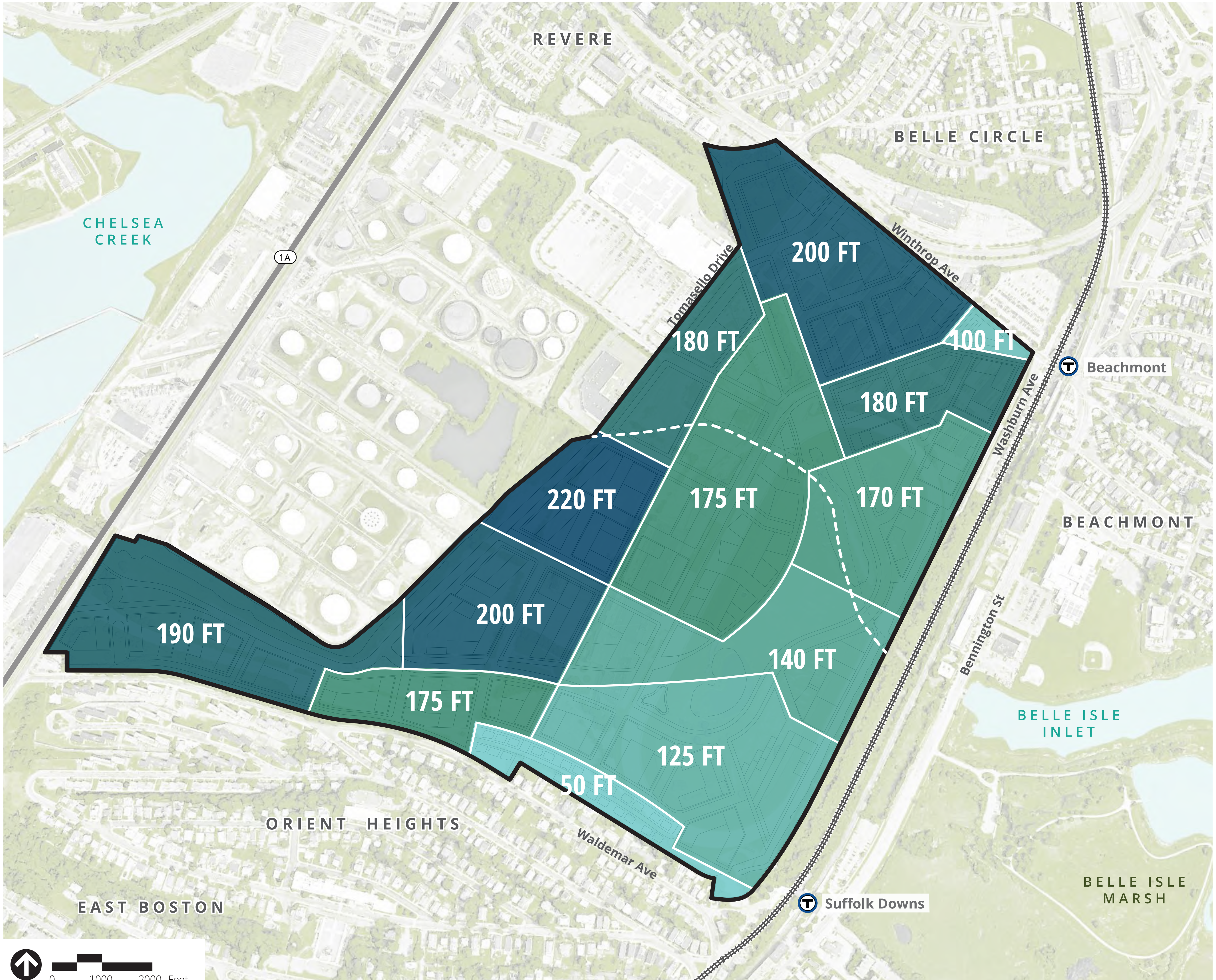
Figure 2.8

Pedestrian Access & Circulation Plan

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Figure 2.9
Conceptual Retail and Active Ground Floor Uses

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts



Notes
The proposed heights of all future buildings will be in compliance with the height requirements of the Federal Aviation Administration associated with Boston-Logan International Airport.

Figure 2.10
Building Height Strategy

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

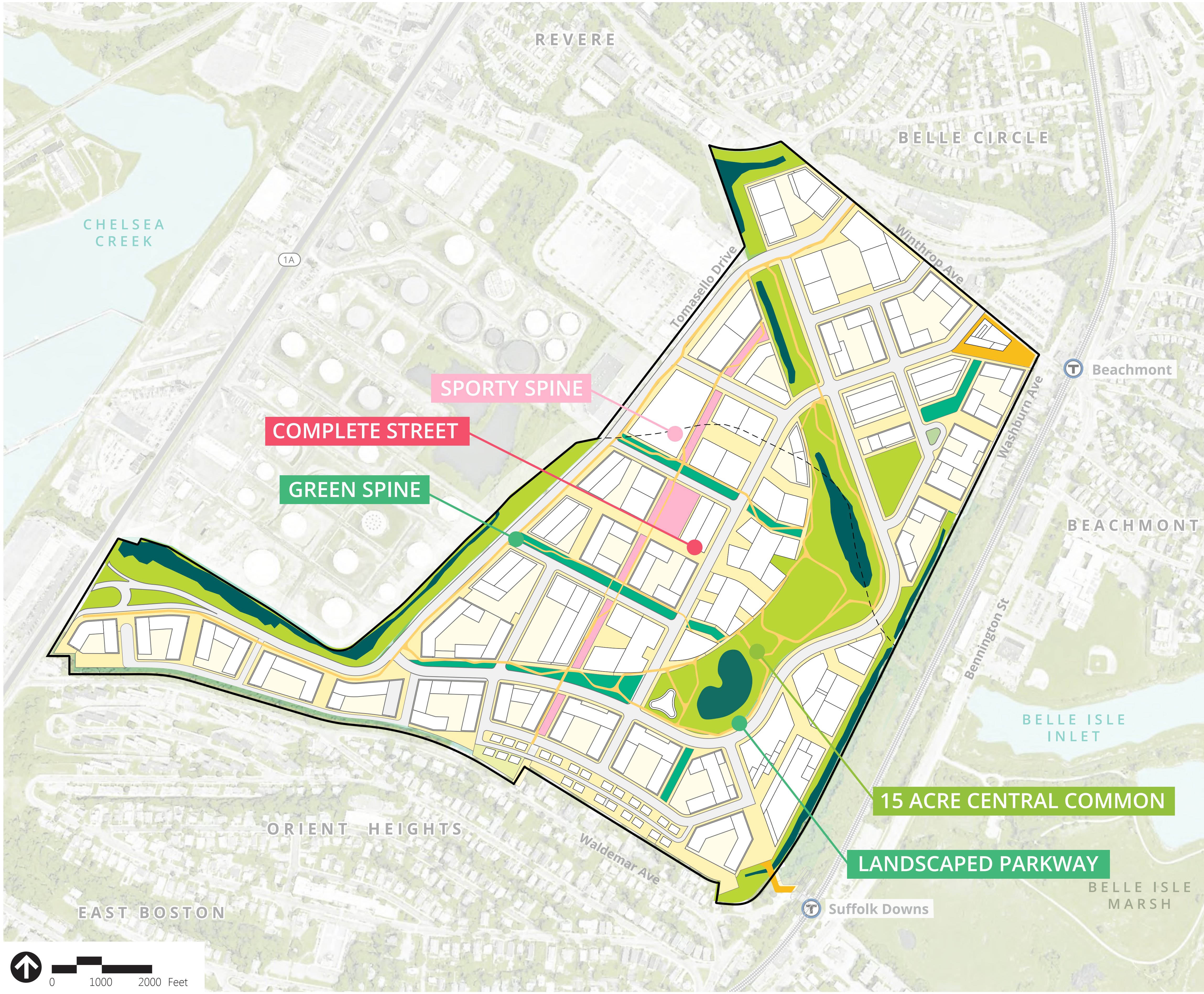


Figure 2.11

Conceptual Landscape Plan

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

3

Sustainability/Green Building and Climate Change Resiliency

The following chapter describes the overall approach to sustainable design, construction, and operation for the Phase 1 Project. Included is a preliminary assessment of green building design, in compliance with the requirements of Article 37 of the Boston Code relative to the City's Green Building policies and procedures ("Article 37"). This chapter also discusses the approach to preparing for predicted climate change, in accordance with the BPDA Climate Change Preparedness and Resiliency Policy (the "Resiliency Policy"). The required Climate Change Preparedness and Resiliency Checklist (the "Resiliency Checklist") has been completed for the Phase 1 Project and is provided in Appendix D.

The GHG emissions assessment presented herein demonstrates that the conceptual design of the Phase 1 Project includes measures to reduce overall energy usage and associated stationary source GHG emissions in support of GHG reduction goals set by both the Commonwealth and the City of Boston. Appendix D provides the complete building model results and other materials in support of the GHG assessment.

3.1 Summary of Key Findings and Benefits of Phase 1 Project

Sustainability is a key theme for the Master Plan Project, including the Phase 1 Project, as it proposes to redevelop an underutilized urban site, use land efficiently by increasing density in a mixed-use TOD and include facilities/systems internal to the Master Plan Project and Phase 1 Project Sites that aim to discourage single-occupancy vehicles and promote low-carbon modes of transportation.

The key findings related to sustainability and climate change include:

- In compliance with Article 37 of the Boston Code, the Phase 1 Project will be certifiable under the LEED for Core & Shell Developments ("LEED-CS") LEEDv4 rating system with a target of Gold.
- The Phase 1 Project will exceed the Stretch Energy Code requirement for 10 percent energy efficiency above code. Preliminary energy modeling indicates a 25 percent energy usage savings and 23 percent reduction in stationary source GHG emissions for the Phase 1 Project.

- The Phase 1 Project is proactively planning for the effects of future climate change for increases in sea level rise and storm surge, precipitation and temperatures.
- The portions of the permanent roadway to be constructed with Phase 1 Project will be designed approximately 40-inches above the 100-year FEMA flood elevation and the finished floor elevation of the buildings will be raised to account for sea level rise and localized storm surge associated throughout the anticipated life of the buildings.
- The stormwater management system for the Phase 1 Project will be integrated into the open space network and will be designed to address potential increases in storm intensity due to climate change in accordance with recent BWSC guidance to convey and detain the 10-year and 100-year design storm increased rainfall depths (6.0 and 8.8 inches, respectively).

3.2 Regulatory Context

The following sections provide an overview of the state and local regulatory context related to sustainability/green building design, energy efficiency and GHG emissions, and climate change resiliency.

3.2.1 Massachusetts Stretch Energy Code

As part of the *Green Communities Act of 2008,* Massachusetts developed the optional Stretch Energy Code that gives municipalities the option to enact a more strenuous energy performance code for buildings than the conventional state building code. The Stretch Energy Code increases the energy efficiency code requirements for new construction (both residential and commercial) and for major residential renovations or additions in municipalities that adopt it.

Effective January 1, 2017 the current Stretch Energy Code, as adopted by both the cities of Boston and Revere, requires projects to achieve, at minimum, a 10 percent energy efficiency improvement when compared to the state’s base energy code (the “Base Energy Code”). Projects may demonstrate the energy use savings by either meeting the performance standard of 10 percent better than ASHRAE 90.1-2013, or using a prescriptive methodology based on IECC 2015.

3.2.2 Article 37 of Boston Zoning Code

Article 37 submittal requirements include completing a LEED scorecard to demonstrate that a project is being designed and constructed to meet the minimum requirements to achieve a LEED Certified level (all LEED prerequisites and achieve at least 40 points) without requiring the Proponent to register and/or certify the project through the GBCI a third-party verification, or "LEED certifiable". With the LEEDv4 rating system effective as of October 31, 2016, the BPDA requires initial

Article 80-B, Large Project Review submissions to demonstrate LEED certifiable status using LEEDv4.

The Boston Interagency Green Building Committee ("IGBC") advises the BPDA on a proposed project's compliance with the provisions of the article. The Committee consists of representatives of city agencies, including the BPDA, BED, BTD, the Inspectional Services Department and the Mayor's Office.

Boston Green Building Credits

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

3.2.3 Greenovate Boston Climate Action Plan

In 2010, the Boston Climate Action Leadership Committee and Community Advisory Committees presented the City's first climate action plan: *Sparking the Climate Revolution 2010*. The report contained wide-ranging recommendations for reducing Boston's contribution to climate change, addressing the changes we cannot avoid, and engaging the Boston community in the effort. Following an update in 2011, which set a goal of reducing GHG emissions by 25 percent by 2020 (*A Climate of Progress*), Mayor Walsh released the *Greenovate Boston 2014 Climate Action Plan Update*, which reported on the City's progress towards reducing GHG emissions and preparing for the impacts of climate change. This report documents that, since 2005, community-wide GHG emissions have decreased by 17 percent, and the City of Boston has made significant progress preparing for climate change. The City, through the BPDA, uses the Article 80 Development Review process to include an assessment of likely effects of climate change in new development.

3.2.4 BPDA Climate Change Preparedness and Resiliency Policy

In conformance with the Mayor's 2011 Climate Action Leadership Committee's recommendations, the BPDA requires projects subject to Boston Zoning Article 80 Large Project Review to complete the Resiliency Checklist to assess potential adverse impacts that might arise under future climate conditions, and any project resiliency, preparedness, and/or mitigation measures identified early in the design stage. The Resiliency Checklist is reviewed by the IGBC.

3.3 Sustainability/Green Building Design Approach

Sustainability is a key theme for the Phase 1 Project as it proposes to redevelop an underutilized urban site, reuse land efficiently by increasing density in a mixed-use TOD, and provide for infrastructure/systems internal to the both the Master Plan and

Phase 1 Project Sites that aim to discourage single-occupancy vehicles and promote low-carbon modes of transportation.

The Phase 1 Project has developed a holistic approach to sustainability through strategies that address site design, water efficiency, energy efficiency, materials, indoor environmental quality and resiliency. The Phase 1 Project intends to track sustainable features and demonstrate compliance with the LEEDv4 rating system, in accordance with Article 37 of the Boston Code. The Phase 1 Project is being designed to achieve LEED Gold certifiable using the LEED-CS rating system. Refer to Figure 3.1 for the draft LEED checklist for the Phase 1 Project, which currently reflects 54 points as 'yes' with an additional 19 'maybe' points. At this early stage in design, it is anticipated that the Phase 1 Project could achieve Gold certifiable if at least six 'maybe' points are achieved.

The Phase 1 Project is targeting a variety of credits and points across the eight LEED categories, as well as the Boston Green Building Credits under Article 37, as addressed further below.

3.3.1 Integrative Process

The design team has and will continue to work in an integrated manner to define sustainability and LEED goals for the Phase 1 Project. Preliminary energy modeling has been conducted to establish an energy goal and a water budget will also be developed.

3.3.2 Location and Transportation

The Phase 1 Project is a TOD that will seek to encourage low-carbon, non-automobile transportation. Strategies include:

- Locate the Phase 1 Project on previously developed land, and retain and enhance approximately 13 acres of existing on-site open space area.
- Locate the Phase 1 Project within approximately ¼-mile of the existing, dense residential neighborhood of Orient Heights in East Boston and close to numerous diverse uses recognized by LEED requirements.
- Locate the Phase 1 Project in an area served by public transportation, including two rapid transit stations along the MBTA Blue Line, both of which are within a ½-mile walk. The Suffolk Downs station is adjacent to the Phase 1 Project Site and will directly serve the Phase 1 Project while the Beachmont MBTA Blue Line station to the north is also within a ½-mile walk.

  Additionally, three bus lines (450, 459, and 119) are located within a ½-mile walk with stops on William McClellan Highway. While this does not meet LEED criteria for bus service (¼-mile), there is bus access within a short walk (approximately eight minutes). As the Master Plan Project is built out, internal site transportation will further improve access to the Phase 1 Project, including potential additional MBTA bus service.

- Incorporate on-site short term and long-term bicycle storage and shower facilities. The Phase 1 Project is not currently located within proximity to an existing bike path/network as the East Boston Greenway terminates close to the Orient Heights T station. However, the Master Plan Project plans to connect the East Boston Greenway to Revere Beach to further encourage the use of this alternative mode of transportation.
- The Proponent is committed to working with Hubway, Boston's public bike share provider, to install a public bicycle share station as part of the Phase 1 Project.
- Incorporate electrical vehicle ("EV") supply equipment in two percent of the parking spaces proposed within the building. These spaces will be clearly identified and reserved for plug-in EVs. Additionally, preferred parking or a discounted parking rate will be designated for low-emitting/fuel-efficient vehicles.

3.3.3 Sustainable Sites

The Phase 1 Project Site will be developed with low-impact development ("LID") principles and best management practices (BMPs). Strategies include:

- Develop and implement an erosion and sedimentation control plan for all construction activities for the Phase 1 Project.
- Incorporate significant on-site stormwater collection and re-use strategies. The majority of stormwater will be managed on-site and the Phase 1 Project is anticipated to improve overall stormwater quality with little to no impact to the municipal stormwater system.
- Preserve/create open space within the Master Plan Project and Phase 1 Project.
- Reduce heat island effect through a combination of strategies, including the use of hardscape materials with a low-solar reflectance and high-albedo roofing materials. A robust tree canopy both within the central common, at points along the 'sporty' and 'green' spines (as described in Chapter 2, *Urban Design*) and along the main roadways will be established to provide shade, as well as complement the open space network.
- Consider installation of green roof area to further reduce heat island effect in conjunction with a cost-benefit analysis of rooftop renewable energy systems.
- Design site lighting for the Phase 1 Project to meet the uplight and light trespass requirements for all applicable exterior luminaires to comply with all internally illuminated signage requirements.
- Develop and implement tenant design and construction guidelines to educate tenants about implementing sustainable strategies in their fit-out, and provide a guidance document describing the sustainable strategies in the base building design.

3.3.4 Water Efficiency

Potable water will be used efficiently both outdoors and indoors for the Phase 1 Project. Strategies include:

- Reduce outdoor water use for landscape requirements by over 50 percent through the use of non-potable water for irrigation and selection of drought-tolerant plantings.
- Reduce indoor potable water use through the use of low- and ultra-low flow water fixtures.
- Install water metering to sub meter at least two end uses, for example, non-potable water and irrigation.
- Install water-efficient heating, ventilation, and air conditioning ("HVAC") systems (i.e., an air-cooled chiller system) that will significantly reduce water usage.

3.3.5 Energy, Atmosphere and GHG Emissions

The Phase 1 Project will be designed to be energy efficient, minimize GHG emissions, and be able to be operated and maintained in an efficient manner. Strategies include:

- Implement enhanced commissioning activities, including building envelope commissioning and, potentially, monitoring-based commissioning as design advances.
- Incorporate energy conservation measures ("ECMs") to exceed the Stretch Energy Code. In addition, the Proponent will continue to evaluate and consider the feasibility of on-site renewable energy systems as design advances. (Refer to Section 3.4.3 below for further details.)
- Install energy metering for base building energy sources and for future tenant spaces to enable metering energy consumption for all systems dedicated to their space on at least a per floor basis.
- Select refrigerants that are non-ozone depleting and have low global warming potential.
- Reduce energy consumption and associated GHG emissions by exploring opportunities for procuring off-site renewable energy, green power, or carbon offsets aligned with LEED requirements.

3.3.6 Materials and Resources

Materials will be selected for their health and life cycle environmental impacts, as well as require recycling in operation and for construction and demolition. Strategies include:

- Divert at least 75 percent of the total construction and demolition material generated for the Phase 1 Project, across four material streams.

- Select materials that have health product declarations and/or declare labels and environmental product declarations to enable the Project Team to make informed decisions about products.
- Select materials with high-levels of recycled content, and consideration for regional materials, as well as specifying wood that is FSC-certified wood.

3.3.7 Indoor Environmental Quality

Strategies to provide a healthy and comfortable indoor environment include:

- Install entryway systems and MERV 13 filters to minimize cross-contamination to enhance indoor air quality.
- Specify low-emitting materials that meet low-VOC content and testing requirements.
- During Construction, the construction manager will be required and responsible for developing and implementing an indoor air quality management plan during construction and pre-occupancy that meets SMACNA guidelines.
- Provide quality views to the outdoors for the majority of occupants.

3.3.8 Innovation in Design

The Phase 1 Project will explore innovation in design credits for green building education, green cleaning, active design, and pest and waste management. Additionally, a LEED AP BD+C accredited professional will be a part of the design team.

3.3.9 Regional Priority Credits

The goal of the Regional Priority (RP) credits is to enhance the ability of LEED project teams to address critical environmental issues across the country and around the world. Regional Priority credits encourage project teams to focus on their local environmental priorities. The Phase 1 Project is targeting achievement of at least one regional priority credit for Boston related to energy efficiency. Rainwater Management is also a 'maybe' point.

3.3.10 Boston Green Building Credits

The Phase 1 Project is exploring the achievement of two of the Boston Green Building Credits to support Article 37 compliance, as described below. The Phase 1 Project is not associated with any historic assets. While the Modern Grid credit is not applicable to the Phase 1 Project it will be explored as part of the Master Plan Project.

Groundwater Recharge

As discussed in Chapter 7, *Infrastructure*, opportunities for infiltration may be limited due to high groundwater and low permeability. However, Sales Creek appears to be the local groundwater discharge point, as well as the hydrogeologic divide on-site, which indicates that sufficient flow will be maintained to this system.

Modern Mobility

As discussed in Chapter 4, *Transportation,* the transportation demand management strategies are meeting the prerequisites for transportation coordinator and association, sharing information on non-automotive options, bike storage and parking ratios. The Phase 1 Project is exploring which high value and four basic strategies can be achieved.

3.4 Preliminary Energy Conservation/GHG Emissions Reduction Approach

The Proponent has undertaken preliminary energy modeling for the Phase 1 Project, which demonstrates that with a performance-based approach, the overall energy usage reduction will comply with the current Stretch Energy Code (ASHRAE 90.1-2013). The preliminary energy model also demonstrates energy cost savings that will exceed the minimum requirements of LEEDv4 energy performance. The preliminary results and assumptions for the Phase 1 Project are provided in the following sections.

3.4.1 Methodology

To provide for energy efficiency and reduced stationary source GHG emissions, the Proponent has evaluated the following key planning and design criteria:

- Methods to reduce overall energy demand through appropriate design and sizing of systems; and
- Methods to incorporate cost-effective energy-optimizing systems.

The Phase 1 Project was modeled with the currently proposed building geometry, HVAC system type, occupancy schedule, and ventilation rates for the buildings.

Direct stationary source CO_2 emissions include those emissions from the facility itself, such as boilers, heaters, and internal combustion engines. Indirect stationary source CO_2 emissions are derived from the consumption of electricity, heat, or cooling from off-site sources, such as electrical utility or district heating and cooling systems. The direct and indirect stationary source CO_2 emissions from the proposed building sources are calculated through an energy analysis procedure that combines the IES Virtual Environment[1] model with Excel spreadsheets for pre and post-processing based on assumptions for the Phase 1 Project's building elements, such as (but not limited to) the specific type of use(s) and users of the buildings, building configuration and architecture type, building envelope (walls/windows), interior fit-out (where known), and HVAC equipment efficiency ratings.

The GHG mitigation measures can be divided into the buildings' construction materials, architecture, and the heating and cooling processes. The following section presents the specific proposed building improvements (and their correlating energy modeling parameters for reference, where applicable) that are assumed to be included as part of the Phase 1 Project for the purpose of this analysis. The specific proposed improvements will likely be subject to design modifications as necessary to achieve the GHG emissions reduction based on the final building program and tenants and design.

Energy Model and Analysis Conditions

The energy analysis is used to estimate the amount of annual energy consumption by simulating a year of building operations based on typical yearly weather and user inputs. The model estimates buildings' electricity and gas usage based on building design and system assumptions using Appendix G of ASHRAE 90.1-2013[2]. The amount of consumed energy is then converted into the amount of CO_2 emitted using the standardized conversion factors. CO_2 emissions were quantified for (1) the Base Case corresponding to the minimum requirements of ASHRAE 90.1-2013 and (2) the Design Case, which includes all energy saving measures that were deemed to be reasonable and feasible. The stationary source assessment calculated CO_2 emissions for the following build conditions:

› **Build Condition with MA Building Code (the "Base Case")** - The Project assuming typical construction materials and building equipment/systems that meet the minimum requirements of the base code. This baseline is established by the energy code as being defined by ASHRAE 90.1–2013.
› **Build Condition with Energy Conservation Measures (the "Design Case")** - The Project assuming building design and system improvements that meet the MEPA GHG Policy and the Stretch Energy Code.

3.4.2 Energy Usage and Stationary Source Greenhouse Gas Emissions

The following provides a summary of the building energy modeling for the Phase 1 Project, which includes approximately 520,000 square feet of office space set in two office buildings and up to 520 structured parking spaces (approximately 215,000

1 "Virtual Environment". *Integrated Environmental Solutions Limited (IES).* Glasgow, Scotland.
2 American National Standards Institute/American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., *ASHRAE 90.1-2013-Energy Standard for Buildings Except* Low-*Rise Residential Buildings*, Appendix G, 2013.

square feet of building area). The parking structure will require lighting and is assumed to be 100 percent ventilated. Natural ventilation of the parking areas will be considered as design moves forward as a strategy to further reduce energy usage by reducing or eliminating the need for ventilation systems.

Descriptions of the noteworthy building improvements and resulting building energy savings and stationary source GHG emissions reductions for the Project are presented below. Specific improvements may be subject to design modification, as needed, to achieve the desired GHG emissions reductions for the final building program and design. Other beneficial improvements or measures that are expected to result in further reductions of stationary source GHG emissions, but were not accounted for by the energy model, are also discussed.

The proposed design was based on several key energy efficiency strategies which include:

- Efficient building envelope that exceeds minimum code values for glazing (i.e. both U-value and solar heat gain coefficient (SHGC)) and insulation value of the roof, R-40.
- High efficiency condensing boilers to meet heating demands
- Dedicated outside air system with energy recovery
- Floor-by-floor VAV reheat units serving active chilled beams
- High efficiency air-cooled chiller plant with variable frequency drives
- Low lighting power densities to be achieved from LED lighting and lighting control systems.

The above strategies, further detailed in Table 3-1 below, are part of the Design Case for the building energy modeling. As shown in Table 3-2 below, these improvements assumed in the preliminary building energy model demonstrate the Phase 1 Project would result in an estimated energy savings of 25 percent equating to a 23 percent reduction in Project-related stationary source GHG emissions. This overall energy savings indicates the Phase 1 Project will exceed the Stretch Energy Code requirement of at minimum 10 percent energy efficiency.

Table 3-1 Phase 1 Project Key Energy Model Assumptions

Modeling Parameter	Base Case[1]	Design Case
Building Envelope		
Roof Insulation	U-value = 0.032 (R-30)	U value = 0.025 (R-40)
Wall Assembly – Opaque	U value = 0.055	Same as baseline
Wall Assembly – Spandrel/Shadow Box	U value = 0.055	U value = 0.200
Fenestration and Shading		
Vertical Glazing U-Factor	U factor = 0.42	U factor = 0.35
Vertical Glazing SHGC	0.40	0.25
Overall % Window to Wall Ratio	40%	60%
HVAC		
HVAC System	VAV with Reheat System Type 7	Dedicated outside air unit w/ energy recovery serving active chilled beams
Primary Cooling	On-site chiller plant°	On-site chiller plant – air cooled chiller with free cooling
CHW Loop Supply Temp / Delta-T	44°F/12°F	57°F/6°F
CHW Loop Temp Reset Parameters	44°F-54°F for OAT 80°F-60°F	57°F-63°F for OAT 80°F-60°F
Primary Heating	On-site boiler plant	On-site condensing boiler plant
HW Loop Supply Temp/Delta-T	180°F/50°F	140°F/30°F
Service Hot Water Type	Electric resistance storage water heater	Condensing hot water heater
Lighting		
Lighting Power Density (LPD)	0.82 W/sf	0.6 W/sf All LED Lighting design
Daylight Dimming Controls	In side-lighted areas	All perimeter spaces
Parking Garage Lighting	Standard Lighting	LED Lighting design

1 The Base Case represents current ASHRAE 90.1-2013 standards.

The total estimated annual electricity use, natural gas consumption, and associated emissions for the Phase 1 Project is presented in Table 3-2 below.

Table 3-2 Phase 1 Project Stationary Source CO_2 Emissions

	Total Energy Consumption			CO_2 Emissions		
	Electricity (MMBtu/yr)	Natural Gas (MMBtu/yr)	Total (MMBtu/yr)	Electricity (tons/ yr)[1]	Natural Gas (tons/ yr)	Total (tons/ yr)
Two Office Buildings						
Base Case	12,060	18,630	30,689	1,320	1,090	2,410
Design Case	10,285	12,787	23,072	1,126	748	1,874
End-Use Savings	1,775	5,843	7,618	194	342	536
Percent Savings			**25%**			**22%**
Parking Garage Area						
Base Case	1,512	0	1,512	165	0	165
Design Case	1,042	0	1,042	114	0	114
End-Use Savings	470	0	470	51	0	51
Percent Savings			**31%**			**31%**
Overall Phase 1 Project						
Base Case	13,572	18,630	32,202	1,485	1,090	2,575
Design Case	11,327	12,787	24,114	1,240	748	1,988
End-Use Savings	2,245	10,924	8,088	246	342	588
Percent Savings			**25%**			**23%**

1 tons/yr = short tons per year

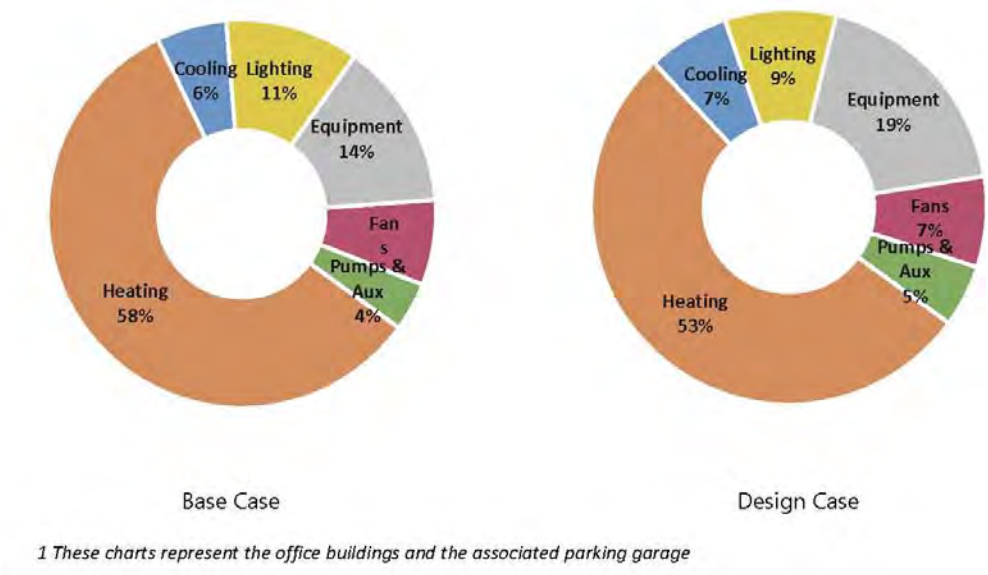
Under the Base Case, the stationary source CO_2 emissions associated with the Phase 1 Project office buildings are estimated to be 2,410 tons per year (Table 3-2). With the building design and system improvements outlined in Table 3-1, the estimated energy use reduction for the office buildings is approximately 25 percent compared to the Base Case, which equates to an approximately 22 percent reduction (536 tpy) in stationary source CO_2 emissions.

Under the Base Case, the stationary source CO_2 emissions associated with the Phase 1 Project structured garage area is estimated at 114 tons per year. With implementation of LED lighting as the key proposed energy conservation measure over the Base Case, the estimated energy use reduction is approximately 31 percent resulting in a 31 percent reduction (51 tpy) in stationary source GHG CO_2 emissions.

When combining the Phase 1 Project office buildings and structured parking areas, the overall energy savings over the Base Case is 25 percent, which amounts to approximately 588 tons per year reduction in CO_2 emission (a 23 percent reduction in stationary source GHG emissions).

Graph 3.1 below presents a breakdown of the overall Phase 1 Project energy use by end use for both the Base Case and the Design Case.

Graph 3.1 Energy Usage by End Use for the Phase 1 Project[1]



Energy Use Intensity

Energy Use Intensity ("EUI") is a tool used to provide a common basis of comparison of energy use for various building uses. It is the total amount of energy used at a project over a one-year period, divided by the square footage of that building and represents the energy consumed by a building relative to its size. Based on a recent U.S. Department of Energy ("DOE") research report, the median EUIs for a prototype Large and Medium Office Buildings in the Commonwealth are 75.2 and 37.1 kBtu/sf, respectively, under ASHRAE 90.1-2013.[3] Table 3-3 below provides the as-modeled EUI for the Phase 1 Project under the Base and Design Cases.

Table 3-3 Phase 1 Project Energy Use Intensity

Energy Use Index (kBtu/sf-yr)		
Base Case[1]	Design Case[2]	Percent Improvement
59	44	25%

1 The Base Case represents current Base Energy Code ASHRAE 90.1-2013 standards.
2 These represent the office buildings and does not include the associated garage which is not conditioned space.

3 "Cost-Effectiveness of the ASHRAE Standard 90.1-2013 for the State of Massachusetts". *US Department of Energy*. December 2015. The prototypical Large Office is 498,600 sf and 12 floors, while the prototypical Medium Office is 53,600 sf and three floors.

The EUIs and conditioned areas of the Phase 1 Project are within the range of the prototype office space in the DOE study. The Prototype Benchmark EUIs are for theoretical buildings with designs that do not exactly reflect the Project they are being compared against. As such, differences between the modeled EUIs and the Benchmarks are expected. For the Phase 1 Project, the Design Case EUI represents significant improvement over the Base Case EUI, which demonstrates the Proponent's commitment to constructing a green project.

Other Phase 1 Project Beneficial Stationary Source GHG Emission Measures

The following sections describe the additional building design and operational measures that were not assumed or quantified as part of the preliminary building energy model, but will be considered as measures to provide additional stationary source GHG benefits. These measures, if implemented, could yield further energy savings and stationary source GHG emissions reductions over the life of the Phase 1 Project. As discussed previously, the design of the Phase 1 Project is targeting LEED Gold certifiable using the LEED-CS rating system and a summary of the sustainable measures and credits were presented earlier.

Building Commissioning, Energy Use Tracking, and Sub-Metering

The purpose of commissioning buildings is to ensure building mechanical, electrical and plumbing (MEP) systems are installed and operational as designed. The intent of the process is to realize energy performance and savings over the life of a Project as well as ensure a reduction in associated stationary source GHG emissions. The Phase 1 Project is pursuing enhanced commissioning under the LEEDv4 criteria as well as building envelope commissioning to go beyond commissioning of only MEP systems.

The Phase 1 Project will install sub-metering for building energy consumption systems (e.g. electricity, chilled water and natural gas) so that energy information can be gathered by tenant on at least a per-floor basis. This enables the Proponent and Tenants to understand where energy is being used and can identify if corrective measures are required to realize energy performance.

Annual reporting under the Building Energy Reporting and Disclosure Ordinance, will also encourage ongoing improvement to reduce overall energy use.

Plug Loads

The Proponent is committed to using Energy Star appliances and equipment where available and reasonably practicable. The Phase 1 Project is core & shell so that plug loads are not within the Proponent's control. The use of Energy Star appliances and equipment will be encouraged by the Proponent. Consistent with DOER policy, the energy use of the plug loads can be reduced by 10 percent in the Design Case when using Energy Star equipment. Such equipment would result in additional energy savings and reductions in associated stationary source GHG emissions. Compared to standard office equipment (non-Energy Star rated), Energy Star-qualified office equipment imaging products and appliances use 30 to 75 percent less electricity.[4]

Net Zero Energy

The Phase 1 Project is committed to constructing a building that exceeds minimum stretch energy code requirements and that will not preclude the advancement toward net zero, as technology becomes available over the life span of the Phase 1 Project. The Phase 1 Project is currently being designed and constructed towards this goal by reducing energy demand through incorporation of an efficient building envelope and systems, such as a well-insulated building envelope including an R-40 roof, active chilled beam system with dedicated outdoor air system and advanced energy metering to be able to track and monitor end use energy consumption.

The Phase 1 Project is also working toward the goal of net zero by evaluating on-site renewables solar PV and solar thermal systems. The Phase 1 Project will have a "solar ready" rooftop, meaning the structure would be designed to accommodate a future system and space for conduit routing for interconnection would be provided.

In addition, the Phase 1 Project will incorporate best management practices by developing tenant design guidelines to explain the sustainable design strategies in the base building design that can contribute to the tenant fit out energy efficiency as well as make recommendations for an energy efficient fit out.

As technology becomes available, and operational processes are refined, the Phase 1 Project will evaluate opportunities for improving efficiency during equipment and system life cycles and upgrades with favorable ROIs for energy efficiency retrofits.

Water Efficiency/Wastewater Reduction

Water efficiency is not only important for conserving potable water and reducing wastewater generation, but also for reducing energy. Nationally, about four percent of electricity use can be attributed to the treatment of potable water and wastewater, excluding the energy use associated with water heating. Potable water will be used efficiently both outdoors and indoors for the Phase 1 Project. Potable water demand will be reduced through strategies such as using non-potable water for irrigation, drought tolerant plantings, low- and ultra-low flow water fixtures, and water metering.

3.4.3 Preliminary Clean and Renewable Energy Analysis

A variety of clean and renewable energy sources were evaluated or are currently being evaluated for the Phase 1 Project, including solar, geothermal, steam, wind, and combined heat and power ("CHP"). Solar is currently under consideration for the

4 According to the Energy Star website: http://www.energystar.gov/index.cfm?c=ofc.

Phase 1 Project as the others have been deemed not applicable or infeasible for the reasons described below.

To further reduce energy consumption and GHG emissions, solar photovoltaic (PV) and solar thermal systems have been evaluated for the Phase 1 Project. The roof areas of the Phase 1 Project are unshaded and are therefore feasible for such systems.

Solar Photovoltaic (PV)

Solar PV system feasibility analysis has been undertaken for a roof mounted system across the two Phase 1 Project buildings. Only the highest roof areas have been included in the analysis as lower roof areas will be shaded throughout the year and are intended to be occupied as amenity space for occupants. The analysis included 20 percent of the roof area for solar PV allowing space for mechanical systems and setbacks for safety and maintenance and the potential for additional uses on the roof.

The rooftop PV arrays could produce approximately three percent of the total building energy consumption and offset approximately 60 metric tons of CO_2 per year, a four percent reduction. Details of the PV assessment are presented in Appendix D.

A simple payback analysis indicates a payback of approximately 12 years which accounts for a continuation of the federal incentive of 30 percent of the total installed cost, as well as an estimation of feed-in tariff rates for the forthcoming Solar Massachusetts Renewable Target “SMART” program in Massachusetts. It is very important to note that the details and rate structure of the SMART program are yet to be finalized. Any proposed system on the Phase 1 Project would also be subject to declining blocks (i.e. rate structures) depending on when the system would be permitted under the SMART program. These blocks are currently estimated to be filled up on a 6-month basis.

Additionally, it is anticipated that a tariff will be implemented in 2018 on the import of foreign PV panels which could significantly impact the pricing of panels and systems throughout the US.

Given the current uncertainty in the solar PV market both federally and at the state level, the Phase 1 Project will continue to assess the feasibility of a roof mounted solar PV system as the design develops. This analysis has shown however, that a solar PV system is the best use of available roof area for a renewable energy system for the Phase 1 Project and therefore the Phase 1 Project will be built to be “solar ready” to maintain the flexibility of installing solar.

Solar Thermal

There is more than enough available roof area for a solar thermal system as domestic hot water demand in an office building is very low. A system that would offset 65 percent of the heating load associated with domestic hot water would require approximately 7,000 square feet of roof space and 73 evacuated tube panels. The system was sized to eliminate overproduction of hot water in the summer (i.e. peak).

This translates to approximately three percent in energy savings and a two percent carbon footprint reduction. A simple payback analysis indicates a payback of approximately 22 years. Refer to the Appendix D for additional details.

Solar thermal has not been recommended as it competes with solar PV for roof area, and solar PV is currently indicated to be a more cost-effective approach to producing renewable energy on-site.

Co-Generation/Geothermal/CHP Systems

While the energy strategy is currently based on an individual building basis, the Proponent will evaluate the efficiency and cost effectiveness of a central plant (or plants) to take advantage of energy efficiency via co or tri-generation by recovering waste heat and generating electricity. To maximize its feasibility a central plant would be analyzed for Master Plan Project Site-wide implementation at the full-build condition and, if deemed feasible, each future building could be designed to be future-ready to connect to the central system.

Wind

Large Turbines. Turbines greater than 100 kW are often sited in low-density areas where a consistent wind resource, unaffected by the built environment, maximizes the payback rate for the installed equipment. Siting such facilities in low-density areas minimizes wind turbulence, a major contributor to reduced performance and longevity of large-scale wind turbines. A large turbine is not currently being considered for the either the Master Plan or Phase 1 Project Sites due to the proximity to Boston-Logan International Airport, which would create additional FAA permitting issues that would be difficult to manage in the Phase 1 Project timeframe.

› *Small Turbines:* Turbines of less than 100 kW include small pole-mounted units and modest tower-mounted units up to about 250 feet tall. Similar to a large turbine, small turbines are not being considered due to the proximity to Logan Airport which would create additional FAA permitting issues that would be difficult to manage in the Phase 1 Project timeframe.
› *Building-integrated Turbines:* Building-integrated turbines include small turbines, generally less than one kW to about five kW, that are mounted on building roofs or parapets, or otherwise attached to a building. Examples of such installations include Boston City Hall, Massport Logan Office Center, and the Museum of Science wind turbine lab. The Proponent intends to consider PV technology for the Phase 1 Project with the potential to be "PV ready" allowing for the possible future installation of PV panels above the rooftop. Installing PV panels would leave little, if any, room to include building-integrated turbines. As a full rooftop-mounted PV array on the Phase 1 Project could generate approximately 215 MW,

significantly more than what could be generated from building-integrated turbines, this technology will likely not be pursued as part of this Phase 1 Project.

Hybrid Vehicles and Electric Charging Station

The Proponent will install preferred parking spaces for alternative-fuel vehicles. In addition, parking spaces on-site will be equipped to support EV charging stations and will be provided within the new garage. Electric vehicles do not have any tailpipe emissions (such as NOx or particulates-both of which contribute to respiratory illness) and emit practically no engine heat reducing the high temperature in congested corridors.

3.4.4 Energy Efficiency Assistance

The Proponent intends to take advantage of the Mass Save New Construction Program for both the Phase 1 Project. This program is designed to incentivize energy efficient design for new commercial, industrial and governmental facilities. Eversource and National Grid act as Mass Save Program Administrators (PA), both of whom currently provide electricity and natural gas to the Master Plan Project Site. The utilities offer technical assistance and provide the incentives for implementing the eligible energy measures identified during the design phase of the Phase 1 Project. The utilities must be involved during the design phase to help determine the cost-benefit of incorporating each measure into the Phase 1 Project energy plan and identify any additional measures that may be available.

The Program offers a custom performance track (vs. the prescriptive track), wherein the whole-building energy modeling software is used to compare energy usage of the as-designed building to that of a baseline code-compliant reference building. The utilities pay incentives on the basis of the calculated savings variance. The custom track is the best option to ensure the Phase 1 will achieve the desired energy, financial, and GHG emissions reductions goals.

3.5 Climate Change Preparedness and Resiliency

Impacts from climate change are expected to result in rising sea levels, more frequent extreme storms, and more extreme weather events/temperatures. This section describes how predicted effects of climate change and potential resiliency measures have been considered in the design of the Master Plan Project, including the Phase 1 Project.

As required by the BPDA for all Large Project Review projects, the Proponent has considered anticipated changes in climate, as described below and reflected in the Resiliency Checklist provided in Appendix C. The Master Plan Project and the Phase 1 Project share the same approach to resiliency and, therefore, the Resiliency Checklist provided in Appendix C demonstrates the intended approach for the larger Master Plan Project.

3.5.1 Predicted Future Conditions

The Proponent has surveyed climate change publications and data to evaluate potential future conditions over the life of the Phase 1 Project, including changes in temperature, precipitation, and flooding events.

Extreme Precipitation

Boston and surrounding cities and towns are expected to experience more frequent and more extreme precipitation events due to climate change. Increases in the intensity of precipitation events cause stormwater infrastructure to reach capacity faster with greater volumes of precipitation runoff. To prevent these potentially destructive consequences, stormwater infrastructure needs to be designed to accommodate the expected increases in precipitation intensity and stormwater management needs to be applied across the local watershed.

The Master Plan Project, including the Phase 1 Project will include a stormwater management system designed to convey a 6-inch storm-event and the 8.8-inch storm event as recommended by the BWSC. The 6-inch depth represents the 2100 10-year storm depth and the 8.8-inch depth represents the 2100 100-year storm depth under the medium emissions scenario. The stormwater management system will be integrated into a network of open spaces that will be strategically designed to accommodate potential flooding impacts associated with sea level rise, providing further protection to the nearby buildings and areas outside the Master Plan Project Site. Stormwater reuse for irrigation purposes will also be incorporated into the stormwater management plan.

Sea Level Rise

New England is expected to experience a rise in sea level as a result of climate change. To develop a design elevation for future resiliency, the Project Team considered the following publications:

FEMA Flood Insurance Rate Maps

Although the coastal floodplain delineated by FEMA on its Flood Insurance Rate Maps ("FIRMs") does not account for future sea level rise, it is useful to understand current flood risk as a basis for exploration of future flood risk.

CZM Report

The Massachusetts Office of Coastal Zone Management's ("CZM's") 2012 Sea Level Rise: Understanding and Applying Trends and Future Scenarios for Analysis and Planning ("CZM Report"), provided projections of expected sea level rise for Boston at several points in the future under different emission scenarios: Lowest; Intermediate Low; Intermediate High; and Highest.

The CZM Report gave planners and designers a resource for 'bathtub model' evaluations of assets and infrastructure. These maps, when combined with sea level rise projections provided a basic flood elevation evaluation tool.

The following reports build upon the static sea level rise analysis provided in the CZM report.

DOT-FHWA Study

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

Climate Ready Boston’s BRAG Report

On June 1, 2016, a publication was issued by the City of Boston and the Green Ribbon Commission for the Climate Ready Boston project. The Boston Research Advisory Group (“BRAG”) Report Climate Change and Sea Level Rise Projections for Boston (“BRAG Report”) provided results focused on the City of Boston proper for three climate scenarios: Lowest Emissions; Intermediate Emissions; and Highest Emissions. The BRAG was established in 2015 to develop a consensus on possible climate changes and sea level rise that would impact the City of Boston by years 2030, 2050, 2070 and 2100. The report lists a Maximum and a Likely Range for all scenarios studied. The BRAG report expanded the analysis of sea level rise beyond that, which was completed in previous reports and forms the basis for sea level rise estimates on this project and sea level rise goals identified in the BPDA’s Resiliency Checklist 2017 update (pending).

The BRAG Report indicates a five percent probability that sea level rise will be higher than three feet by 2070 and a 65 percent probability that sea level rise will be higher than three feet by 2100.

Extreme Weather Conditions

In addition to sea level rise and flooding, additional climate change issues predicted for Massachusetts, per the EEA's 2011 Massachusetts Climate Change Adaptation Report, include an increase in extreme weather events. These may consist of drought, tropical rainfall patterns (i.e., increased precipitation) and extreme heat and cold stretches, increases in the number of days with extreme heat (i.e., temperatures greater than 90°F and 100°F) and/or fewer days of snow yet increased winter precipitation. Project-related resiliency measures aimed at addressing these potential events are discussed below.

3.5.2 Phase 1 Project Resiliency Measures

At the early stage of conceptual design, the Proponent has begun to identify preliminary site design and building-related resiliency measures to address the potential impacts described above. Figure 3.2 shows the on- and off-site 100-year flood elevation for the Phase 1 Project Site within the context of the larger Master Plan Project Site. The Phase 1 Project will be designed to be resilient to both coastal and inland flooding, and the buildings will be designed to account for increased temperatures as described below.

Coastal Flooding

The Phase 1 Project is located within the one percent annual chance floodplain delineated on FEMA FIRM panel 25025C0038J, and is subject to coastal flooding with a base flood elevation ("BFE") of 11 feet NAVD88 (17.5 feet BCB). The portions of the permanent roadway that will be constructed with Phase 1 Project will be designed with a minimum top of curb elevation of 20.83 feet, which is 40-inches above the 100-year FEMA flood elevation. Twelve inches of freeboard will be added to the BFE of the buildings to account for localized storm surges not previously considered in the BRAG Report and MassDOT-FHWA study, resulting in a Finished Floor Elevation ("FFE") of 22 feet BCB.

Inland Flooding

Inland flooding will be mitigated for the Phase 1 Project consistent with the Master Plan Project approach. For peak runoff, two-year, 10-year and 100-year, 24-hour design storms were used to evaluate pre- and post-construction runoff conditions. To accommodate increased future storm intensity, BWSC recommendations regarding the 10-year and 100-year were used (6.0 inches and 8.8 inches, respectively). The Phase 1 Project Site will be designed to manage storm events up to the 100-year storm at a peak flow less than or equal to that of the existing site.

Increased Temperatures

Strategies to mitigate the impacts of increased average temperatures and extreme heat on the Phase 1 Project buildings will be consistent with the Master Plan Project approach. Strategies to mitigate the impacts of increased average temperatures and extreme heat on future buildings include:

› Efficient building envelope that exceeds minimum code values for glazing for Phase 1 buildings (i.e. both U-value and solar heat gain coefficient ["SHGC"]) and insulation value of the roof, R-40;

- The building mechanical systems will use a 95°F peak day for sizing of systems, which exceeds ASHRAE Fundamentals 2017 of 90.6°F;
- A robust and diverse urban canopy located both in the central common and throughout the street network; and
- The open/green space and tree canopy will serve to mitigate heat island impacts and make the Phase 1 Project Site more resilient to increasing temperatures.

LEED v4 for BD+C: Core and Shell
Project Checklist

Project Name: Suffolk Downs Redevelopment - PHASE 1 PROJECT
Date: 11/27/2017

Y	?	N			
1			Credit	Integrative Process	1

Y	?	N			
9	3	8		**Location and Transportation**	**20**
			Credit 1	LEED for Neighborhood Development Location	20
2			Credit 2	Sensitive Land Protection	2
		3	Credit 3	High Priority Site	3
3	3		Credit 4	Surrounding Density and Diverse Uses	6
3		3	Credit 5	Access to Quality Transit	6
		1	Credit 6	Bicycle Facilities	1
		1	Credit 7	Reduced Parking Footprint	1
1			Credit 8	Green Vehicles	1

Y	?	N			
6	2	3		**Sustainable Sites**	**11**
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit 1	Site Assessment	1
		2	Credit 2	Site Development - Protect or Restore Habitat	2
1			Credit 3	Open Space (30% Site Area incl. Bldg Footprint)	1
	2	1	Credit 4	Rainwater Management	3
2			Credit 5	Heat Island Reduction	2
1			Credit 6	Light Pollution Reduction	1
1			Credit 7	Tenant Design and Construction Guidelines	1

Y	?	N			
5	1	5		**Water Efficiency**	**11**
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
1	1		Credit 1	Outdoor Water Use Reduction (50% reduction or no irrigation system)	2
3		3	Credit 2	Indoor Water Use Reduction (3 pts = 35% reduction)	6
		2	Credit 3	Cooling Tower Water Use (no cooling tower on project)	2
1			Credit 4	Water Metering	1

Y	?	N			
16	7	10		**Energy and Atmosphere**	**33**
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
5	1		Credit 1	Enhanced Commissioning	6
9	5	4	Credit 2	Optimize Energy Performance (9 pts = 19% energy cost savings)	18
1			Credit 3	Advanced Energy Metering	1
		2	Credit 4	Demand Response	2
	1	2	Credit 5	Renewable Energy Production	3
1			Credit 6	Enhanced Refrigerant Management	1
		2	Credit 7	Green Power and Carbon Offsets	2

Y	?	N			
5	2	7		**Materials and Resources**	**14**
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
		6	Credit 1	Building Life-Cycle Impact Reduction	6
1	1		Credit 2	Building Product Disclosure and Optimization - Environmental Product Declarations	2
1		1	Credit 3	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1	1		Credit 4	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit 5	Construction and Demolition Waste Management	2

Y	?	N			
6	2	2		**Indoor Environmental Quality**	**10**
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit 1	Enhanced Indoor Air Quality Strategies	2
2	1		Credit 2	Low-Emitting Materials	3
1			Credit 3	Construction Indoor Air Quality Management Plan	1
	1	2	Credit 4	Daylight	3
1			Credit 5	Quality Views	1

Y	?	N			
5	1	0		**Innovation**	**6**
4	1		Credit 1	Innovation	5
1			Credit 2	LEED Accredited Professional	1

Y	?	N			
1	1	2		**Regional Priority**	**4**
	1		Credit 1	Regional Priority: Rainwater Management (2 points)	1
1			Credit 2	Regional Priority: Energy Performance (8 pts = 17%)	1
		1	Credit 3	Regional Priority: Indoor Water Use Reduction (4 pts = 40% reduction)	1
		1	Credit 4	Regional Priority: High Priority Site or Renewable Energy (2 pts = 3%)	1

Y	?	N			
54	19	37		**TOTALS** Possible Points:	**110**

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

Figure 3.1

Phase 1 Project LEED Scorecard

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Note:
Limit of 100-Year Flood Elevation in Boston = 16.46 (BCB)

Limit of 100-Year Flood Elevation in Revere = 17.46 (BCB)

Project Site
Phase 1 Project Site
Municipal Boundary
100-year Floodplain (Surveyed)
FEMA Floodplain

Source:
Off-Site Floodplain: FEMA's National Flood Hazard Layer (Official) Web Map viewed on October 26, 2017 (http://arcg.is/4mmqq)

On-Site Floodplain: The 100 year flood line is published by FEMA with a base flood elevation determined. The Base Flood Elevation (BFE) was established across the site by determining the BFE on the surface created by the topographic survey.

Digital orthophotograph, MassGIS 2014.

Prepared by Beals and Thomas, Inc.

Figure 3.2

Floodplain

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

4

Transportation

4.1 Executive Summary

This chapter presents an evaluation and summary of existing and future transportation infrastructure and operations for the Phase 1 Project. This section provides an overview of the Phase 1 Project, including a discussion of the program elements. The transportation study methodology is also discussed, including provision of a comprehensive Transportation Impact Assessment ("TIA") for the Phase 1 Project to support the request to waive further review of the Phase 1 Project.

Section 4.2 of this chapter presents the comprehensive TIA developed to quantify and mitigate the transportation impacts of the Phase 1 Project as a way to develop appropriate transportation improvements to support the initial phase of the larger redevelopment plan for the Master Plan Project Site. This study conforms with both MassDOT TIA Guidelines[1], as well as to BTD's "Transportation Access Plans Guidelines" and uses standard methodologies, including the Institute of Transportation Engineers' Trip Generation manual (10th Edition) and local travel characteristics as defined in *Access Boston 2000-2010*. The Study analyzes the following as part of the evaluation of 2017 Existing Conditions:

- Vehicle traffic on study area roadways and intersections;
- Parking conditions;
- Loading and service activities;
- Pedestrian and bicycle operations; and
- Public transportation services.

In addition, the Phase 1 Project TIA quantifies and assesses the transportation impacts that are expected within the project area under future conditions. The purposes of these analyses are to:

- Define and quantify existing transportation conditions in the Phase 1 Project study area;
- Estimate the transportation impacts that will be generated under future conditions based on the anticipated program for the Phase 1 Project;

1 *Transportation Impact Assessment (TIA) Guidelines*, Massachusetts Department of Transportation, March 13, 2014.

- Develop a set of mitigation strategies and improvement measures which will help to lessen the transportation effects of the Phase 1 Project; and
- Demonstrate that these transportation mitigation efforts will meet or exceed BPDA, BTD, and MassDOT requirements, and will serve as public benefits.

The Master Plan Project will be studied comprehensively in the subsequent DEIR/DPIR that will be prepared and submitted subsequent to the EENF/EPNF as well as this EPNF filing. The Proponent will continue to work with MassDOT, DCR, BTD, BPDA, and the City of Revere regarding the comprehensive assessment of transportation impacts, mitigation, and improvements as the Master Plan Project progresses through required permitting and development review processes.

4.1.1 Proposed Phase 1 Project Development Program

The Phase 1 Project is proposed in the southeastern corner of the Boston portion of the Master Plan Project Site immediately adjacent to the Suffolk Downs MBTA Blue Line station, i.e., the Phase 1 Project Site. The Phase 1 Project Site currently contains a portion of the Suffolk Downs race track and infield, as well as other previously disturbed areas, including landscaped areas, an infield pond, and portions of an internal driveway and surface parking.

The building design and associated site-wide improvements of the Phase 1 Project have been further advanced, as it is currently contemplated as the initial phase of development for Amazon HQ2. The approximately 520,000-gross square foot office building (studied as a Corporate Headquarters) with up to 520 structured parking spaces Phase 1 Project is part of the overall Master Plan Project program (included within both Programs A and B) and is described in greater detail in Section 1.4.3 of Chapter 1, *Project Description and General Information*. In summary, the Phase 1 Project will consist of:

- Two approximately 260,000-gross square foot office buildings with supporting corporate uses/amenities;
- Approximately 520 structured parking spaces (520 of the existing surface parking spaces will be taken out of service and no net new parking spaces will result from Phase 1);
- Approximately 12 acres of existing open space to remain as-is and an additional approximately 1.2 acres of open space to be improved by the Phase 1 Project, including improved pedestrian access to the Suffolk Downs MBTA station;
- New internal access driveway that connects the Phase 1 Project Site to Route 1A via the existing Tomasello Drive (private roadway);
- Utility improvements/upgrades resulting in improved water quality through an upgraded drainage system;
- Pedestrian facilities, including an on-site accessible walkway to the MBTA Suffolk Downs station; and

- Bicycle facilities, including on-site long- and short-term bicycle storage in accordance with the City of Boston Bicycle Guidelines and a new Hubway public bikeshare station.

4.1.2 Phase 1 Project Key Findings and Benefits

The additional traffic generated by the Phase 1 Project will produce very limited incremental impacts to the surrounding transportation infrastructure. The location of the Phase 1 Project affords the opportunity for it to operate as a highly-effective transit-oriented development ("TOD") that is well served by public transit via the MBTA Blue Line, which will also foster a reduced share of trips that would be generated by automobile, resulting in reduced impacts on surrounding streets. Additionally, the location of the Phase 1 Project relative to the overall MBTA transit system will foster a high proportion of "reverse commute" trip making, utilizing available Blue Line capacity during peak commuter periods (i.e., carrying capacity that is generally underutilized). The Project is not expected to result in any measurable changes to peak hour operating conditions at study area intersections. In addition, Phase 1 Project will have limited impact to the surrounding neighborhoods given the Master Plan Project Site's central location to McClellan Highway, i.e., Route 1A, which will provide the opportunity for vehicles to make use of multiple regional access routes to easily access Phase 1 Project, and make direct highway connections to the north, south, and west. Also, new vehicular trips will be either reverse commuting through the tunnels from Boston or getting off Route 1A before East Boston. Figure 4.1 provides an illustrative Project Site plan of the footprint of the Phase 1 Project, indicating its key transportation-oriented provisions. Key findings and actions include the following:

- The Phase 1 Project Site is currently well served by transportation infrastructure, including nearby public transit (MBTA Blue Line and other local bus routes) and direct access to Route 1A and Winthrop Avenue via Tomasello Drive.
- The Phase 1 Project is expected to generate approximately 334 entering and 25 exiting vehicle trips during the weekday morning peak hour and approximately 31 entering and 277 exiting vehicle trips during the weekday evening peak hour.
- The traffic generated by the Phase 1 Project is expected to have minimal impacts on the area's transportation infrastructure.
- The results of the analysis indicate that there will be only minor incremental increases in delay throughout the study area with the Phase 1 Project in place.
- The Phase 1 Project is expected to generate approximately 263 entering and 20 exiting transit trips during the weekday morning peak hour and approximately 24 entering and 218 exiting transit trips during the weekday evening peak hour.
- The number of estimated new transit trips from the Phase 1 Project would result in a nominal increase to peak direction passenger loading on the MBTA Blue Line. The Phase 1 Project would not cause the MBTA Blue Line to exceed any

capacity thresholds that wouldn't otherwise be exceeded under 2024 No-Build conditions. The analysis of the Blue Line's critical link found that the Blue Line can accommodate the anticipated Phase 1 transit demand during the busiest 30-minute periods of the morning and evening peaks while maintaining acceptable levels of passenger loading per MBTA policy.

- The Proponent is committed to providing approximately 520 on-site parking spaces (1 space per 1,000 sf). These will be structured parking spaces within the new buildings.
- New parking that is proposed will be offset by the elimination of other existing surface parking spaces located on-site (resulting in no net-new parking constructed in connection with the Phase 1 Project).
- There will be dedicated off-street loading docks to ensure that loading and service operations are handled internal to the building site and will not on any public streets or other adjacent private streets (Tomasello Drive). The dock will have enclosed bays in the building for deliveries and trash removal. Access to the loading area will be provided via the new private drive that will connect to Tomasello Drive.
- The Phase 1 Project will improve pedestrian sidewalks adjacent to the Phase 1 Project Site. New sidewalks will meet Americans with Disabilities Act and Architectural Access Board (ADA/AAB) standards. Street trees, where feasible, will also be provided along these new sidewalks.
- The Proponent will provide covered bicycle storage capacity on-site in accordance with the City of Boston Bicycle Guidelines. The Project will also include public bikes racks to support ground floor retail space and visitors.
- The Proponent is committed to providing a Hubway Station for use by the Phase 1 Project occupants and nearby East Boston and Revere residents.
- The Proponent will implement a proactive transportation demand management (TDM) plan to encourage its employees to use transit and other alternative forms of transportation.

4.2 Phase 1 Project Traffic Impact Assessment (TIA)

Evaluation of the transportation impacts associated with the Phase 1 Project requires a thorough understanding of the existing transportation system in the Project study area. The analysis of existing transportation conditions is based on the existing roadway network, roadway/intersection geometry, traffic control, existing daily and peak hour traffic volumes, traffic safety conditions, and existing public transportation.

4.2.1 Phase 1 TIA Methodology

The transportation analysis in support of the Phase 1 Project conforms to both the MassDOT TIA Guidelines[2] and the BTD's "Transportation Access Plans Guidelines"

2 *Transportation Impact Assessment (TIA) Guidelines*, Massachusetts Department of Transportation, March 13, 2014.

and uses standard methodologies, including the Institute of Transportation Engineers' Trip Generation (10th Edition) and local travel characteristics as defined in *Access Boston 2000-2010*.

The Phase 1 Project Transportation Study was conducted in two distinct stages. The first stage (Existing Conditions) involved a survey and compilation of existing transportation conditions within the study area (defined below) including:

- An inventory of the transportation infrastructure within the defined Project study area, including its geometric and operational characteristics;
- Geometric and operational characteristics of study area roadways and intersections;
- Existing traffic control at study area intersections (i.e., traffic signalization, stop signs, one-way streets, etc.);
- Transportation characteristics of current weekday operations at Suffolk Downs, including access, egress, parking for patrons and employees, and loading/service and shuttle bus activities;
- Area off-street and on-street parking supply;
- Pedestrian activity along study area roadways, and at study area intersections;
- Bicycle activity and accommodations; and
- Public transportation options within the study area, including buses and the Blue Line.

In the second stage of the study (Evaluation of Long-Term Transportation Impacts), future transportation conditions were projected within the study area. The future No-Build condition includes an assessment of future transportation including background growth on area roadways and intersections, planned transportation infrastructure improvements, and growth related to other proposed projects within the study area (without consideration of the Proposed Phase 1 Project). The future No-Build Condition takes into consideration many of the projects that are planned and/or under construction within the East Boston and Revere area including those listed in Section 4.2.4. The future Build Condition assesses the No-Build Condition plus estimated traffic generated by the Proposed Phase 1 Project.

Roadway, pedestrian, and transit capacity for morning and evening peak commuter periods, including traffic counts in May 2017, were studied and are summarized for the following conditions:

- 2017 Existing Condition;
- 2024 No-Build Condition; and
- 2024 Build Condition.

Specific travel demand forecasts for the Phase 1 Project were assessed along with future transportation demands due to background traffic growth and traffic growth from other planned or approved projects within the study area. The year 2024 was selected as the horizon year for the purposes of quantifying and assessing future transportation impacts. The seven-year planning horizon is consistent with MassDOT Transportation Impact Assessment (TIA) Guidelines[3]. The analysis of future year conditions considered the following:

- Calculation of vehicular trip generation for the proposed Phase 1 Project and other area planned development identified in the study area.
- Establishment of trip generation estimates based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (10th Edition), as well as approved background projects.
- Distribution and assignment of all development-generated traffic onto study area intersections in accordance with current travel patterns, previous studies of the area, data provided by for other projects, and anticipated travel behavior changes that can be quantified and substantiated.
- Assessment of 2017 Existing Condition, 2024 No-Build Condition, and 2024 Build Condition traffic based on capacity analyses, reported levels of service, and queuing output derived for the defined study area intersections.
- Appropriate mitigation and improvement actions to meet or exceed BPDA, BTD, and MassDOT requirements, and will serve as material public benefits.

4.2.2 Study Area

Study area intersections for the Phase 1 Project are listed below and are identified on Figure 4.2. They are reflective of similar past permitting efforts on the Master Plan Project Site.

1. William F McClellan Highway (Route 1A) at Boardman Street
2. William F McClellan Highway (Route 1A) at Waldemar Avenue
3. William F McClellan Highway (Route 1A) at Tomasello Drive
4. William F McClellan Highway (Route 1A) at Route 1A Southbound Jughandle
5. Bennington Street at Crescent Avenue
6. Bennington Street/State Road at Winthrop Avenue
7. Winthrop Avenue (Route 145) at Revere Beach Parkway
8. Winthrop Avenue (Route 145) at Tomasello Drive
9. Winthrop Avenue (Route 145) at North Shore Road
10. Winthrop Avenue (Route 145) at William F McClellan Highway (Route 1A) southbound On-Ramp
11. Winthrop Avenue (Route 145) at Revere Beach Parkway (Route 16)/Harris Street;
12. Route 60 (American Legion Highway) at Bell Circle – North

3 *Transportation Impact Assessment (TIA) Guidelines*, Massachusetts Department of Transportation, March 13, 2014.

13. Route 1A (American Legion Highway)/Route 16 (Revere Beach Parkway) at Bell Circle – South
14. Route 1A (VFW Parkway) at Bell Circle
15. Beach Street at Bell Circle

These study area intersections were evaluated in detail using standard traffic engineering analysis techniques following both MassDOT and BTD Guidelines to identify incremental impacts of future traffic growth and site-generated traffic.

Roadway Network

The Master Plan Project Site is bounded by William F McClellan Highway (Route 1A) to the west and Winthrop Avenue (Route 145) to the north. Figure 4.3 identifies the study area roadway jurisdictions.

- **William F McClellan Highway (Route 1A)** is generally oriented in the north/south direction, providing a direct connection to/from Boston, along with connections to several state routes (Route 1, Route 16, Route 60, and Route 145) to access surrounding cities and towns (Revere, Malden, Saugus, Lynn, etc.). William F McClellan Highway is classified as an urban principal arterial under MassDOT jurisdiction. Within the vicinity of the Master Plan Project Site, William F. McClellan Highway has two lanes of travel in each direction separated by a median. The posted speed limit is 40 mph within the vicinity of the Master Plan Project Site and sidewalks are provided along both sides of the roadway. The land use majority is commercial within the vicinity of the Master Plan Project Site.
- **Winthrop Avenue (Route 145)** is generally oriented in the east/west direction, providing direct connections to Route 1A or Route 16, along with local connections to Route 1 and Route 60. Winthrop Avenue is classified as an urban principal arterial from William F McClellan Highway (Route 1A) to Revere Beach Parkway (Route 145)-east, the remaining roadway segments are classified as urban minor arterials. Winthrop Avenue from Revere Beach Parkway (Route 16)-west to Revere Beach Parkway (Route 145)-east is under the Department of Conservations and Recreation's (DCR) jurisdiction with remaining roadway segments under local jurisdiction. Within the vicinity of the Master Plan Project Site, Winthrop Avenue has three lanes of travel in each direction separated by a median. The posted speed limit is 40 mph within the vicinity of the Master Plan Project Site with sidewalks provided along both sides of the roadway. The land use majority is commercial within the vicinity of the Master Plan Project Site.
- **Tomasello Drive** is oriented in the east/west directions at the connection to William F McClellan Highway (Route 1A) and north/south directions at the connection to Winthrop Avenue (Route 145) forming T-intersection at both locations. Tomasello Drive is a private way and under the maintenance of the property owner located entirely within the Master Plan Project Site. Tomasello Drive provides two lanes of travel, one in each direction. The posted speed limit

is 25mph with sidewalks provided on the west side of the roadway from Winthrop Avenue to the adjacent shopping center. Tomasello Drive will provide direct access to the Master Plan and Phase 1 Project Sites.

4.2.3 2017 Existing Conditions

Existing Site Access

Under existing conditions, the Master Plan Project Site can be accessed via Tomasello Drive from three locations: (1) Route 1A, (2) Furlong Drive, and (3) Winthrop Avenue. The intersection of Route 1A and Tomasello Drive is currently an unsignalized intersection with a break in the median on Route 1A that allows for full access, including an exclusive left-turn lane into the Master Plan Project Site on the southbound approach. This intersection will serve as the primary access from the south. While left-turns have been prohibited in the past from Tomasello Drive onto Route 1A southbound, the current signage is faded, non-standard, and vehicles are actively making this left-turn maneuver. Furlong Drive, which provides access to The Shops at Suffolk Downs, intersects Tomasello Drive to form a three-way unsignalized intersection. Furlong Drive also intersects Route 1A to form a right-turn in/right-turn out unsignalized intersection. Winthrop Avenue intersects Tomasello Drive to form a three-legged signalized intersection, which will serve as the primary access from the north. The existing site access and circulation of the Mater Plan Project Site is illustrated in Figure 4.4

Traffic Volumes

Daily traffic volumes were collected at six locations over a 7-day period in early May 2017 (Sunday through Saturday) using automatic traffic recorders (ATRs). These dates represent typical days for traffic count purposes (non-holidays) while local schools are in session. The volumes are summarized in Table 4-1 and included in Appendix E.

Table 4-1 Existing Traffic Volume Summary

Location	Weekday ADT [a]	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
		Volume	K Factor [b]	Dir. Dist. [c]	Volume	K Factor	Dir. Dist.
Route 1A, north of Waldemar Avenue	60,900	3,290	5.4%	63% SB	3,650	6.0%	56% NB
Route 1A, north of Tomasello Drive	57,800	3,035	5.3%	62% SB	3,340	5.8%	52% NB
Route 1A, between Jughandle Entrance and Exit	57,900	2,960	5.1%	63% SB	3,405	5.9%	54% NB
Tomasello Drive, east of Route 1A	3,200	230	7.2%	81% WB	290	9.2%	93% EB
Tomasello Drive, south of Winthrop Avenue	11,600	405	3.5%	76% SB	1,025	8.9%	64% NB
Furlong Drive, west of Tomasello Drive	9,300	190	2.0%	62% WB	785	8.4%	51% EB
Winthrop Avenue, west of Tomasello Drive	31,500	2,135	6.8%	54% WB	2,505	7.9%	56% EB
Winthrop Avenue, east of Tomasello Drive	32,300	2,210	6.8	58% WB	2,610	8.1%	61% EB
Bennington Street, south of Crescent Avenue	14,200	1,300	9.2%	84% SB	1,035	7.3%	57% NB
North Shore Road. north of Winthrop Avenue	9,700	730	7.5%	56% SB	750	7.7%	57% NB
Route 1, between Squire Rd Ramps	67,600	4,880	7.2%	68% SB	4,245	6.3%	59% NB

Source: VHB based on automatic traffic recorder counts conducted in May 2017
Note: Peak hours do not necessarily coincide with the peak hours of turning movement counts.
a Average Daily Traffic volume expressed in vehicles per day.
b Represents the percent of daily traffic that occurs during the peak hour.
c Directional distribution of peak hour traffic.

As shown in Table 4-1, approximately 57,800-60,900 vehicles travel along William F McClellan Highway (Route 1A), on a typical weekday with the weekday morning peak hour accounting for approximately five percent and the weekday evening peak hour accounting for approximately six percent of the weekday daily traffic flow. Traffic flow along William F McClellan Highway (Route 1A) is greater in the southbound direction for the weekday morning peak hour and approximately even in each direction during weekday evening peak hours, though the peak direction is based on the time of day.

Tomasello Drive, east of William F McClellan Highway (Route 1A) carries approximately 3,200 vehicles on a typical weekday with the weekday morning peak accounting for approximately seven percent and weekday evening peak hour accounting for approximately nine percent of the weekday daily traffic flow.

Tomasello Drive, south of Winthrop Avenue (Route 145) carries approximately 11,600 vehicles on a typical weekday with the weekday morning peak accounting for approximately 3.5 percent and weekday evening peak hour accounting for approximately nine percent of the weekday daily traffic flow. The differences in daily traffic at each location could be attributed to the commercial development along Furlong Drive connecting to Tomasello Drive, approximately 800 feet south of Winthrop Avenue (Route 145). Traffic flow directionality along William F McClellan Highway (Route 1A) is dependent on the time of day. For the weekday morning peak hour, traffic flows mainly in the southbound direction, while for the weekday evening peak hour traffic flow is mainly in the northbound direction.

Winthrop Avenue, (Route 145), east of Tomasello Drive, carries approximately 32,000 vehicles on a typical weekday with the weekday morning peak accounting for approximately seven percent and weekday evening peak hour accounting for approximately eight percent of the weekday daily traffic flow. Traffic flow along Winthrop Avenue (Route 145) is generally evenly distributed in each direction during the weekday morning peak hours and is greater in the eastbound direction during the weekday evening peak hour, though the peak direction is based on time of day.

Concurrent with the ATR counts, turning movement counts (TMCs) were conducted at the study area intersections in May 2017 during the weekday morning peak period from 6:30 AM to 9:30 AM and the weekday evening peak period from 3:30 PM to 6:30 PM. The TMC data indicates that, within the study area, the weekday morning peak hour occurs between 7:15 AM and 8:15 PM and the weekday evening peak hour occurs between 4:45 PM and 5:45 PM.

Seasonal Variation

MassDOT weekday seasonal factors were reviewed to understand the seasonality of traffic count data collected in the month of May. Data for seasonal variation of traffic volumes on urban arterials and collectors in Boston and Revere, MA indicate that traffic counts in May are generally higher than the average month. Since the May count data were found to be higher than annual average conditions, no further seasonal adjustment factors were applied to the data. The MassDOT weekday seasonal factors are included in Appendix E.

Figures 4.5 and 4.6 illustrate the resulting 2017 Existing Condition weekday morning and weekday evening peak hour traffic volumes, respectively.

Crash History

To identify motor vehicle crash trends in the Phase 1 Project study area, the most current crash data for the study area intersections were obtained from MassDOT for the five-year period from 2011 through 2015. A summary of the vehicular crash data is presented in Table 4-2 and included in Appendix E.

Crash rates are calculated based on the number of crashes at an intersection and the volume of traffic traveling through that intersection on a daily basis. MassDOT average crash rates for District 6 (the MassDOT district designation for Boston) are 0.70 and 0.53 for signalized and unsignalized intersections, respectively, and District 4 (the MassDOT district designation for Revere) are 0.73 and 0.56 for signalized and unsignalized intersections, respectively. In other words, on average, 0.70 crashes occurred per million vehicles entering signalized intersections, and 0.53 crashes occurred per million vehicles entering unsignalized intersections throughout District 6. The same methodology applies to District 4 rates. The crash rate worksheets for the study area intersections are included in Appendix E.

As shown in Table 4-2, the Winthrop Avenue (Route 145) at North Shore Road intersection has a calculated crash rate over the district average. The majority of the crashes are angle collisions with most resulting in property damage only. No fatal crashes were reported for this intersection or any other study area intersection.

Road Safety Audits

Study area intersections located within Highway Safety Improvement Program (HSIP) clusters are subject to a Roadway Safety Audit (RSA). Preliminary steps have been taken to identify possible intersections subject to the RSA. The Phase 1 study area intersections located within a HSIP cluster have been identified as:

- Winthrop Avenue (Route 145) at Revere Beach Parkway and Harris Street
- Winthrop Avenue at North Shore Road
- Bennington Street at Crescent Avenue
- Bennington Street and State Road at Winthrop Avenue

It should be noted that all four of these locations will likely be included in the overall mitigation program that will be outlined in the Master Plan TIA in the DEIR/DPIR. In addition, based on initial discussions with MassDOT, an RSA was previously conducted for Bell Circle. The Proponent will work with MassDOT to determine if additional safety review is required at Bell Circle. The Proponent will also work with MassDOT to determine if the other intersections listed above will require RSAs, and if so, establish the appropriate time frame for conducting the RSA.

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Table 4-2 Intersection Vehicular Crash Summary (2011 – 2015)

	Boardman Street at Route 1A	Route 1A NB at Waldemar Avenue	Route 1A at Suffolk Downs/ Tomasello Drive	Route 1A at Jughandle	Bennington Street at Crescent Avenue	Bennington Street/ State Road at Winthrop Avenue	Winthrop Avenue at Revere Beach Parkway	Winthrop Avenue at Suffolk Downs/ Tomasello Drive	Winthrop Avenue at North Shore Road	Winthrop Avenue at Route 1A SB on-ramp	Winthrop Avenue at Revere Beach Pkwy/Harris Street
Signalized?	yes	no	No	yes	no	yes	yes	yes	yes	yes	yes
MassDOT Average Crash Rate	0.70	0.53	0.53	0.70	0.56	0.73	0.73	0.73	0.73	0.73	0.73
Calculated Crash Rate	0.01	n/a	n/a	0.03	0.21	0.63	0.15	0.33	0.76	0.25	0.49
Exceeds Average?	n/a	n/a	n/a	n/a	no	no	no	no	yes	no	no
Year											
2011	1	0	0	1	2	4	1	2	7	6	6
2012	0	0	0	1	1	6	1	1	7	1	8
2013	0	0	0	0	1	6	1	3	13	3	9
2014	0	0	0	0	0	4	1	7	13	5	9
2015	0	0	0	0	1	1	4	8	6	2	11
Total	1	0	0	2	5	21	8	21	46	17	43
Average	0.20	0.00	0.00	0.40	1.00	4.20	1.60	4.20	9.20	3.40	8.60
Collision Type											
Angle	0	0	0	0	3	9	2	13	22	5	15
Head-on	0	0	0	1	1	1	0	1	2	1	2
Rear-end	0	0	0	0	1	3	4	2	10	8	17
Rear-to-Rear	0	0	0	0	0	0	0	0	0	0	0
Sideswipe, opposite direction	0	0	0	0	0	0	0	0	2	0	0
Sideswipe, same direction	0	0	0	1	0	2	0	0	6	1	3
Single vehicle crash	1	0	0	0	0	5	2	5	4	2	6
Unknown	0	0	0	0	0	1	0	0	0	0	
Not reported	0	0	0	0	0	0	0	0	0	0	
Crash Severity											
Fatal injury	0	0	0	0	0	0	0	0	0	0	0
Non-fatal injury	0	0	0	1	3	12	2	10	11	8	19
Property damage only (none injured)	1	0	0	1	1	8	6	10	32	7	22
Not Reported	0	0	0	0	1	1	0	1	2	1	2
Unknown	0	0	0	0	0	0	0	0	1	1	0
Time of Day											
Weekday, 7:00 AM - 9:00 AM	0	0	0	0	1	4	1	1	3	1	2
Weekday, 4:00 PM - 6:00 PM	0	0	0	0	1	2	0	5	4	2	6
Saturday, 11:00 AM - 2:00 PM	0	0	0	0	0	1	0	1	0	1	0
Weekday, other time	0	0	0	1	3	11	6	12	30	9	19
Weekend, other time	1	0	0	1	0	3	1	2	9	4	16
Pavement Conditions											
Dry	1	0	0	2	3	14	6	15	36	15	38
Wet	0	0	0	0	2	6	1	4	9	2	4
Snow	0	0	0	0	0	0	0	1	0	0	1
Ice	0	0	0	0	0	0	0	1	0	0	0
Slush	0	0	0	0	0	1	0	0	0	0	0
Unknown/Not reported	0	0	0	0	0	0	0	0	1	0	0
Non Motorist (Bike, Pedestrian)	0	0	0	0	0	0		0	0	0	0

Source: MassDOT crash portal, accessed October 2017.

Table 4-2 (continued) Intersection Vehicular Crash Summary (2011 – 2015)

	Route 60 (American Legion Highway) at Bell Circle - North	Route 60 (American Legion Highway) at Bell Circle -South	Route 16 and Route 1A at Bell Circle	Route 1A (VFW Pkwy) at Bell Circle	Beach Street at Bell Circle
Signalized?	yes	yes	yes	yes	yes
MassDOT Average Crash Rate	0.73	0.73	0.73	0.73	0.73
Calculated Crash Rate	0.49	0.54	0.27	0.34	0.60
Exceeds Average?	no	no	no	no	no
Year					
2011	8	8	3	2	3
2012	5	5	1	1	4
2013	5	8	2	0	6
2014	13	6	3	4	8
2015	3	6	2	4	1
Total	34	33	11	11	22
Average	6.80	6.60	2.20	2.20	4.40
Collision Type					
Angle	19	17	2	4	14
Head-on	0	0	0	0	0
Rear-end	7	12	5	3	3
Rear-to-Rear	0	0	0	0	0
Sideswipe, opposite direction	0	1	0	0	0
Sideswipe, same direction	5	2	2	1	2
Single vehicle crash	2	1	1	1	2
Unknown	1	0	0	1	0
Not reported	0	0	1	1	1
Crash Severity					
Fatal injury	14	12	6	4	8
Non-fatal injury	18	17	4	6	13
Property damage only (none injured)	1	2	0	1	0
Not Reported	1	2	1	0	1
Unknown	34	33	11	11	22
Time of Day					
Weekday, 7:00 AM - 9:00 AM	2	3	0	1	4
Weekday, 4:00 PM - 6:00 PM	1	2	3	0	1
Saturday, 11:00 AM - 2:00 PM	1	0	0	0	1
Weekday, other time	18	20	4	6	8
Weekend, other time	12	8	4	4	8
Pavement Conditions					
Dry	15	24	26	10	7
Wet	2	8	6	0	3
Snow	0	1	1	0	0
Ice	0	1	0	0	0
Slush	0	0	0	0	0
Unknown/Not reported	0	0	1	1	1
Non Motorist (Bike, Pedestrian)	2	0	0	2	0

Source: MassDOT crash portal, accessed October 2017.

Public Transportation

The Master Plan and Phase 1 Project Sites are well-served by public transit. The Phase 1 Project Site, specifically, benefits from the adjacent MBTA Blue Line service at the Suffolk Downs MBTA Station. Also, multiple local and commuter bus routes operate within ¼-mile of the Master Plan Project Site. These services are illustrated in Figure 4.7, and their service and operational characteristics are described in further detail below.

MBTA Blue Line Rapid Transit Service

The MBTA's Blue Line rapid transit service operates between Wonderland Station in Revere and Bowdoin Station in Boston. The Blue Line connects with the Orange Line at State Street, the Green Line at Government Center, and ferry service at Aquarium Station. On weekdays, Blue Line service operates from 5:13 a.m. to 1:21 a.m.[4] During the peak periods, trains operate every 4.5 minutes.[5] During weekday off-peak periods, trains are scheduled to run every nine minutes.[6]

The total Blue Line fleet consists of 94 vehicles, which are proactively maintained by the MBTA's reliability-centered maintenance program. The Blue Line fleet is one of the most reliable among the MBTA's vehicle fleets.[7] During peak service, 72 vehicles (12 six-car trainsets) are utilized, with additional trainsets kept in reserve.[8]

The MBTA's Service Delivery Policy (the Policy)[9] provides that its purpose is to "set how the MBTA evaluates service quality and allocates transit service to meet the needs of the Massachusetts Bay region," which is consistent with the MBTA's enabling legislation and other external mandates. Vehicle load standards, as detailed in the Policy, define the levels of crowding that are acceptable for passenger comfort by mode and time period. The absolute maximum number of passengers that can fit onto a transit vehicle (also referred to by the MBTA as "crush capacity") is greater than the vehicle load standards dictated by the MBTA's Policy.

Blue Line service is operated with six-car trainsets, with each car having a seated capacity of 35 passengers.[10] Utilizing the vehicle load standard dictated by the MBTA's Policy, the policy capacity of each Blue Line train during the peak periods is 516 passengers.[11] Based on the 4.5-minute headways operated during the peak, the

4 MBTA. Blue Line Schedule. Accessed from www.mbta.com/schedules/Blue/line.
5 MBTA. DGM Remarks. Presentation to Fiscal & Management Control Board. October 30, 2017.
6 MBTA. Rapid Transit Schedule. Effective September 3, 2017 – December 30, 2017.
7 MBTA. DGM Remarks. Presentation to Fiscal & Management Control Board. October 30, 2017.
8 MBTA. MBTA State of the System: Blue Line Heavy Rail. Presentation to Fiscal & Management Control Board. August 8, 2016.
9 MBTA. *Service Delivery Policy, 2017 Update.* Approved January 23, 2017.
10 MBTA. *Service Delivery Policy, 2017 Update.* Approved January 23, 2017.
11 MBTA. *Service Delivery Policy, 2017 Update.* Approved January 23, 2017.

Blue Line policy capacity during the busiest 30-minute period of service is approximately 3,440 passengers.

Ridership demand on the Blue Line is greatest during the weekday rush hours, with the highest Blue Line Inbound demand occurring between 8:00 a.m. and 8:30 a.m. during the AM Peak, and the highest Blue Line Outbound demand occurring between 5:00 p.m. and 5:30 p.m. during the PM Peak. The maximum load point on the Blue Line is located between Maverick and Aquarium Stations in the peak directions during the peak periods, as illustrated in Figure 4.8 and Figure 4.9. These figures illustrate that the Blue Line currently operates within its policy capacity during the weekday peaks.

The temporal distribution of demand at the Blue Line's maximum load point (between Maverick and Aquarium Stations) on an average weekday is illustrated in Figure 4.10 and Figure 4.11, for the Inbound and Outbound directions, respectively. While the Blue Line operates within its policy capacity during the peak periods, existing passenger volumes slightly exceed policy capacity just before and just after the peak periods. This exceedance is due to the reduction in policy capacity provided outside of the peak period, which is a result of MBTA's Policy dictating a reduced acceptable maximum passenger load per vehicle during off-peak times as well as reduced service frequency provided.

The Master Plan Project Site is served by the Blue Line via two stations: Suffolk Downs Station and Beachmont Station. On a typical weekday in Fall 2016, approximately 75,270 passengers boarded the Blue Line, with approximately 850 passengers boarding at Suffolk Downs and 3,250 passengers boarding at Beachmont.[12] Currently, Suffolk Downs is the least utilized of all the Blue Line stations. Figure 4.12 and Figure 4.13 illustrate Inbound and Outbound platform activity (passenger boardings plus passenger alightings) at Suffolk Downs Station, respectively, for an average weekday.

MBTA Bus Services

The MBTA bus routes operating in the vicinity of the Master Plan Project Site are described below:

- **Route 119** provides local bus service between Beachmont Station and the Northgate Shopping Center. The route operates along the northern end of the Master Plan Project Site, with the nearest stops located on Winthrop Avenue. During peak hours, bus service on this route operates approximately every 30 to 35 minutes.
- **Route 120** operates on the southern side of the Master Plan Project Site in the Orient Heights neighborhood. The route provides local bus service between the MBTA Blue Line's Orient Heights Station and Maverick Station. Blue Line

12 Based on MBTA Blue Line ridership data from Fall 2016. Results rounded to nearest 10.

ridership from the Master Plan Project is anticipated to board the Blue Line directly via Suffolk Downs Station or Beachmont Station and, therefore, is not anticipated to generate demand for the Route 120.

- **Routes 424, 434, 448 and 449** provide commuter bus service between communities in the North Shore to Haymarket Station or Downtown Crossing Station. These routes operate by the Master Plan Project Site via Route 1A, but there are no stops in the vicinity.
- **Route 450** provides service between Salem Depot and Haymarket Station. The route stops on Route 1A in the vicinity of the Master Plan Project Site. During peak hours, bus service on this route operates approximately every 30 minutes.
- **Route 459** provides service between Salem Depot and Downtown Boston. The route stops on Route 1A in the vicinity of the Master Plan Project Site. During peak hours, bus service on this route operates approximately every 70 minutes.

The buses operating on the routes serving the Master Plan Project Site have a seated capacity of 39 passengers.[13] Utilizing the vehicle load standard dictated by MBTA Policy, the policy capacity of each bus during the peak periods is 55 passengers.[14]

Pedestrian and Bicycle Accommodations

Within the vicinity of the Master Plan Project Site, sidewalks are provided along both sides of Route 1A and Winthrop Avenue. Sidewalks are provided along the west side of Tomasello Drive from Winthrop Avenue until the shopping plaza. Crosswalks are provided at the intersection of Winthrop Avenue and Tomasello Drive. The sidewalk along Winthrop Avenue provides access to the residential area, bus stops, and Beachmont Blue Line transit stop to the north of the Master Plan Project Site. The Master Plan Project Site and surrounding areas lack bicycle accommodations.

4.2.4 2024 Future Transportation Conditions

To determine future roadway operations, traffic volumes in the study area were projected to 2024 to reflect a seven-year planning horizon from the 2017 Existing Condition. The seven-year planning horizon is consistent with MassDOT Transportation Impact Assessment (TIA) Guidelines.[15]

Traffic volumes on the roadway network under future conditions without the Phase 1 Project (No-Build) are assumed to include all existing traffic, any new traffic due to regional and area background traffic growth, and traffic related to any specific nearby development projects expected to be completed by the 2024 horizon year. Roadway improvements proposed within the boundaries of the study area by others were also considered and incorporated where appropriate. The anticipated traffic

13 MBTA. *Ridership and Service Statistics, Fourteenth Edition.* 2014.

14 MBTA. *Service Delivery Policy, 2017 Update.* Approved January 23, 2017.

15 *Transportation Impact Assessment (TIA) Guidelines*, Massachusetts Department of Transportation, March 13, 2014.

volumes from the Phase 1 Project were added to the No-Build traffic volumes to reflect future conditions with the Phase 1 Project in place (2024 Build Condition).

2024 No-Build Conditions

The 2024 No-Build traffic volumes were determined by considering existing traffic volumes and adding regional traffic growth and traffic from other known nearby developments. Traffic growth is generally a function of expected new development, changes in demographics, and changes in auto usage and ownership in the region. Regional traffic growth is projected by examining historic traffic growth trends.

Regional Traffic Growth

Historic count data was reviewed to establish an appropriate rate at which traffic volume can be expected to grow. VHB reviewed data from MassDOT Permanent Count Station #8087 (Route 1A north of Tomasello Drive). VHB also conducted comparisons between the 2012 traffic counts conducted for the Mohegan Sun project and the 2017 traffic counts conducted for the Phase 1 Project. The MassDOT data and the count comparisons showed that overall traffic growth is either level or decreasing in most areas. To account for development growth in this area, a growth rate of 0.5-percent per year was applied to the existing traffic volumes. This growth rate is consistent with the anticipated growth identified in the area and used by other area projects.

Planned Development Projects

In addition to regional background growth, the traffic associated with other planned, approved, or under construction developments near the Master Plan Project Site or within the study area are included in the No-Build traffic volume projections. The cities of Boston and Revere identified the 22 projects listed below, which are included in the analysis.

<u>Revere Projects</u>:

- La Quinta Hotel consisting of 100 rooms
- Revere Beach Hotel consisting of 175 room and an 80-seat hotel restaurant
- 205 Revere Beach Parkway (Former Shaw's Plaza) consisting of 310 residential units and 150 hotel rooms with a hotel restaurant
- 71 Revere Street consisting of 53 residential units
- 90 Ocean Avenue consisting of 60 residential units

<u>East Boston Projects</u>:

- 75-85 Liverpool Street consisting of 22 residential units and ground floor commercial space, approximately 20,180 square feet
- 944-946 Saratoga Street consisting of 42 residential units, approximately 43,500 square feet

- 9 Chelsea Street consisting of funeral home and commercial retail spaces, approximately 25,848 square feet
- 175 McClellan Highway consisting of approximately 300 residential units, 2,000 square feet of ground floor commercial space, approximately 275,000 feet
- 135 Bremen Street consisting of 94 residential units and 8,300 square feet of commercial space, approximately 127,770 square feet
- 175 Orleans Street consisting of 127-room boutique hotel, approximately 71,450 square feet
- 301-303 Border Street consisting of 64 residential until and ground floor commercial space, approximately 75,160 square feet
- 125 Sumner Street consisting of 52 residential units, retail space, and community gathering areas, approximately 60,670 square feet
- 99 Sumner Street consisting of approximately 119 residential units and 7,200 square feet of shared work space, approximately 125,610 square feet
- 10-16 Everett Street consisting of 19 residential units, approximately 22,540 square feet
- 187-191, and 211 Condor Street consisting of approximately 23 residential units, approximately 28,357 square feet
- 1181 Bennington Street consisting of 44 residential units, approximately 49,000 square feet
- 202 Maverick Street consisting of 23 residential units, approximately 22,700 square feet
- 319-327 Chelsea Street consisting of 38 residential units and commercial space, approximately 44,550 square feet
- 917 Bennington Street consisting of 42 residential units, approximately 47,230 square feet
- 151 Liverpool Street consisting of 36 condominium units, approximately 39,175 square feet
- 114 Orleans Street consisting of 23 condominium units, approximately 29,385 square feet

Refer to Figure 4.14 for the No-Build background Project trip network.

2024 No-Build Traffic Volumes

2024 No-Build Condition traffic volume networks were developed by applying the 0.5-percent annual growth rate over the seven-year study horizon to the 2017 Existing Condition traffic volume networks and incorporating the traffic volumes associated with the background development described above in one of the following ways:

1. Estimated traffic impacts available from studies or environmental permitting documents;
2. Performed a trip generation, trip distribution and/or trip assignment analysis;
3. Project already included in background regional traffic growth;
4. Project already included in existing traffic counts; or
5. Project is too small or remote from the Project study area to have any meaningful effect.

Figures 4.15 and 4.16 show the resulting 2024 No-Build conditions peak hour traffic volume networks for the weekday morning and weekday evening peak hours, respectively.

Future Roadway Conditions

In assessing future traffic conditions, proposed roadway improvements within the study area that are proposed by others were also considered. Based on information available from MassDOT, no public roadway improvements were identified within the study area. However, there are improvements proposed as part of the 205 Revere Beach Parkway project along Winthrop Avenue. These improvements include:

- A new signalized driveway to the southbound leg of the Winthrop Avenue/Revere Beach Parkway intersection.
- Elimination of the existing right-in/right-out driveway located to the east of Winthrop Avenue.
- Elimination of the existing entrance-only curb-cut located to the east of Tomasello Drive.
- Conversion of the exit-only driveway located at the Tomasello Drive signalized intersection to a right-in/right-out driveway.
- Provision of an exclusive left-turn lane into the Master Plan Project Site at the signalized intersection with Winthrop Avenue/Revere Beach Parkway.
- Signal timing and phasing improvements at the signalized intersections
- Traffic signal coordination.
- A crosswalk across Revere Beach parkway and providing pedestrian signal actuation.

The improvements listed above have been incorporated into the 2024 No-Build and Build Condition analyses.

Future Public Transportation Conditions

MBTA Blue Line Rapid Transit Service

The analysis of 2024 No-Build transit conditions for the Phase 1 Project is focused on the MBTA Blue Line service, as the Phase 1 development is located adjacent to

Suffolk Downs Station and therefore transit demand associated with this development is anticipated to almost exclusively use the Blue Line to access and egress the Master Plan Project Site.

In order to estimate the growth in background ridership between existing conditions and the future 2024 No-Build conditions, an estimated average annual growth rate was applied. The growth rate was based on system-wide MBTA growth projections for rapid transit prepared by the Central Transportation Planning Staff (CTPS) for the Boston Metropolitan Planning Organization’s Long-Range Transportation Plan, *Charting Progress to 2040.*[16] Based on the *Charting Progress to 2040* analysis, a 0.89 percent annual increase in rapid transit ridership is projected system wide.

To analyze the Blue Line’s demand and capacity for the 2024 No-Build condition, the highest projected passenger loading volumes between Aquarium and Maverick Stations were studied, consistent with the existing conditions maximum load point presented in Section 4.2.3. Under 2024 No-Build conditions, the Blue Line is projected to operate within its policy capacity during the weekday peaks, as illustrated in Figure 4.17 and Figure 4.18 for the Inbound and Outbound directions, respectively. Similar to existing conditions, 2024 No-Build passenger volumes are projected to slightly exceed policy capacity just before and just after the peak periods, when service is less frequent and when the MBTA’s Policy dictates reduced maximum passenger loading levels as compared to during the peak.

Figure 4.19 and Figure 4.20 illustrate the projected 2024 No-Build Inbound and Outbound platform activity, respectively, at Suffolk Downs Station during an average weekday. Under 2024 No-Build conditions, daily platform activity is projected to increase by approximately 10 percent as compared to existing conditions. This increase in platform activity is well within the capacity that can be accommodated by the existing Suffolk Downs Station.

4.2.5 2024 Build Transportation Conditions

Build traffic volumes were determined by estimating project-generated traffic volumes and distributing these volumes over the study area roadways. The Phase 1 Project generated traffic volumes include new trips that are likely to be generated by the Phase 1 Project.

Project-generated Traffic Volumes

Project Trip Generation was calculated using the methodologies outlined in the ITE Trip Generation Handbook, 10th Edition (September 2017). The methodology and assumptions utilized to accurately estimate the number of Project-generated trips is as follows:

16 Boston Metropolitan Planning Organization. *Charting Progress to 2040.* July 2015.

1. Identify Project Land Use Codes and estimate ITE Unadjusted Vehicle Trips
    a. Estimate existing Master Plan Project Site-generated trips
2. Convert ITE Unadjusted Vehicle Trips into Person Trips
    a. Average Vehicle Occupancy (AVO) Rates
    b. Calculate Internal Capture Trips
3. Determine Appropriate Mode Shares by Land Use
4. Calculate Daily and Peak Hour Trips by Mode (vehicle, transit, walk, bike)
    a. Convert Person Trips to Adjusted Vehicle Trips
5. Summarize Project Generated Trips

The following sections summarize the analytical details involved in following these steps and supporting calculations used to determine Phase 1 Project Trip Generation.

1. Project Land Use Codes and ITE Unadjusted Vehicle Trips

The ITE Trip Generation Manual categorizes land uses by Land Use Code (LUC) and provides daily, morning, and evening peak hour trip generation rates for each respective use. The rate at which any development generates traffic is dependent upon several factors such as its respective size, location, and concentration of surrounding developments. As previously discussed, the Proponent proposes to redevelop the Phase 1 Site with 520,000 square feet (KSF) of commercial (corporate headquarters) space. Trip generation estimates for the proposed land uses were projected using trip generation rates published by the Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition[17] for LUC 714 (Corporate Headquarters). The LUC and respective trip generation rates are shown in Table 4-3.

Table 4-3 ITE Land Use Code and Trip Generation Rates

Land Use	ITE LUC	Average Trip Rate Weekday Daily	Average Trip Rate Morning Peak Hour	Average Trip Rate Evening Peak Hour
Office	LUC 714 Corporate Headquarters	5.34	1.28	1.10

Source: ITE Trip Generation Handbook 10th Edition
a Trip generation rates based on ITE LUC 714 (Corporate Headquarters) – (regression rate)

a. *Estimate Existing Site Generated Trips*

When estimating trips for a new development on a site with an existing development, trip generation rates do not account for the existing site generated trips therefore the existing site generated trips are subtracted from the new

17 *Trip Generation, 10th Edition*, Institute of Transportation Engineers, Washington, D.C., 2017.

development program's total trip generation estimates. To determine the existing site generated trips, traffic counts and observations were conducted on two days (a weekday in September 2017 and a weekday in October 2017) for the facilities' hours of operation plus a half hour prior to opening and after closing (10:30 AM to 6:00 PM and 10:30 AM to 8:30 PM, respectively). Note that care was taken to ensure that only traffic specifically generated by existing Off Track Betting operations occurring at Suffolk Downs were included in this assessment. Through traffic along Tomasello Drive as well as any other traffic destined for retail uses along Furlong Drive were excluded from these counts. The two days of counts were averaged to represent a typical weekday condition. The existing site generate trips are shown in Table 4-4.

Table 4-4 Existing Site Trip Generation Summary

	Daily	Morning Peak Hour	Evening Peak Hour
Total Suffolk Downs OTB Trips	891	0	107

The trip generation rates and the existing Master Plan Project Site-generated trips, previously presented, were used to calculate the unadjusted vehicle trips for the Phase 1 Project, shown in Table 4-5. The trip generation worksheets are included in Appendix E.

Table 4-5 Phase 1 Project Unadjusted Trip Generation Summary

		Daily	Morning Peak Hour	Evening Peak Hour
Corporate Headquarters				
	In	1,387	620	57
	Out	1,387	47	515
	Total	2,775	667	572

Source: ITE Trip Generation Handbook 10th Edition
a Trip generation estimate based on ITE LUC (Corporate Headquarters) – (regression rate)

2. Covert ITE Unadjusted Vehicles Trip to Person Trips

The calculation of person trips from unadjusted vehicle trips involves two distinct steps, including the following actions:

a. Identify Average Vehicle Occupancy Rates by Land Use Type

b. Calculate Internal Capture Trips

Each of these supporting analyses are described in the following sections.

a. Average Vehicle Occupancy (AVO) Rates

The unadjusted vehicle trips are converted into person trips by applying the national average vehicle occupancy (AVO) rates as established in the 2009 National Household Travel Survey. The following AVO rate was used to generate total person trips generated by the Phase 1 Project:

› Office: 1.13

b. Internal Capture Trips

For projects with a mix of uses, some of the trips to be generated by the Phase 1 Project will be contained on-site as "internal" or "shared vehicle" trips. For example, patrons of a proposed supermarket may also visit the general retail on a site. While these shared trips represent new traffic to the individual uses, they would not show up as new vehicle trips on the surrounding roadway network. The Phase 1 Project's proposed development is a single land use, and therefore, no internal capture trips would be generated.

3. Determine Appropriate Mode Shares by Land Use

The mode shares used to support this effort are derived from the Census Transportation Planning Products (CTPP). The CTPP is based on the 2006-2010 5-year American Community Survey Data. The information provided by this planning tool provides mode-specific origin (work/home)-destination (home/work) information which provides mode share data for the area, as well as trip distribution information. The information collected and analyzed are for the City of Boston and the City of Revere.

The mode shares, by land use, for the Phase 1 Project are presented in Table 4-6.

Table 4-6 Mode Shares

Mode	Office
Drive Alone	44.4%
Rideshare	7.6%
Transit	37.5%
Other (Walk, Bike, etc.)	10.5%

The mode shares shown in Table 4-6 are driven by the characteristics of the surrounding area, and the context of the land use that is proposed. The higher transit share is driven by the transit oriented City of Boston, and the proximity to the MBTA Blue Line and bus access for the City of Revere. Note that over the long-term, the Master Plan Project is intended to function as an active and successful TOD with a mix of uses that will complement each other and will foster significant reduced trip making and high levels of transit and alternative mode travel choices. While there will be emphasis to also support a high proportion of alternative trip making by the Phase 1 Project, this more conservative mode share profile has been utilized given the proposed buildings are being analyzed as a standalone project without the benefit of a mixed-use environment. This approach, in connection with the use of ITE rates that are representative of an office/corporate headquarters use, supports a technical analysis that very conservatively represents the potential transportation impacts of the Phase 1 Project.

4. Calculate Daily and Peak Hour Trips by Mode (vehicle, transit, walk, bike)

a. Adjusted Project Trips

The mode shares discussed above were applied to the person trips to generate the Adjusted Project Trips by mode.

A local AVO was applied to the rideshare mode to more accurately reflect the number of vehicles generated by the Master Plan Project Site. The local AVO for office was calculated to be 2.39.

Detailed trip generation worksheets are provided in Appendix E.

5. Summarize Adjusted Project-generated Trips

The above methodology was utilized to calculate the net-new Adjusted Project-generated trips for Phase 1 of the Project. Table 4-7 shows the number of trips generated by the Phase 1 Project.

Table 4-7 Adjusted Project Trips

			Vehicle	Transit	Other
Daily	In		746	588	165
	Out		746	588	165
		Total	**1,492**	**1,176**	**330**
AM	In		334	263	74
	Out		25	20	6
		Total	**359**	**283**	**80**
PM	In		31	24	7
	Out		277	218	61
		Total	**308**	**242**	**68**

As shown in Table 4-7, the Phase 1 Project is estimated to generate approximately 359 new vehicle trips (334 entering/25 exiting) during the weekday morning peak hour and 308 new trips (31 entering/277 exiting) during the weekday evening peak hour. The Phase 1 Project is estimated to generate slightly lower transit trips than the number of vehicles trips. The Phase 1 Project is expected to generate approximately 283 new transit trips (263 entering/20 exiting) during the weekday morning peak hour and approximately 242 new trips (24 entering/218 exiting) during the weekday evening peak hour.

Trip Distribution

The directional distribution of traffic approaching and departing the Phase 1 Project is a function of several variables: population densities, existing travel patterns, and the efficiency of the roadways leading to/from the Phase 1 Project Site. The trip distribution for the office use was generated based on the origin-destination US Census Bureau American Community Survey 2006-2010 Five-year Estimates for Boston and Revere. The assignment of site-generated traffic to specific travel routes was based on the assumption that most motorists will seek the fastest and most direct routes to and from the Phase 1 Project along with the Phase 1 Project Site's adjacency to the MBTA Blue Line Stations, its proximity to two high-volume commuting corridors, and the location of office uses where they will generate traffic in the non-critical direction (reverse commute). The anticipated office trip distribution patterns are summarized in Table 4-8 and illustrated in Figure 4.21 and Figure 4.22.

Table 4-8 Phase 1 Project Vehicular Trip Distribution

Direction (To/From)	Travel Route	Percent to/from Route
North	Route 60	10%
North	North Shore Road	9%
South	Route 1A	59%
East	Winthrop Ave (Route 145)	7%
East	Route 16	5%
West	Winthrop Ave (Route 145)	4%
West	Route 16	6%
Total	All Routes	100%

2024 Build Condition Traffic Volumes

The Phase 1 Project-generated traffic volumes were assigned to the roadway network according to the distribution and travel patterns described above, and added to the 2024 No-Build conditions traffic volumes. Figures 4.23 and 4.24 show the resulting 2024 Build conditions peak hour traffic volume networks for the weekday morning and weekday evening peak hours, respectively.

Proposed Phase 1 Project Site Access and Circulation

The following summarizes key access and circulation considerations for the Phase 1 Project:

› Vehicle access to the will continue to be served by Tomasello Drive with connecting access to Route 1A and North Shore Road.

- Access via public transit will be provided from the nearby Suffolk Downs MBTA Blue Line and other local bus routes.
- The Proponent is committed to providing approximately 520 on-site structured parking spaces (1 space per 1,000 square feet). This new parking will be offset by the elimination of other existing surface parking spaces located on-site, as shown in Figure 1.7, resulting in no net-new parking constructed in connection with the Phase 1 Project.
- There will be dedicated off-street loading docks to ensure that loading and service operations are handled internal to the building site and will not occur on any public streets or other adjacent private streets (Tomasello Drive). The dock will have enclosed bays in the building for deliveries and trash removal. Access to the loading area will be provided via the new private drive that will connect to Tomasello Drive.
- The Phase 1 Project will improve pedestrian sidewalks adjacent to the Phase 1 Project Site. New sidewalks will meet Americans with Disabilities Act and Architectural Access Board (ADA/AAB) standards. Street trees, where feasible, will be provided along these new sidewalks as well.
- The Proponent will provide covered bicycle storage capacity on-site in accordance with the City of Boston Bicycle Guidelines. The Phase 1 Project will also include public bikes racks to support ground floor retail space and visitors.
- The Proponent is committed to providing a Hubway Station for use by the Phase 1 Project occupants and nearby East Boston and Revere residents.
- The Proponent will implement a proactive transportation demand management (TDM) plan to encourage its employees to use transit and other alternative forms of transportation. The Proponent will require any future third-party tenants to implement their own proactive TDM plans. 2024 Build Transit Conditions

MBTA Blue Line Rapid Transit Service

The analysis of 2024 Build transit conditions for the Phase 1 Project compared MBTA Blue Line demand, including projected background ridership growth and estimated Project-generated ridership, against the policy capacity of the line. The analysis considered passenger loading volumes at the critical link between Maverick and Aquarium Stations, consistent with the existing conditions maximum load point presented in Section 4.2.3.

A majority of the Phase 1 Project-generated transit ridership, presented in Table 4-7, is in the non-critical, or reverse commute, direction. Projected peak hour demands and non-peak hour daily demands were distributed to 30-minute time periods and assigned to the Blue Line's Inbound and Outbound directions based on existing ridership trends at Suffolk Downs MBTA station, applied to reflect the anticipated reverse commute nature of the Phase 1 Project. For example, existing temporal and directional trends for Blue Line boardings at Suffolk Downs Station, which primarily occur during the morning, were used to develop estimated distributions for net new

Blue Line alightings resulting from the Phase 1 Project, which would also primarily occur during the morning due to the proposed office uses at the Phase 1 Project Site. For a conservative Phase 1 Project impact analysis, all demand projected to arrive to the Phase 1 Project Site via the Blue Line Outbound or depart from the Phase 1 Project Site via the Blue Line Inbound was assumed to travel through the maximum load point of the line, between Maverick Station and Aquarium Station. Some of these transit trips, however, will begin or end at locations that will not impact the critical link, such as trips to/from Airport Station. These distribution and assignment assumptions will be further refined for the detailed analysis of the Master Plan Project through close coordination with the MBTA during the development of the DEIR/DPIR. For purposes of the Phase 1 Project analysis, these more conservative assumptions were used to evaluate 2024 Build conditions.

Under the 2024 Build Condition, the Blue Line is projected to operate within its policy capacity during the weekday peak periods, as illustrated in Figure 4.25 and Figure 4.26 for the Inbound and Outbound directions, respectively. Similar to the 2024 No-Build Condition, passenger volumes are projected to slightly exceed policy capacity just before and just after the peak periods, when service is less frequent and when the MBTA's Policy dictates reduced maximum passenger loading levels as compared to during the peak. The Phase 1 Project would result in a nominal increase to passenger loading during these times, but would not result in any new time periods where passenger loads exceed policy capacity. In summary, the Phase 1 Project would not cause the MBTA Blue Line to exceed any capacity threshold that wouldn't otherwise be exceeded under the 2024 No-Build Condition.

Figure 4.27 and Figure 4.28 illustrate the projected 2024 Build Condition platform activity at Suffolk Downs Station for the Inbound and Outbound directions, respectively, during an average weekday. Under the 2024 Build Condition, daily platform activity is projected to increase by approximately 62 percent as compared to the 2024 No-Build Condition. Despite the substantial percentage increase in platform activity due to the Phase 1 Project, the magnitude of platform activity projected is well within the capacity that can be accommodated by Suffolk Downs Station, currently the least utilized station on the Blue Line. A total of approximately 3,070 weekday boardings and alightings are projected at Suffolk Downs Station under the 2024 Build Condition, including approximately 440 boardings and alightings during the morning peak hour and approximately 420 boardings and alightings during the evening peak hour. By comparison, the Blue Line's Wonderland Station currently experiences a total of approximately 13,620 weekday boardings and alightings, including approximately 1,500 boardings and alightings during the morning peak hour and approximately 1,550 during the evening peak hour.[18]

18 Based on MBTA Blue Line ridership data from Fall 2016. Results rounded to nearest 10.

4.2.6 Phase 1 Project Traffic Operations Analysis

Measuring existing traffic volumes and projecting future traffic volumes quantifies traffic within the study area. To assess quality of flow, roadway capacity analyses were conducted with respect to the 2017 Existing Condition and projected 2024 No-Build and Build Conditions. These analyses are included in Appendix E. Capacity analyses provide an indication of how well the roadway facilities serve the traffic demands placed on them. Calculated levels of service classify roadway operating conditions.

Level-of-Service Criteria

Level of service (LOS) is the term used to denote the different operating conditions that occur on a given roadway segment under various traffic volume loads. It is a qualitative measure that considers a number of factors including roadway geometry, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions.

For signalized intersections, the evaluation criteria used to analyze study area intersections are based on the 2000 Highway Capacity Manual (HCM).[19]

Intersection Capacity Analysis

Intersection capacity analyses were conducted at all intersections in the study area. Analyses were conducted for the 2017 Existing, 2024 No-Build, and 2024 Build conditions. Tables 4-9 and 4-10 summarize the capacity analyses for signalized and unsignalized intersections, respectively.

It should also be noted that as part of the existing and future conditions capacity analysis, additional volume was included along the Route 1A corridor to account for unmet demand associated with queuing in the peak direction. Based on information provided in prior studies of this area, an additional 300 vehicles were added to Route 1A southbound during the morning peak hour and 300 vehicles were added to the Route 1A northbound during the weekday evening peak hour. This approach is consistent with comments made by MassDOT on the prior casino studies prepared for this area.

19 Transportation Research Board, Highway Capacity Manual, Washington, D.C., 2000.

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Table 4-9 Unsignalized Intersection Capacity Analysis

		2017 Existing Conditions					2024 No-Build Conditions					2024 Build Conditions – Phase 1				
Location	Movement	D [a]	v/c [b]	Del [c]	LOS [d]	95 Q [e]	D	v/c	Del	LOS	95 Q	D	v/c	Del	LOS	95 Q
Route 1A at Waldemar Avenue																
Weekday Morning	WB R	130	0.25	12	B	24	135	0.21	11	B	19	135	0.19	11	B	17
Weekday Evening	WB R	120	0.31	19	C	33	105	0.29	18	C	30	105	0.29	18	C	30
Route 1A at Tomasello Drive																
Weekday Morning	WB L	205	>1.20	>120	F	865	210	>1.20	>120	F	Err	210	>1.20	>120	F	Err
	WB R	10	0.03	14	B	3	10	0.03	15	C	2	20	0.07	17	C	6
	SB L	0	n/a	n/a	n/a	n/a	0	n/a	n/a	n/a	n/a	35	0.09	15	B	0
Weekday Evening	WB L	5	>1.20	>120	F	47	5	>1.20	>120	F	Err	5	>1.20	>120	F	Err
	WB R	5	0.04	29	D	3	5	0.04	35	E	3	115	1.03	>120	F	177
	SB L	20	0.03	26	D	2	5	0.04	34	D	3	10	0.09	36	E	7
Bennington Street at Crescent Avenue																
Weekday Morning	WB L	170	0.86	72	F	172	180	0.88	79	F	177	185	0.90	83	F	186
	WB R	280	0.47	14	B	62	290	0.45	14	B	59	305	0.47	15	B	64
Weekday Evening	WB L	50	0.21	21	C	19	60	0.25	24	C	24	60	0.26	24	C	24
	WB R	120	0.22	12	B	20	130	0.22	12	B	21	130	0.22	12	B	21

a. Demand of critical movement.
b. Volume to capacity ratio.
c. Average total delay, in seconds per vehicle.
d. Level-of-service.
e. 95th percentile queue, in feet.

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Table 4-10 Signalized Intersection Capacity Analysis

		2017 Existing Conditions						2024 No-Build Conditions						2024 Build Conditions – Phase 1					
Location	**Movement**	**D [a]**	**v/c [b]**	**Del [c]**	**LOS [d]**	**50 Q**	**95 Q [e]**	**D**	**v/c**	**Del**	**LOS**	**50 Q**	**95 Q**	**D**	**v/c**	**Del**	**LOS**	**50 Q**	**95 Q**
Route 1A at Boardman Street																			
Weekday Morning	EB L	40	>1.20	>120	F	~74	#176	45	>1.20	>120	F	~90	#195	45	>1.20	>120	F	~89	#195
	EB T/R	130	0.22	76	D	31	113	135	0.27	77	E	46	131	135	0.27	77	E	46	131
	WB L/T	475	>1.20	>120	F	~1324	#1558	525	>1.20	>120	F	~1430	#1682	525	>1.20	>120	F	~1420	#1682
	WB R	100	0.33	62	E	122	180	135	0.39	60	E	158	230	135	0.39	59	E	156	230
	NB L	130	0.81	108	F	176	#264	140	0.84	112	F	196	#311	135	0.83	111	F	187	#294
	NB T	995	0.48	14	B	314	405	1090	0.56	18	B	417	500	1285	0.66	20	C	549	655
	NB R	120	0.09	10	A	0	26	170	0.13	12	B	0	31	170	0.13	12	B	0	31
	SB L	85	0.68	97	F	114	182	125	0.80	108	F	176	260	125	0.80	107	F	175	261
	SB T/R	2355	1.12	93	D	~1952	#2095	2395	1.19	121	F	~2171	#2261	2410	1.19	>120	F	~2172	#2283
	Overall			**>120**	**F**					**>120**	**F**					**>120**	**F**		
Weekday Evening	EB L	75	>1.20	>120	F	~184	#307	80	>1.20	>120	F	~190	#326	80	>1.20	>120	F	~190	#326
	EB T/R	95	0.15	77	E	20	82	100	0.15	78	E	19	88	100	0.15	78	E	19	88
	WB L/T	200	>1.20	>120	F	~472	#649	255	>1.20	>120	F	~610	#820	255	>1.20	>120	F	~610	#820
	WB R	200	0.58	64	E	257	349	240	0.65	67	E	304	419	240	0.65	67	E	304	419
	NB L	85	0.69	101	F	114	179	90	0.72	102	F	127	194	90	0.72	102	F	127	194
	NB T	2245	1.04	63	E	~1716	#1820	2355	1.17	116	F	~2103	#2192	2375	1.18	120	F	~2135	#2221
	NB R	90	0.06	12	B	4	28	140	0.11	13	B	13	43	140	0.11	13	B	14	43
	SB L	170	0.89	118	F	245	#388	205	1.00	>120	F	300	#497	205	1.10	>120	F	300	#497
	SB T/R	1460	0.70	18	B	615	778	1565	0.75	21	C	712	898	1720	0.82	24	C	877	1104
	Overall			**88**	**F**					**>120**	**F**					**>120**	**F**		
Route 1A at the Jughandle																			
Weekday Morning	EB L/T/R	70	0.45	32	C	34	65	75	0.43	32	C	32	71	75	0.43	32	C	32	71
	NB T/R	1105	0.54	6	A	122	202	1240	0.60	7	A	143	235	1250	0.60	7	A	146	240
	SB T	2200	0.98	25	C	~467	#761	2355	1.10	64	E	~704	#906	2400	1.12	72	E	~728	#932
	Overall			**19**	**B**					**44**	**D**					**49**	**D**		
Weekday Evening	EB L/T/R	140	0.53	30	C	73	114	145	0.49	29	C	65	118	145	0.49	29	C	65	118
	NB T/R	2235	1.06	52	D	~622	#838	2355	1.17	94	F	~738	#956	2465	>1.20	118	F	~799	#1020
	SB T	1620	0.79	12	B	254	422	1780	0.88	16	B	322	#617	1940	0.96	24	C	398	#713
	Overall			**35**	**C**					**60**	**E**					**75**	**E**		

a. Demand of critical movement.
b. Volume to capacity ratio.
c. Average total delay, in seconds per vehicle.
d. Level-of-service.
e. 95th percentile queue, in feet

Table 4-10 Signalized Intersection Capacity Analysis (Continued)

		2017 Existing Conditions						2024 No-Build Conditions						2024 Build Conditions – Phase 1					
Location	Movement	D [a]	v/c [b]	Del [c]	LOS [d]	50 Q	95 Q [e]	D	v/c	Del	LOS	50 Q	95 Q	D	v/c	Del	LOS	50 Q	95 Q
Route 1A On-Ramp at Winthrop Avenue (Route 145)																			
Weekday Morning	EB T/R	1280	0.58	8	A	65	98	1355	0.63	9	A	72	109	1405	0.66	9	A	78	116
	WB L	310	0.71	17	B	65	#158	325	0.76	20	B	73	#179	330	0.77	20	C	74	#182
	WB T	1385	0.30	0	A	0	0	1460	0.32	0	A	0	0	1465	0.33	0	A	0	0
	Overall			**5**	**A**					**6**	**A**					**6**	**A**		
Weekday Evening	EB T/R	1530	0.71	9	A	95	136	1610	0.76	10	B	104	150	1615	0.76	11	B	105	150
	WB L	265	0.66	16	B	55	#135	280	0.70	17	B	61	#153	360	0.89	34	C	85	#210
	WB T	1385	0.29	0	A	0	0	1460	0.32	0	A	0	0	1495	0.33	0	A	0	0
	Overall			**6**	**A**					**6**	**A**					**8**	**A**		
Revere Beach Parkway (Route 16) at Winthrop Avenue (Route 145) and Harris Street																			
Weekday Morning	EB L/T	290	0.84	77	E	148	#223	300	0.89	84	F	159	#247	300	0.89	85	F	159	#247
	EB R	25	0.01	56	E	0	0	25	0.02	56	E	0	0	25	0.02	56	E	0	0
	WB L	895	1.13	>120	F	~559	#681	945	1.16	>120	F	~580	#715	950	1.17	>120	F	~586	#721
	WB T/R	490	1.20	>120	F	~625	#841	515	1.23	>120	F	~642	#873	515	1.24	>120	F	~642	#873
	NB T	440	0.40	35	C	180	227	455	0.40	35	C	180	231	455	0.40	35	C	180	231
	NB R	820	0.82	23	C	566	778	875	0.85	25	C	611	871	925	0.90	30	C	703	#1100
	SB T/R	420	0.42	35	C	211	206	435	0.34	34	C	167	215	435	0.34	34	C	167	215
	SEB L /R	215	>1.20	>120	F	~272	#447	225	>1.20	>120	F	~283	#460	225	>1.20	>120	F	~283	#460
	Overall			**83**	**F**					**92**	**F**					**94**	**F**		
Weekday Evening	EB L/T	245	0.73	68	E	124	175	260	0.77	71	E	135	#191	260	0.77	71	E	135	#191
	EB R	10	0.01	57	E	0	0	10	0.01	56	E	0	0	10	0.01	56	E	0	0
	WB L	765	0.92	65	E	394	#514	810	0.96	73	E	419	#553	845	1.01	84	F	~448	#592
	WB T/R	620	>1.20	>120	F	~867	#1109	650	>1.20	>120	F	~917	#1161	650	>1.20	>120	F	~917	#1161
	NB T	1020	0.86	48	D	502	597	1055	0.89	51	D	527	#630	1055	0.89	51	D	527	#630
	NB R	1170	1.10	82	F	~1316	#1586	1230	1.15	103	F	~1439	#1708	1235	1.16	105	F	~1449	#1720
	SB T/R	445	0.35	33	C	178	224	460	0.35	34	C	178	228	460	0.35	34	C	178	228
	SEB R	150	0.92	105	F	171	#276	155	0.87	93	F	157	#288	155	0.87	93	F	157	#288
	Overall			**94**	**F**					**105**	**F**					**107**	**F**		

a. Demand of critical movement.
b. Volume to capacity ratio.
c. Average total delay, in seconds per vehicle.
d. Level-of-service.
e. 95th percentile queue, in feet

Table 4-10 Signalized Intersection Capacity Analysis (Continued)

		2017 Existing Conditions						2024 No-Build Conditions						2024 Build Conditions – Phase 1					
Location	**Movement**	**D [a]**	**v/c [b]**	**Del [c]**	**LOS [d]**	**50 Q**	**95 Q [e]**	**D**	**v/c**	**Del**	**LOS**	**50 Q**	**95 Q**	**D**	**v/c**	**Del**	**LOS**	**50 Q**	**95 Q**
Winthrop Avenue (Route 145) at N. Shore Road																			
Weekday Morning	EB L	280	0.84	68	E	242	#519	295	0.84	42	D	123	#354	295	0.84	42	D	123	#354
	EB T	900	0.89	61	E	291	#515	960	0.30	4	A	23	123	1010	0.31	4	A	25	130
	WB T/R	1190	0.65	5	A	34	m87	1280	0.60	16	B	161	324	1295	0.60	16	C	161	325
	SB L	125	0.42	50	D	111	205	130	0.90	77	E	59	#208	165	1.14	>120	F	~83	#264
	SB R	275	0.22	48	D	0	48	290	0.20	33	C	0	#117	290	0.20	33	C	0	#117
	Overall			**35**	**D**					**19**	**B**					**23**	**C**		
Weekday Evening	EB T	1280	>1.20	>120	F	~668	#766	1370	0.49	12	B	130	290	1375	0.49	12	B	131	292
	WB T/R	1120	0.51	1	A	1	m28	1195	0.58	25	C	210	328	1345	0.67	25	C	212	368
	SB L	100	0.32	56	E	101	165	110	0.30	38	D	60	135	110	0.32	39	D	63	142
	SB R	230	0.16	54	D	0	84	245	0.18	37	D	0	76	245	0.18	37	D	0	76
	Overall			**90**	**F**					**30**	**C**					**28**	**C**		
Winthrop Avenue (Route 145) at Tomasello Drive																			
Weekday Morning	EB T	895	0.65	22	C	68	284	955	0.79	19	B	128	m#408	955	0.79	18	B	125	m#192
	EB R	130	0.22	10	A	6	m32	135	0.29	15	B	33	m59	215	0.46	16	B	54	m81
	WB L	195	0.63	53	D	163	313	200	0.60	29	C	79	#218	225	0.67	32	C	90	#258
	WB T	1145	1.15	>120	F	~443	#727	1225	0.43	7	A	51	114	1230	0.43	7	A	51	115
	NB L	45	0.11	49	D	20	40	50	0.15	30	C	10	32	65	0.20	30	C	13	40
	NB R	40	0.18	50	D	35	73	45	0.25	31	C	19	62	45	0.25	31	C	19	62
	SB R	*Not Part of Roadway Network in this Condition*						5	0.02	29	C	2	13	10	0.05	30	C	4	22
	Overall			**76**	**E**					**14**	**B**					**15**	**B**		
Weekday Evening	EB T	1380	0.75	35	C	270	m132	1480	0.87	33	C	263	#659	1255	0.87	33	C	265	#663
	EB R							225	0.37	24	C	83	180	230	0.37	24	C	84	184
	WB L	155	0.56	59	E	163	247	160	0.68	50	D	101	#239	160	0.64	48	D	100	#228
	WB T	880	0.92	72	E	379	#480	950	0.34	10	B	76	91	950	0.33	10	A	72	87
	NB L	240	0.33	48	D	120	165	245	0.42	39	D	73	139	395	0.72	46	D	127	#236
	NB R	450	1.27	>120	F	~672	#905	470	1.65	>120	F	~444	#813	490	>1.20	>120	F	~483	#860
	SB R	*Not Part of Roadway Network in this Condition*						5	0.01	36	D	3	15	5	0.01	36	D	3	15
	Overall			**72**	**E**					**83**	**F**					**83**	**F**		

a. Demand of critical movement.
b. Volume to capacity ratio.
c. Average total delay, in seconds per vehicle.
d. Level-of-service.
e. 95th percentile queue, in feet

Table 4-10 Signalized Intersection Capacity Analysis (Continued)

		2017 Existing Conditions						2024 No-Build Conditions						2024 Build Conditions – Phase 1					
Location	Movement	D [a]	v/c [b]	Del [c]	LOS [d]	50 Q	95 Q [e]	D	v/c	Del	LOS	50 Q	95 Q	D	v/c	Del	LOS	50 Q	95 Q
Bennington Street and State Road at Winthrop Avenue																			
Weekday Morning	EB L/T	135	0.55	44	D	105	159	145	0.55	44	D	103	169	145	0.55	44	D	103	169
	EB R	360	0.68	50	D	75	172	375	0.65	49	D	67	196	375	0.65	49	D	67	196
	NB L	340	>1.20	>120	F	~374	#592	355	>1.20	>120	F	~340	#614	370	>1.20	>120	F	~364	#643
	NB T/R	210	0.30	16	B	96	172	190	0.30	16	B	92	185	215	0.30	16	B	92	185
	SB L/T	695	1.37	>120	F	~709	#1085	730	>1.20	>120	F	~743	#1137	730	>1.20	>120	F	~743	#1137
	SB R	175	0.26	30	C	30	104	180	0.27	30	C	31	108	180	0.27	30	C	31	108
	Overall			**>120**	**F**					**>120**	**F**					**>120**	**F**		
Weekday Evening	EB L/T	325	0.81	51	D	253	367	440	0.83	52	D	264	382	350	0.84	53	D	275	397
	EB R	230	0.46	37	D	82	170	245	0.50	37	D	92	183	250	0.51	37	D	97	190
	NB L	335	0.88	49	D	205	#403	355	0.97	69	E	~253	#475	355	0.98	72	E	~269	#477
	NB T/R	415	0.61	27	C	259	398	440	0.67	28	C	297	444	440	0.67	29	C	303	444
	SB L/T	205	0.83	70	E	171	#323	220	0.88	77	E	183	#345	220	0.88	78	E	186	#345
	SB R	130	0.12	42	D	0	60	135	0.12	43	D	0	61	135	0.12	43	D	0	61
	Overall			**44**	**D**					**50**	**D**					**51**	**D**		
Revere Beach Parkway at Winthrop Avenue																			
Weekday Morning	EB L	345	0.17	5.5	A	32	59	370	0.21	14	B	45	72	370	0.22	15	B	48	72
	EB T	595	0.54	8.8	A	148	280	635	0.67	12	B	217	356	635	0.67	13	B	227	356
	WB T/R	470	0.63	28.7	C	116	164	460	0.63	27	C	109	157	475	0.64	27	C	113	162
	SB L/T/R	*Not Part of Roadway Network in this Condition*						50	0.03	32	C	0	0	50	0.03	33	C	0	0
	SWB R	875	0.33	6.4	A	32	64	965	0.79	24	C	171	242	990	0.80	25	C	180	247
	Overall			**11**	**B**					**21**	**C**					**21**	**C**		
Weekday Evening	EB L	1000	0.51	9.4	A	141	238	1050	0.70	15	B	~218	#399	1065	0.71	16	B	~227	#407
	EB T	620	0.59	11.1	B	182	351	675	0.81	20	B	253	#457	685	0.82	21	C	258	#469
	WB T/R	595	0.69	29.1	C	153	208	680	0.77	26	C	147	216	680	0.77	26	C	147	#216
	SB L/T/R	*Not Part of Roadway Network in this Condition*						40	0.03	29	C	0	0	40	0.03	30	C	0	0
	SB R	465	0.17	6.8	A	12	34	460	0.47	23	C	55	92	460	0.47	23	C	55	92
	Overall			**14**	**B**					**20**	**B**					**20**	**B**		

a. Demand of critical movement.
b. Volume to capacity ratio.
c. Average total delay, in seconds per vehicle.
d. Level-of-service.
e. 95th percentile queue, in feet

Table 4-10 Signalized Intersection Capacity Analysis (Continued)

		2017 Existing Conditions						2024 No-Build Conditions						2024 Build Conditions – Phase 1					
Location	Movement	D [a]	v/c [b]	Del [c]	LOS [d]	50 Q	95 Q [e]	D	v/c	Del	LOS	50 Q	95 Q	D	v/c	Del	LOS	50 Q	95 Q
Route 60 (American Legion Highway) at Bell Circle - North																			
Weekday Morning	WB T	990	0.88	49	D	386	477	1030	0.94	54	D	421	511	1030	0.94	54	D	421	511
	WB R	275	0.31	41	D	64	m96	285	0.38	39	D	85	m110	285	0.38	39	D	85	m110
	NB T	620	0.40	1	A	0	0	695	0.43	1	A	0	0	695	0.43	1	A	0	0
	SB T	830	0.70	33	C	288	364	900	0.76	35	C	323	404	925	0.78	35	D	336	420
	SB R	335	0.29	25	C	22	92	345	0.31	26	C	29	104	345	0.31	26	C	29	104
	Overall			**31**	**C**					**33**	**C**					**33**	**C**		
Weekday Evening	WB T	1160	0.97	59	E	465	554	1210	1.06	81	F	521	m#613	1210	1.06	81	F	521	m#613
	WB R	345	0.52	39	D	146	m188	355	0.57	37	D	151	m191	355	0.57	37	D	151	m191
	NB T	895	0.54	1	A	2	2	975	0.58	1	A	0	0	1000	0.59	1	A	0	0
	SB T	760	0.61	30	C	242	308	850	0.71	33	C	297	374	850	0.71	33	C	297	374
	SB R	285	0.19	24	C	0	54	295	0.22	24	C	7	65	295	0.22	24	C	7	65
	Overall			**32**	**C**					**40**	**D**					**40**	**D**		
Route 1A (American Legion Highway)/Route 16 (Revere Beach Parkway) at Bell Circle – South																			
Weekday Morning	EB T	510	0.71	33	C	118	197	535	0.78	36	D	141	228	535	0.78	36	D	141	228
	EB R	875	0.84	28	C	7	#84	905	1.01	55	E	26	#297	905	1.02	58	E	26	#320
	NB T	620	0.57	29	C	213	263	695	0.60	30	C	230	294	695	0.60	30	C	230	294
	NB R	365	1.10	117	F	~358	#507	385	1.07	108	F	~341	#537	385	1.07	108	F	~341	#537
	SB T	830	0.52	1	A	5	6	900	0.55	1	A	0	0	925	0.56	1	A	0	0
	NW R	595	0.68	37	D	198	224	615	0.60	35	C	167	235	615	0.60	35	C	167	235
	Overall			**34**	**C**					**38**	**D**					**39**	**D**		
Weekday Evening	EB T	505	0.69	33	C	118	192	525	0.75	36	D	143	213	525	0.75	36	D	143	213
	EB R	860	0.74	24	C	28	76	900	0.94	44	D	55	#118	900	0.94	44	D	55	#118
	NB T	895	0.73	34	C	317	396	975	0.80	36	D	358	445	1000	0.82	37	D	372	461
	NB R	460	>1.20	>120	F	~574	#657	480	>1.20	>120	F	~483	#693	480	>1.20	>120	F	~483	#693
	SB T	760	0.45	1	A	4	5	850	0.51	1	A	0	0	850	0.51	1	A	0	0
	NW R	1060	1.14	114	F	~491	#640	1100	1.17	>120	F	~519	#667	1100	1.17	>120	F	~519	#667
	Overall			**70**	**E**					**66**	**E**					**67**	**E**		

a. Demand of critical movement.
b. Volume to capacity ratio.
c. Average total delay, in seconds per vehicle.
d. Level-of-service.
e. 95th percentile queue, in feet

Table 4-10 Signalized Intersection Capacity Analysis (Continued)

		2017 Existing Conditions						2024 No-Build Conditions						2024 Build Conditions – Phase 1					
Location	Movement	D [a]	v/c [b]	Del [c]	LOS [d]	50 Q	95 Q [e]	D	v/c	Del	LOS	50 Q	95 Q	D	v/c	Del	LOS	50 Q	95 Q
Route 1A (VFW Parkway) at Bell Circle																			
Weekday Morning	WB R	965	0.52	43	D	31	111	1005	0.59	45	D	47	141	1005	0.59	45	D	47	141
	NB T	350	0.21	11	B	65	m93	370	0.21	10	A	64	m90	370	0.21	10	A	64	m90
	NB R	1120	0.49	>120	F	0	m57	1165	0.47	>120	F	0	m109	1165	0.47	>120	F	0	m109
	Overall			**77**	**E**					**88**	**F**					**88**	**F**		
Weekday Evening	WB R	1035	0.69	48	D	87	196	1080	0.86	59	E	149	#315	1080	0.86	58	E	149	#315
	NB T	425	0.24	15	B	92	m91	440	0.24	16	B	100	m96	440	0.24	16	B	100	m96
	NB R	1600	0.66	61	E	0	m11	1665	0.65	74	E	0	m14	1665	0.65	74	E	0	m14
	Overall			**51**	**D**					**61**	**E**					**61**	**E**		
Beach Street at Bell Circle																			
Weekday Morning	EB R	365	0.29	1	A	0	0	380	0.27	0	A	0	0	380	0.27	0	A	0	0
	SB T	1020	0.44	2	A	15	14	1060	0.47	2	A	15	14	1060	0.47	2	A	15	14
	SB R	305	0.22	0	A	0	m0	315	0.23	0	A	0	m0	315	0.23	0	A	0	m0
	Overall			**1**	**A**					**1**	**A**					**1**	**A**		
Weekday Evening	EB R	360	0.26	0	A	0	0	375	0.26	0	A	0	0	375	0.26	0	A	0	0
	SB T	1005	0.41	2	A	12	m11	1050	0.45	2	A	12	m11	1050	0.45	2	A	12	m11
	SB R	440	0.30	0	A	0	m0	455	0.32	0	A	0	m0	455	0.32	0	A	0	m0
	Overall			**1**	**A**					**1**	**A**					**1**	**A**		

a. Demand of critical movement.
b. Volume to capacity ratio.
c. Average total delay, in seconds per vehicle.
d. Level-of-service.
e. 95th percentile queue, in feet

2017 Existing Conditions

Intersections in urban areas are typically considered to be operating acceptably if the intersection is LOS D or better. While the majority of the intersections within the study area operate above this threshold, there are seven signalized study intersections currently operating at LOS E or F during the weekday morning and/or weekday evening peak hours, as listed below.

- Route 1A at Boardman Street
- Revere Beach Parkway (Route 16) at Winthrop Avenue (Route 145) and Harris Street
- Winthrop Avenue (Route 145) at N. Shore Road
- Winthrop Avenue (Route 145) at Tomasello Drive
- Winthrop Avenue (Route 145) at Bennington Street and State Road (morning weekday peak only)
- Route1A (American Legion Highway)/Route 16 (revere Beach Parkway) at Bell Circle – South
- Route 1A (VFW Highway) at Bell Circle

During the existing weekday morning and weekday evening peak hour conditions, the current left-turn movement from Tomasello Drive onto Route 1A southbound is operating at LOS F. Currently, there is faded, non-standard, improperly-located signage that restricts this left-turn movement. However, vehicles currently make this maneuver. During the existing weekday morning peak hour condition, the westbound left turn at Bennington Street and Crescent Avenue is operating at LOS F.

2024 No-Build Conditions

As discussed previously, the 2024 No-Build condition includes seven years of historic growth at 0.5 percent per year as well as 22 background projects planned in the area. With this additional growth, there are seven signalized study intersections currently operating at LOS E or F during the weekday morning and/or weekday evening peak hours, as listed below.

- Route 1A at Boardman Street
- Route 1A at the Jughandle
- Revere Beach Parkway (Route 16) at Winthrop Avenue (Route 145) and Harris Street
- Winthrop Avenue (Route 145) at Tomasello Drive
- Winthrop Avenue (Route 145) at Bennington Street and State Road (morning weekday peak only)
- Route1A (American Legion Highway)/Route 16 (revere Beach Parkway) at Bell Circle – South
- Route 1A (VFW Highway) at Bell Circle

Winthrop Avenue (Route 145) at North Shore Road, during the weekday morning and evening peak hour conditions, and Winthrop Avenue (Route 145) at Tomasello Drive, during the weekday morning peak hour condition, experience improved operations due to the mitigation implemented by the 205 Revere Beach Parkway redevelopment. An operational change also occurs at Route 1A and the Jughandle, during the weekday evening peak hour condition, where operations degrade from LOS C to LOS E. The drop-in operations could be attributed to the increased volume on the roadway from background projects.

The unsignalized analysis results show the westbound right-turn movement from Tomasello Drive to Route 1A northbound degrade from LOS D to LOS E.

2024 Phase 1 Build Conditions

The 2024 Phase 1 Build condition includes approximately 520,000 square feet of development located in the southeast corner of the Master Plan Project Site. Primary entering access to the Phase 1 Project is proposed at the intersection of Route 1A and Tomasello Drive while the primary exiting access would be through the intersection of Winthrop Avenue at Tomasello Drive. With this initial phase of development, there are seven (7) signalized study intersections that remain operating at LOS E or F during the weekday morning and/or weekday evening peak hours, as listed below.

› Route 1A at Boardman Street
› Route 1A at the Jughandle
› Revere Beach Parkway (Route 16) at Winthrop Avenue (Route 145) and Harris Street
› Winthrop Avenue (Route 145) at Tomasello Drive
› Winthrop Avenue (Route 145) at Bennington Street and State Road (morning weekday peak only)
› Route1A (American Legion Highway)/Route 16 (revere Beach Parkway) at Bell Circle – South
› Route 1A (VFW Highway) at Bell Circle

The unsignalized analysis results show the Route 1A and Tomasello Drive westbound approach continues operating at LOS E or F and southbound left-turn movement from Route 1A to Tomasello Drive degrades from LOS D to E.

4.2.7 Mitigation

Based on the results of the capacity analyses summarized in Tables 4-11 and 4-12, this section discusses improvement measures that will be implemented to minimize potential impacts and facilitate access to and from the Phase 1 Project. Based on the safety review and traffic analysis, mitigation measures proposed at the intersections of Route 1A at Tomasello Drive, and Winthrop Avenue at Tomasello Drive will address Phase 1 Project-related impacts, as well as existing deficiencies.

Route 1A at Tomasello Drive: While there is currently no signage prohibiting left turns from Tomasello Drive onto Route 1A southbound, it is important to note that the traffic volumes and speeds on Route 1A create safety concerns for this maneuver. In addition, vehicle queues along Route 1A can impede sight lines for this left turn. To address safety concerns, the existing improperly-located "right-turn only" signage will be replaced and relocated with MUTCD compliant "No Left-Turn" signage to restrict this movement. For analysis purposes, the existing left-turn volumes on Tomasello Drive were redistributed to alternate routes on Bennington Street and Winthrop Avenue based on existing travel patterns. The redistribution resulted in negligible impacts within the study area. The results of the capacity analysis are summarized in Table 4-12.

Winthrop Avenue at Tomasello Drive: As shown in Table 4-12, the Phase 1 Project is expected to result in minor increases in delay between 2024 No-Build and 2024 Build conditions. While this is a minor impact, the Proponent proposes to optimize the traffic signal timings at this intersection to facilitate access to and from the Phase 1 Project Site. In addition, these timing adjustments would also serve to optimize the operations for the future volumes that will be present in the 205 Revere Beach Parkway redevelopment.

Table 4-11 Unsignalized Intersection Mitigation Capacity Analysis

		2024 No-Build Conditions					2024 Build Conditions – Phase 1					2024 Build with Mitigation – Phase 1				
Location	Movement	D [a]	v/c [b]	Del [c]	LOS [d]	95 Q [e]	D	v/c	Del	LOS	95 Q	D	v/c	Del	LOS	95 Q
Route 1A at Tomasello Drive																
Weekday Morning	WB L	210	>1.20	>120	F	Err	210	>1.20	>120	F	Err					
	WB R	10	0.03	15	C	2	10	0.07	17	C	6	20	0.07	17	C	6
	SB L	0	n/a	n/a	n/a	n/a	35	0.09	15	B	0	35	0.09	15	B	0
Weekday Evening	WB L	5	>1.20	>120	F	Err	5	>1.20	>120	F	Err					
	WB R	5	0.04	35	E	3	115	1.03	>120	F	177	115	1.03	>120	F	177
	SB L	5	0.04	34	D	3	10	0.09	36	E	7	25	0.09	36	E	7

a. Demand of critical movement.
b. Volume to capacity ratio.
c. Average total delay, in seconds per vehicle.
d. Level-of-service.
e. 95th percentile queue, in feet.

Table 4-12 Signalized Intersection Mitigation Capacity Analysis

		2024 No-Build Conditions						2024 Build Conditions – Phase 1						2024 Build with Mitigation – Phase 1					
Location	Movement	D [a]	v/c [b]	Del [c]	LOS [d]	50 Q	95 Q [e]	D	v/c	Del	LOS	50 Q	95 Q	D	v/c	Del	LOS	50 Q	95 Q
Winthrop Avenue (Route 145) at Tomasello Drive																			
Weekday	EB T	955	0.79	19	B	128	m#408	960	0.79	18	B	126	m#209	960	0.79	19	B	126	m#399
Morning	EB R	135	0.29	15	B	33	m59	215	0.46	16	B	54	m82	130	0.28	15	B	30	M54
	WB L	200	0.60	29	C	79	#218	225	0.67	32	C	90	#258	105	0.31	25	C	38	108
	WB T	1225	0.43	7	A	51	114	1230	0.43	7	A	51	115	1310	0.46	8	A	56	124
	NB L	45	0.14	30	C	9	30	65	0.20	30	C	13	40	65	0.20	30	C	13	40
	NB R	45	0.25	31	C	19	62	45	0.25	31	C	19	62	45	0.25	31	C	19	62
	SB R	5	0.02	29	C	2	13	10	0.05	30	C	4	22	10	0.05	30	C	4	22
	Overall			14	B					15	B					14	B		
Weekday	EB T	1255	0.87	33	C	265	#663	1255	0.87	33	C	265	#663	1255	0.87	33	C	265	#663
Evening	EB R	225	0.37	24	C	83	179	230	0.37	24	C	84	184	225	0.37	24	C	83	179
	WB L	160	0.68	50	D	101	#239	160	0.64	48	D	100	#228	160	0.64	48	D	100	#228
	WB T	950	0.34	10	B	76	91	950	0.33	10	A	72	87	950	0.33	10	A	72	87
	NB L	250	0.43	39	D	75	142	390	0.71	46	D	125	#227	390	0.71	46	D	125	#227
	NB R	470	1.65	350	F	~444	#813	490	>1.20	>120	F	~483	#860	490	>1.20	>120	F	~483	#860
	SB R	5	0.01	36	D	3	15	5	0.01	36	D	3	15	5	0.01	36	D	3	15
	Overall			72	E					83	F					83	F		

a. Demand of critical movement.
b. Volume to capacity ratio.
c. Average total delay, in seconds per vehicle.
d. Level-of-service.
e. 95th percentile queue, in feet.

Transportation Demand Management Program

Consistent with the City of Boston's goals to reduce auto-dependency, the Proponent will proactively incorporate TDM measures to encourage alternative modes of transportation. TDM measures are most often directed at commuter travel, which is the nature of the majority of the trips to/from the Phase 1 Project.

The following discusses an array of TDM measures that could be implemented. A description of the TDM elements is presented in this section along with information on how those elements aid Phase 1 Project users – notably employees and visitors travelling to and from the Phase 1 Project Site. Measures being considered as part of the Phase 1 Project include:

- Provide secure and covered/indoor bicycle storage for long-term building users in accordance with the City of Boston Bicycle Guidelines.
- Securely mounted bike racks provided at select, highly-visible locations on-site for short-term users.
- Addition of a new Hubway Station for building users;
- Parking spaces designated for a car-sharing service, such as ZipCar® within the new structured parking.

- Parking spaces equipped to support electric vehicle (”EV”) charging stations within the new structured parking.
- Preferential parking for alternative-fueled vehicles within the new structured parking.
- Future tenants will be encouraged to provide employer subsidies to employees who purchase monthly or multiple trip transit passes.
- Future tenants will be encouraged to provide a guaranteed ride home program, in conjunction with MassRIDES, to eliminate an often-cited deterrent to carpool and vanpool participation.
- Future tenants will be encouraged to offer direct deposit payment for monthly transit passes to employees.
- An on-site Transportation Coordinator will be designated to oversee parking and loading operations, as well as to promote alternative transportation measures. The person assigned to this role will coordinate with office and retail tenants to help promote a reduced reliance on single-occupant motor-vehicle travel to the Phase 1 Project. To that end, the TDM measures identified in the following sections will be implemented under the direction and supervision of this person. The duties of the transportation coordinator may include, but not be limited to:
  - Acting as a liaison between future tenants and MassRIDES.
  - Assisting future employees with ride matching and transportation planning.
  - Disseminating information on alternate modes of transportation and developing transportation related marketing and education materials, including a website. This includes posting relevant public transit information potentially at an outdoor kiosk included as part of the Phase 1 Project. This would include, but is not limited to, providing transit information, such as maps and schedules to future tenants in an orientation package.
  - Developing and maintaining information pertaining to pedestrian and cycling access to and from the Phase 1 Project Site.
  - Encouraging tenants to provide on-site transit pass sales to employees.

All TDM measures will be formalized in the Phase 1 Project TAPA to be executed with BTD.

4.3 Conclusion

As shown in Tables 4-11 and 4-12, the additional traffic generated by the Phase 1 Project is expected to have minor incremental increases in delay at the study area intersections and, therefore, the Phase 1 Project can be accommodated by the existing transportation infrastructure. In addition, the implementation of a robust TDM program will further reduce the vehicular impacts and will lay the foundation for the Project to be a successful transit-oriented development.

Vehicle access to the Phase 1 Project Site will continue to be served by Tomasello Drive with connecting access to Route 1A and North Shore Road. Given the minimal impacts experienced throughout the study area, the transportation improvements proposed as part of the Phase 1 Project are focused on providing safe and efficient access. Accordingly, the Proponent proposes to optimize traffic signal timings at the intersection of Winthrop Avenue and Tomasello Drive. In addition, to address safety concerns at the intersection of Route 1A at Tomasello Drive, the Proponent proposes to implement MUTCD-compliant "No Left Turn" signage at this intersection. The Proponent is also proposing a robust TDM program consistent with the City of Boston's goals to reduce auto-dependency. These measures will encourage alternative modes of transportation.

Public transportation is expected to serve a critical role in supporting the Phase 1 Project's transportation needs. Served by a rapid transit station at the easterly side of the Phase 1 Project Site, there is opportunity to accommodate significant additional ridership on the MBTA Blue Line, the MBTA's least utilized rapid transit line. A majority of the Phase 1 Project-generated transit ridership is projected in the non-critical, or reverse commute, direction. In the peak directions, the additional transit ridership generated by the Phase 1 Project would have an insignificant impact. Without the Phase 1 Project, under 2024 No-Build conditions, Blue Line passenger volumes are projected to slightly exceed policy capacity just before and just after the peak periods, when service is less frequent and when the MBTA's Policy dictates reduced maximum passenger loading levels as compared to during the peak. The Phase 1 Project would result in a nominal increase to passenger loading during these times, but would not result in any new time periods where passenger loads exceed policy capacity. In summary, the Phase 1 Project would not cause the MBTA Blue Line to exceed any capacity threshold that wouldn't otherwise be exceeded under the 2024 No-Build Condition. The analysis of the Blue Line's critical link found that the Blue Line can accommodate the anticipated Phase 1 transit demand during the busiest 30-minute periods of the morning and evening peaks while maintaining acceptable levels of passenger crowding per the MBTA's Policy.

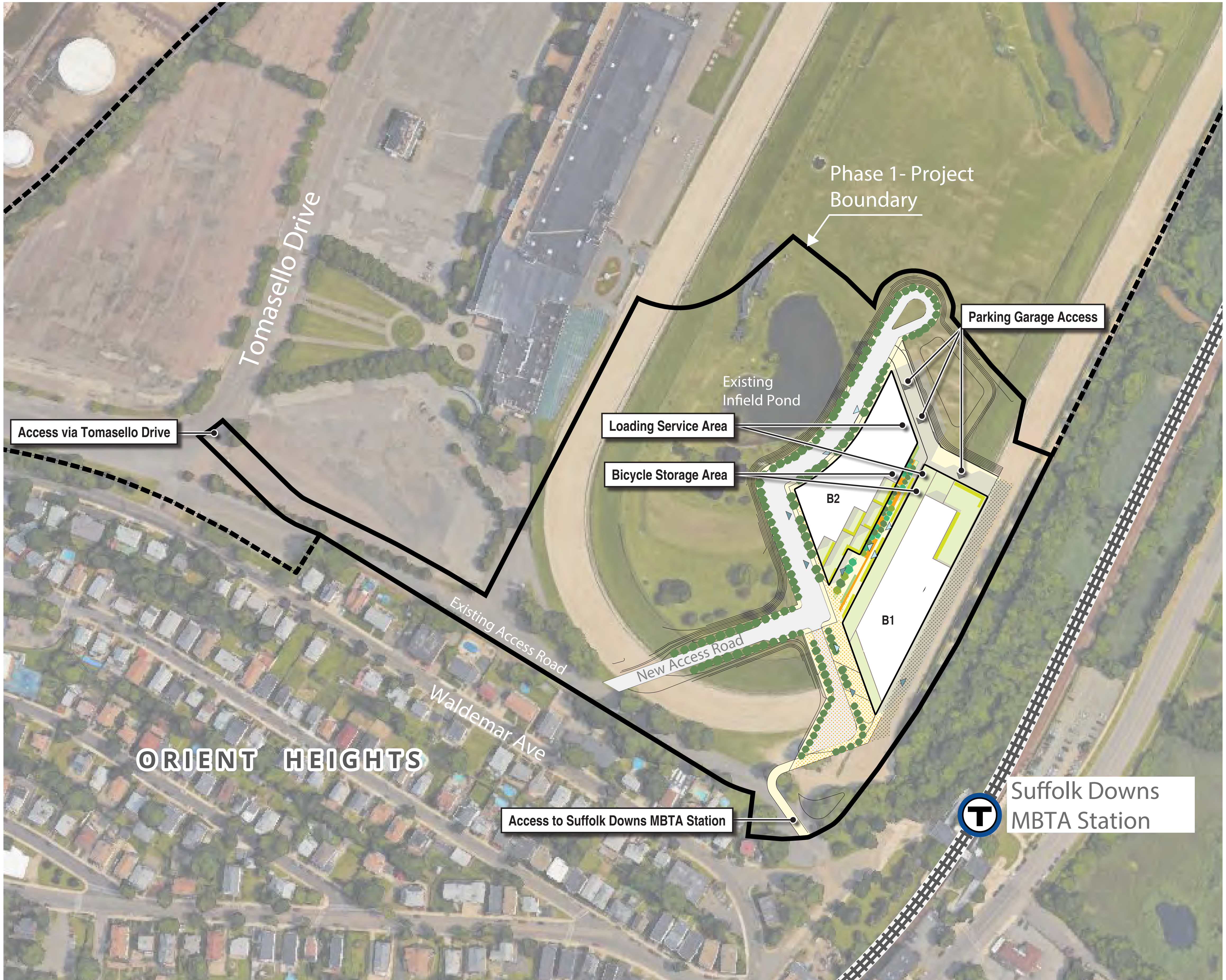


Figure 4.1

Phase 1 Project Access/Circulation Plan

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Source:

Figure 4.2

Phase 1 Project
Study Area Intersections

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Source:

Figure 4.3

Roadway Jurisdiction Map

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Source:

Figure 4.4

Existing Conditions
Site Access and Circulation

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

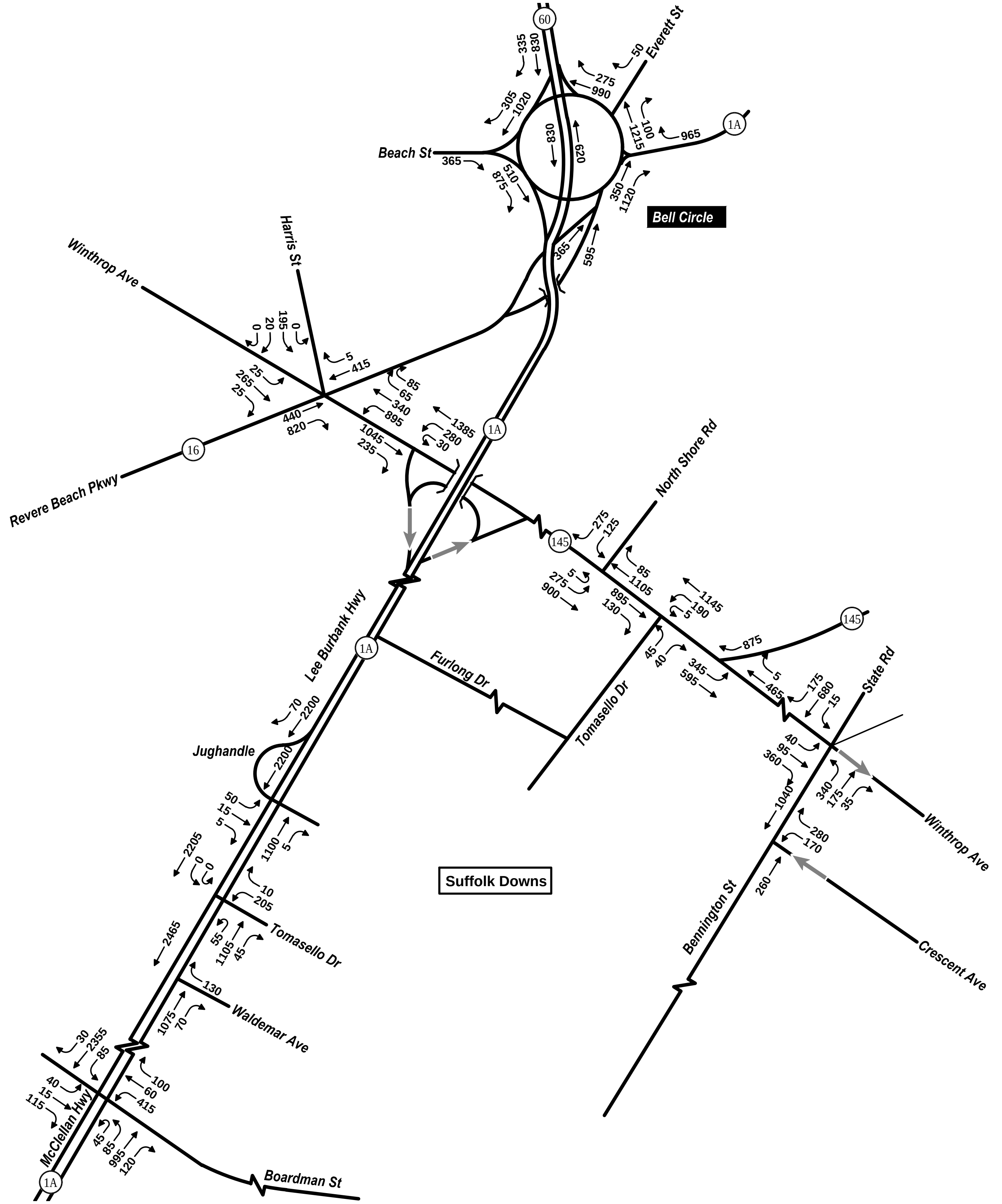


Figure 4.5

Existing Conditions Volume Network
Weekday Morning Peak Hour

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

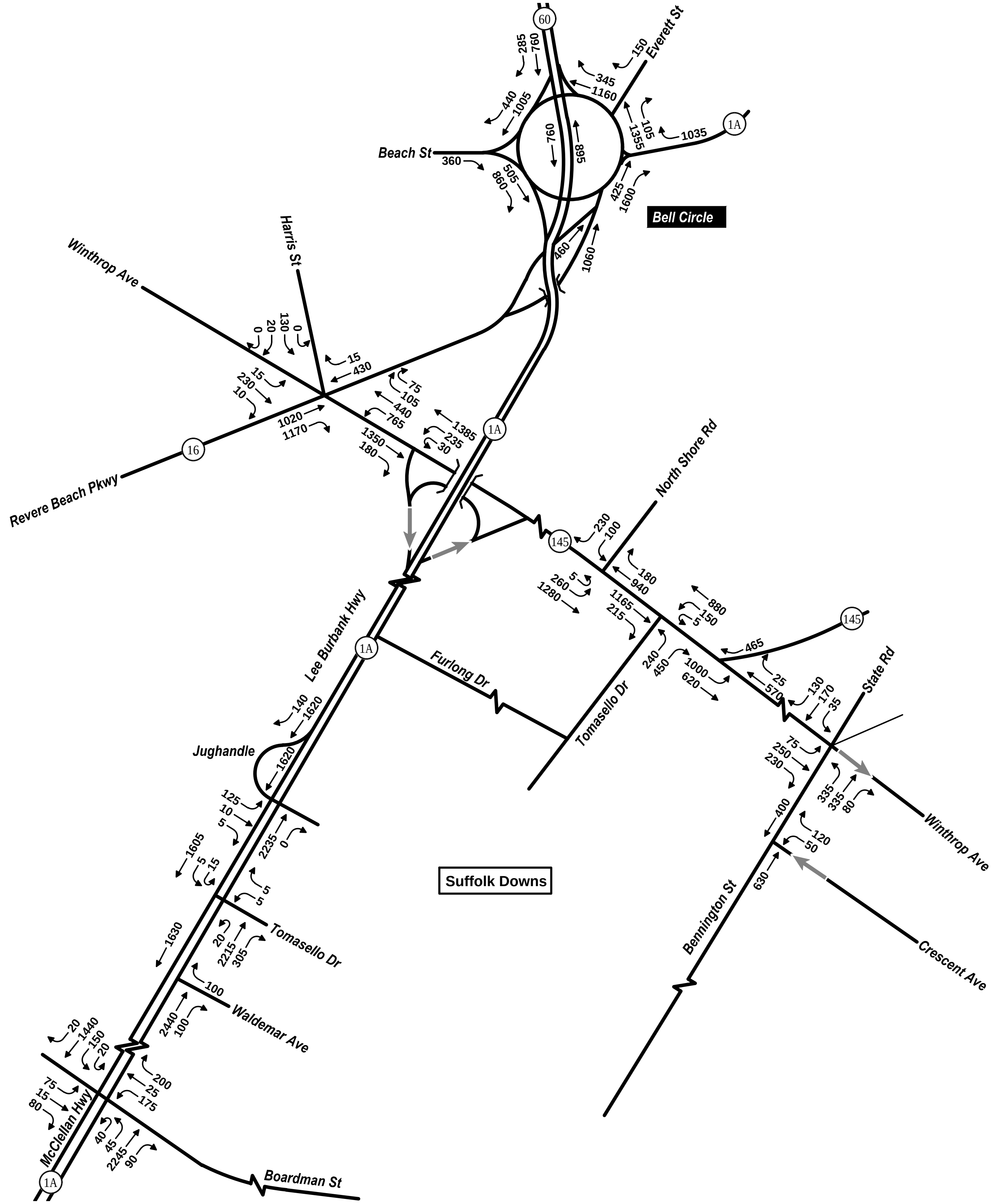


Figure 4.6

Existing Conditions Volume Network
Weekday Evening Peak Hour

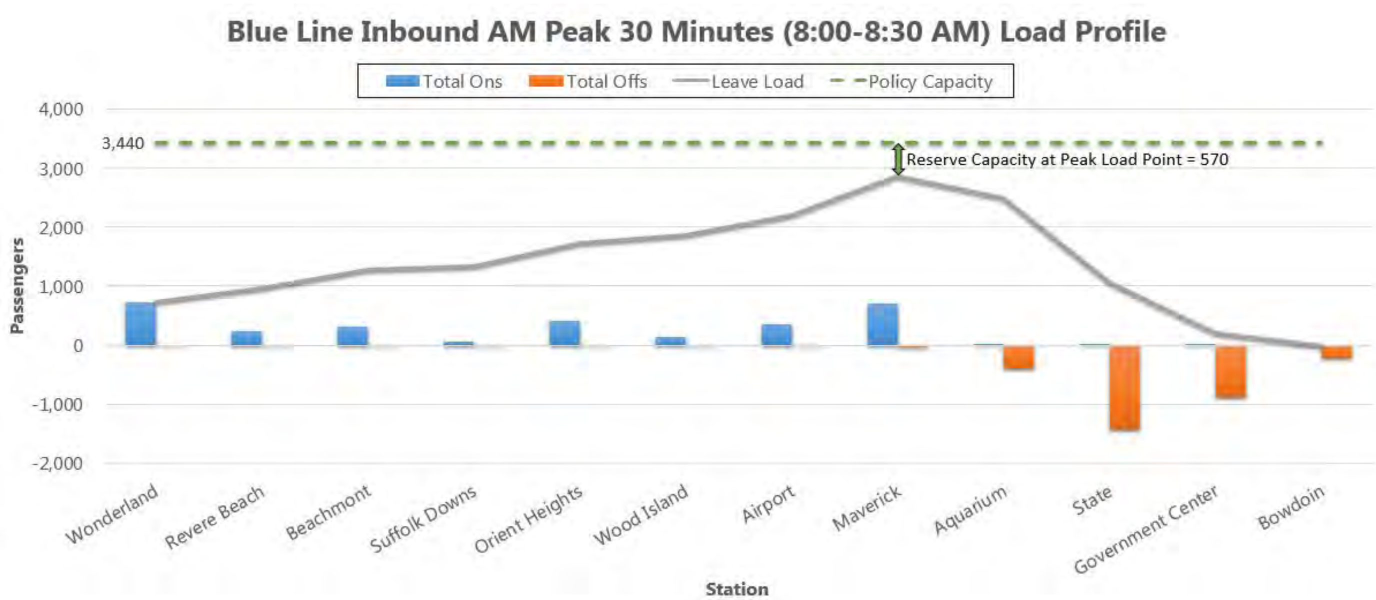
Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

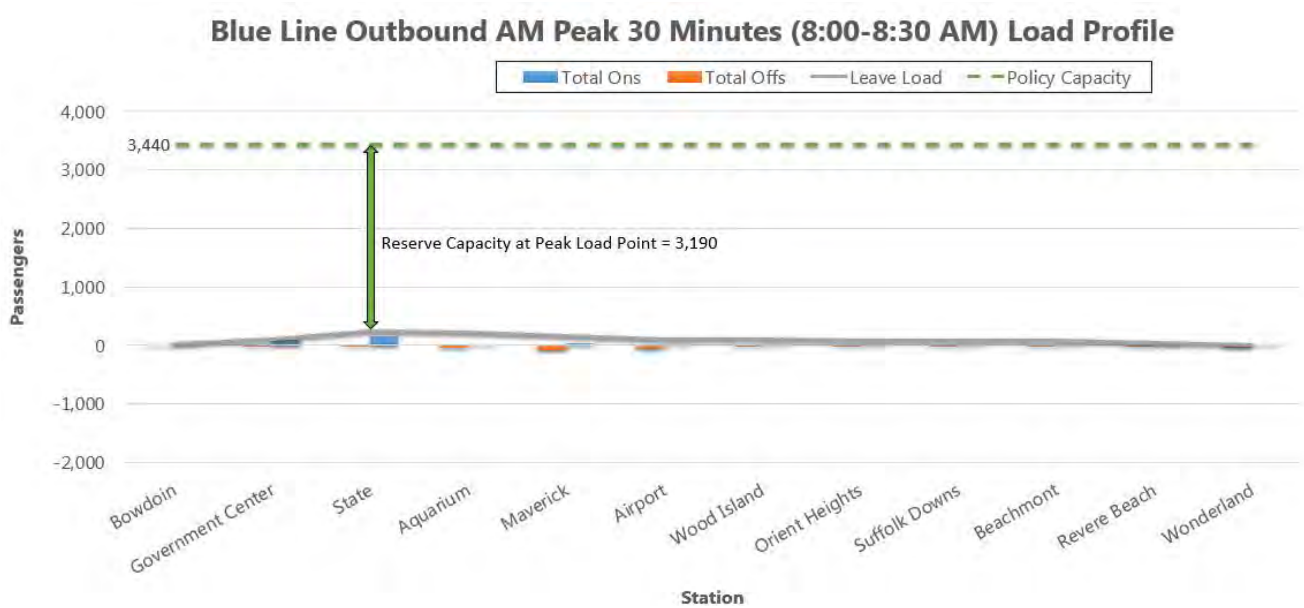
Source: MassGIS Orthographic Aerial Imagery, Boston, Massachusetts

Figure 4.7

Existing Public Transportation

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts



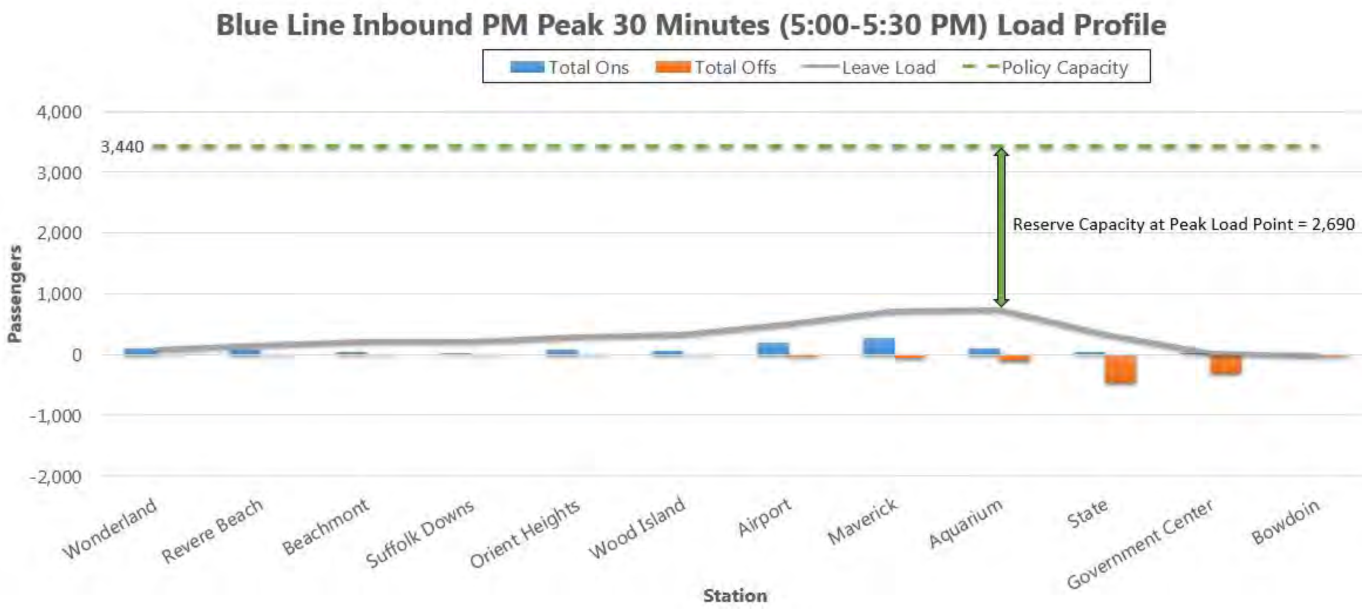


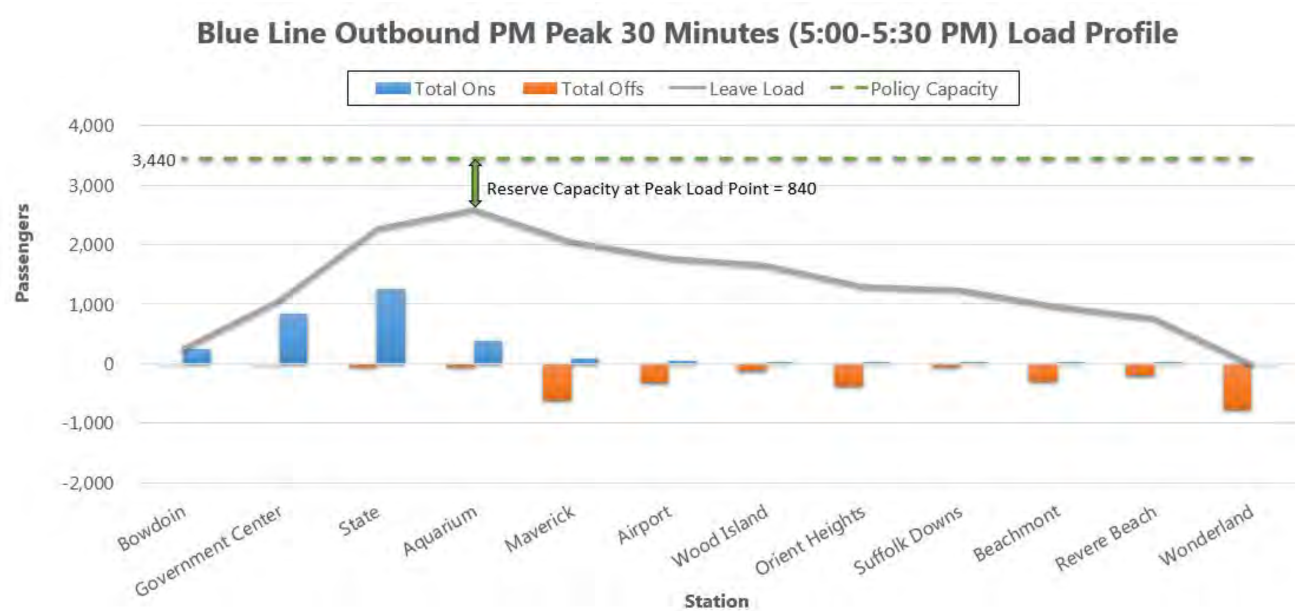
Source: MBTA, Blue Line Ridership Data, Fall 2016.
Note: Results rounded to nearest 10.

Figure 4.8

Existing Conditions
Blue Line Morning Peak Load Profile

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts



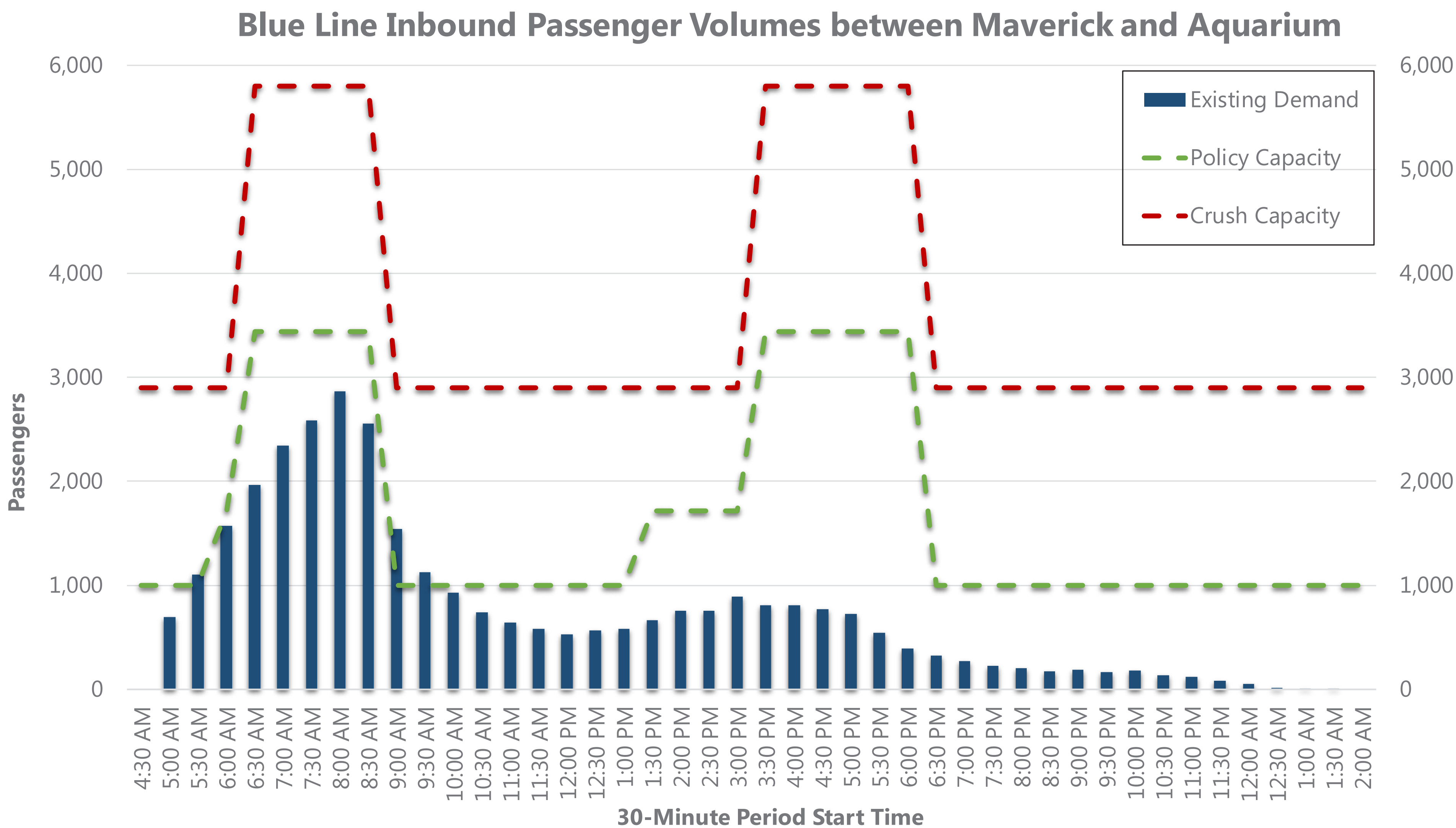


Source: MBTA, Blue Line Ridership Data, Fall 2016.
Note: Results rounded to nearest 10.

Figure 4.9

Existing Conditions
Blue Line Evening Peak Load Profile

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

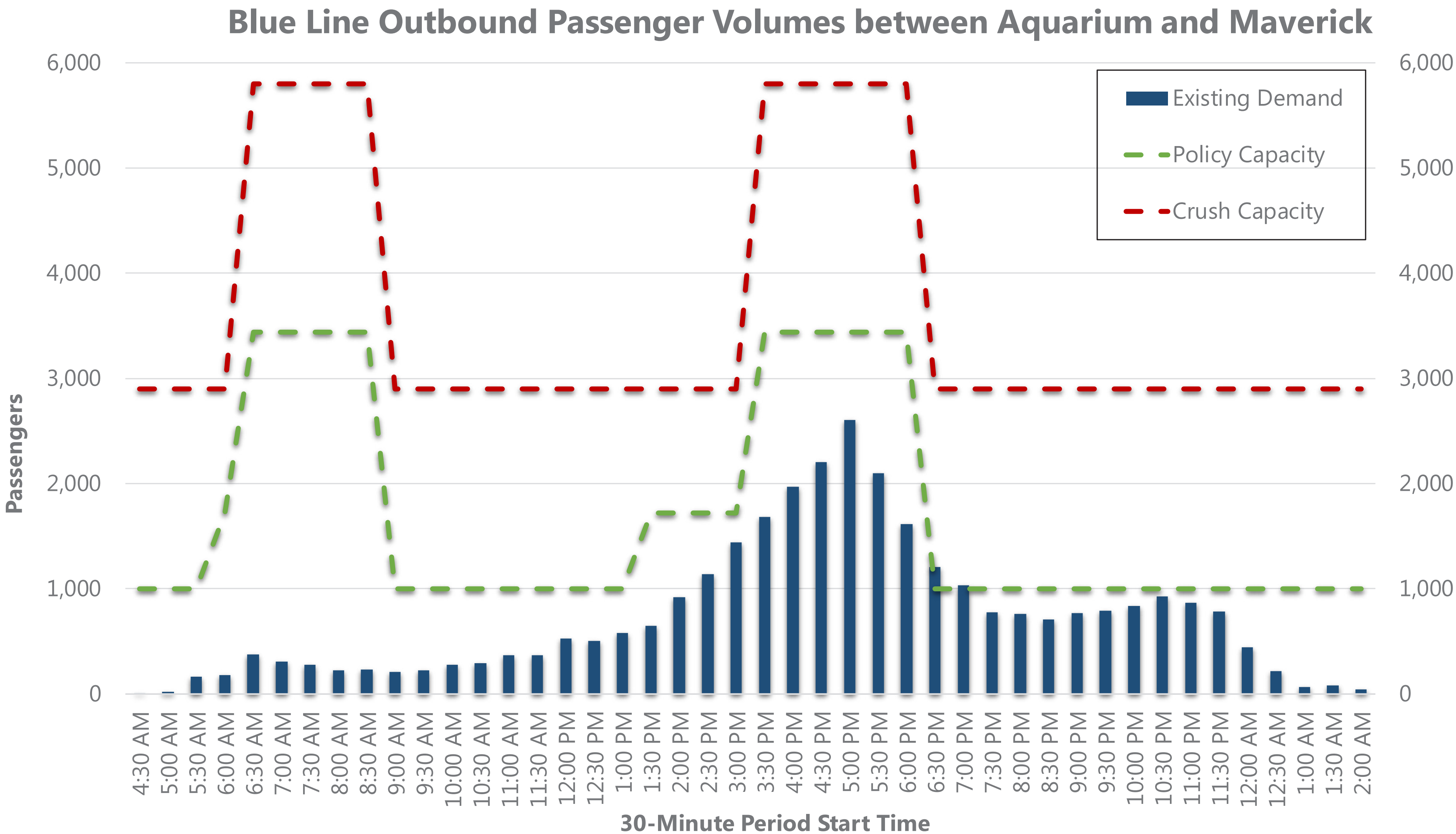


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 4.10

Existing Conditions
Blue Line Inbound Passenger Volumes
Between Maverick and Aquarium Stations

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

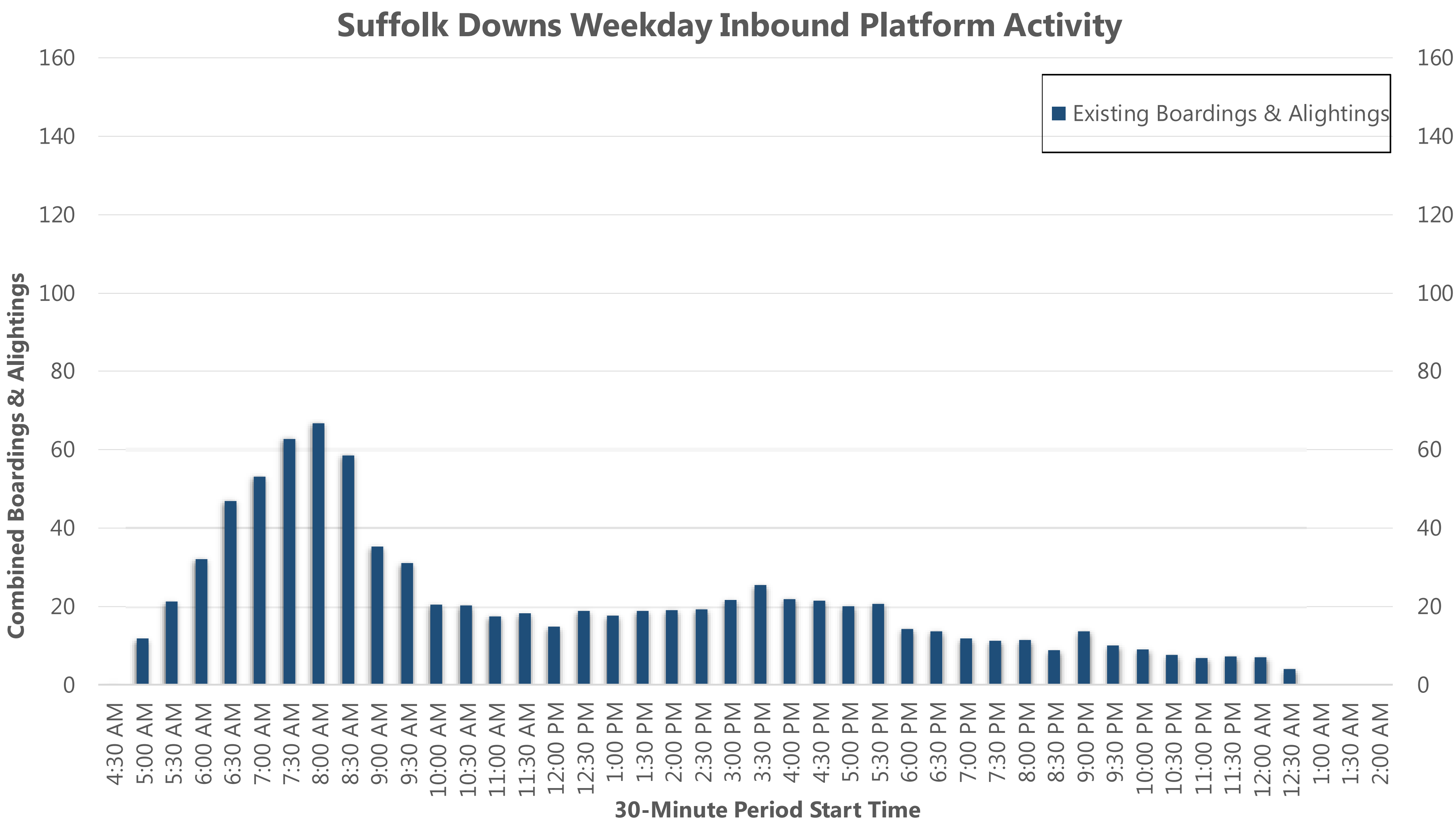


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 4.11

Existing Conditions
Blue Line Outbound Passenger Volumes
Between Aquarium and Maverick Stations

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

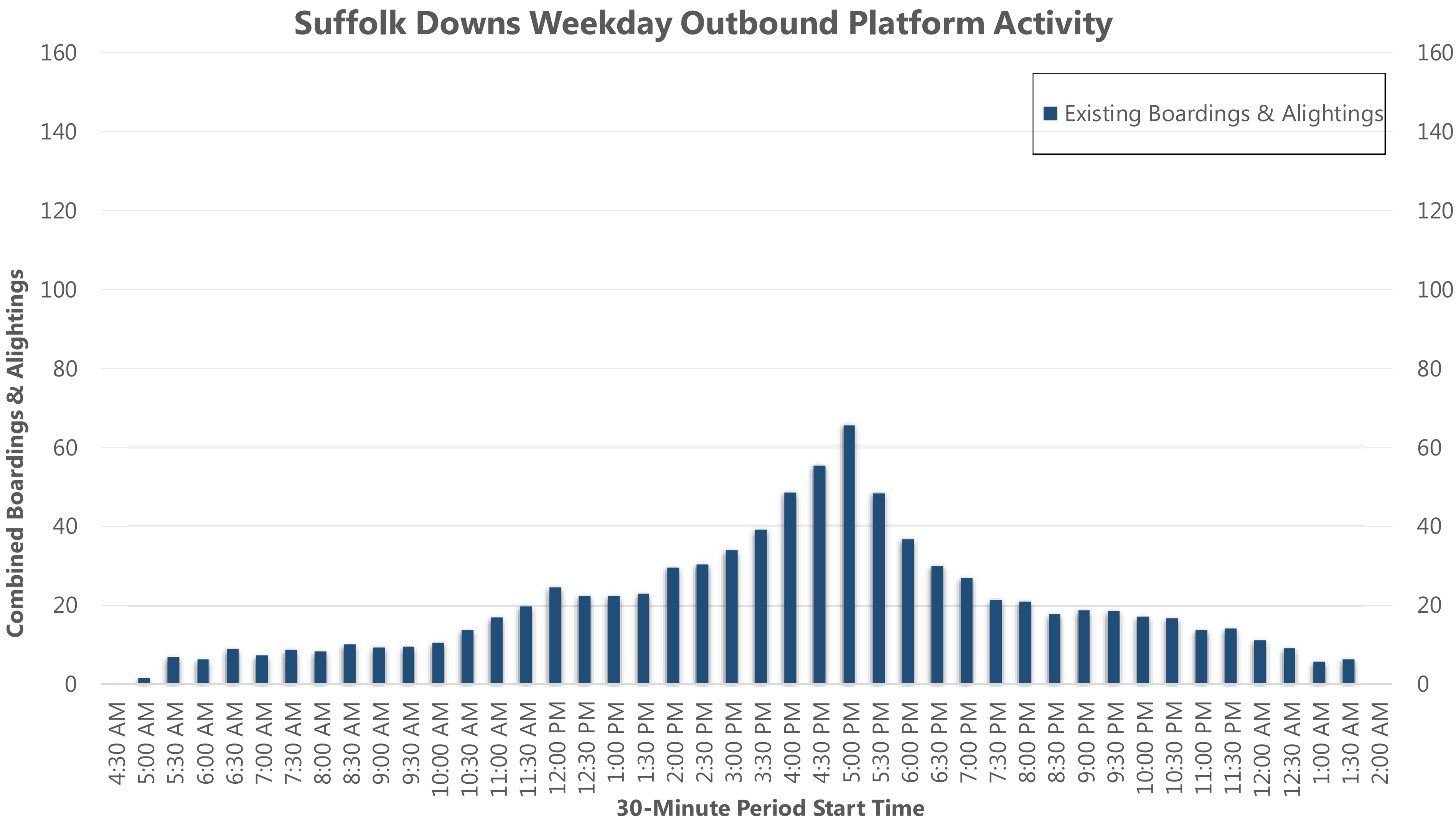


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 4.12

Existing Conditions
Suffolk Downs Station
Inbound Platform Activity

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts



Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 4.13

Existing Conditions
Suffolk Downs Station
Outbound Platform Activity

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

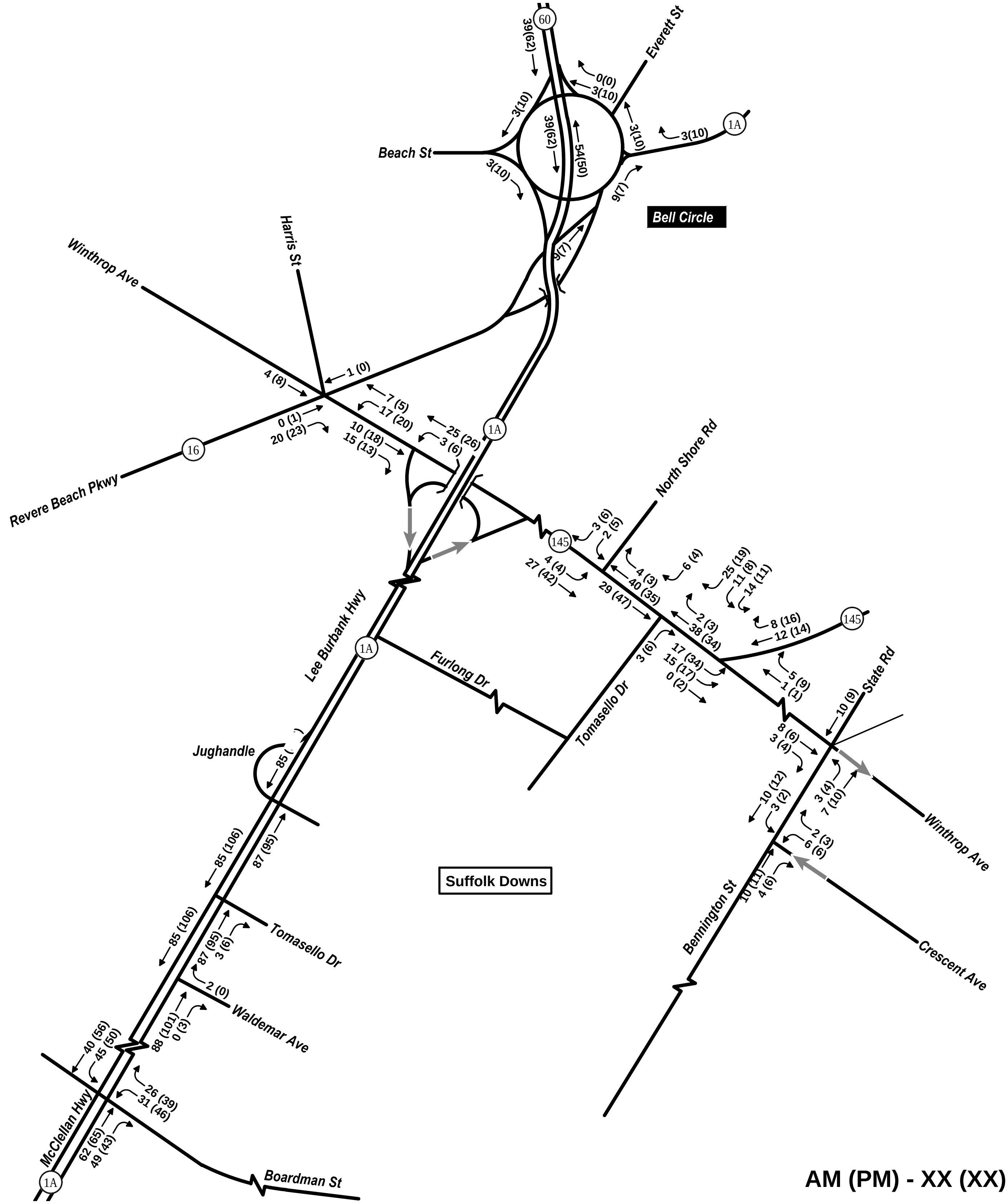


Figure 4.14

2024 No-Build Conditions
Background Project Trips

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

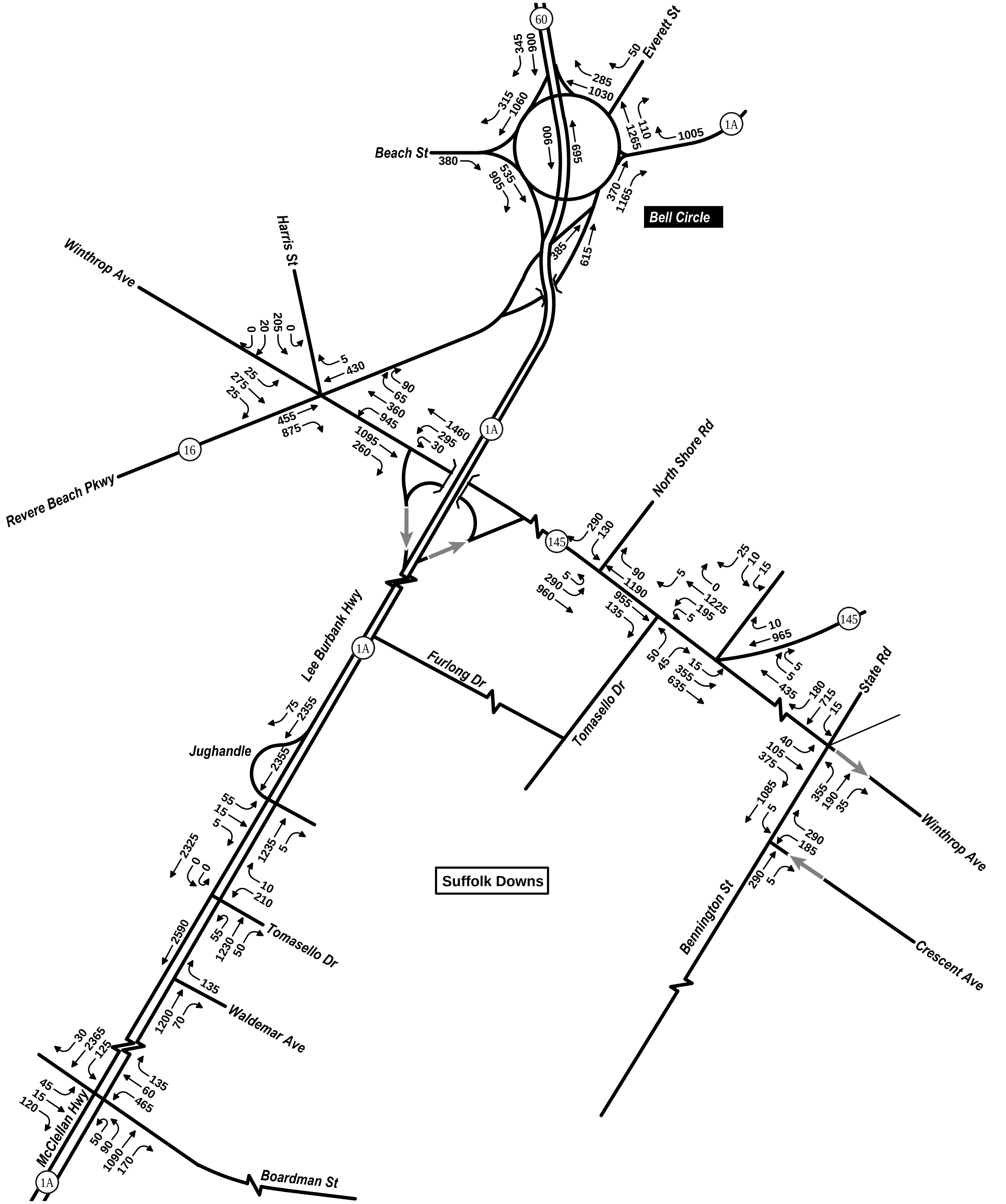


Figure 4.15

2024 No-Build Conditions Volume Network
Weekday Morning Peak Hour

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

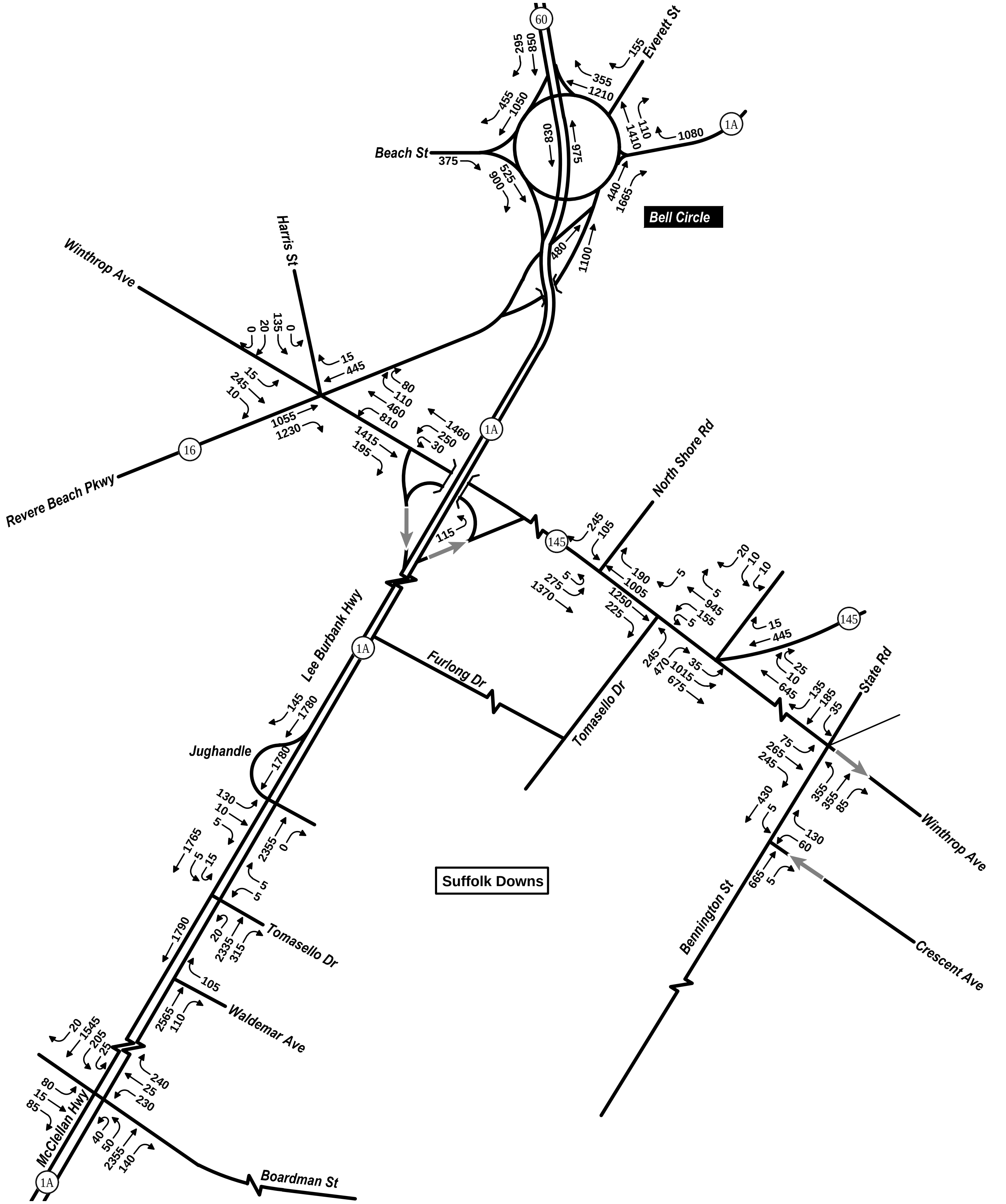
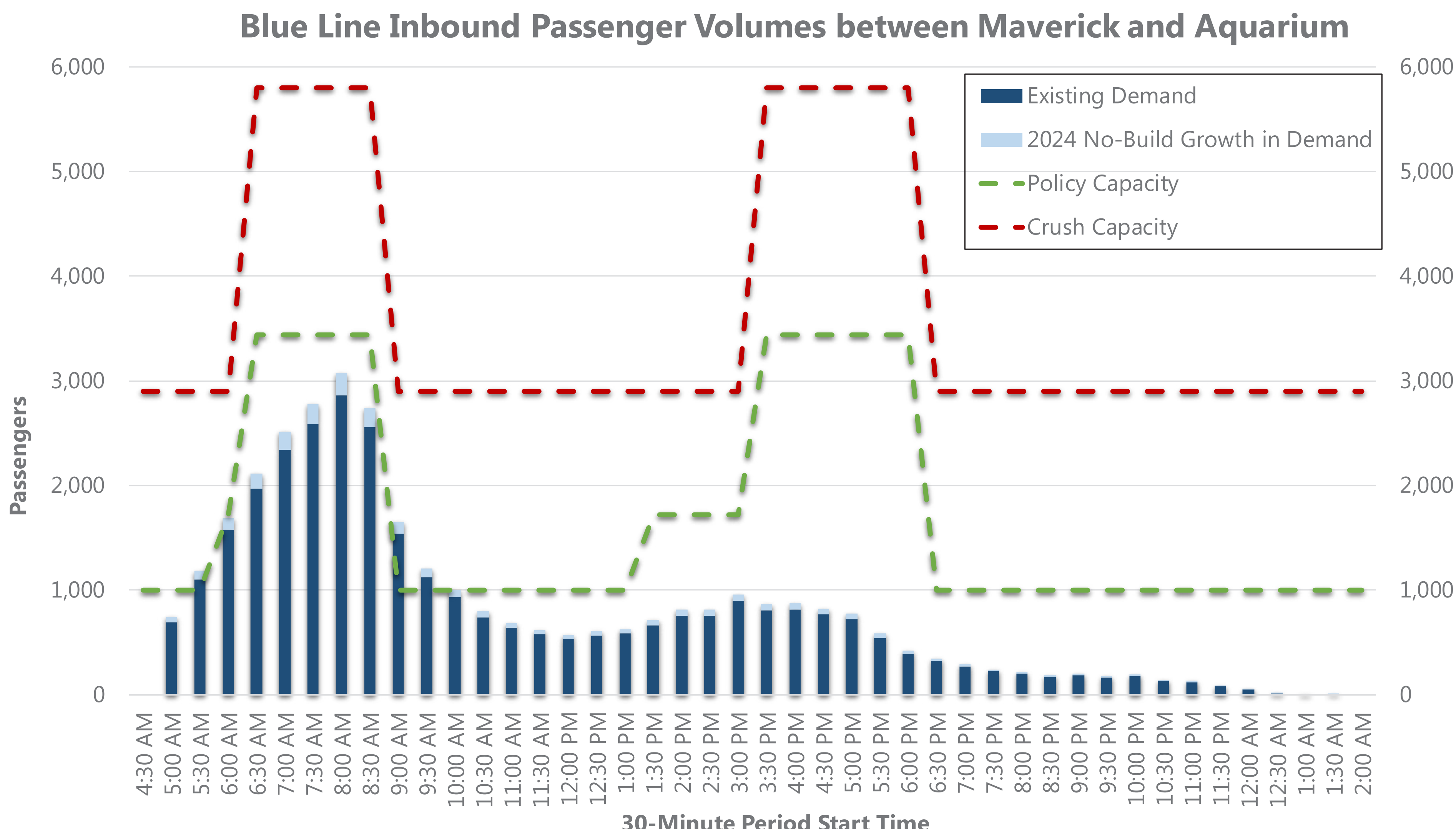


Figure 4.16

2024 No-Build Conditions Volume Network
Weekday Evening Peak Hour

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

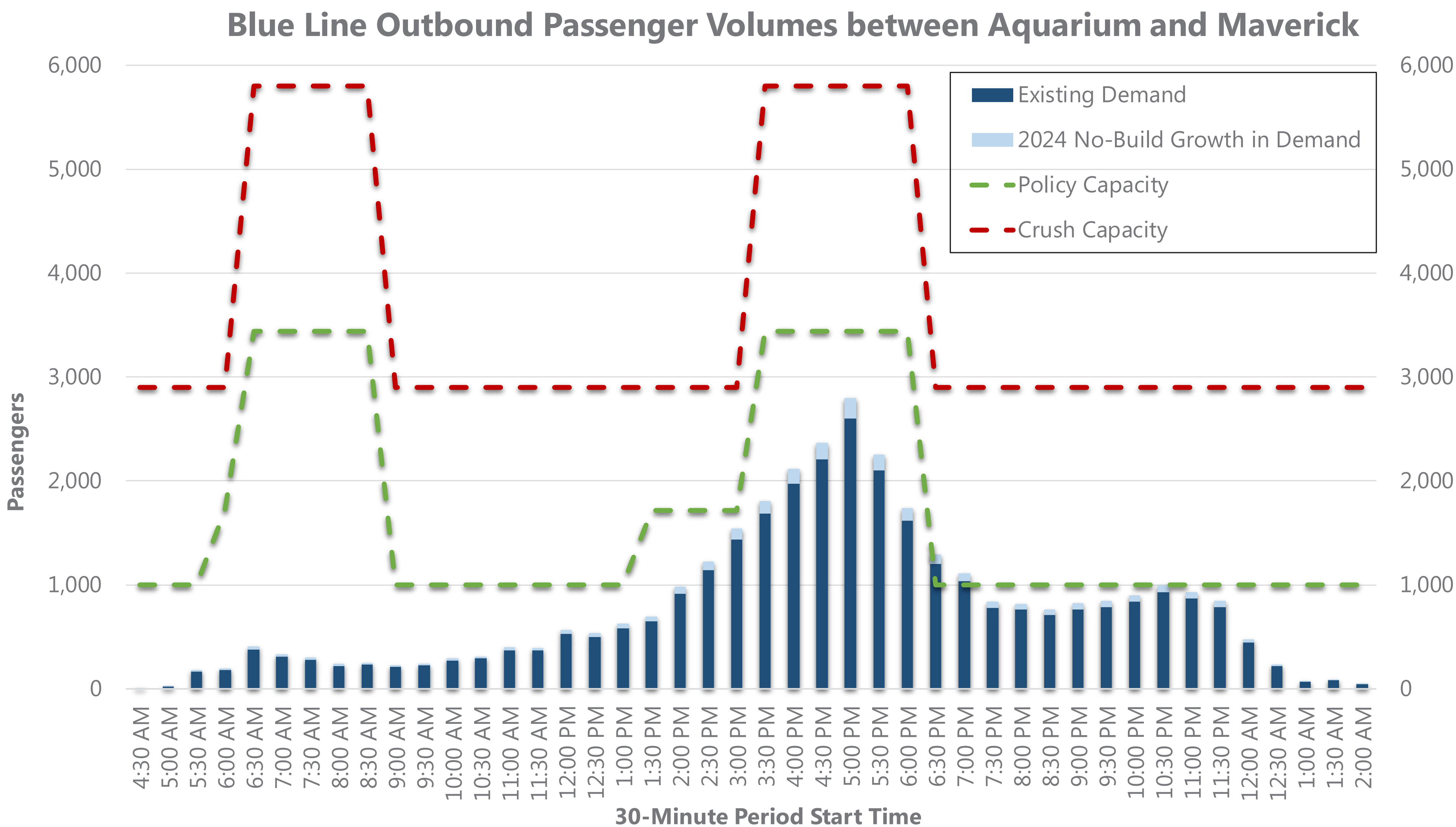


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 4.17

2024 No-Build Conditions
Blue Line Inbound Passenger Volumes
Between Maverick and Aquarium Stations

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

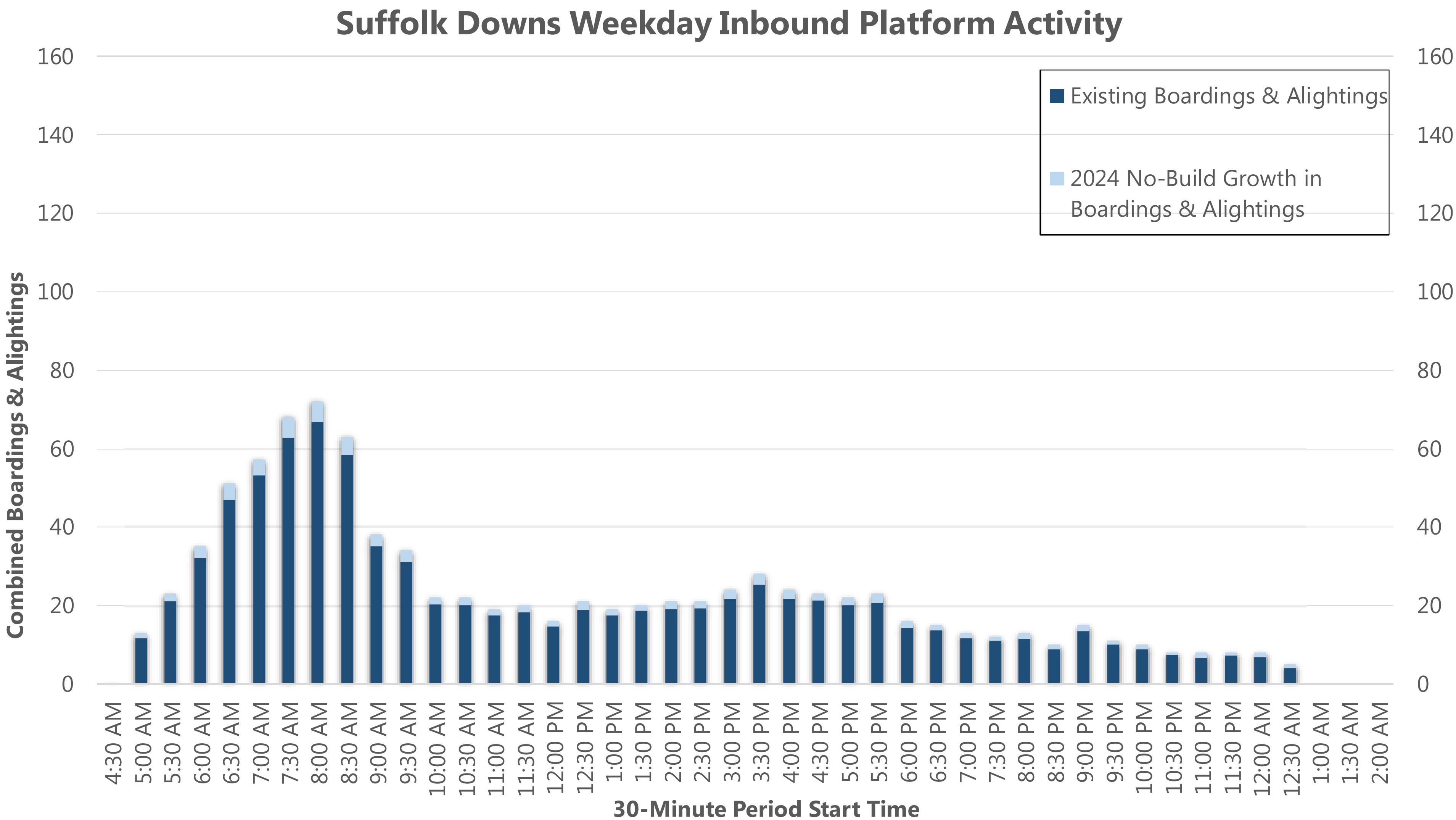


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 4.18

2024 No-Build Conditions
Blue Line Outbound Passenger Volumes
Between Aquarium and Maverick Stations

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

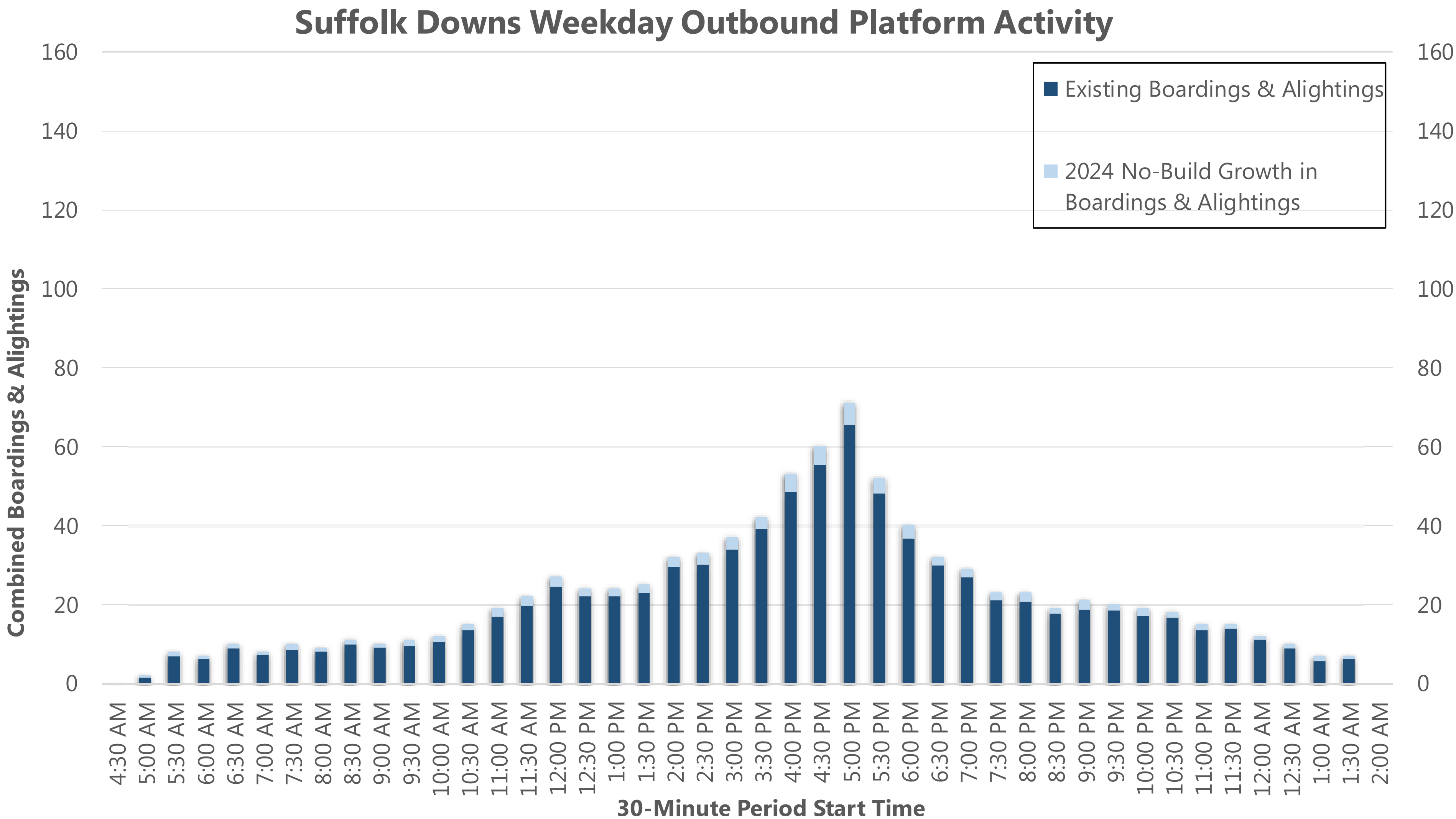


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 4.19

2024 No-Build Conditions
Suffolk Downs Station
Inbound Platform Activity

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts



Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 4.20

2024 No-Build Conditions
Suffolk Downs Station
Outbound Platform Activity

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

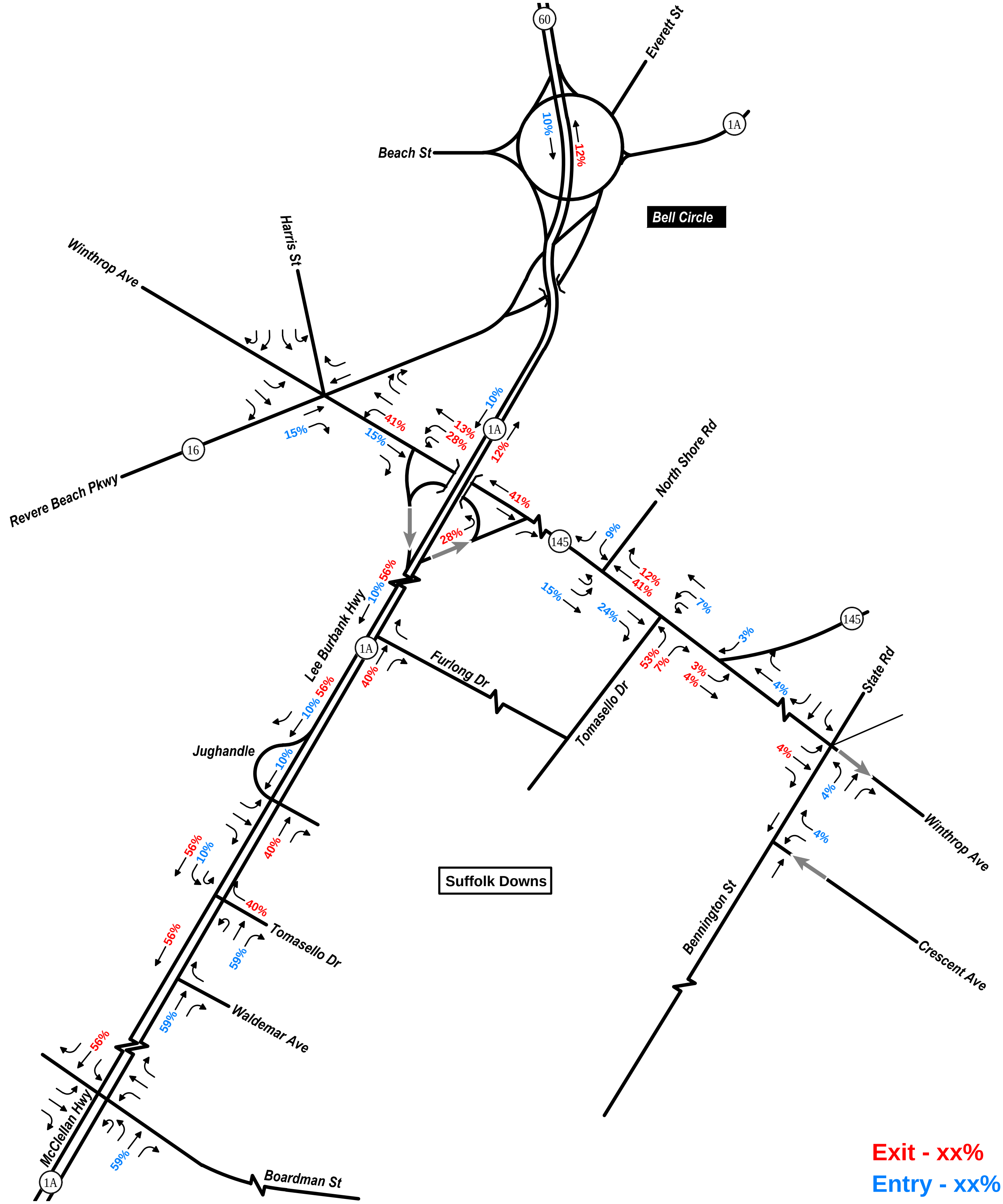


Figure 4.21

Phase 1 Project
Trip Distribution

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

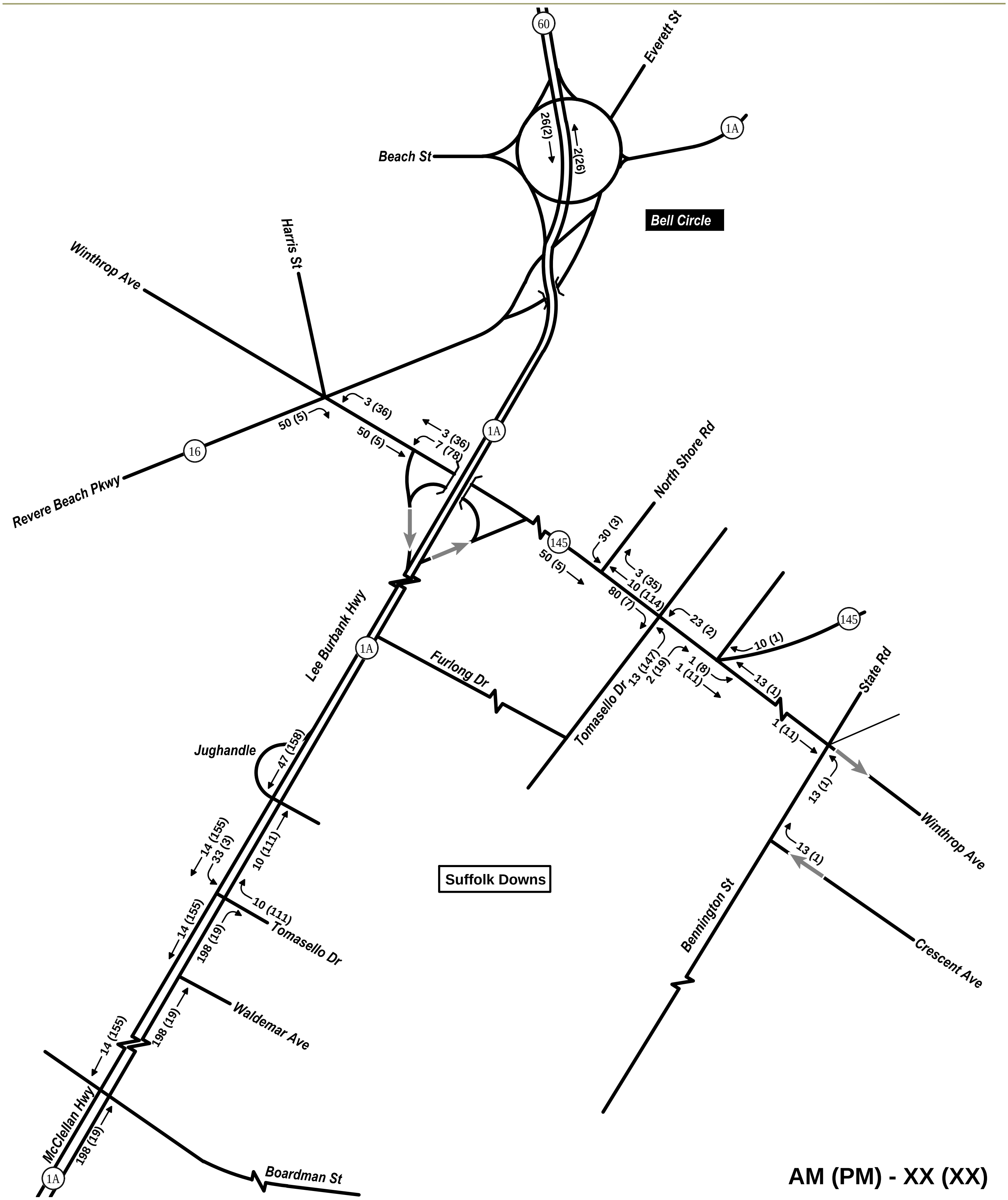


Figure 4.22

Phase 1 Project
Trip Volume Network

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

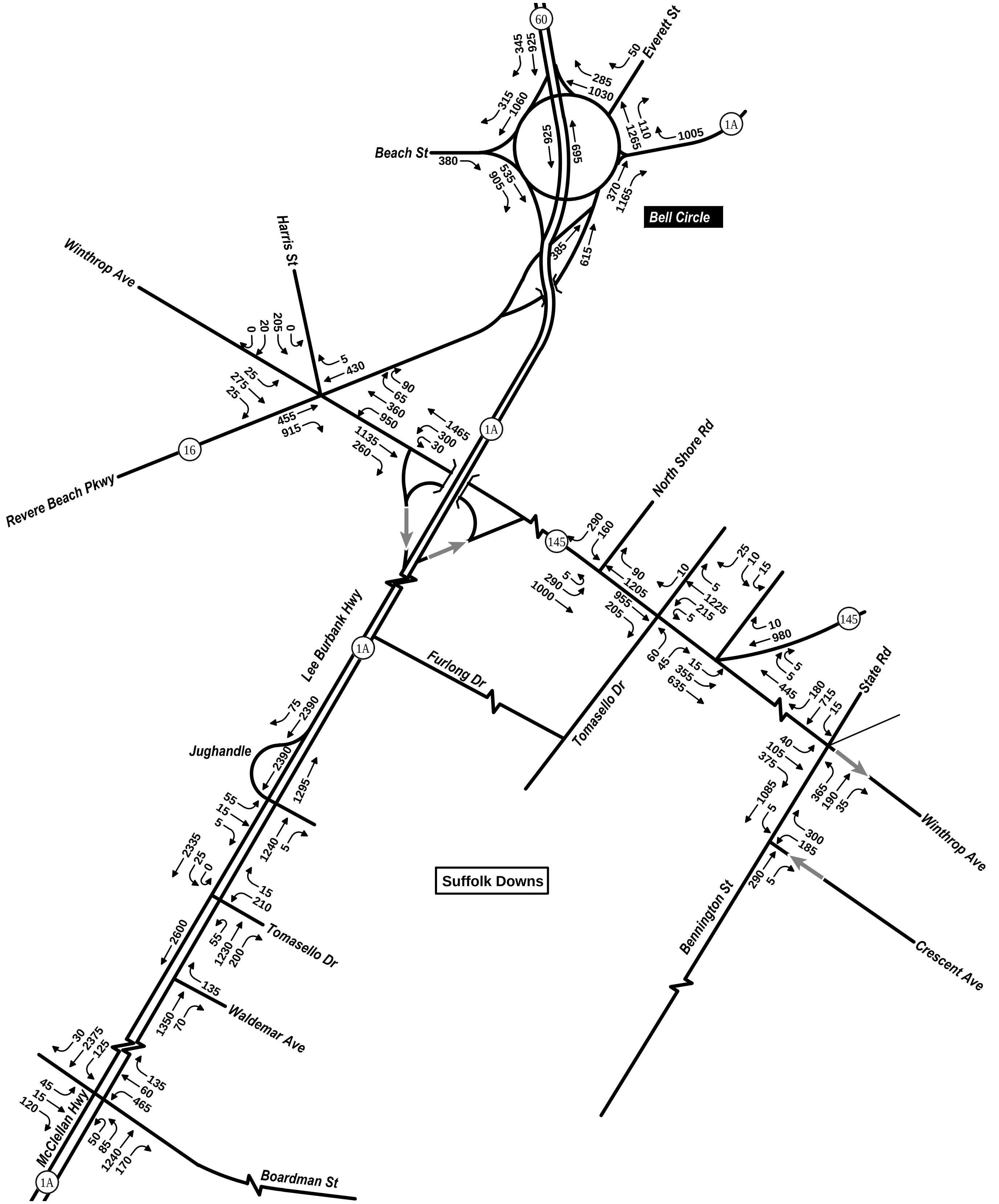


Figure 4.23

2024 Build Conditions Volume Network
Weekday Morning Peak Hour

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

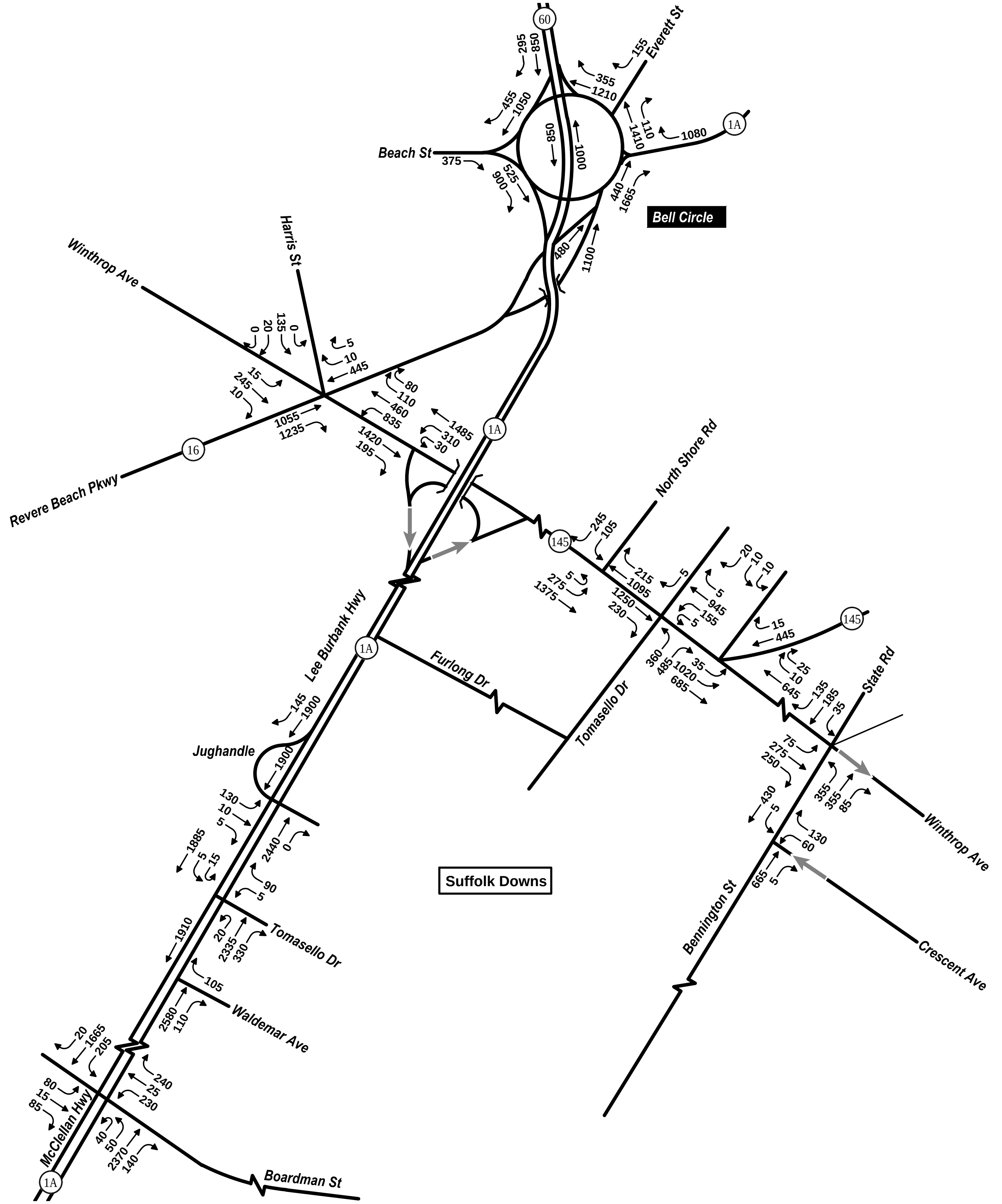
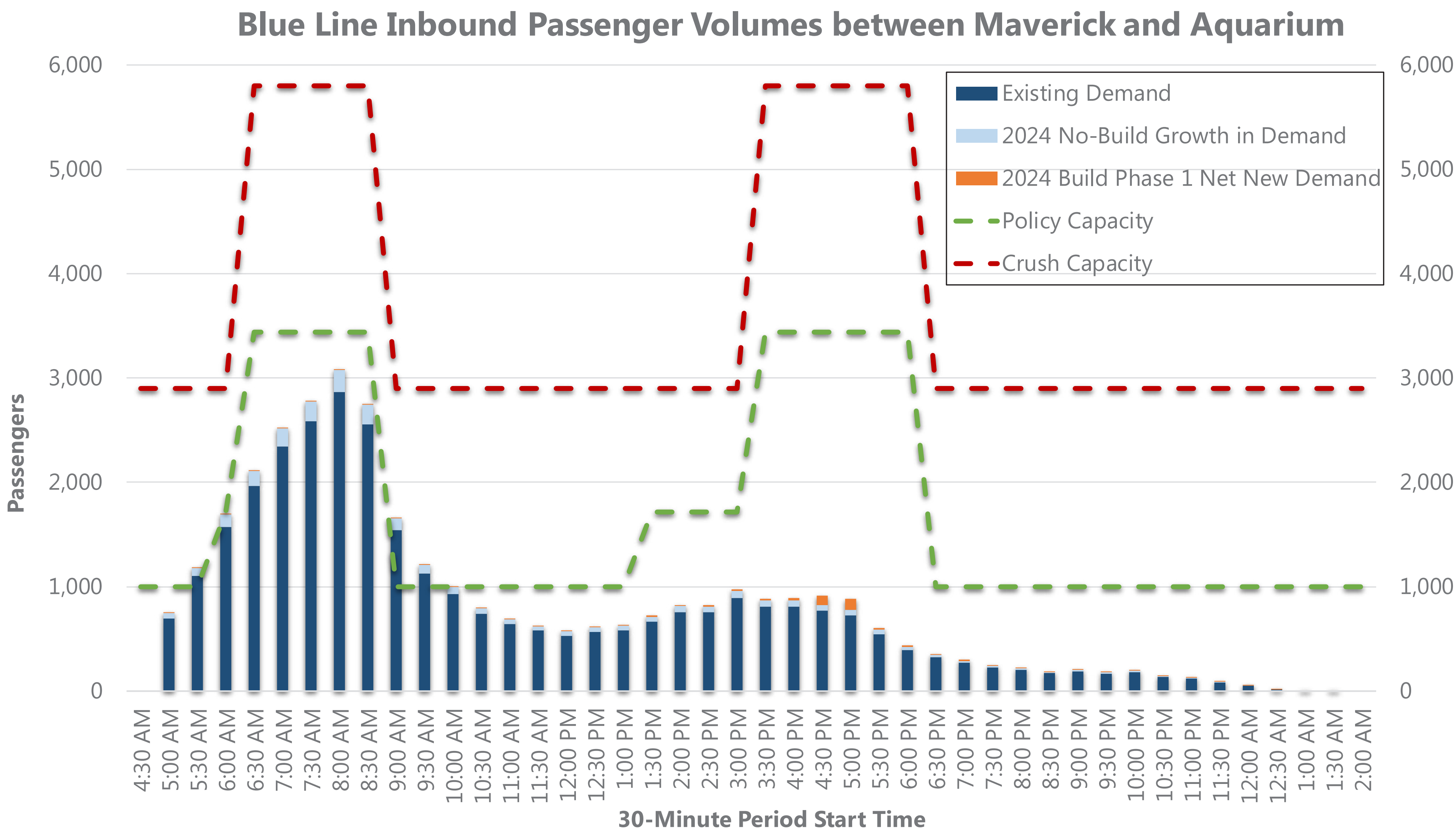


Figure 4.24

2024 Build Conditions Volume Network
Weekday Evening Peak Hour

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

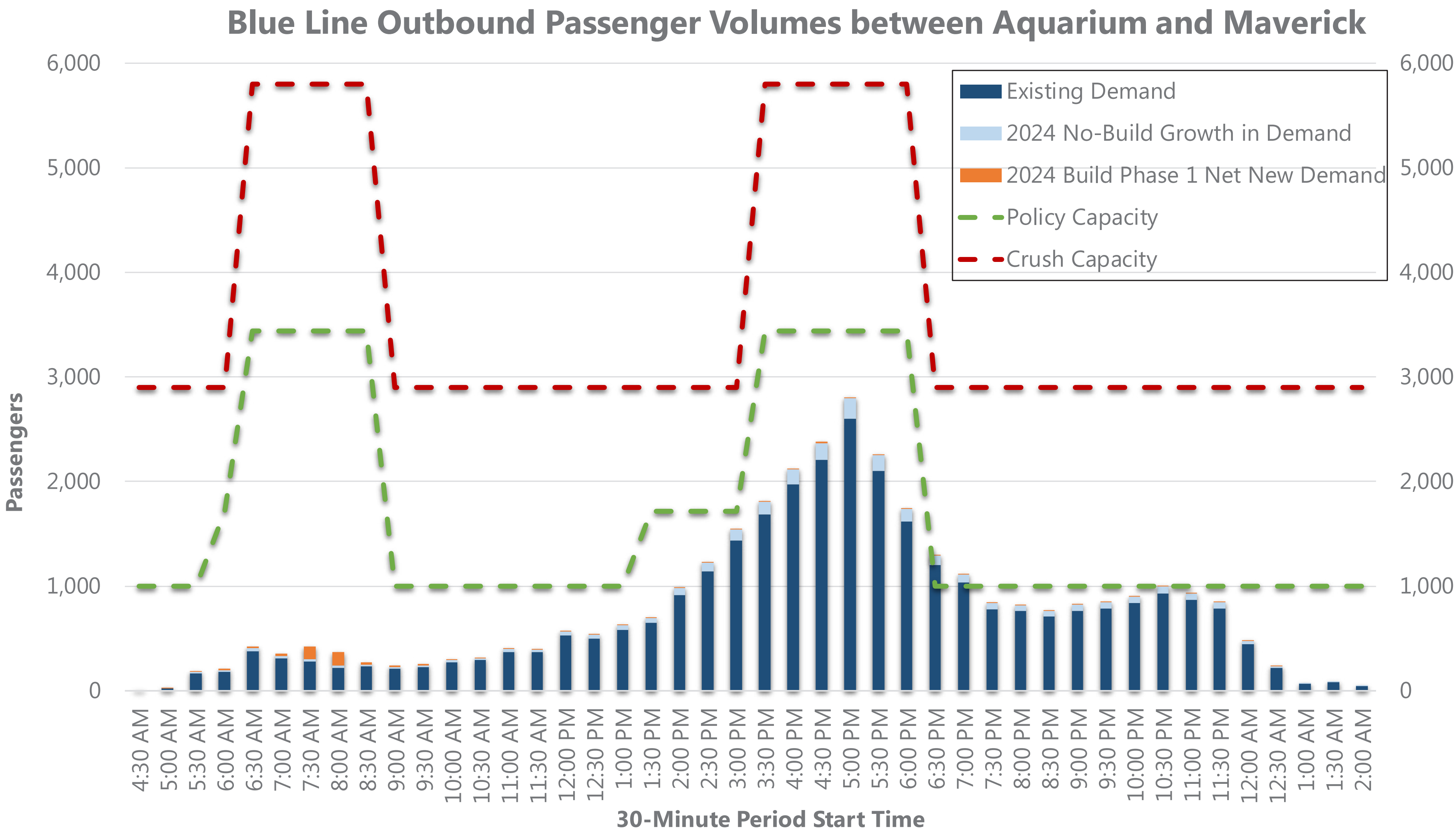


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 4.25

2024 Build Conditions
Blue Line Inbound Passenger Volumes
Between Maverick and Aquarium Stations

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

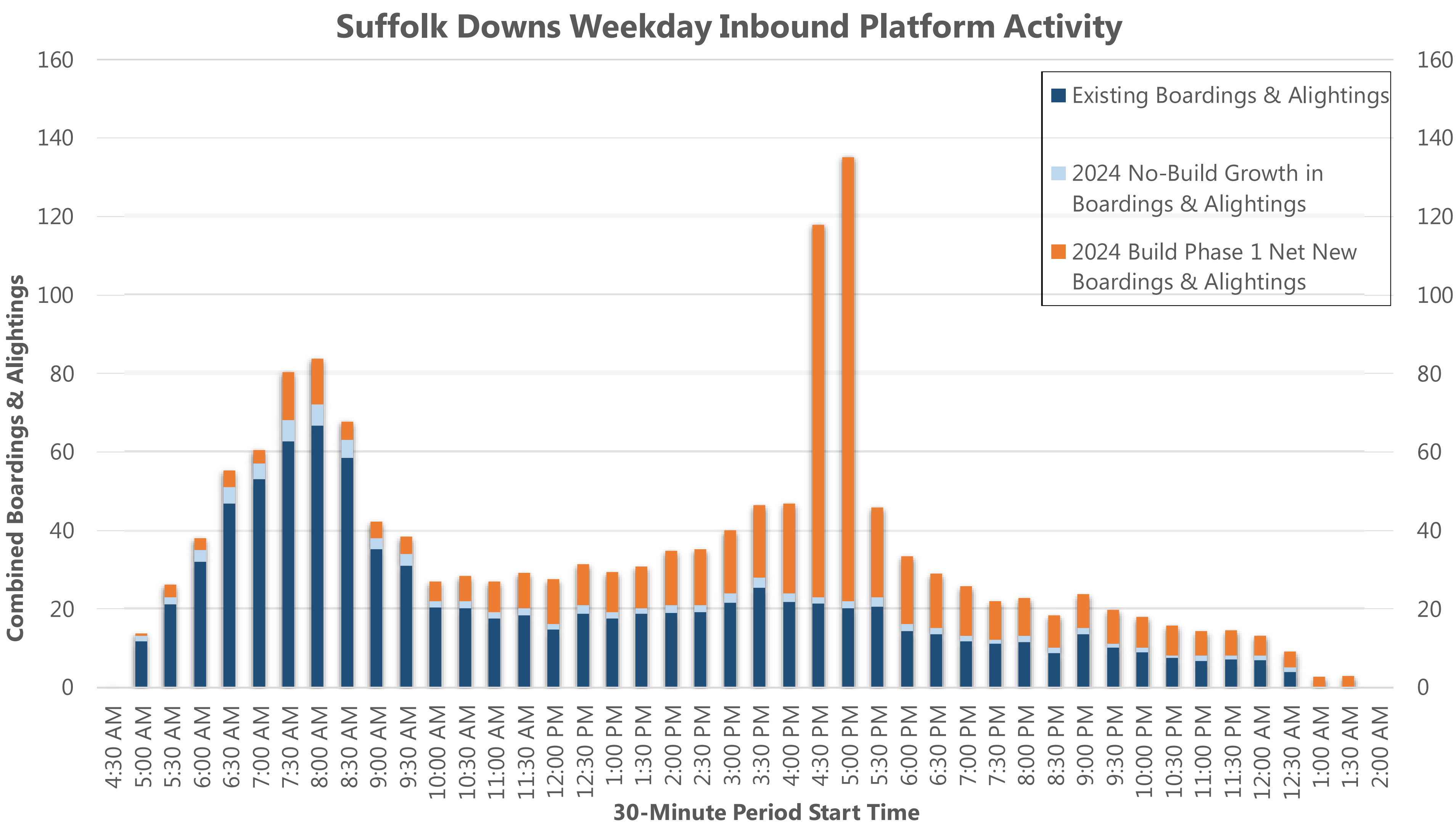


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 4.26

2024 Build Conditions
Blue Line Outbound Passenger Volumes
Between Aquarium and Maverick Stations

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

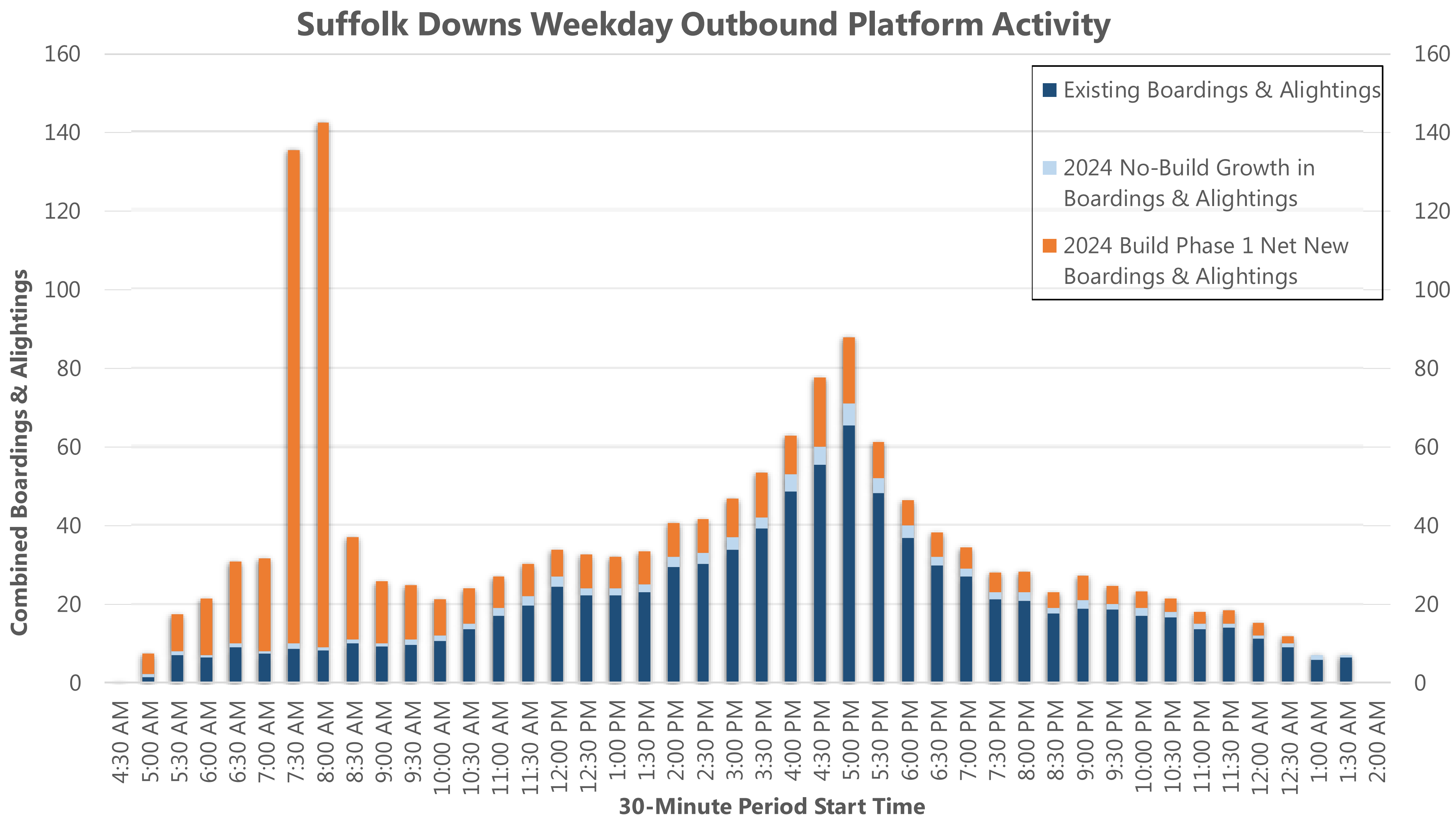


Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 4.27

2024 Build Conditions
Suffolk Downs Station
Inbound Platform Activity

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts



Existing Conditions Data Source: MBTA, Blue Line Ridership Data, Fall 2016.

Figure 4.28

2024 Build Conditions
Suffolk Downs Station
Outbound Platform Activity

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

5

Environmental Protection

This chapter provides information on existing environmental conditions at the Phase 1 Project Site and the potential changes that may occur as a result of the Phase 1 Project. The following sections identify impacts and discuss steps that have been or will be taken through design and management to avoid, minimize, and/or mitigate adverse effects. Temporary construction-period impacts associated with the Phase 1 Project will be managed to minimize disruption to the surrounding neighborhoods.

In compliance with Article 80, this chapter will address potential environmental impacts in the following categories:

- *Wind*
- *Shadow*
- *Daylight*
- *Solar Glare*
- *Air Quality*
- *Water Quality*
- *Flood Hazard*
- *Wetlands and Waterways*
- *Noise*
- *Solid and Hazardous Materials*
- *Groundwater*
- *Geotechnical*
- *Construction*
- *Rodent Control*

The following sections describe the environmental conditions and potential changes as a result of the Phase 1 Project. As demonstrated below, impacts have been avoided, minimized and/or mitigated through design and/or management while addressing local, state and federal requirements.

5.1 Wind

Pursuant to Section B.1 of the BPDA Development Review Guidelines, a qualitative assessment was conducted to estimate the pedestrian wind conditions around the Phase 1 Project compared to the existing condition, and to provide recommendations for minimizing any potential adverse impacts.

5.1.1 Methodology

Wind flows around the Phase 1 Project and its surroundings were simulated using Virtualwind™, which is a proprietary software developed by RWDI for the qualitative assessment of pedestrian wind conditions.

The prevailing winds from the west-northwest, northeast and southwest were simulated for the existing Phase 1 Project Site and with the full build-out of the Phase 1 Project. The architectural model of the Phase 1 Project provided sufficient massing details that would affect wind flows in the area. For a conservative estimate, landscaping was not included in the computer model.

Pedestrian Wind Comfort Criteria

The BPDA has adopted two standards for assessing the relative wind comfort of pedestrians. First, the BPDA 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 miles per hour (mph) should not be exceeded more than one percent of the time. The second set of criteria used by the BPDA to determine the acceptability of specific location 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 99th percentile mean wind speed) and are presented in Table 5-1.

Table 5-1 BPDA Mean Wind Criteria*

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

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

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

5.1.2 Preliminary Wind Impacts

Based on the preliminary computer model results, the Phase 1 Project is not anticipated to generate any unsafe wind conditions around the Phase 1 Project Site or nearby public spaces. Although some increased wind speeds may be experienced along the corners of the Phase 1 Project buildings, these impacts will be mitigated by either locating entrances, pick-up/drop-offs, outdoor cafes, etc., away from the building corners, and/or incorporating canopies, recessed entrances, windscreens, planters, etc., as necessary. These mitigation measures will be evaluated as the Phase 1 Project design advances to ensure a comfortable and safe environment surrounding the Phase 1 Project Site.

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

Refer to Appendix F for addition detail on the pedestrian wind assessment.

5.2 Shadow

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

5.2.1 Methodology

A shadow impact analysis was conducted at regular time intervals to investigate the effect that the Phase 1 Project will have throughout the year. A computer model of the Phase 1 Project and surrounding urban area was developed. A number of days and times were analyzed, as required under Article 80. The analysis used "clear sky" solar data at Boston's Logan International Airport, meaning the assumption that no cloud cover ever occurs; therefore, providing a "worst case" scenario showing the full extent of when and where shadow could occur.

In order to represent a variety of shadow conditions at various times of the day, and times of the year, three time intervals (9:00 AM, 12:00 PM, 3:00 PM) are represented for the Vernal and Autumnal Equinoxes (March 21st and September 21st, see Figure 5.1a), Summer Solstice (June 21st, see Figure 5.1b), and Winter Solstice (December 21st, see Figure 5.1c). Per the BPDA Development Review Guidelines, 6:00 PM has been added to the June 21, September 21 shadow study. This study takes into consideration Daylight Savings Time ("DST"), and therefore times are presented in Eastern Standard Time ("EST") and Eastern Daylight Time ("EDT"). The analysis focuses on the shadow cast onto existing pedestrian areas, open spaces, and sidewalks adjacent to and in the vicinity of the Phase 1 Project Site.

Table 5-2 shows the solar azimuth and altitude data. Times are listed as EST and EDT, as appropriate. The data reflects a latitude of 42.358^{0} and a longitude of -71.06^{0}.

Table 5-2 Solar Azimuth and Altitude Data

Date	Time	Azimuth [1]	Altitude[2]
March 21 EDT	9:00 AM	112.59	23.61
March 21 EDT	12:00 PM	161.17	46.69
March 21 EDT	3:00 PM	223.5	39.26
June 21 EDT	9:00 AM	93.51	39.95
June 21 EDT	12:00 PM	149.52	68.8
June 21 EDT	3:00 PM	246.32	56.48
June 21 EDT	6:00 PM	280.71	23.83

Date	Time	Azimuth [1]	Altitude[2]
September 21 EDT	9:00 AM	115.54	25.89
September 21 EDT	12:00 PM	166.28	47.2
September 21 EDT	3:00 PM	227.1	37.14
September 21 EDT	6:00 PM	140.54	27.83
December 21 EST	9:00 AM	184.36	24.12
December 21 EST	12:00 PM	224.96	10.1
December 21 EST	3:00 PM	112.59	23.61

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

5.2.2 Shadow Study Findings

Given the Phase 1 Project Site location, shadows generated by the Phase 1 Project will not adversely impact existing public open spaces. On-site open spaces are oriented to provide unshaded areas throughout the daytime.

March 21st and September 21st

The net new shadows associated with the Phase 1 Project for September 21 and March 21 are illustrated in Figure 5.1a. March 21 is the vernal equinox and September 21 is the autumnal equinox; for both of these dates, the length of daytime and nighttime are equal. The sun rises at 6:31 AM EDT in the southeastern sky and sets at 6:42 PM EDT to the southwest. The shadows cast on these dates are similar for the purposes of this analysis.

At 9:00 AM the morning shadow is generally contained within the Phase 1 Project Site, with shadows falling to the northwest and shading internal streets and sidewalks, as well as a portion of the existing infield pond and race track infield.

At 12:00 PM, shadows are generally contained within the Phase 1 Project Site, with new shadows falling north of the proposed buildings.

At 3:00 PM the Phase 1 Project casts limited new shadow to the northeast onto race track and a portion of the race track infield.

At 6:00 PM, as a result of the low sun angle, shadows are long, and some new shadow falls to the east of the Phase 1 Project Site across the MBTA Blue Line tracks and into a small portion of the Belle Isle Marsh Reservation; however, they do not extend into the pedestrian trails within the Belle Isle Marsh Reservation. Although shadows during this period are long, they move quickly and are less apparent near dusk; therefore, they are not anticipated to have any adverse impact on on-site or offsite wetlands.

June 21st

The new shadows associated with the Phase 1 Project for June 21 are illustrated in Figure 5.1b. June 21 is the summer solstice and the longest day of the year. The sun rises at 5:08 AM EDT in the southeastern sky and sets at 8:25 PM EDT. Shadows during the summer are generally shorter than other seasons as the sun is highest in the sky.

At 9:00 AM the morning shadow is contained within the Phase 1 Project Site, with some new shadow falling westward along the infield pond and portions of the internal pedestrian network. Due to the higher angle of the sun, the shadows quickly shorten and rotate eastward.

At 12:00 PM, shadows are entirely contained within the Phase 1 Project Site, with some incremental new shadow falling onto internal streets and sidewalks to the north of the Phase 1 buildings.

At 3:00 PM shadows extend to the northeast, with limited net new shadow falling within the Phase 1 Project Site.

At 6:00 PM the sun begins to set and the Phase 1 Project casts some incremental new shadow to the east of the Phase 1 Project Site, but short of the MBTA Blue Line tracks.

December 21st

The net new shadows associated with the Phase 1 Project on December 21 are depicted on Figure 5.1c. December 21 is the winter solstice and the shortest day of the year. The sun is at its lowest inclination above the horizon at each hour of the day. Even low buildings cast long shadows in northerly latitudes such as Boston. The sun rises at 7:10 AM EST and sets at 4:15 PM EST in December.

At 9:00 AM, due to the low sun angle, morning shadows extend to the northwest shading internal streets, sidewalks and a portion of the existing infield pond and race track infield.

At 12:00 PM, there are new shadows cast north across the eastern corner of the infield pond and onto race track infield.

At 3:00 PM, new shadows cast to the northeast over race track infield and into the wooded area east of the Phase 1 Project Site. New shadows at this time do not extend beyond the MBTA Blue Line Tracks. Although net new shadow is greatest at this period due to the low sun angle, the days during this time of year are less bright and there is much less contrast between shaded and unshaded areas.

5.3 Daylight

The following section describes the anticipated effect on daylight coverage at the Phase 1 Project Site as a result of the Phase 1 Project. An analysis of the percentage of skydome obstructed under the No-Build and Build Conditions is a requirement of Article 80 (Section 80B-2(c)). The daylight analysis was prepared using the BPDA's Daylight Analysis Program ("BRADA") and has been completed in accordance with the requirements of Article 80. The results of the analysis are presented in Figure 5.2.

5.3.1 Methodology

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

The model inputs used for the study presented herein were taken from a combination of the BPDA's City of Boston model data, an existing conditions survey, and schematic design plans prepared by the Phase 1 Project architect. As described above, the BRADA software considers the relative reflectivity of building façades when calculating perceived daylight obstruction. Highly reflective materials are thought to reduce the perceived skydome obstruction when compared to non-reflective materials. For the purposes of this daylight analysis, the building façades are considered non-reflective, resulting in a conservative estimate of daylight obstruction.

Viewpoints

The following viewpoint was used for this daylight analysis:

- **Bennington Street** – This viewpoint is located on the centerline of the Phase 1 Project Site. Bennington Street is the only adjacent public way that is anticipated to experience impacts to visible skydome.

This point represents the proposed buildings façades when viewed from the adjacent public way.

5.3.2 Daylight Study Findings

Daylight Existing/No-Build Conditions

Under the existing condition/no build condition, the most significant skydome obstruction is the tree line along the MBTA Blue Line tracks, which run parallel to Bennington Street. Directly to the east of the Phase 1 Project Site is the Suffolk Downs MBTA Blue Line Station and associated surface parking. Since the BRADA program does not account for obstructions from natural features, this analysis compares the proposed buildings' façades to a baseline of zero obstruction, resulting in a conservative estimate of skydome obstruction.

Daylight Build Conditions

Table 5-3 below presents the percentage of skydome that is expected to be obstructed with and without the Phase 1 Project. Figure 5.2 graphically shows the Phase 1 Project-related daylight impacts from the viewpoint of Bennington Street.

Table 5-3 Existing/No-Build and Build Daylight Conditions

Viewpoint	Existing/No-Build Skydome Obstruction	Build Skydome Obstruction
Bennington Street	0%	10.1%

As previously stated, under the Existing/No-Build Condition, the skydome is assumed to be unobstructed, despite the presence of an existing tree line which separates the Phase 1 Project Site from Bennington Street and the Suffolk Downs MBTA Blue Line Station to the east. Therefore, this analysis presents a more conservative estimate of daylight obstruction. Notwithstanding this conservative approach, the obstruction of skydome as a result of the Phase 1 Project is anticipated to be minimal due to the existing setback from Bennington Street. The location and massing of the Phase 1 Project buildings limit visible skydome obstruction along Bennington Street while maximizing the accessibility of the Phase 1 Project Site to the Suffolk Downs MBTA Blue Line Station.

5.4 Solar Glare

The City of Boston BPDA Development Review Guidelines require projects undergoing Large Project Review to analyze the potential impacts from solar glare if there is a potential for visual impairment or discomfort due to reflective spot glare on:

- Potentially affected streets;
- Public open spaces; and
- Pedestrian areas.

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

The exterior building materials have not yet been finalized for the Phase 1 Project, however, it is not anticipated that highly reflective glass will be employed in any of the building facades. The Phase 1 Project will be designed to minimize the potential for solar glare that could adversely impact traffic safety along nearby roadways and solar heat gain in nearby buildings through the consideration of low/non-reflecting exterior building materials as design progresses. The absence of solar glare impacts will be confirmed during the design review process in connection with the selection of façade materials.

5.5 Air Quality

This section presents an overview of and the results for the preliminary mobile source assessment conducted for the Phase 1 Project. The purpose of the air quality assessment is to demonstrate that the Phase 1 Project satisfies applicable regulatory requirements, and whether it complies with the 1990 Clean Air Act Amendments ("CAAA") following the local and the EPA policies and procedures.

The air quality assessment conducted for this Phase 1 Project includes a qualitative localized (microscale), or "hot spot", analysis of carbon monoxide ("CO") concentrations in accordance with BPDA screening guidance. The microscale analysis evaluated potential CO impacts from vehicles traveling through congested intersections in the Phase 1 Project Site area under the existing conditions, as well as considering site-specific impacts under the future conditions. The results from this evaluation are subject to the National Ambient Air Quality Standards ("NAAQS"). A review of the mesoscale/regional air quality impacts is also qualitatively discussed below.

5.5.1 Background and Methodology

The CAAA resulted in states being divided into attainment and non-attainment areas, with classifications based upon the severity of their air quality problems. Air quality control regions are classified and divided into one of three categories: attainment, non-attainment and maintenance areas depending upon air quality data and ambient concentrations of pollutants. Attainment areas are regions where ambient concentrations of a pollutant are below the respective NAAQS; non-attainment areas are those where concentrations exceed the NAAQS. A maintenance area is an area that used to be non-attainment, but has demonstrated that the air quality has improved to attainment. After 20 years of clean air quality, maintenance areas can be re-designated to attainment.

The Phase 1 Project is located within East Boston which is a CO Maintenance area (although not officially designated on the Greenbook[2], the area is beyond the 20-year maintenance timeframe and therefore could be designated as attainment). Projects located in a CO maintenance area are required to evaluate their CO concentrations

2 *Nonattainment Areas for Criteria Pollutants*, Greenbook (as of September 30, 2017), https://www.epa.gov/green-book. Accessed November 1, 2017.

with the NAAQS. As such, CO concentrations need to be considered for this Project. Suffolk County is in attainment for the remainder of the criteria pollutants.

Air Quality Standards

The EPA has established the NAAQS to protect the public health. Massachusetts has adopted similar standards as those set by the EPA for CO. Table 5-4 presents the NAAQS for CO.

Table 5-4 National Ambient Air Quality Standards

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

DEP maintains a network of air quality monitors to measure background CO concentrations. Background concentrations are ambient pollution levels from all stationary, mobile, and area sources. Background CO concentrations are determined by choosing the maximum of the 2nd-highest annual values from the previous three years. Looking at the air quality monitor closest to and most representative of the Phase 1 Project Site (Von Hillern) for the years 2014-2016, the CO background values are 1.7 ppm for the 1-hour averaging time and 0.9 ppm for the 8-hour averaging time. These values are much less than the 1-hour and 8-hour NAAQS. The background values are presented in Table 5-5.

Table 5-5 Air Quality Background Concentrations

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

Monitoring Location: Von Hillern, Boston, MA. Years 2014-2016.

The potential CO concentrations from motor vehicle traffic related to the Phase 1 Project will be considered in conjunction with these background concentrations to demonstrate that the Phase 1 Project will comply with the NAAQS Standards.

BPDA Development Review Guidelines

The BPDA Development Review Guidelines require “a microscale analysis predicting localized carbon monoxide concentrations should be performed, including identification of any locations projected to exceed the National or Massachusetts Ambient Air Quality Standards, for projects in which:

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

Traffic Data

The air quality study uses traffic data (volumes, delays, and speeds) developed for the analysis conditions based upon the traffic analysis. The traffic study area includes the following intersections:

1. William F McClellan Highway (Route 1A) at Boardman Street
2. William F McClellan Highway (Route 1A) at Waldemar Avenue
3. William F McClellan Highway (Route 1A) at Tomasello Drive
4. William F McClellan Highway (Route 1A) at Jughandle
5. Bennington Street at Crescent Avenue
6. Bennington Street/State Road at Winthrop Avenue
7. Winthrop Avenue (Route 145) at Revere Beach Parkway
8. Winthrop Avenue (Route 145) at Tomasello Drive
9. Winthrop Avenue (Route 145) at North Shore Road
10. Winthrop Avenue (Route 145) at William F McClellan Highway (Route 1A) southbound On-Ramp
11. Winthrop Avenue (Route 145) at Revere Beach Parkway (Route 16)/Harris Street.

Based on the traffic study presented in Chapter 4, *Transportation*, the Phase 1 Project is expected to generate 359 new vehicle trips in the morning peak hour and 308 new vehicle trips in the evening peak hour.

5.5.2 Microscale Screening Analysis

An evaluation of the traffic data was conducted under the review guidelines developed by the BPDA for determination of the potential for CO impacts. It was determined that:

- The Phase 1 Project would not cause a decline in LOS at any intersection in the study area in both the morning and evening peak hours. Additionally, the trips from the Phase 1 Project are expected to impact a limited number of intersections operating at LOS D, E, or F in the No Build condition. Mitigation will be provided at Route 1A at

Tomasello Drive and Winthrop Avenue at Tomasello Drive that will improve operating conditions.

› Phase 1 Project traffic is not expected to increase traffic volumes at nearby intersections by 10 percent or more. The maximum anticipated increase is seven percent at the intersection of McClellan Highway (Route 1A) with Tomasello Drive. Compared to the No Build conditions, the Phase 1 Project is expected to generate 359 vehicle trips in the weekday morning peak hour and 308 vehicle trips in the evening peak hour.
› The Phase 1 Project will generate less than 3,000 or more new average daily trips on the study area roadways. The Phase 1 Project will generate 1,492 new weekday vehicle trips, less than the 3,000 vehicles per day threshold.

Based on the microscale screening results discussed above, it has been determined that a quantitative CO hotspot analysis is not necessary for the Phase 1 Project, as the BPDA thresholds are not exceeded.

5.5.3 Mesoscale Air Quality Analysis

The purpose of the mesoscale analysis is to estimate the area-wide emissions of VOC and NOx during a typical day in the peak ozone season (summer) consistent with the requirements of the State Implementation Plan (“SIP”). The mesoscale analysis evaluates the change in VOC and NOx emissions from average daily traffic volumes and vehicle emission rates. To demonstrate compliance with the SIP criteria, the air quality study must show the Project's change in daily (24-hour period) VOC and NOx emissions.

The BPDA requires a mesoscale air quality analysis if a project produces 10,000 or more vehicle trips per day. The Phase 1 Project is not anticipated to generate over 10,000 or more vehicle trips per day, therefore this analysis is not required for the BPDA.

5.6 Water Quality

The Phase 1 Project will improve the quality of stormwater runoff from the Phase 1 Project Site as compared to existing conditions. The proposed stormwater management system will comply with the 2008 DEP Stormwater Management Handbook, as well as the WPA and City of Boston and Revere Stormwater requirements. Refer to Chapter 7, *Infrastructure*, for additional detail regarding quality of stormwater runoff.

5.7 Flood Hazard

The Phase 1 Project has been designed with consideration of its location within the current FEMA one percent annual chance flood plain and incorporates appropriate measures to avoid and minimize potential flood hazard. Such measures include, for example, elevating the access roadway and buildings. Refer to Chapter 3, *Sustainability/Green Building and Climate Change Resiliency*, for additional detail regarding flood hazard and resiliency.

5.8 Wetlands and Waterways

This section identifies existing wetland resources and tidelands impacts within the Phase 1 Project Site, and describes the Phase 1 Project's compliance with the Massachusetts Wetlands Protection Act and the Massachusetts Public Waterfront Act. Impacts related to wetlands and waterways resulting from the Phase 1 Project will be avoided and minimized to the extent practicable, as described below.

5.8.1 Massachusetts Wetlands Protection Act

Existing Conditions

Wetland resources areas on the Phase 1 Project Site that are regulated as Areas Subject to Protection under the WPA (MGL Chapter 131 § 40 and associated regulations at 310 CMR 10.00) include:

- **Inland Bank ("Bank")** – According to 310 CMR 10.54, Bank is the portion of the land surface which normally abuts and confines a water body. The upper boundary of Bank in non-tidal rivers is coincident with Mean Annual High Water ("MAHW") and was determined utilizing bankfull indicators, including changes in slope, changes in vegetation, stain lines, changes in bank material, and bank undercuts.
- **Land Under Waterbodies and Waterways ("LUWW")** – According to 310 CMR 10.56, LUWW is the land beneath any creek, river, stream, pond or lake. LUWW extends to the Mean Annual Low Water ("MALW") elevation associated with the infield pond and H-Series Intermittent Stream. The limits of LUWW lie entirely within the Bank of the infield pond.
- **Land Subject to Coastal Storm Flowage ("LSCSF")** – As defined in §10.04, LSCSF means "land subject to any inundation caused by coastal storms up to and include that caused by the 100-year storm, surge of record, whichever is greater."

Additionally, although not itself considered a state resource area, there is a 100-foot jurisdictional buffer zone to Bank. Work within wetland resource areas and associated buffer zones will require an Order of Conditions from the Boston Conservation Commission.

Wetland resource areas were delineated on the Phase 1 Project Site by a Professional Wetland Scientist on June 29, July 6, and July 11, 2017, in accordance with the WPA, Sections 401 and 404 of the United States Clean Water Act (33 USC 1344). The resource areas identified included Bank and LSCSF. Refer to Figure 5.3 for

On-Site Wetland Resource Areas. These resource areas were confirmed in Orders of Resource Area Delineation ("ORAD") issued by the Boston Conservation Commission on September 28, 2017. LUWW was also identified on-site, but was not requested to be confirmed in the ORADs, as it is located entirely within other resource areas.

The on-site resource areas and associated buffer zones are previously heavily disturbed by buildings, roads, paved and unpaved areas and other improvements, including portions of the dirt horse racing track. Vegetation, where existing, is dominated by invasive plant species and turf grass. Soils generally consist of urban fill and the Phase 1 Project Site does not contain rare species habitat.

Impacts to On-Site Wetland Resource Areas

Work within areas under the jurisdiction of the WPA for the Phase 1 Project will be limited to the alteration of LSCSF and the 100-foot buffer associated with the Bank of the infield pond and an unnamed intermittent stream along the eastern Phase 1 Project Site Boundary referred to as the "H-Series Intermittent Stream."

Work within LSCSF consists of construction of portions of the proposed buildings and access road, as well as associated utilities and stormwater management system. The portions of the Phase 1 Project Site within LSCSF will be graded to address resiliency and future sea level rise as described in Chapter 3, *Sustainability/Green Building and Climate Change Resiliency*.

Work within the 100-foot buffer zone consists of construction of portions of the buildings, the roadway system, stormwater management facilities, and associated site preparation work. Portions of the buffer zone in which work is proposed are generally previously disturbed and contain turf grass, common lawn weed, invasive species, dirt horse racing track and asphalt associated with existing parking facilities.

The Phase 1 Project will comply with all applicable wetlands regulations.

Impacts to Off-Site Wetland Resources Areas

There are currently no planned off-site infrastructure improvements for the Phase 1 Project. However, if off-site infrastructure improvements are required, and if those off-site infrastructure improvements have potential impacts to off-site wetland resource areas, the Proponent will work with the appropriate state and local agencies to address any potential impacts that are identified.

5.8.2 Massachusetts Public Waterfront Act (Chapter 91)

A portion of the Phase 1 Project Site is located within landlocked former tidelands which are exempt from licensing under the provisions of Chapter 91, Section 18(b) and 310 CMR 9.04(2). Historic filled former tidelands on-site are entirely separated by public ways from flowed tidelands; do not lie within 250 feet of the high-water mark; and are not located within a Designated Port Area. Therefore, pursuant to 310

CMR 9.02, the filled former tidelands are categorized as landlocked tidelands that are not subject to Chapter 91 licensing requirements.

This designation was confirmed by DEP in a June 23, 2000 letter indicating that the Master Plan Project Site is no longer considered subject to Chapter 91 jurisdiction, as on-site filled former tidelands are landlocked, and reaffirmed in its March 26, 2013 comment letter on the Caesar's Resort ENF. Refer to Appendix F.

While a public benefits determination is not required for the Phase 1 Project, pursuant to 301 CMR 13.02(1), the Secretary may conduct a public benefits determination for the Phase 1 Project. Public benefits for the Phase 1 Project are discussed in Chapter 1, *Project Description and General Information.* The Phase 1 Project unlocks the opportunity for the extraordinary economic development and activity associated with the larger Amazon HQ2 development in Boston.

5.9 Noise

The noise assessment evaluated the potential noise impacts associated with the Phase 1 Project, including mechanical equipment and loading activities. This section discusses the fundamentals of noise, City of Boston's noise standards, noise analysis methodology, existing ambient sound levels, and potential future sound levels associated with the Phase 1 Project's operations.

The assessment demonstrates that the Phase 1 Project will comply with City of Boston noise regulations. Based on preliminary design, the Phase 1 Project's operations will have no adverse noise impacts at nearby sensitive receptor locations.

5.9.1 Fundamentals of Noise

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

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

Sound levels are most often measured on a logarithmic scale of decibels (dB). The decibel scale compresses the audible acoustic pressure levels which can vary from the threshold of hearing (zero dB) to the threshold of pain (120 dB). Because sound levels are measured in dB, the addition of two sound levels is not linear. Adding two equal sound levels creates a three dB increase in the overall level. Research indicates the following general relationships between sound level and human perception:

- A 3-dB increase is a doubling of acoustic energy and is the threshold of perceptibility to the average person.
- A 10-dB increase is a tenfold increase in acoustic energy but is perceived as a doubling in loudness to the average person.

The human ear does not perceive sound levels from each frequency as equally loud. To compensate for this phenomenon in perception, a frequency filter known as A-weighted [dB(A)] is used to evaluate environmental noise levels. Table 5-6 presents a list of common outdoor and indoor sound levels.

Table 5-6 Common Outdoor and Indoor Sound Levels

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

Source: Highway Noise Fundamentals. Federal Highway Administration, September 1980.
* μPA – MicroPascals, which describe pressure. The pressure level is what sound level monitors measure.
** dB(A) – A-weighted decibels, which describe pressure logarithmically with respect to 20 μPa (the reference pressure level).

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

- L90 is the sound level which is exceeded for 90 percent of the time during the time period. L90 is generally considered to be the ambient or background sound level.
- Leq is the A-weighted sound level, which averages the background sound levels with short-term transient sound levels. The Leq sound level accounts for varying fluctuations of sound energy during an interval and provides a uniform method for comparing sound levels that vary over time.

5.9.2 Methodology

The noise study evaluated the potential noise impacts associated with the Phase 1 Project's operations, which include mechanical equipment and loading/service activities. The assessment included measurements of existing ambient background sound levels and a qualitative evaluation of potential noise impacts associated with the proposed mechanical equipment (e.g., HVAC units) and loading/service activities. The study area was evaluated and sensitive receptor locations near the Phase 1 Project Site were identified and examined. The Master Plan Project Site layout and building design, as they relate to the loading areas and management of deliveries at the Phase 1 Project Site were also considered. The analysis considered sound level reductions due to distance, proposed building design, and obstructions from surrounding structures.

Receptor Locations

The noise study included an evaluation of the study area to identify nearby sensitive receptor locations, which typically include areas of sleep and areas of outdoor activities. This assessment identified nine residential areas near the Phase 1 Project Site that would have the most potential for exposure to the Phase 1 Project's activities. As shown on Figure 5.4, the receptor locations include the following:

- R1 – Residential neighborhood to the southwest on Waldemar Avenue;
- R2 – Residential neighborhood to the south on Waldemar Avenue;
- R3 – Residential neighborhood to the southeast on Waldemar Avenue;
- R4 – Residential neighborhood to the southeast on Swan Avenue/Lawn Avenue;
- R5 – Residential neighborhood to the northeast on Washburn Avenue;
- R6 – Residential neighborhood to the northeast, east of the Bennington Street;
- R7 – Residential neighborhood to the north on Standish Road;
- R8 – Residential neighborhood to the north on Campbell Avenue/Charles Avenue; and
- R9 – Residential neighborhood to the northeast on Pratt Court.

These receptor locations, selected based on land use considerations, represent the most sensitive locations near the Phase 1 Project Site.

City of Boston Noise Impact Criteria

The City of Boston has developed noise standards that establish noise thresholds deemed to result in adverse impacts. The noise analysis for the Phase 1 Project used these standards to evaluate whether the Phase 1 Project will generate sound levels that result in potential adverse impacts.

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

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

Table 5-7 City of Boston Noise Standards by Zoning District, dB(A)

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

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

5.9.3 Noise Study Findings

Existing Noise Conditions

A noise monitoring program was developed to establish existing ambient sound levels in vicinity of the Phase 1 Project Site. The existing sound levels were measured using Type 1 sound analyzers (Larson Davis 831 and SoundExpert LxT). Measurements were conducted between October 31, 2017 and November 2, 2017. Measurements were conducted at five locations, shown in Figure 5.4 for a 24-hr period to capture sound levels representative of typical existing ambient conditions. The existing measured sound level data are summarized in Table 5-8.

Table 5-8 Existing Ambient Sound Levels, dB(A)

	City of Boston Residential District Noise Standard		Measured Leq Sound Levels	
Monitoring Location	**Daytime**	**Nighttime**	**Daytime**	**Nighttime**
M1 – McClellan Highway (Route 1A)	60	50	55-59	49-**58**
M2 – Waldemar Avenue/Tomasello Drive	60	50	56-**61**	50-**59**
M3 – Suffolk Downs MBTA Blue Line Station	60	50	48-**62**	45-**53**
M4 – Washburn Avenue	60	50	57-**63**	45-**61**
M5 – Revere Beach Parkway/Winthrop Avenue	60	50	55-**63**	47-**59**

Source: VHB
Note: Refer to Figure 5.4 for noise monitoring locations.
Measured sound levels represent hourly Leq levels.

The measured Leq sound levels range from approximately 48 dB(A) to approximately 63 dB(A) during the daytime period in the surrounding neighborhoods. During the nighttime period, the neighborhoods experience sound levels ranging from approximately 45 dB(A) to approximately 61 dB(A). The result of the noise monitoring program indicates that the daytime sound levels in the surrounding neighborhoods adjacent to the Project Site are currently exceeding the City of Boston's standards for a Residential District. During the daytime period, the measured sound levels data were composed of noise from aircraft flying overhead, the MBTA's Blue Line, and vehicles traveling on the surrounding roadways, such as McClellan Highway (Route 1A), Tomasello Drive, Bennington Street, and Winthrop Avenue. The measured sound levels during the nighttime also exceeds the City of Boston's nighttime standards. The nighttime period sound levels were generally associated with similar sources until approximately midnight when aircraft and train operations were limited.

Future Noise Conditions

The noise analysis assessed the potential noise impacts associated with the Phase 1 Project's mechanical equipment and loading activities. The analysis evaluated the potential sound level impacts at the nearby areas.

<u>Mechanical Equipment</u>

Specific details related to the final selection of mechanical equipment are not confirmed at the time of this noise assessment. Based on preliminary design plans, the anticipated mechanical equipment associated with the proposed commercial buildings may include the following:

- Energy recovery air handling units,
- Exhaust fans, and
- Emergency generators.

The Phase 1 Project will incorporate noise attenuation measures as necessary to comply with City of Boston's noise criteria at the sensitive receptor locations. During the design and selection process, the mechanical equipment will be strategically located to minimize potential noise impacts, such as setting on the building's rooftop. The appropriate low-noise mechanical equipment will be selected, including potential noise mitigation measures, such as acoustical enclosures and/or acoustical silencers.

The rooftop mechanical equipment would be strategically located on the rooftop to minimize the impacts to the surrounding sensitive receptor locations. Noise attenuation can be achieved by utilizing the building structure. The Phase 1 Project height is approximately 120 feet tall, which is greater than the height of the surrounding sensitive receptors to the north and east of the Phase 1 Project Site. Building rooftops could serve as a barrier by breaking the direct line of exposure between the potential rooftop noise sources and nearby receptor locations. As such, the sound levels associated with the Phase 1 Project's mechanical equipment are expected to be insignificant at the surrounding sensitive receptor locations. Additionally, acoustical screening walls or penthouse surrounding the mechanical equipment would be considered during the design process to minimize the potential noise impacts at the nearby sensitive areas.

Emergency generators are generally considered for life safety purposes, such as emergency exit lighting. The Phase 1 Project will be required to adhere to DEP's regulations that require such equipment to be certified and registered when installed. As part of the air permitting process, proposed generators will be required to comply with additional noise requirements described in DEP regulations under the Codes of Massachusetts Regulations (310 CMR 7.00). At the proper time during the construction phase, the Proponent will submit the appropriate permit application or certification to DEP, which would include noise mitigation measures, such as acoustic enclosures and exhaust silencers as necessary to meet DEP's noise criteria.

Service and Loading Activities

Loading activities are expected to occur in designated loading areas at the ground/lower level of the proposed commercial building. The loading area is expected to be located internally within the proposed buildings' structure. The loading activities will be managed so that service and loading operations do not impact traffic on the adjacent roadways. Since loading activities will be enclosed and will be managed, potential noise impacts to nearby sensitive receptor locations are expected to be negligible.

Conclusion of Noise Impact Assessment

The noise analysis determined that the sensitive receptor locations near the Phase 1 Project Site currently experience sound levels above the City of Boston's noise standards during both the daytime and nighttime periods. Based on preliminary design, the proposed Phase 1 Project's operations will have no adverse noise impacts at nearby sensitive receptor locations. During the design of the proposed buildings, low noise equipment and mechanical penthouse and/or acoustical screening walls along the rooftop would be considered to minimize sound levels at nearby sensitive receptor locations.

5.10 Solid and Hazardous Wastes

The Phase 1 Project is not located in an area of current or historical buildings or in an area of current or historical chemical or petroleum storage. The area was filled prior to the original development of the race course in the 1930s. Current structures in the Phase 1 Project Site are limited to fences and wooden rails. Debris from the demolition of these structures will be managed appropriately in accordance with Massachusetts solid waste regulations.

Environmental investigations conducted in the Phase 1 Project Site identified historical urban fill under topsoil. The historical urban fill contains varying concentrations of petroleum, polycyclic aromatic hydrocarbons ("PAHs"), and metals and is consistent with urban fill identified elsewhere on the Master Plan Project Site and in the local area. The petroleum, metals, and PAHs detected in the urban fill were previously reported to the DEP in 1997 and were assigned Release Tracking Number ("RTN") 3-14857. Massachusetts Contingency Plan ("MCP") obligations for RTN 3-14857 were addressed in a Class B-1 Response Action Outcome Statement ("RAO") submitted to the DEP in 1998, which concluded the contaminants detected in the urban fill were a background condition and posed a condition of No Significant Risk to human health, public welfare, safety, and the environment, and that no further MCP response actions applied to the urban fill.

Environmental assessment conducted in February 2017 to support real estate due diligence included the sampling and analysis of soil samples for volatile organic compounds ("VOCs"), semi-VOCs, polychlorinated biphenyls ("PCBs"), organochlorine pesticides, extractable petroleum hydrocarbons ("EPH"), volatile petroleum hydrocarbons ("VPH"), and Resource Conservation and Recovery Act Eight metals (RCRA 8 Metals) (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). The results of the testing were consistent with the findings of the 1998 RAO and no new conditions for which DEP notification is required were identified.

Hazardous wastes have not been identified in the Phase 1 Project Site. Soils excavated during the Phase 1 Project will be reused at the property, initially for geotechnical surcharge and subsequently as fill material. Refer to Figure 5.5a-c.

5.11 Groundwater

Groundwater quality in the Phase 1 Project Site has been assessed as part of environmental investigations of the larger Master Plan Project Site. Groundwater quality assessment at the Phase 1 Project Site included the installation of four monitoring wells and sampling and analysis of groundwater for VOCs, EPH, VPH, and 12 dissolved metals (antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc). No analytes were detected at concentrations exceeding MCP reportable concentrations.

The Phase 1 Project will include a new stormwater management system designed to improve the quality of stormwater runoff discharged to the watershed from existing developed areas, as well as the newly developed area. Proposed stormwater management measures will control peak runoff rates, provide water quality treatment, promote groundwater recharge, and promote sediment removal.

Dewatering may be required during construction and it is anticipated that dewatering effluent will be recharged into the subsurface.

5.12 Geotechnical

Based on available subsurface data, the soil strata present at the Phase 1 Project Site are listed below in Table 5-9 in order of increasing depth below ground surface.

Table 5-9 Subsurface Conditions

Generalized Strata	Approx. Range in Thickness (ft.)
Miscellaneous Fill	10-20
Organic Deposits	25-30
Marine Clay	45-55
Glaciofluvial	0-5
Glacial Till	5-10
Bedrock (Depth Below Ground Surface)	95 to 110
Bedrock (Elev., BCB)	El. -80 to El. -85

- **Miscellaneous Fill.** Fill in the Phase 1 Project Site generally consists of sand and gravel with silt, brick, cinder, ash, porcelain, and sea shells.
- **Organic Deposits.** Organic deposits generally consisted of very soft to medium stiff, dark olive gray organic soil with peat in certain areas; some samples exhibited an organic odor and contained shell fragments.
- **Marine Clay.** Marine Clay ranged from very soft to stiff olive lean clay to medium dense gray silt.
- **Glaciofluvial.** Glaciofluvial soil consisted of a medium dense to very dense poorly grade gravel with sand to a silty sand with gravel.
- **Glacial Till.** The glacial till consisted of very dense poorly graded gravel with silt and sand to a silty sand with gravel.

- **Bedrock.** Bedrock underlying the Phase 1 Project Site consists of a fine-grained sedimentary rock known as Cambridge Argillite and was typically described as hard, slightly to moderately weathered, gray, and thinly bedded with joints dipping at low to high angles.

Refer to Figure 5.6.

5.12.1 Foundation Construction

Foundations for new buildings planned in the Phase 1 Project Site will consist of end bearing piles driven to glacial till or bedrock with consideration of a partial level of below grade parking.

Because the Phase 1 Project is to be supported on deep foundations with limited below grade excavation, the impacts to adjacent properties due to foundation installation activities will be limited.

5.13 Construction

The following generally describes the potential temporary impacts resulting from construction activities and proposed mitigation measures anticipated to reduce these impacts. As design progresses, construction mitigation will be reviewed and refined by appropriate regulatory agencies through the development and submission of a Phase 1 Project specific Construction Management Plan (“CMP”). The overall duration of construction for the Phase 1 Project is anticipated to last approximately 18 months.

5.13.1 Overview

Construction activities will be accommodated within current Phase 1 Project Site boundaries. Details of the overall construction schedule, work hours, number of construction workers, worker transportation and parking, number of construction vehicles and routes will be addressed in the CMP to be filed with BTD in accordance with the City’s transportation maintenance plan requirements. The CMP would also include more detail on:

5.13.2 Air Quality

No adverse air quality impacts from the construction of the Phase 1 Project are anticipated. Fugitive dust mitigation measures may include, as necessary:

- Wet suppression to minimize the generation of dust from excavation operations and on-site vehicle traffic, with provisions for any runoff control;
- Spraying any piles of excavation materials with soil cement or calcium chloride overnight and on weekends, and securely covering long-term material stock piles;

- Compacting of the soil or the use of gravel to stabilize the Phase 1 Project Site access points;
- Washing vehicle wheels before leaving the Phase 1 Project Site, as necessary, with provisions for runoff control;
- Periodic cleaning of paved streets near the entrances to the Phase 1 Project Site to minimize vehicle mud/dirt carryout;
- Installing fencing around the perimeter of the Phase 1 Project Site to assist in containing wind-blown dust;
- Requiring that trucks hauling excavated material from the Phase 1 Project Site install secure covers over their loads; and
- Encouraging the construction contractors for the Phase 1 Project to implement the Massachusetts Diesel Retrofit Program control measures for heavy-duty diesel equipment.

5.13.3 Noise

The construction of the Phase 1 Project will be performed in a manner that complies with the DEP and City of Boston noise regulations. To ensure compliance with these regulations during construction, the Proponent, to the extent practicable, will seek to incorporate into the general construction contract the following mitigation measures:

- Limited vehicle idling to five minutes;
- Limited construction vehicle warm-up to ten minutes;
- Insuring construction vehicles have ambient leveling sensors on the back up alarms; and
- Limiting construction to the hours allowable by City of Boston regulations.

5.13.4 Traffic

To minimize impacts to abutters and the local community, the Proponents will consider all available measures, including information on construction activities, specific construction mitigation measures, and construction materials access and staging area plans. Barricades, walkways, lighting and signage will be used to ensure public safety throughout the construction period.

5.13.5 Odor

If large quantities of organic soils are encountered, the Project Team will undertake appropriate mitigation measures to control the odor associated with their removal, such as:

- Cut and cover utility trenches whenever possible;
- Protection of excavated materials with plastic sheathing to encapsulate odors; and

- Removal of excavated materials from the Phase 1 Project Site in a covered vehicle on a frequent basis.

5.13.6 Rodents

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

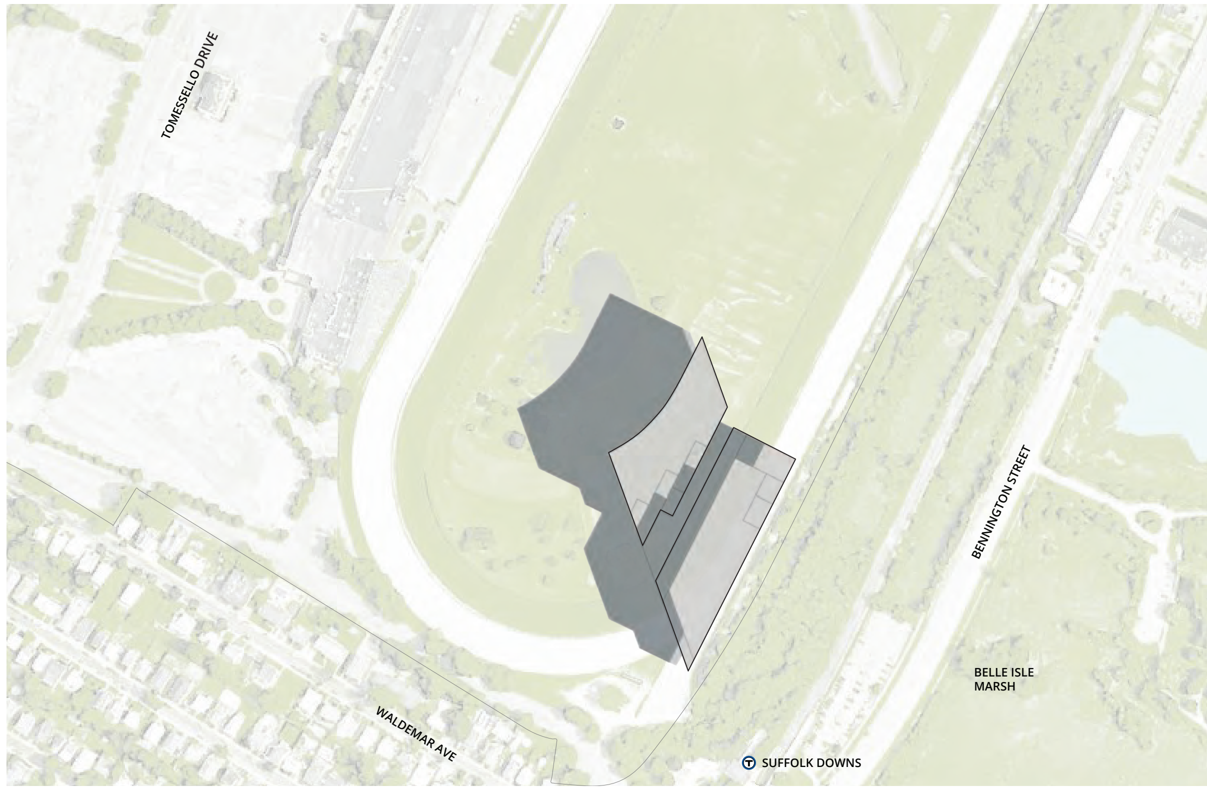
5.13.7 Construction Staging – Public Safety

Prior to the beginning of construction, the Construction Manager will produce a site-specific safety plan to be reviewed and approved by the City as well as all other agencies impacted in conjunction with the CMP.

The entire perimeter of the Phase 1 Project construction site will be protected with a construction fence with debris net on top of concrete barriers to separate the construction activities and general public. Vehicular gates will be provided for construction traffic in alignment with the flow of traffic on perimeter roads to allow safe entrance and exiting for construction vehicles. Sidewalks around the Phase 1 Project Site perimeter will be maintained during construction, and overhead protection will be utilized in areas where the new construction is in close proximity to the general public.

5.14 Rodent Control

Post-construction during building operations, trash and solid waste removal will be handled by building management. A service contract with a professional pest control firm will be maintained to address rodent/pest control during the operational phase of the Phase 1 Project, as needed. In addition, no open top dumpsters will be allowed as an additional precaution to deter infestation.



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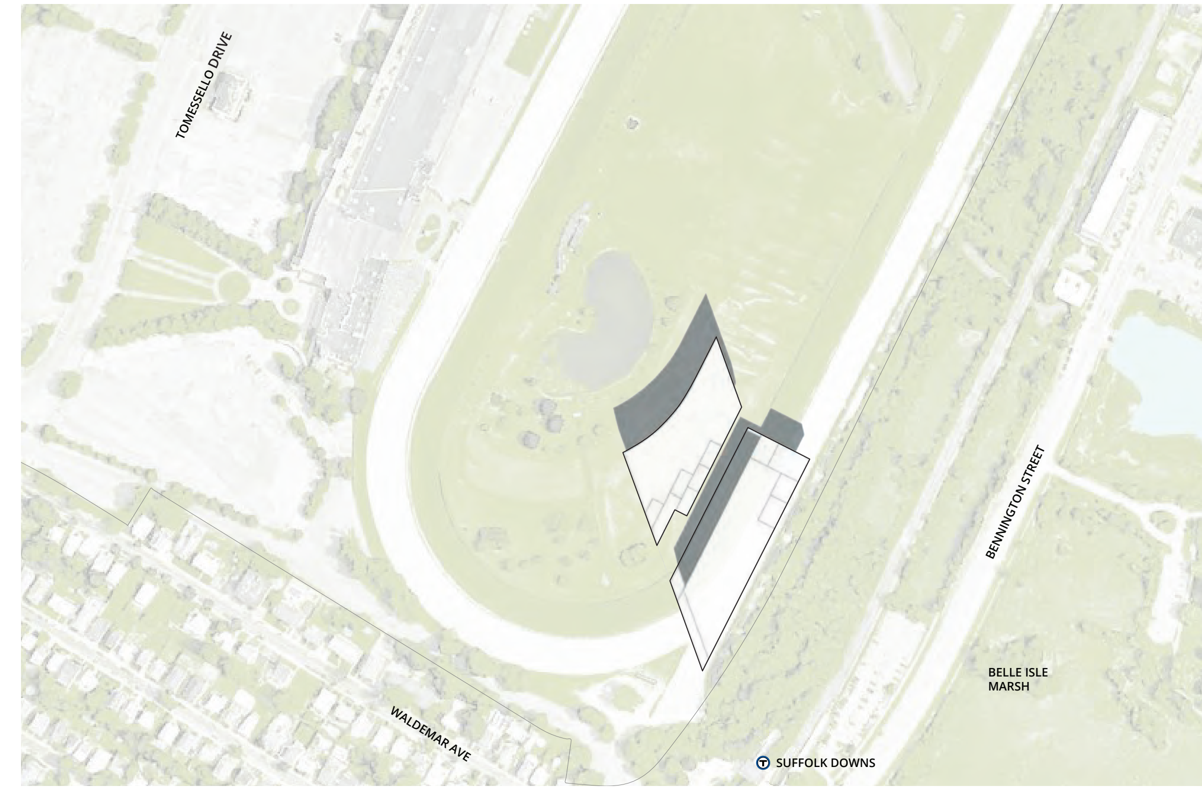

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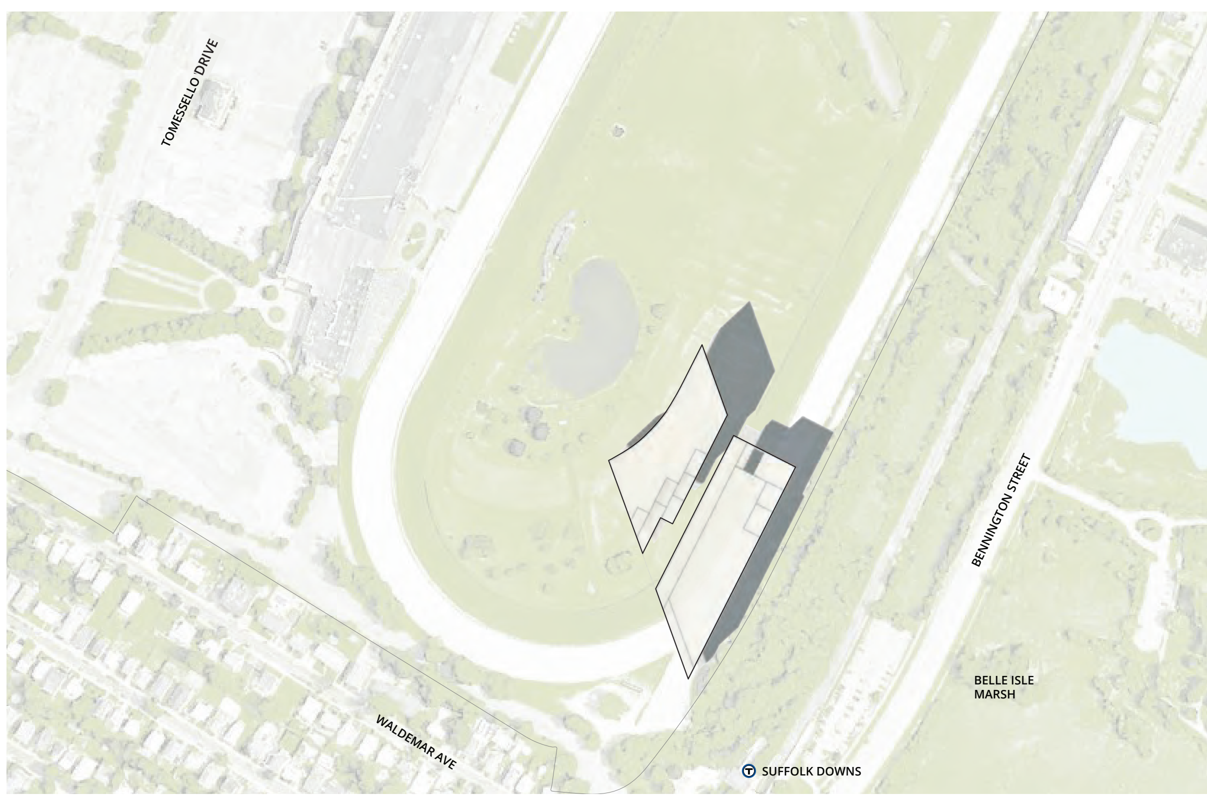

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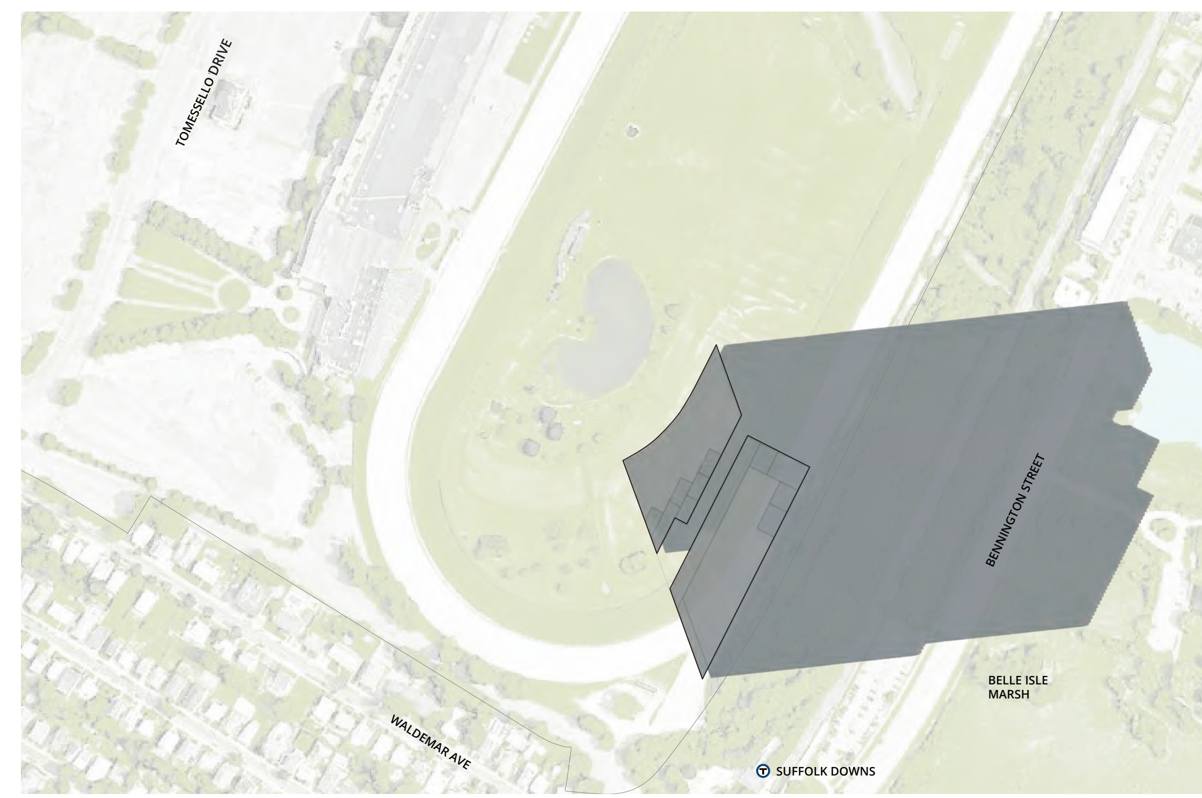

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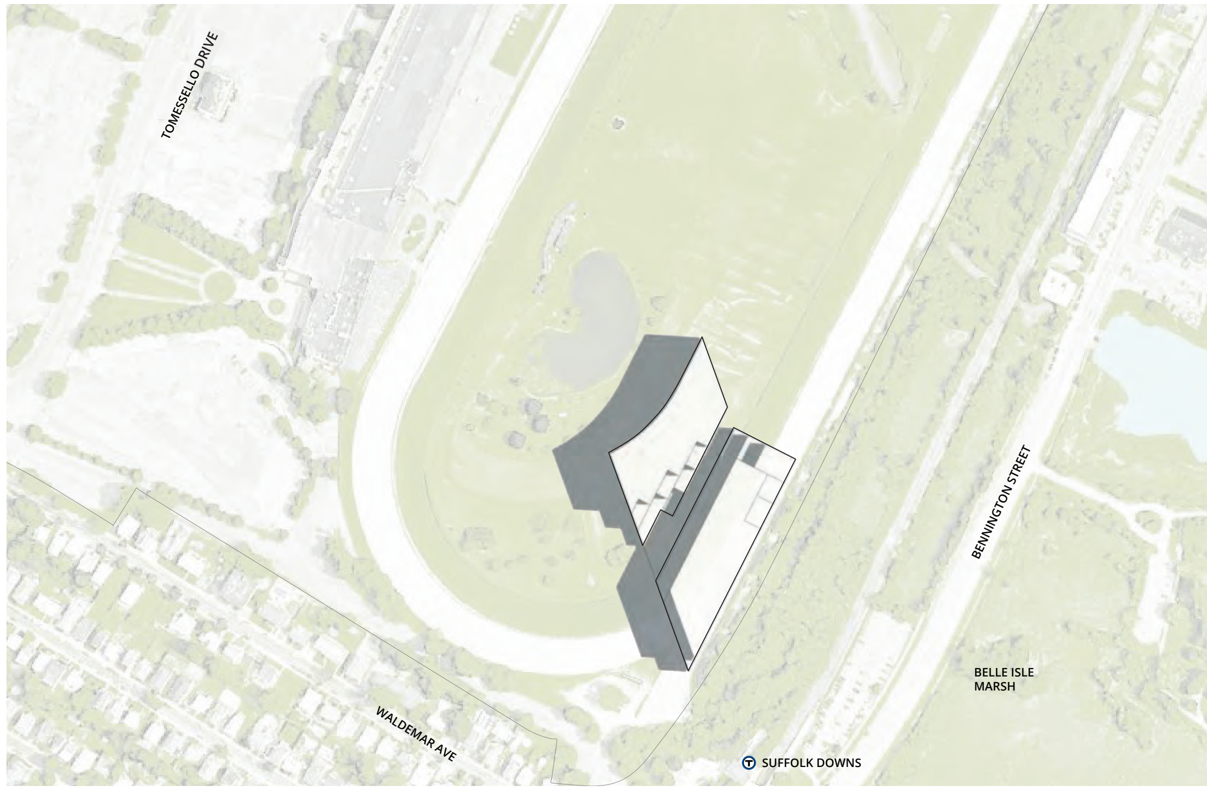
5.1a

Phase 1 Shadow Study

Vernal/Autumnal Equinox



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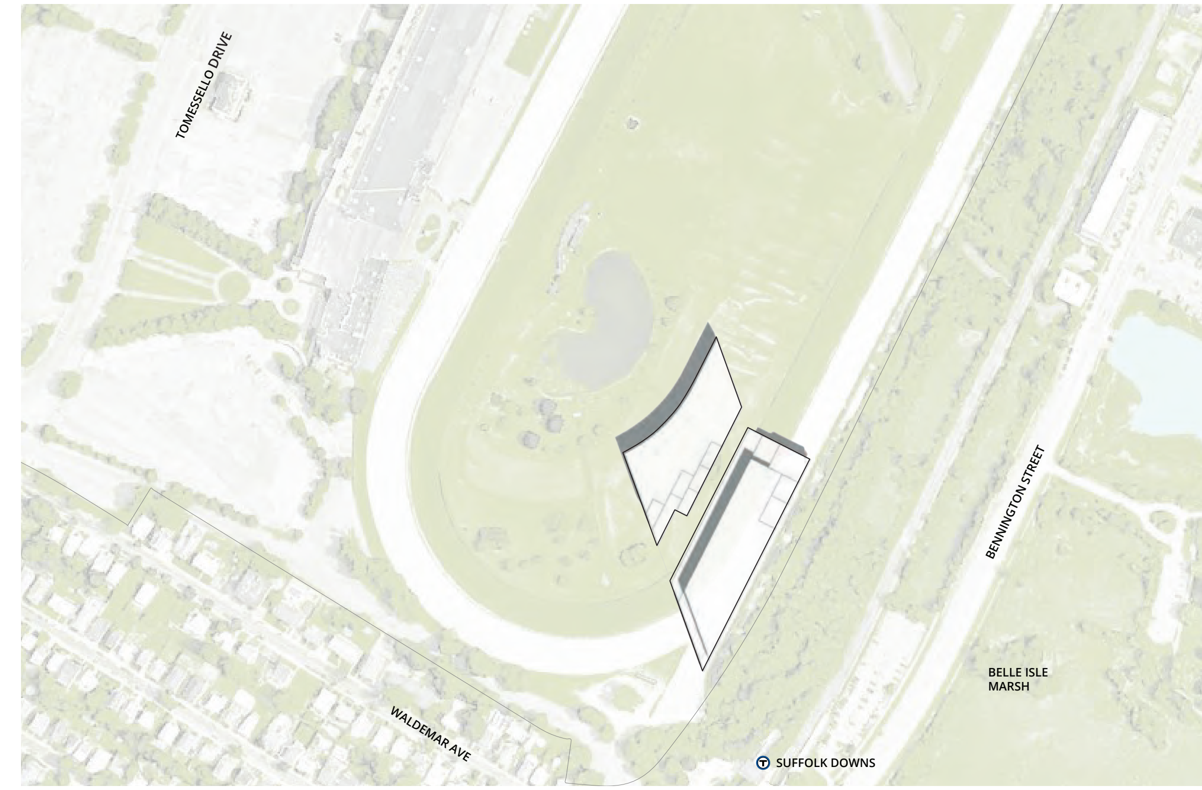

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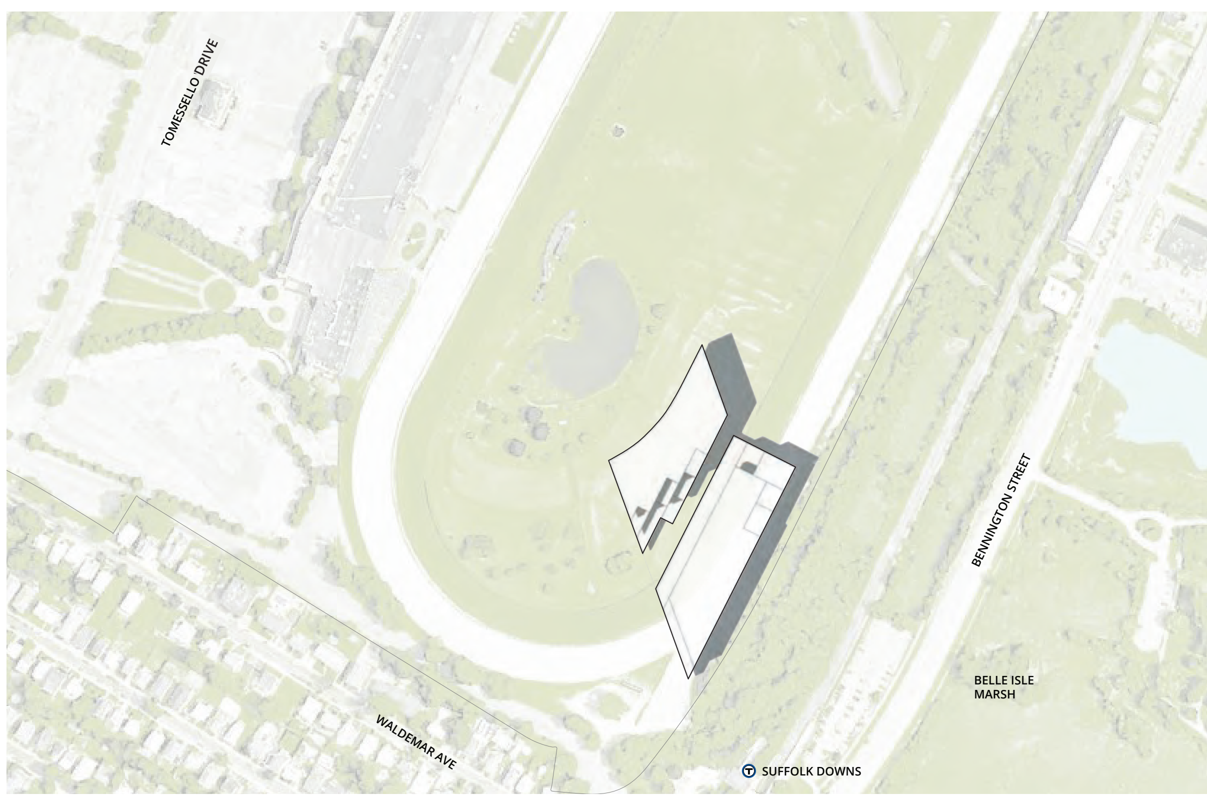

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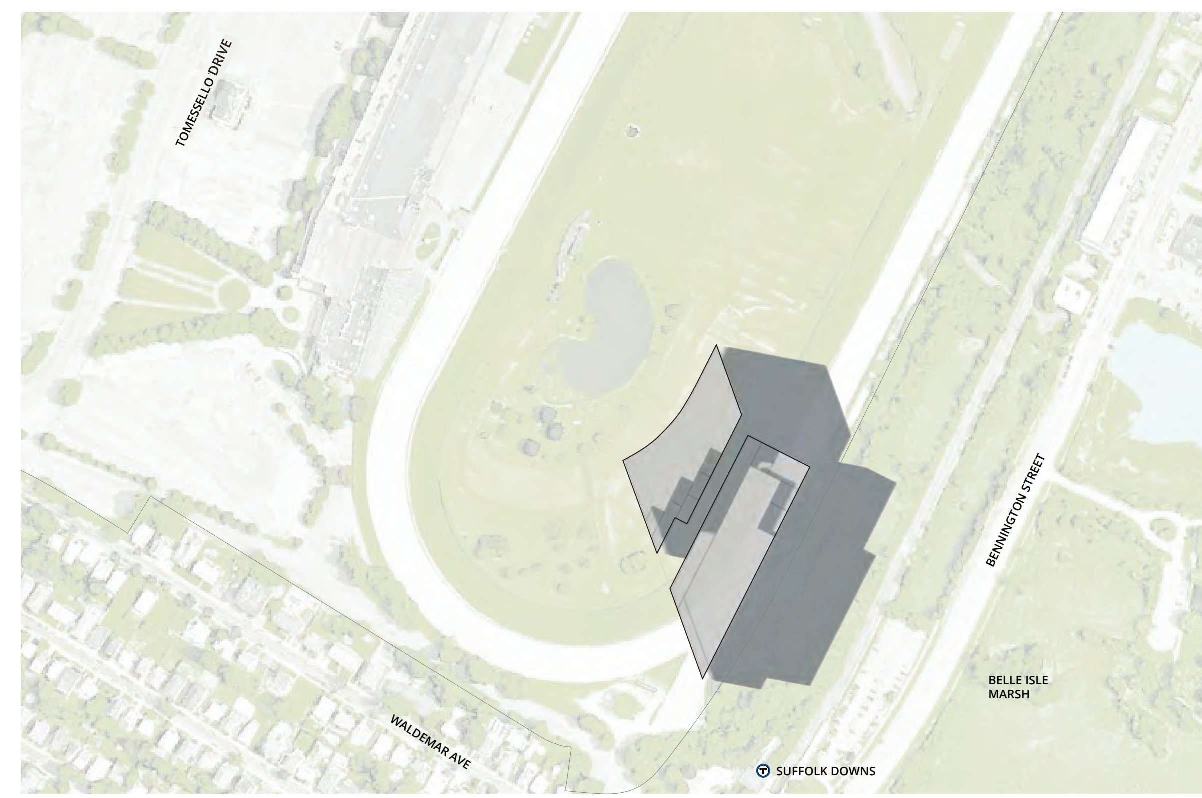

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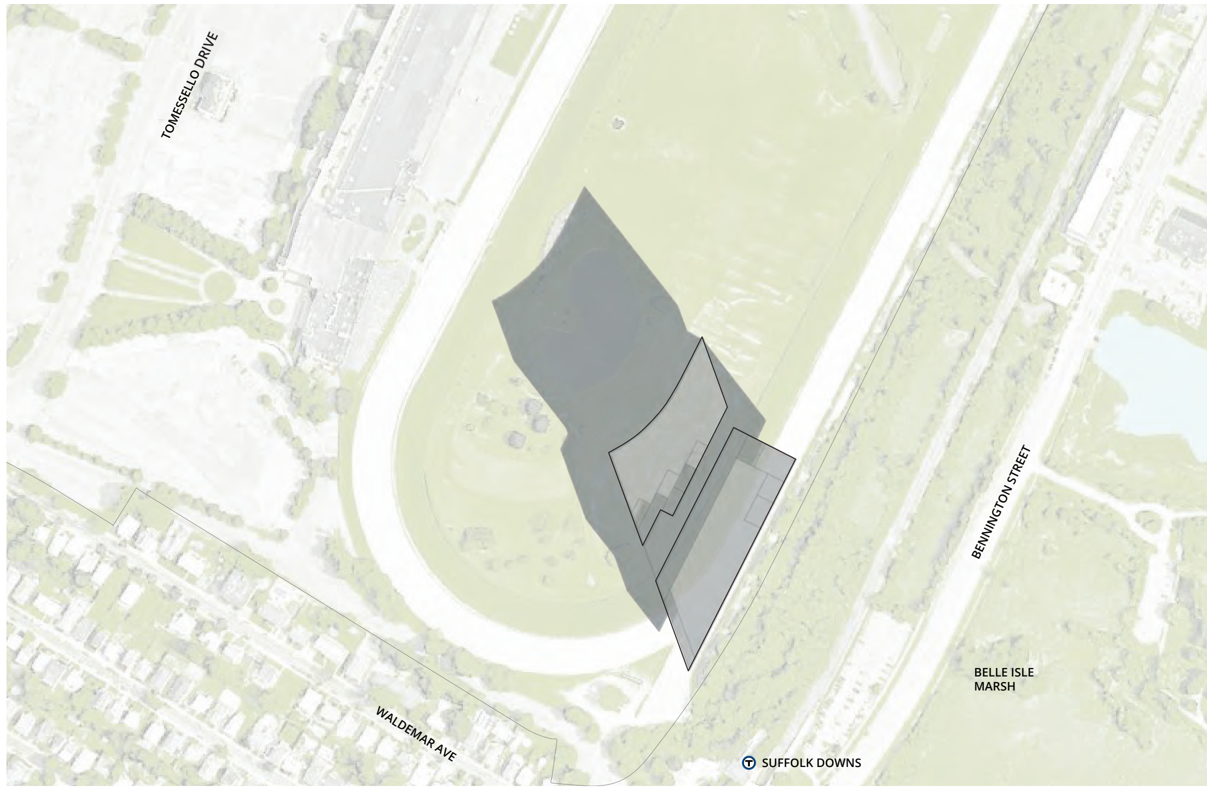
5.1b

Phase 1 Shadow Study

Summer Solstice



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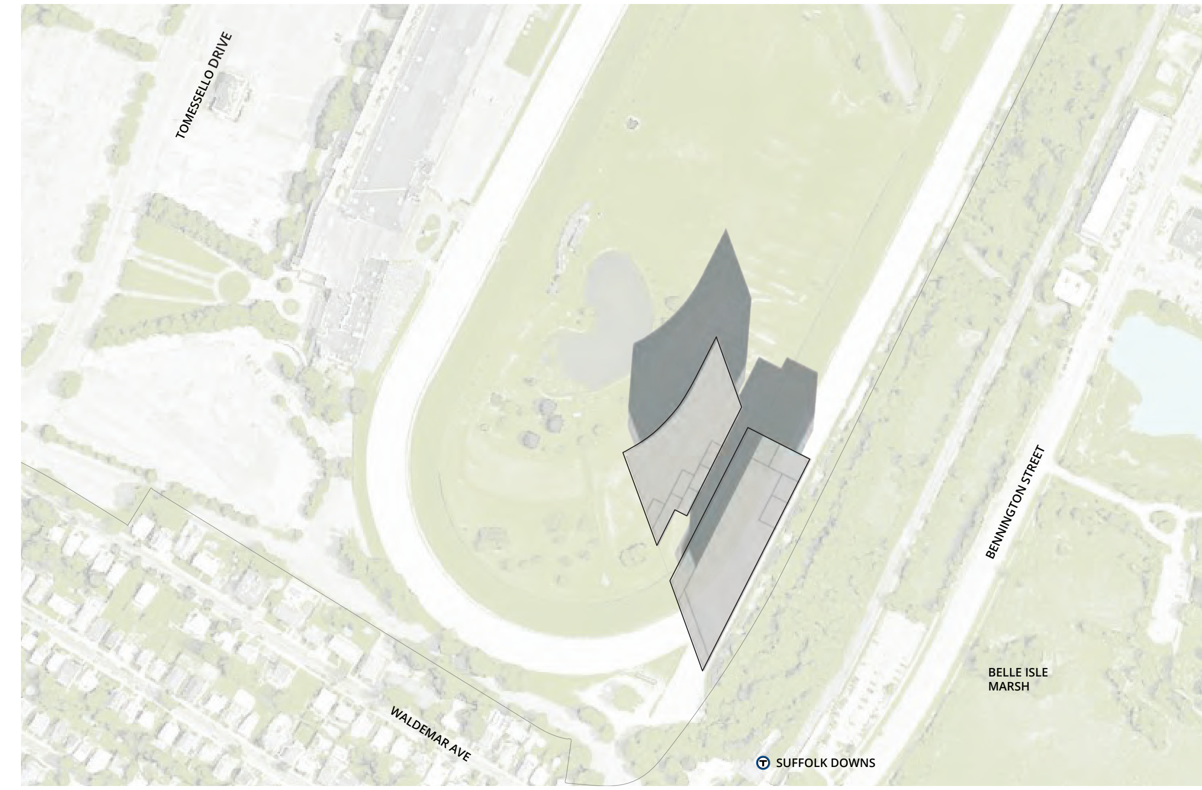

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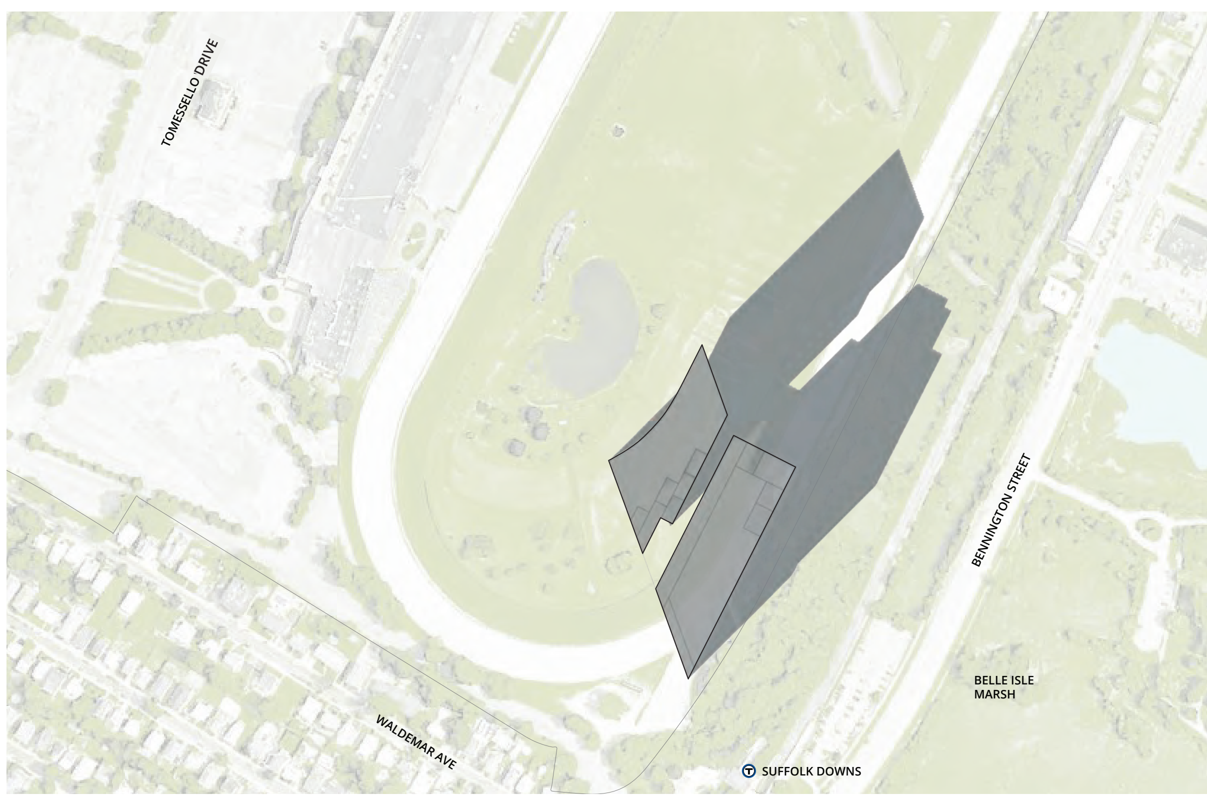

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5.1c

Phase 1 Shadow Study

Winter Solstice

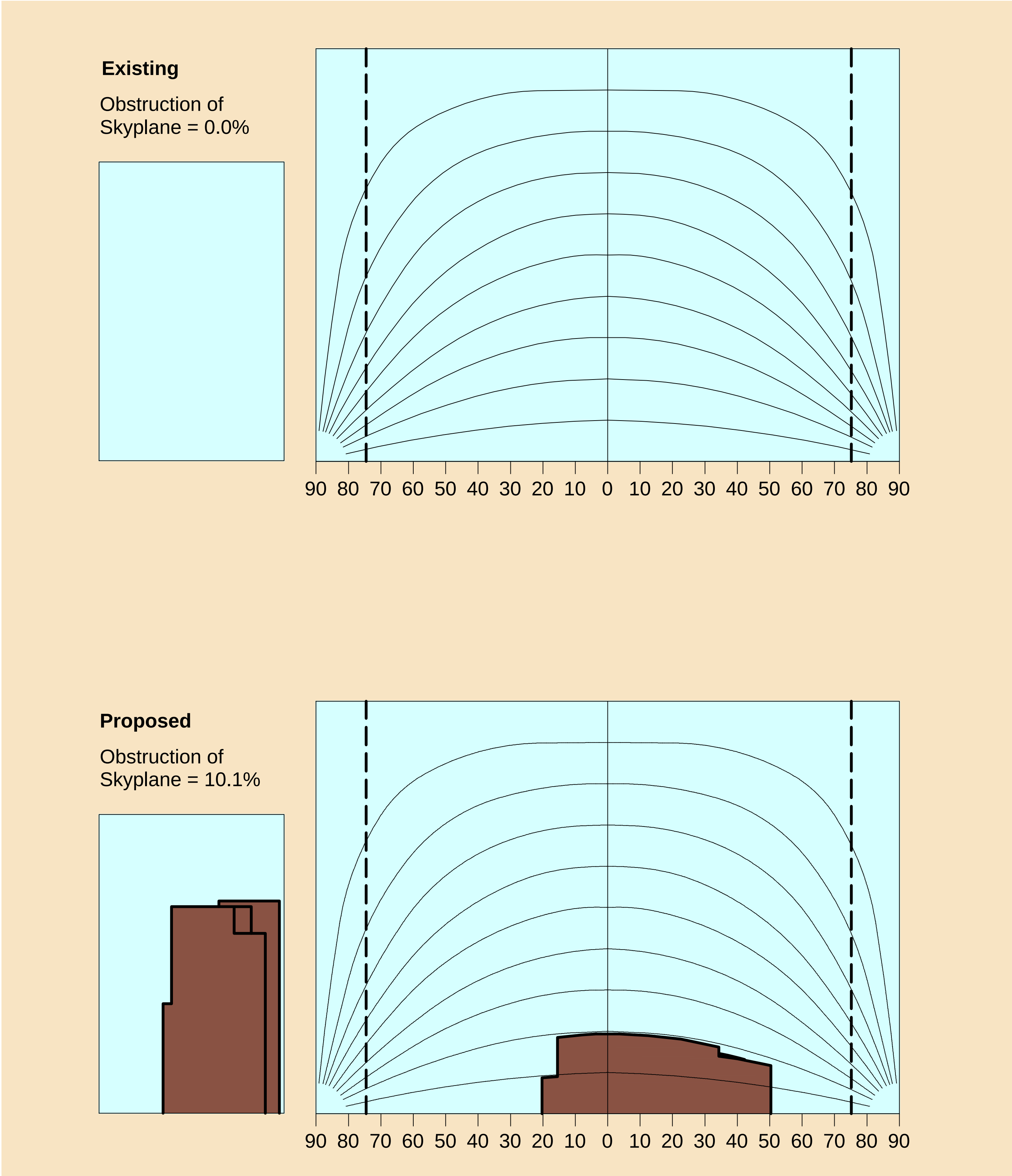
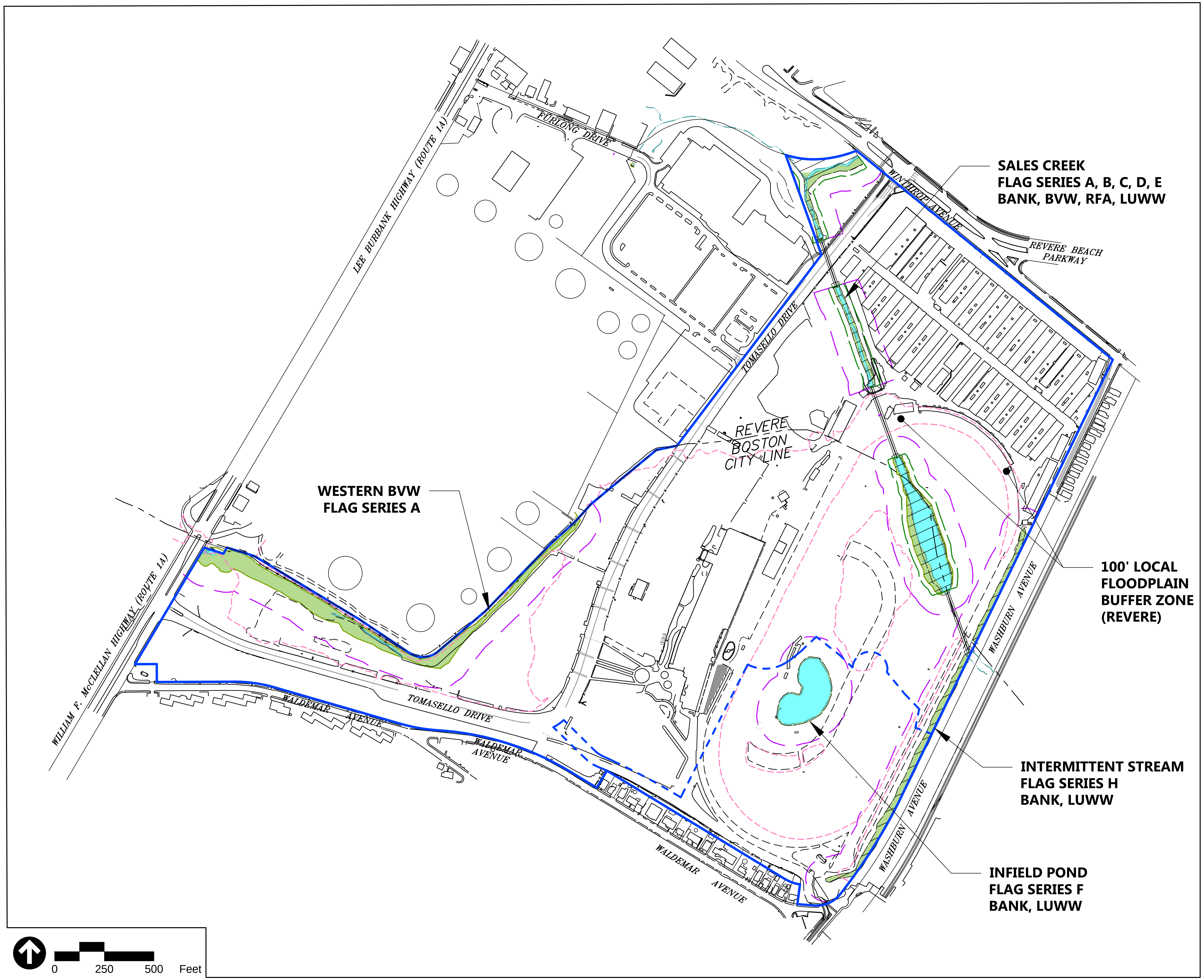


Figure 5.2

Daylight Analysis

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts



- Project Site
- Phase 1 Project Site
- Top of Bank/Mean Annual High Water
- Approximate Top of Bank/Mean Annual High Water
- Bordering Vegetated Wetland Boundary
- Approximate Boundary of Bordering Vegetated Wetland
- 100' Buffer Zone Boundary
- 25' Riverfront Area Boundary
- 100-year Floodplain (Land Subject to Coastal Storm Flowage) Boundary
- Edge of Water
- Municipal Boundary
- Bank or Bordering Vegetated Wetland
- Water Bodies/Waterways
- Outstanding Resource Waters

BVW Bordering Vegetated Wetland
RFA Riverfront Area
LUWW Land Under Water Bodies and Waterways

Source:
Wetland Resource Areas confirmed by Orders of Resource Area Delineation issued by the Boston and Revere Conservation Commissions (MassDEP File No. 006-1546 dated September 20, 2017 and MassDEP File No. 061-0705 dated October 4, 2017, respectively).

The 100 year flood line is published by FEMA with a base flood elevation (BFE) determined. The BFE across the Project Site was established by determining the BFE on the surface created by the topographic survey.

Outstanding Resource Water limits established based upon 314 CMR 4.00 Massachusetts Surface Water Quality Standards.

Figure 5.3

On-Site Wetland Resource Areas

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Source: BING

- Project Site
- Phase 1 Project Site
- Town Line
- M# Monitoring Locations
- R# Receptor Locations

Figure 5.4

Noise Receptor Locations

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

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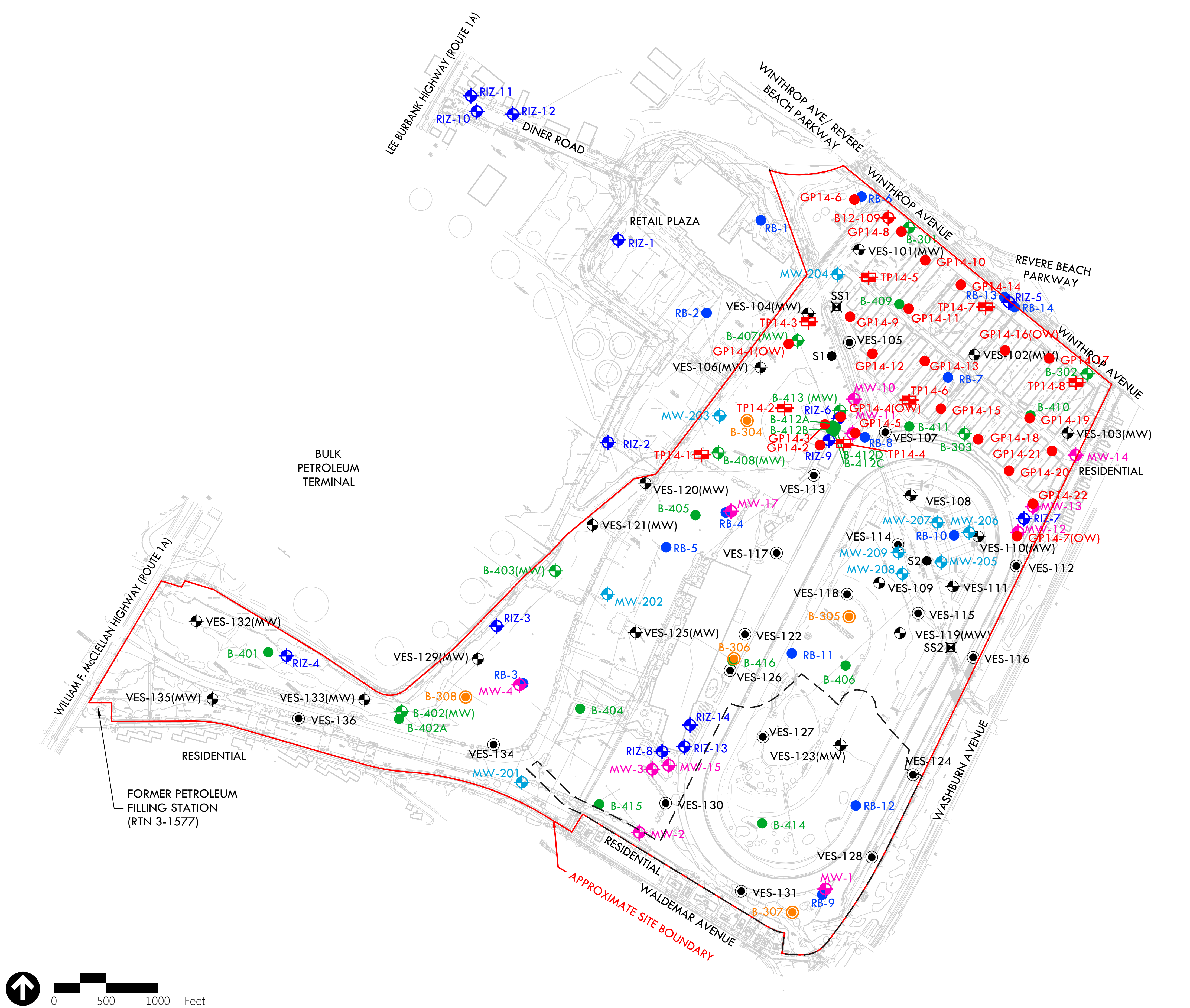

LEGEND:

----		PHASE 1 PROJECT SITE
	VES-101(MW)	MONITORING WELL - 2017
	VES-105	SOIL BORING - 2017
	GP-14-10	SURFICIAL SOIL/ STOCKPILE SAMPLE - 2017
	SS2	SEDIMENT SAMPLE - 2017
	B-304	SOIL BORING - DECEMBER 2006
	B-402(MW)	MONITORING WELL - 2006
	B-401	SOIL BORING INSTALLED - (2006) 300 SERIES - GEOTECHNICAL 400 SERIES - ENVIRONMENTAL
	RIZ-1	MONITORING WELL - (1996)
	RB-1	SOIL BORING - (1996)
	MW-201	MONITORING WELL - (1991)
	MW-1	MONITORING WELL - (1986)
	WE(OW)-4	WELL INSTALLED
	GP14-2	GEOPROBE BORING - (2014)
	TP14-1	TEST PIT - (2014)
	B12-109	TEST BORING - (2012)

PREPARED BY: VERTEX

Figure 5.5a

Sample Locations

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

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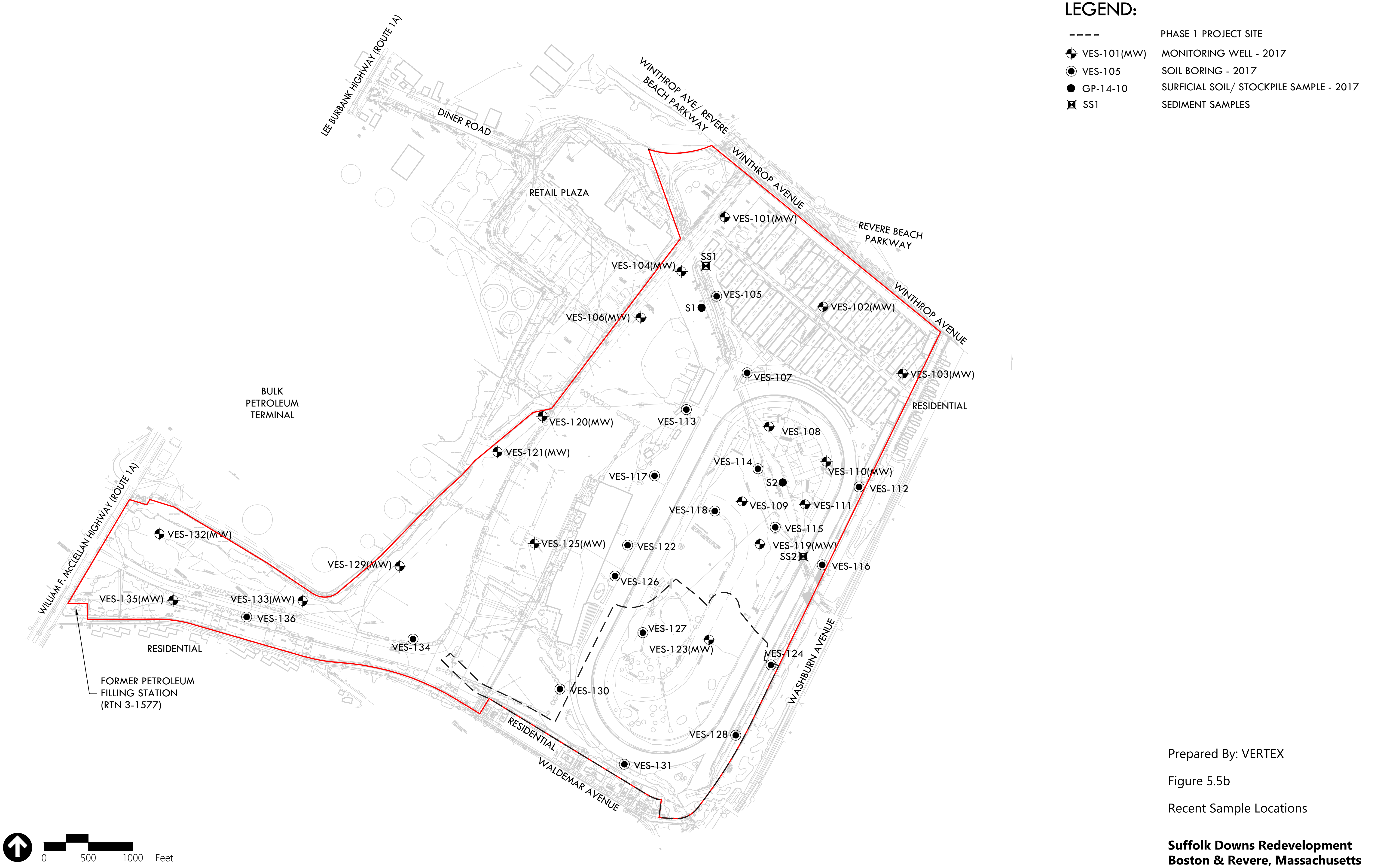

Prepared By: VERTEX

Figure 5.5b

Recent Sample Locations

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

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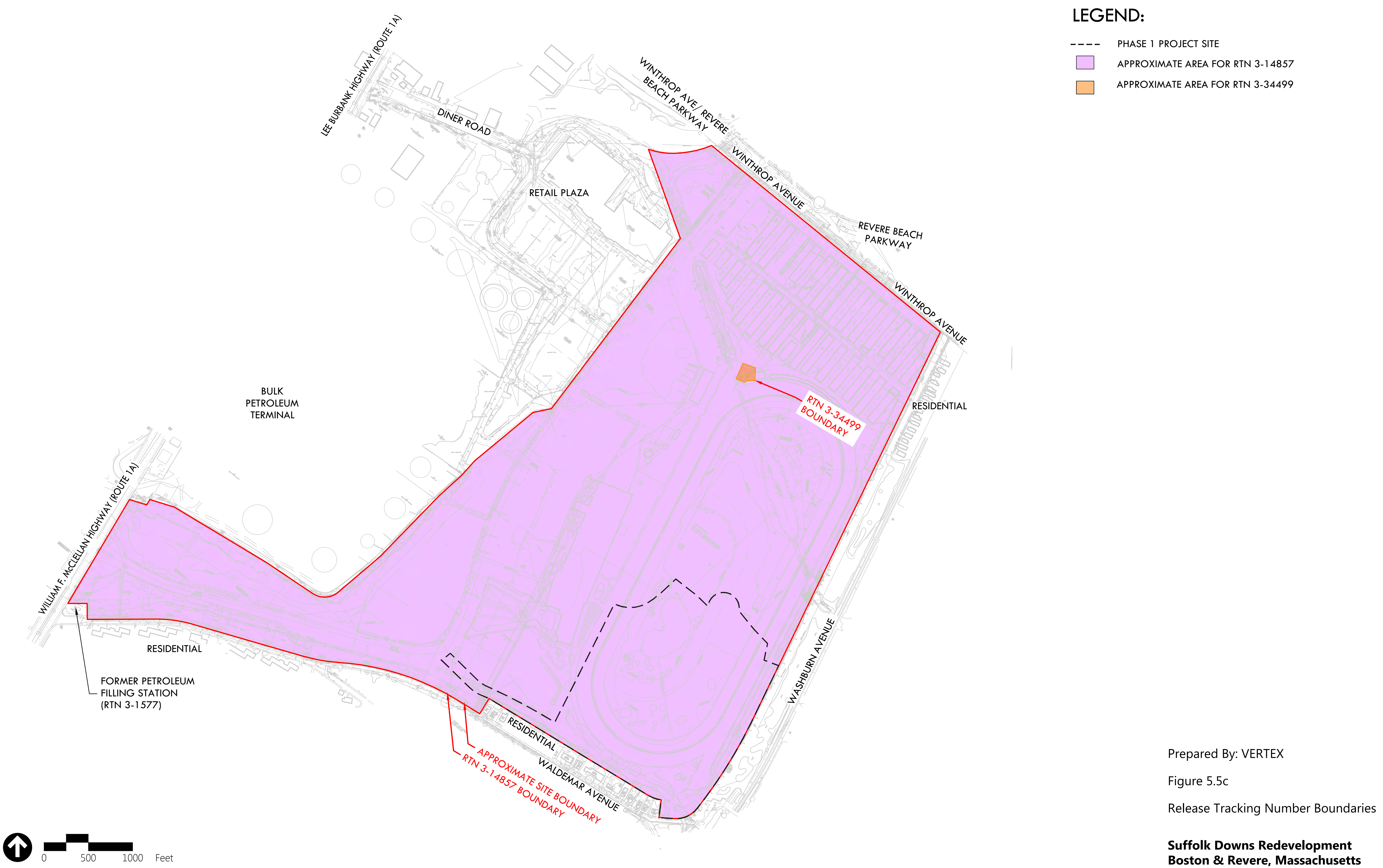

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Figure 5.5c

Release Tracking Number Boundaries

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

STRATA	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5
	THICKNESS IN FEET				
FILL	5 TO 15	5 TO 10	5 TO 10	10 TO 20	10 TO 20
ORGANICS	10 TO 12	5 TO 10	5 TO 10	0 TO 5	30 TO 50
ESTUARINE	30 TO 50	5 TO 20	10 TO 25	0 TO 10	0 TO 10
MARINE SAND	0 TO 15	10 TO 20	5 TO 10	NE	5 TO 10
MARINE CLAY	0 TO 15	0 TO 10	30 TO 40	30 TO 40	30 TO 50
GLACIOFLUVIAL	0 TO 5	NE	NE	NE	0 TO 15
GLACIAL TILL	0 TO 15	0 TO 15	NE	0 TO 5	0 TO 15
EL. TOP OF BEDROCK (FT)	-40 TO -60	-40 TO -50	-50 TO -70	-40 TO -60	-60 TO -110

NOTES

1. BASE PLAN TAKEN FROM A DRAWING TITLED 9180_TOPO1_051712.dwg, PREPARED BY NITSCH ENGINEERING OF BOSTON, MASSACHUSETTS.
2. LIMITS OF PHASE 1 PROJECT AREA TAKEN FROM DRAWING FILE NAMED "2017-11-21-285402D005C.DWG", UNDATED, RECEIVED ON 21 NOVEMBER 2017, FROM VHB OF BOSTON, MASSACHUSETTS.
3. ALL ELEVATIONS ARE IN BOSTON CITY BASE (BCB) DATUM.

CONDITIONS ARE FOR PLANNING PURPOSES ONLY. ACTUAL CONDITIONS COULD DIFFER FROM THOSE SHOWN HEREIN.

Figure 5.6

Site and Subsurface Conditions Plan

Suffolk Down Redevelopment
Boston & Revere, Massachusetts

6

Historic Resources

Introduction

This chapter identifies properties located within and in the vicinity of the Master Plan Project and Phase 1 Project Sites that are listed in the National and State Registers of Historic Places, and/or are included in the Inventory of Historic and Archaeological Assets of the Commonwealth (the "Inventory").

6.1 Summary of Key Findings and Benefits

The key findings related to historic resources include:

› The Master Plan Project Site includes the Suffolk Downs property, which is included in the Inventory. Suffolk Downs is not listed in the State or National Registers of Historic Places.

› The Suffolk Downs race track is no longer an economically viable facility and the existing buildings associated with the race track are in poor condition, underutilized, and cannot meet the projected needs of the Phase 1 Project.

› There are six historic resources located within a one-quarter-mile radius of the Master Plan Project Site.

› The Phase 1 Project will not adversely affect any previously-recorded resource.

6.2 Phase 1 Project Impacts

The Phase 1 Project is located in the southeastern corner of the Master Plan Project Site, which provides convenient access to the nearby Suffolk Downs MBTA Blue Line Station. A portion of the Suffolk Downs race track is located within the Phase 1 Project Site. This site element is included in the Inventory, but not listed in the State or National Registers of Historic Places. The new office building proposed as part of the Phase 1 Project will be located on this small portion of the race track (Figure 1.7).

The Suffolk Downs race track and associated buildings have been underutilized for over 20 years, due to the public's diminishing interest in horse racing. Retention of the race track is not feasible to meet programmatic requirements of the proposed construction, nor is retention of the race track economically viable. The remaining buildings and structures within Suffolk Downs, including the clubhouse, grandstand, vacant administration building, pump house, barns, and ancillary structures, are not included within the Phase 1 Project Site and will not be impacted.

In addition to Suffolk Downs, three inventoried properties are located within a one-quarter-mile radius of the Phase 1 Project Site; there are no archaeological resources on or within a one-quarter-mile of the Phase 1 Project Site.

Given the distance and intervening structures between the Phase 1 Project Site and the above-mentioned historic resources, construction of the Phase 1 Project will not adversely affect any previously-recorded resource.

The Phase 1 Project is not subject to Article 85 of the Boston Code (Demolition Delay), as no buildings are proposed for demolition. Therefore, the Phase 1 Project will not require the filing of a Demolition Delay application with the Boston Landmarks Commission ("BLC").

6.3 Regulatory Context

6.3.1 Massachusetts Historical Commission

Massachusetts Historical Commission ("MHC") has review authority over projects requiring state or federal funding, licensing, permitting, and/or approvals, in order to evaluate potential direct or indirect impacts to properties listed or eligible for listing in the National and State Registers of Historic Places, in compliance with State Register Review requirements (M.G. L. Chapter 9, Sections 27-27c, as amended by Chapter 254 of the Acts of 1988) and Section 106 of the National Historic Preservation Act of 1966 (if necessary). The filing of this EPNF will initiate MHC review under MEPA and the MHC's State Register Review process. MHC review will also be undertaken in connection with review of the Master Plan Project.

6.3.2 Boston Landmarks Commission

The submission of this EPNF initiates BLC's review of the Phase 1 Project under the BPDA Article 80B, Large Project Review process, in association with BED. No buildings exist on the Phase 1 Project Site and, therefore, Demolition Delay under Article 85 of the Boston Code is not applicable to the Phase 1 Project. A Demolition Delay application will be submitted to the BLC for the Master Plan Project.

6.4 Historic Resources

A review of the State and National Registers and Inventory was undertaken to identify previously recorded above-ground and archaeological resources on or within a one-quarter-mile radius of the Master Project Site. The Master Project Site contains Suffolk Downs, which is included in the Inventory (MHC Area BOS.ABQ). In addition, one National Register District (Revere Beach Parkway), and four inventoried properties are located within a one-quarter-mile radius of the Master Plan Project Site.

The names and addresses of properties listed in the State and National Registers of Historic Places and included in the Inventory within a one-quarter-mile radius of the Project Site are listed in Table 6-1 and depicted in Figure 6.1. A description of the historic resources in the vicinity of the Master Plan Project Site follows.

Table 6-1 Historic Resources within and in the Vicinity of the Project Site

No.	Resource Name	Location	MHC Inventory No.	Designation
A	Revere Beach Parkway	N/A	REV.H	NRDIS
1	Suffolk Downs	111 Waldemar Avenue, Boston	BOS.ABQ / REV.J	INV
2	Our Lady of Lourdes Catholic Church Complex	1, 2, Endicott Avenue, Revere	REV.G	INV
3	Residence	54-56 Orient Avenue, East Boston	BOS.109	INV
4	Residence	75-79 Orient Avenue, East Boston	BOS.112	INV
5	Don Orione Complex	111, 120-150 Orient Avenue, East Boston	BOS.110, 111, 113, 114, 902	INV

NRDIS National Register of Historic Places, District
INV Listed in the Inventory of Historic and Archaeological Assets of the Commonwealth; no current designation

6.4.1 Historic Resources on the Project Site

Suffolk Downs (BOS.ABQ / REV.J)

The 161-acre Suffolk Downs property (i.e., the Master Plan Project Site) includes the one-mile long race track, connected Clubhouse and Grandstand, administration building, pump house, barns, and ancillary structures.

Constructed in 1935 by Joseph A. Tomasello at a cost of two million dollars, the race track facility served as the first major race track in New England. Originally designed in the Art Deco Style, the property has undergone substantial renovations through the years, including enclosure of the grandstand in 1945, major renovations and modifications in 1962 with a new grand entrance and the joining and complete enclosure of the grandstand and clubhouse, a major renovation in 1992, and a series of updates and improvements over the past 5-10 years. Refer to Figures 6.2 and 6.3a through 6.3f for existing conditions photos of the Master Plan Project Site.

6.4.2 Historic Resources within One-Quarter-Mile Radius of the Project Site

Revere Beach Parkway (REV.H)

Originally built between 1896 and 1904 to link the interior areas north of Boston with the new Revere Beach Reservation, the Revere Beach Parkway is a 5.3-mile curvilinear boulevard that runs between Wellington Circle in Medford and Eliot Circle in Revere. Designed by Olmsted, Olmsted and Eliot, and its successor firm, Olmsted Brothers for the Metropolitan Park Commission, the Parkway was one of the first suggested by Charles Eliot in his 1893 report to the Temporary Metropolitan Park Commission, and remains emblematic of the firm's principles of parkway creation. The Parkway was listed in the National Register in 2007.

Our Lady of Lourdes Roman Catholic Church Complex (REV.G)

The Our Lady of Lourdes Roman Catholic Church Complex is comprised of the church, rectory, garden with shrine, and garage. Designed by Maginnis, Walsh and Sullivan in 1907, the Neoclassical complex is associated with the development of the Beachmont section of Revere in the early twentieth century.

54-56 and 75-79 Orient Avenue (BOS.109 & BOS.112)

The residential properties at 54-56 and 75-79 Orient Avenue were constructed ca. 1915 and executed in the Colonial Revival Style.

Don Orione Complex (BOS.110, BOS.111, BOS.113, BOS.114, BOS.902)

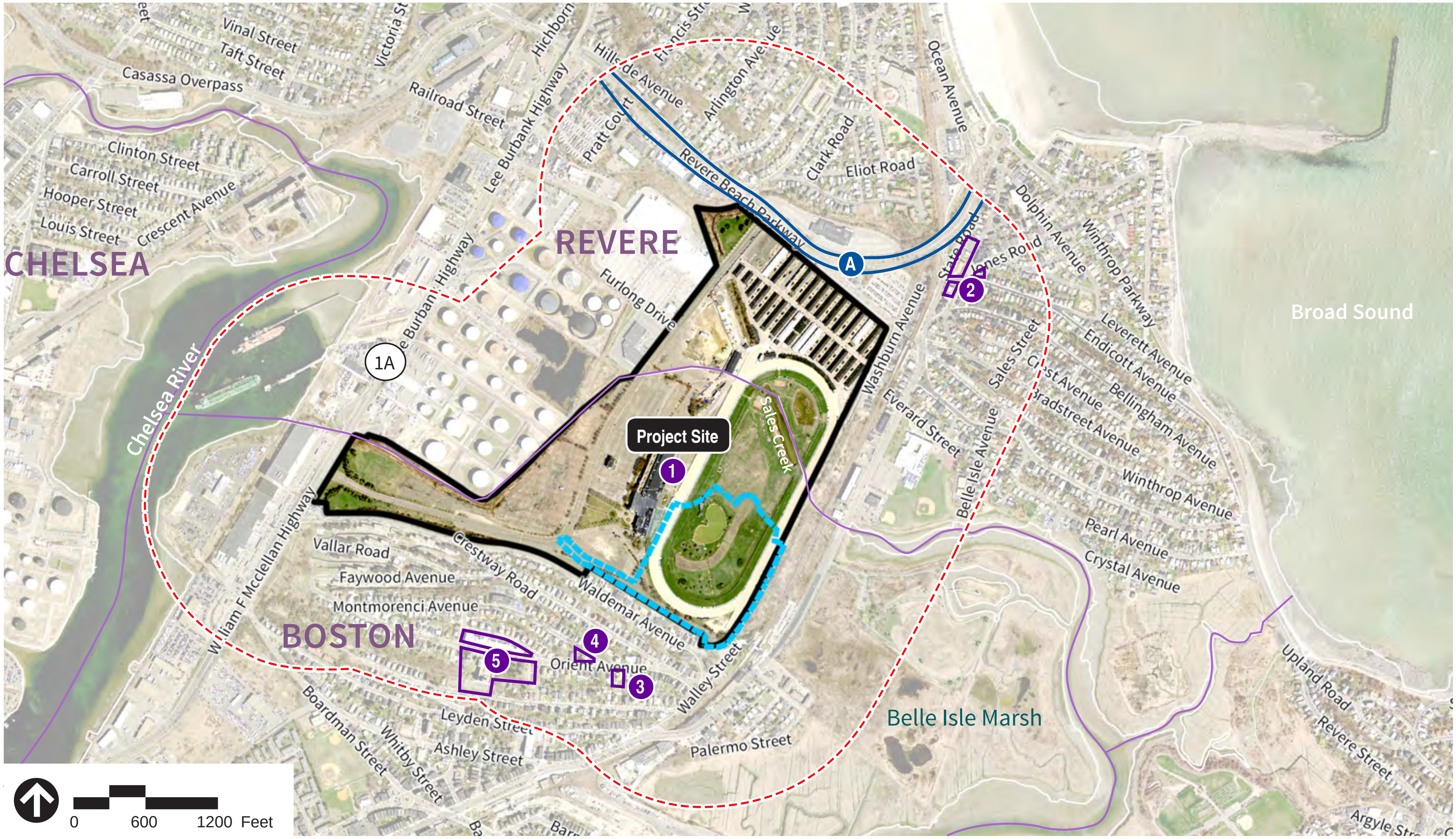
The Don Orione Complex at the top of Orient Heights in East Boston is the national headquarters for the Don Orione religious order. The Madonna Queen National Shrine (BOS.902) features a full-size replica of the Madonna Queen of the Universe Statue at the Don Orione Center in Rome, Italy, and was executed by Jewish-Italian sculptor Arrigo Minerbi at no cost as a gesture of gratitude to the Don Orione priests for helping him escape the Nazis during World War II. The complex also includes the Mother Queen Shrine Chapel (BOS.114), Italianate style Don Orione Rest Home (BOS.110), Don Orione Nursing Home (BOS.113), and the Franciscan Sisters of Mary Convent (BOS 111).

6.4.3 Archaeological Resources on the Project Site

The Master Plan Project Site is located on former marshland that was filled beginning in the 1890's and completed in the early 20th century to accommodate speculative residential development prior to the construction of Suffolk Downs. No previously identified archaeological resources are located within the Master Plan Project Site or immediate vicinity, including the Phase 1 Project Site and, therefore, no impacts to archaeological resources are anticipated as a result of the Phase 1 Project.

6.5 Evaluation of Potential Impacts to Nearby Historic Resources

The DEIR/DPIR to be submitted for the Master Plan Project will include an evaluation of any potential impacts the build-out of the broader Master Plan Project Site may have on historic resources located on and within a one-quarter-mile radius of the Master Plan Project Site, including, as applicable, visual, urban design, and shadow impacts. Potential impacts to historic resources are expected to be limited to Revere Beach Parkway improvements as a result of the Master Plan Project.



Source: BING

- Project Site
- Phase 1 Project Site
- 1/4-Mile Radius
- Town Line

Properties Included in the Inventory of Historic and Archaeological Assets of the Commonwealth

1. Suffolk Downs (INV)
2. Our Lady of Lourdes Catholic Church Complex (INV)
3. 54-56 Orient Avenue (INV)
4. 75-79 Orient Avenue (INV)
5. 111, 120-150 Orient Avenue (INV)

Historic Properties Listed in the State and National Registers

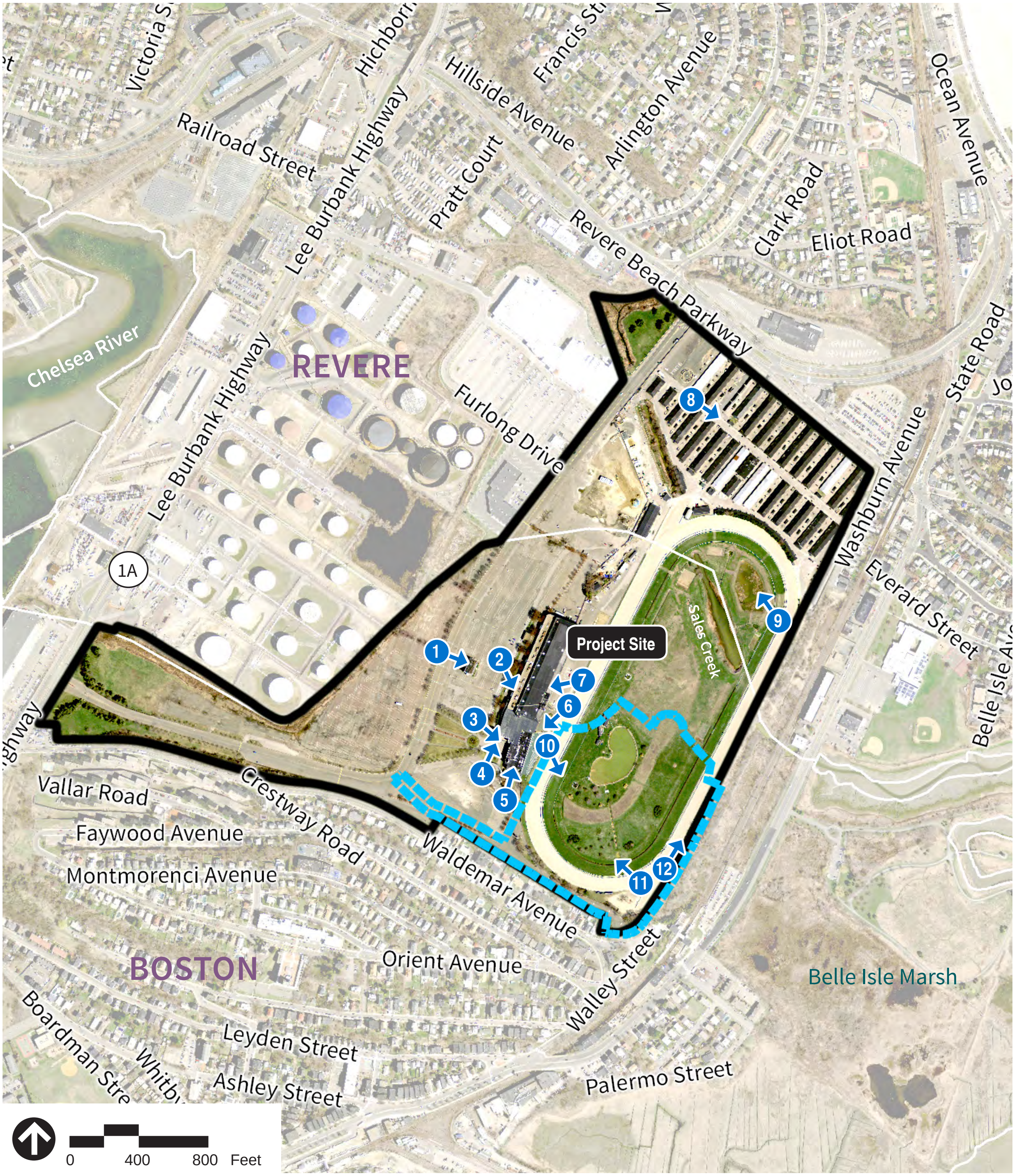
A. Revere Beach Parkway (NRDIS)

NRDIS National Register of Historic Places, District
INV Listed in the Inventory of Historic and Archaeological Assets of the Commonwealth; no current designation

Figure 6.1

Historic Resources within 1/4 Mile of Project Site

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts



Source BING

Project Site

Figure 6.2

Site Photos Key

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

1

2

Figure 6.3a

Site Photos

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

3

4

Figure 6.3b

Site Photos

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

5

6

Figure 6.3c

Site Photos

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

7

8

Figure 6.3d

Site Photos

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

9

10

Figure 6.3e

Site Photos

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

11

12

Figure 6.3f

Site Photos

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

7

Infrastructure

This chapter describes the infrastructure needs for the Phase 1 Project, including stormwater management, water and wastewater, and utilities. As demonstrated below, adequate infrastructure facilities and services are available within the Master Plan Project Site to serve the Phase 1 Project. Figure 7.1 depicts the proposed infrastructure for the Phase 1 Project. Additionally, gas, electric, telephone and telecommunications utilities are also located proximate to the Phase 1 Project Site.

7.1 Summary of Key Findings and Benefits

The key findings related to infrastructure systems associated with the Phase 1 Project include:

- Adequate infrastructure facilities and services are available within or around the Phase 1 Project Site.
- A new stormwater management system will be incorporated to improve the quality of stormwater runoff discharged to the watershed from existing developed areas, as well as the newly developed area. Proposed stormwater management measures will control peak runoff rates, provide water quality treatment, promote groundwater recharge, and promote sediment removal.
- Potential increased storm intensity due to climate change will be addressed as part of the Phase 1 Project by designing the stormwater management system to convey and detain the 10-year and 100-year design storm increased rainfall depths (6.0 and 8.8 inches, respectively) as recommended by BWSC.
- Approximately 39,000 gallons per day ("GPD") of wastewater generation is estimated and approximately 43,000 GPD of potable water is estimated to be required.
- Low- and/or ultra-low flow water fixtures will be utilized to reduce indoor potable water use consistent with the sustainable design approach.
- Inflow/Infiltration ("I/I") mitigation equivalent to a 4:1 removal ratio for every gallon of wastewater proposed will mitigate potential capacity issues in the regional wastewater collection system.
- Energy utilities are available within the vicinity of the Phase 1 Project Site. Natural gas will be supplied by National Grid and electricity will be supplied by Eversource.

7.2 Regulatory Context

All infrastructure for the Phase 1 Project will be designed in accordance with local, state and federal regulations. The following is a summary of key regulations, particularly regarding stormwater, that influence the site design of the Phase 1 Project.

7.2.1 National Pollutant Discharge Elimination System

The Clean Water Act prohibits discharging pollutants through a point source into Waters of the United States unless a permit is obtained under the EPA NPDES program. A NPDES permit contains limits, monitoring and reporting requirements, and other provisions to ensure that a discharge does not degrade water quality or cause harm to public health. It translates the requirements of the Clean Water Act into specific provisions tailored to the operations of each entity discharging pollutants.

Concentrated Animal Feeding Operation NPDES Permit

Under the Clean Water Act, CAFOs are classified as a point source and, therefore, require a NPDES permit. The Master Plan Project Site is classified as a large CAFO since it can stable, confine, feed or maintain 500 horses or more for a total of 45 days or more in any 12-month period. In September of 2015, NPDES Permit No. MA0040228 was issued for Suffolk Downs authorizing discharge to Sales Creek. The NPDES permit includes effluent limitations, monitoring requirements, and other conditions on the discharge.

The conditions of the NPDES permit are required to be adhered to until all horseracing operations cease on the Master Plan Project Site. At such time, the permit is required to be closed-out in accordance with the conditions outlined. The previous owner of the Master Plan Project Site has the right to continue horseracing operations until construction commences. The prior owner is responsible for closure of the CAFO in accordance with the conditions outlined in the CAFO's NDPES permit when such operations cease.

NPDES Construction General Permit

The EPA also requires that all projects that disturb greater than one acre of land obtain a permit for stormwater discharges through the NPDES Construction General Permit ("CGP") for Stormwater Discharges from Construction Activity (2017, EPA). Compliance with the CGP is achieved by the following:

- Developing and Implementing a Stormwater Pollution Prevention Plan ("SWPPP");
- Completing, certifying, and submitting a Notice of Intent to the EPA; and
- Complying with the requirements contained in the CGP and the Order of Conditions.

Compliance with the CGP and its Standard Permit Conditions is the responsibility of the site operator.

7.2.2 DEP Stormwater Standards

In March 1997, DEP adopted a new Stormwater Management Policy to address non-point source pollution. In 1997, DEP published the Massachusetts Stormwater Handbook as guidance on the Stormwater Policy, which was revised in February 2008. The Stormwater Management Standards are regulated under the Wetlands Protection Act Regulations 310 CMR 10.05(6)(k) through (q). The Handbook prescribes specific stormwater management standards for redevelopment projects, including urban pollutant removal criteria for projects that may impact environmental resource areas.

7.2.3 City of Boston Stormwater Requirements

BWSC requires that the volume generated by the first one inch of rainfall from the impervious area on-site, be retained on-site for infiltration or reuse. All stormwater management improvements and connections to BWSC infrastructure are reviewed by BWSC as part of the Site Plan Review process. This approval process includes a comprehensive design review of the proposed service connections, assessment of system demands and capacity, and establishment of service accounts for water, sewer, and stormwater systems.

7.3 Stormwater Management

7.3.1 Existing Drainage Conditions

Figure 7.2 illustrates the Master Plan Project Site-wide drainage system. As described previously, Suffolk Downs was constructed in the early 1930s on marshlands and tidal creeks that were originally filled in the early 20th century in relation to a then-proposed residential development. At that time, the majority of the existing on-site stormwater management system was built and the portion of Sales Creek that passes through the Master Plan Project Site was reconstructed as a drainage channel. This occurred prior to the promulgation of DEP Stormwater Management Standards; therefore, the existing stormwater management infrastructure provides minimal stormwater quality treatment.

The Phase 1 Project Site includes two key drainage areas that drain to two distinct locations on-site. The race track and infield areas drain to the infield pond. The infield pond is an approximately one-acre human-made feature, constructed for ornamental purposes prior to 1938. Drainage channels direct runoff from the race track to the infield pond. The level of the pond is regulated by a water control structure at the northern edge of the pond which artificially controls the mean annual flood level of the pond. Overflow from the pond drains to Sales Creek via an 18-inch culvert.

The existing overflow parking area and area outside of the race track drain to the intermittent stream located along the eastern perimeter of the Master Plan Project Site, which also discharges to Sales Creek. Sales Creek lies within LSCSF as it ultimately discharges into the Atlantic Ocean.[1]

7.3.2 Proposed Stormwater Management System

The Phase 1 Project will include a stormwater management system, including two detention basins designed to improve water quality discharged to the watershed from existing developed areas, as well as the newly developed area. Proposed stormwater management measures will control peak runoff rates, provide water quality treatment, promote groundwater recharge, and promote sediment removal. The elements of the Phase 1 Project stormwater management system are depicted on Figure 7.1.

The proposed basins are designed to maintain pre-development runoff rates up to and including the increased 100-year storm event with a total rainfall depth of 8.8 - inches. While portions of the Phase 1 Project stormwater system are sited in locations of future planned development associated with the Master Plan Project, the ability for the Phase 1 Project to manage stormwater is not dependent on construction of any future system of the Master Plan Project. The Phase 1 Project drainage features will be accounted for in the future Master Plan Project stormwater management system, but could stand alone indefinitely if future development phases were not constructed.

The stormwater management system has been designed to comply with:

- The 2008 DEP Stormwater Management Handbook;
- The Massachusetts WPA Regulations (310 CMR 10.00); and
- The BWSC Stormwater Requirements.

The Phase 1 Project Site will continue to discharge to LSCSF under proposed conditions. Under this condition, the DEP Stormwater Standards waive the requirement to mitigate peak stormwater discharge rates; however, Sales Creek is isolated from tidal flows by the Bennington Street tide gates and DCR pumping station. Therefore, to demonstrate that the Phase 1 Project will not increase stormwater flows to the pumping station, the pre- and post-development hydrologic conditions were modeled using HydroCAD™ software. The hydrologic model shows that post-development stormwater runoff rates will be less than or equal to the pre-development rates.

To account for increased storm intensity projected to occur due to climate change, the 10-year and 100-year storm events used in the design of the proposed

1 As discussed in Section 5.8.1 of Chapter 5, *Environmental Protection*, on-site resource areas were confirmed in ORADs issued by the Boston Conservation Commission on September 28, 2017. LUWW was also identified on-site, but was not requested to be confirmed in the ORAD as it is located entirely within other resource areas.

stormwater management system are based on the BWSC increased rainfall recommendations of six inches and 8.8 inches, respectively.

Table 7-1 below summarizes the peak runoff rates for the pre- and post-development conditions for the Phase 1 Project.

Table 7-1 Phase 1 Project Runoff Rates (cfs)

	2 Year		10 Year		100 Year	
Storm Event	***Pre***	**Post**	***Pre***	**Post**	***Pre***	**Post**
Design Point 2	7.32	5.60	21.68	16.60	37.03	28.34
Design Point 2A	40.65	35.32	93.12	89.09	144.92	143.74
Design Point 2C	20.44	19.13	57.28	53.63	95.90	89.78

The Phase 1 Project stormwater management system has also been designed to provide treatment of stormwater runoff associated with the proposed impervious surfaces on-site. All stormwater BMPs are designed to treat a minimum of the first inch of runoff generated by the on-site paved impervious areas.

To avoid sedimentation of the proposed detention basins, sediment forebays have been incorporated into the design. The outlet structures have been designed as multi-stage outlets to provide control for a variety of storm events and will direct stormwater via overland flow towards the intermittent stream along the eastern portion of the Phase 1 Project Site. In the event of overtopping, emergency spillways have been provided to direct the excess flow via overland flow towards the intermittent stream, consistent with the existing drainage pattern. The detention basins have been designed so that they will fully dewater within 72 hours.

The proposed stormwater management system for the Phase 1 Project has been designed in compliance with the DEP Stormwater Management Standards and will greatly improve the treatment of stormwater as compared to the existing condition. A complete Stormwater Management Report for the Phase 1 Project is contained in Appendix G, which details direct compliance with the DEP Stormwater Management Standards.

7.4 Water and Wastewater

7.4.1 Existing Water and Wastewater Infrastructure

Figures 7.3 and 7.4 illustrate the Master Plan Project Site-wide sanitary sewer collection and water distribution systems, respectively. The MWRA operates transmission mains near the Phase 1 Project Site in Boston. The BWSC purchases finished water (fluoridated and disinfected) from the MWRA. The MWRA obtains its water supply primarily from the Quabbin Reservoir, which is approximately 65 miles west of Boston and has an elevation of approximately 530 feet above the mean City elevation. The elevation differential creates a natural gravitational flow and thereby eliminates the need to pump water into the distribution system.

BWSC maintains and operates the water distribution system in Boston. The BWSC distribution system is divided into four service zones. East Boston, Charlestown and Allston are serviced by the Northern Low Service ("NLS") zone. An additional small area of the Orient Heights section of East Boston is served by a single connection to the MWRA Northern High Service ("NHS") zone. Based on information provided by the BWSC, the water distribution network near the Master Plan Project Site appears to be served by the NHS. Water distribution infrastructure exists in Waldemar Avenue, south of the Master Plan Project Site. The diameter of the water main in Waldemar Avenue varies from 12 inches, reduces to eight inches, and increases to 10 inches as it traverses from west to east. The existing water service to the Master Plan Project Site originates from the 10-inch portion of the water main adjacent to 97 Waldemar Avenue. It is anticipated that existing on-site water distribution infrastructure beyond the connection point in Waldemar Avenue will be demolished or abandoned in place as part of the Master Plan Project.

All existing wastewater flow from the Master Plan Project Site currently discharges to the MWRA system and the Caruso Pump Station ("CPS"). From the CPS, flow is pumped to the MWRA North Metropolitan Trunk Sewer, which conveys flows to the MWRA Deer Island Wastewater Treatment plant.

7.4.2 Estimated Water Demand and Wastewater Generation

The projected sanitary sewage generation for the Phase 1 Project is estimated to be approximately 39,000 GPD.[2] The Phase 1 Project's estimated potable water demand of approximately 43,000 GPD was determined by increasing the projected wastewater generation rate by a factor of 10 percent to account for consumptive losses. The existing on-site operations are estimated to generate approximately 27,000 GPD of wastewater flow and 30,000 GDP of water demand.[3] This results in a net increase for Phase 1 of 12,000 GPD of wastewater flow and 13,000 GPD of water demand, respectively.

Existing water and wastewater systems have sufficient capacity (i.e. volume) to provide both sewer and water service to the Phase 1 Project. The Proponent will work with both the BWSC and MWRA, as applicable, to evaluate the associated infrastructure systems and identify appropriate mitigation. A water connection to the existing BWSC infrastructure at the intersection of Walley Street and Waldemar Avenue is anticipated for the Phase 1 Project. The Proponent is working with the

2 Volume estimated using the standards included in the Title 5 State Environmental Code Regulations (310 CMP 15.00) of 75 GPD/1,000 SF for commercial space.

3 Existing water demand calculated based upon BWSC metered flow; excludes Revere flow, which appears to be negligible based on limited available information. Domestic wastewater flow calculated based upon 10 percent reduction in metered flow from BWSC, and excludes CAFO flow.

BWSC to develop the most appropriate and technically feasible wastewater discharge connection point for the Phase 1 Project. It is anticipated that wastewater flows will be directed to the southeast where an existing 24-inch BWSC sewer exists near the Suffolk Downs MBTA Blue Line Station on Walley Street.

I/I mitigation for the Phase 1 Project is estimated at approximately $2.41 per gallon at four times the projected sanitary sewage generation.

The Phase 1 Project includes relocation of the existing on-site four-inch force main, which serves the CAFO discharge, as depicted in Figure 7.1. The remainder of the CAFO existing infrastructure will be maintained in its current location until permanently removed as part of the Master Plan Project, in accordance with the existing NPDES permit.

7.5 Other Utilities

The following public utility companies serve the Phase 1 Project Site:

- Electricity from Eversource in East Boston; and
- Natural Gas from National Grid.

The Phase 1 Project Site is in close proximity to the interstate electric transmission system and the interstate natural gas pipeline (“NGP”) system. Both Eversource and National Grid have bulk power sub-stations adjacent to the Phase 1 Project Site. National Grid’s Revere City Gate Station connects the area to the Tennessee Gas Pipeline System. Close proximity of these assets assures adequate capacity is available. Typically, the utility connections will be designed based on the overall Master Plan Project build-out schedule and expected load requirements of each future building.

The electricity connection(s) at the Phase 1 Project Site may ultimately be supplied by Eversource or National Grid or both, which will be determined through ongoing discussions with the utility providers.

The Phase 1 Project is located in Eversource service territory. Based on the proposed plans for Phase 1, Eversource expects an upgrade of the current system configuration will be required to serve the estimated diversified load of two megawatts (“MW”). The upgrade would increase the available capacity and further improve the reliability in the area. As is typical, Eversource will also design the Phase 1 Project upgrade with the ability to accommodate future expansions.

The natural gas connection(s) at the Phase 1 Project Site will be supplied by National Grid. Based on the proposed use and location of the Phase 1 buildings, National Grid expects system upgrades in the public way to bring the service to the new buildings’ location on-site.

The design and installation of the on-site private utility system(s) will be coordinated with the build-out of the larger Master Plan Project.

7.5.1 Protection of Utilities During Construction

Existing utilities that feed the Phase 1 Project Site will be disconnected and removed, unless otherwise needed for temporary and/or construction service. The temporary/construction utility connections will be installed per the public utility construction standards and in accordance with local jurisdiction. These systems will be safe, resilient, and properly labeled and protected to ensure worker safety and minimize any construction delays.

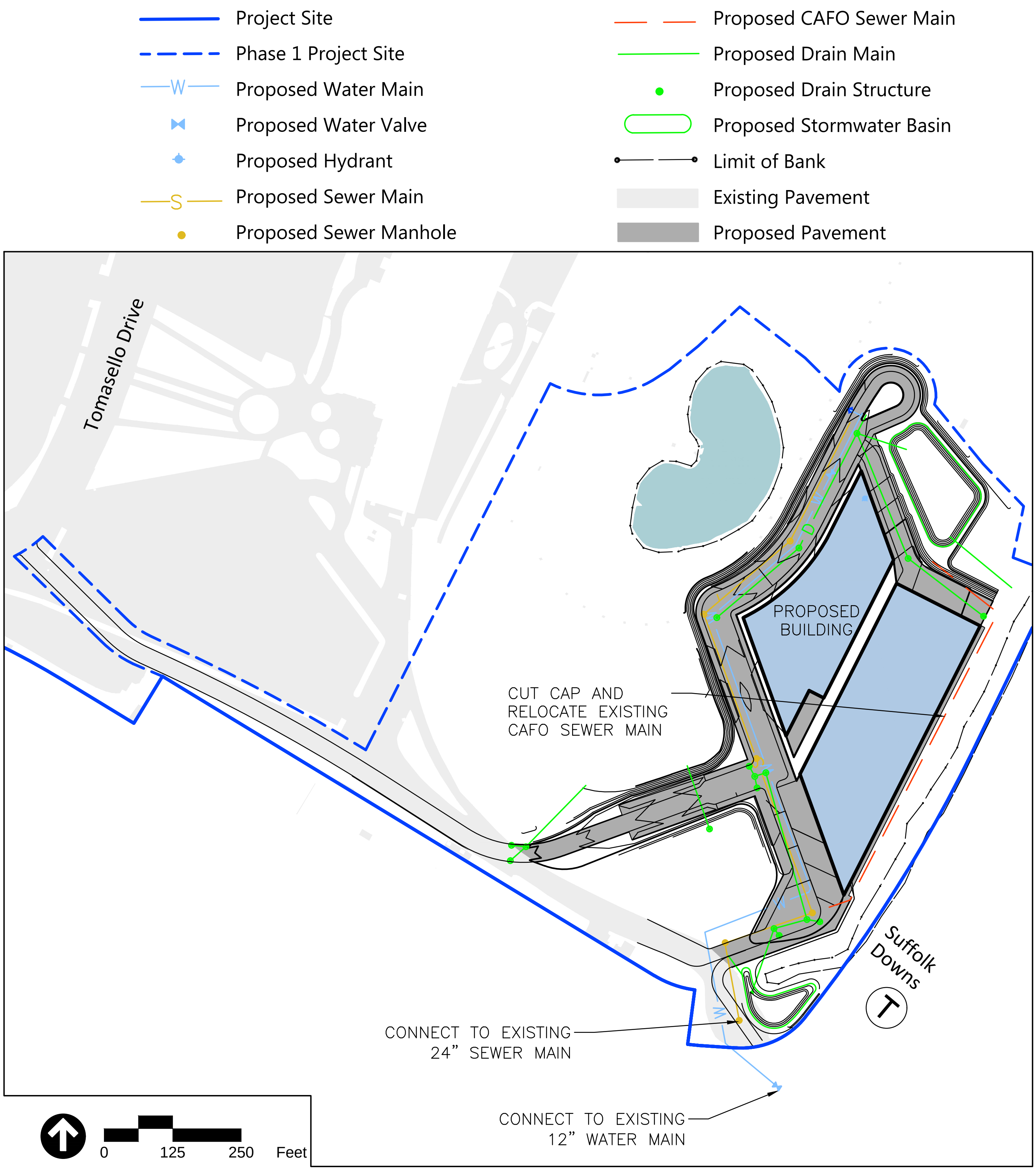
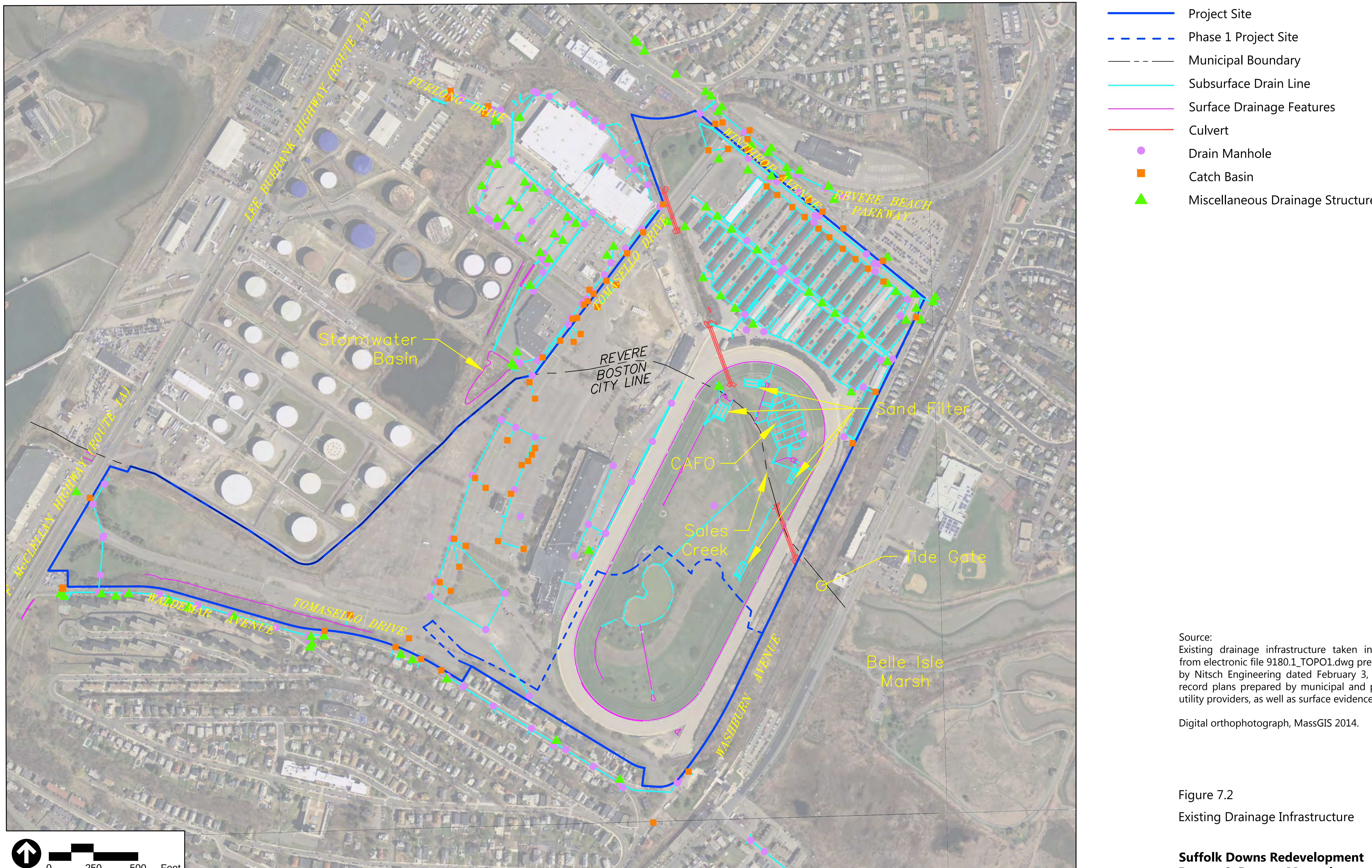


Figure 7.1

Phase 1 Project Infrastructure

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Prepared by Beals and Thomas, Inc.



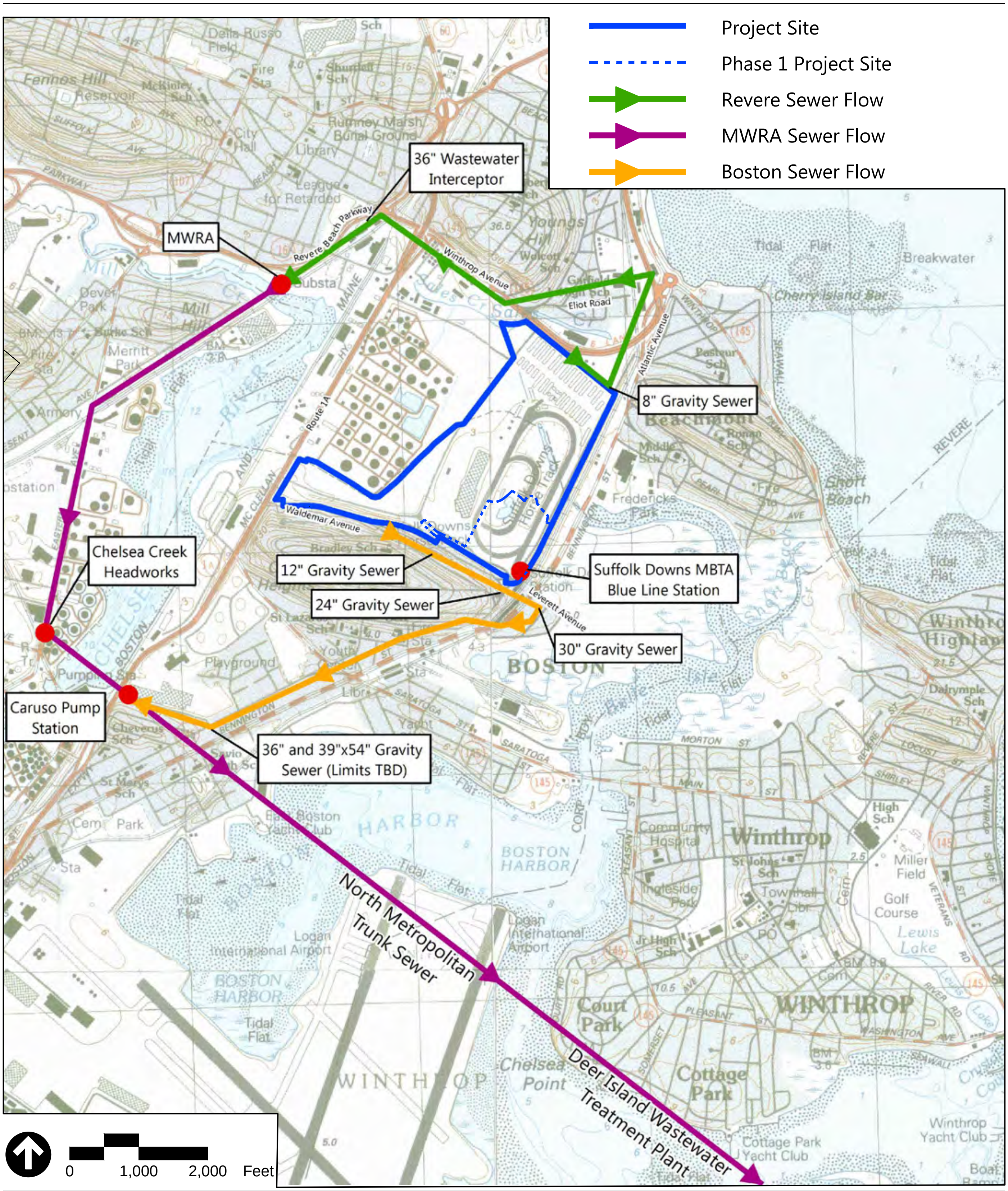
Source:
Existing drainage infrastructure taken in part from electronic file 9180.1_TOPO1.dwg prepared by Nitsch Engineering dated February 3, 2014, record plans prepared by municipal and public utility providers, as well as surface evidence.

Digital orthophotograph, MassGIS 2014.

Figure 7.2

Existing Drainage Infrastructure

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts



Source:
Sewer lines estimated from Environmental Notification Form "Caesars Resort at Suffolk Downs, Boston and Revere, Massachusetts" dated January 31, 2013, EEA No. 15006. Sewer alignments are illustrative and do not necessarily represent actual locations.

Digital USGS Maps of Boston North and Lynn, MA, dated 1985, provided by MassGIS.

Figure 7.3

Existing Wastewater Infrastructure

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Prepared by Beals and Thomas, Inc.

Source:
Underground utilities were taken in part from electronic file 9180.1_TOPO1.dwg prepared by Nitsch Engineering dated February 3, 2014, record plans prepared by municipal and public utility providers, as well as surface evidence.

Digital orthophotograph, MassGIS 2014.

Figure 7.4

Existing Water Infrastructure

Suffolk Downs Redevelopment
Boston & Revere, Massachusetts

Prepared by Beals and Thomas, Inc.

Appendix A: Letter of Intent

THE
HYM
INVESTMENT GROUP, LLC

November 8, 2017

BRA
'17 NOV 8 PM4:29:57

BY HAND DELIVERY

Mr. Brian Golden, Director
Boston Planning and Development Agency
Boston City Hall, 9th Floor
One City Hall Square
Boston, MA 02201

Re: Letter of Intent to File Project Notification Form
Suffolk Downs Redevelopment Project

Dear Mr. Golden:

In accordance with the Executive Order Relative to the Provision of Mitigation by Development Projects in Boston issued on October 10, 2000, as amended, and Article 80 of the Boston Zoning Code (the "Code"), in anticipation of the submission of a Project Notification Form to commence the Article 80B Large Project Review process, this Letter of Intent is submitted to the Boston Planning & Development Agency (the "BPDA") by The HYM Investment Group, LLC ("HYM") on behalf of The McClellan Highway Development Company, LLC ("MHDC"), as the redeveloper of the Suffolk Downs Redevelopment Project (the "Project") located at 525 McClellan Highway in East Boston (the "Site").

The Project involves redevelopment of the Site, which is a 161-acre underutilized thoroughbred horse racing facility located within East Boston and Revere, Massachusetts. Approximately 109 acres of the Site is in East Boston, and approximately 52 acres is in Revere. Existing facilities at the Site include a clubhouse, grandstand, thoroughbred racetrack, an administration building, maintenance buildings, horse barns and extensive surface parking areas. The Boston portion of the Site is in the Suffolk Downs Economic Development Area of the East Boston Neighborhood District, which is governed by Article 53 of the Code. The Code identifies the Suffolk Downs Economic Development Area as a Special Study Overlay Area, and establishes the Boston portion of the Site as a potential location for a Planned Development Area ("PDA"). The Project site was also recently identified in the Boston 2030 Plan as a key site for Boston's future growth and targeted for a significant new transit oriented mixed-use development district.

Redevelopment of the Site provides a unique opportunity to create additional housing, spur economic development, and improve connections between several adjoining neighborhoods. HYM proposes that the Project include various improvements and benefits for the area and City of Boston, as follows:

- Development of a new neighborhood with an active, lively and appropriate mix of uses (including residential, retail, office, lab, hotel, parking and other uses), connected and supported by new open space, neighborhood retail and civic spaces;
- Provision of an extensive 40-acre publicly-accessible open space system which will include existing wetland features and both active and passive recreation areas;

- Incorporation of extensive street-front retail anchored by two new retail squares, Beachmont Square and Belle Isle Square, as well as a new connecting "Main Street" retail district;
- Construction of a new district attractive to employers of growing industries which will enhance and expand job creation and economic opportunity;
- Incorporation of various kinds of housing to meet the needs of surrounding neighborhoods, including townhomes, apartments, condominiums, and senior housing;
- Application of transit-oriented-development principles, through integration of the two existing adjacent MBTA Blue Line Stations and alternative travel modes including new bicycle path connections and Hubway Stations;
- Development of improved connections to adjacent neighborhoods of East Boston and Revere through the Site, including along new open space and pedestrian and bicycle pathways; and
- Incorporation of forward-thinking climate change & resiliency strategies intended to address future sea level rise and other impacts of climate change.

Due to the size and complexity of the Project, we anticipate that the Project will require zoning relief through the creation of a PDA Development Plan under Section 80C of the Code. It is anticipated that the Project will include approximately 11 million square feet of development in Boston (which equates to an approximately 2.3 floor area ratio) in a number of buildings to be constructed in phases over a 15-20 year period. In addition, the Site has been identified by the City of Boston as a suitable potential location for Amazon's second corporate headquarters. As part of its RFP, Amazon is seeking an approximately 500,000 square foot office building with ground floor retail space, and related infrastructure and open space improvements, to be delivered by the end of 2019. It is possible that, separate from the PDA for the larger master plan, expedited Large Project Review and additional zoning relief, including a zoning amendment or variance, may be required (for this single building only) to meet Amazon's timetable requirements respecting its initial 500,000 SF building.

We anticipate submitting an Expanded Project Notification Form and look forward to working closely with the BPDA, the community and various city agencies during the review of the Project.

Thank you for your consideration of this letter.

Very Truly Yours,

Thomas N. O'Brien
The McClellan Highway Development Company, LLC
c/o The HYM Investment Group, LLC
One Congress Street, 11th Floor
Boston, MA 02114

cc: Douglas J. Manz – The HYM Investment Group, LLC
Paul Crisalli – The HYM Investment Group, LLC
Richard Rudman – DLA Piper

Appendix B: Metes and Bounds

Note: Materials are provided on the enclosed CD-ROM due to large file size. Hard copies are available upon request.

Appendix C: Preliminary BPDA Checklists

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:	Suffolk Downs Redevelopment
Project Address Primary:	525 William F McClellan Highway, Boston, MA 02128
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	Doug Manz / Director of Development / The HYM Investment Group, LLC / dmanz@hyminvestments.com / 617.248.2378

A.2 - Team Description

Owner / Developer:	The McClellan highway Development Company, LLC c/o The HYM Investment Group, LLC
Architect:	CBT Architects
Engineer (building systems):	AKF
Sustainability / LEED:	ARUP
Permitting:	VHB
Construction Management:	TBD
Climate Change Expert:	LimnoTech

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, Office, Lab, Commercial, Retail, Hotel,
List the First Floor Uses:	Active Public Uses, Residential, Parking

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

Wood Frame	Masonry	Steel Frame	Concrete

Describe the building?

Site Area:	*161 Acres (Total) 109 Acres (Boston)*	Building Area:	*16.5 MSF (Total) 11 MSF (Boston)*
Building Height:	*50-220 Ft.*	Number of Stories:	*Varies.*
First Floor Elevation (reference Boston City Base):	TBD	Are there below grade spaces/levels, if yes how many:	*Yes / Number of Levels TBD*

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** Residential buildings	**Core & Shell** Office	Healthcare	Schools
	Retail Retail buildings	Homes Midrise	Homes	**Other – Hospitality** Hotel buildings
Select LEED Outcome:	**Certified** Retail	**Silver** Office, Hotel & Residential	Gold	Platinum

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

Registered:	***Yes*** / *No* All buildings	Certified:	**Certification will be evaluated on a building by building basis**

A.6 - Building Energy

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

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

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

Estimated peak building energy load and demand, and nature and source of back-up/emergency generators will be evaluated in greater detail in the DEIR/DPIR.

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 – Buildings**	**75 Years - Infrastructure**

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	<u>25 Years</u>	<u>50 Years</u>	<u>75 Years</u>

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

95 Deg.

In all climate projections for Boston, there is a trend showing an increase in annual temperature, including both increases during the summer and winter months. As such, the coldest temperatures are being experienced in present day. Of these increases, those seen during the summer months will present the greatest challenges in terms of cooling loads and associated energy demands. Therefore, this project will focus on the summer peak temperatures and heat waves.

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

95 Deg.	3 Days	3 Events / yr.

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

Drought tolerance will be addressed through a combination of native/adaptive plantings that require less water and maintenance, and a water-efficient irrigation system.

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

42 Inches / yr.	*6.0 Inches*	*0.1 Events / yr.*

For seasonal conditions, a continuous simulation of rainfall for 2005-2015 was used. For peak runoff, 2-year, 10-year and 100-year, 24-hour design storms were used to evaluate pre- and post-construction runoff conditions. To accommodate increased future storm intensity the Boston Water and Sewer Commission recommendations regarding the 10-year and 100-year were used (specifically, 6" and 8.8", respectively).

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?

Based on the uncertainty of how wind patterns and intensities will change with respect to future climatological conditions, current wind design criteria are adopted for the Master Plan Project

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:	*TBD %*	See below.
How is performance determined:	Preliminary energy modeling for the Master Plan Project will be carried out in the next submission phase.	

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

Select all appropriate:	High performance building envelope [All typologies]	High performance lighting & controls [All Typologies]	Building day lighting [All Typologies]	EnergyStar equip. / appliances [Residential, Hotel & Retail]
	High performance HVAC equipment [All typologies]	Energy recovery [All typologies]	No active cooling	No active heating
Describe any added measures:	See Chapter 3 of the PNF/ENF for LEED compliance narratives.			

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

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

The Master Plan Project will study the feasibility and cost benefit of the following systems in the next submission phase.

On-site clean	Building-wide	Thermal energy	Ground source

	energy / CHP system(s)	power dimming	storage systems	**heat pump**
	On-site Solar PV	**On-site Solar Thermal**	Wind power	None
Describe any added measures:	**Central Plant(s) options**			

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

Select all appropriate:	**Connected to local distributed electrical**	**Building will be Smart Grid ready** This will be evaluated as the Master Plan Project develops.	Connected to distributed steam, hot, chilled water	Distributed thermal energy ready

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

The Master Plan Project is exploring resilience requirements for each typology of building, i.e. Office, Residential, Hotel and Retail during utility power outages.

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** [Residential and Hotel buildings]	Natural ventilation	**Building shading**
	Potable water for drinking / food preparation	Potable water for sinks / sanitary systems	Waste water storage capacity	**High Performance Building Envelope** [All typologies]
Describe any added measures:	**The measures noted above have been and will continue to be evaluated for their feasibility per building typology and on a building by building basis as the Master Plan Project design develops.**			

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:	- Flexible areas designated for temporary extreme storm event flooding - Site grading plan developed to maintain emergency access/egress to/from Project Site,			

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?

Portions of the Project Site are located in Zone AE, (Special Flood Hazard Areas Subject to Inundation by the 1% Annual Chance Flood; Base Flood Elevations Determined) as shown on "Flood Insurance Rate Map, Suffolk County, Massachusetts" Panels 19 and 38 of 176, Map Numbers 25025C0019J and 25025C0038J, effective March 16, 2016. The 100-year flood is classified as Land Subject to Coastal Storm Flowage and extends from Broad Sound via Belle Isle Inlet as well as from Boston Inner Harbor via the Chelsea River.

To reduce the risk of future flooding, the site has been designed with approximately 2 to 4 feet of fill to raise site grades from the existing average elevation of about 17.1± (Boston City Base). Proposed roadways and building first floor elevations are proposed to be higher than the 2070 1% probability flood elevation.

Site Elevation – Low/High Points:	*Low Point: 14± (in Revere) 16± (in Boston); High Point 40'±Boston City Base Elev.*
Building Proximity to Water:	*<65 Ft. +/-*

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

Coastal Zone:	Yes	Velocity Zone:	No
Flood Zone:	Yes	Area Prone to Flooding:	Yes

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:	No	Future floodplain delineation updates:	Not at this time

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

Portions of the Project Site are located within the Coastal Zone and Land Subject to Coastal Storm Flowage

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:	3.3 Ft.	Frequency of storms:	Not analyzed

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:	*Varies – Specific El. TBD*	First Floor Elevation:	*Varies – Specific El. TBD*

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

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

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

Yes

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

Yes, key portions of the site will remain accessible	If yes, to what height above 100 Year Floodplain:	*Specific El. TBD*

Will the project employ hard and / or soft landscape elements as velocity barriers to reduce wind or wave impacts?

	Not Anticipated
If Yes, describe:	

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

The Master Plan Project is exploring resilience requirements for each typology of building, i.e. Office, Residential, Hotel and Retail during utility power outages.

Yes / No	If Yes, for how long:	*TBD*

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

A large portion of the Project Site is anticipated to be designated as temporary storm and sea level rise storage and will remain at the existing grade. Additionally, the Project Site will use low impact development standards designed to infiltrate and detain regular stormwater runoff.

C.4 - Building Resilience and Adaptability

Describe any strategies that would support rapid recovery after a weather event and accommodate future building changes that respond to climate change:

Will the building be able to withstand severe storm impacts and endure temporary inundation?

Select appropriate:	*Yes / No*	Hardened / Resilient Ground Floor Construction	Temporary shutters and or barricades	Resilient site design, materials and construction

Can the site and building be reasonably modified to increase Building Flood Proof Elevation?

Select appropriate:	*Yes / No*	Surrounding site elevation can be raised	Building ground floor can be raised	Construction been engineered

Describe additional strategies:	The Master Plan Project is evaluating ground floor elevations on a building by building basis. Refer to Section C for site elevation changes.

Has the building been planned and designed to accommodate future resiliency enhancements?
The Master Plan Project is studying the implications of solar ready and will consider this and implementation of Solar PV on a building by building basis. Further enhancements will be studied as part of the central plant feasibility study to be undertaken.

Select appropriate:	Yes / *No*	Solar PV	Solar Thermal	Clean Energy / CHP System(s)
		Potable water storage	Wastewater storage	Back up energy systems & fuel
Describe any specific or additional strategies:				

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

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

Accessibility Checklist

(to be added to the BRA Development Review Guidelines)

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

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

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

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

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

Accessibility Analysis Information Sources:

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

Project Information

Project Name:	Suffolk Downs Redevelopment
Project Address Primary:	525 William F McClellan Highway, Boston, MA 02128
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	Doug Manz / Director of Development / The HYM Investment Group, LLC / dmanz@hyminvestments.com / 617.248.2378

Owner / Developer:	The McClellan highway Development Company, LLC c/o The HYM Investment Group, LLC
Architect:	CBT Architects
Engineer (building systems):	AKF
Sustainability / LEED:	ARUP
Permitting:	VHB
Construction Management:	TBD

Project Permitting and Phase

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

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

Building Classification and Description

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

Residential – One to Three Unit	Residential - Multi-unit, Four +	Institutional	Education
Commercial	Office	Retail	Assembly
Laboratory / Medical	Manufacturing / Industrial	Mercantile	Storage, Utility and Other

First Floor Uses (List)	Varies

What is the Construction Type – select most appropriate type?

Wood Frame	Masonry	Steel Frame	Concrete

Describe the building?

Site Area:	*161 Acres (Total) 109 Acres (Boston)*	Building Area:	*161 Acres (Total) 109 Acres (Boston)*
Building Height:	*50-220 Ft.*	Number of Stories:	*Varies.*
First Floor Elevation:	*TBD*	Are there below grade spaces:	*Yes*

Assessment of Existing Infrastructure for Accessibility:

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

Provide a description of the development neighborhood and identifying characteristics.	The Project Site is currently home to the Suffolk Downs race track facility. The western side of the Project Site is bordered by land that includes a retail shopping center, properties containing fuel storage tanks owned by Irving Oil Terminals Inc. and Global Petroleum, and McClellan Highway (Route 1A). Winthrop Avenue is located along the northern boundary of the Project Site. The neighborhood north of Winthrop Avenue is Crescent Beach, which in turn borders Revere Beach and the Atlantic Ocean; the Project Site is located less than one mile from the beach and ocean. Washburn Avenue, the MBTA Blue Line, and Bennington Street (which connects East Boston to the City of Revere and is a route for access to the Town of Winthrop (via Saratoga Street, Route 145) lie east of the Project Site. Waldemar Avenue and the Orient Heights residential neighborhood of East Boston are located immediately south of the Project Site.
List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter rail, subway, bus, etc.	One of the Project Site's greatest strengths is its two direct connections to the MBTA Blue Line - Beachmont and Suffolk Downs stations. Using the Blue Line, the Project Site is just five minutes from Logan Airport and 11 minutes from State Street, in the heart of Boston's financial district. The Blue Line also offers connections to South Station and its commuter rail lines via the Silver Line, and to North Station and Back Bay Station and their respective commuter rail lines via the Orange Line.
List the surrounding institutions: hospitals, public housing and elderly and disabled housing	To be determined

developments, educational facilities, etc.	
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.	To be determined

Surrounding Site Conditions – Existing:

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

Are there sidewalks and pedestrian ramps existing at the development site?	There are no existing sidewalks, however there is one pedestrian ramp.
If yes above, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.	The pedestrian ramp leads to the front door of the existing grandstand building from the adjacent parking lot. This is a concrete ramp.
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. All existing sidewalks and pedestrian ways are to be removed and replaced. Any non-compliant conditions will be improved and brought into compliance.
Is the development site within a historic district? **If yes,** please identify.	No

Surrounding Site Conditions – Proposed

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

Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? See: www.bostoncompletestreets.org	Yes
If yes above, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.	Varies
What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.	Varies
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?	Material selection is to be determined.
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?	Undetermined at this time.
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way?	Undetermined at this time.
If yes above, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be?	

Proposed Accessible Parking:

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

What is the total number of parking spaces provided at the	Undetermined at this time.

development site parking lot or garage?	
What is the total number of accessible spaces provided at the development site?	The Master Plan Project will comply with City requirements.
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?	Accessible parking spaces will be provided. The Proponent has not yet contacted the CPD or BTD regarding this need, but will do so when details of on street parking are prepared.
Where is accessible visitor parking located?	Accessible visitor parking locations have not yet been determined.
Has a drop-off area been identified? **If yes,** will it be accessible?	Undetermined at this time.
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.	

Circulation and Accessible Routes:

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

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

Provide a diagram of the accessible route connections through the site.	Refer to Figure 2.12 in Chapter 2, *Urban Design*, for a preliminary Site circulation plan. All pedestrian pathways will be accessible, and all buildings will feature accessible entrances.
Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.	Entries will have a combination of flush conditions, stairs, and accessible ramps.
Are the accessible entrance and the standard entrance integrated?	Undetermined at this time.

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.	Undetermined at this time.
Has an accessible routes way-finding and signage package been developed? **If yes,** please describe.	No. Such signage will be developed further into the design process.

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?	7,500-10,000 units
How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?	Undetermined at this time.
How many accessible units are being proposed?	The number of accessible units at the Master Plan Master Plan Project will be determined as the Master Plan Project advances.
Please provide plan and diagram of the accessible units.	Details will be determined as the designed advances.
How many accessible units will also be affordable? If none, please describe reason.	The number of affordable accessible residential units will be determined as the Master Plan Project design advances.
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.	The interior building design is early in its development, however, it is not anticipated that either residential units or common spaces will have any architectural barriers.
Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor's Commission	The Master Plan Project has not yet been presented to the City of Boston Mayor's Commission for Persons with Disabilities Advisory board. The Project Team will meet with the Board as the Master Plan Project design advances and is fully committed to delivering a Project that is ADA compliant.

for Persons with Disabilities Advisory Board?	
Did the Advisory Board vote to support this project? **If no,** what recommendations did the Advisory Board give to make this project more accessible?	The Master Plan Project has not yet been reviewed by the Advisory Board.

Thank you for completing the Accessibility Checklist!

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

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

Appendix D: Greenhouse Gas Emissions Assessment Supporting Documentation

ENERGY CONSUMPTION AND GHG EMISSIONS

	Energy Consumption (MMBtu/year)			Energy Use Intensity (kBtu/sf/year)	
	Baseline	Phase 1 Project	% savings	Baseline	Phase 1 Project
Office	30,689	23,072	25%	59	44
Parking Garage	1,512	1,042	31%	7	5
Total Project	32,202	24,114	25%	44	33

REVISED FOR 520,000 GSF OFFICE 11.27.2017												
ENERGY TOTALS		**Phase 1 Project**				**Phase 1 Project**				**GHG emissions (tons/yr)**		
Energy Metric	**Unit**	**Baseline**	**Phase 1 Project (Proposed)**	**Savings (%)**		**Baseline**	**Phase 1 Project (Proposed)**		**Savings (%)**	**Baseline**	**Phase 1 Project (Proposed)**	**Savings (%)**
Total Electricity Consumption	MMBtu/year	12,060	10,285	-	kBtu/year	12,059,897	10,284,794	1,775,103	**15%**	1320	1126	**15%**
Total Natural Gas Consumption	MMBtu/year	18,630	12,787	-	kBtu/year	18,629,579	12,786,808	5,842,771	**31%**	1090	748	**31%**
Total Energy Consumption	MMBtu/year	30,689	23,072	**25%**	kBtu/year	30,689,475	23,071,601	7,617,874	**25%**	2410	1874	**22%**
Total Energy Cost	$/year	760,755	617,463	**19%**								
Building Site Energy Use Intensity (EUI)	kBtu/sf/year	59	44									

REVISED FOR 215,000 GSF PARKING GARAGE 11.28.2017												
ENERGY TOTALS						**Phase 1 Project**				**GHG emissions (tons/yr)**		
Energy Metric	**Unit**	**Baseline**	**Phase 1 Project (Proposed)**	**Savings (%)**		**Baseline**	**Phase 1 Project (Proposed)**		**Savings (%)**	**Baseline**	**Phase 1 Project (Proposed)**	**Savings (%)**
Total Electricity Consumption	MMBtu/year	1,512	1,042	-	kBtu/year	1,512,200	1,041,914	470,286	**31%**	165	114	**31%**
Total Natural Gas Consumption	MMBtu/year	0	0	-	kBtu/year	0	0	0	-	0	0	-
Total Energy Consumption	MMBtu/year	1,512	1,042	**31%**	kBtu/year	1,512,200	1,041,914	470,286	**31%**	165	114	**31%**
Total Energy Cost	$/year	$70,909	$48,857	**31%**								
Building Site Energy Use Intensity (EUI)	kBtu/sf/year	7	5									

TOTAL PROJECT (OFFICE & PARKING) 11.28.2017												
ENERGY TOTALS										**GHG emissions (tons/yr)**		
Energy Metric	**Unit**	**Baseline**	**Phase 1 Project (Proposed)**	**Savings (%)**		**Baseline**	**Phase 1 Project (Proposed)**		**Savings (%)**	**Baseline**	**Phase 1 Project (Proposed)**	**Savings (%)**
Total Electricity Consumption	MMBtu/year	13,572	11,327	-	kBtu/year	13,572,097	11,326,708	2,245,389	**17%**	1485	1240	**17%**
Total Natural Gas Consumption	MMBtu/year	18,630	12,787	-	kBtu/year	18,629,579	12,786,808	5,842,771	**31%**	1090	748	**31%**
Total Energy Consumption	MMBtu/year	32,202	24,114	**25%**	kBtu/year	32,201,675	24,113,515	8,088,160	**25%**	2575	1988	**23%**
Total Energy Cost	$/year	$831,665	$666,320	**20%**								
Building Site Energy Use Intensity (EUI)	kBtu/sf/year	44	33	**25%**								

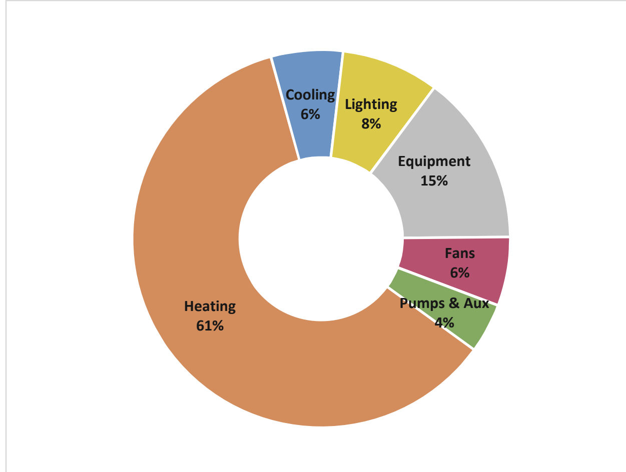
CONVERSION TABLE

CONVERT	MULTIPLY BY
KWH TO MWH	0.0
MWH TO LBS[2]	747.0
THERMS TO MBTU	0.1
LBS TO SHORT TONS	0.0005
kBTU to KWH	0.293
MMBTU to LBS[3]	117.0

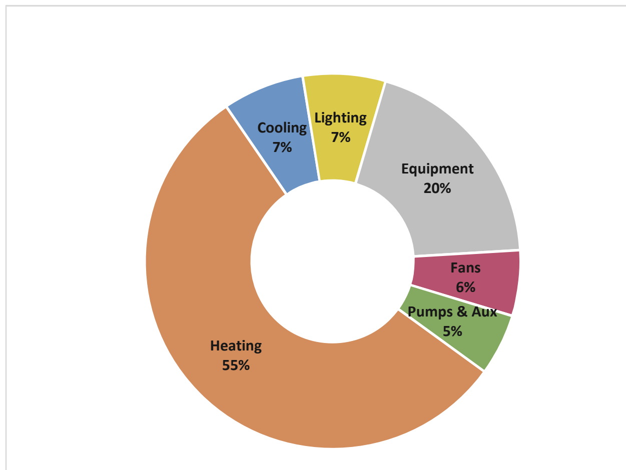
2 mwh to lbs of CO2 conversion factor from 2015 ISO New England Electric Generator Air Emissions Report

3 https://www.eia.gov/environment/emissions/co2_vol_mass.cfm

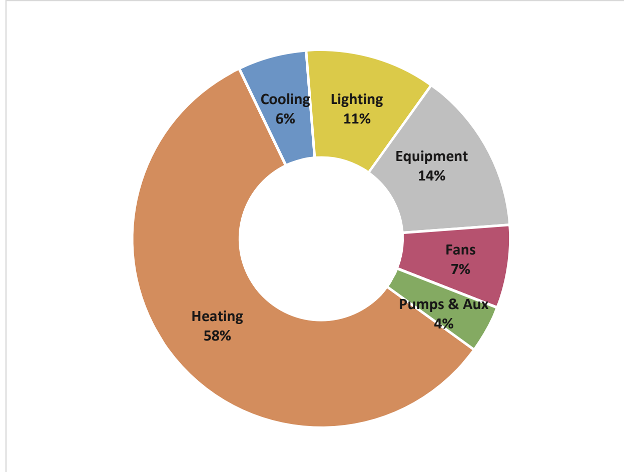
BASELINE - OFFICE ONLY		
End Use	**Value (Mbtu)**	**Percentage**
Heating	18,629	58
Cooling	1,887	6
Lighting	2,570	8
Equipment	4,492	14
Fans	1,804	6
Pumps & Aux	1,307	4
	30,689	



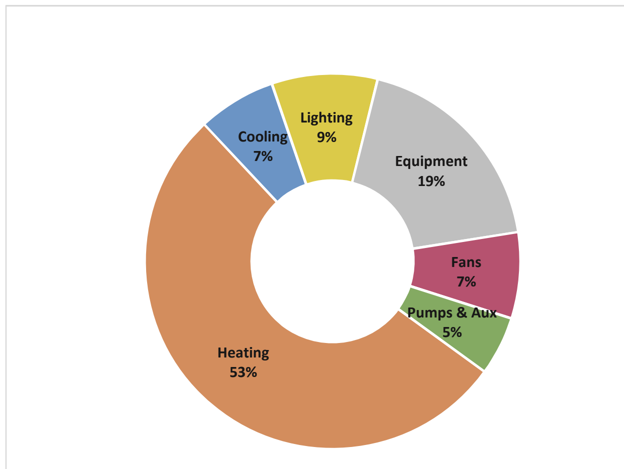
PROPOSED - OFFICE ONLY		
End Use	**Value**	**Percentage**
Heating	12,787	53
Cooling	1,623	7
Lighting	1,640	7
Equipment	4,494	18
Fans	1,306	5
Pumps & Aux	1,223	5
	23,072	



BASELINE - OFFICE & PARKING		
End Use	**Value (Mbtu)**	**Percentage**
Heating	18,629	58
Cooling	1,887	6
Lighting	3,599	11
Equipment	4,492	14
Fans	2,287	7
Pumps & Aux	1,307	4
	32,201	



PROPOSED - OFFICE & PARKING		
End Use	**Value**	**Percentage**
Heating	12,787	53
Cooling	1,623	7
Lighting	2,198	9
Equipment	4,494	18
Fans	1,789	7
Pumps & Aux	1,223	5
	24,114	



SOLAR PHOTOVOLTAICS ANALYSIS

Phase 1 Project Solar Photovoltaic (PV) Feasibility Analysis

Solar Photovoltaic (PV)

Solar PV system feasibility analysis has been undertaken for a roof mounted system across the two (2) buildings in the Phase 1 Project. Only the highest roof areas have been included in the analysis as lower roof areas will be shaded throughout the year and are intended to be occupied as amenity space for occupants. The analysis included 20% of the roof area for solar PV allowing space for mechanical systems, setbacks for safety and maintenance and potential for additional uses on the roof.

The rooftop PV arrays could produce approximately 785 MMBtu/year, 3 percent of the total building energy consumption and offset approximately 60 metric tons of CO2 per year, a 4 percent reduction.

A simple payback analysis indicates a payback of approximately 12 years which accounts for a continuation of the federal incentive of 30% of the total installed cost as well as an estimation of feed-in tariff rates for the forthcoming Solar Massachusetts Renewable Target "SMART" program in Massachusetts. It is very important to note that the details and rate structure of the SMART program are yet to be finalized. Any proposed system on the Phase 1 Project would also be subject to declining blocks (i.e. rate structures) depending on when the system would be permitted under the SMART program. These blocks are currently estimated to be filled up on a 6 month basis.

Additionally, it is anticipated that a tariff will be implemented in 2018 on the import of foreign PV panels which could significantly impact the pricing of panels and systems throughout the US.

Given the current uncertainty in the solar PV market both federally and at the state level, the project will continue to assess the feasibility of a roof mounted solar PV system as the design develops. This analysis has shown however, that a solar PV system is the best use of available roof area for a renewable energy system for the Phase 1 project.

	EUI (kBtu/sf/yr)	ENERGY (MMBtu/yr)	CO2e (tons/yr)	ENERGY SAVINGS (%)	CO2e SAVINGS (%)
ROOF PV	44	785	60	3	4

	Construction Cost[1] ($)	ENERGY COST Savings[2] ($)	SIMPLE PAYBACK (Years)
ROOF PV	630,000	52,900	11.9

[1] Construction Cost includes federal incentive of 30% of total installed cost.

[2] Energy cost savings include SMART incentives of $0.21/kWh for a 25-200kW system and an additional incentive of $0.02/kWh for building mounted systems for a total of $0.23/kWh.

Solar Thermal

There is more than enough available roof area for a solar thermal system as domestic hot water demand in an office building is very low. A system that would offset 65% of the heating load associated with domestic hot water would require approximately 7,000 square feet of roof space and 73 evacuated tube panels. The system was sized to eliminate overproduction of hot water in the summer (i.e. peak).

This translates to approximately 3% percent in energy savings and a 2% percent carbon footprint reduction. A simple payback analysis indicates a payback of 22 years.

Solar thermal has not been recommended as it competes with solar PV for roof area, and solar PV is currently indicated to be a more cost-effective approach to producing renewable energy on-site.

	EUI (kBtu/sf/yr)	ENERGY (MMBtu/yr)	CO2e (tons/yr)	ENERGY SAVINGS (%)	CO2e SAVINGS (%)
ROOF Thermal	44	680	36	3	2

	Construction Cost ($)	ENERGY COST Savings ($)	SIMPLE PAYBACK (Years)
ROOF THERMAL	153,245	6,875	22.3

Appendix E: Transportation Supporting Documentation

Note: Materials are provided on the enclosed CD-ROM due to large file size. Hard copies are available upon request.

Traffic Counts

- Automatic Traffic Record Raw Data
- Turning Movment Count Raw Data

Vehicular Crash Data

- Grouped Crash Data from MassDOT Website
- Crash Rate Sheets

Trip Generation

- Phase 1 Project Trip Generation Table

Intersection Capacity Analysis

- Existing Consition Results
- No-Build Conditions Results
- Phase 1 Project Condition Results
- Phase 1 Project Condition with Mititigation Results

Appendix F: Environmental Protection Supporting Documentation

INITIAL COMMENTS

SUFFOLK DOWNS MASTERPLAN

BOSTON, MA

PEDESTRIAN WIND ASSESSMENT

PROJECT #1801719

NOVEMBER 29, 2017

SUBMITTED TO

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SITE AND BUILDING CHARACTERISTICS

- The proposed development is large in plan, including multiple mid- and low-rise buildings with green spaces in between;

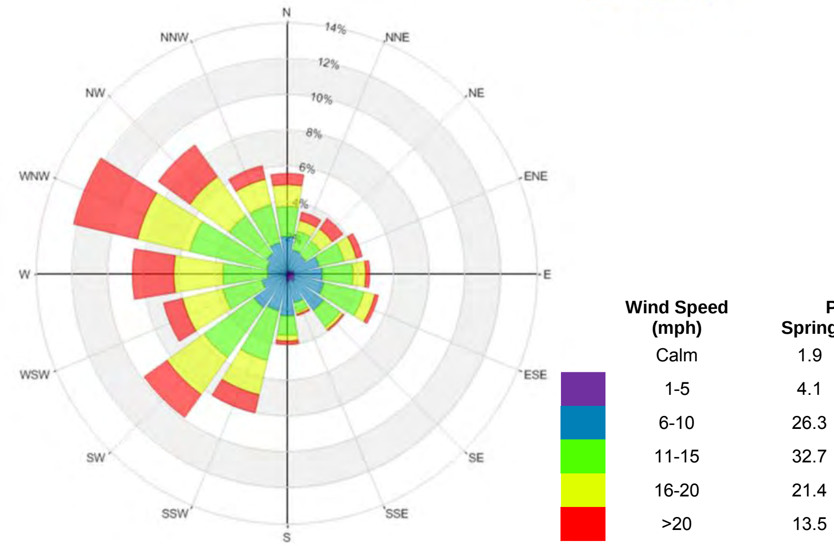
- Immediate surroundings consist of dense low buildings in most directions, a conservation area to the southeast, and oil tanks and Chelsea River to the west. Further away are Logan Airport to the south, and the Atlantic Ocean to the northeast through southeast; and,

- The existing conditions on site are likely windy due to the exposure, but not expected to exceed the wind comfort and safety criteria.

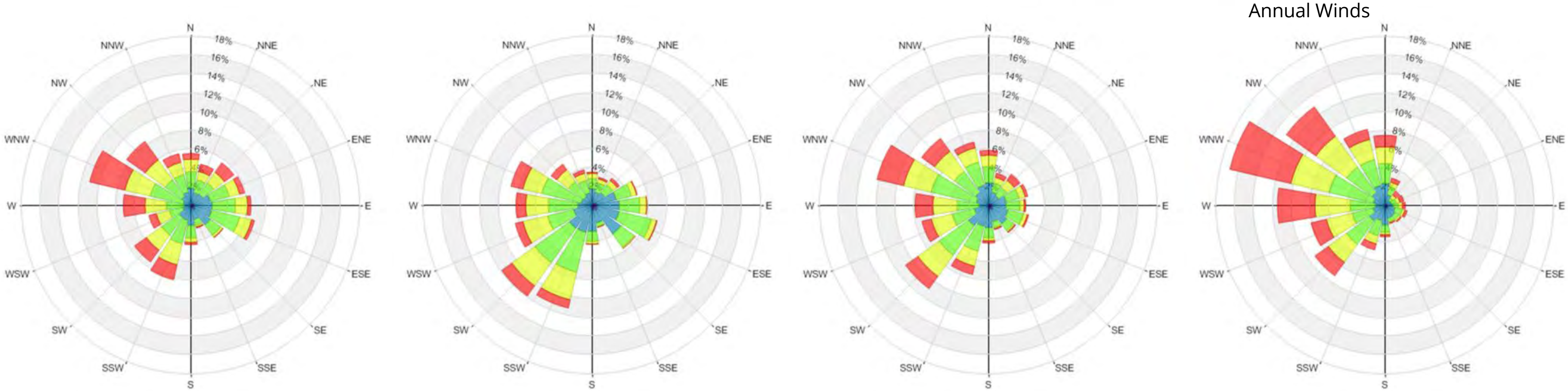
LOCAL WIND CLIMATE

Wind statistics at Boston Logan International Airport between 1990 and 2015 were analyzed for four seasons and on an annual basis. When all winds are considered (regardless of speed), winds from the northwest and southwest quadrants are predominant. Northeasterly winds are also frequent, especially in the spring.

Strong winds with mean speeds greater than 20 mph (red bands in the images) are prevalently from the northwesterly direction throughout the year, while the southwesterly and northeasterly winds are also frequent. These are critical wind directions to be focused on in the following discussions.



Annual Winds



Spring (March to May)

Summer (June to August)

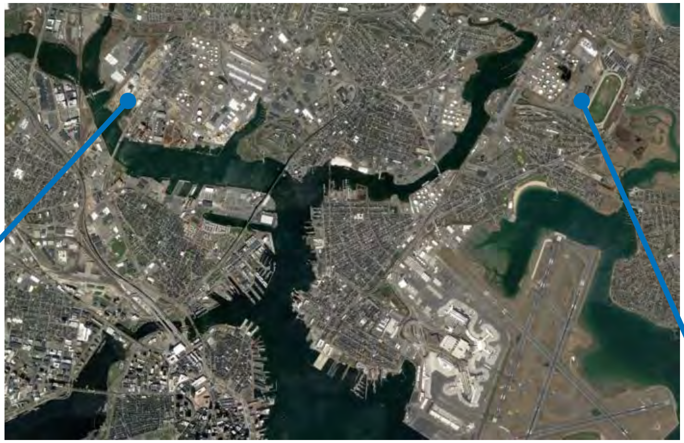
Fall (September to November)

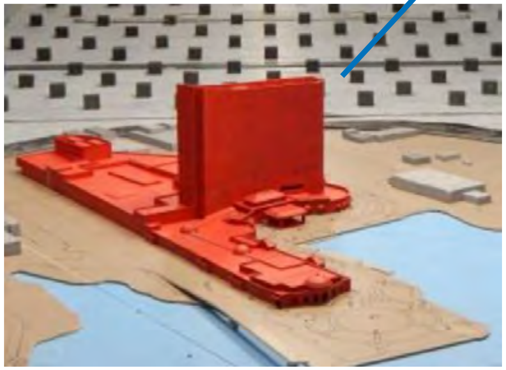
Winter (December to February)

Directional distribution of winds approaching Boston Logan International Airport (1990 to 2015)

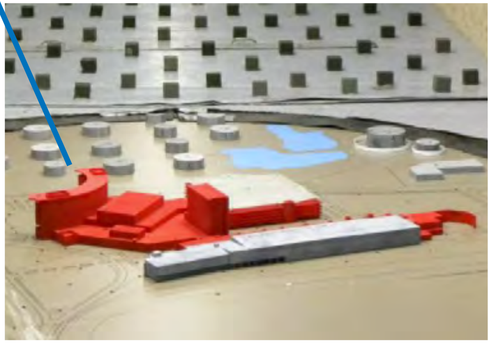
REFERENCE WIND TUNNEL PROJECTS

Many wind-tunnel studies have been conducted by RWDI for buildings in the Boston area and the two shown below were selected to be used as a reference to predict the wind conditions around the future development.





- Surroundings were similar to the current development site; and,
- Uncomfortable and unacceptable wind conditions were caused by the 17-story tower at several locations.



- A previous proposal on the same project site;
- Proposed buildings were approximately 10 stories; and,
- Increased wind speeds were detected in the wind tunnel testing, but generally below the wind comfort and safety limits.

BASIC FLOW PATTERNS

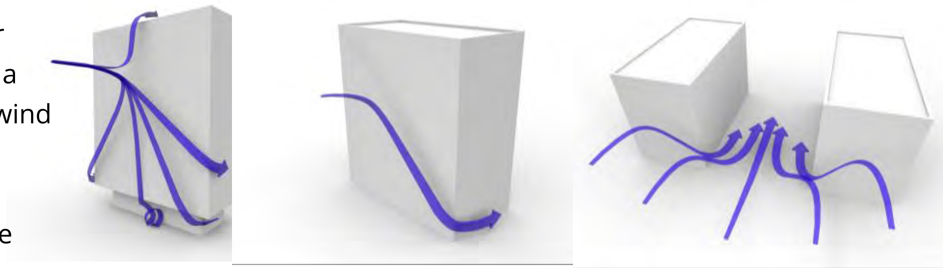
- Tall buildings tend to intercept stronger winds at higher elevations and redirect them to the ground level. Such a Downwashing Flow (a) is the main cause for increased wind activity around buildings at the pedestrian level;

- Oblique winds also cause wind accelerations around the downwind building corner (b);

- When two buildings are situated side by side, wind flows tend to accelerate through the space between the buildings due to the so-called Channeling Effect (c);

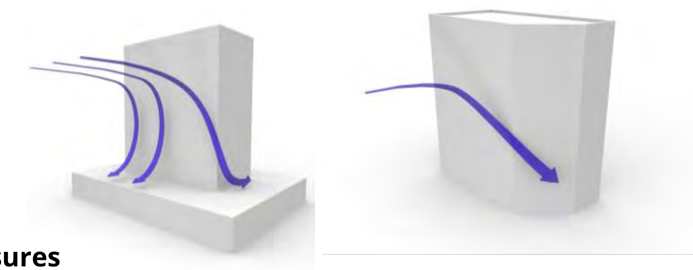
- If these building/wind combinations occur for prevailing winds, there is a greater potential for increased wind activity and uncomfortable or unsafe conditions; and,

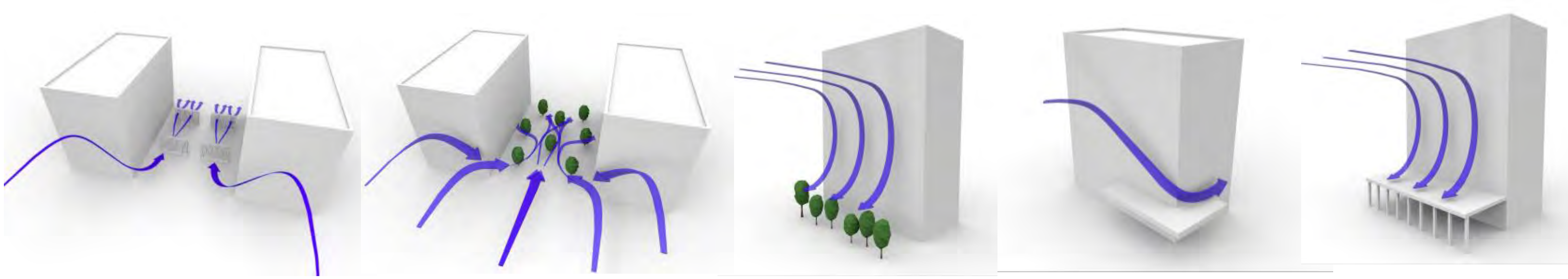
- Typical wind control measures include podiums/tower setbacks, chamfered corners, canopies, screens, trees, etc.



(a) (b) (c)

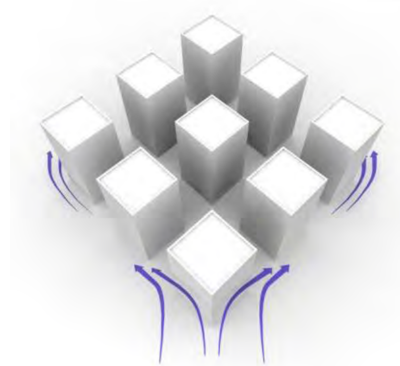
Typical Wind Control Measures

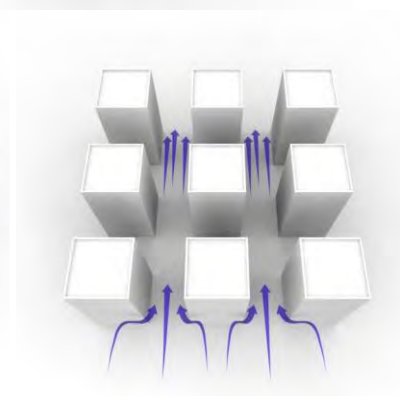




BUILDING MASSING AND LAYOUT

- For wind control, one desired approach is to have the lowest buildings along the perimeter of the site and the tallest buildings at the center;
- A reversed arrangement of buildings may also work, to a certain extent: tall buildings along the perimeter would provide sheltering for the inner space, but local wind accelerations at the bases of these tall buildings may be problematic, due to the downwashing and channeling effects.
- Main streets, especially those near taller buildings, should not be aligned with the prevailing northwesterly or northeasterly winds, if feasible; and,
- Podiums and tower setbacks would not only reduce the impact of downwashing winds, but also increase the distance between towers (and reduce the potential channeling effect).





SITE OVERVIEW

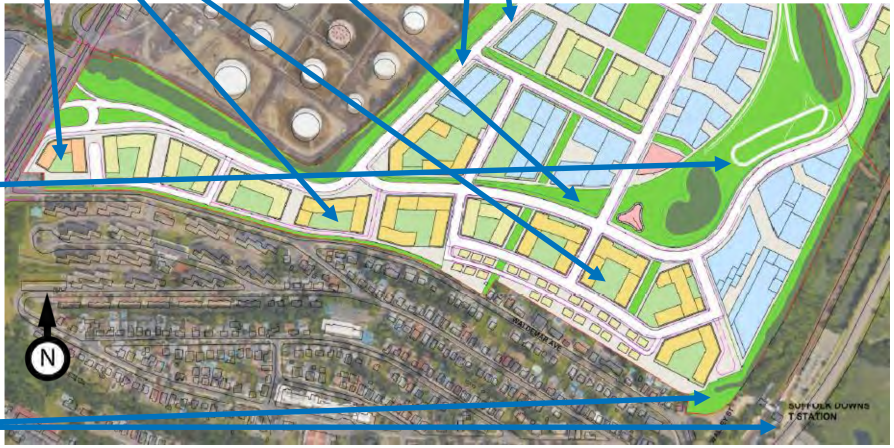
This narrow strip of green area is generally protected by the proposed buildings. The future wind conditions can be further improved by trees through the area and a larger building structure (B30) at the east end.

This wall of mid-rise buildings are fully exposed to the west and northwest winds and wind flow accelerations are expected along the gaps between these buildings, resulting in uncomfortable and unacceptable winds. Reduced building heights and a tall coniferous shelter barrier is recommended along the west edge.

Buildings that have podium terraces facing south are positive in sheltering the terraces from the strong northwest and northeast winds, while exposing them to the sunlight. However, they are open to the southwesterly winds, which are most frequent in the summer and fall seasons when these areas are typically in use. See Pages 12 and 13 for wind control recommendations.

This large green space is partially sheltered by the proposed buildings, but the resultant wind conditions may be higher than desired for sitting, even in the summer. Localized wind control solutions should be developed for any seating areas (see recommendations on Page 12).

Given the distance and location of the proposed buildings, the existing wind conditions at this T Station are not expected to be negatively affected by the project. Any landscaping in the green area will further improve the wind conditions.



SITE OVERVIEW

The green space is in a NNW-SSE direction, which is not aligned with any prevailing winds. However, the northwest and southwest winds may accelerate around the exposed sharp corners of the proposed buildings, and they may also be deflected down by the taller buildings on the east side of green space.

The winding nature of these streets is positive in reducing flow accelerations of the northeast and southwest winds. Building height reductions and tower setbacks from the north edge of the site are recommended for additional wind control.

On the green spaces at the podium level, suitable wind conditions are expected at the more protected areas on the residential blocks (e.g., R-5 and R-6), while higher wind speeds are likely to occur at the more exposed blocks (e.g., R-7 and R-8).

The existing wind conditions at the T Station will not be negatively affected by the proposed development.

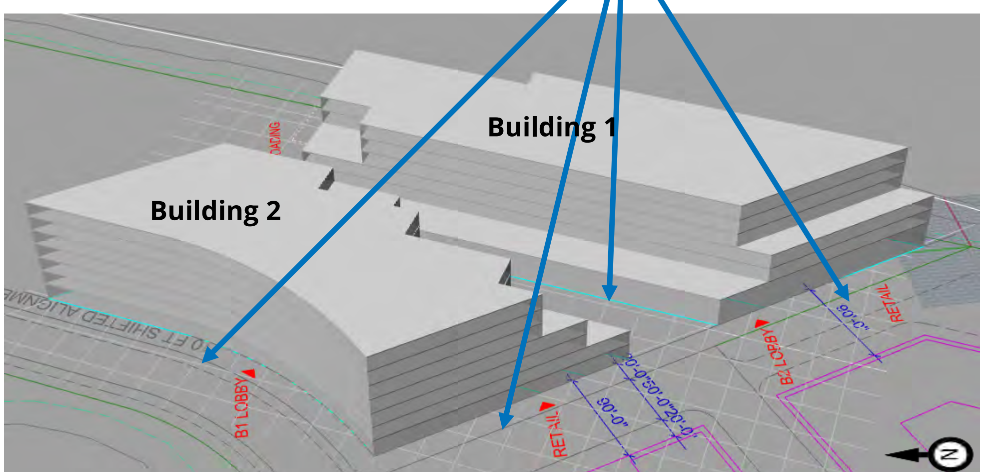
It will be windy at this opening due to the exposure. If any pedestrian activity is planned for this area, considerable wind control solutions will need to be developed – the existing shelter belt to the east will provide some protection for the northeasterly winds.

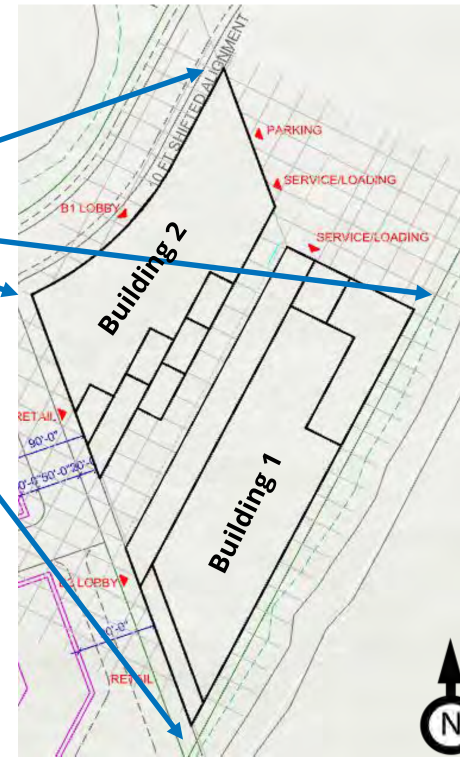
REVISED B-12

- B-12 will consist of two buildings: Building 1 at 6 stories on the east half and Building 2 at 7 stories on the west half. They will be fully exposed to the prevailing winds before other buildings in the masterplan are constructed;

- Increased wind speeds are anticipated at exposed building corners and facades. Although they are unlikely to exceed the wind safety limit due to the limited building heights, pedestrian areas, such as entrances, pick-up/drop-offs and outdoor cafes, should be placed away from these corners; and,

- Suitable wind conditions are predicted along public sidewalks in general.





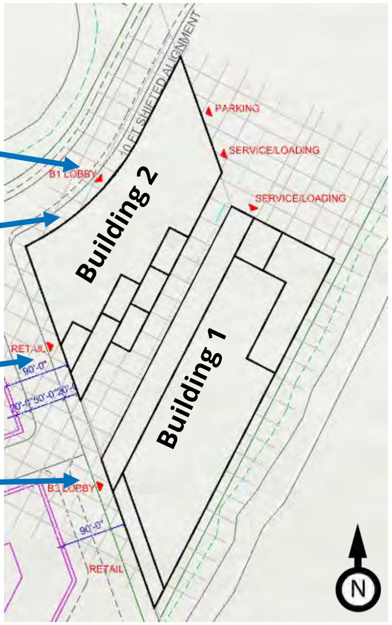
REVISED B-12

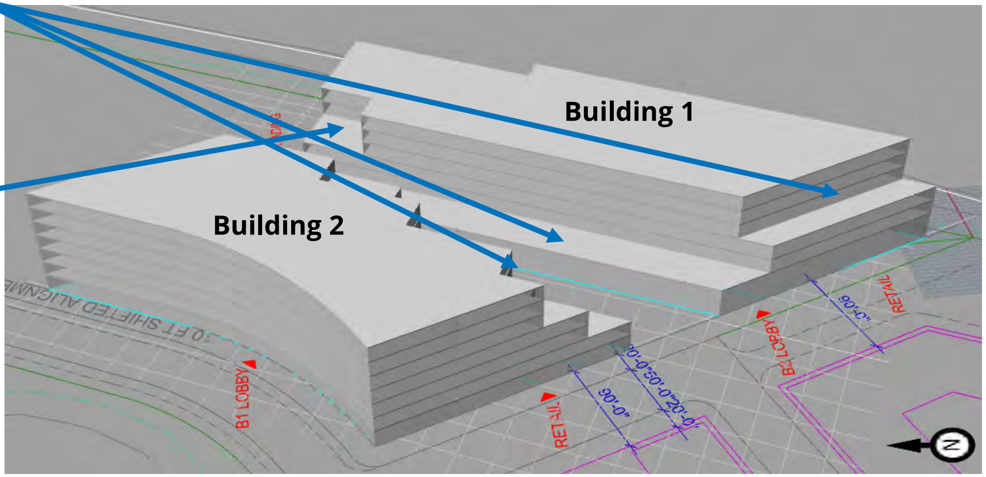
- Building 2 entrance is fully exposed to the northwest winds, which may downwash off the building façade. Wind mitigation may include installing canopies and/or recessing the entrances. Southwest winds may also accelerate along the façade, which can be controlled by wind screens and planters – see examples on the next page;

- The entrances along the southwest street may also be affected by the northwest (horizontal) and southwest (vertical) winds. This Building 1 entrance should be moved away from the corner, if possible;

- Above-grade terraces on Building 2 and the west and south podiums of Building 1 are well protected from the prevailing northwesterly winds; and,

- The roof at the north end of Building 1 is more exposed to the northwest and northeast winds. If frequent use of this area is anticipated, wind mitigation is required – see examples on the next three pages.





BUILDING ENTRANCES

Building entrances are not identified in the current masterplan. Low wind speeds are generally desired for the main entrance areas, where pedestrians may linger. As general guidelines,

- Main entrances should be placed away from building corners where high wind activity is typically expected;
- For the entrances directly exposed to the prevailing winds, winds downwashing off the proposed buildings be can be an issue. Canopies should be installed for protection from wind, rain and snow;
- Additional wind control measures may include entrance recessing, arcades as well as wind screens and planters on both sides of the entrances for controlling horizontal winds.

Wind control examples for building entrances

GREEN SPACE

The large open green park is sheltered by the proposed buildings to some extent, but wind speeds are expected to be higher than desired for passive pedestrian activities.

We recommend additional wind protection be considered along the perimeter and local measures around any seating areas, including soft and hardscaping (e.g., trees, screens, fences, trellises, etc.).

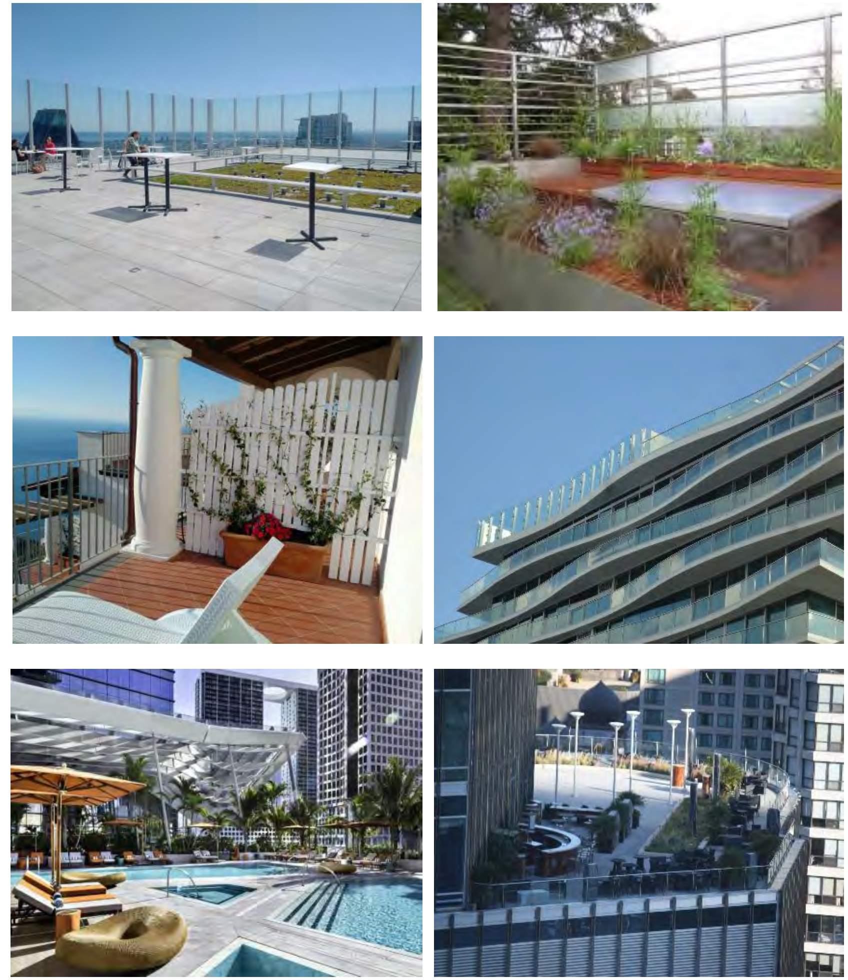
Another effective wind control strategy is to include under plantings to stop wind accelerations under tree canopies.

Examples of landscaping for wind control

PODIUM AND ROOF AMENITY

Potentially, there could be many above-grade terraces and green areas for the development. Rooftop areas are typically windy due to their elevation and exposure. The most common wind control measures are tall guardrails and parapets.

While podiums and setbacks are positive measures for reducing the wind impact at ground level, increased wind speeds are expected for podium terraces. The actual speeds vary with the exposure, location, size and elevation of these areas. In the event that undesirable conditions occur, taller guardrails, windscreens, privacy fences and landscaping may be incorporated to provide sheltering for amenity users. Podium terraces may also be affected by vertical winds that are deflected down by the building elements above. Therefore, wind control measures may also include overhead protection provided by trellises and canopies.



Examples of wind control features for above-ground amenity areas

SUMMARY

- Pedestrian wind conditions are assessed for the proposed Suffolk Downs Masterplan. This qualitative assessment is based on the local wind climate, current master plan, existing surroundings and our knowledge and experience with wind tunnel testing of similar buildings in the Boston area;

- The proposed masterplan includes several positive design features for wind control. As a result, the existing wind conditions in the surrounding areas such as T stations and public sidewalks, will not be altered significantly;

- On the development site, suitable wind conditions are predicted for most sidewalks and the proposed green spaces throughout the year;

- Due to the local wind climate, elevated wind conditions are anticipated around the exposed building corners. Other potential areas with undesirable wind conditions may include exposed building entrances, green spaces and above-ground amenities;

- Wind control concepts are provided to improve these wind conditions, ranging from building massing/layout to small scale mitigation measures such as landscaping, screens and canopies. Photo examples are provided in the report for consideration; and,

- Wind tunnel tests should be conducted at a later design stage to quantify these wind conditions and to develop wind control solutions.

Noise Measurement Data

		ML1		ML2		ML3		ML4		ML5	
Date	**Time**	**Leq**	**L90**	**Leq**	**L90**	**Leq**	**L90**	**Leq**	**L90**	**Leq**	**L90**
2017/10/31	10:00:00			57.6	47.7	57.1	48.0				
2017/10/31	11:00:00			56.7	47.4	56.8	45.6	63.0	45.7		
2017/10/31	12:00:00			58.5	49.7	57.5	46.6	62.0	45.8		
2017/10/31	13:00:00			58.6	49.8	55.7	47.6	60.1	46.8		
2017/10/31	14:00:00			60.9	51.5	56.4	48.9	60.2	48.9		
2017/10/31	15:00:00			59.8	51.1	58.5	51.6	62.5	48.6		
2017/10/31	16:00:00			60.0	51.5	55.5	47.7	62.4	47.8		
2017/10/31	17:00:00			59.6	51.4	57.4	46.7	63.1	47.8		
2017/10/31	18:00:00			59.1	49.0	55.8	45.9	62.5	46.5		
2017/10/31	19:00:00			57.2	48.8	56.7	46.1	62.8	46.5		
2017/10/31	20:00:00			57.7	49.2	57.5	46.6	62.6	46.0		
2017/10/31	21:00:00			56.0	48.2	51.7	46.2	58.2	45.7		
2017/10/31	22:00:00			55.3	46.9	52.5	44.9	58.5	44.7		
2017/10/31	23:00:00			54.6	45.3	49.3	42.9	58.4	43.1		
2017/11/01	00:00:00			52.2	44.3	49.7	42.9	58.5	42.9		
2017/11/01	01:00:00			51.6	44.0	46.6	42.6	55.5	42.5		
2017/11/01	02:00:00			51.7	44.9	45.4	43.5	45.4	42.8		
2017/11/01	03:00:00			49.8	45.7	47.1	44.2	46.1	43.2		
2017/11/01	04:00:00			51.5	47.3	47.5	46.0	47.0	44.5		
2017/11/01	05:00:00			54.2	49.4	50.7	48.1	57.5	47.2		
2017/11/01	06:00:00			59.2	50.6	53.0	49.4	60.9	49.0		
2017/11/01	07:00:00			61.4	52.3	53.7	48.8	61.5	48.8		
2017/11/01	08:00:00			60.2	49.5	53.1	45.8	60.8	45.2		
2017/11/01	09:00:00			57.6	46.0	48.4	42.5	60.3	43.4		
2017/11/01	10:00:00			56.2	45.3	61.8	42.6	57.1	41.4		
2017/11/01	11:00:00	56.0	52.0			51.9	46.2	56.6	42.4	57.0	51.2
2017/11/01	12:00:00	55.9	51.4							55.2	51.7
2017/11/01	13:00:00	56.5	52.3							58.2	51.6
2017/11/01	14:00:00	58.5	53.0							57.3	52.8
2017/11/01	15:00:00	57.6	52.5							58.5	53.6
2017/11/01	16:00:00	57.8	53.4							59.9	53.1
2017/11/01	17:00:00	57.6	52.7							59.4	53.4
2017/11/01	18:00:00	59.1	53.1							62.6	54.6
2017/11/01	19:00:00	56.2	51.3							60.0	54.3
2017/11/01	20:00:00	54.6	50.2							58.6	52.9
2017/11/01	21:00:00	55.2	50.0							59.4	52.9
2017/11/01	22:00:00	54.1	49.4							58.0	51.0
2017/11/01	23:00:00	53.3	48.0							56.5	48.1
2017/11/02	00:00:00	51.2	45.2							51.5	43.0
2017/11/02	01:00:00	49.6	45.1							48.6	41.0
2017/11/02	02:00:00	49.5	42.7							46.9	40.9
2017/11/02	03:00:00	51.0	42.5							47.8	41.8
2017/11/02	04:00:00	53.7	48.2							49.6	43.2
2017/11/02	05:00:00	55.7	50.7							55.8	48.7
2017/11/02	06:00:00	57.6	52.6							58.5	54.0
2017/11/02	07:00:00	58.9	54.1							60.2	56.0
2017/11/02	08:00:00	57.5	53.6							61.2	56.2
2017/11/02	09:00:00	56.3	52.4							58.7	54.6
2017/11/02	10:00:00	57.1	52.4							58.7	53.6
2017/11/02	11:00:00	58.5	53.2							59.2	54.1

ML1	Route 1A
ML2	Tomesello Way
ML3	Suffolk Downs T Station
ML4	Washburn Ave
ML5	Revere Beach Parkway

Leq						
	Daytime		**Nighttime**		**Overall**	
	Min	**Max**	**Min**	**Max**	**Min**	**Max**
ML1	55	59	49	58	49	59
ML2	56	61	50	59	50	61
ML3	48	62	45	53	45	62
ML4	57	63	45	61	45	63
ML5	55	63	47	59	47	63

L90						
	Daytime		**Nighttime**		**Overall**	
	Min	**Max**	**Min**	**Max**	**Min**	**Max**
ML1	50	54	43	53	43	54
ML2	45	52	44	51	44	52
ML3	43	52	43	49	43	52
ML4	41	49	43	49	41	49
ML5	51	56	41	54	41	56

Summary	
Filename	LxT_Data.002
Serial Number	4586
Model	SoundTrack LxT®
Firmware Version	2.301
User	MJA
Location	ML1-Route 1A
Job Description	SuffolkDowns
Note	13796.0
Measurement Description	
Start	2017/11/01 11:02:21
Stop	2017/11/02 11:16:53
Duration	1 Day 00:14:32.9
Run Time	1 Day 00:14:32.9
Pause	0:00:00.0
Pre Calibration	2017/11/01 11:01:30
Post Calibration	None
Calibration Deviation	---
Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1
Microphone Correction	Off
Integration Method	Exponential
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax
Results	
LASeq	56.2 dB
LAS1.00	64.2 dB
LAS10.00	58.6 dB
LAS33.30	55.9 dB
LAS50.00	54.5 dB
LAS90.00	48.2 dB
LAS99.00	42.7 dB

Summary	
Filename	LxT_Data.001
Serial Number	4586
Model	SoundTrack LxT®
Firmware Version	2.301
User	MJA
Location	ML2-Tomesello Way
Job Description	Suffolk Downs
Note	13796.0
Measurement Description	
Start	2017/10/31 10:19:46
Stop	2017/11/01 10:40:53
Duration	1 Day 00:21:07.0
Run Time	1 Day 00:21:07.0
Pause	0:00:00.0
Pre Calibration	2017/10/31 10:19:26
Post Calibration	2017/11/01 10:42:03
Calibration Deviation	-0.10 dB
Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1
Microphone Correction	Off
Integration Method	Exponential
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax

Results		
LASeq	57.7	dB
LAS1.00	67.0	dB
LAS10.00	61.8	dB
LAS33.30	55.6	dB
LAS50.00	52.5	dB
LAS90.00	46.3	dB
LAS99.00	44.0	dB

Summary		
Filename	VHB_Main.026	
Serial Number	3502	
Model	Model 831	
Firmware Version	2.311	
User	MJA	
Location	ML3-Suffolk Downs T Station	
Job Description	Suffolk Downs	
Note	13796.0	
Measurement Description		
Start	2017/10/31 10:42:27	
Stop	2017/11/01 11:07:46	
Duration	1 Day 00:25:19.8	
Run Time	1 Day 00:25:19.8	
Pause	0:00:00.0	
Pre Calibration	2017/10/31 10:40:40	
Post Calibration	2017/11/01 11:08:40	
Calibration Deviation	-0.77 dB	
Overall Settings		
RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamp	PRM831	
Microphone Correction	Off	
Integration Method	Exponential	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	A Weighting	
OBA Max Spectrum	At Lmax	
Gain	0.0	dB
Results		
LASeq	55.2	dB
LAS1.00	66.8	dB
LAS10.00	56.8	dB
LAS33.30	51.1	dB
LAS50.00	49.0	dB
LAS90.00	44.4	dB
LAS99.00	42.2	dB

Summary	
Filename	LxT_Data.017
Serial Number	3707
Model	SoundExpert™ LxT
Firmware Version	2.301
User	MJA
Location	M4-Washburn Ave
Job Description	Suffolk Downs
Note	13796.0
Measurement Description	
Start	2017/10/31 11:14:53
Stop	2017/11/01 11:44:28
Duration	1 Day 00:29:35.7
Run Time	1 Day 00:29:35.7
Pause	0:00:00.0
Pre Calibration	2017/10/31 11:14:39
Post Calibration	2017/11/01 11:45:25
Calibration Deviation	-0.23 dB
Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Exponential
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax

Results		
LASeq	60.2	dB
LAS1.00	73.5	dB
LAS10.00	61.1	dB
LAS33.30	50.5	dB
LAS50.00	48.5	dB
LAS90.00	44.0	dB
LAS99.00	41.8	dB

Summary	
Filename	VHB_Main.027
Serial Number	3502
Model	Model 831
Firmware Version	2.311
User	MJA
Location	ML5-Revere Beach Parkway
Job Description	Suffolk Downs
Note	13796.0
Measurement Description	
Start	2017/11/01 11:31:21
Stop	2017/11/02 11:27:50
Duration	23:56:29.4
Run Time	23:56:29.4
Pause	0:00:00.0
Pre Calibration	2017/11/01 11:30:50
Post Calibration	None
Calibration Deviation	---
Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRM831
Microphone Correction	Off
Integration Method	Exponential
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax
Gain	0.0 dB
Results	
LASeq	58.1 dB
LAS1.00	66.7 dB
LAS10.00	60.7 dB
LAS33.30	56.9 dB
LAS50.00	55.3 dB
LAS90.00	45.4 dB
LAS99.00	41.0 dB

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

June 23, 2000

Greg D. Peterson
Hill & Barlow
One International Place
Boston, MA 02110-2600

Dear Mr. Peterson:

In response to your inquiry about the status of Suffolk Downs under Chapter 91, the Department has concluded based upon further review of maps, the licensing history, and a site visit that the Suffolk Downs property is no longer subject to jurisdiction. We summarize here the basis for our opinion.

Much of the property (Bk 21541, Pg 247; Doc.# 553756) was originally salt marsh, elevated above mean high water. Smaller portions of the property were open, tidal channels and upland. The flowed tideland areas were filled pursuant to Chapter 311 of the Acts of 1894 and a series of licenses and state reclamation plans issued in the 1930s. Those licenses also authorized the permanent exclusion of tidal action on the site though the construction of tidegates and other structures and the artificial re-engineering of prior channels (and digging of new channels) as drainage channels. A more recent authorization in 1993 allowed the replacement of these tidegates and the further excavation of drainage channels. The result of these activities is a site consisting predominately of upland fill and some drainage features. The filled tidelands are now landlocked (entirely separated from flowed tidelands by public ways including among others, State Highway Route 1A, Revere Beach Parkway, Saratoga Street and Bennington Street) and greater than 250 feet from the high water mark (see 310 CMR 9.02). According to 310 CMR 9.02, therefore, the Department has determined that the filled tidelands are no longer subject to jurisdiction. The ditches and drainage basin are not flowed tidelands, due to the tidegates, nor are they natural rivers or streams. Instead, the areas containing water appear to be freshwater drainage conduits to prevent flooding of the filled areas.

The situation at Suffolk Downs is distinguishable from the jurisdictional status of areas such as along the Charles River where the Department has extended jurisdiction over filled tidelands. These distinguishable cases involve a natural pond, river, or stream which is clearly navigable and remains connected to flowed tidelands even if interrupted by a lock, culvert, or other intervening connection structure. On the other hand, the drainage created at this site for flood control does not constitute a natural pond, river, or stream. In addition, the drainage pipes, culverts and channels do not, and were intended not to, preserve tidal flow or navigation. The inundated lands under certain sections of the drainage channels may arguably, as a technical matter, be impressed with some residual public rights, however, the Department has determined that the interest is so minimal, remote, and alienated that we do not believe that remnant interest is germane to c. 91. The Department has therefore decided not to assert jurisdiction under these circumstances.

If requested, the Department will evaluate any new information submitted which supplements the substantial basis developed for this interpretation and finding letter. This letter supersedes any prior communications from the Department on this matter. Please let me know if you have any questions.

Sincerely,

Arleen O'Donnell
Assistant Commissioner

MassDEP

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

March 26, 2013

Richard K. Sullivan Jr., Secretary
Executive Office of
Energy & Environmental Affairs
100 Cambridge Street
Boston MA, 02114

RE: Boston/Revere
Caesars Resort at Suffolk Downs
Suffolks Downs Racecourse
Route 1A Tomasello Drive
EEA # 15006

Attn: MEPA Unit

Dear Secretary Sullivan:

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed the Environmental Notification Form (ENF) submitted by Sterling Suffolk Racecourse, LLC to construct a resort casino on the 161 acre, Suffolk Downs Racetrack property in Boston and Revere (EEA #15006). The site is bisected by the Rumney Marshes Area of Critical Environmental Concern (ACEC), which extends along Sales Creek. The casino will comprised of up to 450 hotel rooms in two hotels; multi-purpose meeting space; approximately 16 restaurants; 200,000 square feet (sf) of gaming space; 30,000 sf of retail space; and parking that includes a seven-story parking garage with about 2,600 spaces, valet parking for 450 vehicles, and 2,100 surface parking spaces. The Suffolk Downs Grandstand building will be repurposed to support one of the casino areas. The entire project is estimated at 1,802,363 sf in several linked buildings, and it exceeds several MEPA thresholds, which make the project categorically included for the preparation of an environmental impact report. MassDEP provides the following comments.

Wastewater

The ENF states that there is sufficient capacity in the existing collection system to accommodate the estimated 307,080 gallons per day (gpd) of new wastewater flow, which will increase the wastewater discharge to 473,100 gpd from the project site. Since new flows from the site will be greater than 50,000 gpd, a sewer extension/connection permit will be required. Additional information on the sewer extension and connection regulations is available on the MassDEP website: http://www.mass.gov/dep/service/regulations/314cmr07.pdf. Flows from the entire project must be included in the MassDEP Sewer Connection Permit Application. Wastewater generated by the project will discharge into the City of Boston's sewer system and ultimately flow to the MWRA's Deer Island Wastewater Treatment Facility. The wastewater flow generation estimation should be expanded from the information provided in the

ENF. Wherever possible, the flow generation numbers noted in 314 CMR 7.15 or 310 CMR 15.203(2) – (5) should be used as design flows. In this regard, the estimate for theatre seats should be five gallons per day (gpd)/seat and not three gpd/seat, as noted in the ENF. Flows from existing areas which are to remain may be estimated using existing water meter data. Future flows which are not encompassed in the regulations cited above should be based on best engineering judgment, and typically can be determined utilizing 200 percent of the average daily flows using actual data from similar facilities. The method used to produce flow estimates must be detailed in the DEIR.

MassDEP collaborates with the MWRA and its member communities, (including Boston), in implementing a flow control program in the MWRA regional wastewater system to remove extraneous clean water, which is referred to as infiltration/inflow (I/I) from the sewer system. Proponents adding significant new wastewater flow participate in the I/I reduction effort to ensure that the additional wastewater flows from their projects are offset by the removal of I/I, which is typically at a rate of four gallons of I/I removed for every gallon of wastewater added. In accordance with the provisions of the MassDEP policy on I/I mitigation requirements in MWRA communities, (available at http://www.mass.gov/dep/water/laws/mwraii09.pdf), I/I mitigation is a required element of a MassDEP sewer connection permit for projects which generate greater than 15,000 gallons per day of wastewater flow where a project exceeds any MEPA threshold for an DEIR or if the project has a significant risk of creating conditions leading to a sanitary sewer overflow. Given the scope and impacts of the proposed project, and the need for I/I mitigation, the proponent should arrange to meet with MassDEP and the cities of Boston and Revere to develop a plan to meet the mitigation requirements of the MassDEP I/I Policy.

Chapter 91, Waterways Licensing

The ENF suggests that no Chapter 91 license is required for the project because it is not located on jurisdictional tidelands. This view is consistent with a prior opinion from MassDEP in June, 2000, that found the tidelands on the site are non-jurisdictional because they are landlocked tidelands in accordance with the definition of that term in the waterways regulations at 310 CMR 9.02. The Department has confirmed the conclusion of the 2000 correspondence through a careful review of previous Chapter 91 licenses, dating back to the late 1800's, that were issued for the filling of tidelands, installation of tidegates, and creation of drainage features at and adjacent to the project site.

While projects on landlocked tidelands are not subject to licensing, they are required to seek a Public Benefits Determination by the Secretary. According to the ENF, the DEIR will include more information regarding the projects benefits to public trust rights in tidelands. The Department will review and comment upon the DEIR's discussion of the public benefits provided by the project.

Wetlands

MassDEP requests a description of the wetland resources onsite and off-site where project-related work or mitigation is proposed. The DEIR should quantify the extent of unavoidable wetland alteration, including both temporary and permanent impacts. Plans at a readable scale should show the boundaries of all wetland resource areas and areas to be altered.

The proposal also should explain how the project will comply with the applicable performance standards as required in the wetlands regulations and demonstrate that wetland alteration has been avoided and minimized to the extent feasible through preparation of an alternatives analysis (see 310 CMR 10.55(4)). Where opportunities exist, revised site designs should be considered in order to avoid and minimize wetland impacts. The proposal should include plans depicting and quantifying wetlands replication areas and information on how altered wetland functions will be restored.

According to the ENF, the project will fill 480,000 square feet (sf) of Bordering Land Subject to Flooding (BLSF), and this loss will be compensated with 140,000 cubic feet (cf) of compensatory flood storage. The areas of impact and compensation will need to be shown on plans at a readable scale. Compensatory flood storage must be provided at an incremental basis, in accordance with the performance standards under 310 CMR 10.57(4).

In addition, off-site work relating to the project would alter 40,000 sf of Land Subject to Coastal Storm Flowage (LSCSF). This area also needs to be shown on the project plans. MassDEP also requests a full description of this floodplain area and an explanation for classifying this area as LSCSF, rather than BLSF.

Stormwater

A new stormwater drainage system is proposed for the two casino areas, parking garage, and surface parking areas. As explained in the ENF, the stormwater system for the CAFO operations in the northern and northeastern portions of the site is expected to remain as is.

According to the ENF, the Redevelopment Standard 7 in the MassDEP stormwater management regulations (SMR), (310 CMR 10.05(6)(k)), is applicable to the project. This standard allows the proponent to demonstrate that the standards have been met "to the maximum extent practicable," where it is not feasible to comply with the standards fully. However, this is a largely underdeveloped project site that includes the Rumney Marshes ACEC, and the nearby waterbodies are impaired, such that total maximum daily loads (TMDL) are needed and a draft pathogen TMDL has been established. Therefore, MassDEP strongly encourages the proponent to evaluate stormwater management designs in the DEIR that fully comply with the SMR performance standards in order to protect the ACEC and conform to the goals established in the pathogen TMDL. The project has an opportunity and obligation to contribute toward the ongoing revitalization of this significant natural resource, which notably received one million dollars last year from the U.S Fish and Wildlife Service (USFWS) National Coastal Wetland Conservation Grant Program (NCWCG) to restore 33 acres of the 2,000 acre Rumney Marsh, the largest contiguous salt marsh habitat in the Boston metropolitan area.

As specified for redevelopment in the *Stormwater Management Handbook Volume 1*, a demonstration of "to the maximum extent practicable" entails a demonstration that all reasonable efforts have been made to comply with the standards, including considering on and off-site alternatives. "The scope and effort to be undertaken to meet the standards should reflect the scale and impacts of the proposed project and the classification and sensitivity of the affected wetlands and water resources." Conventional best management practices (BMPs) and low impact development techniques are proposed for compliance with the applicable performance standards. Currently, there are no detailed stormwater management plans in the ENF.

The DEIR should demonstrate that the project's water quality and quantity impacts would be controlled with best management practices (BMPs) to comply with SMR standards and for consistency with the applicable Storm Water Programs under the NPDES Phase I and Phase II Stormwater General Permits for MassDOT and the cities of Boston and Revere. These state and local stormwater management programs have requirements and implementation strategies to control the release of pollutants in stormwater runoff to impaired waterbodies with total maximum daily loads (TMDLs). As there is a *Draft Pathogen TMDL for the Boston Harbor Watershed (excluding the Neponset River sub-basin)* for impaired and non-impaired waterbodies in the vicinity of the project site, the stormwater management study should consider how stormwater controls conform to the TMDL and associated implementation strategies established for pathogens. In general, the MassDEP report, *Mitigation Measures to Address Pathogen Pollution in Surface Water: A TMDL Implementation Guidance Manual for Massachusetts,* recommends the use of infiltration BMPs to control pathogens. "Given the high concentrations of bacteria often found in stormwater and the lack of targeted mitigation measures, perhaps the most effective means of reducing stormwater contributions to pathogen impairment is to reduce the volume of runoff by increasing infiltration to groundwater." The DEIR should present a thoughtful analysis of the effectiveness of the stormwater management system in controlling the recognized water quality impairments, particularly pathogens, taking into consideration pollution prevention, source control, BMPs, and system maintenance. Additional information on pathogen mitigation is available in this report; it is available at the following MassDEP website: http://www.mass.gov/dep/water/resources/impguide.pdf.

Stormwater runoff impacts during construction and post-construction will need to be evaluated in the DEIR, including off-site transportation mitigation and sewer-related work. It is anticipated that the stormwater management report will be sufficiently detailed to demonstrate that source controls, pollution prevention measures, erosion and sediment controls, and the post-development drainage system will be designed in compliance with the MassDEP stormwater management regulations, pursuant to 310 CMR 10.05(6)(k) and all applicable performance standards, including Standard 6 for Critical Areas such as ACECs, which are addressed in greater detail in the Stormwater Management Handbooks.

The DEIR also should demonstrate that source controls, pollution prevention measures, erosion and sediment controls during construction, and the post-development drainage system will be designed to comply with the SMR and standards for water quality and quantity impacts and for consistency with the Storm Water Programs identified previously. Calculations, stormwater system design plans at a readable scale, best management practice (BMP) designs, and supporting information should demonstrate that the stormwater system design protects wetland resources in conformance with the stormwater regulations and NPDES permits.

Low Impact Development

The proponent is considering low impact development (LID) and the use of integrated management practices (IMP) for control of stormwater in combination with conventional drainage control measures, as the SMR requires. The range of LID techniques offers a stormwater management approach that minimizes runoff impacts by maintaining and mimicking existing hydrologic functions. LID can be less costly than conventional gutter and pipe drainage systems to construct and maintain. LID also can provide redundancy for stormwater control.

The current project layout reduces imperviousness by about nine acres, which downsizes the volume of stormwater that will need to be controlled and may allow infiltration of rainwater to limit the release of contaminants from the site into nearby marshland and waterbodies. Currently 71 acres of the 161 acre site are impervious, with 90 acres considered pervious. This project also is suitable for other low impact development (LID) stormwater control strategies and practices. For example, flat-roof buildings could be vegetated as green roofs, and pervious pavement could be used for low intensity parking areas and sidewalks on site. There also may be an opportunity to add raingardens/bioretention areas and tree box filters for enhanced stormwater infiltration in open space and landscaped strips. Additional information on LID practices with high environmental performance efficiencies is available on the following USEPA website: www.epa.gov/nps/lid.

Greenhouse Gas Emissions (GHG)

According to the ENF, the project "will set a new standard of excellence in sustainable design…" for similar facilities. The goal for this project is the US Building Council's Leadership in Energy and Environmental Design (LEED) Gold rating. The project will need to comply with the City of Boston's Article 37 Zoning Ordinance and the applicable Stretch Building Code, which is being revised and expected to take effect either this year or 2014. It is anticipated that the DEIR will describe the design measures that will adopted to achieve at least these standards, in addition to providing a full analysis of mobile and stationary sources of greenhouse gas emissions. The proposed project is subject to the *MEPA Greenhouse Gas Emissions Policy and Protocol (Policy)* as amended on May 5, 2010.

The policy requires energy modeling to quantify projected energy consumption and the related GHG emissions from direct and indirect stationary sources, and to evaluate the energy efficient design alternatives that will be incorporated into the project to reduce greenhouse gas emissions. The policy allows the proponent to select a model; however, MassDEP and DOER recommend using EQUEST for stationary source modeling. The DEIR should include the modeling printout for at least three scenarios: base case, preferred alternative case, and preferred alternative with greater GHG mitigation case. In addition, the DEIR should include emission tables that compare base case emissions in tons with the mitigation alternatives showing the reduction in tons and percentage by emissions source, direct, indirect and transportation. Other tables or graphs that show the tonnage and percentage reduction of major mitigation elements are also very useful in comparing the value added of different measures. The DEIR should explain, in reasonable detail, any measure not selected that has the potential to significantly reduce GHG emissions. At this stage of the MEPA review, the proponent anticipates that the project would include high efficiency chillers, condensing boilers, water and airside economizers, heat recovery, high efficiency lighting, lighting controls, and water conserving plumbing fixtures.

The Massachusetts Clean Energy and Climate Plan 2020 estimates that MEPA project reviews will contribute by reducing approximately 100,000 Metric Tons of CO_2 equivalent by 2020. Significant projects, such as Caesars Resort are integral to the achievement of this goal.

Therefore, MassDEP encourages the proponent to adopt cutting-edge energy efficient designs and equipment wherever feasible, taking into consideration that energy efficient designs yield cost-savings over time.

At this early planning stage, the proponent is evaluating on-site anaerobic digestion (AD) to reduce organic waste from the casino and racetrack, which can generate an alternative fuel source for the project. In addition, photovoltaics (PV), green roofs, and combined heat and power (CHP) will be given consideration. The DEIR should layout information and plans to understand the feasibility of incorporating renewable energy into the project design. Should a renewable energy option be infeasible, it is requested that the DEIR provide an explanation and a thoughtful discussion of the changes that would be needed for reconsideration of that alternative.

MassDEP is very supportive of CHP for this project, in light of the information provided by USEPA on CHP and casinos, such as the USEPA factsheet and market analysis, which are available at the following websites: http://www.epa.gov/chp/markets/casino_fs.html and http://www.epa.gov/chp/documents/hotel_casino_analysis.pdf, respectively. According to USEPA, CHP is a viable option for a significant number of large hotels and casinos; CHP typically supplies 50 to 70 percent of the electricity needed. As the proponent proceeds with the technical and economic feasibility evaluation, it may be helpful to consult the CHP Partnership, an organization that assists with the design process and to identify financing options and other services that can be accessed through the USEPA website: http://www.epa.gov/chp/. In addition, MassDEP has promulgated regulations to encourage the installation of CHP systems. These regulations may be found at 310 CMR 7.26(45) Combined Heat and Power (CHP).

Anaerobic Digestion(AD) to Energy

MassDEP supports the proponent's efforts to evaluate AD as an energy source for this project and requests that the DEIR describe and provide plans for an AD system, or alternative AD systems that would utilize available resources to meet the project's energy needs. The potential for GHG emissions reductions from an alternative fuel should be considered in the DEIR.

In terms of air quality permitting, the proponent has the option of either complying in full with the MassDEP regulations for engines and turbines in 310 CMR 7.26(43), or alternatively, complying with the Best Available Control Technology (BACT) requirements in 310 CMR 7.02(5). The engine and turbine regulations apply to engines that have a power output rating equal to or greater than 50kW and turbines with a rated power output less than or equal to ten MW.

If the alternative approach and BACT is selected, the requirements for top-case BACT are explained in the commercial AD BACT Guidance document, entitled *Current Best Available Control Technology (BACT) Requirements,* which is available at the following MassDEP website: http://www.mass.gov/dep/air/approvals/bactadc.pdf. In addition, detailed information on the Air Quality (AQ) Plan Approval process, as well as the AQ forms that would be needed in order to obtain a written AQ Plan Approval are available on the following MassDEP website: http://www.mass.gov/dep/air/approvals/aqforms.htm#airpapp.

In addition, with respect to any proposed AD component of the project, the DEIR should discuss the applicability of MassDEP's regulations promulgated in November 2012 for the purpose of building capacity for managing organic materials (310 CMR 16.00, 310 CMR 19.00 & 314 CMR 12.00). These regulatory amendments were developed to address barriers to the development of certain types of recycling, composting, and other clean/green cutting edge technologies in the Commonwealth, such as AD. The regulatory changes were created to bring the regulations up-to-date with innovative clean energy technologies by establishing a clear permit pathway for these activities; thereby facilitating siting of these projects and ensuring that high environmental standards are met. Among other things, these regulations exempt certain activities from solid waste site assignment requirements and set forth a straightforward pathway for permitting certain recycling, composting, and conversion (RCC) activities.

MassDEP is available to hold pre-application meetings with the proponent in order to fully answer any technical questions concerning regulatory requirements for AD, and to describe the best path to take to fulfill the regulatory requirements expeditiously. However, in the event that an AD system is found to be infeasible for the project, MassDEP requests that the DEIR provide an organics management plan for the project.

Air Quality

The ENF estimates that the project will generate 24,600 new vehicle trips per day based on a preliminary analysis which will be refined in the Draft Environmental Impact Report (DEIR). Nevertheless, it is anticipated that the final, new vehicle trip projection will exceed MassDEP's review threshold of 3,000 daily trips for mixed use development requiring an air quality mesoscale analysis of project related emissions. The purpose of the mesoscale analysis is to determine to what extent the proposed project trip generation will increase the amount of volatile organic compounds (VOCs) and nitrogen oxides (NOx) in the project study area. The proposed project also is subject to the MEPA Greenhouse Gas Emissions Policy and Protocol (Policy) as amended on May 5, 2010. The Policy requires the project proponent to quantify project-related carbon dioxide (CO_2) emissions and identify measures to avoid, minimize, and mitigate these emissions. The mesoscale analysis also should be used for this purpose. The analysis must compare the indirect emissions from transportation sources under future No Build, Build, and Build with Mitigation conditions. Subsequent environmental filings should include the results of the mesoscale analysis for VOC, NOx, and CO2 emissions under these conditions.

MassDEP supports the proponent's commitment to collaborate with the MBTA to enhance transit service to the site and to mitigate the impacts of the project-related traffic through a combination of local and regional roadway improvements, transportation demand management (TDM), and parking management.

Enhanced Transit Service

The project site enjoys excellent transit connections with nearly direct access via Suffolk Downs and Beachmont Blue Line Stations, local bus service, and limited express bus service. MassDEP recommends that the proponent exploit the potential of this transit-rich location by promoting transit service to the project site from neighboring communities, Logan Airport, Downtown, and the Seaport District. Accordingly, the DEIR should explore all reasonable opportunities for trip reduction and management tailored to the specific needs of employees and patrons with particular emphasis on transit connections as well as bicycle and pedestrian infrastructure and amenities. MassDEP recommends that the project proponent consider the following three actions:

- Work closely with the MBTA to consider adding an on-site bus stop for the Express Bus Routes 424, 434, 448, and 449 for increased transit service to the site.
- Maintain the existing Suffolk Downs shuttle service to adjacent Blue Line stations and expand the shuttle service as necessary to accommodate additional Blue Line ridership to the project site.
- Offer active support for any future consideration to expand the Silver Line into East Boston and Chelsea. Should the Hubway bike share program expand into East Boston, MassDEP recommends the proponent support an on-site docking station.

MassDEP encourages the proponent to explore these and other opportunities for trip reduction and management and recommends that the DEIR includes greater emphasis on pedestrian and bicycle measures that take advantage of the project's proximity to several transit options.

Recommended Mitigation Measures

In addition to MassDEP's aforementioned recommendations and the transit demand management (TDM) measures presented in the ENF, MassDEP recommends that the DEIR contain a greater emphasis on TDM and mitigation measures to reduce project related emissions, such as the following measures:

- Provide market incentives that encourage patrons to seek travel by charter bus service rather than private automobile.
- Charge market price for parking spaces used by single occupant vehicle (SOV) drivers. Proponents can charge a fee to those who drive alone, while keeping parking free for bus, transit, carpool or vanpool.
- Offer parking cash-out incentives to employees whose parking is provided. This strategy encourages employers/tenants to provide employees with an option for compensation for not utilizing dedicated parking spaces, thus encouraging employees to seek alternative modes of transportation such as walking, biking, carpooling, or taking public transit to work.
- Provide expanded private shuttle service to transit connections for both employees and patrons.
- Improve proposed bicycle parking by providing short and long term accommodations, as appropriate, for project employees and patrons. Bicycle parking should be secure, convenient, weather protected, and sufficient to meet demand.
- Work with Boston officials to support and fund as necessary, off-site, improved bicycle access to the project site, including the use of the most recent MassDOT Design Guidelines or engineering judgment, as appropriate.
- Offer Alternative Work Schedules to all employees as well as staggered work shifts, where appropriate, to reduce peak period traffic volumes.
- Provide Direct Deposit for employees.

- Participate in the USEPA SmartWay Transport Program. SmartWay is a voluntary program that increases energy efficiency and reduces greenhouse gas emissions.
- Provide Guaranteed Ride Home to those employees who regularly commute by transit, bicycle, or vanpool to the site and who have to leave work in the event of a family emergency or leave work late due to unscheduled overtime.
- Establish infrastructure that provides publicly available electric vehicle charging facilities.
- Provide electronic signage displaying shuttle and transit schedule information.
- Dedicate space for Car Sharing/Bike Sharing. The proponent should dedicate a minimum of two car sharing spaces in the proposed garage. MassDEP recommends the proponent provide support and dedicated space for bike sharing on site as this concept expands into the area.
- Hire an Employee Transportation Coordinator to administer the parking management program. A Coordinator can act as a point of contact for the various tenants within a given development, help enforce the parking requirements, and carry out any other day-to-day tasks and strategies from the rest of the list above.
- Unbundle hotel guest parking fees from accommodation rates, thus encouraging alternative travel mode choice.
- Provide preferential and free parking for guests using carpools.
- Explore shared parking opportunities to take advantage of the varying parking demand periods of nearby facilities.

Recommended Construction Period Air Quality Mitigation Measures

Diesel emissions contain fine particulates that exacerbate a number of heath conditions, such as asthma and respiratory ailments. MassDEP recommends that the proponent work with its staff to implement construction-period diesel emission mitigation, which could include the installation of after-engine emission controls such as oxidation catalysts or diesel particulate filters, or the use of construction equipment that meet Tier 3 or Tier 4 emission standards for non-road construction equipment. Additional information is available on the MassDEP website: http://www.mass.gov/dep/air/diesel/conretro.pdf. In addition, project contractor(s) are required to use ultra low diesel fuel (ULSD) in their off-road construction equipment in conjunction with after-engine emission controls.

Required Mitigation Measures: Compliance with the Massachusetts Idling Regulation

The ENF acknowledges the Massachusetts Idling regulation (310 CMR 7.11) which prohibits motor vehicles from idling their engines more than five minutes unless the idling is necessary to service the vehicle or to operate engine-assisted power equipment (such as refrigeration units) or other associated power. The DEIR should address how the project will ensure compliance with the regulation. Questions regarding this regulation should be directed to Julie Ross of MassDEP at 617-292-5958.

Recycling Issues

MassDEP acknowledges the proponent's commitment to recycle and reuse as much of the construction and demolition (C&D) waste as feasible. The proponent also should be aware of that certain materials are restricted from disposal, pursuant to 310 CMR 19.017 and that demolition activities must comply with both Solid Waste and Air Pollution Control regulations, pursuant to M.G.L. Chapter 40, Section 54, which provides:

"Every city or town shall require, as a condition of issuing a building permit or license for the demolition, renovation, rehabilitation or other alteration of a building or structure, that the debris resulting from such demolition, renovation, rehabilitation or alteration be disposed of in a properly licensed solid waste disposal facility, as defined by Section one hundred and fifty A of Chapter one hundred and eleven. Any such permit or license shall indicate the location of the facility at which the debris is to be disposed. If for any reason, the debris will not be disposed as indicated, the permittee or licensee shall notify the issuing authority as to the location where the debris will be disposed. The issuing authority shall amend the permit or license to so indicate."

For the purposes of implementing the requirements of M.G.L. Chapter 40, Section 54, MassDEP considers an asphalt, brick, and concrete (ABC) rubble processing or recycling facility, (pursuant to the provisions of Section (3) under 310 CMR 16.05, the Site Assignment regulations for solid waste management facilities), to be conditionally exempt from the site assignment requirements, if the ABC rubble at such facilities is separated from other solid waste materials at the point of generation. In accordance with 310 CMR 16.05(3), ABC can be crushed on-site with a 30-day notification to MassDEP. However, the asphalt is limited to weathered bituminous concrete, (no roofing asphalt), and the brick and concrete must be uncoated or not impregnated with materials such as roofing epoxy. If the brick and concrete are not clean, the material is defined as construction and demolition (C&D) waste and requires either a Beneficial Use Determination (BUD) or a Site Assignment and permit before it can be crushed.

Pursuant to the requirements of 310 CMR 7.02 of the Air Pollution Control regulations, if the ABC crushing activities are projected to result in the emission of one ton or more of particulate matter to the ambient air per year, and/or if the crushing equipment employs a diesel oil fired engine with an energy input capacity of three million or more British thermal units per hour for either mechanical or electrical power which will remain on-site for twelve or more months, then a plan application must be submitted to MassDEP for written approval prior to installation and operation of the crushing equipment.

In addition, if significant portions of the demolition project contain asbestos, the project proponent is advised that asbestos and asbestos-containing waste material are a special waste as defined in the Solid Waste Management regulations, (310 CMR 19.061). Asbestos removal notification on permit form ANF 001 and building demolition notification on permit form AQ06 must be submitted to MassDEP at least 10 working days prior to initiating work. Except for vinyl asbestos tile (VAT) and asphaltic-asbestos felt and shingles, the disposal of asbestos containing materials within the Commonwealth must be at a facility specifically approved by MassDEP, (310 CMR 19.061). No asbestos containing material including VAT, and/or asphaltic-asbestos felts or shingles may be disposed at a facility operating as a recycling facility, (310 CMR 16.05). The disposal of the asbestos containing materials outside the jurisdictional boundaries of the Commonwealth must comply with all the applicable laws and regulations of the state receiving the material.

The demolition activity also must conform to current Massachusetts Air Pollution Control regulations governing nuisance conditions at 310 CMR 7.01, 7.09 and 7.10. As such, the proponent should propose measures to alleviate dust, noise, and odor nuisance conditions, which may occur during the demolition. Again, MassDEP must be notified in writing, at least 10 days in advance of removing any asbestos, and at least 10 days prior to any demolition work. The removal of asbestos from the buildings must adhere to the special safeguards defined in the Air Pollution Control regulations, (310 CMR 7.15 (2)).

The proponent's record for its comprehensive recycling programs should be emulated and expanded in Massachusetts. In addition to paper, glass, plastics, waste oil, and cardboard, MassDEP would appreciate and encourage a commitment to innovative recycling of the waste stream, characteristic of a resort casino, such as is being done with gently-used soap and personal care products. Facilitating future waste reduction and recycling and integrating recycled materials into the project are necessary to minimize or mitigate the long-term solid waste impacts of this type of development. The Commonwealth's waste diversion strategy is part of an integrated solid waste management plan, contained in The Solid Waste Master Plan that places a priority on source reduction and recycling. Efforts to reduce waste generation and promote recycling have yielded significant environmental and economic benefits to Massachusetts' residents, businesses and municipal governments over the last ten years. Waste diversion will become even more important in the future as the key means to conserve the state's declining supply of disposal capacity and stabilize waste disposal costs.

In revising the Solid Waste Master Plan, MassDEP is advancing a goal to divert 450,000 tons of food waste from landfills and incinerators by 2020. In the future, large-scale food waste generators, which may include Caesar's Resort, will be banned from landfilling or incinerating food waste. Therefore, MassDEP strongly encourages the proponent to move forward with plans for anaerobic digestion (AD) on-site. If this is infeasible, an alternative AD facility and/or composting facility should be considered for the project's organic waste.

As the lead state agencies responsible for helping the Commonwealth achieve its waste diversion goals, MassDEP and EEA have strongly supported voluntary initiatives by the private sector to institutionalize source reduction and recycling into their operations. Adapting the design, infrastructure, and contractual requirements necessary to incorporate reduction, recycling and recycled products into existing large-scale developments has presented significant challenges to recycling proponents. Integrating those components into developments such as the Caesars Resort at Suffolk Downs project at the planning and design stage enable the project's management and occupants to establish and maintain effective waste diversion programs. For example, facilities with minimal obstructions to trash receptacles and easy access to main recycling areas and trash chutes allow for implementation of recycling programs and have been proven to reduce cleaning costs by 20 percent to 50 percent. Other designs that provide sufficient space and electrical services will support consolidating and compacting recyclable material and truck access for recycling material collection.

By incorporating recycling and source reduction into the design, the proponent has the opportunity to join a national movement toward sustainable design. Sustainable design was endorsed in 1993 by the American Institute of Architects with the signing of its *Declaration of*

Interdependence for a Sustainable Future. The project proponent should be aware there are several organizations that provide additional information and technical assistance, including Recycling Works in Massachusetts, the Chelsea Center for Recycling and Economic Development, and MassRecycle.

Massachusetts Contingency Plan/M.G.L. c.21E

Contaminated Soil and Groundwater: The ENF has identified 1 contamination sites assigned to release tracking numbers, including: RTN 3-14857 (RAO B-1). The project proponent is advised that excavating, removing and/or disposing of contaminated soil, pumping of contaminated groundwater, or working in contaminated media must be done under the provisions of MGL c.21E (and, potentially, c.21C) and OSHA. If permits and approvals under these provisions are not obtained beforehand, considerable delays in the project can occur. The project proponent cannot manage contaminated media without prior submittal of appropriate plans to MassDEP, which describe the proposed contaminated soil and groundwater handling and disposal approach, and health and safety precautions. Because contamination at the site is known or suspected, the appropriate tests should be conducted well in advance of the start of construction and professional environmental consulting services should be readily available to provide technical guidance to facilitate any necessary permits. If dewatering activities are to occur at a site with contaminated groundwater, or in proximity to contaminated groundwater where dewatering can draw in the contamination, a plan must be in place to properly manage the groundwater and ensure site conditions are not exacerbated by these activities. Dust and/or vapor monitoring and controls are often necessary for large-scale projects in contaminated areas. The need to conduct real-time air monitoring for contaminated dust and to implement dust suppression must be determined prior to excavation of soils, especially those contaminated with compounds such as metals and PCBs. An evaluation of contaminant concentrations in soil should be completed to determine the concentration of contaminated dust that could pose a risk to health of on-site workers and nearby human receptors. If this dust concentration, or action level, is reached during excavation, dust suppression should be implemented as needed, or earthwork should be halted.

Potential Indoor Air Impacts: Parties constructing and/or renovating buildings in contaminated areas should consider whether chemical or petroleum vapors in subsurface soils and/or groundwater could impact the indoor air quality of the buildings. All relevant site data, such as contaminant concentrations in soil and groundwater, depth to groundwater, and soil gas concentrations should be evaluated to determine the potential for indoor air impacts to existing or proposed building structures. Particular attention should be paid to the vapor intrusion pathway for sites with elevated levels of chlorinated volatile organic compounds such as tetrachloroethylene (PCE) and trichloroethylene (TCE). MassDEP has additional information about the vapor intrusion pathway on its website at http://www.mass.gov/dep/cleanup/laws/vifs.htm.

New Structures and Utilities: Construction activities conducted at a disposal site shall not prevent or impede the implementation of likely assessment or remedial response actions at the site. Construction of structures at a contaminated site may be conducted as a Release Abatement Measure if assessment and remedial activities prescribed at 310 CMR 40.0442(3) are completed within and adjacent to the footprint of the proposed structure prior to or concurrent with the construction activities. Excavation of contaminated soils to construct clean utility corridors should be conducted for all new utility installations.

The MassDEP appreciates the opportunity to comment on this proposed project. Please contact Jerome.Grafe@state.ma.us at (617) 292-5708 for mobile source air quality impacts, Rachel.Freed@state.ma.us at (978) 694-3258 Kevin.Brander@state.ma.us at (978) 694-3236 for further information on the wastewater issues, James.Belsky@state.ma.us, at (978) 694-3288 for issues relating to air quality plan approval, and Alex.Strysky@state.ma.us at (617) 292-5616 for issues relating to the Chapter 91, waterways license. If you have any general questions regarding these comments, please contact Nancy.Baker@state.ma.us, MEPA Review Coordinator at (978) 694-3338.

Sincerely,

John D. Viola
Deputy Regional Director

cc: Brona Simon, Massachusetts Historical Commission
Jerome Grafe, Alex Strysky, MassDEP-Boston
Eric Worrall, Susan Ruch, Kevin Brander, Rachel Freed, Heidi Davis, Jim Belsky, Jill Provencal, MassDEP-NERO
City of Boston, Conservation Commission
City of Revere, Conservation Commission
Marianne Connolly, MWRA
John E. Sullivan, P.E. BWSC

CITY OF BOSTON
THE ENVIRONMENT DEPARTMENT

Boston City Hall. Room 709 • Boston. MA 02201 • 617/635-3850 • FAX: 617/635-3435

September 28, 2017

Thomas O'Brien
The McClellan Highway Development Company, LLC
c/o HYM Investment Group, LLC
One Congress Street, 11th Floor
Boston, MA 02114

HAND DELIVERED: September 28, 2017

RE: Order of Resource Area Delineation from Beals and Thomas, Inc. on behalf of the McClellan Highway Development Company, LLC to confirm the limit and regulatory status of the wetland resource areas located at 525 McClellan Highway, East Boston, MA

Dear Mr. O'Brien,

Pursuant to the Massachusetts Wetlands Protection Act, G.L. c. 131, § 40 (the "Act"), I have enclosed the Order of Resource Area Delineation for the above referenced project, as voted by the Conservation Commission at the September 6, 2017 public hearing. The delineated area of Bordering Vegetated Wetlands, Bank, Riverfront and Land Subject to Coastal Storm Flowage, was deemed accurate by the Commission.

This Order of Resource Area Delineation determines that the boundaries of those resource areas noted above, have been delineated and approved by the Conservation Commission and are binding as to all decisions rendered pursuant to the Massachusetts Wetlands Protection Act (M.G.L. c.131, § 40) and its regulations (310 CMR 10.00).

If you should have any questions regarding the Order I may be contacted at 617-635-4416.

For the Commission,

Amelia Croteau, Executive Secretary
Boston Conservation Commission

Enclosure: WPA Form 4B

CC: Stacy Minihane, Beals and Thomas

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 4B – Order of Resource Area Delineation

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
006-1546
MassDEP File Number

eDEP Transaction Number

City/Town

A. General Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

From: Boston
1. Conservation Commission

2. This Issuance is for (check one):

a. ☒ Order of Resource Area Delineation

b. ☐ Amended Order of Resource Area Delineation

3. Applicant:

a. First Name: Thomas
b. Last Name: O'Brien
c. Organization: The McClellan Highway Development Company, LLC
d. Mailing Address: c/o HYM Investment Group, LLC, One Congress St, 11th Floor
e. City/Town: Boston
f. State: MA
g. Zip Code: 02114

4. Property Owner (if different from applicant):

a. First Name
b. Last Name
c. Organization
d. Mailing Address
e. City/Town
f. State
g. Zip Code

5. Project Location:

a. Street Address: 525 McClellan Highway
b. City/Town: East Boston
c. Zip Code: 02128
d. Assessors Map/Plat Number: 0102524000
e. Parcel/Lot Number: NA

Latitude and Longitude (in degrees, minutes, seconds):
f. Latitude: 42° d 23' m 39.0802"
g. Longitude: -71° d 0' m 1.026" s

6. Dates:
a. Date ANRAD filed: August 23, 2017
b. Date Public Hearing Closed: September 6, 2017
c. Date of Issuance: September 20, 2017

7. Title and Date (or Revised Date if applicable) of Final Plans and Other Documents:

a. Title: ANRAD Plan 525 William F. McClellan Highway, East Boston, MA in 7 sheets
b. Date: August 18, 2017

c. Title
d. Date

B. Order of Delineation

1. The Conservation Commission has determined the following (check whichever is applicable):

a. ☒ **Accurate:** The boundaries described on the referenced plan(s) above and in the Abbreviated Notice of Resource Area Delineation are accurately drawn for the following resource area(s):

1. ☒ Bordering Vegetated Wetlands

2. ☐ Other resource area(s), specifically:

a. Bank: 3,250 linear feet, Riverfront: 700 linear feet
Land Subject to Coastal Storm Flowage: 14,680 linear feet

b. ☐ **Modified:** The boundaries described on the plan(s) referenced above, as modified by the Conservation Commission from the plans contained in the Abbreviated Notice of Resource Area Delineation, are accurately drawn from the following resource area(s):

1. ☐ Bordering Vegetated Wetlands

2. ☐ Other resource area(s), specifically:

a. ________________

c. ☐ **Inaccurate:** The boundaries described on the referenced plan(s) and in the Abbreviated Notice of Resource Area Delineation were found to be inaccurate and cannot be confirmed for the following resource area(s):

1. ☐ Bordering Vegetated Wetlands

2. ☐ Other resource area(s), specifically:

3. ☐ The boundaries were determined to be inaccurate because:

C. Findings

This Order of Resource Area Delineation determines that the boundaries of those resource areas noted above, have been delineated and approved by the Commission and are binding as to all decisions rendered pursuant to the Massachusetts Wetlands Protection Act (M.G.L. c.131, § 40) and its regulations (310 CMR 10.00). This Order does not, however, determine the boundaries of any resource area or Buffer Zone to any resource area not specifically noted above, regardless of whether such boundaries are contained on the plans attached to this Order or to the Abbreviated Notice of Resource Area Delineation.

This Order must be signed by a majority of the Conservation Commission. The Order must be sent by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate DEP Regional Office (see http://www.mass.gov/eea/agencies/massdep/about/contacts/find-the-massdep-regional-office-for-your-city-or-town.html).

D. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate DEP Regional Office to issue a Superseding Order of Resource Area Delineation. When requested to issue a Superseding Order of Resource Area Delineation, the Department's review is limited to the objections to the resource area delineation(s) stated in the appeal request. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order of Resource Area Delineation will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order or Determination, or providing written information to the Department prior to issuance of a Superseding Order or Determination.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act, (M.G.L. c. 131, § 40) and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal bylaw or ordinance, and not on the Massachusetts Wetlands Protection Act or regulations, the Department of Environmental Protection has no appellate jurisdiction.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 4B – Order of Resource Area Delineation
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
006 - 1546
MassDEP File Number

eDEP Transaction Number

City/Town

E. Signatures

9/20/2017
Date of Issuance

Please indicate the number of members who will sign this form.

4
1. Number of Signers

Signature of Conservation Commission Member

Signature of Conservation Commission Member

Signature of Conservation Commission Member

Signature of Conservation Commission Member

Signature of Conservation Commission Member

Signature of Conservation Commission Member

Signature of Conservation Commission Member

This Order is valid for three years from the date of issuance.

If this Order constitutes an Amended Order of Resource Area Delineation, this Order does not extend the issuance date of the original Final Order, which expires on unless extended in writing by the issuing authority.

This Order is issued to the applicant and the property owner (if different) as follows:

2. ☐ By hand delivery on

a. Date

3. ☒ By certified mail, return receipt requested on

9/28/2017
a. Date

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 4B – Order of Resource Area Delineation

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
061-0705
MassDEP File Number

eDEP Transaction Number

City/Town

A. General Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

tab

return

Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

From: Revere
1. Conservation Commission

2. This Issuance is for (check one):

a. ☒ Order of Resource Area Delineation

b. ☐ Amended Order of Resource Area Delineation

3. Applicant:

Thomas
a. First Name

O'Brien
b. Last Name

The McClellan Highway Development Company LLC c/o The HYM Investment Group, LLC
c. Organization

One Congress Street, 11th floor
d. Mailing Address

Boston
e. City/Town

MA
f. State

02114
g. Zip Code

4. Property Owner (if different from applicant):

a. First Name

b. Last Name

c. Organization

d. Mailing Address

e. City/Town

f. State

g. Zip Code

5. Project Location:

Winthrop Avenue and Furlong Drive
a. Street Address

Revere
b. City/Town

02151
c. Zip Code

4-80-14B, 7-114-118-UNK, 6-120B-1A
d. Assessors Map/Plat Number

NA
e. Parcel/Lot Number

Latitude and Longitude (in degrees, minutes, seconds): 42.398319d m s -70.995693d m

6. Dates:

August 23, 2017
a. Date ANRAD filed

October 4, 2017
b. Date Public Hearing Closed

October 4, 2017
c. Date of Issuance

7. Title and Date (or Revised Date if applicable) of Final Plans and Other Documents:

ANRAD Plan - Furlong Drive and Winthrop Avenue Revere, MA (Suffolk County)

August 18, 2017
b. Date

c. Title

d. Date

B. Order of Delineation

1. The Conservation Commission has determined the following (check whichever is applicable):

   a. ☒ **Accurate**: The boundaries described on the referenced plan(s) above and in the Abbreviated Notice of Resource Area Delineation are accurately drawn for the following resource area(s):

      1. ☒ Bordering Vegetated Wetlands
      2. ☐ Other resource area(s), specifically:

      a. Bank (Sales Creek- multiple locations, intermittent stream along eastern straightaway of race track), Land Under Water Bodies (Sales Creek and intermittent stream, Riverfront area (Sales Creek) and Land Subject to Coastal Storm Flowage

   b. ☐ **Modified**: The boundaries described on the plan(s) referenced above, as modified by the Conservation Commission from the plans contained in the Abbreviated Notice of Resource Area Delineation, are accurately drawn from the following resource area(s):

      1. ☐ Bordering Vegetated Wetlands
      2. ☐ Other resource area(s), specifically:

      a.

   c. ☐ **Inaccurate**: The boundaries described on the referenced plan(s) and in the Abbreviated Notice of Resource Area Delineation were found to be inaccurate and cannot be confirmed for the following resource area(s):

      1. ☐ Bordering Vegetated Wetlands
      2. ☐ Other resource area(s), specifically:
      3. ☐ The boundaries were determined to be inaccurate because:

C. Findings

This Order of Resource Area Delineation determines that the boundaries of those resource areas noted above, have been delineated and approved by the Commission and are binding as to all decisions rendered pursuant to the Massachusetts Wetlands Protection Act (M.G.L. c.131, § 40) and its regulations (310 CMR 10.00). This Order does not, however, determine the boundaries of any resource area or Buffer Zone to any resource area not specifically noted above, regardless of whether such boundaries are contained on the plans attached to this Order or to the Abbreviated Notice of Resource Area Delineation.

This Order must be signed by a majority of the Conservation Commission. The Order must be sent by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate DEP Regional Office (see http://www.mass.gov/eea/agencies/massdep/about/contacts/find-the-massdep-regional-office-for-your-city-or-town.html).

D. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate DEP Regional Office to issue a Superseding Order of Resource Area Delineation. When requested to issue a Superseding Order of Resource Area Delineation, the Department's review is limited to the objections to the resource area delineation(s) stated in the appeal request. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order of Resource Area Delineation will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order or Determination, or providing written information to the Department prior to issuance of a Superseding Order or Determination.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act, (M.G.L. c. 131, § 40) and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal bylaw or ordinance, and not on the Massachusetts Wetlands Protection Act or regulations, the Department of Environmental Protection has no appellate jurisdiction.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 4B – Order of Resource Area Delineation

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
061-0705
MassDEP File Number

eDEP Transaction Number

City/Town

E. Signatures

Date of Issuance
10/4/2017

Please indicate the number of members who will sign this form.

1. Number of Signers – 4

Signature of Conservation Commission Member

Signature of Conservation Commission Member

Signature of Conservation Commission Member

Signature of Conservation Commission Member

Signature of Conservation Commission Member

Signature of Conservation Commission Member

Signature of Conservation Commission Member

This Order is valid for three years from the date of issuance.

If this Order constitutes an Amended Order of Resource Area Delineation, this Order does not extend the issuance date of the original Final Order, which expires on unless extended in writing by the issuing authority.

This Order is issued to the applicant and the property owner (if different) as follows:

2. ☐ By hand delivery on

a. Date

3. ☐ By certified mail, return receipt requested on

a. Date

Appendix G: Stormwater Management Supporting Documentation

Note: Materials are provided on the enclosed CD-ROM due to large file size. Hard copies are available upon request.