Expanded Project Notification Form

Submitted Pursuant to Article 80 of the Boston Zoning Code

New Brighton Landing

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

Submitted by:
New Brighton Landing, LLC
180 Guest Street
Brighton, MA 02135

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

In Association with:
Elkus-Manfredi Architects
Goodwin Procter LLP
Howard/Stein-Hudson Associates, Inc.
Carol R. Johnson Associates, Inc.
Beals Associates, Inc.
McNamara/Salvia, Inc.
Cosentini Associates, Inc.
WSP Flack + Kurtz
LeMessurier Consultants
Sanborn Head & Associates, Inc.

May 25, 2012

Epsilon ASSOCIATES INC. NEW BRIGHTON LANDING, LLC ELKUS | MANFREDI ARCHITECTS

PUBLIC NOTICE

The Boston Redevelopment Authority ("BRA"), pursuant to Section 80A-2and 80B-5 of the Boston Zoning Code, hereby gives notice that anExpanded Project Notification Form (the “PNF”) was submitted to theBRA on May 25, 2012 by New Brighton Landing, LLC. The Expanded PNF details a proposed project whose components would be located at38-180 and 77 Guest Street (the “Project Site”) within the Brightonsection of Boston.The Project Site contains first-class commercial office space, a newworld headquarters building for New Balance Athletic Shoe, Inc., aboutique hotel, and a sports complex, totaling approximately1,450,000 square feet (the “Proposed Project”). The Proposed Projectwill also include open space and approximately 1,750 on-siteparkingspaces. The BRA, in the Scoping Determination for the Project, maywaive the requirement for filing and review of a Draft Project ImpactReport and Final Project Impact Report, pursuant to Section80B-5.3(d), if the BRA finds that the Expanded PNF adequatelydescribes the Project’s impacts.Approvals are requested of the BRA pursuant to Article 80B of theBoston Zoning Code for the Project.The Expanded PNF may be reviewed at the Office of the Secretary ofthe BRA, Room 910, Boston City Hall, Boston, MA 02201, between 9:00AM and5:00PM, Monday through Friday except legal holidays. A copy of theExpanded PNF is also on file for review at the Boston Public Library,Brighton Main Branch, 40 Academy Hill Road, Brighton, MA 02135: theBrighton Faneuil Branch, 419 Faneuil Street, Brighton, MA 02135; andthe Honan-Allston Branch, 300 North Harvard Street, Allston, MA 02134.Public comments on the Expanded PNF, including the comments of publicagencies, should be submitted in writing to Mr. Erico Lopez, SeniorProject Manager, BRA, Boston City Hall, One City Hall Plaza, Boston,MA 02201 or by email at erico.lopez.bra@cityofboston.gov, by 5:00PMon Wednesday, August 8, 2012.

BOSTON REDEVELOPMENT AUTHORITY
Brian Golden, Executive Director /Secretary
May 25

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Section 1.0

Project Summary

1.0 PROJECT SUMMARY

1.1 Project Overview

New Brighton Landing, LLC (the "Proponent") proposes to redevelop underutilized property in Allston-Brighton along Guest Street, adjacent to the existing New Balance Headquarters building to create a new vibrant health and wellness district. The 13.98-acre redevelopment site is located at 38-180 Guest Street and 77 Guest Street, as shown on Figures 1.1-1 and 1.1-2. The site is currently occupied by low-rise buildings and surface parking lots that were at one time part of the Brighton Stockyards and have at various times since supported manufacturing, office, warehouse, bulk storage, and other industrial uses. The redevelopment of the site will contribute numerous benefits to the local community including job creation, health and wellness, significant sports and fitness opportunities, enhanced access to open space, as well as improvements to public infrastructure.

The Proposed Project will be known as New Brighton Landing. At full build-out, the Proposed Project will comprise up to 1,450,000 square feet, exclusive of areas dedicated to parking and loading, consisting of the following:

a) A new up to 250,000 square-foot world headquarters for New Balance Athletic Shoe, Inc. at the property with the address of 180 Guest Street.;

b) A new up to 345,000 square-foot sports complex at 77 Guest Street and the adjacent vacant lot that will house a 200-meter hydraulic-banked track and field facility, an NHL-regulation arena, 30,000 square feet of medical office space, plus other amenities for fitness and wellness activities;

c) An up to 140,000 square-foot hotel, with up to 175 rooms and suites at 180 Guest Street;

d) Up to 650,000 square feet of office spread among up to three buildings at 38-40 Guest Street; and

e) Up to 65,000 square feet of retail and restaurant space that will serve to enliven the immediate area.

The final Project build-out will also include up to 1,750 on-site parking spaces. The square footage of the parking and loading areas intended to service the Proposed Project will be up to 775,000 square feet, of which up to 380,000 square feet will be below grade. The Proposed Project will also include the construction of approximately 1.4 acres of new publicly-usable open space. The Proposed Project's estimated construction cost is $500 million.

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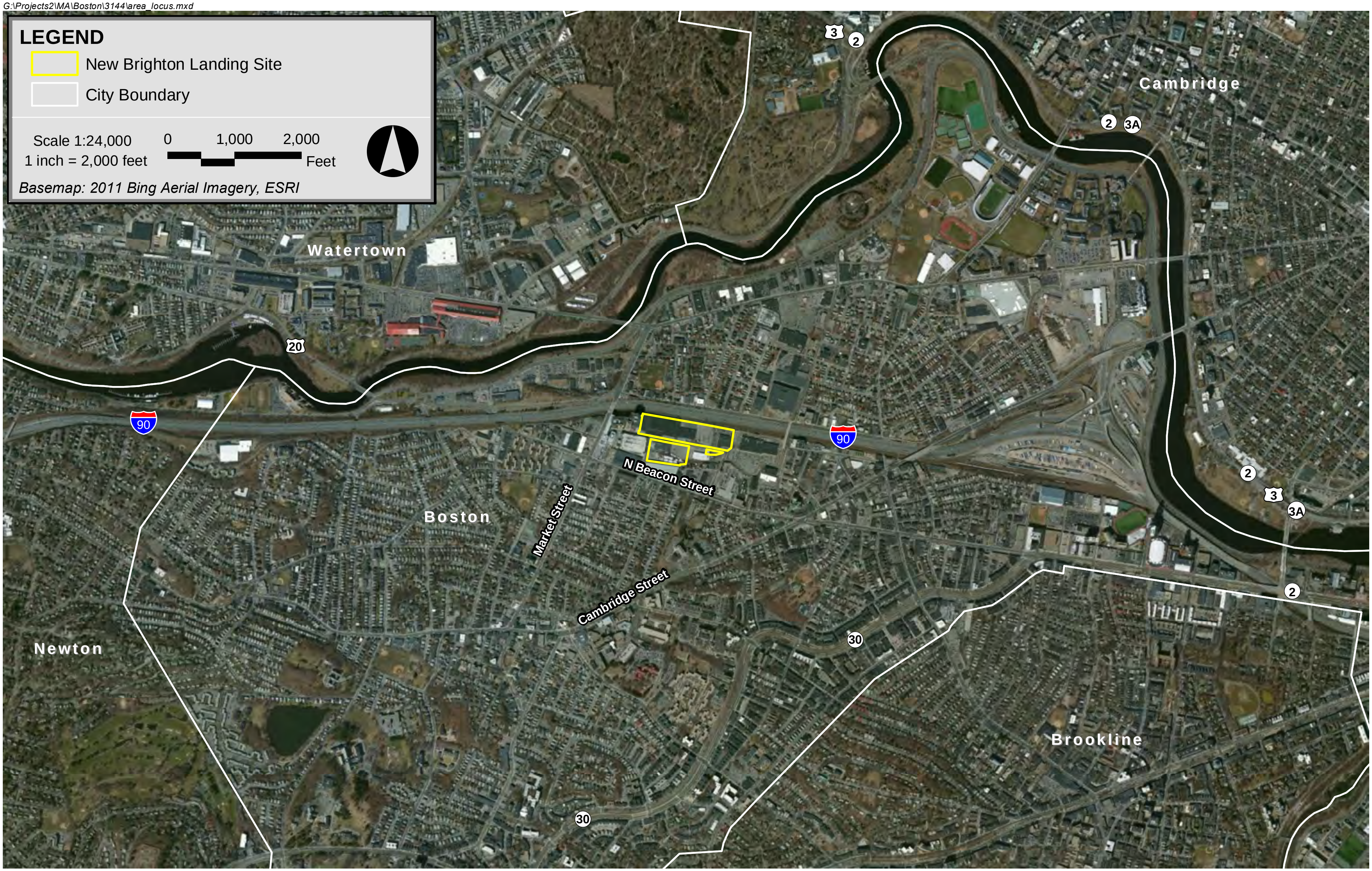

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New Brighton Landing
Boston, Massachusetts

Epsilon Associates Inc.

New Brighton Landing, LLC

Figure 1.1-1
Aerial Photography - Area Locus

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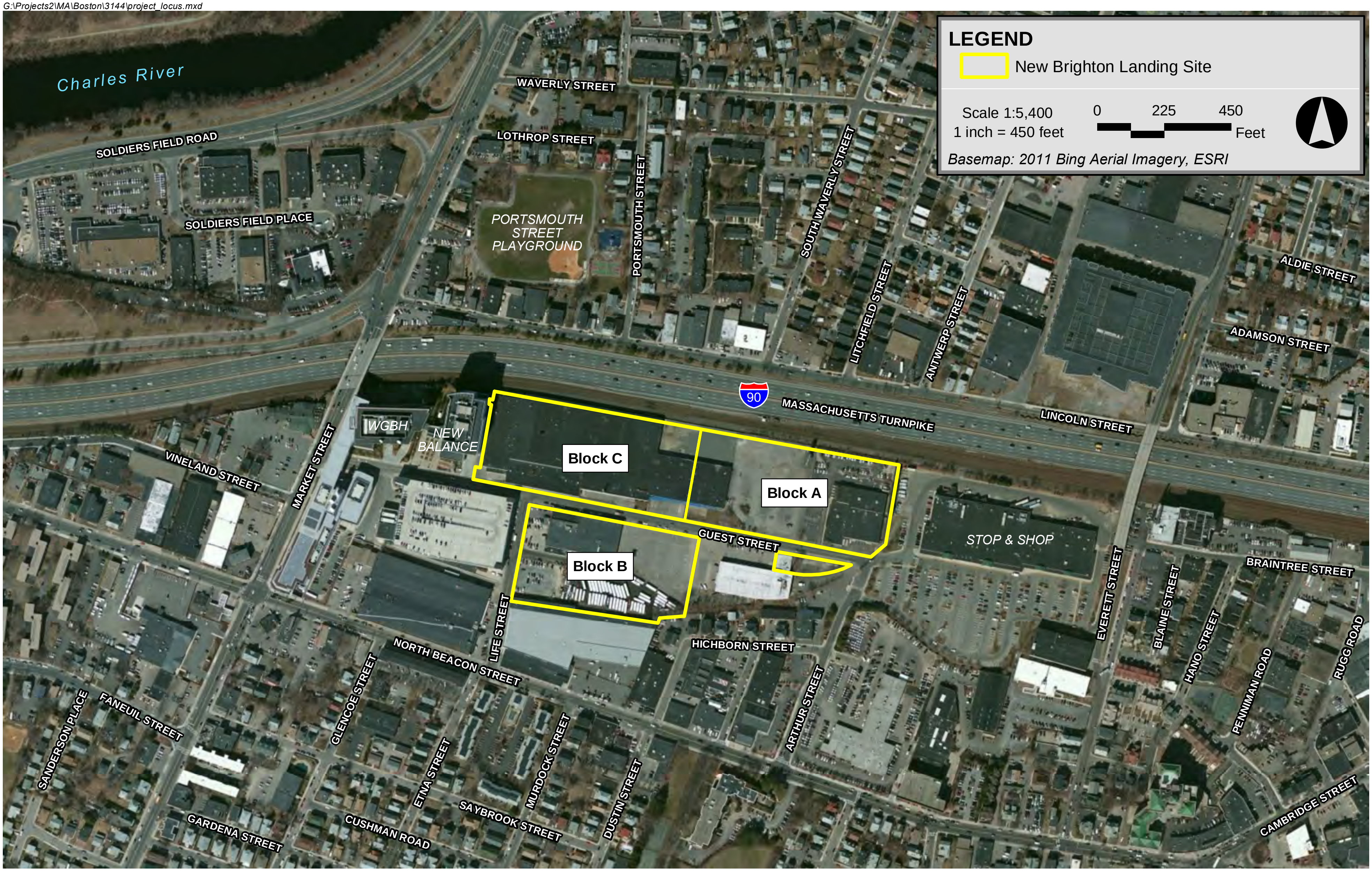

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New Brighton Landing
Boston, Massachusetts

Epsilon Associates Inc.

New Brighton Landing, LLC

Figure 1.1-2
Aerial Photography - Project Locus

1.2 Development Team

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

Project Name:	New Brighton Landing
Location:	38-180 Guest Street and 77 Guest Street Brighton, MA 02135
Proponent:	New Brighton Landing, LLC 180 Guest Street Brighton, MA 02135 (617) 987-2500 Ty Hanlan　Erin Johnson Keith Craig　Brian Howe Jay Rourke　Robert Graham
Architect:	Elkus-Manfredi Architects 300 A Street Boston, MA 02210 (617) 426-1300 David Manfredi, FAIA, LEED AP Mark Sardegna, AIA, LEED AP Hal Munger, AIA, LEED AP
Legal Counsel:	Goodwin Procter LLP Exchange Place Boston, MA 02111 (617) 570-1000 Lawrence E. Kaplan Martin R. Healey
Permitting Consultant:	Epsilon Associates, Inc. 3 Clock Tower Place, Suite 250 Maynard, MA 01754 (978) 897-7100 Margaret Briggs David Hewett, LEED AP Tyler Norod

Transportation Consultants:	Howard/Stein-Hudson Associates, Inc. 38 Chauncy Street Boston, MA 02111 (617) 482-7080 Guy Busa Elizabeth Peart
Landscape Architect:	Carol R. Johnson Associates, Inc. 115 Broad Street Boston, MA 02110 (617) 896-2500 Chris Jones Steven Woods
Civil Engineer:	Beals Associates, Inc. 2 Thirteen Street Charlestown, MA 02129 617.242.1120 Larry Beals Todd Morey
MEP Engineers:	Cosentini Associates, Inc. Building 200, 2nd Floor One Kendall Square, Suite B2204 Cambridge, MA 02139-1571 (617) 494-9090 Vladimir Yarmarkovich, P.E. Robert Leber, P.E. WSP Flack + Kurtz 88 Black Falcon Avenue, Suite 210 Boston, MA 02210 (617) 210-1600 Robert Flaherty Tom Burroughs
Structural Engineers:	McNamara Salvia, Inc. 160 Federal Street, 5th Floor Boston, MA 02110 (617) 737-0040 Joseph Salvia, P.E.

Structural Engineers: (Continued)	LeMessurier Consultants 675 Massachusetts Avenue Cambridge, MA 02139 (617) 868-1200 Mysore V. Ravindra, P.E.
Geotechnical Engineer:	Sanborn Head & Associates, Inc. 1 Technology Park Drive Westford, MA 01886 (978) 392-0900 Stan Sadkowski, P.E.

1.3 Public Benefits

The development of New Brighton Landing will generate myriad public benefits for the surrounding neighborhoods and the City of Boston as a whole, both during construction and continuing on into the future once completed and occupied. These public benefits include both the financial benefits that will accrue to the city as well urban design/public realm improvements that will benefit the Brighton neighborhood and the entire city.

1.3.1 Financial Benefits

Re-establishing the Brighton Landing area into a primary economic engine comprising a world headquarters emblematic of the New Balance Brand, a multi-purpose sports complex, Class A office space, a boutique hotel, restaurant venues, and retail amenities will result in significant financial benefits to the City of Boston and its residents, including:

- Significant additional real estate tax revenues to the City's General Fund, projected to total approximately $12.5 million annually at full build-out.
- Approximately $10.5 million in housing linkage funds and approximately $2.1 million in jobs linkage funds to the City of Boston.
- The creation of approximately 400 full-time construction jobs, 600 peak construction jobs and approximately 3,000 permanent new jobs.
- Up to 175 new hotel rooms in the city that will generate additional sales tax for the City of Boston.

1.3.2 Urban Design Benefits

The Proposed Project will vastly improve the Guest Street corridor and act as a catalyst for the future redevelopment of other underutilized land within the 100-acre Brighton Guest Street Planning Study area.

The Proposed Project will help to create a pattern of blocks and streets that is consistent with adjacent neighborhoods and turn Guest Street into an active, "Complete Street" for all types of users.

The pedestrian experience will be improved through the addition of new, high quality architecture, increased access to public open space, street level retail and restaurant uses, and streetscape improvements to be constructed throughout the corridor. The Proposed Project has been strategically designed to expand the diversity of uses along the Guest Street corridor to ensure long-term activity and vitality. By planning for new east-west and north-south roadway connections for pedestrian, bike, and vehicular circulation, the Proposed Project will knit what is now an isolated area into the fabric of the surrounding residential neighborhoods.

The Proponent is committed to developing buildings that are sustainably designed, energy efficient, environmentally conscious, and healthy for workers, residents, and visitors. Consistent with Article 37 of the Boston Zoning Code, the Proposed Project will be Leadership in Energy and Environmental Design (LEED) certifiable and may be capable of achieving certification at the LEED Silver level, which would exceed the requirements of Article 37. A full discussion of the Project's sustainable features is included in Section 4.12.

1.4 Schedule

The first phase of the Proposed Project, including site preparation and demolition is expected to begin approximately in the fall of 2012 and to take approximately three months to complete. Subsequent phases are planned as follows, subject to change based on market conditions.

- Phase 2 will include the construction of portions of the below-grade garage structures north of Guest Street.
- Phase 3 will include construction of the New Balance World headquarters north of Guest Street and the Sports Complex south of Guest Street.
- Phase 4 will include construction of the hotel north of Guest Street.
- Phase 5 will include construction of the below-grade portion the Block C parking garage.

- ♦ Phase 6 will include construction of the up to three office buildings north of Guest Street.

1.5 Consistency with Zoning

This section describes how the Proposed Project, as it is described above in Section 1.1 will comply with the Boston Zoning Code (the "Code" or "Zoning Code").

1.5.1 Article 80B Large Project Review

Since the Proposed Project involves new construction in excess of 50,000 square feet of Gross Floor Area, the Proposed Project is subject to Large Project Review pursuant to Article 80B of the Zoning Code. Under the Mayor's Executive Order dated October 10, 2000, and amended on April 3, 2001, regarding mitigation for development projects, the Mayor has appointed an Impact Advisory Group to advise the BRA on mitigation measures for projects undergoing Large Project Review. Also in connection with the Large Project Review, the Proposed Project will be subject to, among other requirements: (i) Boston Civic Design Commission review; (ii) the green building requirements of Article 37 of the Code; and (iii) Development Impact Project Exactions under Section 80B-7 of the Code.

The design, the number of buildings, and the site layout of components of the Proposed Project may change over time (the "Revisions") depending upon, among other things, construction constraints, market conditions and tenant demand. In such event, and so long as the total Floor Area, Gross (as defined in the Zoning Code) does not exceed the maximum Floor Area, Gross set forth herein for the entire Proposed Project, and so long as the uses to which the Proposed Project is to be put are consistent with what is stated herein, such Revisions, if approved by the BRA, shall be deemed to be in compliance with the Scoping Determination waiving further review issued pursuant to Section 80B-5.3(d) and the agreements executed pursuant thereto.

1.5.2 Zoning District

New Brighton Landing is located within the Guest Street Local Industrial Subdistrict, which is governed by Article 51 of the Zoning Code. There are no overlay districts applicable to the site. New Brighton Landing contains more than five acres of land, and since it is not located in a residential zoning district, the Proponent on March 21, 2012, filed a Master Plan for Planned Development Area (PDA) #87 pursuant to Article 3-1A.a of the Zoning Code. The plan sets forth the zoning for the Proposed Project for the PDA site. The Proponent acknowledges that all buildings, which are subject to Large Project Review under Article 80B of the Zoning Code, are subject to Article 37 of the Zoning Code regarding Green Buildings. To the extent that any of the Proposed Projects do not comply with the use, dimensional or other zoning regulations applicable thereto, the PDA Master Plan, and any subsequently filed PDA Development Plans, will supersede all such zoning requirements. In addition, the Proposed Project will be subject to one or more

Development Plans submitted and approved in accordance with Article 80C of the Zoning Code.

1.5.3 Uses

A Master Plan for a Planned Development Area (PDA) #87 was submitted to the BRA on March 21, 2012 and went through a 45-day comment period that ended on May 7, 2012. The Proposed Project's office, hotel, sports complex, and ground-floor retail uses will all become allowed uses upon approval of the PDA Master Plan by the BRA, the Boston Zoning Commission, and the Mayor.

1.6 Legal Information

1.6.1 Legal Judgments Adverse to the Proposed Project

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

1.6.2 History of Tax Arrears on Property

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

1.6.3 Evidence of Site Control/Nature of Public Easements

Title to the area to be governed by the PDA Master Plan, and any subsequently filed PDA Development Plans, was acquired by the Proponent by Deeds recorded with the Suffolk County Registry of Deeds in Book 47681, Page 181, Book 48536, Page 179, Book 47681, Page 177, and by a Deed filed with the Suffolk County Registry District of the Land Court as Document #788771. The Proposed Project does not require the amendment, elimination, or curtailment of any third-party ownership rights in the Proposed Project sites or elsewhere. No private agreements with third-party property owners are required to construct the Proposed Project.

1.7 Public Review

1.7.1 Massachusetts Environmental Policy Act

In addition to Article 80 review, the Proposed Project will also be reviewed at the state level by the Executive Office of Energy and Environmental Affairs (EEA) pursuant to the Massachusetts Environmental Policy Act (MEPA). The Proponent expects to file an Expanded Environmental Notification Form (ENF) with the MEPA Office at EEA to initiate MEPA review in late May 2012. The Proponent also intends to seek a Waiver from the requirement to prepare an Environmental Impact Report (EIR). The public comment period on the Expanded ENF and Waiver Request is expected to be roughly concurrent with the public comment period on this Expanded PNF.

1.7.2 Permits and Approvals

Table 1-1 presents a preliminary list of local, state, and federal permits and approvals that may be required for the Proposed Project. The list is based on current information about the Proposed Project and is subject to change as the design of the Project advances. Some of the permits listed may not be required, while there may be others not listed that will be needed.

Table 1.7-1 Preliminary List of Permits and Approvals

Agency	Approval
Boston	
Boston Redevelopment Authority	Article 80B Large Project Review
	Article 80C Planned Development Area Review
Boston Zoning Commission	Article 80C Planned Development Area Review
Boston Civic Design Commission	Design Review
Boston Landmarks Commission	Article 85 Demolition Delay Review
Boston Water and Sewer Commission	Site Plan Review/General Service Application/Water and Sewer Connection Permits
Public Improvement Commission	Specific Repairs/Discontinuance (if required)
Boston Transportation Department	Construction Management Plan/Transportation Access Plan Agreement
Boston Public Works Department	Curb Cut Permit(s)
Boston Air Pollution Control Commission	Parking Freeze Permit/Exemption
Boston Public Safety Commission	Permit to Erect and Maintain a Parking Structure
Joint Committee on Licenses	Flammable Storage License
Boston Inspectional Services Department	Demolition/Building Permits
State	
Executive Office of Environmental Affairs	Massachusetts Environmental Policy Act Review
Massachusetts Historical Commission	State Register Review (via the MEPA process)
Department of Environmental Protection	Notice of Demolition/Construction/Fossil Fuel
Federal	
Federal Aviation Administration	Determination of No Hazard to Air Navigation
Environmental Protection Agency	NPDES Notice of Intent for Construction - Stormwater

1.8 Community Outreach

The Proponent has already initiated a comprehensive community outreach process and looks forward to working with its longtime neighbors and other stakeholders to develop a project that will strengthen all of Boston's neighborhoods through significant urban design and public infrastructure improvements, the creation of new public open space, new retail amenities, considerable financial benefits, and approximately 3,000 jobs.

The Proposed Project is in the early stages of the Article 80 public review process. A Letter of Intent to develop the Proposed Project was submitted to the BRA on February 1, 2012. Since that time, the Proponent has met periodically with BRA staff and the staff of other City Departments to review specific aspects of the development proposal in advance of this filing, which begins the Proposed Project's formal Article 80 public review process.

The Proponent is pleased to be working with Mayor Menino's Impact Advisory Group that has been formed to review and provide input on the Proposed Project, and expects that the IAG will be an important forum for community review and comment. To date, the IAG has met four times to discuss the Proposed Project and feedback from the IAG has been very constructive, helpful, and encouraging.

1.9 Responses to Comments Received on the PDA Master Plan

The Proponent filed a Planned Development Area (PDA) Master Plan (#87) (including a comprehensive traffic study) with the BRA on March 21, 2012 and went through a 45-day comment period that ended on May 7, 2012 . Two public meetings regarding the proposed PDA Master Plan were held, the first on April 10, 2012 and the second on April 23, 2012. Feedback from the community at both meetings was generally positive.

The following public comments were submitted to the BRA during the review process for the PDA Master Plan.

Comments or questions are shown in italics followed by the Proponent's response.

Timing of Signals

"Will retiming the signals alleviate traffic?" Yes. Coordinating the signals to communicate with one another will allow for better traffic flow.

Additional Intersections

"Please study additional intersections (West of Market on Faneuil) (N. Harvard & Western) (N. Harvard & Franklin)." These intersections have now been included in the traffic study. See Chapter 3.

Neighborhood "Side-Streets

"The proposal will increase traffic on neighborhood side streets." The Proponent will work with BTD to implement restricted left and right turns onto neighborhood side streets during peak hours.

Turnpike Off-Ramps

"Please include Massachusetts Turnpike Off-Ramps." The Proposed Project does not include off-ramps from the Turnpike.

Improve Area Bus Service

"Please improve MBTA bus service to the neighborhood." Considering the potential introduction of a new commuter rail station and ongoing development in the neighborhood, New Brighton Landing will work with community leaders and elected officials to request increased MBTA bus service in the area.

Pedestrian Safety

"Please make improvements to pedestrian safety." The proposed streetscape improvements are extensive and will include new street connections, intersection improvements, bike lanes, way-finding signage, and new sidewalks/crosswalks. These improvements will greatly improve pedestrian safety.

River Access

"Please provide access to the river." New Brighton Landing, working with BTD and DCR, will provide transportation improvements at Arsenal Street, Western Avenue and Birmingham Parkway, from Lincoln Street to the Soldiers Field Road. These improvements will improve all modes of transportation.

Bike Lanes

"Please provide a safer environment for cyclists." Please see statements above. Note that the proposed improvements are in addition to the bike network that the City of Boston and Toole Design Group are developing across the neighborhood.

Commuter Rail Station

"Please provide a commuter rail station." As stated above, New Brighton Landing, if designated by MassDOT, will design, permit, and construct a commuter rail station.

View Corridors

"Please increase view corridors through the development to North Brighton and Allston." The Proposed Project allows for view corridors through the site from the streets in the existing roadway network. Please refer to Section 5.8 for a discussion of the proposed street grid.

Foot Bridge

"Please provide a foot bridge over the Turnpike." A pedestrian footbridge is not part of the New Brighton Landing proposal.

View from North Brighton / Allston

"Please treat the façade along the Turnpike properly." The New Brighton Landing development includes a proposed new roadway "behind" (i.e., north of) the proposed new buildings, parallel to the Turnpike. This roadway also includes a sidewalk for pedestrian travel and a planting zone for trees. The trees will grow to a similar height of the evergreen trees along the façade of the existing Brighton Landing building. The façade itself will be designed in a way that is creative and functional.

Jobs

"Please provide jobs for Allston/Brighton residents." The full build-out of the Proposed Project will provide approximately 3,000 jobs. In addition to linkage payments to the city for job creation, New Brighton Landing will work with the Allston Brighton Resource Center on a jobs program.

Green Space

"Please provide a tot-lot and playground." The Proposed Project will provide significant amount of new public open space and also features a Sports Complex that will be open to the public.

Sports Complex Events

"Please explain weekend use of the sports complex." The hockey rink will host youth hockey games and adult ("men's leagues") competitions. Given the seating limitations, very few significant events can be held in a rink of this size. The track and field facility will operate during the track and field season which begins after Thanksgiving and runs until the middle of March. New Brighton Landing only anticipates a few significant track events to be held during the track season. Those events would be held on a Saturday during the winter months. The remaining few events will be high school competitions and are not expected to generate significant crowds. The fitness portion of the complex will be by membership and we anticipate members to the fitness center will be residents of Allston/Brighton and weekday employees.

Sports Complex Membership

"Will the community be able to use the sports complex?" Yes. Unlike many of the local sports complexes that serve the local institutions, the Sports Complex will be available for the public.

Rodents

"Please mitigate rodent control during construction." New Brighton Landing will comply with all regulatory codes when it comes to construction of the Proposed Project. Please see Section 4.10.15.

The Office Market

"Is there a demand for office space in the area?" Yes. There is interest in office space at this location and in particular for the concept of a "Health and Wellness District".

Interim Conditions

"What will the interim condition of the site look like before construction?" New Brighton Landing proposes to raze the Briggs and Barry Controls buildings located at 38-40 Guest Street to allow for staging during the construction of the New Balance Headquarters, Hotel and Sports Complex. During or shortly after construction of these buildings, the Proponent expects to begin construction of portions of the office component of the Project. If there is any delay in this phase, however, the Proponent would treat the street wall along Guest Street and the Pike with attractive fencing and complete the streetscape by adding sidewalks. The appearance to Guest Street and the neighborhood is very important to New Brighton Landing.

Public Access

"It would be nice to have public access to an observatory and restaurant." The Proposed Project includes multiple retail areas for future restaurants. The Proponent will seek a mix of restaurants and all would be open to the public.

Bump-outs

"Please provide "bump-outs" for bus and passenger vehicles to drop-off and pick-up." The Proponent has designed Guest Street to allow for easy bike, pedestrian, and vehicular flow by including dedicated bus and passenger drop-off and pick-up areas.

"Existing crosswalks could be improved by adding curb extensions." Where possible and working with BTD, existing crosswalks will be improved.

History

"Please provide acknowledgement to Brighton's past in the new development." New Brighton Landing is committed to working with the Impact Advisory Group and the community to recognize this area and how it has contributed to Allston/Brighton's past.

Level of Service ("LOS")

"Are LOS grades E&F considered acceptable." LOS A thru C are great, LOS D is acceptable while LOS E is marginal and acceptable for short periods of time in urban settings. LOS F means that, on average, a driver will wait 80 seconds or more at an intersection. LOS F should be avoided but it does occur, particularly during the peak hours. That said, there are certain approaches to intersections with poor LOS while the overall intersection operates well. These are especially evident at unsignalized intersections.

Parking Restrictions

"Please restrict parking at certain intersections for safer crossing." New Brighton Landing is committed to working with BTD to improve the intersections as described in this PNF.

"Brighton River 2.5 Mile Loop"

"Please fund the 2.5-Mile Brighton River Loop." The Proponent would be happy to partner with the community, elected officials and non-profit organizations to seek public funding to complete this 10-year planning vision.

Re-configure Mass Pike off and on ramps

"Please reconfigure the Mass Pike on-ramps and off-ramps at Cambridge Street. "This is not included as part of the Proposed Project.

Sound Barrier Wall on Lincoln Street

*"Please provide a sound barrier wall on Lincoln Street. "*This is not included as part of the New Brighton Landing development. As discussed in the conclusion to Section 4.8, the Proposed Project is not expected to increase noise north of the Turnpike.

Franklin Street Pedestrian Bridge

"Please make improvements to the Franklin Street pedestrian bridge." New Brighton Landing would support efforts to enlist funding sources from public infrastructure capital projects budgeted in the future.

Independent Traffic Study

"Please provide a grant for an overall neighborhood traffic study." In consultation with BTD, the Proponent has completed a comprehensive traffic study of the site's surrounding streets. Future proposals will have the benefit of this study and be able to use the information it provides to further study network improvements.

Honan Housing Complex (Everett Street)

"Please provide safety measures at the Brian Honan Housing Complex at Everett Street." New Brighton Landing will be making significant improvements to the current conditions on Everett Street at the southern end of the Everett Street Bridge. The Guest Street Extension to Everett Street will create a significant "traffic calming" measure by implementing a four-way traffic signal at this location and including pedestrian and bike crossings. Current conditions will be vastly improved.

Construction/Delivery Trucks & Vehicles

"How will construction and delivery vehicles access the site?" As discussed in Section 4.11, New Brighton Landing will work with BTD to develop a Construction Management Plan (CMP). In general, it is expected that all truck traffic to the site will follow the route from the Massachusetts Turnpike Exit 17, north on Centre Street/Galen Street to Watertown Square, right onto Arsenal Street, across the Charles River, right onto Leo Birmingham Parkway/Market Street, and left onto Guest Street. Trucks leaving the site will take this route in reverse. In this way, truck traffic will not impact residential areas around the construction site. No construction vehicles or delivery trucks will be allowed to exit the Turnpike at Cambridge Street (Exit 18).

Parking Restrictions

"Please work with BTD to secure on-street parking restrictions around the site." New Brighton Landing will work with the community and BTD to restrict/limit on-street parking around the Site and in the neighborhood.

Dedicated Parking for Allston/Brighton Residents

"Please provide designated parking spaces in the garage(s) for Allston Brighton residents." The New Brighton Landing proposal does not consider this request at this time.

Accelerated Bridge Program

"Please partner with MassDOT on bridge reconstruction for the Soldiers Field Road "underpass" bridges." These bridges are not included in the State's Accelerated Bridge Program but New Brighton Landing will work with elected officials to see if they can be included in a future phase of the Program.

Braintree Street Throughway

"Plans for Braintree Street are worrisome based on the assumption that it will be used for a commuter bypass." Based upon discussions with the transportation consultant (Howard Stein-Hudson) and BTD, the Proponent believes that Braintree Street has the ability to become a real main street tributary. Following the guidance from the Brighton Guest Street

Planning Study, the vision of the street will be transformed from its current industrial nature, into a true connection to and from Allston Village. New Brighton Landing, through BTD, will be reconfiguring Denby Street and the terminus of Braintree Street into one-ways to allow a safer and true connection to Allston Village.

Bike Lanes on Faneuil Street

"Please provide bike lanes on Faneuil Street." New Brighton Landing has been working with Toole Design Group and BTD on their vision for the neighborhood and can assist/support their current plans for bike lane installation.

Braintree Restriction at Stop & Shop

"Please remove the one-way restriction to enter Braintree Street heading eastbound." By creating the Guest Street Extension to Everett Street, New Brighton Landing will now be able to make the connection to Braintree Street possible in the east-bound direction. The Guest Street Extension will connect to Everett Street and Braintree Street.

Height

"Building heights should conform more closely to the Guest Street Area Planning Study." The Proponent respects the guidelines of the Brighton Guest Street Planning Study. The proposed building heights were designed to create a diversity of height along the site. The proposed plan includes signature buildings that will complement one another and act as a gateway to the city. To accomplish this, however, the plan increases the height slightly of two of the buildings over the guidelines of the Planning Study.

"The building designs should demonstrate a high degree of variety and a diverse contemporary architectural vocabulary to reinforce the urban main street quality and a new identity to the emerging district. New buildings should feature a range of architectural styles and approach to building details, materials, and fenestration." The buildings as proposed provide for a diversity of heights, masses and forms. Additionally the buildings propose a wide variety of material variation throughout the project site.

"Development projects should adhere in spirit to the massing, height and FAR guidelines outlined in Brighton Guest Street Area Planning Study." The Proposed Project adheres to the spirit of the Guest Street planning study and varies only slightly from the guidelines it sets forth. While the Proposed Project exceeds the proposed heights in a couple of locations, at the same time it also proposes buildings heights lower than the suggested limits in other locations. This variation was planned deliberately to increase the building diversity, which is also one of the primary goals of the study. In addition, the Proposed Project is well below the FAR suggested in the study and exceeds all expectations for publically accessible "active" space and open space.

Franklin/Brentwood/Appian Way Crosswalk

"The Franklin/Brentwood/Appian Way crosswalk (used by Gardner School students) should be rebuilt because it currently shares a curb-cut with a driveway and has poor visibility." Working with BTD, New Brighton Landing will reconstruct a new crosswalk(s) to allow for safer crossing for the students at the Gardner School and the community.

Two-Way Streets to One-Way Streets

"Please consider the possibility of converting existing two-way streets to one-way streets." New Brighton Landing is currently proposing this movement at the Denby Street, Braintree Street, Cambridge Street and Harvard Avenue intersection. Please refer to Chapter 3 for a more complete discussion of proposed traffic changes.

Zipcars

"Please have Zipcars in the proposed development." As with the existing garage associated with the New Balance and WGBH buildings at 20 Guest, New Brighton Landing will have Zipcars in the garage of the Proposed Project.

Bike Parking

"Please provide ample, well-guarded, well-placed and attractive indoor bike parking in every building". New Brighton Landing will install indoor bike parking.

Expanding Hubway

"Please request the Hubway Program be expanded in the Allston/Brighton neighborhoods". New Brighton Landing will make the request to Hubway suggesting that the program be expanded in core locations in the neighborhood. Hubway will determine where these stations are located.

Website to Keep Open Communication

"*Maybe New Balance could consider having an ongoing task force, or website, that will allow the community to keep an open line of communication to New Balance both during construction and after the project is complete."* New Brighton Landing currently has a Web site that will be updated throughout the Article 80 review process and beyond. The Web site lists all the members of the New Brighton Landing team to allow for easy communication in the future.

Hotel View Corridor

"Will the siting of the hotel obstruct views to the city?" New Brighton Landing has designed the hotel to be a slender structure allowing existing city views to remain intact.

Roadway Behind the Site

"Will the roadway that is planned behind the site be a private or public way?" It will be a public roadway.

Residential

"Addition of a residential component, E+ housing units." Residential use is not contemplated as part of the Proposed Project.

Allston Brighton Health Collaborative

"Partnership with the Allston Brighton Health Collaborative." New Brighton Landing is eager to learn more about the work that the Allston Brighton Health Collaborative is currently undertaking.

Infrastructure

"Phasing of necessary infrastructure improvements must be coordinated with an overall strategy for improvements." As part of the PDA Master Plan, Transportation Study, and reiterated in this PNF, New Brighton Landing has proposed a series of transportation improvements and their implementation.

"The Proponent will be expected to reinforce the importance of Guest Street as a linear spine/urban main street that is central to the district's identity. Guest Street should facilitate connections to and through the district, and serve as the basis for a smoothly functioning multi-modal circulation system that facilitates vehicular, pedestrian and bicycle mobility." New Brighton Landing agrees with this statement and believes that the proposed design meets this desire.

"Create a network of streets and publicly accessible open spaces that will transform the area into an attractive, pedestrian scaled, new district. This network of streets and open spaces must achieve the goal of connecting to the existing neighborhood across North Beacon, Everett, Guest streets and the Turnpike." The New Brighton Landing plan as envisioned is the first step to creating a legitimate street grid in a district where a grid never existed before throughout its history. Guest Street will be transformed into a completely new street which responds to the circulation of vehicles, bicycles and pedestrians alike. The plan also envisions extending Life Street to the northern most boundary of the site and terminating on a service drive running parallel to the Mass Pike. The New Brighton Landing PDA Master Plan allows for the extension of Hichborn to terminate at a new public open space at the intersection of Guest Street with a continuing vehicular drive through to the service drive to the North. The view corridor of the future Hichborn extension is framed by the New Balance Headquarters building spanning over the top of the vehicular drive. The future Hichborn extension is not achievable under this plan as the Proponent does not control the land; however, the building planning allows for the extension in the future. Additionally,

the PDA Master Plan allows for the future extension of Arthur Street with the termination of the proposed Arthur Street Boulevard terminating at a future commuter rail station. Again the plan does not have control over Arthur Street or the train station but the plan allows for their eventuality. The plan also envisions an extension of Guest Street to Everett Street.

Building Design Criteria

"Building massing and architecture should attempt to further breakdown the scale of large superblocks into more a discrete pedestrian scale experience of building frontage, especially along Guest Street." The current plan provides for a multitude of different building massing responses to the varied urban conditions and maintains a consistent special definition to the pedestrian realm. The buildings purposefully frame both the public streets and the new open spaces in a clear and concise manner.

Placemaking

"*The Brighton Guest Street Area Planning Study established the framework and urban design guidelines to shape future development and established a coherent vision for an innovative and vibrant mixed use destination that will serve as Boston's western front door. The Proponent should place special emphasis on the public realm elements when working with development interests to create a "destination place"."* The Proposed Project with its focus as a health and wellness district complies with this goal of creating a destination. The Sports Complex and the publically accessible open space along with the focused street level supporting retail is all geared towards creating a vibrant mixed-use environment centered on the wellness theme.

"As these proposed projects advance, the Proponent should use streets, open space, and building design to create a greater sense of identity for the Guest Street, Arthur Street, and Life Street intersections and along Guest Street to Market Street." Please see the previous response regarding streets and building design.

"Create a pattern of blocks and streets that are consistent with the adjacent neighborhoods." The proposed plan creates a series of blocks that conform to the proposed new street grid while at the same time accommodates the program for the various building types proposed for the Project. The blocks as envisioned are walkable and pedestrian-friendly unlike the current conditions which exist today.

"Emphasize active uses including retail, restaurants, ground floor assembly and work spaces with a high degree of visual interest and frequent entrances." The ground floor of each of the buildings is deliberately designed to contain active uses fronting the public realm. This includes retail, food and beverage, office lobbies and other publically beneficial spaces.

Open Space

"The Proponent should provide further detailed description and development of the intended use of the publicly accessible open spaces for the overall development as well as how these spaces will relate and contribute to the overall open space network/framework for the district." The proposed plan provides a significant amount of publically beneficial open space with a wide variety of typologies of open space. This includes an outdoor amphitheater for public entertainment to soft lawns and landscaped areas for quiet contemplation. Additionally, the plan envisions a future extension of a significant green space along Hichborn Street.

"*The design should develop in detail the relationship of exterior spaces to the building program (used by office/building occupants as well as the general public). For example, will the planned Sports Complex have some related exterior program space for classes or public gathering?*" Yes, this is a possibility.

"*Will the New Balance Headquarters offer daycare facilities that require related outdoor space?*" It is unknown at this time if a daycare space will be provided.

"*How will the sloped outdoor space adjacent to the headquarters and hotel be programmed?*" The sloped grass lawn has many possibilities and the detailed programming of this space will evolve over time.

"*How will the elevated open spaces adjacent to the proposed office buildings be accessed?*" The elevated open space at the moment is not considered to be publically accessible. This open space and its accessibility will be developed once the building tenants become known and a better understanding of how each tenant will access and/or intends to utilize this open space.

"*The Proponent should identify which spaces and facilities will be open and available to the local community/residents and at what times. In general, areas of the campus should be park-like and available for use by neighbors on nights and weekends."* The generous open space located at grade is intended to be available at all times for responsible use by the public.

Streetscape

"The design should focus on the public realm elements (publicly accessible open space, sidewalks, and streets) to create a "destination place"." Refer to above responses.

"The Proposed Project will enhance many aspects of the physical environment in the area by the addition of new trees, landscape elements, sidewalks, and crosswalks. The proponent should work with the BRA and BTD to develop and construct improvements/reconstruction of streets that are consistent with a vibrant mixed use

development outlined in the Brighton Guest Street Area planning Study." The streets that are directly associated with the Proposed Project will be developed in concert with the BRA and BTD.

"The Proponent should refer to Boston's Complete Streets guidelines as well as the Brighton Guest Street Area Planning Study for the development of multi-modal streets and comfortable walking environments that offer green connections to future area amenities beyond the campus." The streets that are directly developed as part of the Proposed Project will provide wide pedestrian sidewalks, bike lanes and the like in accordance with good urban planning and in concert with the BRA and BTD.

1.10 Summary of the Proponent's Commitment to Transportation Improvements

The public response to the PDA Master Plan was positive; however, as evidenced by the comments outlined in the previous section, the main concern raised was with regard to the Proposed Project's potential traffic impacts. The Proponent is committed to alleviating current adverse traffic conditions in the Project area and improving future conditions in the area by directly funding and implementing the comprehensive transportation mitigation program detailed below. The Proponent is prepared to make significant improvements to the bike, vehicular and pedestrian experiences in and around the Site. Access to Proposed Project area is equally important to the Proponent as it is to the residents and businesses in the neighborhood which is why the Proponent is prepared to implement the following measures to make improvements to the neighborhood.

- If designated by MassDOT, the Proponent will permit, design, and construct a commuter rail station at the Site.
- The Proponent will work with the Department of Conservation and Recreation and the Boston Transportation Department (BTD) to make improvements at Birmingham Parkway where it intersects with Western Avenue and Soldiers Field Road.
- The Proponent will work collaboratively with BTD and the adjacent controlling landowner to extend Guest Street through to Everett Street, thereby creating a new east/west connection for bikes, pedestrians, and vehicles.
- Through BTD, the Proponent will coordinate the timing of traffic signals and make lane modifications at various locations, including Market Street, North Beacon Street, and Braintree Street/Denby Street/Harvard Avenue/Cambridge Street. This will allow for safer bike, pedestrian, and vehicular movements.
- Through BTD, the Proponent will install bike lanes at various locations in and around the Site.

- As the new office space comes online, New Brighton Landing will increase the existing shuttle system that currently provides service to and from Harvard and Kenmore Squares.

- Under BTD's direction, the Proponent will develop a comprehensive way-finding/signage program for bike, pedestrian and vehicular travel on Market Street, Guest Street, Life Street, Arthur Street, North Beacon Street, Everett Street, and Birmingham Parkway. The program will make it easier for all modes of transportation to navigate the area street network.

- The Proponent will work with BTD to provide assistance for additional traffic enforcement in the area of the Brighton Guest Street Planning Study.

- Working with BTD, the Proponent will reconstruct the Franklin/Brentwood/ Appian Way crosswalk for safer crossing for the students at the Gardner School and the community.

Chapter 3 provides a more complete summary of the Proposed Project's transportation study, including existing and future conditions, and proposed mitigation measures. Due to its large size, the complete transportation study has not been printed; rather, it has been included with this PNF on compact disc.

Section 2.0

Project Description

2.0 PROJECT DESCRIPTION

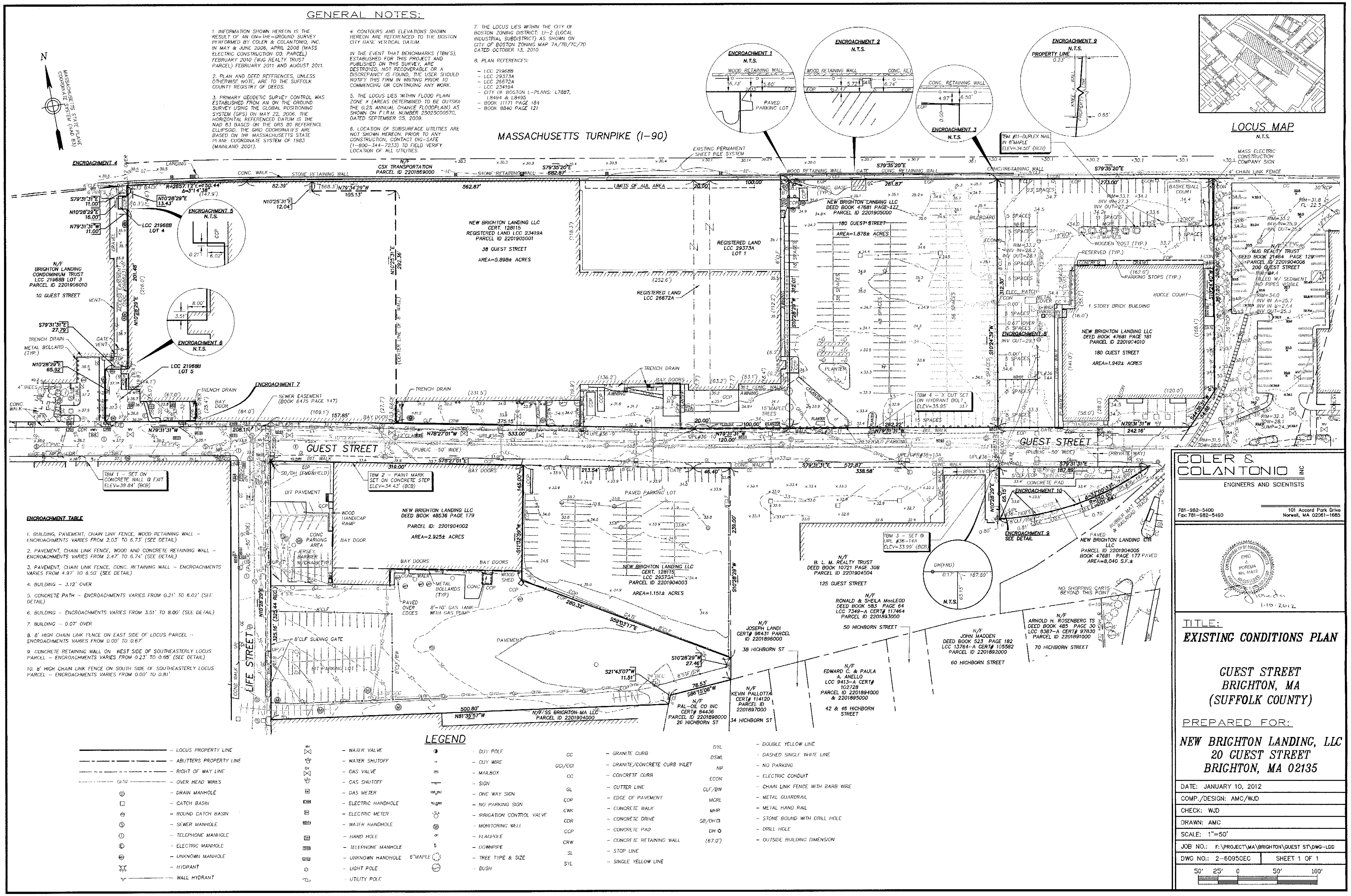
2.1 Project Site

The Proposed Project includes the construction of up to six new buildings within the proposed Planned Development Area #87. Totaling approximately 13.98 acres of land, the Proposed Project Site comprises six parcels on the north and south side of Guest Street in Brighton, Massachusetts. The properties consist of parcels numbered 38-180 Guest Street, 77 Guest Street, and two vacant lots (the "Vacant Lots"). The parcels at 38-180 Guest Street comprises about 9.72 acres and is located on the north side of Guest Street. On the south side of Guest Street and east of Life Street, 77 Guest Street and the Vacant Lots together comprise about 4.26 acres. Together, these Proposed Project Sites will be referred to collectively as the "Sites". These parcels are further detailed in Table 2.1-1. Figure 2.1-1 provides an existing conditions plan. Figures 2.1-2 through 2.1-5 are photographs showing street level views of the existing Project site.

Table 2.1-1 Site Parcel Information

Address	Area		Assessor's PID #	Proposed Use
North of Guest Street	Acres	Square Feet		
38-40 Guest Street	5.9	256,942	2201905001	Three Class A Office Buildings
150 Guest Street	1.88	81,798	2201905000	New Balance Headquarters
180 Guest Street	1.94	84,600	2201904010	New Balance Headquarters and Hotel
Subtotal	**9.72**	**423,340**		
South of Guest Street				
77 Guest Street	2.93	127,466	2201905002	Sports Complex
Vacant Lot 1	1.15	50,133	2201904003	Sports Complex
Vacant Lot 2	0.18	8,049	2201904005	Not Programmed
Subtotal	**4.26**	**185,648**		
Total Site Area	**13.98**	**608,988**		

The up to three proposed class A office buildings will be located on the north side of Guest Street and will occupy the parcel now known as 38 Guest Street, PID# 2201905001, which consists of 256,942 square feet of existing industrial buildings and surface lots.


GENERAL NOTES:
MASSACHUSETTS TURNPIKE (I-90)
GUEST STREET
LIFE STREET
LOCUS MAP
ENCROACHMENT TABLE
LEGEND
COLER & COLANTONIO INC
ENGINEERS AND SCIENTISTS
TITLE:
EXISTING CONDITIONS PLAN
GUEST STREET
BRIGHTON, MA
(SUFFOLK COUNTY)
PREPARED FOR:
NEW BRIGHTON LANDING, LLC
20 GUEST STREET
BRIGHTON, MA 02135
DATE: JANUARY 10, 2012
COMP./DESIGN: AMC/WJD
CHECK: WJD
DRAWN: AMC
SCALE: 1"=50'
SHEET 1 OF 1

ELKUS | MANFREDI
ARCHITECTS

New Brighton Landing
Boston, Massachusetts

Epsilon
ASSOCIATES INC.

NEW BRIGHTON LANDING, LLC

Figure 2.1-2
Guest Street looking East

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Figure 2.1-3
Guest Street looking Northeast

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Boston, Massachusetts

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Figure 2.1-4
Project Site looking West

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ARCHITECTS

New Brighton Landing
Boston, Massachusetts

Epsilon ASSOCIATES INC.

NEW BRIGHTON LANDING, LLC

Figure 2.1-5
Guest Street looking Northwest

The proposed sports complex will be located on the south side of Guest Street and will occupy the parcels now known as 77 Guest Street, PID# 2201905002, and the vacant lot, PID# 2201904003. These two parcels consist of 127,466 square feet of existing industrial buildings and surface lots and a 50,133 square foot vacant lot for a total of 177,599 square feet.

The proposed hotel will be located on the north side of Guest Street and will occupy a portion of the parcel known as 180 Guest Street, PID# 2201904010, which consists of 84,600 square feet of existing industrial buildings and surface lots.

The proposed new world headquarters for New Balance will be located on the north side of Guest Street and will occupy the parcels now known as 180 Guest Street, PID# 2201904010, and 150 Guest Street, PID# 2201905000. 180 Guest Street consists of 84,600 square feet of existing industrial buildings and surface lots and 150 Guest Street is currently utilized as a surface parking lot.

2.2 Project Description

The Proposed Project consists of four main building components: 1) the construction of an up to 130-foot-tall new world headquarters office building at the corner of Guest Street and the Arthur Street extension for New Balance; 2) the construction of an approximately 205-foot-tall, up to 175-room boutique hotel at the corner of Guest Street and Arthur Street; 3) the construction of an up to 95-foot-tall sports complex at what is currently known as 77 Guest Street; and 4) and the construction of up to three Class A office buildings with a maximum height of 165 feet along Guest Street abutting to the east of the existing New Balance Headquarters building. The Proposed Project will also include up to 1,750 parking spaces. Figure 2.2-1 shows the proposed site plan.

Included with the Proposed Project is up to 65,000 square feet of retail, restaurant, and service uses. The total square footage of the Proposed Project will be approximately 1,450,000 (based upon the Zoning Code) and it will have an overall Floor Area Ratio (FAR) of approximately 3.02 (including above-grade parking and loading). The total gross floor area dedicated to parking and loading will be up to 775,000 square feet of which, 380,000 square feet will be below grade.

In addition to the proposed new buildings, the Proposed Project will also dramatically improve Guest Street itself which will be transformed from an underutilized area of industrial uses and vacant derelict lots into a mixed use, vibrant community, focused on the promotion of health and wellness for workers, residents, and visitors alike. The current streetscape will be completely redesigned and reconstructed to include two vehicular travel lanes, two bicycle lanes, parallel parking, and wide pedestrian friendly sidewalks along both sides of the street. Guest Street will be lined with active uses including retail, restaurants, office lobby entrances, and well defined outdoor spaces for public use. The street will have continuous frontage by buildings on both sides and will be well landscaped

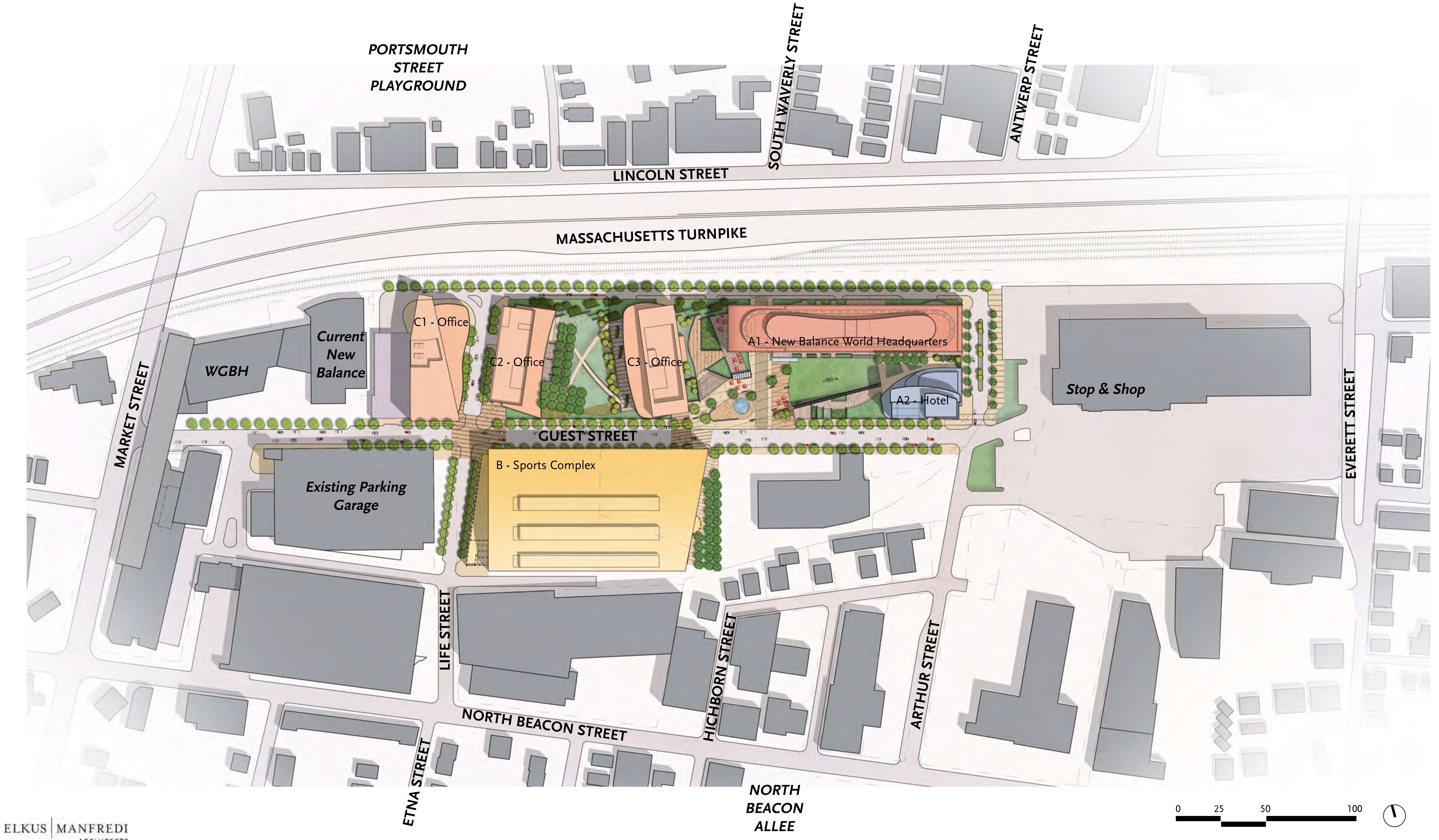


Figure 2.2-1
Proposed Site Plan

with trees and street furniture. All utilities will be relocated below grade. Building services, including loading docks and mechanical equipment rooms, transformers, and other necessary infrastructure components will be located along the new service street to the north directly adjacent to the railroad ROW, ensuring continuous street frontage along Guest Street for a more pedestrian friendly environment. Figure 2.2-2 is a proposed landscape plan that shows the location of the green space that is included in the Project.

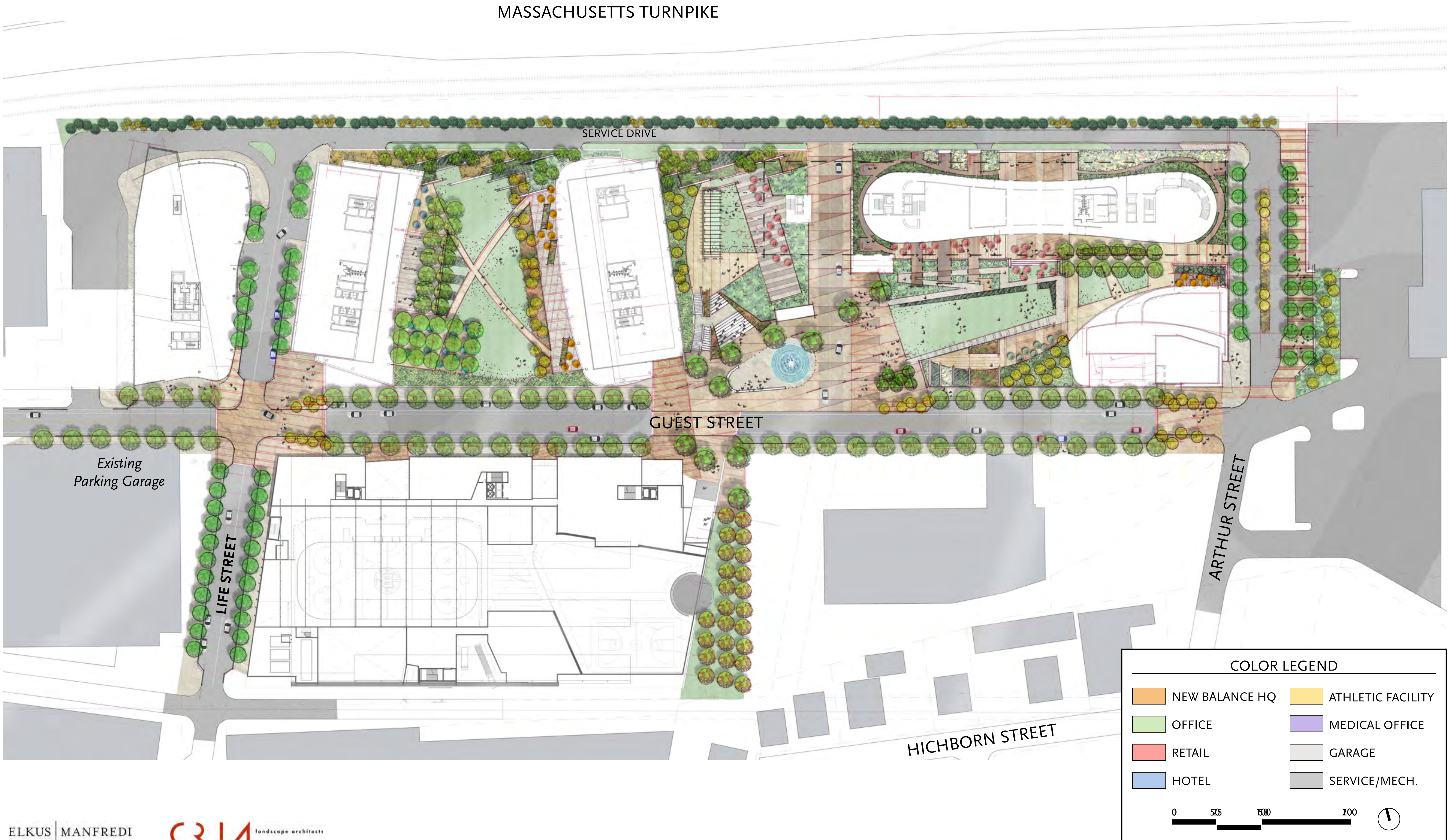
The redevelopment of Guest Street will be continuous from Market Street to the intersection of Arthur Street. An important component of the traffic mitigation associated with the Project will be the new connection of Guest Street to Everett Street, ultimately allowing for significant improvements in east/west traffic flow. This connection was identified in the Brighton Guest Street Area Planning Study as part of the overall vision for the area. The Proponent is working collaboratively with the Boston Transportation Department (BTD) and the adjacent landowner that control the right-of-way needed for the connection to be made to plan for and construct the extension as soon as is feasible.

2.2.1 Overall Program Description

The Proposed Project will be divided into three distinct blocks (A, B, and C) See Figure 2.2-3. Block A will house the proposed New Balance Headquarters and Hotel. Block B will house the Sports Complex and Block C up to three New Office Buildings.

On the north side of Guest Street, Blocks A and C will be constructed above of a parking garage (one level below grade and two above) that will act as a podium for the structures above. This garage will have approximately 1,550 spaces. The sports complex on Block B will also contain on site parking for approximately 200 vehicles to support the demand associated with its operation. The proposed buildings' Guest Street frontages will be wrapped in ground floor retail, restaurant, and service uses to create an engaging pedestrian environment within the corridor.

Following are a series of graphics that depict the Proposed Project's Floor Plans (Figures 2.2-4 through 2.1-17; Site Sections (Figures 2.2-18 and 2.2-19); and Elevation Drawings (Figures 2.2-20 through 2.2-25). More detail on the individual buildings is provided following these graphics.



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CRJA landscape architects

Figure 2.2-2
Proposed Landscspe Plan

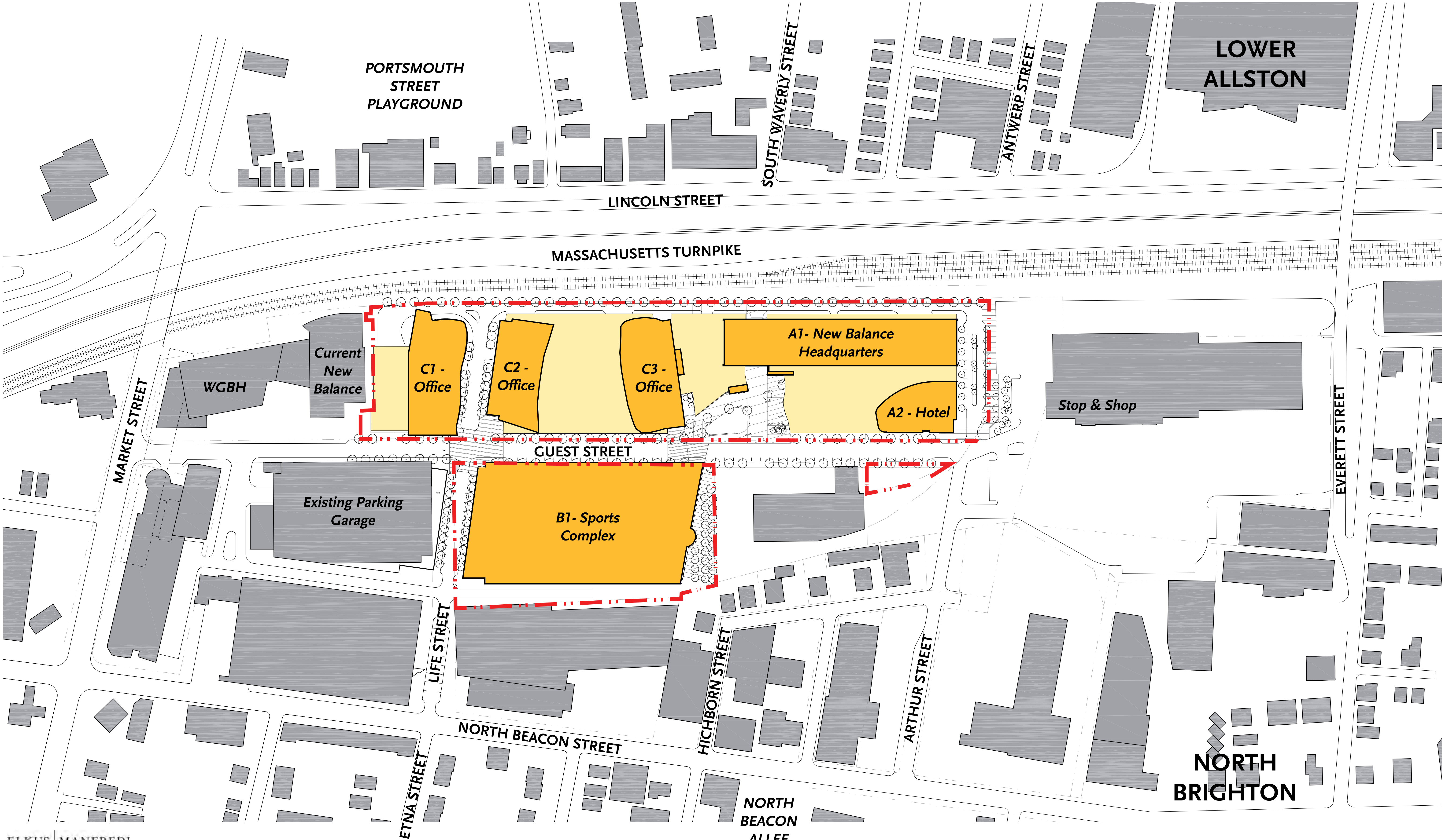

Figure 2.2-3
Proposed Neighborhood Context Plan

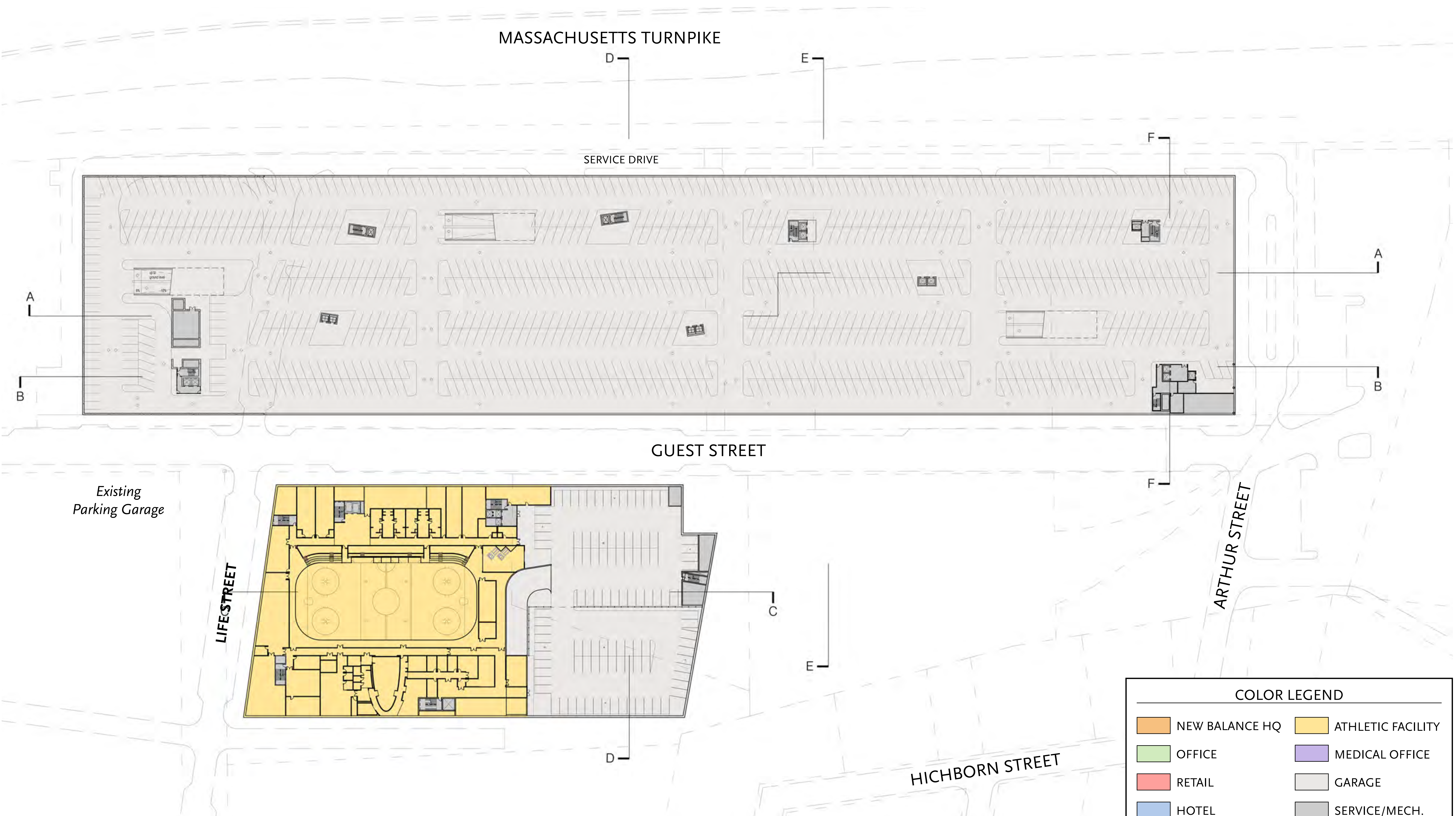

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Figure 2.2-4
Floor Plan - Lower Level

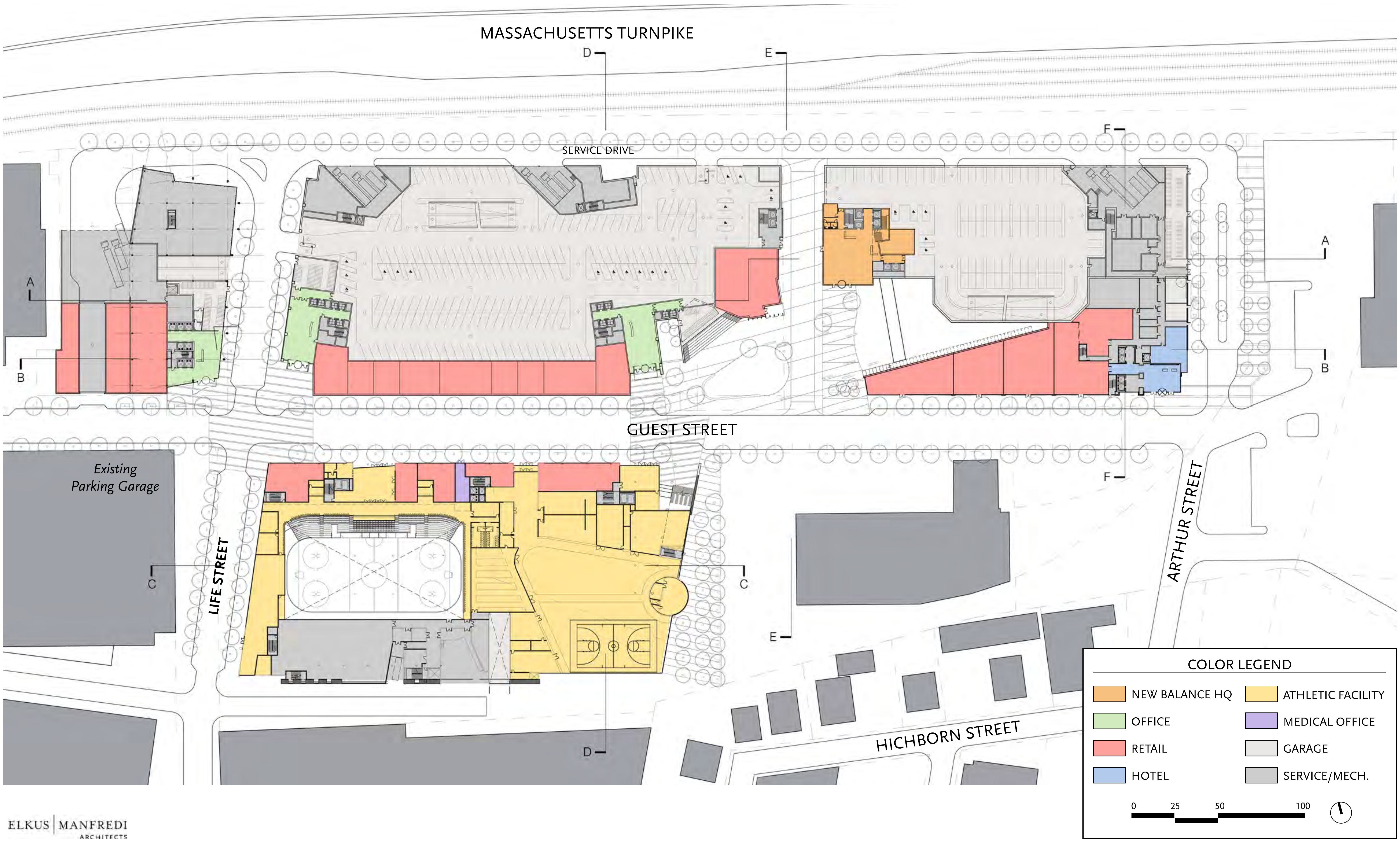

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Figure 2.2-5
Floor Plan - Ground Level

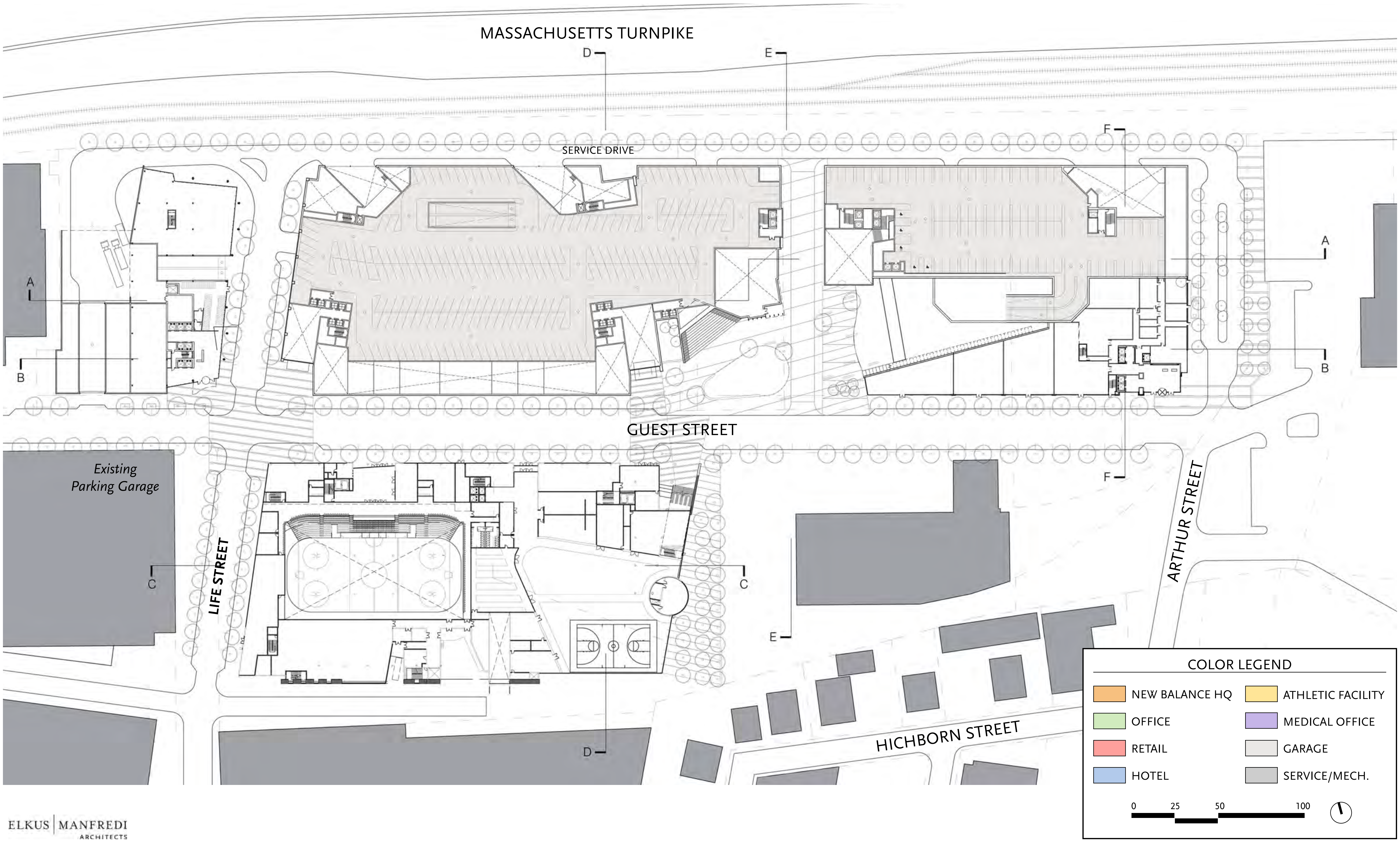

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Figure 2.2-6
Floor Plan - Mezzanine Level

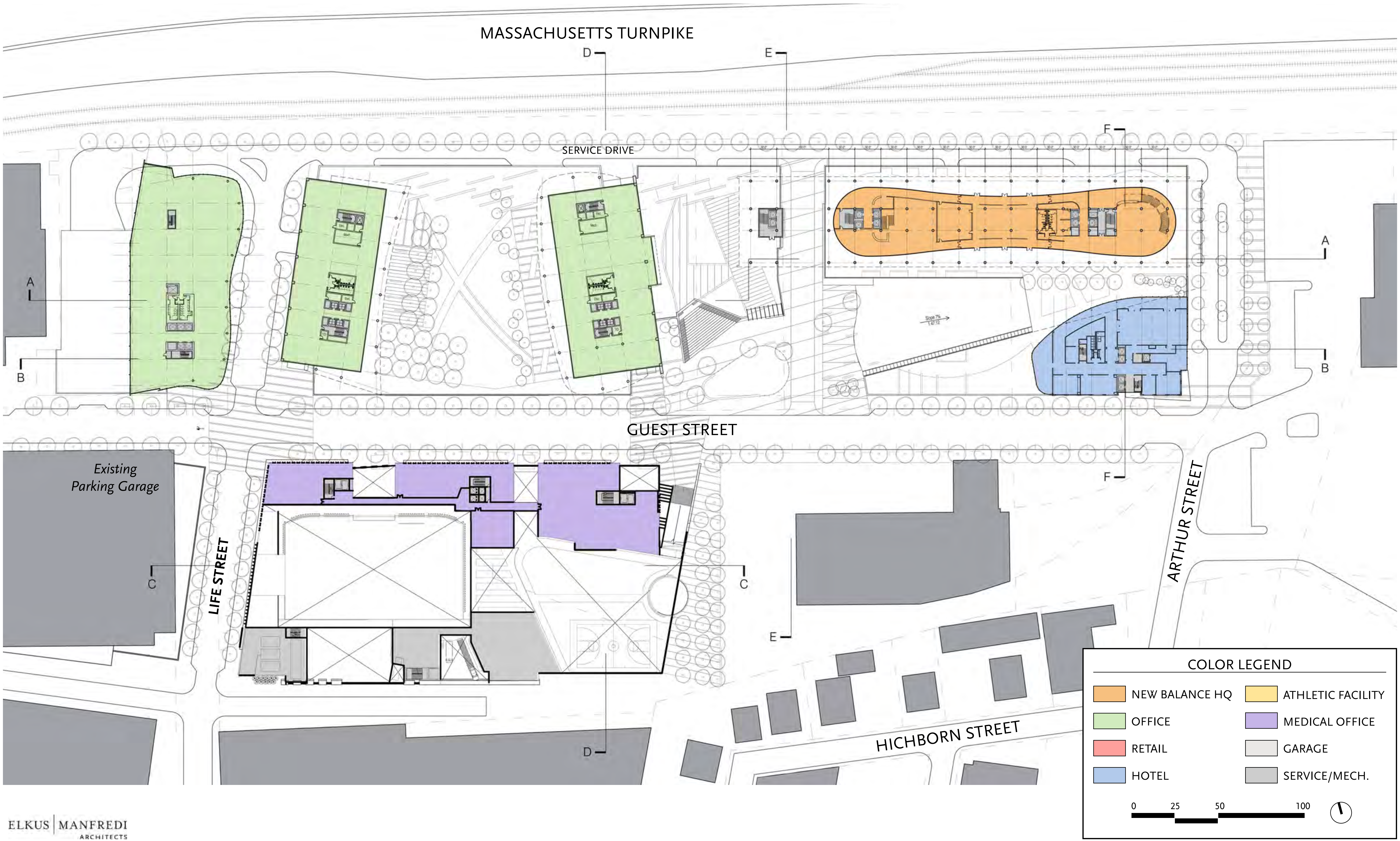
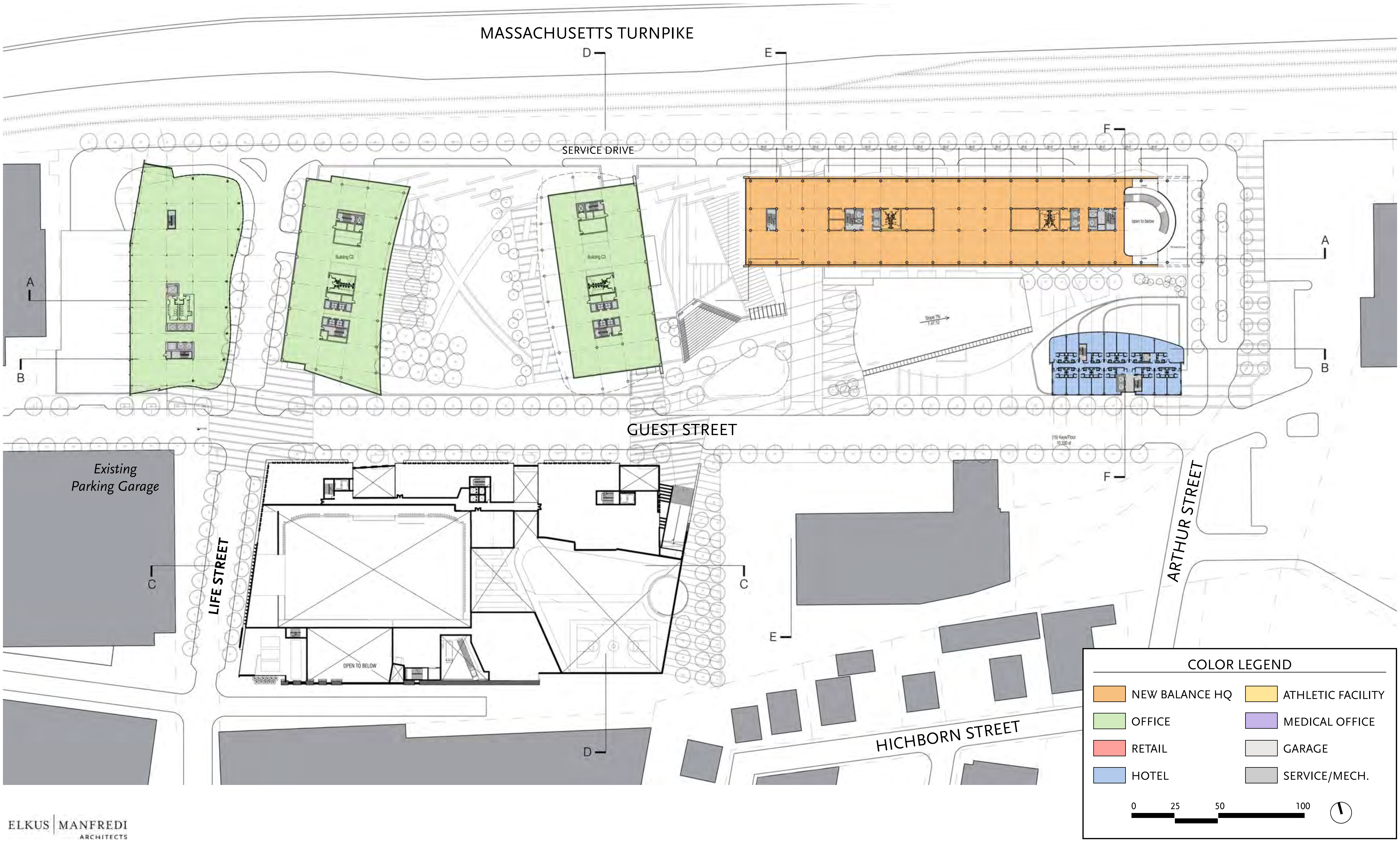


Figure 2.2-7
Floor Plan - Terrace Level



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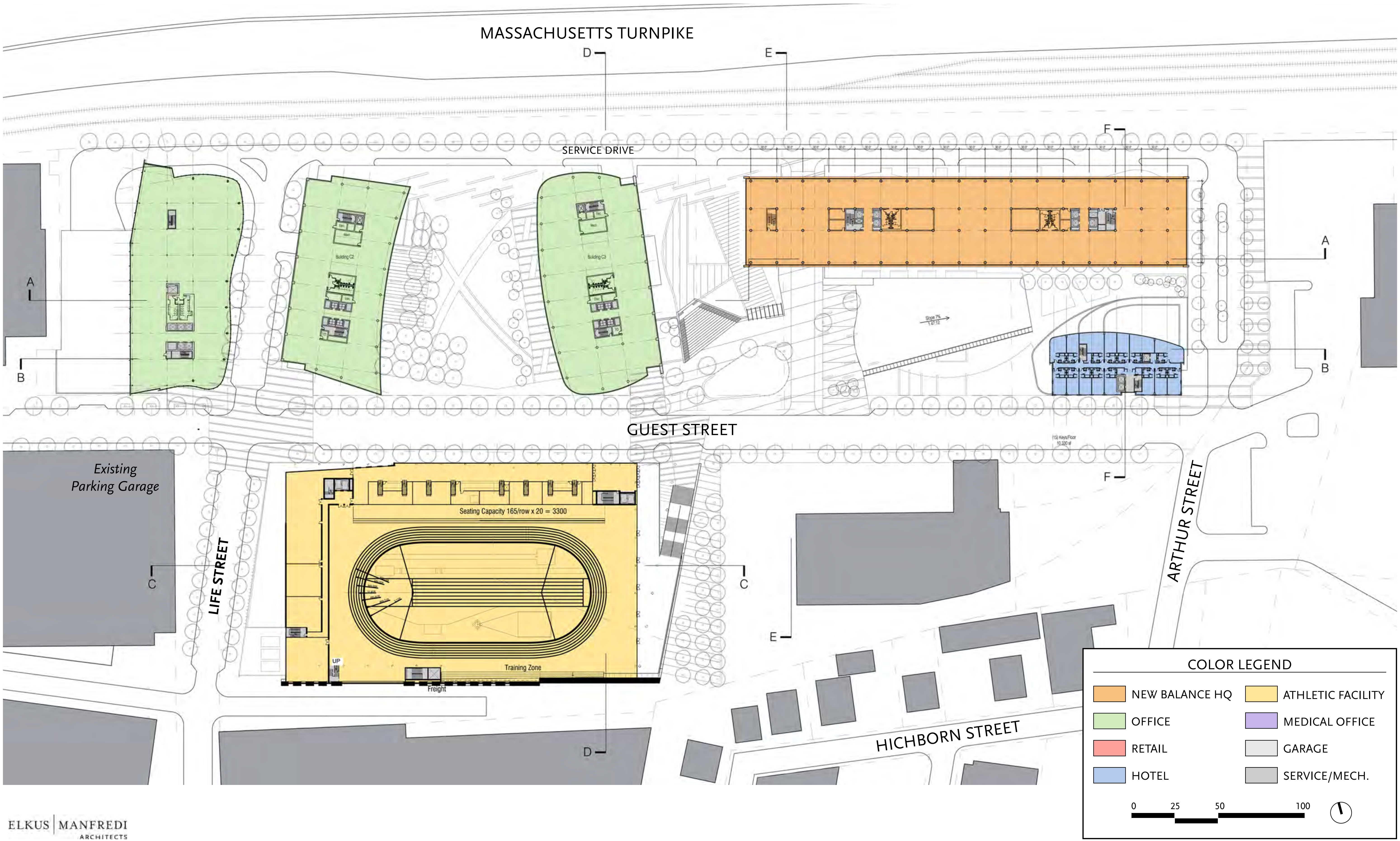
New Brighton Landing
Boston, Massachusetts

Epsilon ASSOCIATES INC.

NEW BRIGHTON LANDING, LLC

Figure 2.2-8
Floor Plan - Second Level



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New Brighton Landing
Boston, Massachusetts

Epsilon Associates Inc.

New Brighton Landing, LLC

Figure 2.2-9
Floor Plan - Third and Fourth Level

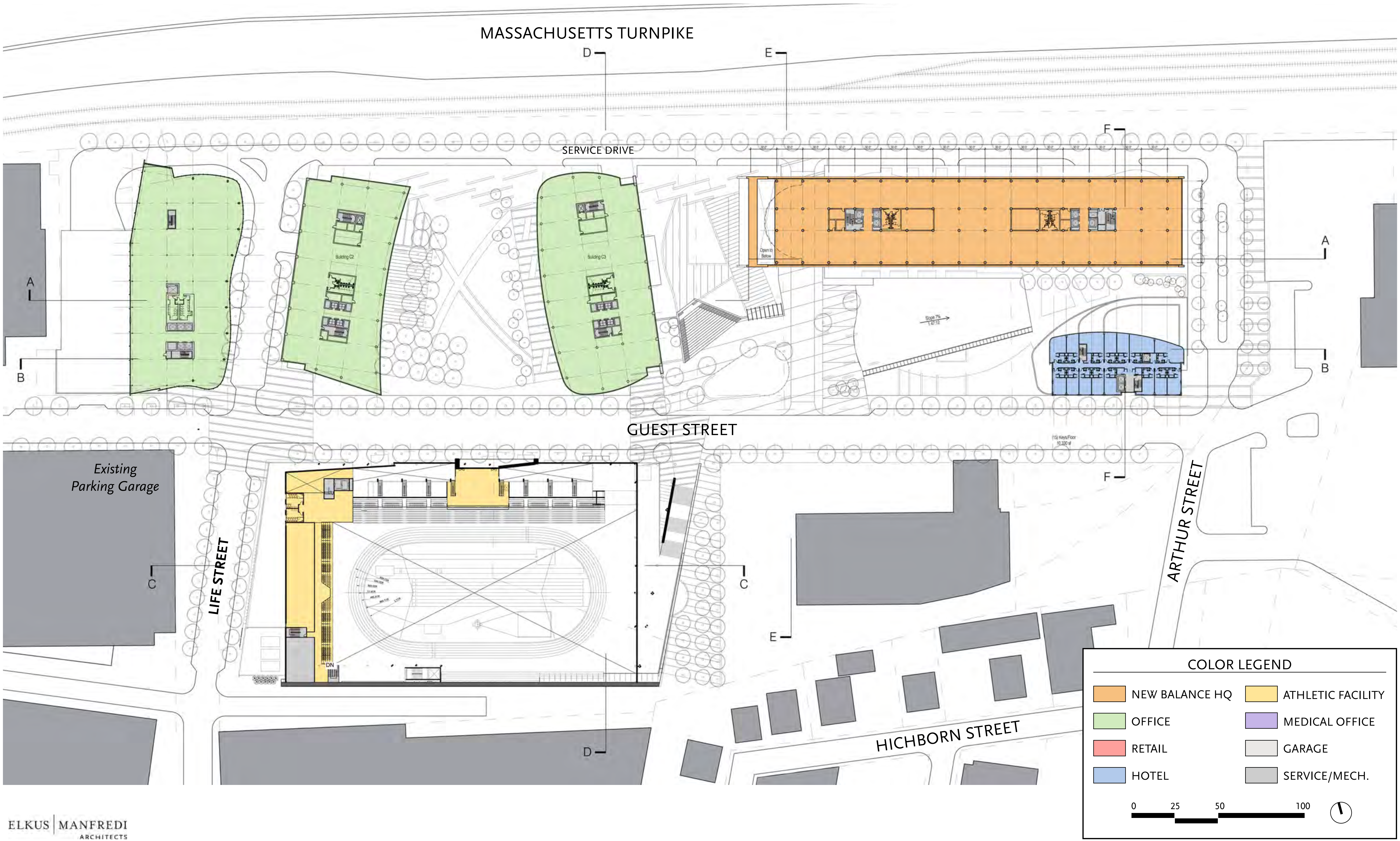

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Figure 2.2-10
Floor Plan - Fifth Level

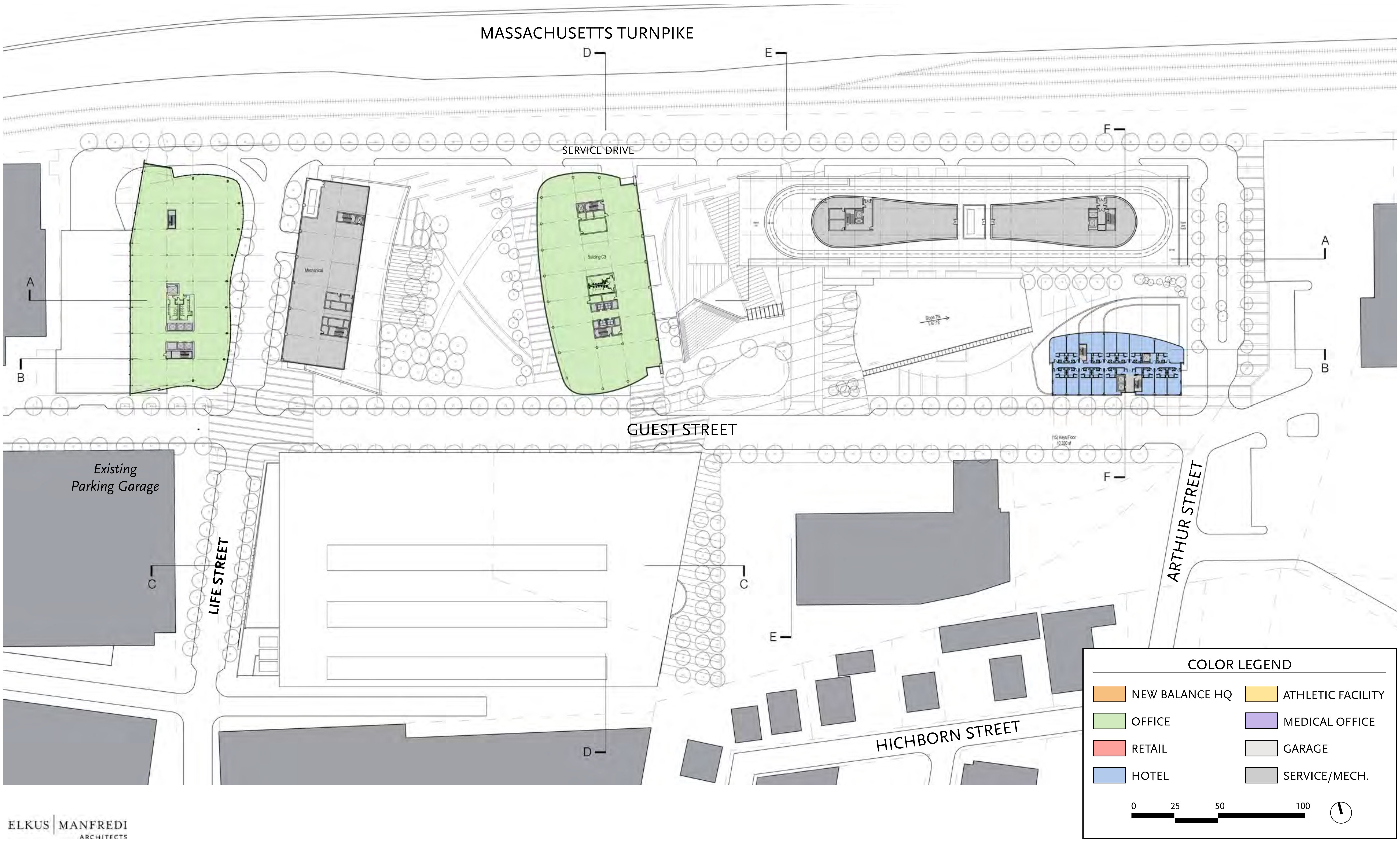

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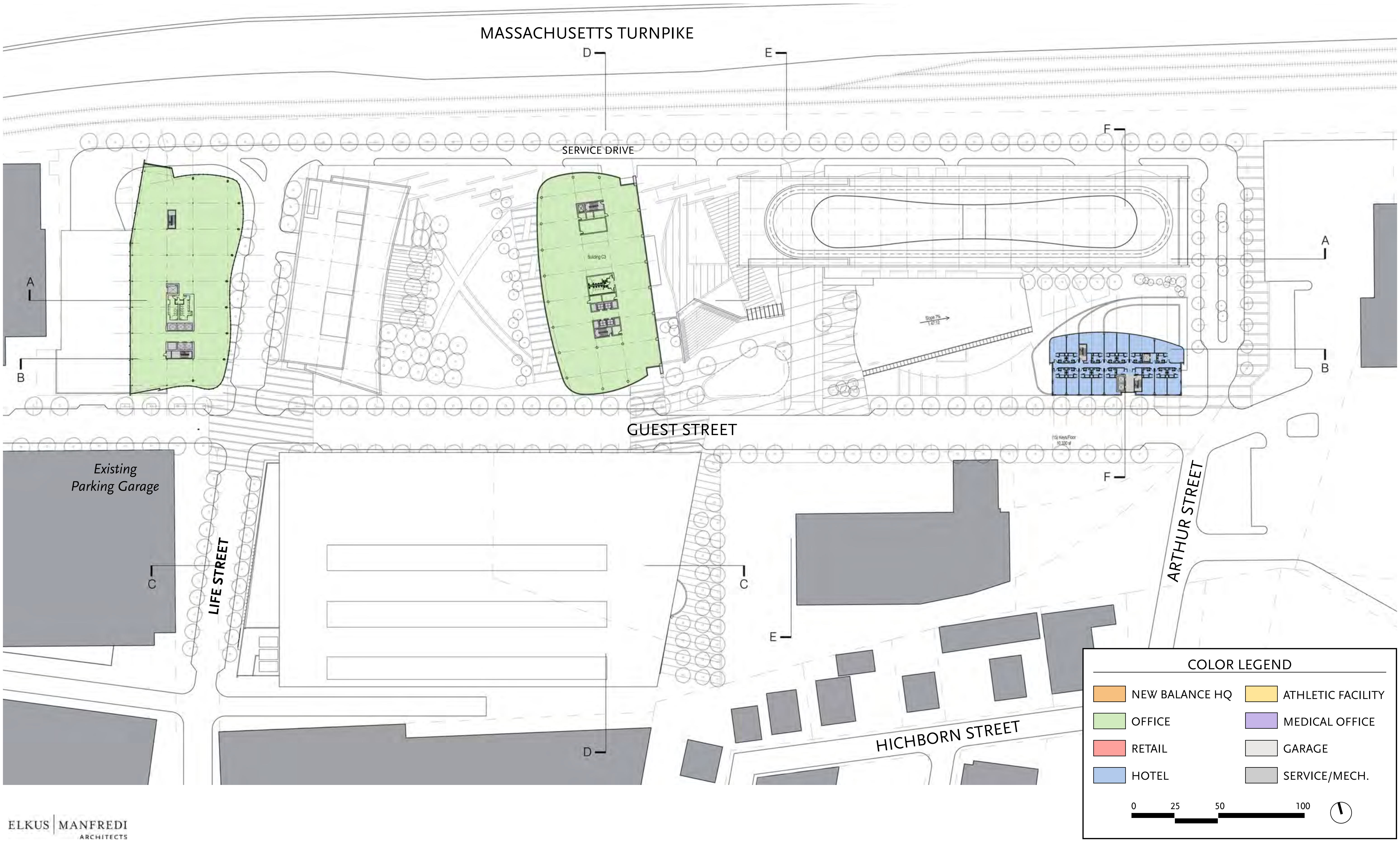
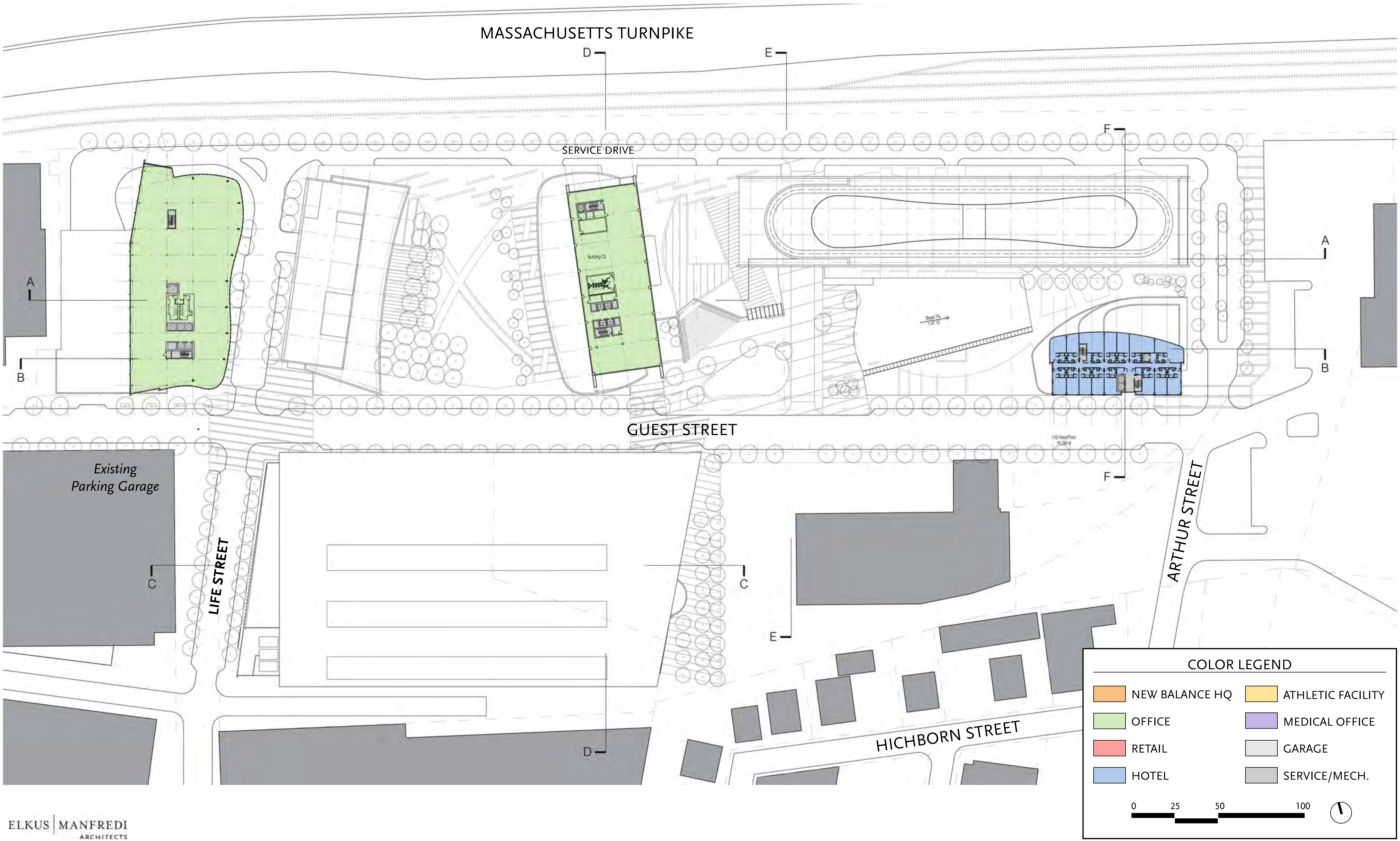
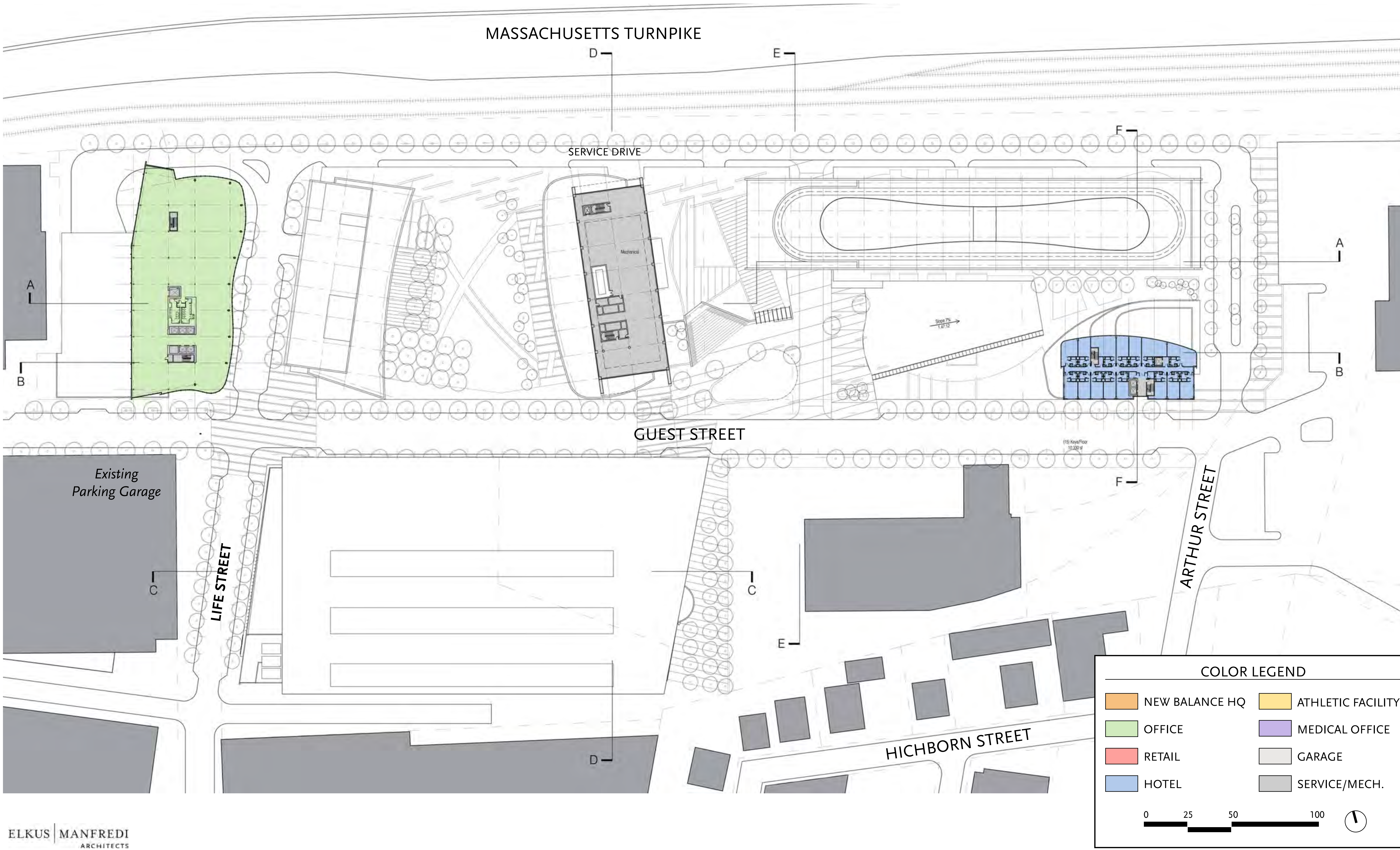
Figure 2.2-11
Floor Plan - Sixth Level


MASSACHUSETTS TURNPIKE
SERVICE DRIVE
GUEST STREET
Existing Parking Garage
LIFE STREET
ARTHUR STREET
HICHBORN STREET
A
B
C
D
E
F
COLOR LEGEND
NEW BALANCE HQ
ATHLETIC FACILITY
OFFICE
MEDICAL OFFICE
RETAIL
GARAGE
HOTEL
SERVICE/MECH.
0
25
50
100

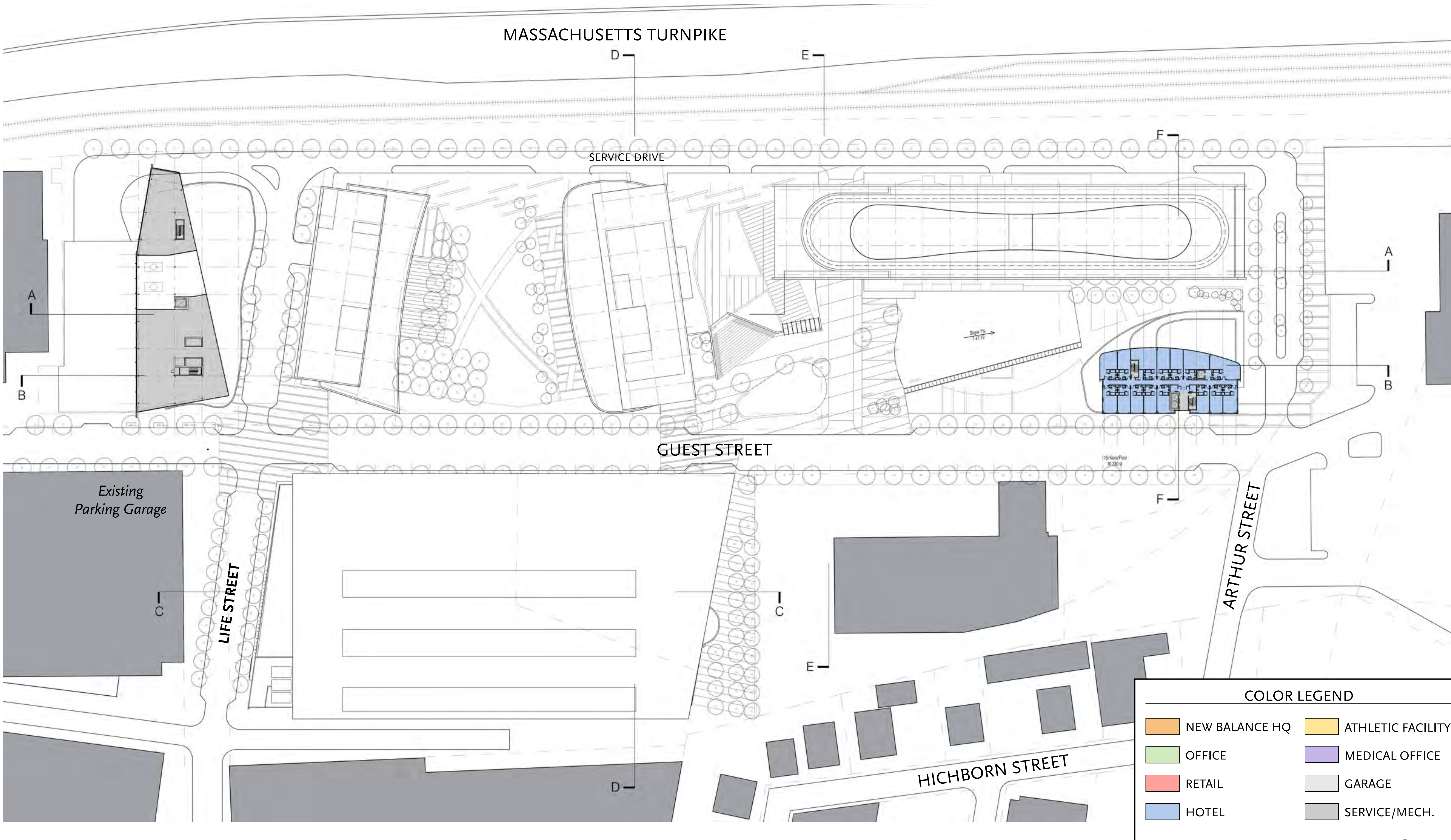


ELKUS | MANFREDI ARCHITECTS

Figure 2.2-13
Floor Plan - Ninth Level



ELKUS | MANFREDI ARCHITECTS



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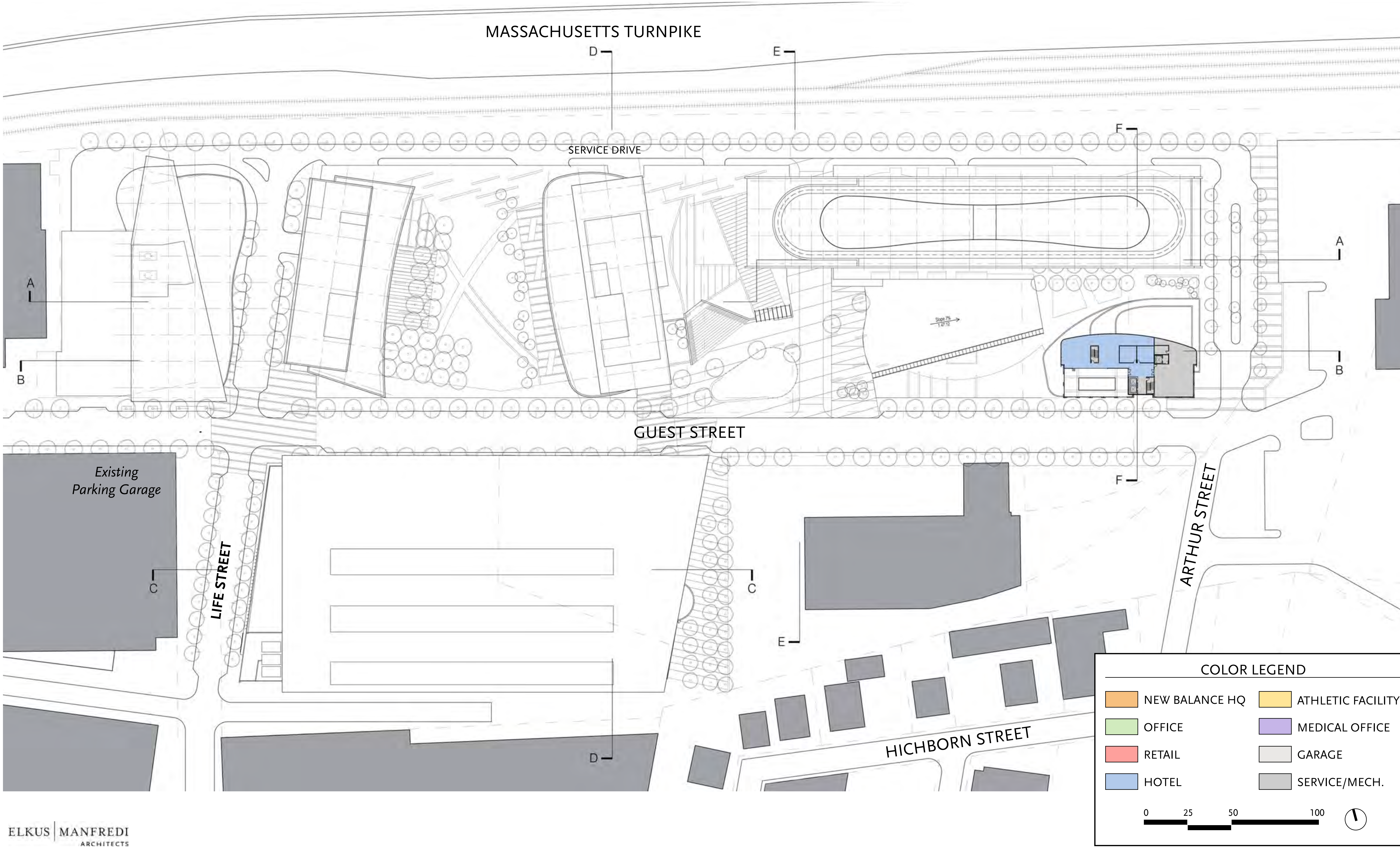
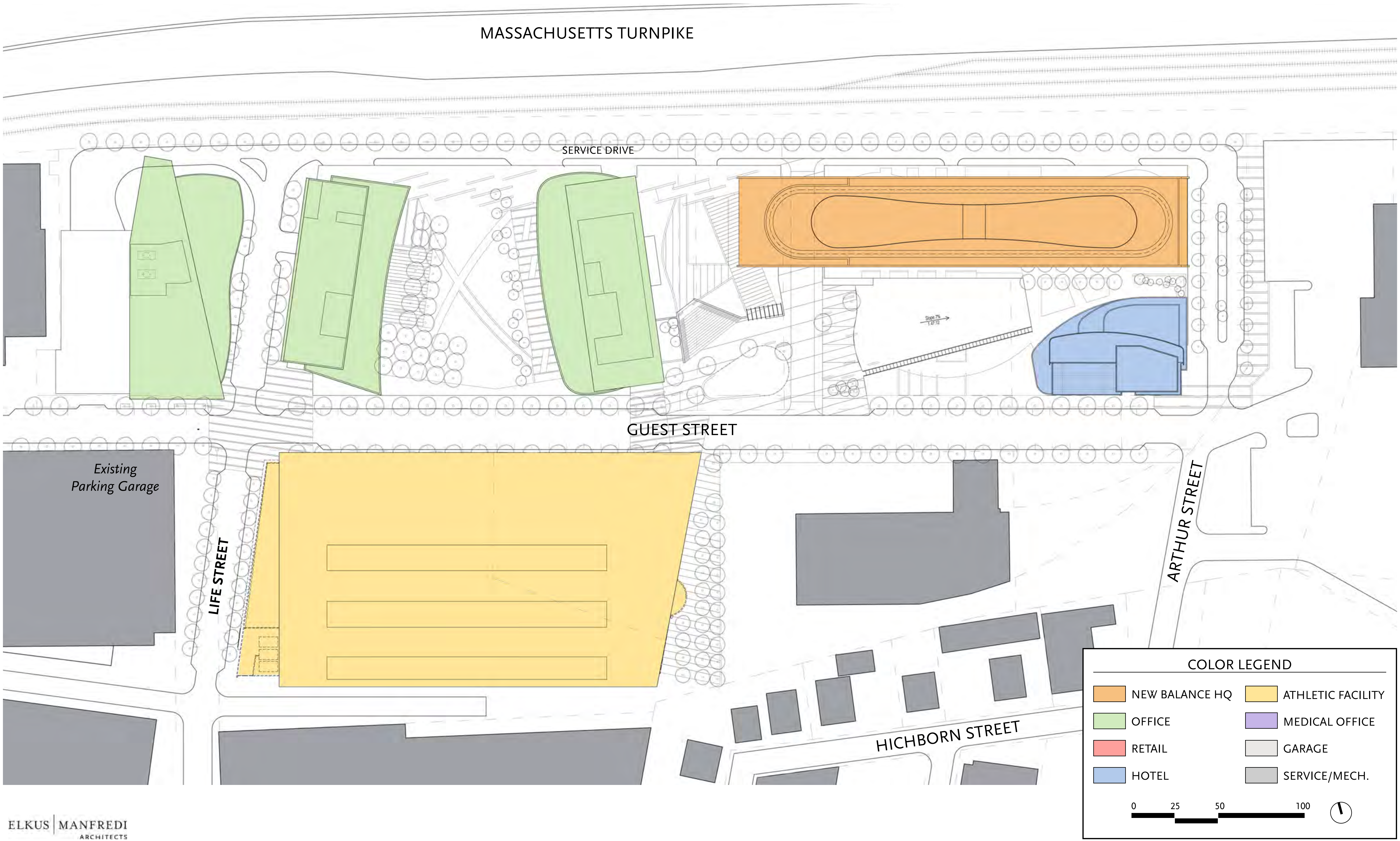


ELKUS | MANFREDI ARCHITECTS

Figure 2.2-16
Floor Plan - Fifteenth Level



ELKUS | MANFREDI ARCHITECTS

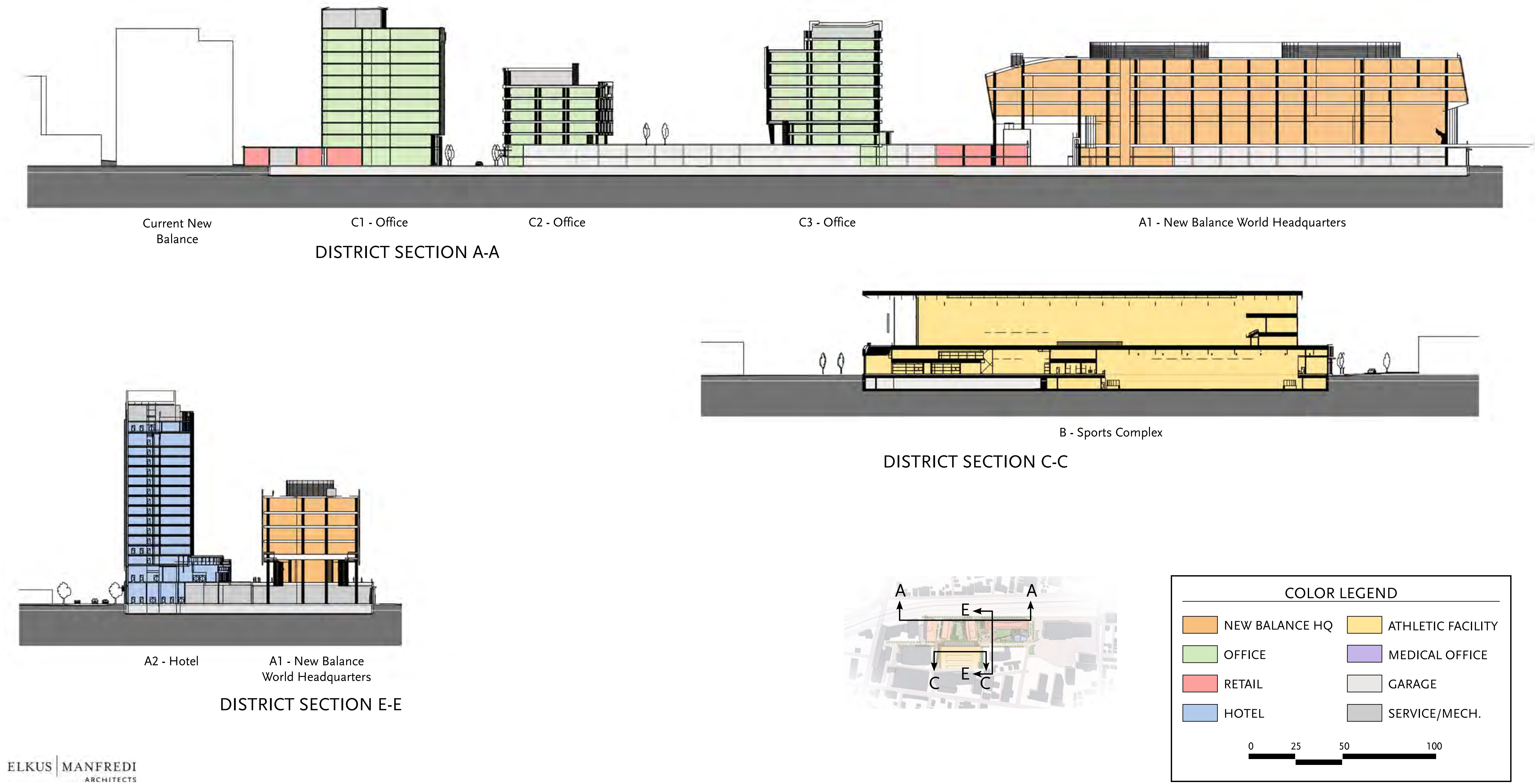
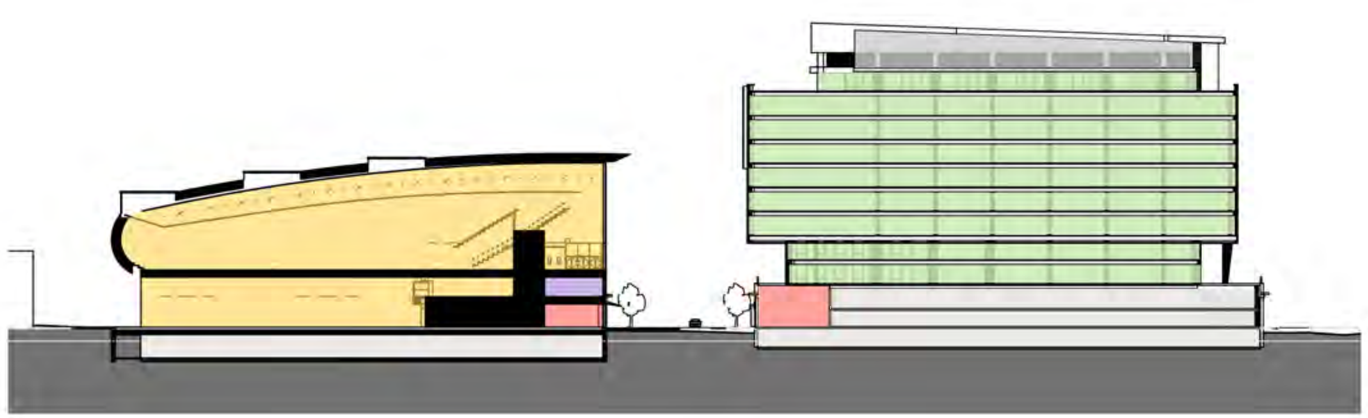


Figure 2.2-18
Site Sections

A2 - Hotel C3 - Office C2 - Office C1 - Office

DISTRICT SECTION B-B

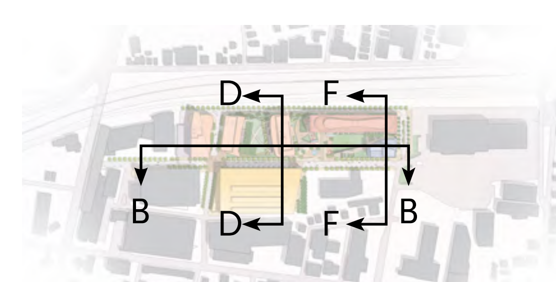


B - Sports Complex C3 - Office

DISTRICT SECTION D-D

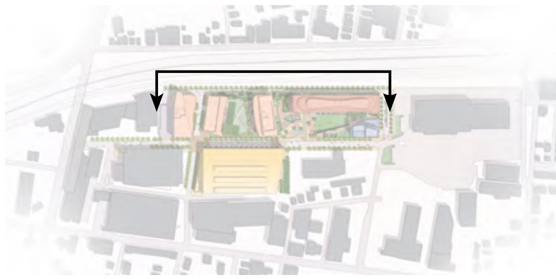
A1 - New Balance World Headquarters

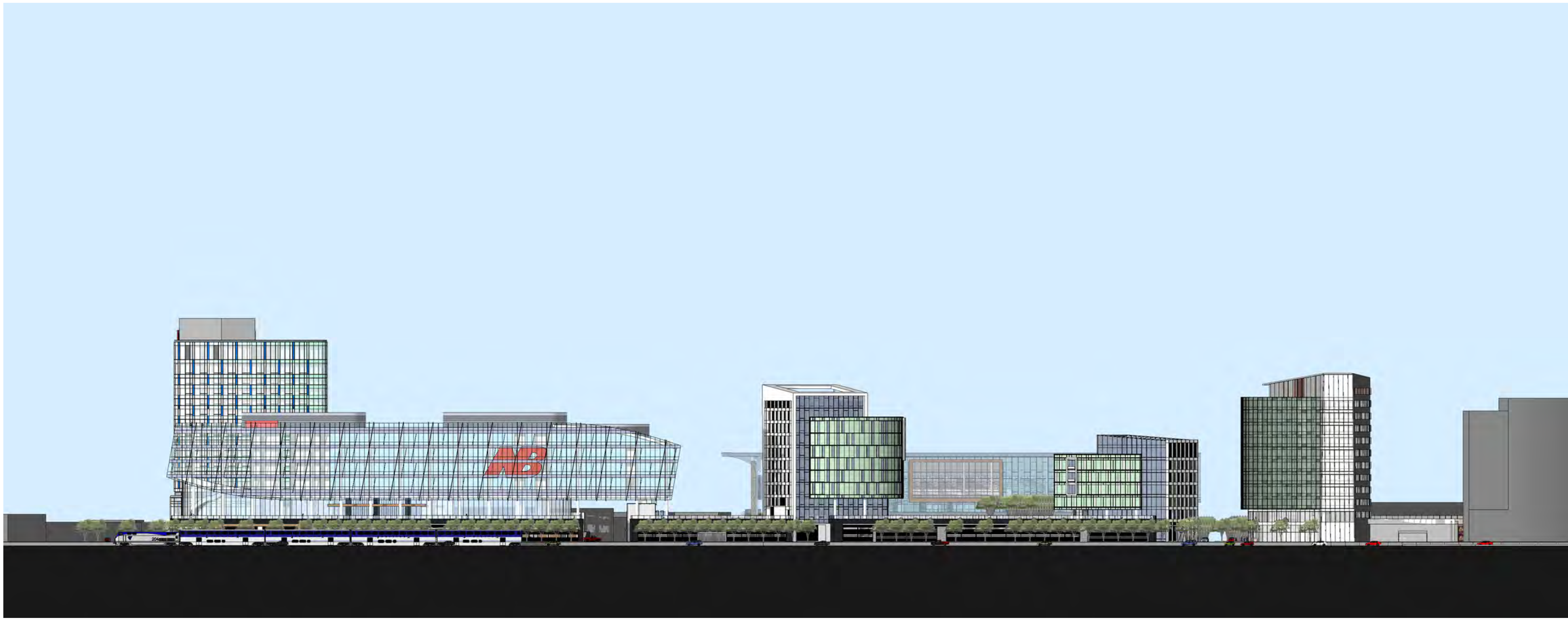
DISTRICT SECTION F-F



COLOR LEGEND

- NEW BALANCE HQ
- ATHLETIC FACILITY
- OFFICE
- RETAIL
- GARAGE
- HOTEL
- SERVICE/MECH.





NORTH ELEVATION

0 50 100 200

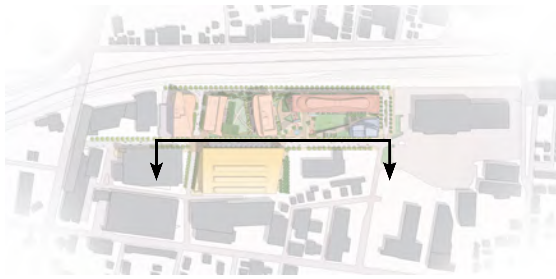
ELKUS | MANFREDI ARCHITECTS

New Brighton Landing
Boston, Massachusetts

Epsilon ASSOCIATES INC.

NEW BRIGHTON LANDING, LLC

Figure 2.2-20
District North Elevation 1



NORTH ELEVATION

ELKUS | MANFREDI
ARCHITECTS

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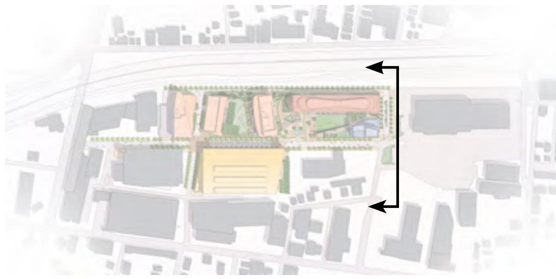

EAST ELEVATION

ELKUS | MANFREDI ARCHITECTS

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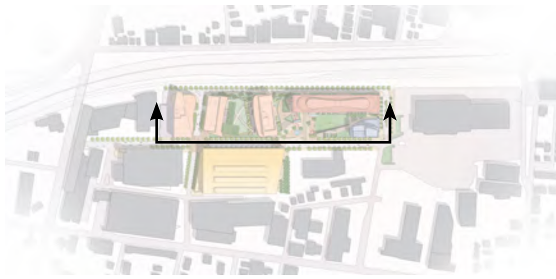

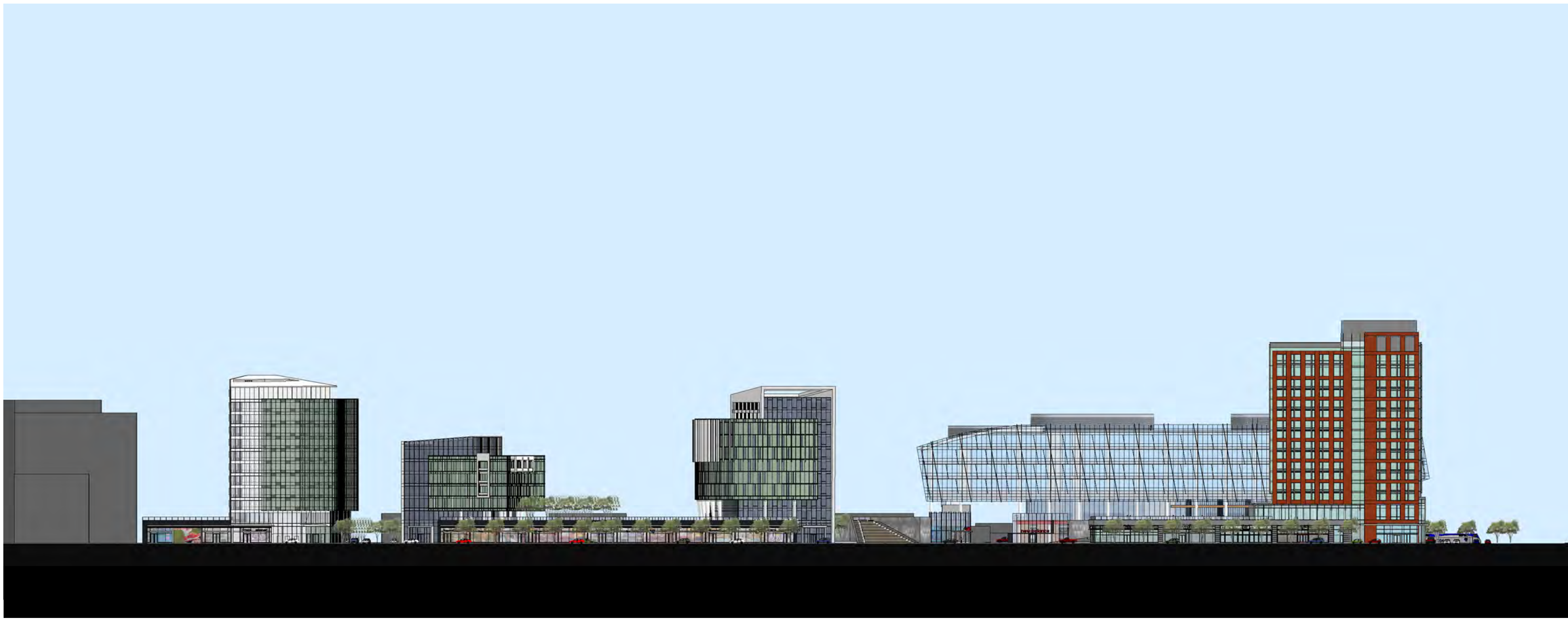

SOUTH ELEVATION

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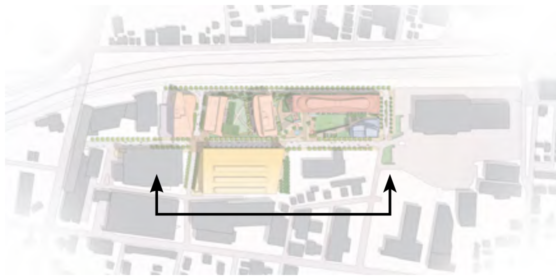

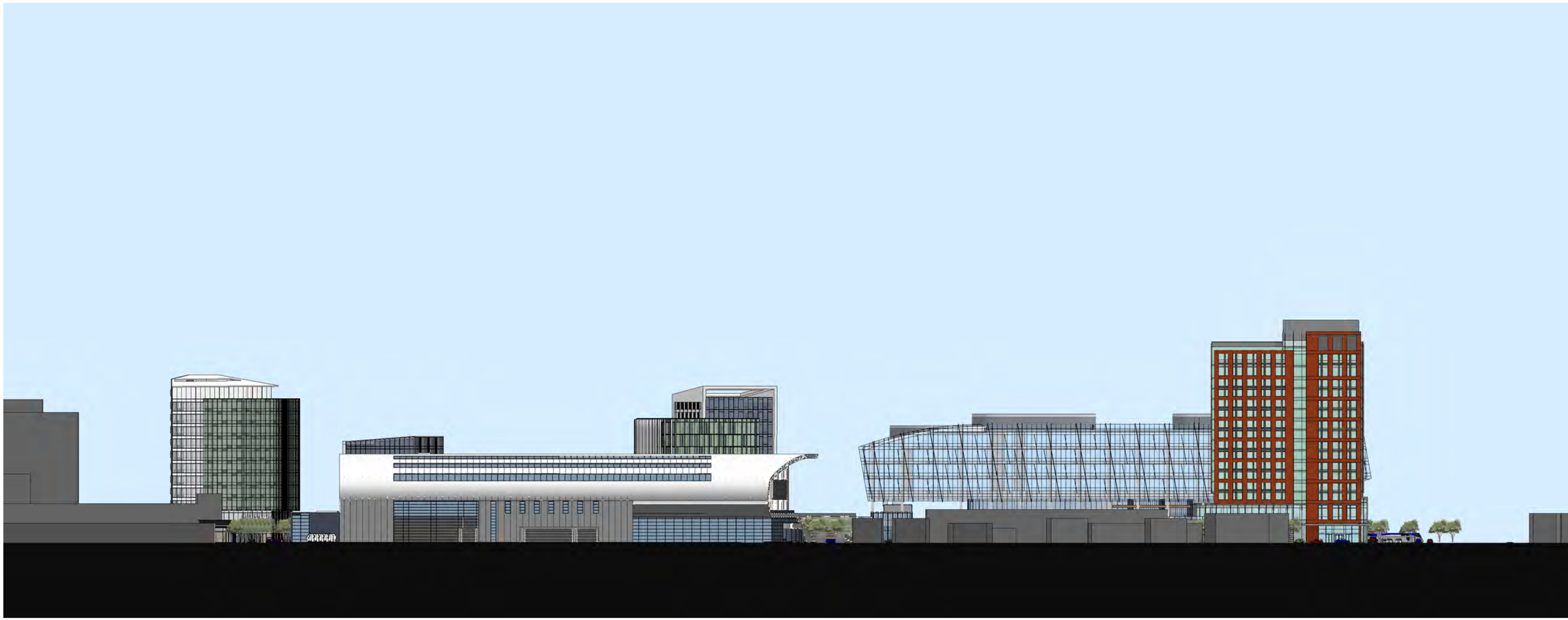

SOUTH ELEVATION

ELKUS | MANFREDI
ARCHITECTS

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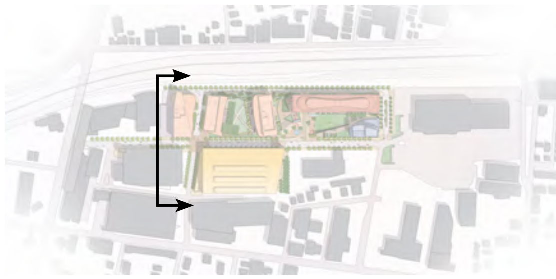


WEST ELEVATION

ELKUS | MANFREDI ARCHITECTS

2.2.2 Building Descriptions

Block A.

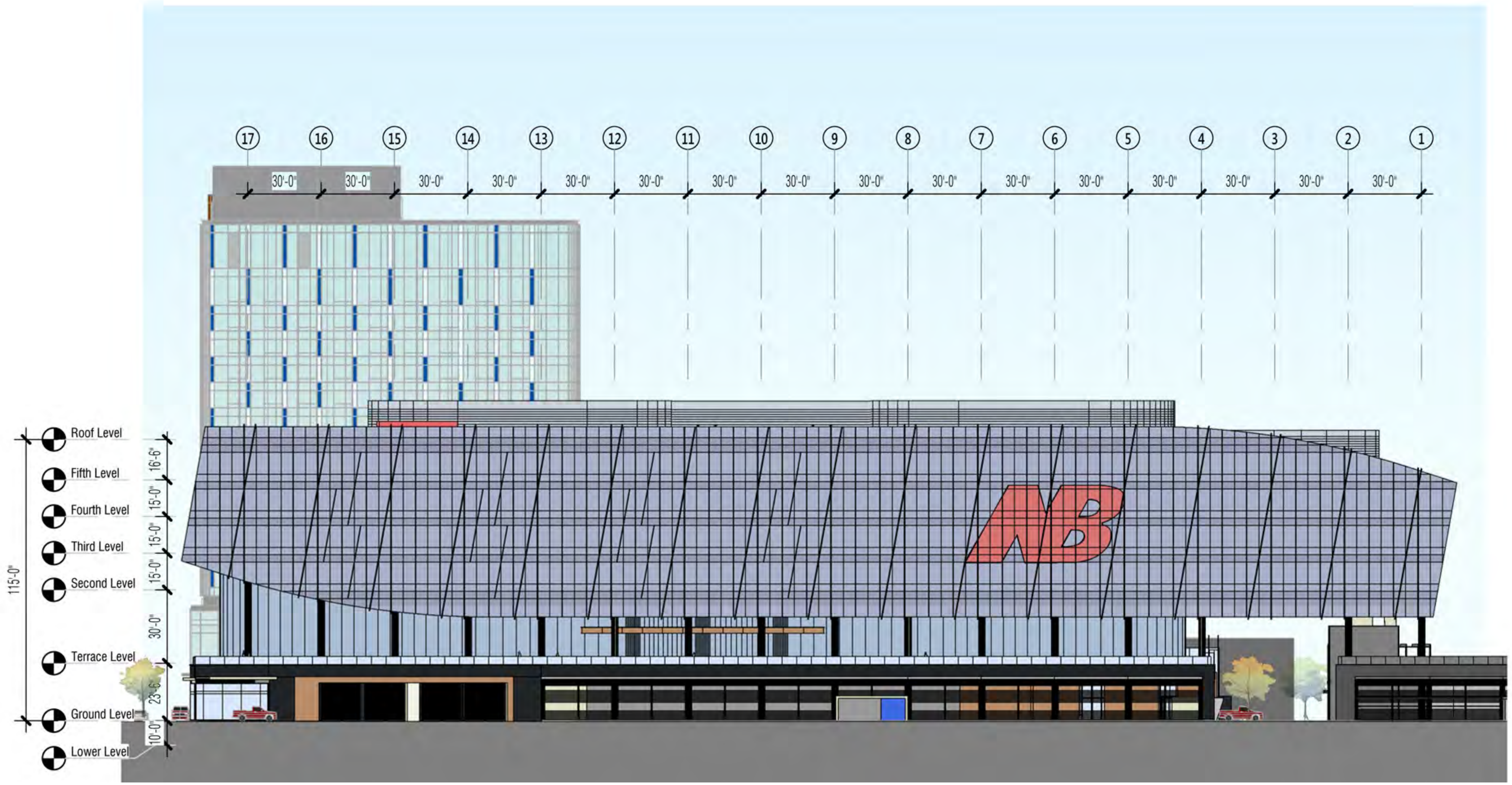
Block A is proposed to house the new world headquarters for New Balance and a boutique hotel. For visitors traveling along the Massachusetts Turnpike the buildings will serve as gateway to the City of Boston. The world headquarters building will feature a distinct design, while the hotel, as the tallest building of the Proposed Project, will act as a landmark for the revitalized New Brighton Landing area.

The building footprints have been strategically laid out to maximize opportunity for new public open space. As shown in Figure 2.2-2, significant new open space will be created along the northern edge of Guest Street, offering pedestrians green space to sit, play, and eat outdoors.

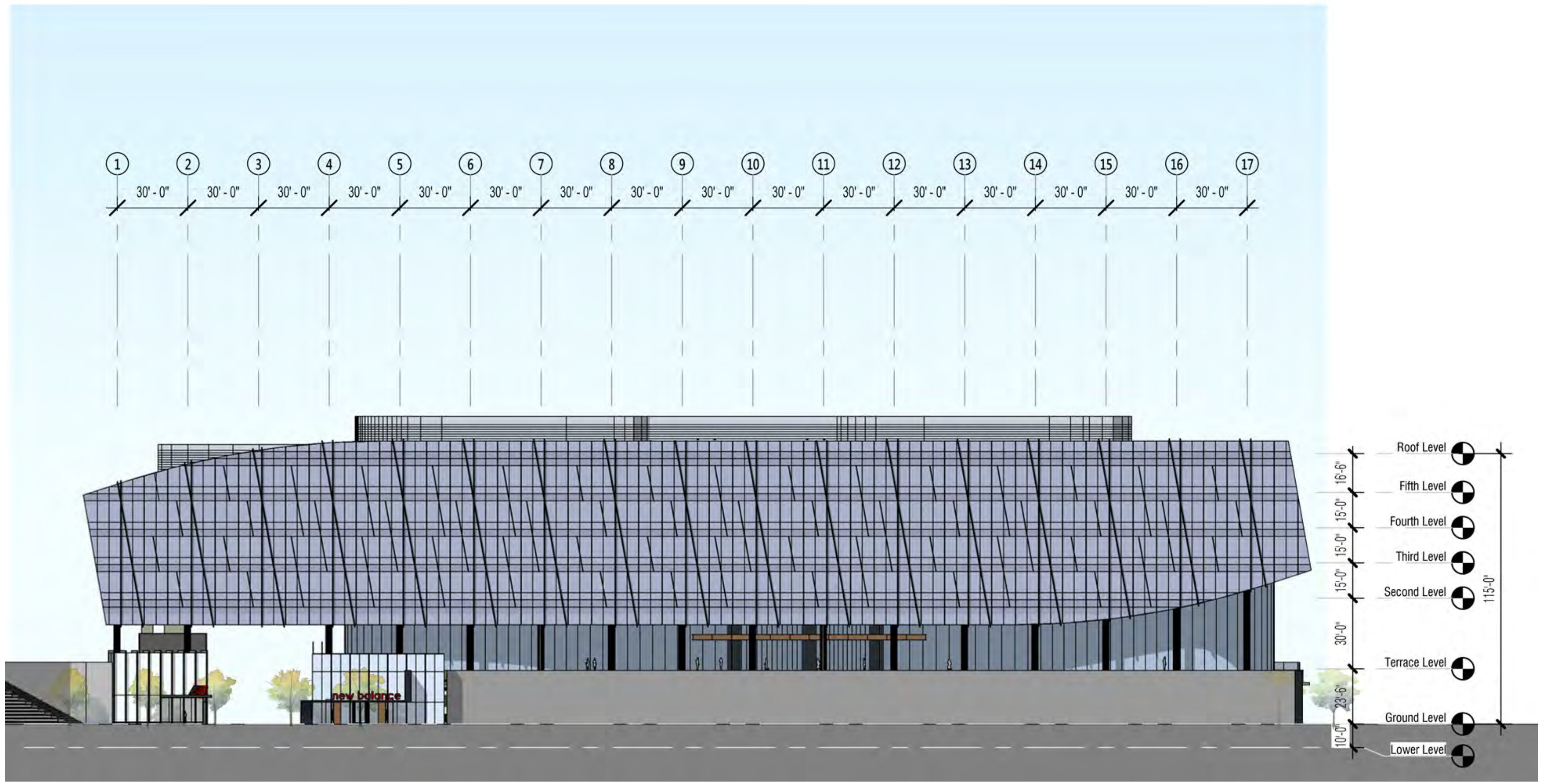
The layout of the hotel will further improve the pedestrian experience by providing ground floor retail along Guest Street. To accommodate this space, the hotel's lobby and fitness facility will be moved to the second floor of the building. Parking will be located onsite as part of the overall parking garage beneath Blocks A and C.

The new headquarters building for New Balance will be an approximately 250,000 square foot building running parallel to the Massachusetts Turnpike with a maximum height of approximately 130 feet. The north and south facades will be composed of a glass curtain wall system to enclose the unique profile of the structure and afford views both into and out of the building. The four floors of office will be built above a raised base podium which will house the main office lobby, street level retail facing Guest Street, and two levels of above-grade parking. The roof of the podium will be a fully accessible green roof with extensive plantings and outdoor areas for employees and visitors. In addition to the podium level green space, the upper roof of the building will have an extensive green roof and may include an outdoor running/walking track around its perimeter. Figures 2.2-26 through 2.2-28 provide detailed building elevations of the new headquarters.

The proposed hotel will have approximately up to 175 rooms, and up to 140,000 square feet, including a 3,000 square-foot+/- ballroom, meeting rooms, and related back of the house spaces. The building's relatively small footprint is intended to anchor the corner of Guest and Arthur Streets, and with a height of approximately 205 feet it will act as a visual landmark for the New Brighton Landing District. The Guest Street façade and portions of the east and west façades will be composed of terra cotta panels and "punched" glass openings. The north façade will be composed of a curvilinear glass curtain wall which affords a clean, expressive image toward the Massachusetts Turnpike while maximizing views to the Charles River and Boston skyline. Figures 2.2-29 through 2.2-31 provide detailed building elevations of the new headquarters.

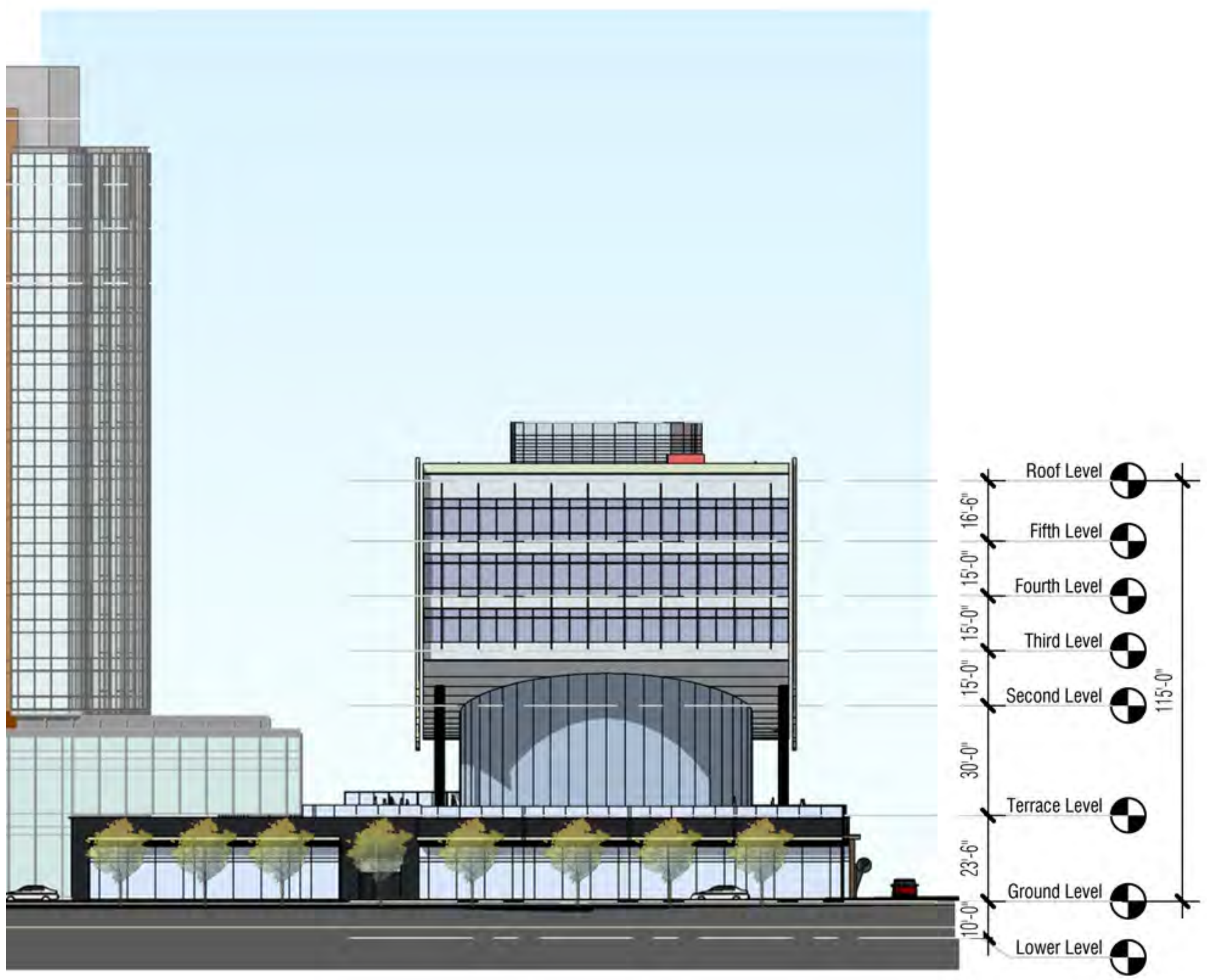


NORTH ELEVATION

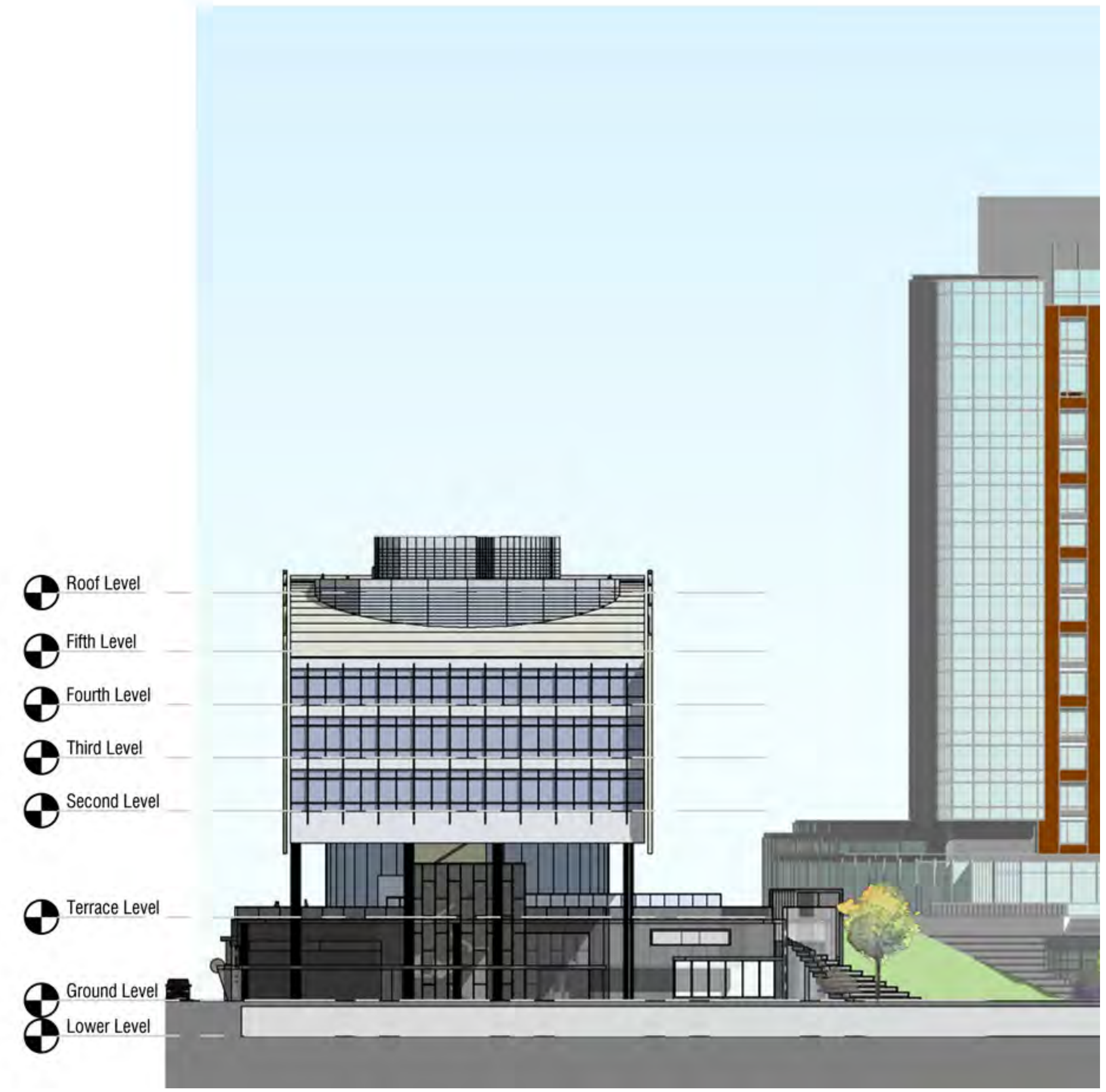


SOUTH ELEVATION

ELKUS | MANFREDI ARCHITECTS



EAST ELEVATION

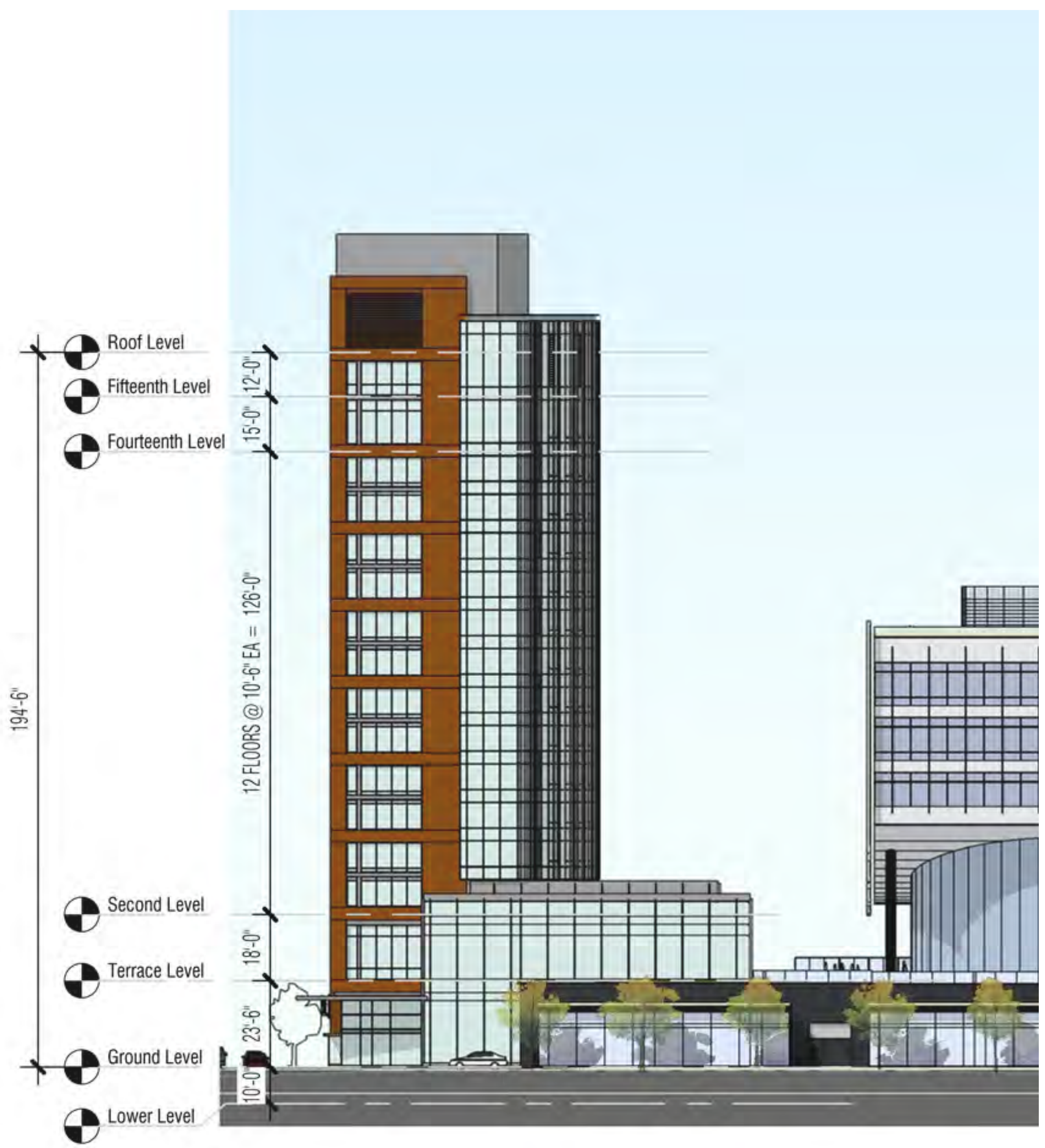


WEST ELEVATION

0 25 50 100

NORTH ELEVATION

SOUTH ELEVATION



EAST ELEVATION

WEST ELEVATION

ELKUS | MANFREDI ARCHITECTS

0 25 50 100

Block B

The proposed new sports complex on Block B will feature a NHL regulation ice hockey rink and a hydraulic track, a fitness center, and medical office space. This facility will be a focal point of the Proposed Project that in conjunction with the presence of New Balance will help rebrand the district as a center for health and wellness.

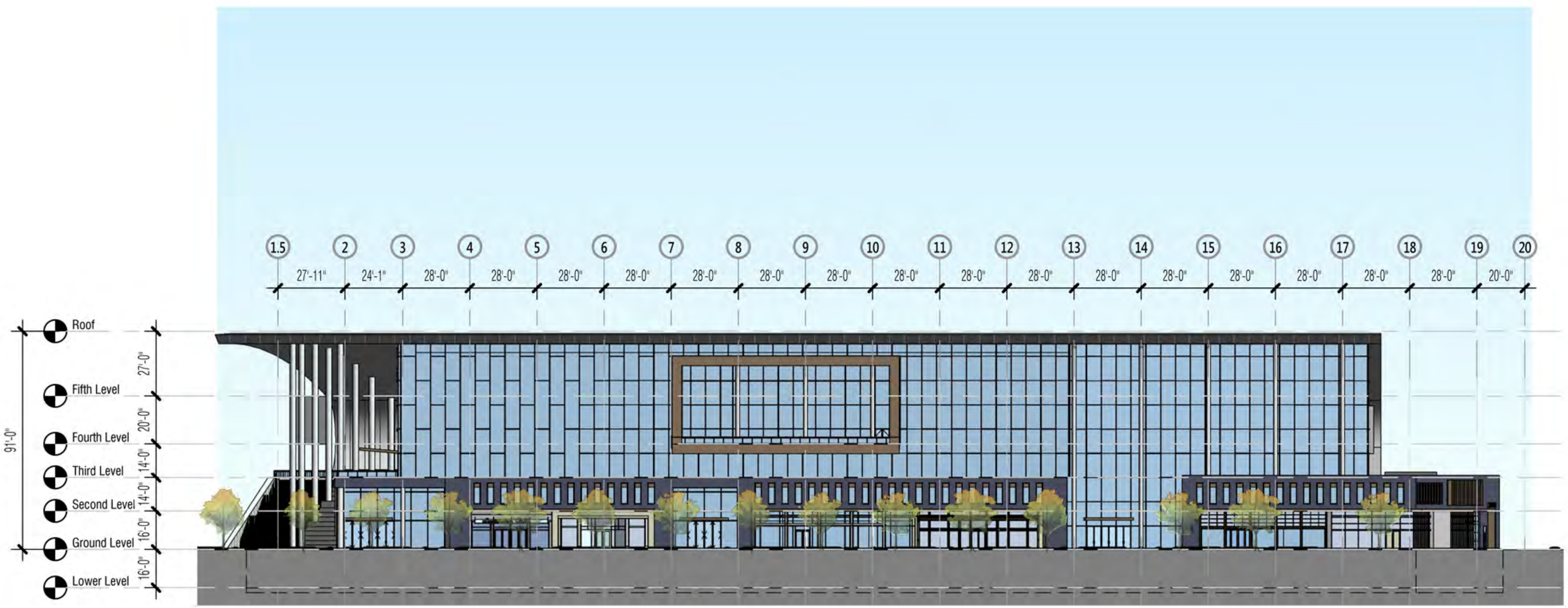
The sports complex will be up an to 345,000 square-foot and up to 95-foot high structure with an asymmetrical roof. The low point of the roof will be on the southern side of the building which will gently slope away from the neighborhood. The roof line will be punctuated with three horizontal roof monitors allowing diffused southern light into the track and field venue beneath. To the north and east, the building façades are primarily glazed, allowing for natural light and views into and out of the facility. The ground level of the building fronting Guest Street is designed as a retail store front allowing retail tenants to maintain their own identity while maximizing the variety of architecture directly fronting the pedestrian realm. Figures 2.2-32 through 2.2-34 provide detailed building elevations of the new sports complex.

Block C

The up to three office buildings within Block C are designed to be of varying height, but with a maximum of no more than 165 feet. The tallest building (Building C1) will occupy the western most portion of the site adjacent to the existing New Balance Headquarters. The variable heights and configurations that are proposed were designed deliberately to maximize diversity of the architecture.

As currently proposed, the two buildings to the east (C2 and C3) will rest on a 2-story above-grade podium similar to the proposed new Headquarters building. The 2-story podium will include ground level retail fronting on Guest Street, behind which will be a parking garage similar to the podium located within the A block. The roof of the podium will be a combination of planted and hardscape areas. Figures 2.2-35 through 2.2-40 provide detailed building elevations of the proposed office buildings.

The total square footage of Block C will be approximately 870,000 square feet, including up to approximately 650,000 square feet of office, 25,000 square feet of retail in the podium level fronting Guest Street, and about 170,000 square feet of above grade parking within the podium.



NORTH ELEVATION

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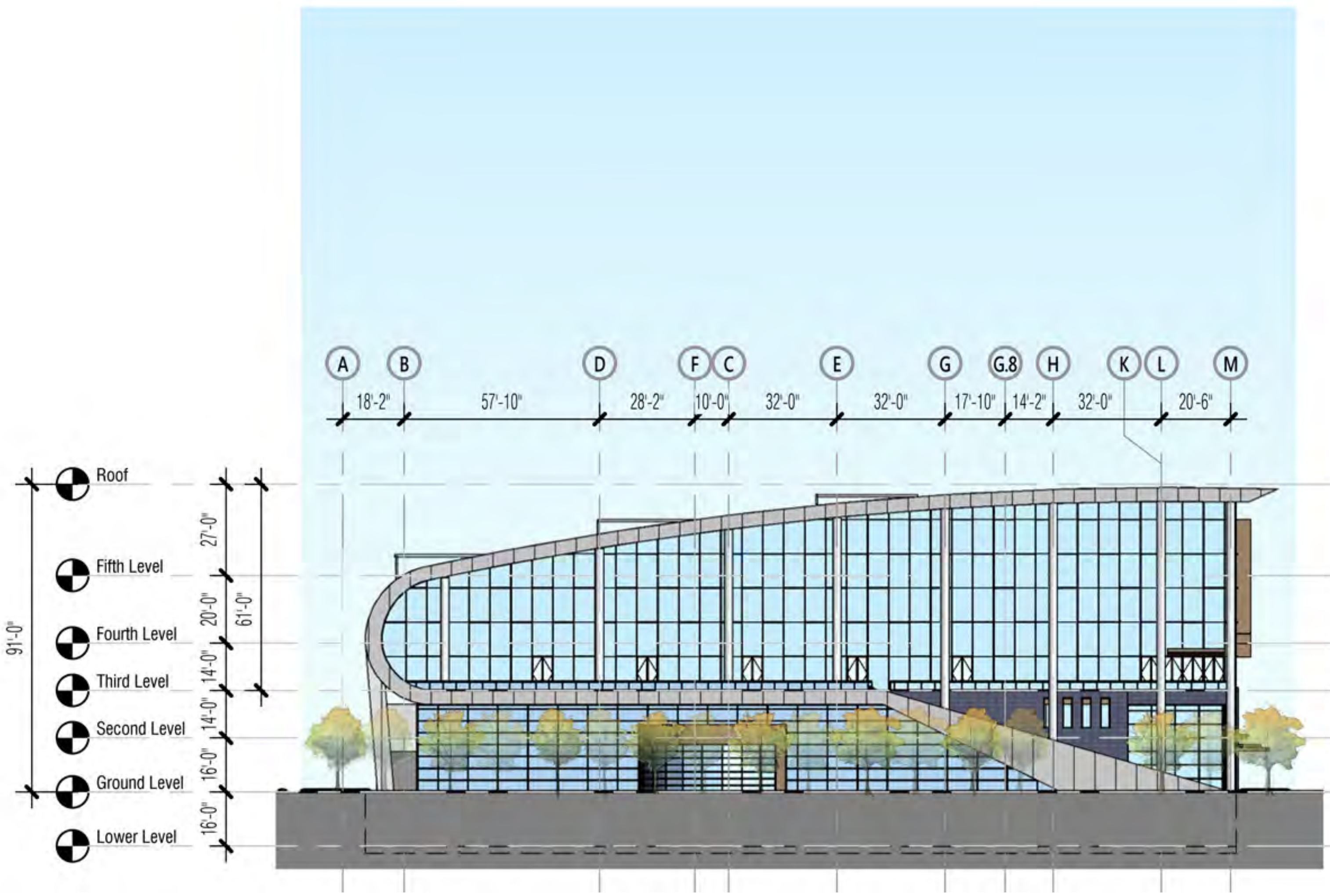

EAST ELEVATION

WEST ELEVATION

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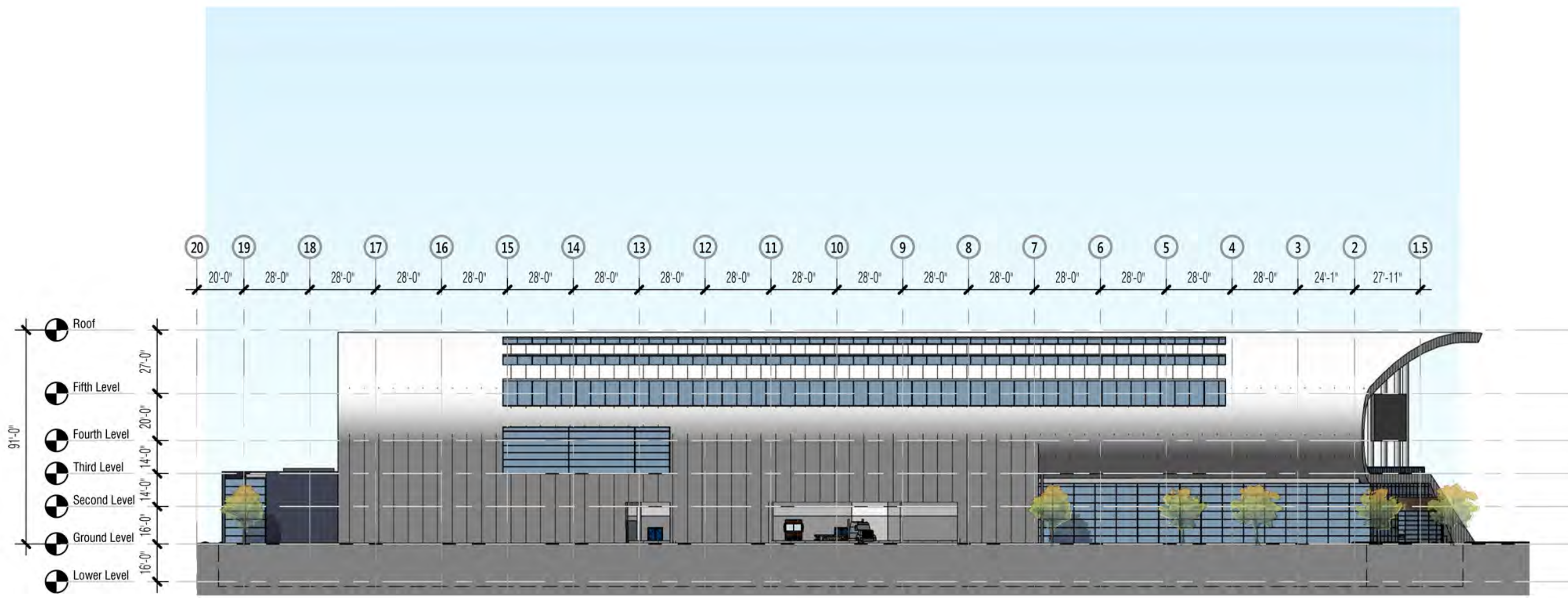


SOUTH ELEVATION

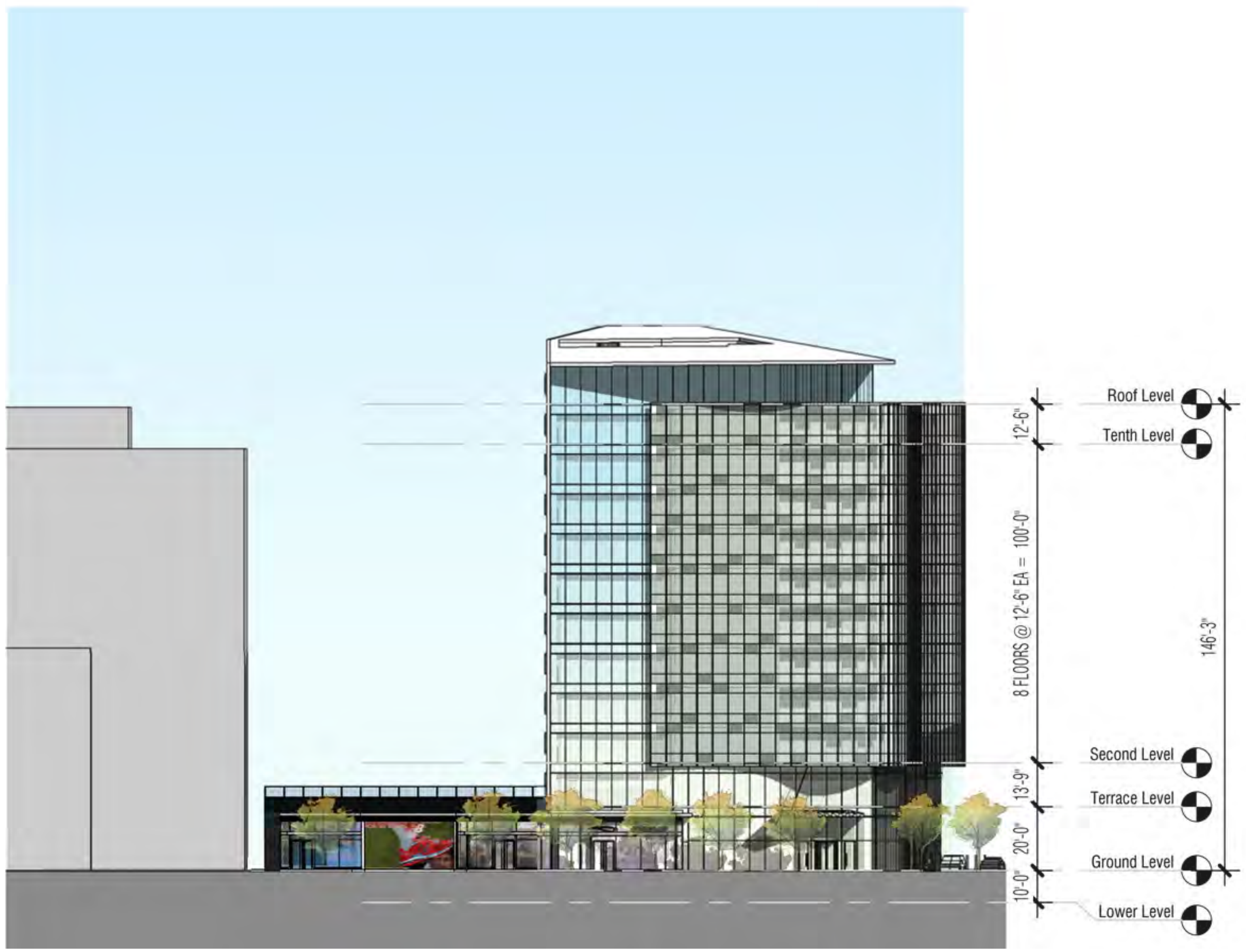
NORTH ELEVATION

EAST ELEVATION

ELKUS | MANFREDI ARCHITECTS

0 25 50 100

Figure 2.2-35
Office "C1" - North-East Elevations



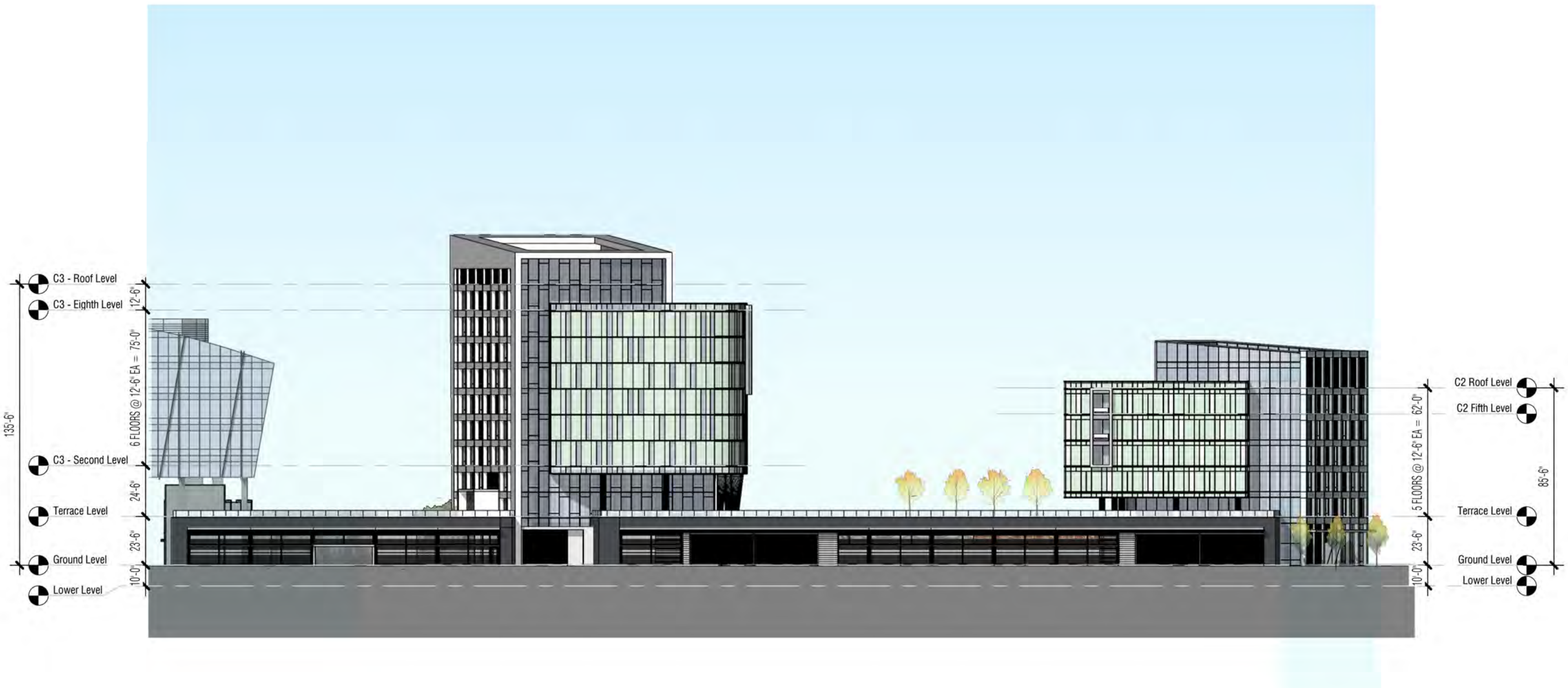
SOUTH ELEVATION

WEST ELEVATION

ELKUS | MANFREDI ARCHITECTS

0 25 50 100

Figure 2.2-36
Office "C1" - South-West Elevations



NORTH ELEVATION

ELKUS | MANFREDI ARCHITECTS

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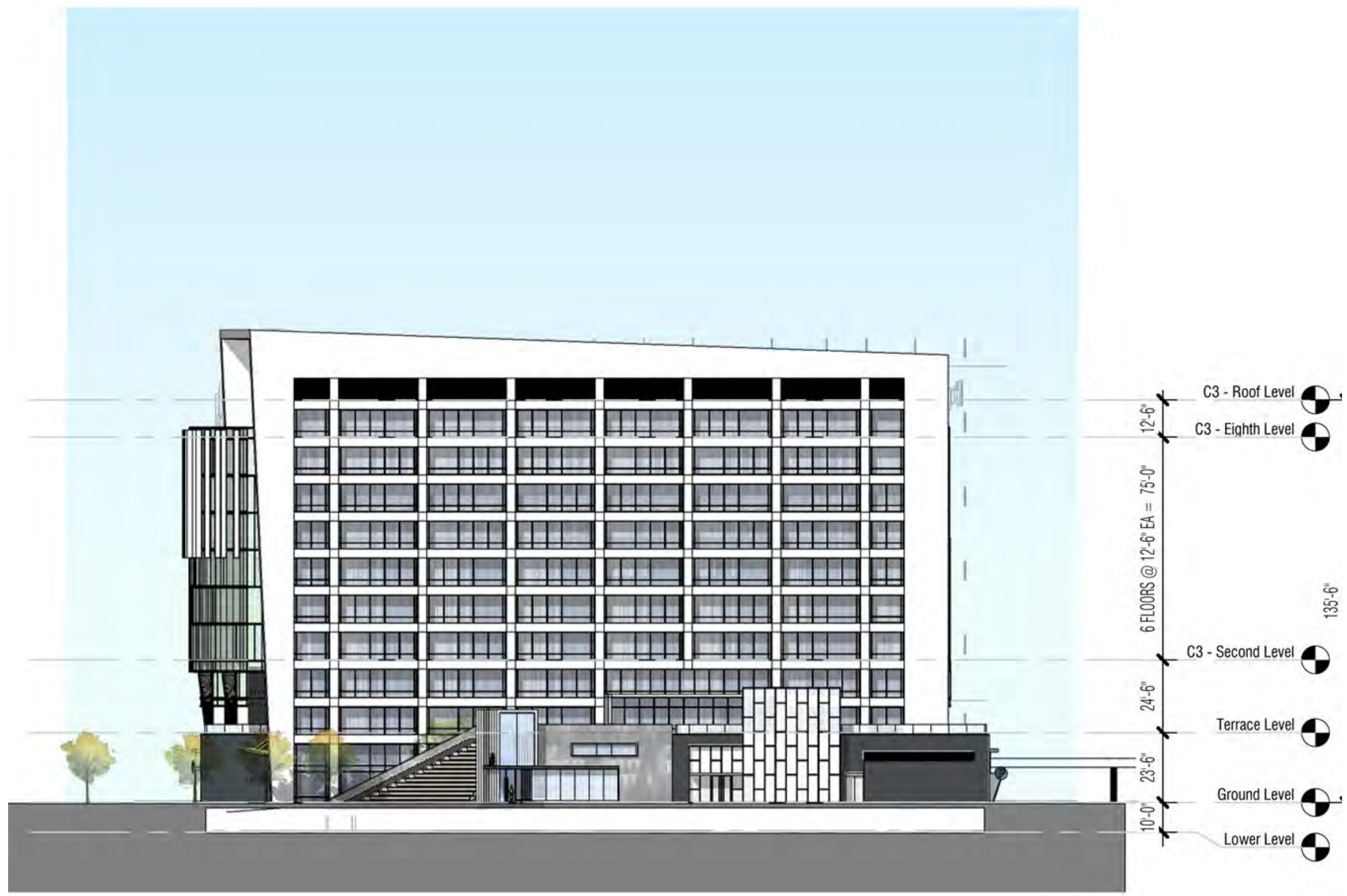


EAST ELEVATION

Figure 2.2-38
Office "C2 and C3" - East Elevation

SOUTH ELEVATION

ELKUS | MANFREDI ARCHITECTS

0 25 50 100

New Brighton Landing
Boston, Massachusetts

Epsilon Associates Inc.

New Brighton Landing, LLC

Figure 2.2-39
Office "C2 and C3" - South Elevation

WEST ELEVATION

ELKUS | MANFREDI ARCHITECTS

0 25 50 100

2.3 Consistency with Planning

2.3.1 The Brighton Guest Street Area Planning Study

The Proposed Project is located within the Brighton Guest Street Study Planning Area, ("the Study"), which was completed by the BRA in March of 2012. The Study area is bounded by the Massachusetts Turnpike to the west and north, North Beacon Street to the south, and Cambridge Street to the east and encompasses approximately 100 acres. The study area is characterized mostly by industrial buildings and surface parking lots with some residential uses along in the southeastern portion. WGBH headquarters and the existing New Balance's headquarters on Guest Street are two notable features within the Study Area.

The Proponent has been an active participant in the development of the Study. The Study examined potential development opportunities, identified and defined height, density, design, and use guidelines, and developed scenarios for future development in the area. Provisions for improved access to public open space, pedestrian friendly streetscape and improved street grid connectivity are also part of the Study.

The Proposed Project is consistent with most of the main goals of the Brighton Guest Street Area Planning Study, in particular those for the future of Guest Street itself. By transforming a significant portion of the Guest Street corridor from underutilized and vacant parcels into a vibrant mixed use area, the Project will vastly improve the existing public realm. The Proposed Project calls for the addition of ground floor retail and restaurant uses along Guest Street as well as the addition of 1.42 acres of new open space. These additions will serve to enhance the existing urban fabric by creating a pedestrian friendly environment and significantly increasing access to open space.

In keeping with the goals of the study, the Proposed Project anticipates redesigning a portion of the local street grid to not only help improve local traffic flow but also to increase connectivity between the Guest Street corridor and surrounding residential and commercial areas. These new streets will promote the integration of uses and help establish a vibrant new district complimenting and strengthening the surrounding neighborhoods.

2.3.2 Boston's Open Space Plan 2008 – 2012

The Proposed Project will have a beneficial impact on Boston's open space. As part of the Project, the Proponent will create approximately 1.42-acres of new useable green space along Guest Street that will be open to the public for passive recreation. Furthermore, it will replace underutilized parcels with attractive new developments that will help improve and enliven the public realm and streetscape surrounding this new green space.

The Proposed Project is not expected to have any significant negative impacts on proximate open spaces, such as Murray's Park (a.k.a. Portsmouth Playground) north of the Turnpike or

McKinney Playground located approximately a block west of Market Street. The Proposed Project will not directly impact these or any other open spaces and is not expected to result in any significant increase in the use of these parks.

2.3.3 Consistency with Metropolitan Area Planning's MetroFuture

The MetroFuture Plan is the new regional plan for the Greater Boston Area produced by the Metropolitan Area Planning Council (MAPC). The plan establishes a vision for the region with regard to land use and development. The plan provides 65 goals in six categories: Sustainable Growth Patterns, Housing Choices, Community Vitality, Prosperity, Getting Around, and Energy, Air, Water and Wildlife. The Proposed Project furthers many of these goals by building on previously developed land in Boston, enhancing the pedestrian environment, developing a LEED certifiable project, and locating proximate to existing and proposed transportation infrastructure.

Section 3.0

Executive Summary - Transportation

3.0 EXECUTIVE SUMMARY - TRANSPORTATION

This section presents a summary of the Transportation Study completed for the Proposed Project. The full Transportation Study is enclosed at the end of this section on compact disc.

3.1 Background of Planning Studies

The Proposed Project site is at the heart of a larger 100-acre district recently examined in the City's Brighton Guest Street Area Planning Study[1]. The study established urban design guidelines intended to help shape future development in this area of Allston/Brighton, focusing on creating a unique identity for the area through a blend of pedestrian-scaled streets, public parks and plazas, and neighborhood amenities. Many of the recommended short-term and long-term transportation improvements in the Study are supported by New Brighton Landing and have been successfully incorporated into the Proposed Project.

The Transportation Study developed for the PDA Master Plan is resubmitted here for the Expanded Project Notification Form with several additions based on input from the community at both public meetings held for the PDA Master Plan and from the IAG. Specifically, these additions include study area intersections (six locations) and additional detail on proposed mitigation, particularly as it relates to improving vehicular, pedestrian and bicycle conditions in the area. Since the PDA Master Plan submittal, certain vehicular, pedestrian and bicycle mitigation elements have been enhanced.

The entire Transportation Study can be found in the Appendix to this report as a compact disk or as part of the PDA master Plan, submitted to the BRA on March 21, 2012.

3.2 Coordination with Reviewing Agencies Regarding Transportation

New Brighton Landing has had several meetings focused on transportation-related issues with the Boston Redevelopment Authority (BRA) and the Boston Transportation Department (BTD) during development of the PDA Master Plan Transportation Study, this document, and subsequently BTD provided guidance in identifying the study area and in the development of both short-term and long-term transportation mitigation elements and infrastructure improvements in the area. In terms of transportation, coordination with the BRA helped establish and maintain consistency of the Proponent's overall development and mitigation package with the Brighton Guest Street Area Planning Study.

1 "Brighton/Guest Street Area Planning Study, Final Report", prepared for the Boston Redevelopment Authority by Sasaki Associates and GLC Development Resources. February 2012.

New Brighton Landing has also had discussions and a meeting with the Department of Conservation and Recreation (DCR) for their input as they control several key intersections within the study area adjacent to the site, specifically along Birmingham Parkway. New Brighton Landing has agreed to work closely with the DCR on mitigation elements as it may relate to the Birmingham Parkway corridor.

Discussions continue with MassDOT regarding the potential of establishing a commuter rail station adjacent to the site.

New Brighton Landing will continue to work collaboratively with the City, the Commonwealth and the community throughout the planning phases and into the design development and construction of the Project.

3.3 Transportation Study Methodology

The Transportation Study was conducted in accordance with the BTD's *Transportation Access Plan Guidelines* (2001), the *BRA Development Review Guidelines* (2006), and *MEPA Regulations 301 CMR 11.00* (amended in 2008). The study describes roadway, parking, transit, pedestrian, and bicycle conditions, loading transportation issues and transportation goals for the Proposed Project.

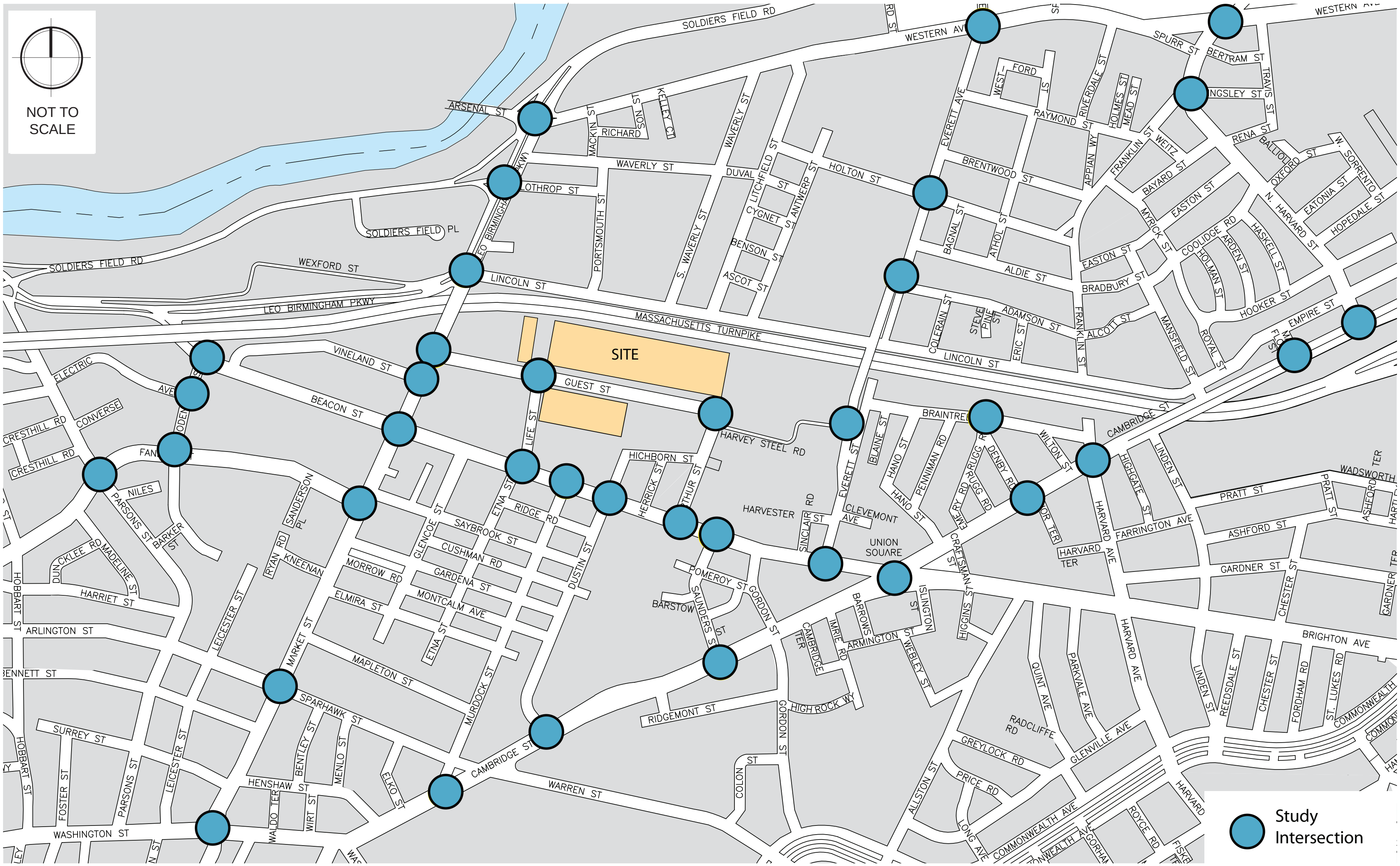
3.3.1 Study Area

The Transportation Study area, as presented in Figure 3.3-1 and coordinated with BTD, comprises of 36 intersections generally reaching from Western Avenue to the north, Cambridge Street to the east, North Beacon Street to the south and Market Street to the west. Several locations beyond these corridors are also included in the study, most notably along Market Street south to Washington Street, west to Parsons and Goodenough Streets along Faneuil Street and North Beacon Street, and north of the site along Franklin Street and North Harvard Street. An additional 8 intersections are added to the full-build traffic operations assessments due to new intersections created by both new driveways associated with the site and the extension of Guest Street to Everett Street.

3.3.2 Traffic Analysis Time Periods

The Transportation Study assesses traffic operations for 3 analysis periods including the weekday commuter peak periods and the Saturday mid-day peak period:

- Weekday a.m. peak hour (8:00 – 9:00 a.m.);
- Weekday p.m. peak hour (5:00 – 6:00 p.m.); and
- Saturday Midday Peak hour (12:45 – 1:45 p.m.).



New Brighton Landing
Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

NEW BRIGHTON LANDING, LLC

Figure 3.3-1
Transportation Impact Study Area Intersections

The study area for the Saturday mid-day traffic operations assessment is a subset of 19 intersections more proximate to the Proposed Project site.

3.3.3 Traffic Data

Traffic data utilized in the transportation study were taken from 2 primary sources which recently collected significant amounts of traffic data in the area; Lowe's Home Centers[2]and Harvard University's Allston Science Complex[3]traffic studies. Both studies contained traffic data from 2006 or 2007 that was calibrated for the New Brighton Landing transportation study through a series of 48-hour automatic traffic recorder (ATR) counts, taken in early 2012 and adjusted by seasonal factors. As suspected, the prior traffic data has not increased substantially due to the economic stress of the past several years. In consultation with BTD, it was determined that a conservative (i.e., generous) background traffic growth factor of 0.5% annually should be used.

3.3.4 Traffic Analysis

Industry traffic engineering standard methods, accepted by both City of Boston and MEPA reviewing agencies, were utilized for assessment of traffic operations at area intersections. The study calculated average delay and associated LOS (level-of-service) at study area intersections using Trafficware's Synchro 6 software, which also evaluates the impact on traffic operations from closely spaced intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2010 Highway Capacity Manual (HCM).

Level of service and delay (in seconds) are based on intersection geometry and available traffic data for each intersection. BTD provided the intersection signal timing and phasing used in the analysis.

3.3.5 Traffic Impact Assessment Years

The transportation study assesses traffic and transportation conditions for various years and scenarios including:

- Existing 2012 Conditions;
- Year 2014 Conditions with NBL sponsored "Baseline Improvements";

[2] "Lowe's Allston-Brighton, Guest Street, Boston, Massachusetts, Draft Project Impact Report" submitted to the Boston Redevelopment Authority by Lowe's Home Centers, Inc. Prepared by Tetra Tech Rizzo with transportation work by Vanasse& Associates, Inc. March 10, 2010.

[3] "Allston Science Complex, Harvard University, Draft Project Impact Report" submitted to the Boston Redevelopment Authority by Harvard University through the Allston Development Group. Prepared by Epsilon Associates with transportation work prepared by Vanasse Hangen and Brustlin, Inc, June 25, 2007.

- Year 2017 Conditions, including No-Build (without NBL), Build (with NBL) and Build with NBL Mitigation.

Existing 2012 conditions assessment involves an analysis of traffic operations LOS (level-of-service) and an inventory of existing parking, transit, and bicycle and pedestrian conditions.

Year 2014 conditions were established with certain "Baseline Improvements" independent of any new development, as New Brighton Landing is committed to improving existing traffic conditions in the area. The 2014 baseline improvements are those that can be implemented in the immediate short-term. NBL has had several meetings with BTD during development of both the PDA Master Plan Transportation Study and this document where these baseline improvements have been furthered. NBL will continue to work collaboratively with the City to support implementation of these, and any additional immediate short-term improvements that may be identified during the review process. It is expected, for example, that some of the currently proposed short-term 2014 baseline improvements will be coupled with the City's initiative installing bicycle lanes in the area.

Expected roadway, parking, transit, bicycle, and pedestrian conditions were identified for Year 2017, based on a five-year horizon from the existing year (2012), as is typically defined by both the City and state reviewing agencies. No-Build 2017 Conditions, which include general background growth and additional vehicular traffic associated with specific planned developments near the Project site, were assessed. Full-Build 2017 Conditions were determined and a Full-Build 2017 Conditions assessment with NBL sponsored mitigation are presented.

3.3.6 New Brighton Landing Transportation Characteristics

The determination of transportation characteristics – trip generation, travel mode split, traffic assignment, and parking and loading demand – expected from the New Brighton Landing development program follows standard traffic engineering practice and BTD and MEPA guidelines. Trip generation is based on ITE trip generation rates for office, retail/commercial, hotel, and health club land uses. Trip generation for the sports complex was determined by specific expected facility use. Travel mode split is determined for each neighborhood of the City by BTD based on Census data. The assignment of traffic to various roadway corridors is also based on BTD provided Census data. Parking demand follows BTD guidelines by land use and neighborhood. Loading demand is estimated by using NCHRP data for each land use.

3.4 Transportation Study Findings

3.4.1 Summary of Findings

The Transportation Study and information in this document have identified specific roadway and intersection improvements sufficient to handle traffic expected from the Proposed Project. These traffic mitigation improvements are consistent with those identified in the recently completed Guest Street Area Planning Study.

Several elements of the Brighton Guest Street Planning Study are important and remain so with the Transportation Study conducted for New Brighton Landing:

- A mixed-use development plan is important in balancing overall transportation needs and impacts;
- Additional connectivity of streets is important in dispersing vehicle trips.
- The Guest Street Extension is important for unlocking the "superblock" and providing an east/west connection through the site.

New Brighton Landing is also committed to significant transportation demand management measures including:

- MBTA commuter rail station;
- Increased shuttle service to Harvard and Kenmore squares; and
- Enhanced bicycle network.

While collectively these traffic demand efforts to reduce reliance on the automobile to access the site have the potential to reduce vehicle trips by 10% to 20%, the traffic impact analysis did not take "credit" for these reductions. Meaning that traffic operations after the proposed improvements described below are in place will be better than what is presented in the Transportation Study.

3.4.2 Immediate-Term Roadway and Intersection Improvements

The Transportation Study identified existing conditions where intersection levels of service needed improvement. New Brighton Landing has committed to improving intersection operations in the immediate-term with measures that can be implemented quickly and without significant design or construction time lags. As such, these efforts include signal timing and phasing adjustments, signal coordination efforts, lane use changes, and changes to curbside regulations.

The Proponent has had preliminary meetings with BTD who is receptive to these immediate-term improvements. BTD asked that these efforts complement any proposed bicycle accommodation efforts being undertaken by the City in the area. Market Street is presently slated for installation of bicycle lanes by the fall of 2012.

Located on Figure 3.4-1, the following immediate-term improvements are presented as 2014 "Baseline Improvements" in the Transportation Study:

North Beacon Street Corridor

- Modify the overall signal cycle length on the North Beacon Street corridor and optimize signal timings at:
  - North Beacon Street /Arthur Street;
  - North Beacon Street /Everett Street; and
  - North Beacon Street/Cambridge Street/Brighton Avenue.

North Beacon Street/Cambridge Street/Brighton Avenue (Union Square)

- Change lane use for Brighton Avenue westbound approach from:
  - Existing - left | left | thru | channelized right; to
  - Proposed - left | left/thru |thru | channelized right.
- Restrict North Beacon St. parking 24/7 vs. existing 4:00 p.m. to 6:00 p.m. (4 spaces).

North Beacon Street/Arthur Street

- Restripe North Beacon eastbound approach to accommodate a 100-foot left-turn storage lane and one through lane.
  - Adjust signal timings.

Market Street Corridor:

- Modify overall signal cycle length on the Market Street corridor and optimize signal timings at:
  - Birmingham Parkway/Market Street/Lincoln Street;
  - Market Street/Guest Street/Stockyard Driveway;

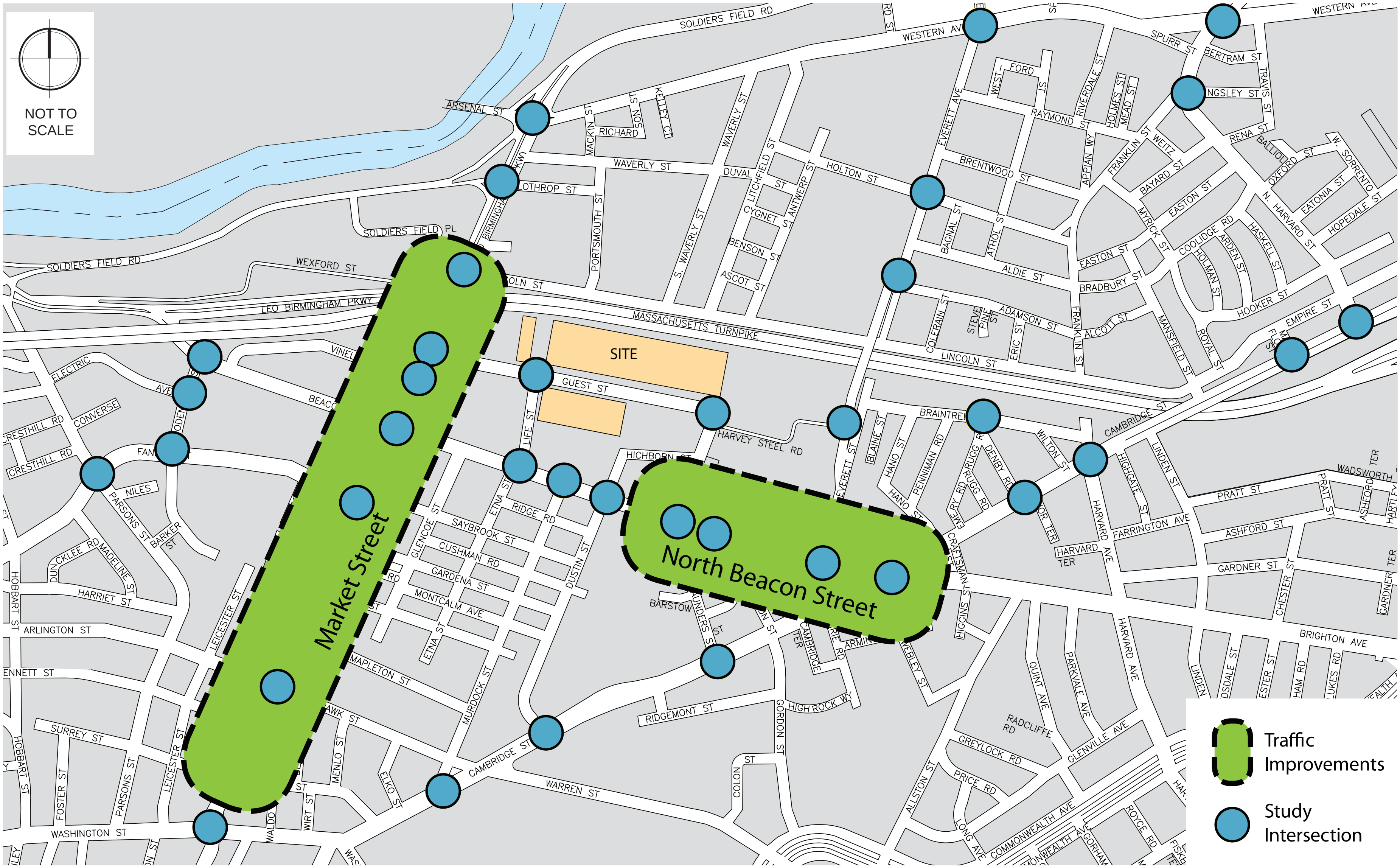


Figure 3.4-1
Locations Identified for Immediate Improvements

- o Market Street/North Beacon Street;
- o Market Street/Faneuil Street; and
- o Market Street/Arlington Street/Sparhawk Street.

New Brighton Landing is committed to making these immediate-term improvements to the existing local roadway network. It is expected that these 2014 baseline improvements may be able to be installed in late 2012 or early 2013. NBL will work with BTD in developing necessary plans and implementation strategies for each proposed improvement.

In addition, several items identified in full-build roadway improvements listed below may be able to be advanced to immediate-term improvements, particularly as they relate to bicycle lane improvements currently being planned for Market Street. NBL is working with the City and the City's bicycle consultant in advancing Market Street improvements at Faneuil Street and as shown conceptually in Figure 3.4-2 and at Sparhawk Street/Arlington Street. NBL is also interested in advancing full-build improvements at North Beacon Street/Arthur Street as described below and presented conceptually in Figure 3.4-3.

3.4.3 Full-Build Roadway and Intersection Improvements

The extent of full-build roadway and intersection improvements in the local area are presented in Figure 3.4-4. Significant full-build improvements include:

- ♦ Reconstruction of Guest Street;
- ♦ Construction of Guest Street Extension from Arthur Street to Everett Street combined with the construction of infrastructure supporting the Braintree Street connection to Cambridge Street via Denby Street and from Franklin Street (see Figures 3.4-5, 3.4-6, and 3.4-7); and
- ♦ Traffic, pedestrian, and bicycle safety and operational improvements to Birmingham Parkway between Lincoln Street at Market Street and Western Avenue at Arsenal Street, as presented in Figure 3.4-8.

Additional improvements include intersection signalization and installation of City of Boston signal interconnect systems along North Beacon Street and Birmingham Parkway.

Organized by roadway corridor, the complete list of full-build improvements are as follows:

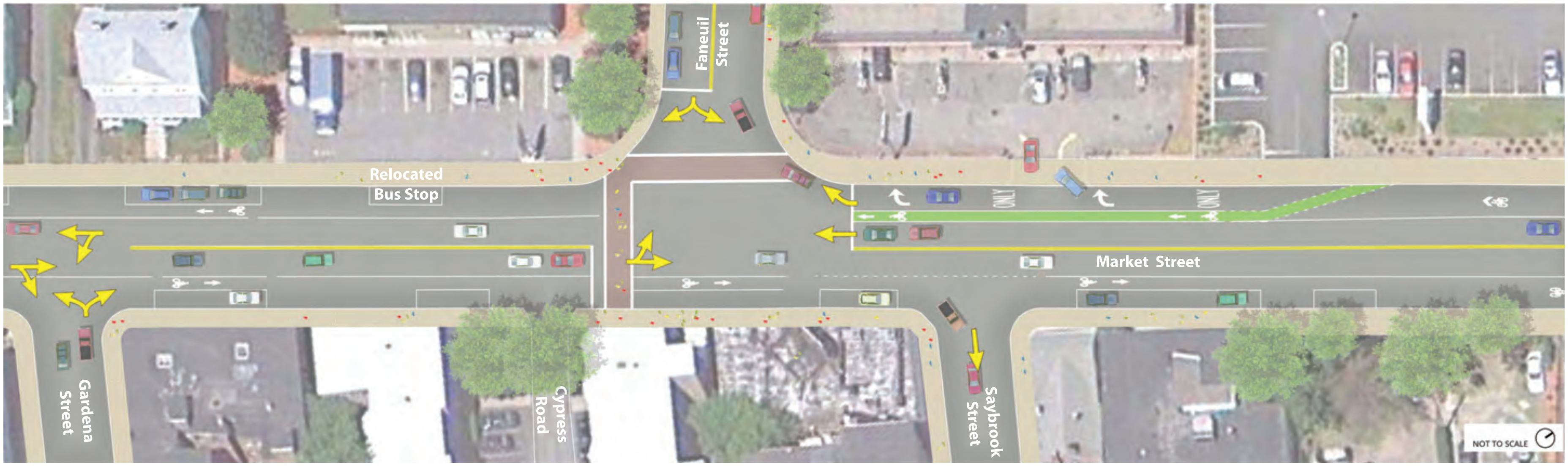


Figure 3.4-2
Concept for Proposed Traffic Mitigation:
Market Street/Faneuil Street

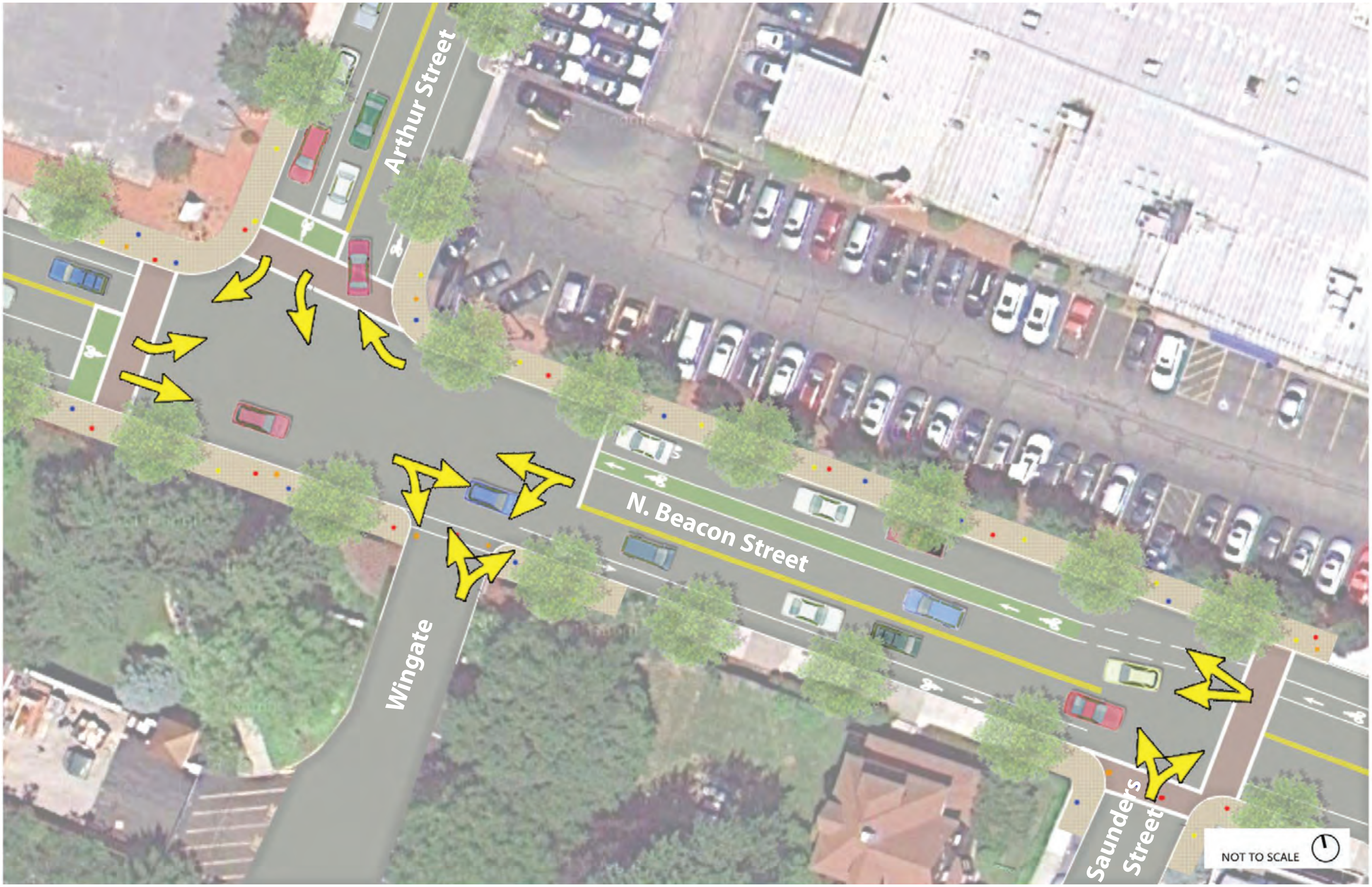


Figure 3.4-3

Concept for Proposed Traffic Mitigation:
North Beacon Street/Arthur Street

Figure 3.4-4
Concept for Locations Identified for Traffic Mitigation

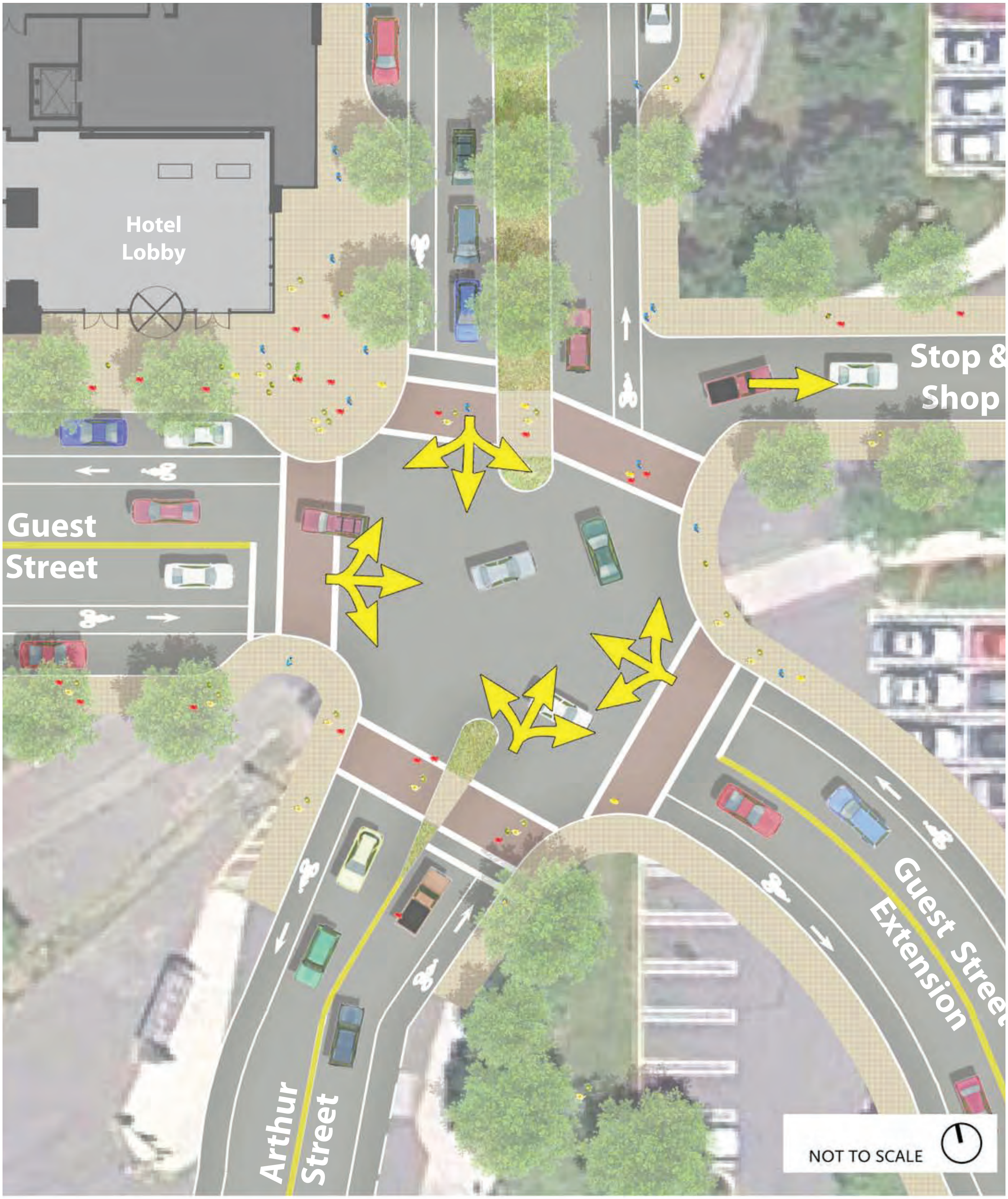


Figure 3.4-5

Concept for Proposed Traffic Mitigation:
Guest Street/Arthur Street

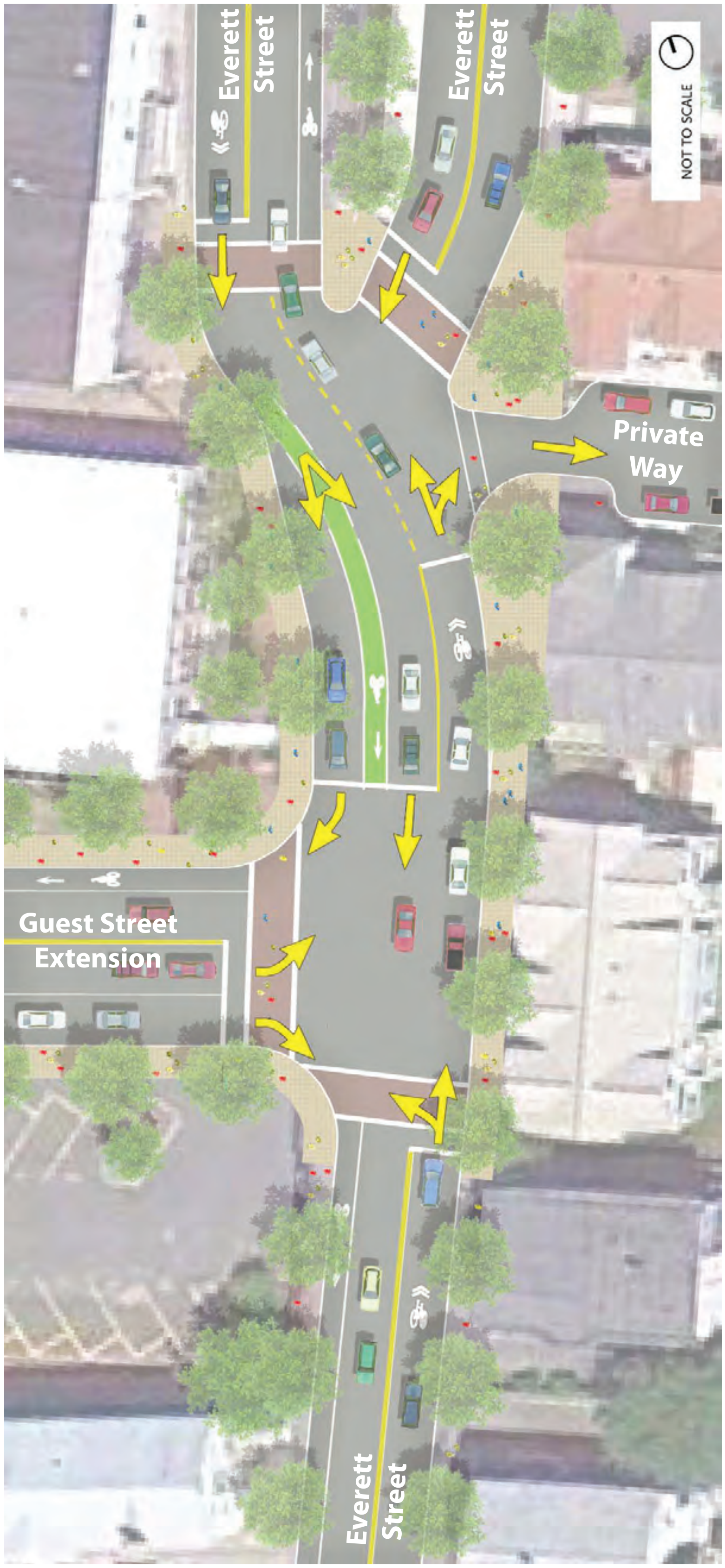


Figure 3.4-6
Concept for Proposed Traffic Mitigation:
Guest Street Extension/Everett Street

Figure 3.4-7

Concept for Proposed Traffic Mitigation:
Cambridge Street/Denby Street/Harvard Street

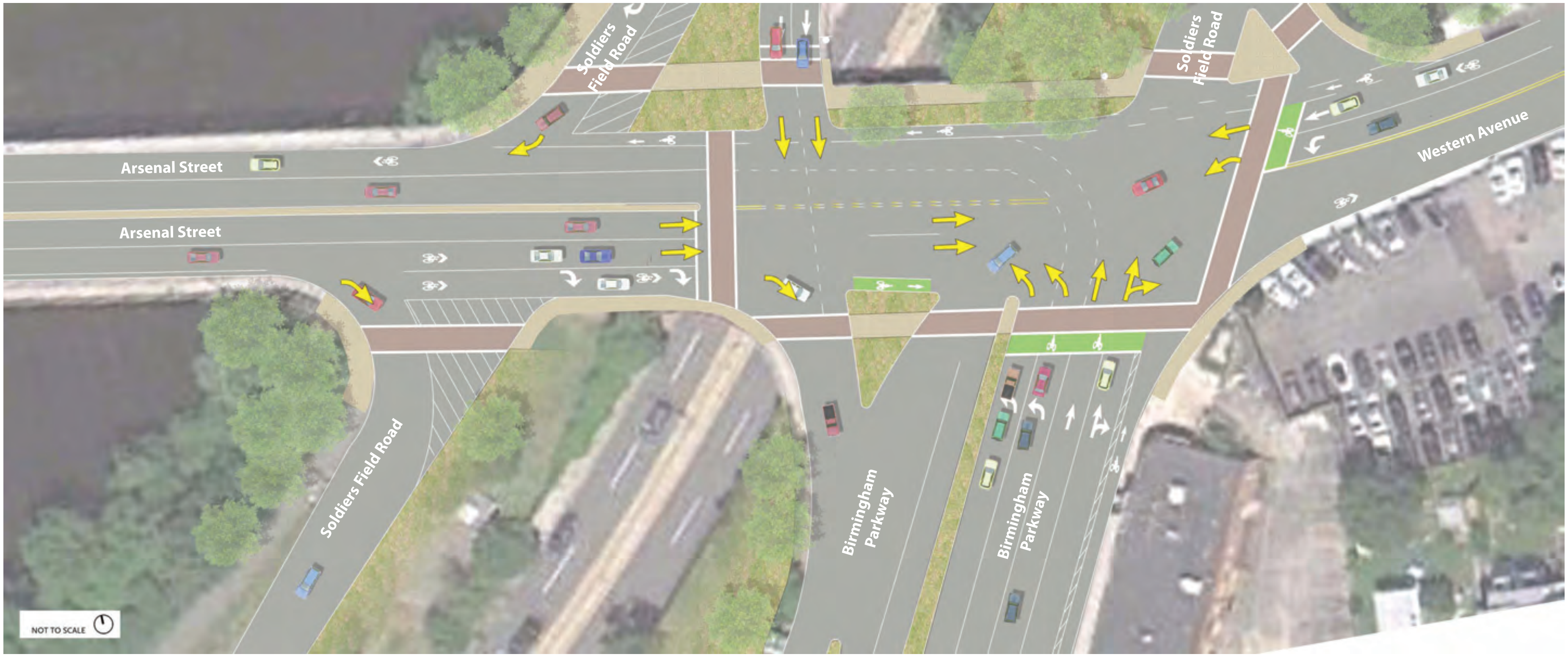


Figure 3.4-8

Concept for Proposed Traffic Mitigation:
Birmingham Parkway/Western Avenue/Arsenal Street

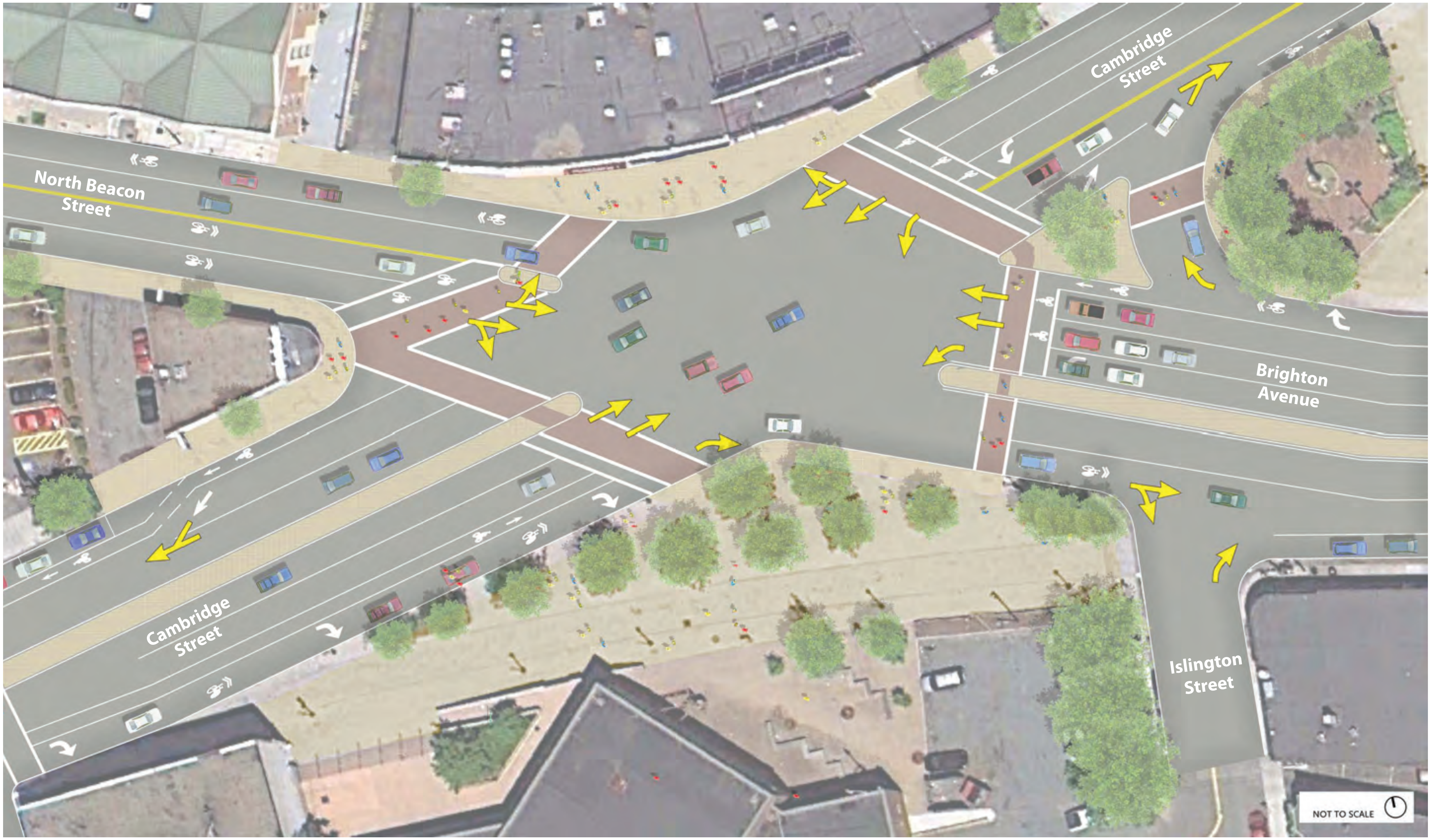


Figure 3.4-9

Concept for Proposed Traffic Mitigation:
Cambridge Street/North Beacon Street/Brighton Avenue (Union Square)

Guest Street Corridor:

Reconstruct Guest Street from Life Street to Arthur Street

- Signalize intersection of Guest Street/Life Street/Life Street Extension (Block C Access Road).
- Signalize Guest Street/Arthur Street (see Concept Figure 3.4-5).
- Install bicycle lanes.

Construct Guest Street Extension:

- Extend Guest Street to Everett Street.
- Upgrade sidewalks and install plantings.
- Install bicycle lanes.

Guest Street Extension/Everett Street

- Signalize and cluster with Everett Street/Little Everett Street south (see Concept Figure 3.4-6).
- Provide ADA-compliant pedestrian crossings.
- Install bicycle accommodations.

Braintree Street/Cambridge Street Corridor:

Braintree Street and Little Everett Street South

- Install pavement markings and signage as required.

Cambridge Street/Denby Street (see Concept Figure 3.4-7)

- Modify Denby Street to be one-way southbound.
- Eliminate parking both sides of Cambridge Street between Denby Street and Harvard Street/Franklin Street.
- Signalize intersection with Cambridge Street and coordinate with:
    - Cambridge Street/Franklin Street/Harvard Street;
    - Cambridge Street/Lincoln Street; and

- Cambridge Street/N Harvard Street.

- Provide ADA-compliant pedestrian crossings.

Cambridge Street/N. Harvard Street

- Modify signal phasing.

<u>North Beacon Street Corridor:</u>

North Beacon Street/Cambridge Street/Brighton Avenue (see Concept Figure 3.4–9)

- Add Cambridge Street southbound lane and add bicycle lanes to all approaches):
  - Elimination of 4-5 parking spots.
  - Modify signal phasing and timing.

North Beacon Street/Arthur Street (refer back to Figure 3.4-3)

- Add westbound 140-foot right-turn storage lane and bicycle lanes.
- Provide ADA-compliant pedestrian crossings.

North Beacon Street/Dustin Street/Hichborn Street

- Signalize intersection.
- Provide infrastructure for connection to BTD system.
- Coordinate signal with:
  - North Beacon Street/Life Street;
  - North Beacon Street/Arthur Street;
  - North Beacon Street/Everett Street; and
  - North Beacon Street/Cambridge Street/Brighton Avenue.

North Beacon Street/Life Street

- Provide infrastructure for connection to BTD system.
- Coordinate with:
  - North Beacon Street/Dustin Street/Hichborn Street;

- North Beacon Street/Arthur Street;
- North Beacon Street/Everett Street; and
- North Beacon Street/Cambridge Street/Brighton Avenue.

♦ Provide ADA-compliant pedestrian crossings.

Market Street Corridor:

Market Street/Arlington Street/Sparhawk Street

♦ Remove parking on both sides of Market Street at intersection.

♦ Relocate southbound MBTA #86 bus stop south of Sparhawk Street to north side of Sparhawk Street.

♦ Add left-turn storage lanes:
  - 80-foot left-turn lane northbound; and
  - 100-foot left-turn lane southbound.

Market Street/Faneuil Street (refer back to Concept Figure 3.4-2)

♦ Relocate southbound MBTA #86 bus stop to north side of Faneuil Street.

♦ Change exclusive pedestrian phase to concurrent pedestrian crossings:
  - Remove southbound approach crosswalk;
  - Add signage to intersection indicating that southbound right cannot turn on red and that it must wait for green arrow; and
  - Upgrade signal equipment as needed.

♦ Provide ADA-compliant pedestrian crossings.

Market Street/North Beacon Street

♦ Prohibit southbound left-turns during p.m. peak hour:
  - Provide signage on Birmingham/Market that indicates no left-turn to North Beacon Street during p.m. peak hour.
  - Vehicles to take left at Guest Street and filter through Life Street, Arthur Street, and Everett Street; and

- o Remove southbound lead phase and add westbound lead phase.

Birmingham Parkway Corridor:

Birmingham Parkway/Lincoln Street/Market Street

- ♦ Change lane use on Lincoln Street westbound to 2multipurpose lanes.
- ♦ Coordinate signal to Birmingham Parkway corridor.
- ♦ Provide ADA-compliant pedestrian crossings.

Birmingham Parkway/Lothrop Street/Soldiers Field Road Off-ramp

- ♦ Provide infrastructure to connect to BTD system.
- ♦ Coordinate signal to Birmingham Parkway corridor.
- ♦ Provide ADA-compliant pedestrian crossings.

Western Avenue/Birmingham Parkway/Soldiers Field Road (see Concept Figure 3.4-8)

- ♦ Shorten distance between Arsenal Street signal and Western Avenue signal.
  - o Extend Arsenal Street median.
  - o Restrict westbound left-turn to southbound On-ramp.
  - o Restrict southbound Off-ramp through movement to southbound On-ramp.
  - o Restrict eastbound left-turn to northbound On-ramp.
  - o Reduce clearance time for vehicles to traverse intersection.
- ♦ Restrict southbound Soldiers Field Road Off-ramp left-turn to Western Avenue to provide for Western Avenue crosswalk concurrent crossing.
- ♦ Provide infrastructure to connect to BTD system.
- ♦ Coordinate signal to Birmingham Parkway corridor.
- ♦ Provide ADA-compliant pedestrian crossings.

Section 4.0

Environmental Component

4.0 ENVIRONMENTAL COMPONENT

This chapter describes the Proposed Project's expected environmental impacts and the mitigation measures that will be undertaken to avoid and minimize those impacts to the greatest extent practicable. Overall, through the expected remediation of contaminated soils, the reduction of stormwater runoff, the construction of green LEED certifiable buildings, and the creation of new open space, the Project is expected to have a positive environmental impact. Unavoidable adverse impacts such as increased shadows and potential wind impacts are minimal.

4.1 Wind

4.1.1 Introduction

An analysis has been performed to assess the effect of the Proposed Project on wind conditions on the pedestrian areas realm around the Proposed Project site and to provide recommendations for minimizing any potential adverse effects. The results of the wind study are summarized here in the Expanded PNF. A complete copy of the wind study report, prepared by RWDI of Guelph, Ontario, is available upon request.

The wind study involved wind simulations of the Proposed Project in a boundary-layer wind tunnel. A total of 145 wind measurement locations were examined in the wind tunnel. The large majority of the locations tested (approximately 85 percent) are expected to experience either improved or unchanged wind conditions. Other locations are expected to experience only relatively minor increases in wind speeds. None of the locations studied are expected to experience dangerous wind conditions and only two locations (near the intersection of Guest Street and Arthur Street) will experience uncomfortable wind speeds. These locations will be mitigated through design techniques implemented along the exterior of the hotel project.

4.1.2 Background

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

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

4.1.3 Methodology

For its analysis, RWDI gathered information concerning the site and surroundings from site photographs, and BRA mapping, and used the most current schematic design for the Proposed Project. The wind tunnel study looked at the No-Build Condition, *i.e.*, the current existing condition without the Proposed Project; and at the Build Condition, *i.e.*, with the Proposed Project as it is described in this Expanded PNF.

The wind simulations were conducted in an eight-foot wide by six-foot high boundary-layer wind tunnel. A 150-horse power axial fan is used to produce wind speeds in excess of 35 mph. Unwanted fan turbulence is removed by means of screens and honeycombs, and a realistic simulation of atmospheric turbulence is provided in the long working section, by means of spires at the upwind end and roughness blocks on the floor. The spires and roughness are selected to represent open, suburban or urban terrain, depending on the site and the wind direction being tested. The working section is followed by the test section, where a scale model of the Proposed Project sits on a motorized turntable, embedded in the wind tunnel floor. Photographs of the models tested are included in Figures 4.1-1 and 4.1-2. All of the figures related to wind are included at the end of this section, beginning on page 4-6.

The scale model was equipped with 145 specially designed wind speed sensors at the locations shown in Figure 4.1-3 that were connected to the wind tunnel's data acquisition system to record the mean and fluctuating components of wind speed at a full-scale height of five feet above grade in pedestrian areas throughout the study site. The data from Sensors 1, 2, 4, 6, 8, 9, 20, 28, 35, 37, 38, 40, 41, and 42 were not applicable for the No Build Configuration as these sensors are located within the footprint of existing buildings. Wind speeds were measured for 36 wind directions, in 10 degree increments, starting from true north. The measurements at each sensor location were recorded in the form of ratios of local mean and gust speeds to the reference wind speed in the free stream above the model. The results were then combined with long-term meteorological data, recorded during the years 1945 to 1998 at Boston's Logan International Airport, in order to predict full scale wind conditions. The analysis was performed separately for each of the four seasons and for the entire year.

Figures 4.1-4 through 4.1-6 present "wind roses", summarizing the annual and seasonal wind climates in the Boston area, based on the data from Logan Airport.

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

4.1.4 Pedestrian Wind Comfort Criteria

The BRA has adopted two standards for assessing the relative wind comfort of pedestrians. First, the BRA wind design guidance criterion states that an effective gust velocity (hourly mean wind speed +1.5 times the root-mean-square wind speed) of 31 mph should not be exceeded more than one percent of the time. The second standard used by the BRA is based on the work of Melbourne[1] and is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing, or walking, as shown in Table 4.1-1.[2] The criteria are shown in terms of benchmarks for the one-hour mean speed exceeded one percent of the time (*i.e.*, the 99-percentile mean wind speed).

Table 4.1-1 Boston Redevelopment Authority Mean Wind Criteria*

Level of Comfort	Wind Speed
Dangerous	> 27 mph
Uncomfortable for Walking	>19 and <27 mph
Comfortable for Walking	>15 and <19 mph
Comfortable for Standing	>12 and <15 mph
Comfortable for Sitting	<12 mph

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

The wind climate found in a typical downtown Boston location is generally comfortable for pedestrian use of sidewalks and thoroughfares and meets the BRA effective gust velocity criterion of 31 mph. However, the general wind climate in Boston is likely to be frequently uncomfortable for more passive activities such as sitting.

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

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

4.1.5 Results

No-Build.

One Hundred and thirty-one locations were tested under the No-Build condition. On an annual basis, mean wind speeds comfortable for walking or better were predicted at all on-site locations (3, 5, 7, 10 through 19, 21 through 27, 29 through 34, 36, 39, 74, 83, through 91, and 100 through 103 in Figure 4.1-7)

Most off-site locations (43 through 73, 78 through 82, 91 through 99 and 104 through 145) were predicted to have mean wind speeds that were generally comfortable for walking or better (see Figure 4.1-7). Mean wind speeds uncomfortable for walking were detected at locations 43, 44, 50, 53, and 54 on an annual basis. Location 53 failed the effective gust criterion during the winter session, but met the criterion throughout the rest of the year.

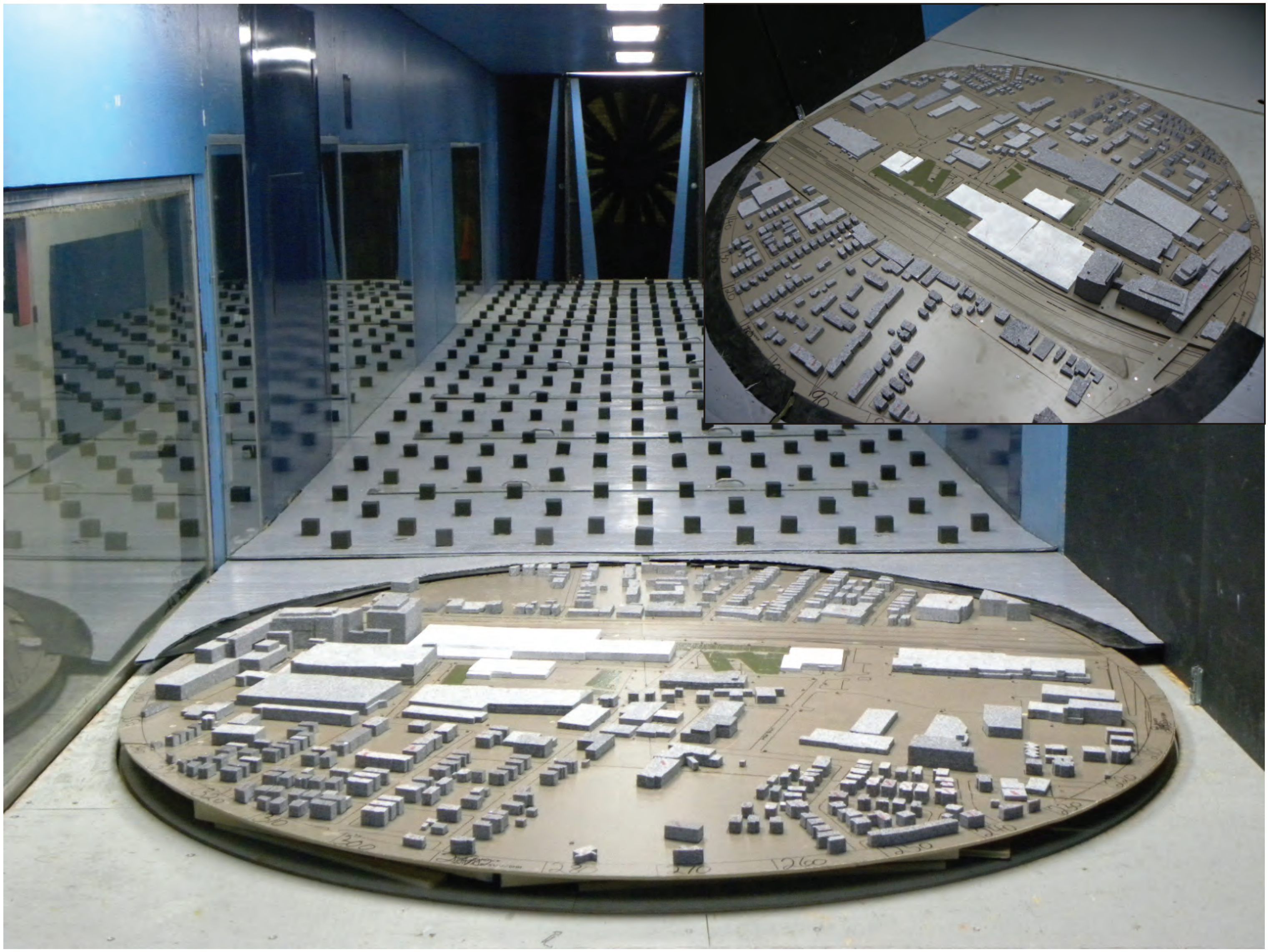
Overall, twelve of the 131 No-Build test locations were found to have uncomfortable wind conditions in the winter. All locations passed the effective gust criterion through the year with the exception of location 53 (the Corner of Market and Guest Streets), which did not meet the criterion during the winter. These are clear indications that the proposed development site is windy at the present time. It can therefore be expected that when a proposed building, regardless of its height, is placed in this environment, uncomfortable wind conditions may still occur on an annual basis at certain locations, such as exposed building corners or areas of channeling wind flows.

Build Condition

The scope of the Build scenario was determined by evaluating how far from the Proposed Project sites the construction of the Proposed Project would have any material influence on annual PLW conditions. The Proposed Project will generally not adversely affect existing wind conditions and in fact is expected to actually improve wind comfort levels at a significant number of the locations that were measured. Build Conditions are shown on Figure 4.1-8.

A total of 145 locations were tested under the Build Condition (14 more than the No-Build condition). Of the 131 locations that can be compared directly to the No-Build, the large majority (90 percent) showed either no change or improvements to their wind condition as described by BRA comfort ratings. Seventy locations (53 percent) showed no change, while 48 locations (37 percent) improved by one or two categories. Eleven locations (8 percent) worsened by one category and just two locations (#21 and #27) worsened by two categories, both shifting from a comfortable for standing rating to uncomfortable under the Build Condition. Figure 4.1-9 depicts this information graphically. No locations are expected to experience any dangerous winds. A total of nine locations, however, are expected to experience uncomfortable winds under the Build Condition. This compares to five under the No-Build Condition. Of the nine locations, three (#44, 50, and 53) are rated s uncomfortable under the No-Build Condition. Three others (#1, 26, and 42) were not tested under the No-Build. The remaining three locations (19, 21, and 114) are all located at the eastern edge of the Project adjacent to Arthur Street. The Proponent will examine means to mitigate uncomfortable winds in these locations through the use of such measures as plantings and architectural wind screens added to the hotel. These measures will be examined further during later stages of design.

Because the Proponent is committed to installing a series of new deciduous street trees on the entire block surrounding the Proposed Projects, RWDI modeled Build condition winds under the "worst-case" scenario, in which these new trees would have no foliage during the winter months. For much of the calendar year, actual wind conditions in the vicinity of the Proposed Project Sites would likely be better than those modeled, because the new trees will be fully foliated, offering greater wind mitigation than in cases where the trees have shed their foliage for the winter. RWDI did not test unmitigated wind conditions because the construction of the Proposed Project will include the installation of these new deciduous trees, which have the dual benefit of improving the appearance of the pedestrian streetscape and mitigating wind impacts on the pedestrian realm.



Wind Tunnel Study Model
Configuration - Existing

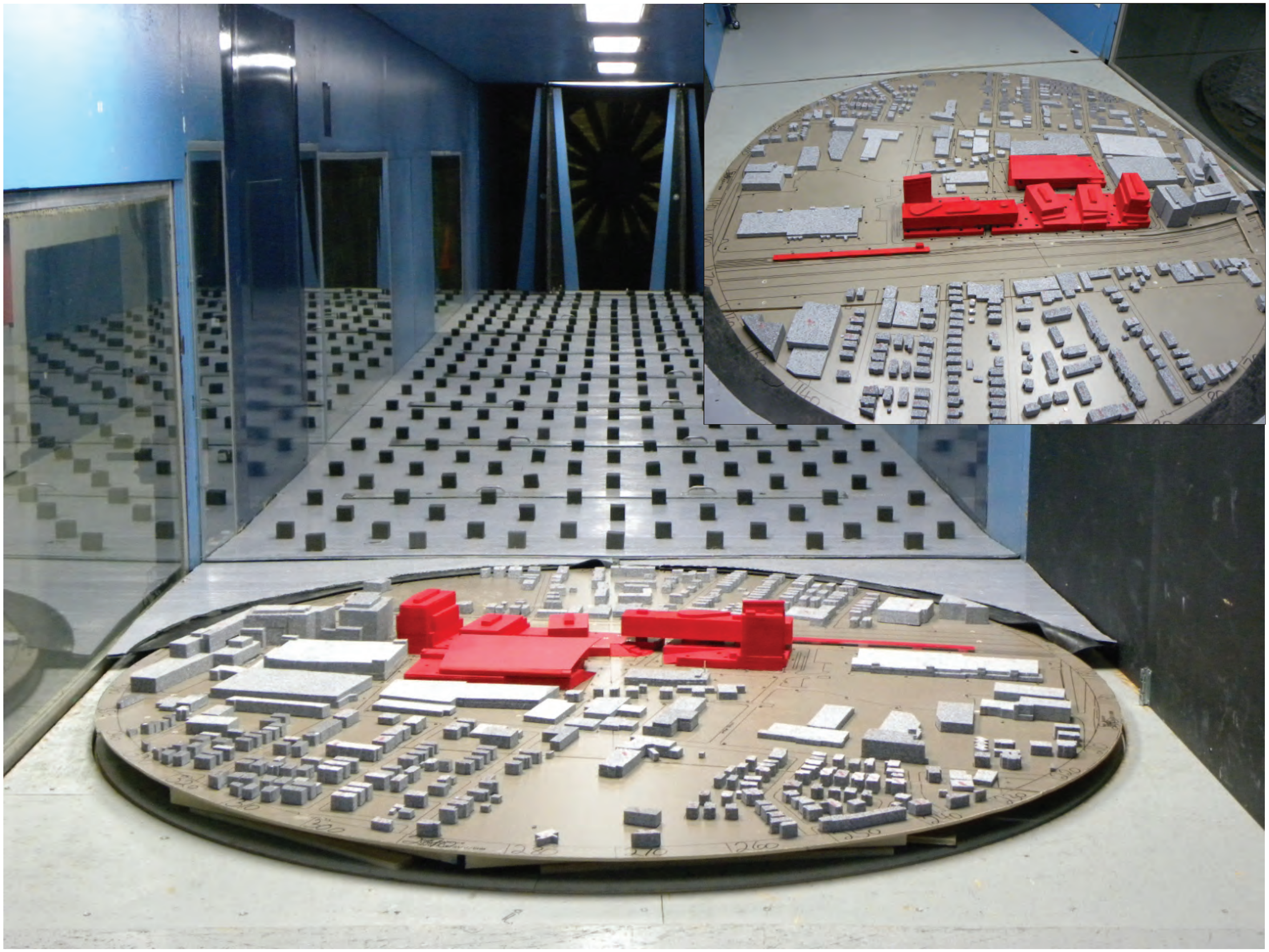
New Balance World Headquarters - Boston, MA

Project #1201273

Figure: 1a

Date: May 26, 2010

RWDI



Wind Tunnel Study Model
Configuration - Proposed

New Balance World Headquarters - Boston, MA

Project #1201273

Figure: 1b

Date: May 26, 2010

RWDI

Preliminary Sensor Plan

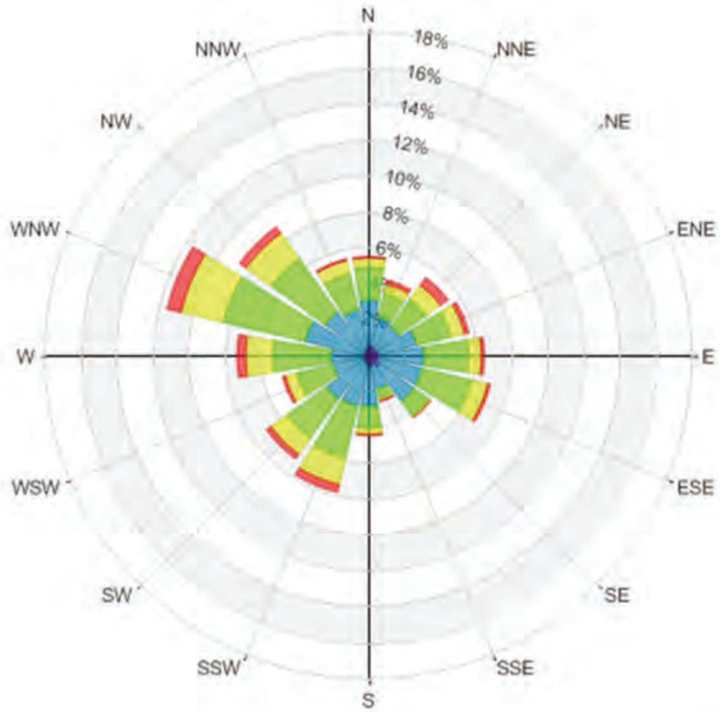
True North

New Balance World Headquarters - Boston, MA

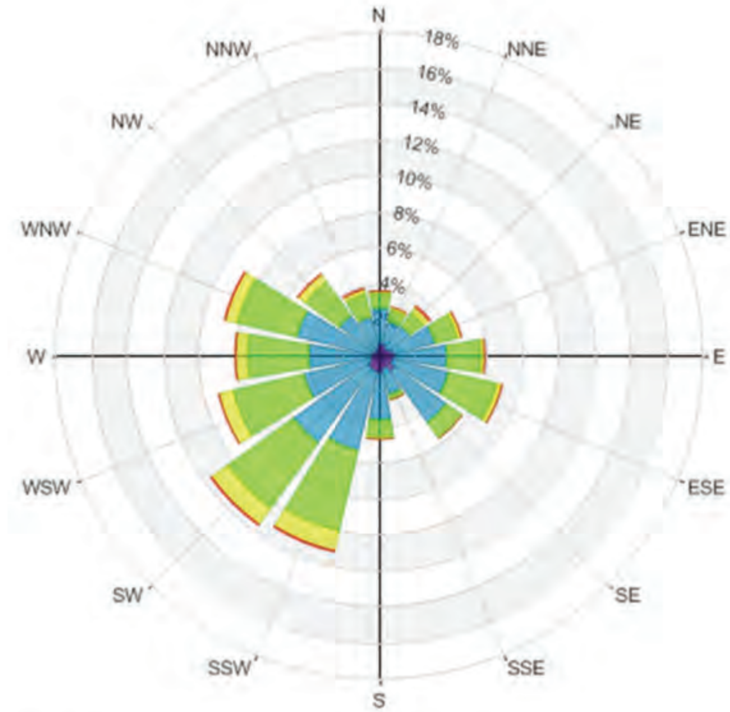
Project #1201273

Drawn by: SMR	Figure:	
Approx. Scale:	1"=200'	
Date Revised:	Apr. 2, 2012	

RWDI



Spring Winds
(March - May)



Summer Winds
(June - August)

Speed (mi/h)	Probability (%) Spring	Summer
Calm	1.3	1.3
1-6	7.3	10.5
7-12	35.9	46.7
13-18	36.4	34.1
19-24	14.7	6.8
>24	4.3	0.6

Directional Distribution (%) of Winds (Blowing From)
Boston Logan International Airport (1973 - 2008)

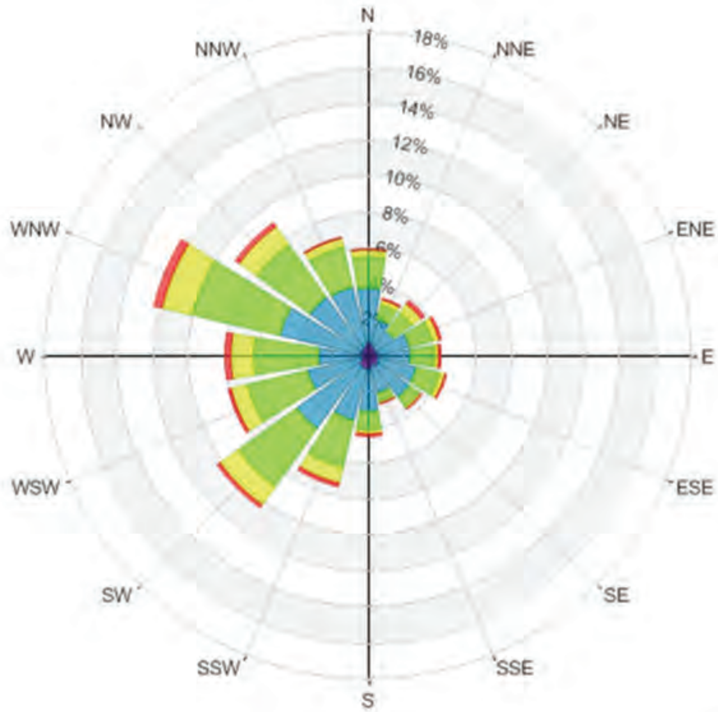
New Balance World Headquarters – Boston, MA

Project #1201273

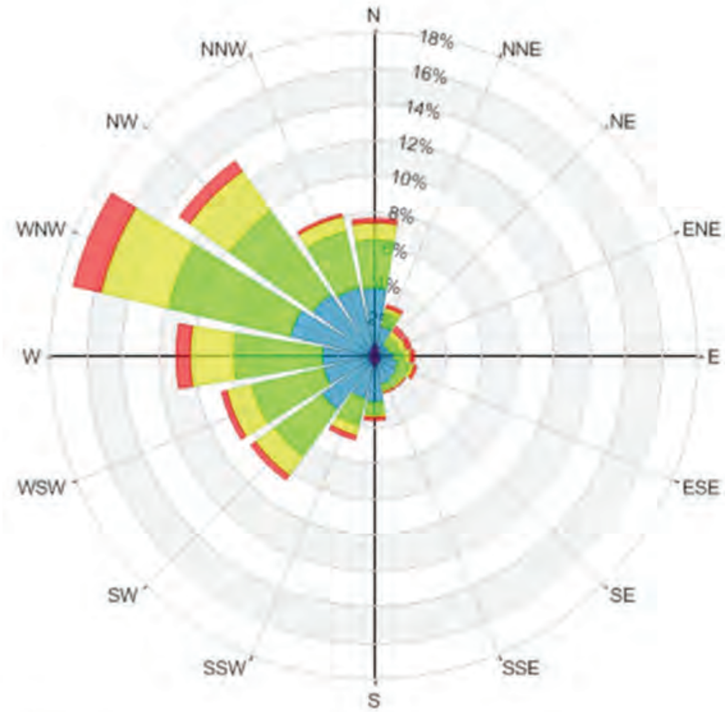
Figure No: 2a

Date: 4/4/2012

RWDI



Fall Winds
(September -
November)



Winter Winds
(December - February)

Speed (mi/h)	Probability (%) Fall	Winter
Calm	1.3	1.1
1-6	9.0	6.9
7-12	42.0	33.4
13-18	34.7	36.8
19-24	10.4	16.2
>24	2.6	5.7

Directional Distribution (%) of Winds (Blowing From)
Boston Logan International Airport (1973 - 2008)

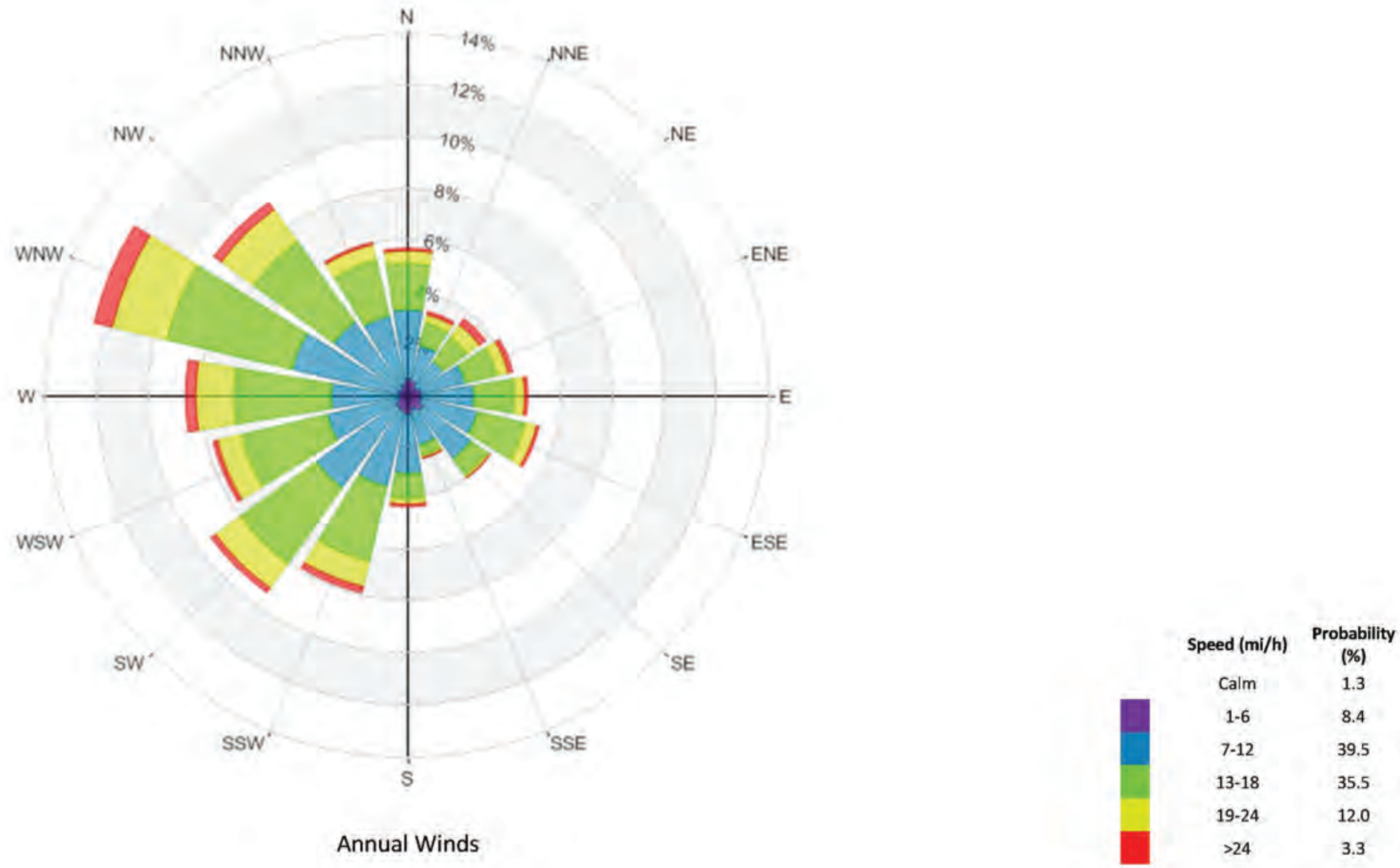
New Balance World Headquarters – Boston, MA

Project #1201273

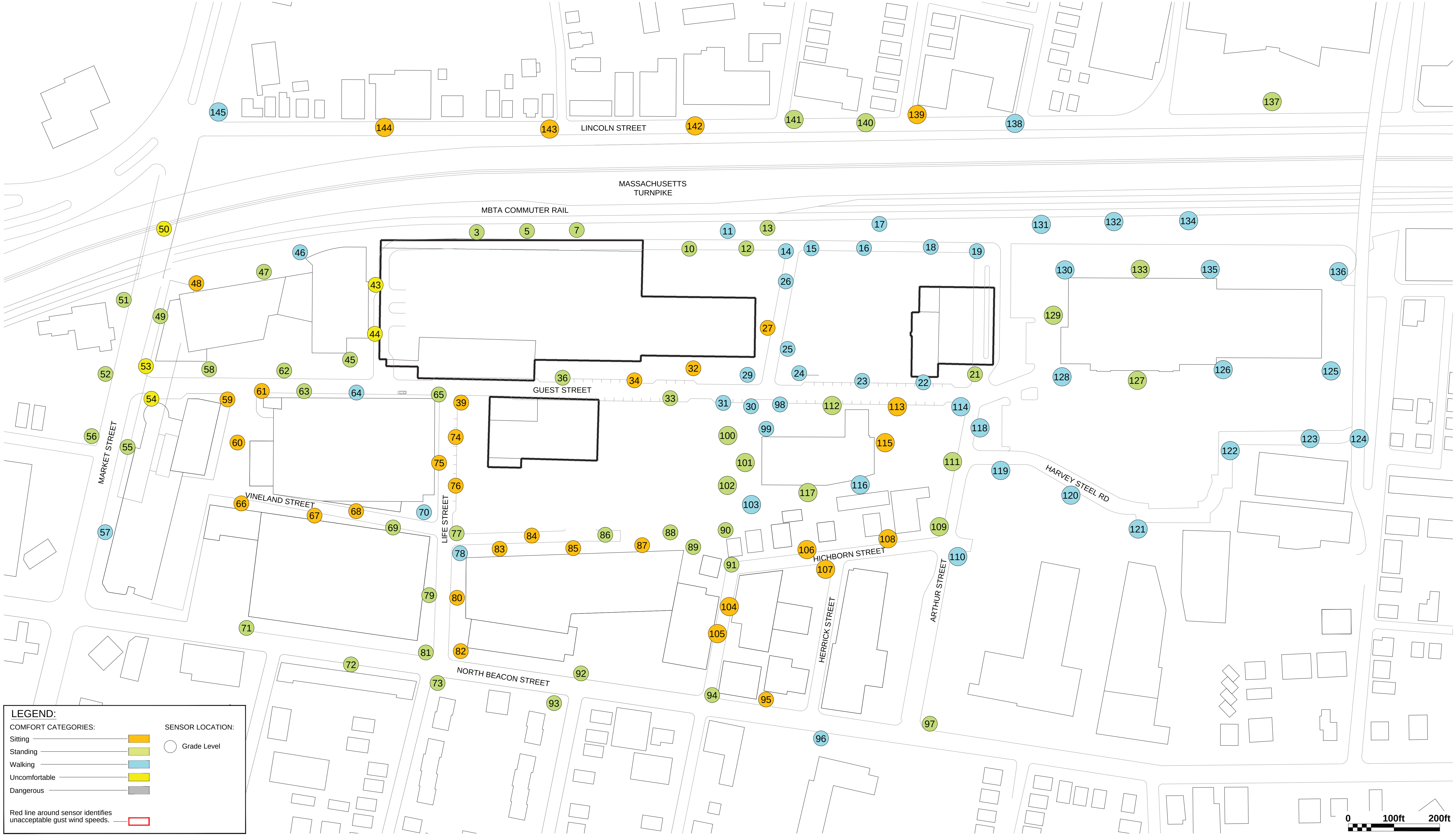
Figure No: 2b

Date: 4/4/2012

RWDI



Directional Distribution (%) of Winds (Blowing From) **Boston Logan International Airport (1973 - 2008)** New Balance World Headquarters – Boston, MA Project #1201273	Figure No: 2c Date: 4/4/2012	RWDI



Pedestrian Wind Conditions - No Build
Summer (May to October)

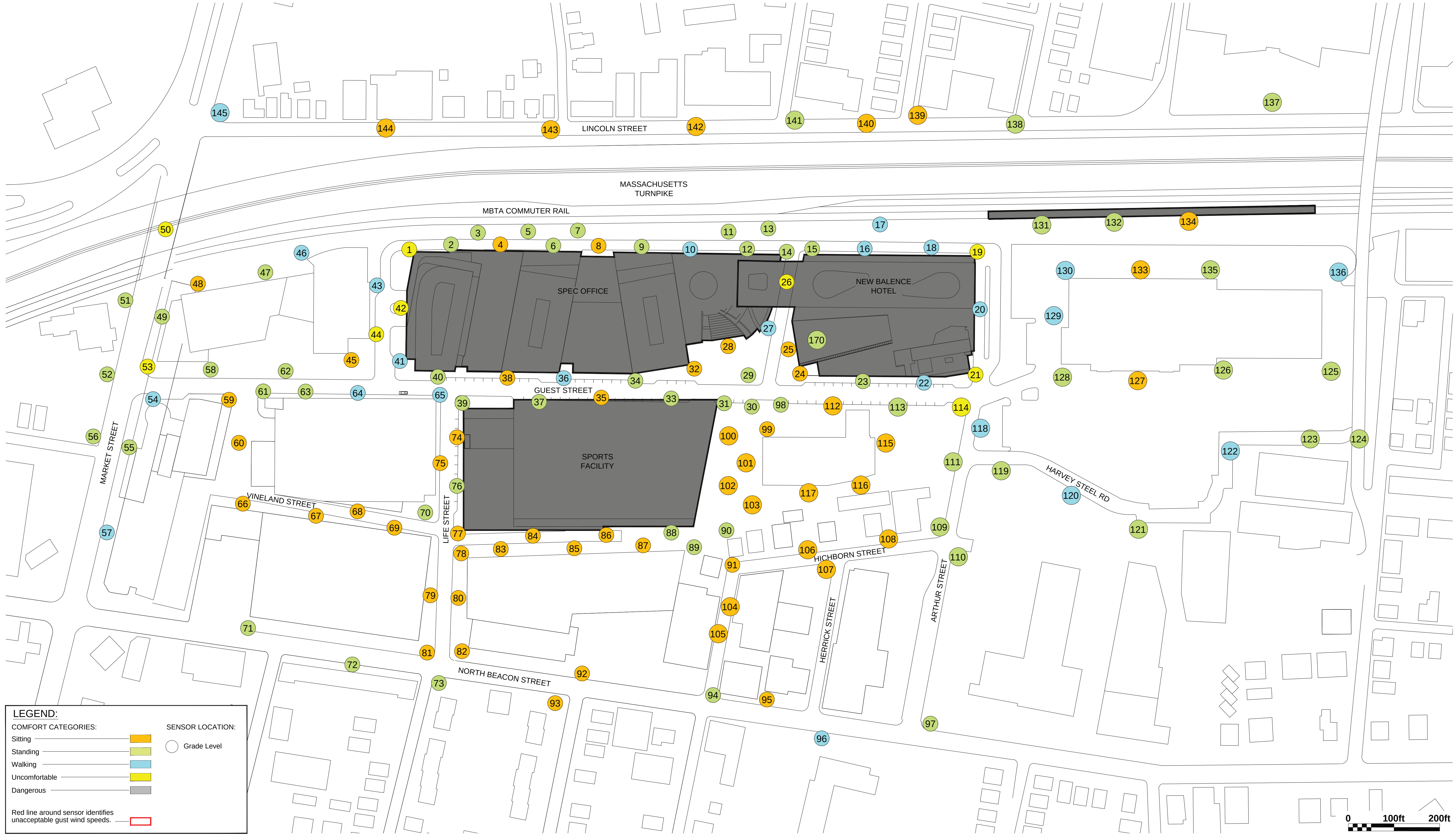
New Balance World Headquarters - Boston, MA

True North

Project #1201273

Drawn by: SMR	Figure: 3
Approx. Scale:	1"=200'
Date Revised:	Apr. 2, 2012

RWDI



Pedestrian Wind Conditions - Build
Summer (May to October)

New Balance World Headquarters - Boston, MA

True North

Project #1201273

Drawn by: SMR	Figure: 4
Approx. Scale:	1"=200'
Date Revised:	Apr. 2, 2012

RWDI

Pedestrian Wind Conditions - Category Change
Annual

New Balance World Headquarters - Boston, MA

True North

Project #1201273

Drawn by: SMR	Figure: 5		RWDI
Approx. Scale:	1"=200'		
Date Revised:	May. 2, 2012		

4.2 Shadow

4.2.1 Introduction and Methodology

To assess the shadow impacts associated with the Proposed Project's construction, a shadow impact analysis was conducted for the hours of 9:00 am, 12:00 noon, and 3:00 pm during the summer solstice (June 21), autumnal equinox (September 21), and the winter solstice (December 21). In order to differentiate the vernal equinox shadow impacts from those of the autumnal equinox, the vernal equinox was studied as if March 21 were in Standard Time, *i.e.*, the time periods of 10:00 am, 1:00 pm, and 4:00 pm were examined. Impacts at 6:00 pm during the summer and autumn were also examined. The study used the applicable Altitude and Azimuth data for Boston presented in Appendix B of the BRA's 2006 *Development Review Guidelines*.

The analysis presents the existing shadow and new shadow that would be created by the Proposed Project, illustrating the incremental impact of the Project. The study focuses on nearby open spaces and the sidewalks adjacent to and in the vicinity of the Project site. Results of the shadow impact study are discussed in the following sections, and are supported by Figures 4.2-1 through 4.2-14 which are included at the end of this section, beginning on page 4-18.

New Shadow will generally be limited to the immediately surrounding streets and sidewalks. Portsmouth Playground and most nearby bus stops will not be impacted by new shadow from the Project during any of the time periods studied.

Vernal Equinox (March 21)

No material shadow is cast at any time of day onto any of the area's existing open spaces. In general, the majority of the net new shadow impacts fall onto public streets and/or buildings already owned by New Brighton Landing, LLC.

At 10:00 am during the vernal equinox, shadow from the Proposed Project will be cast in a northwesterly direction. New shadow will be cast across minor portions roadways and sidewalks along Guest Street, Life Street and the Massachusetts Turnpike adjacent to the Proposed Project site. New shadow will likely be cast on the 77 Guest Street bus stop along the 64 bus route. No new shadow will impact nearby existing public open space.

As the day progresses, the shadows become shorter, falling to the north. At 1:00 pm, shadow from the Proposed Project will be cast across a minor portion of roadway and sidewalks along Guest Street adjacent to the Proposed Project site and onto small portions of the adjacent Massachusetts Turnpike. New shadow will likely be cast on the 77 Guest Street bus stop along the 64 bus route. No new shadow will impact nearby existing public open space.

At 4:00 pm shadow will extend to the northeast. New shadow from the Proposed Project will fall on portions of roadway and sidewalks along Guest and Arthur Street as well as the Massachusetts Turnpike. New shadow is expected to fall on the 64 bus route stop near 77 Guest Street. No new shadows will affect any nearby existing public open space.

Summer Solstice (June 21)

At 9:00 am during the summer solstice, shadow will be cast in a westerly direction. New shadow from the Proposed Project will be cast across the roadway and sidewalks of Life Streets adjacent to the Proposed Project site. Some minor new shadows will affect small narrow portions of the Guest Street sidewalk. No new shadows will impact nearby bus stops or existing public open space.

As the day progresses, the shadows become shorter and swing to the north. At noon, much of the new shadow from the Proposed Project will fall within the Proposed Project site, with minor new shadow falling across the roadways and sidewalks of Guest Street. Minimal new shadows may fall on the 64 bus route stop along the southern side of Guest Street. No new shadows will impact existing public open space.

At 3:00 pm, shadow will extend to the northeast. New shadow from the Proposed Project will fall on a small portion of the roadway and sidewalks of Guest and Arthur Streets adjacent to the Proposed Project site. New shadow may affect one bus stop near 77 Guest Street. No new shadow will impact any existing public open space.

At 6:00 pm, shadow will be cast to the east. New shadow from the Proposed Project will be cast across portions of Arthur Street and along portions of the Project site. Minimal new shadow may fall on the 64 bus route stop along the southern side of Guest Street. No new shadows are expected to impact any nearby existing public open space.

Autumnal Equinox (September 21)

At 9:00 am during the autumnal equinox, shadow will be cast northwest across portions of the roadways and sidewalks along Guest and Life Streets as well as the Massachusetts Turnpike. New shadow may fall on the 64 bus route stop along Guest Street. No new shadows are expected to impact any nearby existing public open space.

At noon, new shadow from the Proposed Project will be cast across a small portion of the roadway and sidewalks of Guest Street. New shadow from the Proposed Project will also fall on a minor portion of the Massachusetts Turnpike and may impact the 64 bus route stop near 77 Guest Street. No new shadows are expected to impact any nearby existing public open space.

In the afternoon (3:00 pm), new shadow will extend to the northeast. New shadow from the Proposed Project will be cast across portions of roadway and sidewalks of Guest and Arthur Streets as well as the Massachusetts Turnpike. New shadow may extend onto the

64 bus route stop near 77 Guest Street. No new shadow will impact any nearby existing public open space.

By 6:00 pm, much of the area is in existing shadow. New shadow from the Proposed Project will be cast to the east. The new shadows will also extend over portions of roadway and sidewalks along Guest, Lincoln, Everett and Arthur Streets as well as the Massachusetts Turnpike. New shadow may affect the two 64 bus route stops along Guest Street and at the corner of Guest and Arthur Streets. No new shadow will impact nearby existing public open space.

Winter Solstice (December 21)

The winter solstice creates the least favorable conditions for sunlight in New England. The sun angle during the winter is lower than in any other season, causing shadows to elongate.

At 9:00 am, the morning sun will cast new shadow from the Proposed Project to the northwest, largely falling on the Massachusetts Turnpike as well as along the roadways and sidewalks of Guest, Market, Lincoln and Life Streets. New shadow may fall on the 64 bus route stop along Guest Street. No new shadows are expected to impact any nearby existing public open space.

At noon, shadow will extend to the north. New shadow will fall across small portions of the roadways and sidewalks of Guest and Lincoln Streets as well as across portions of the Massachusetts Turnpike. New shadow may fall on the 64 bus route stop along Guest Street. No new shadows are expected to impact any nearby existing public open space.

At 3:00 pm, shadows elongate and extend northeast. The Proposed Project will cast shadow along the roadways and sidewalks of Guest, Lincoln, Portsmouth, South Waverly, Litchfield, Antwerp and Arthur Streets, including portions of the Massachusetts Turnpike. New shadow may fall on the 64 bus route stop along Guest Street. No new shadows are expected to impact any nearby existing public open space.

4.2.2 Lack of Shadow Impacts on Open Spaces

The Proposed Project does not cast any new shadow on any nearby park including Portsmouth Playground located on the northern side of the Massachusetts Turnpike.

4.2.3 Conclusions

Typical of a densely built urban area, some new shadow will be cast on the surrounding streetscapes and may also be periodically cast on the 64 bus stop in the middle of the Proposed Project near 77 Guest Street. No new shadow from the Proposed Project will fall on any of the surrounding area's existing open spaces.

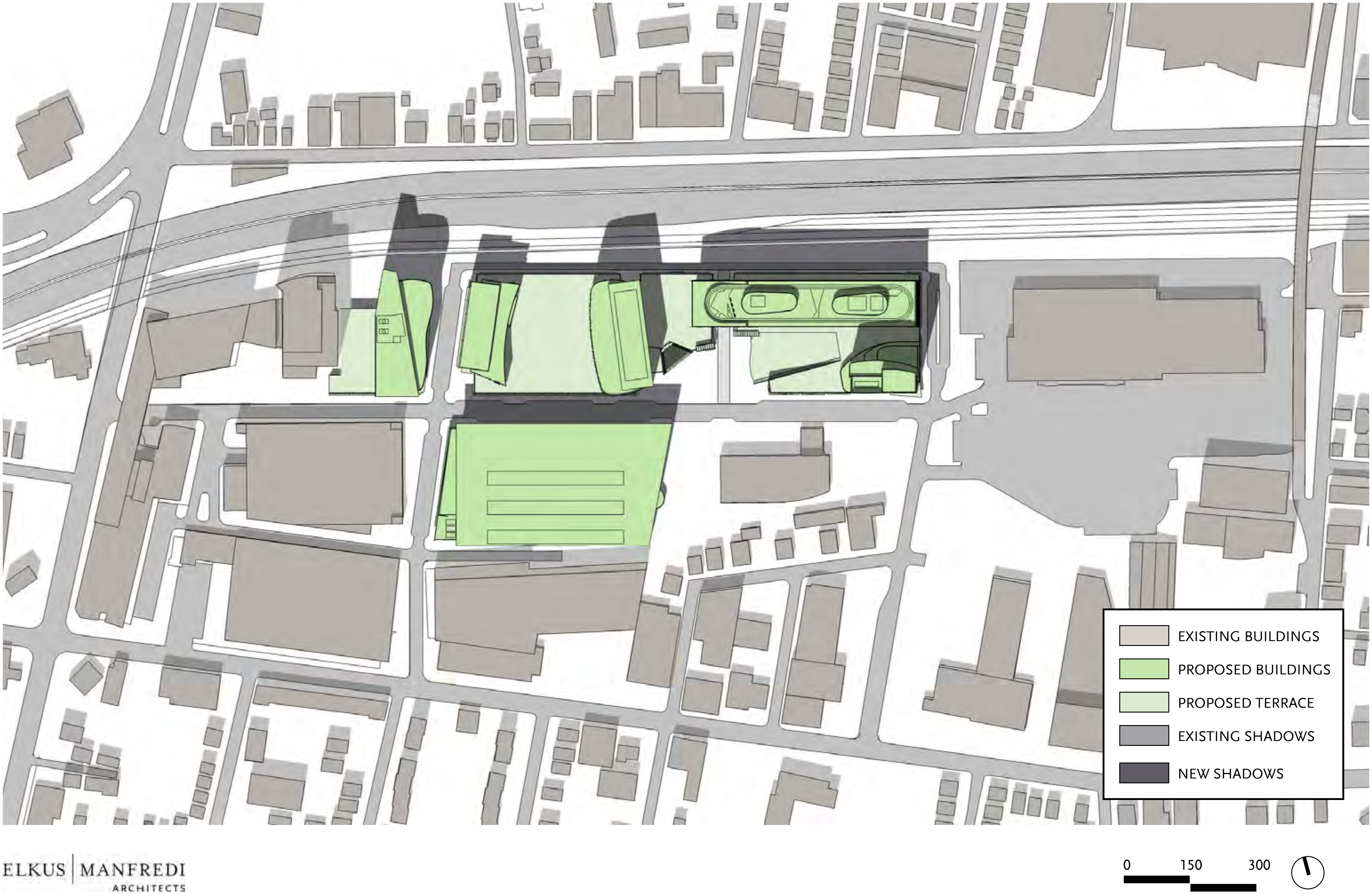
ELKUS | MANFREDI ARCHITECTS

New Brighton Landing
Boston, Massachusetts

Epsilon ASSOCIATES INC.

NEW BRIGHTON LANDING, LLC

Figure 4.2-1
March 21, 10:00am | Shadow Study



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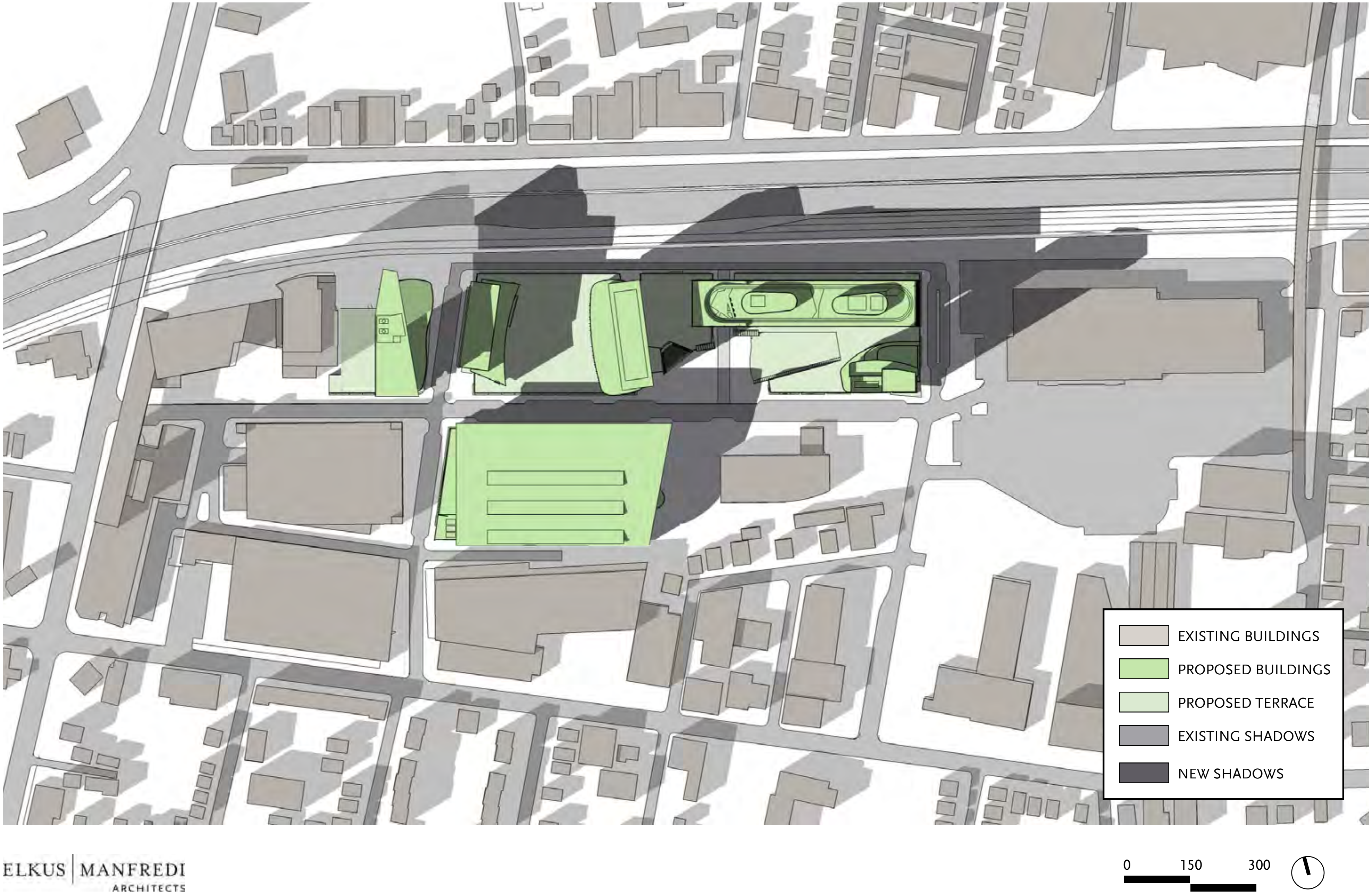
New Brighton Landing
Boston, Massachusetts

Epsilon ASSOCIATES INC.

NEW BRIGHTON LANDING, LLC

Figure 4.2-2
March 21, 1:00pm | Shadow Study



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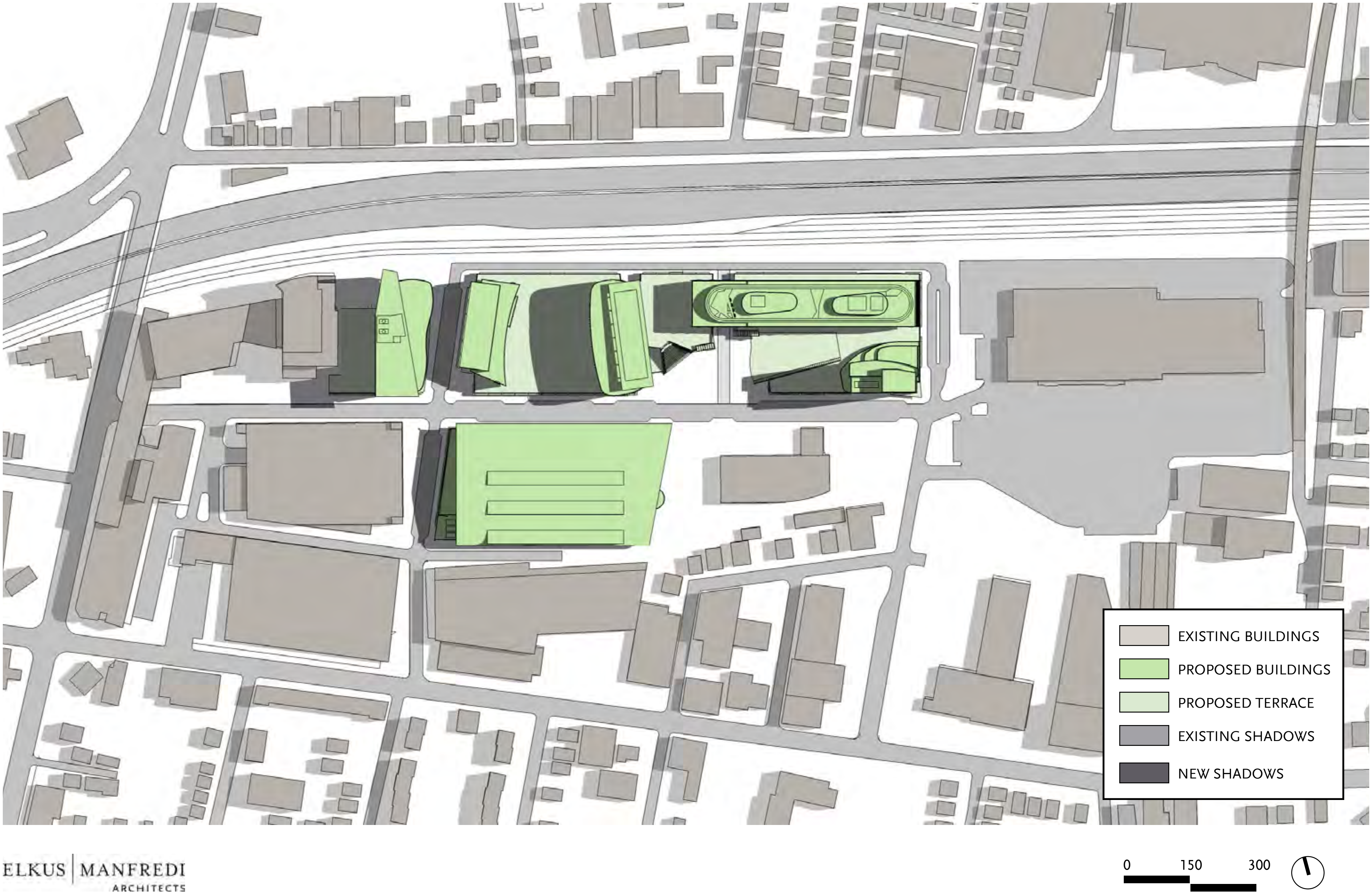
New Brighton Landing
Boston, Massachusetts

Epsilon ASSOCIATES INC.

NEW BRIGHTON LANDING, LLC

Figure 4.2-3
March 21, 4:00pm | Shadow Study



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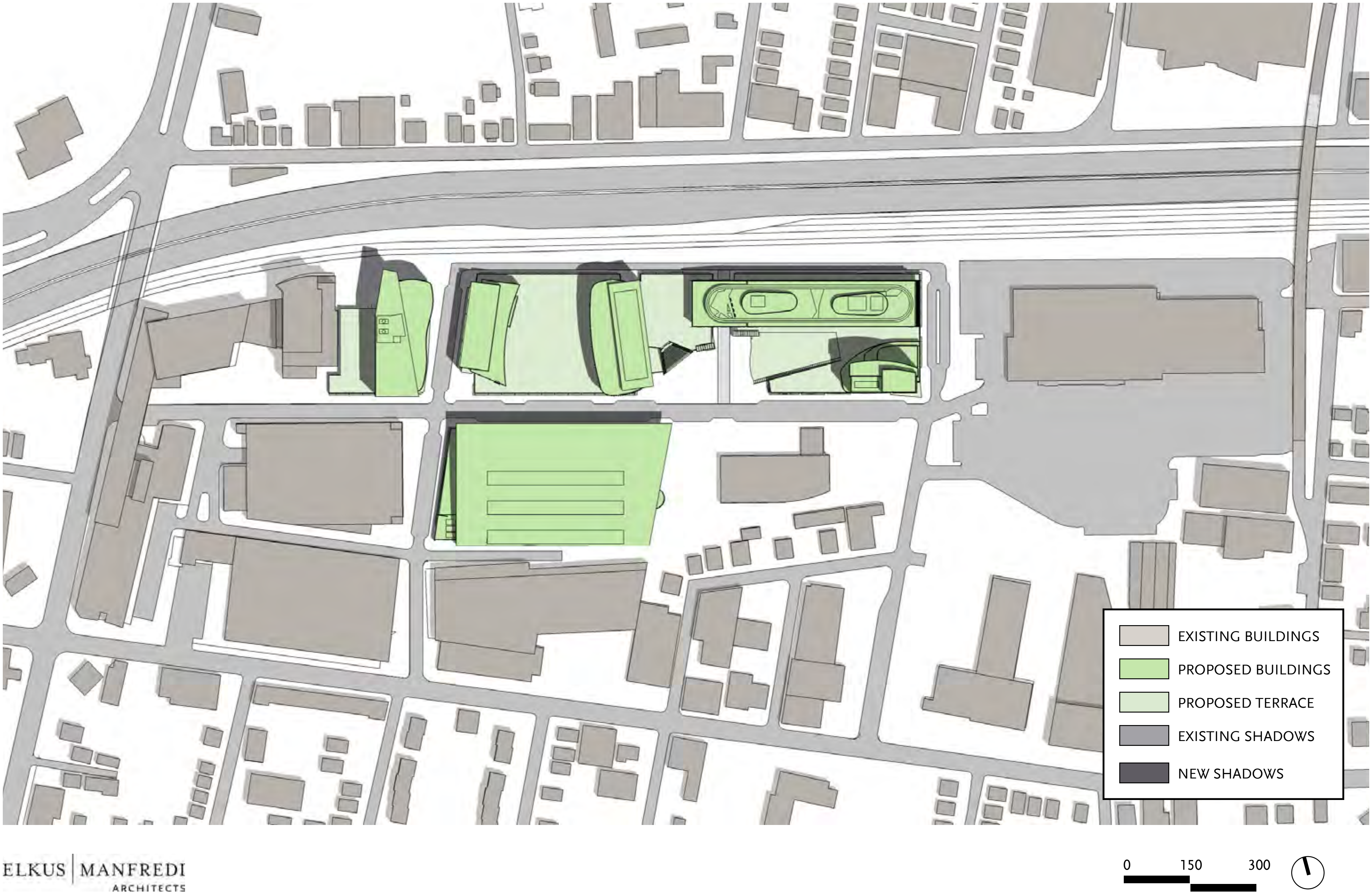
New Brighton Landing
Boston, Massachusetts

Epsilon ASSOCIATES INC.

NEW BRIGHTON LANDING, LLC

Figure 4.2-4
June 21, 9:00am | Shadow Study



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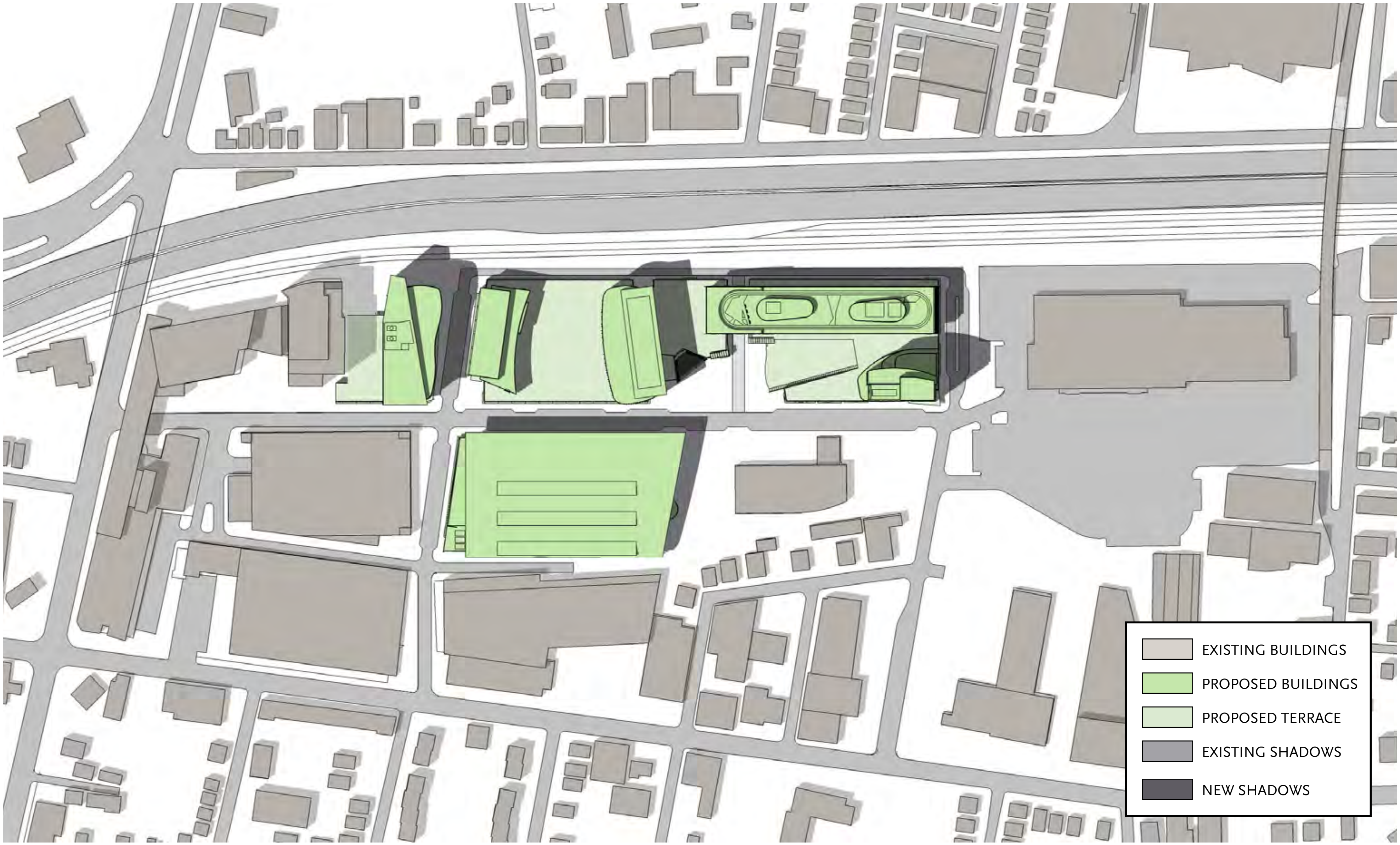
New Brighton Landing
Boston, Massachusetts

Epsilon ASSOCIATES INC.

NEW BRIGHTON LANDING, LLC

Figure 4.2-5
June 21, 12:00pm | Shadow Study



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Boston, Massachusetts

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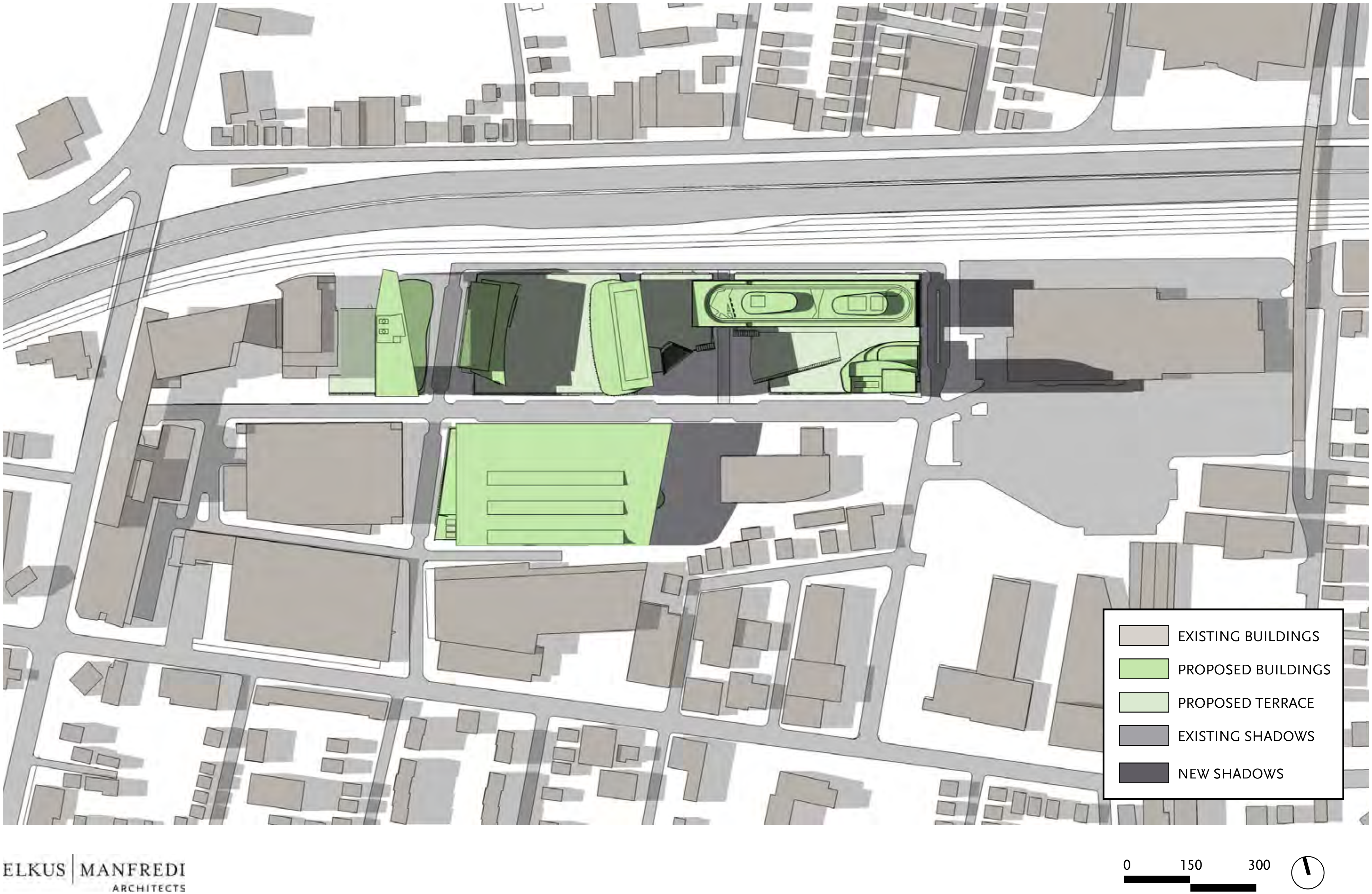
NEW BRIGHTON LANDING, LLC

Figure 4.2-6
June 21, 3:00pm | Shadow Study



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Boston, Massachusetts

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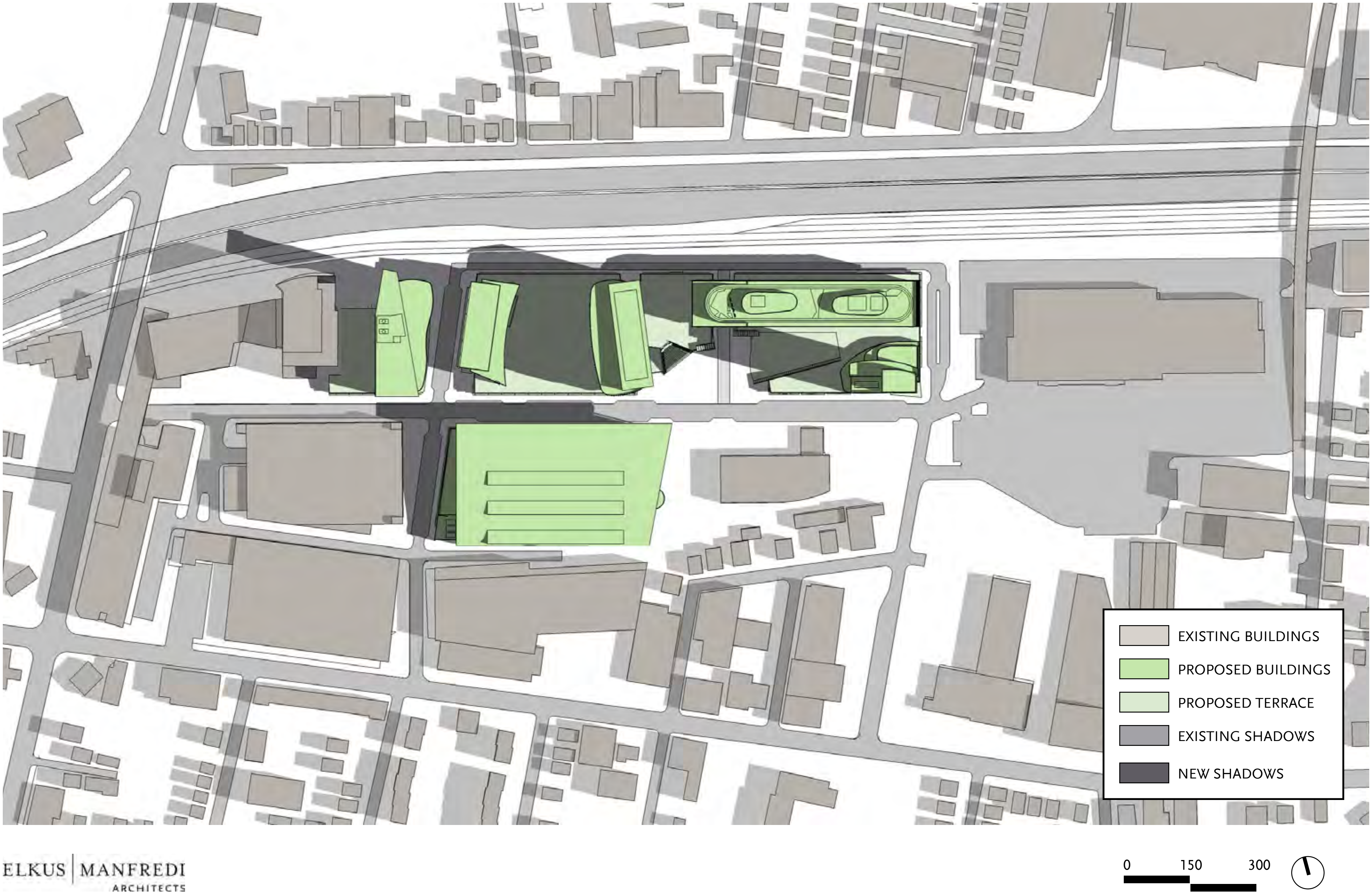
NEW BRIGHTON LANDING, LLC

Figure 4.2-7
June 21, 6:00pm | Shadow Study



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Boston, Massachusetts

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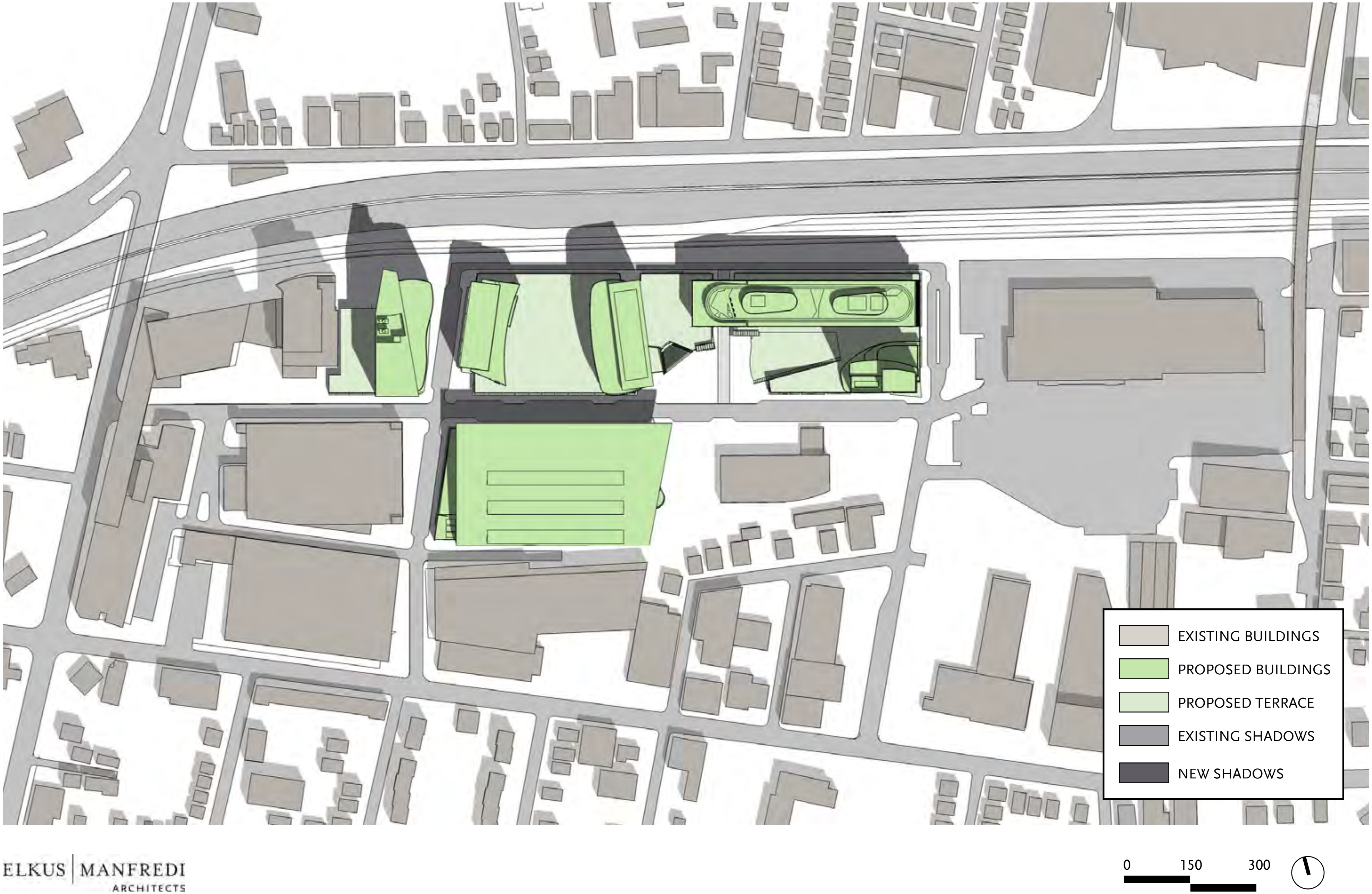
Figure 4.2-8
September 21, 9:00am | Shadow Study



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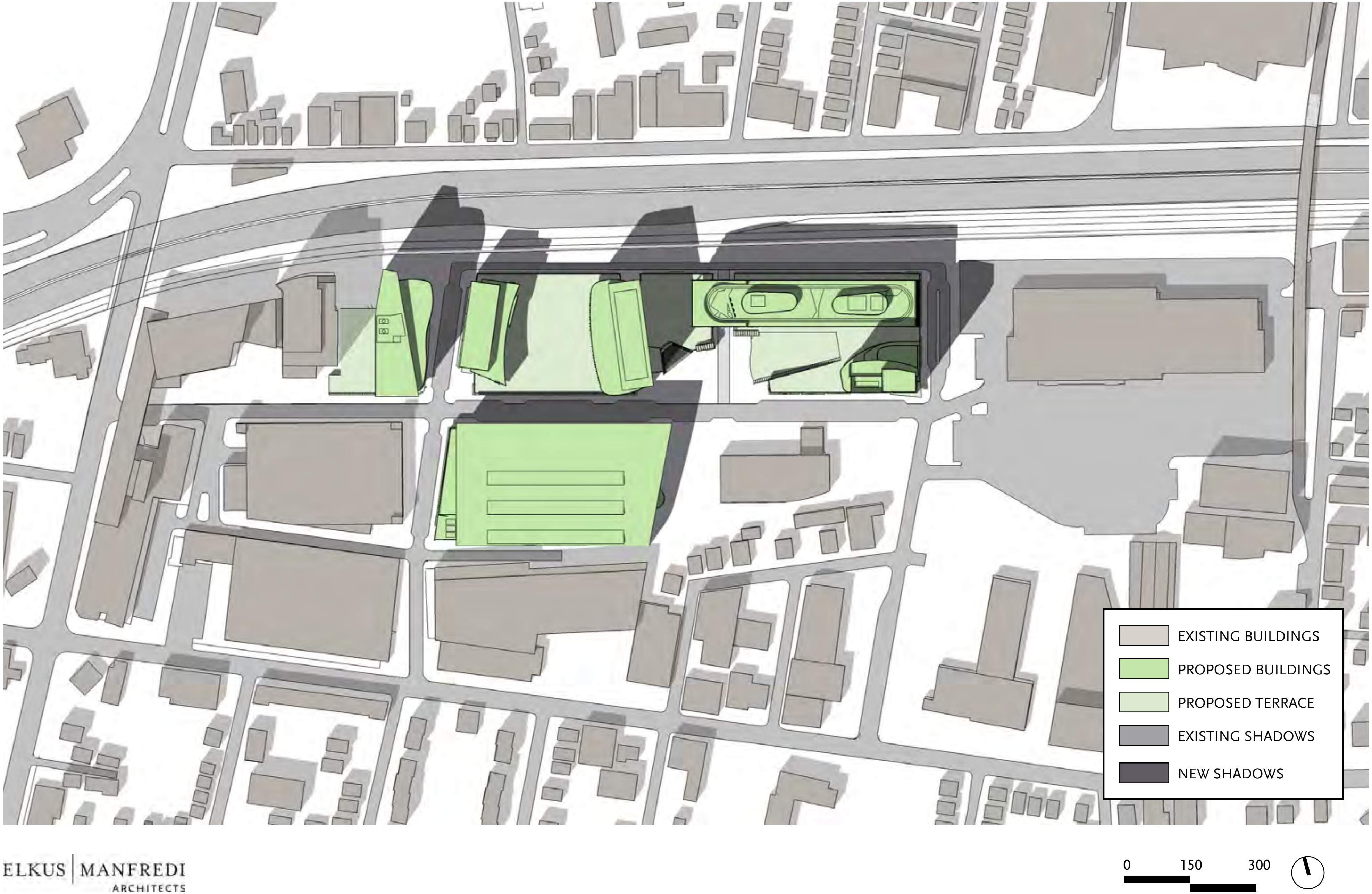
New Brighton Landing
Boston, Massachusetts

Epsilon ASSOCIATES INC.

NEW BRIGHTON LANDING, LLC

Figure 4.2-9
September 21, 12:00pm | Shadow Study



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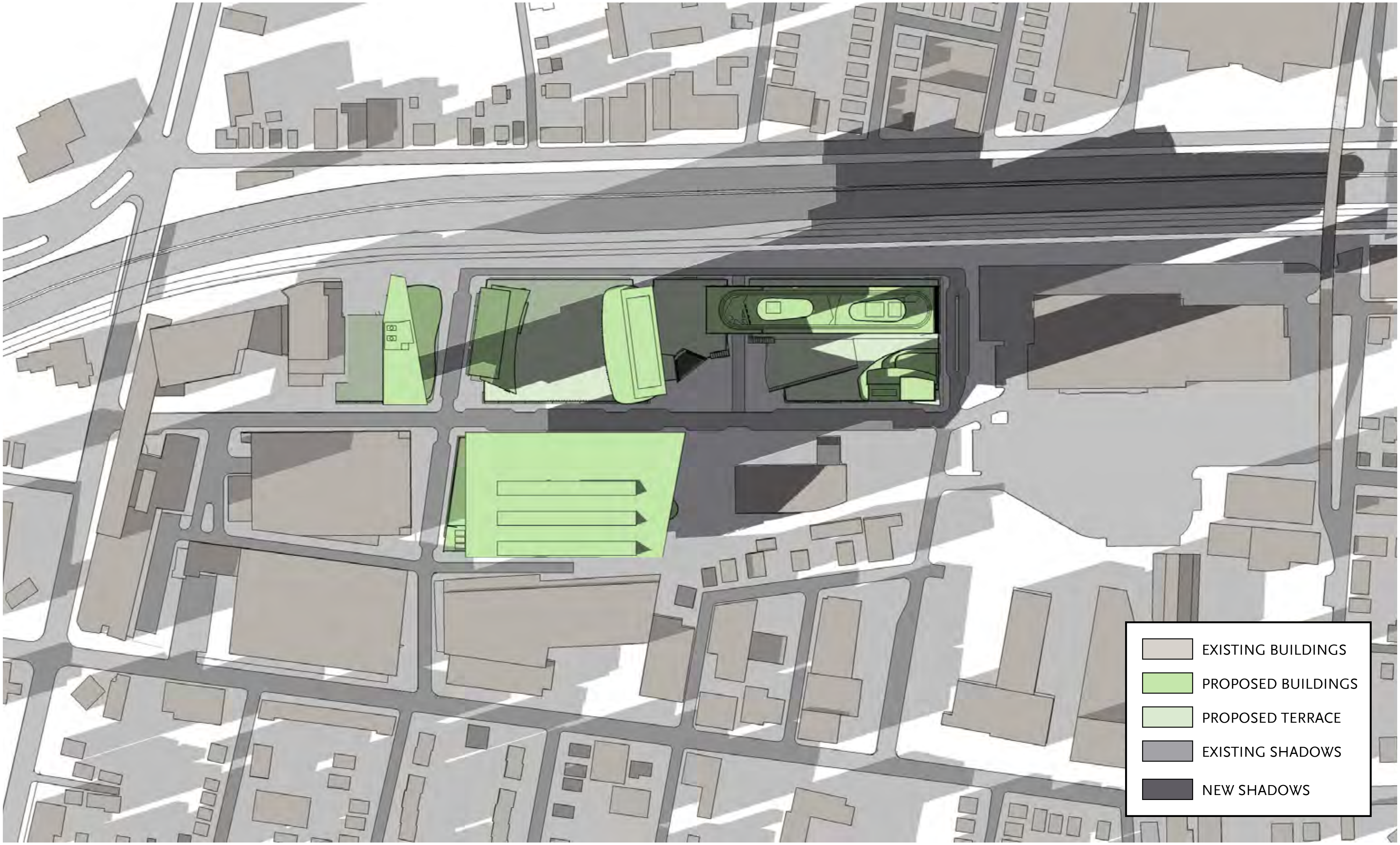
NEW BRIGHTON LANDING, LLC

Figure 4.2-10
September 21, 3:00pm | Shadow Study



ELKUS | MANFREDI ARCHITECTS

Figure 4.2-11
September 21, 6:00pm | Shadow Study

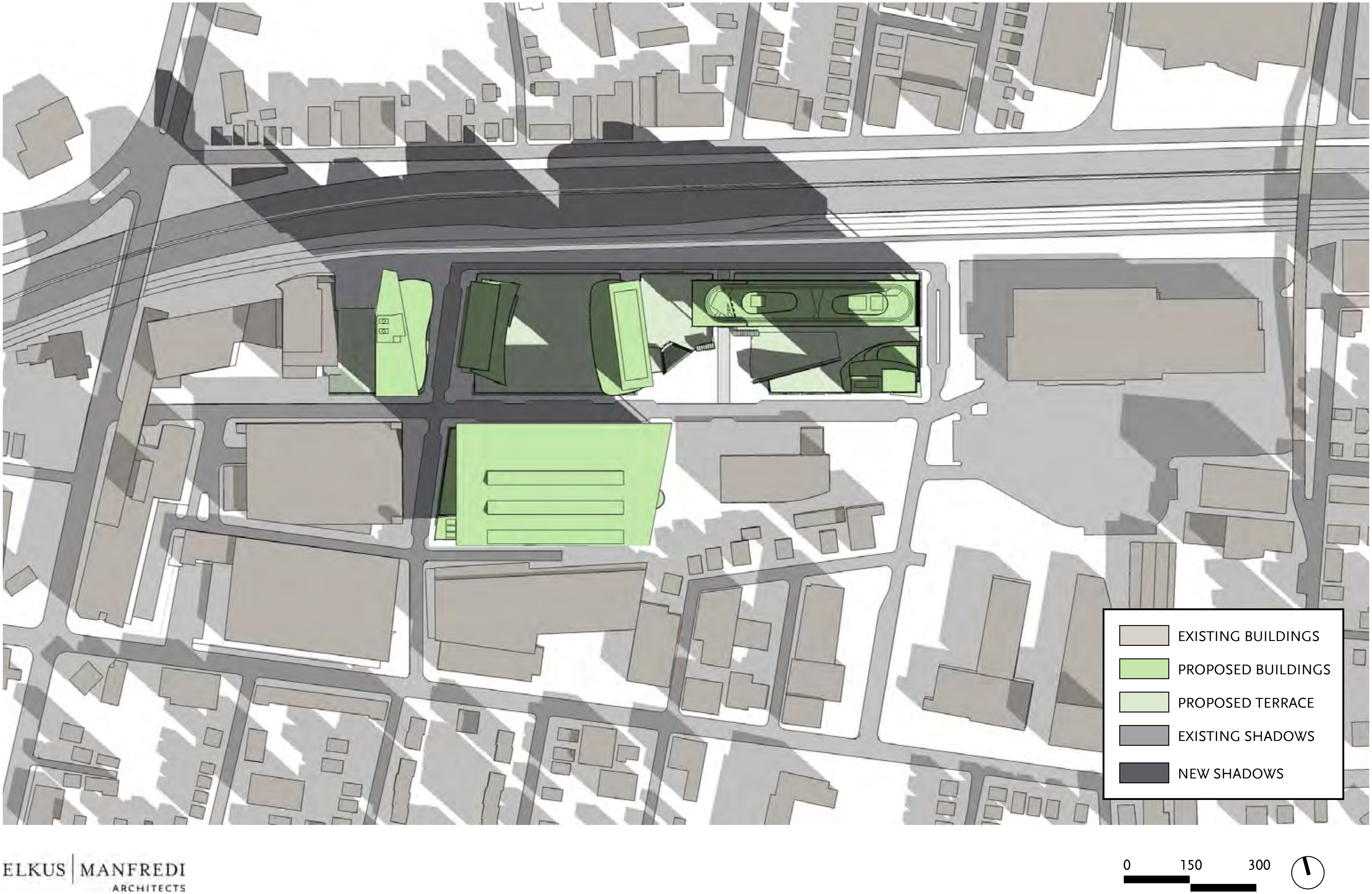


Figure 4.2-12
December 21, 9:00am | Shadow Study

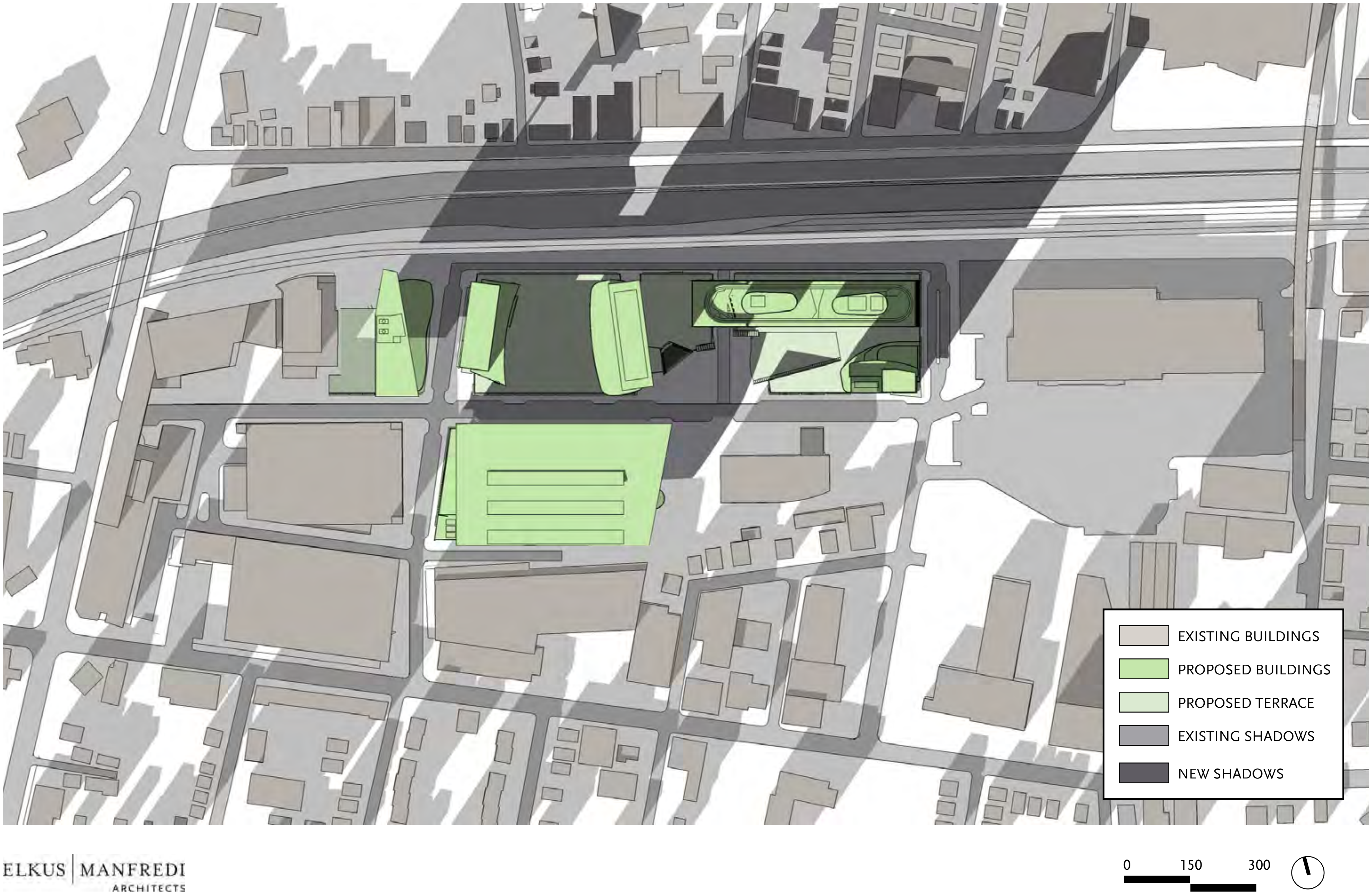
ELKUS | MANFREDI ARCHITECTS

New Brighton Landing
Boston, Massachusetts

Epsilon ASSOCIATES INC.

NEW BRIGHTON LANDING, LLC

Figure 4.2-13
December 21, 12:00pm | Shadow Study



ELKUS | MANFREDI ARCHITECTS

New Brighton Landing
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NEW BRIGHTON LANDING, LLC

Figure 4.2-14
December 21, 3:00pm | Shadow Study

4.3 Daylight

4.3.1 Introduction

The purpose of a daylight analysis is to estimate the extent to which a proposed project will affect the amount of daylight reaching the streets and the sidewalks in the immediate vicinity of a proposed project. A daylight analysis for the Proposed Project considers the existing, proposed and as-of-right conditions and daylight obstruction values of the surrounding area.

Because the Project site currently consists of low-rise buildings and parking lots, the proposed Project will increase daylight obstruction; however, the resulting conditions will be typical of the area, and daylight obstruction will not be significant.

4.3.2 Methodology

The daylight analysis was performed utilizing the Boston Redevelopment Authority Daylight Analysis ("BRADA") computer program.[3] This program measures the percentage of sky-dome that is obstructed by a project and is a useful tool in evaluating the net change in obstruction from existing to build conditions at a specific site.

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

The analysis compares three conditions: Existing Conditions; Proposed Conditions; and the context of the area. Due to the limitations of the BRADA software, the northern-most Project area needed to be split into two adjacent parcels to complete the analysis.

Three viewpoints along Guest Street and one along Life Street were chosen to evaluate daylight obstruction for the proposed and existing conditions. Three area context points were considered in order to provide a basis of comparison to existing conditions in the surrounding area. The viewpoints and area context viewpoints were taken in the following locations and are shown on Figure 4.3-1:

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

- **Viewpoint 1** – View from Guest Street facing north toward the eastern half of the Project Site.

- **Viewpoint 2 –** View from Guest Street facing north toward the western half of the Project site.

- **Viewpoint 3 –** View from Guest Street facing south toward the Project site.

- **Viewpoint 4 –** View from Life Street facing east toward the Project site.

- **Area Context Viewpoint AC1 –** View from Market Street facing east toward the WGBH building at 1 Guest Street.

- **Area Context Viewpoint AC2** – View from Guest Street facing north toward the existing New Balance building at 20 Guest Street.

- **Area Context Viewpoint AC3** – View from Life Street facing west toward the parking garage at 40 Life Street.

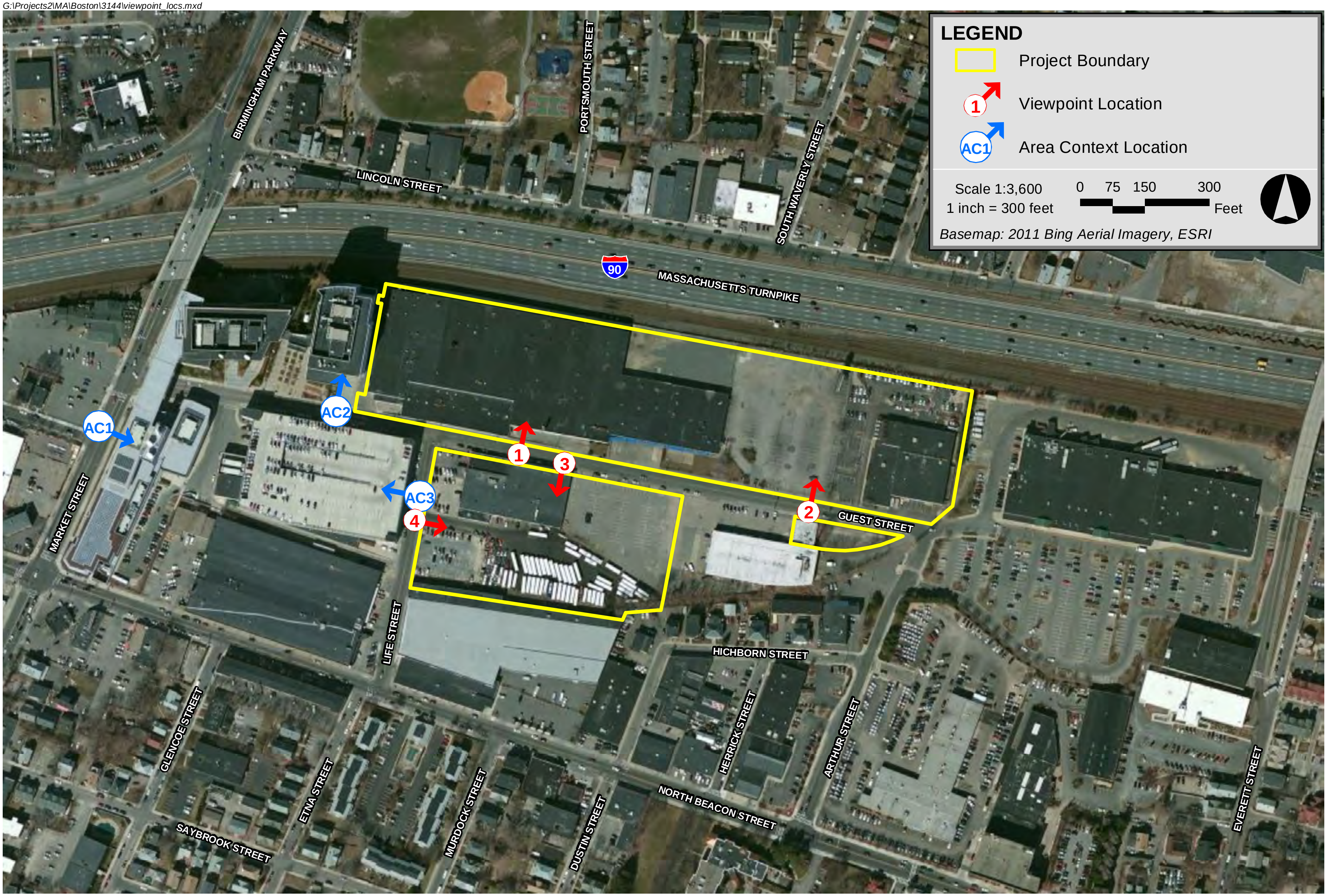
4.3.3 Results

The results for each viewpoint under each alternative condition are described in Table 4.3-1. Figure 4.3-2 through Figure 4.3-4 illustrate the BRADA results for each analysis.

Table 4.3-1 Daylight Obstruction Values

Viewpoint Locations		Existing Conditions	Proposed Conditions
Viewpoint 1	Guest Street looking north at the western half of the Proposed site	14.4%	26.8%
Viewpoint 2	Guest Street looking north at the eastern half of the Proposed site	0.4%	36.2%
Viewpoint 3	Guest Street looking south at the Proposed site	38.0%	69.4%
Viewpoint 4	Life Street looking east at the Proposed site	3.6%	70.9%
Area Context Points			
AC1	Market Street looking east at the WGBH building at 1 Guest Street	66.0%	N/A
AC2	Guest Street looking north at the existing New Balance building at 20 Guest Street	50.6%	N/A
AC3	Life Street looking west at the parking garage at 40 Life Street	64.3%	N/A

G:\Projects2\MA\Boston\3144\viewpoint_locs.mxd



New Brighton Landing
Boston, Massachusetts

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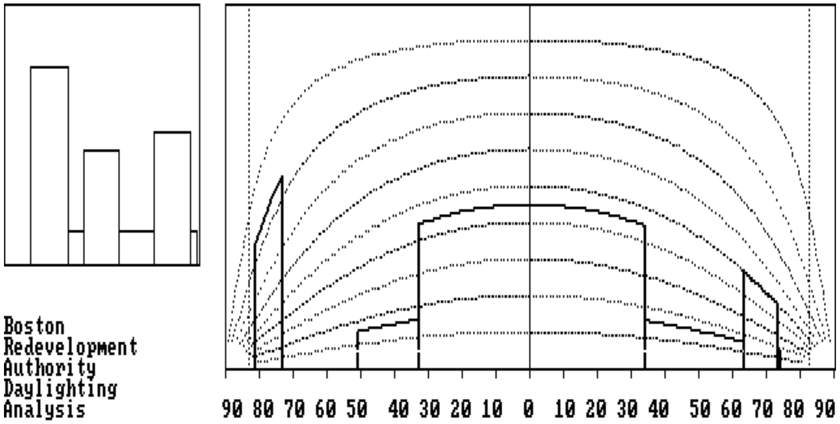
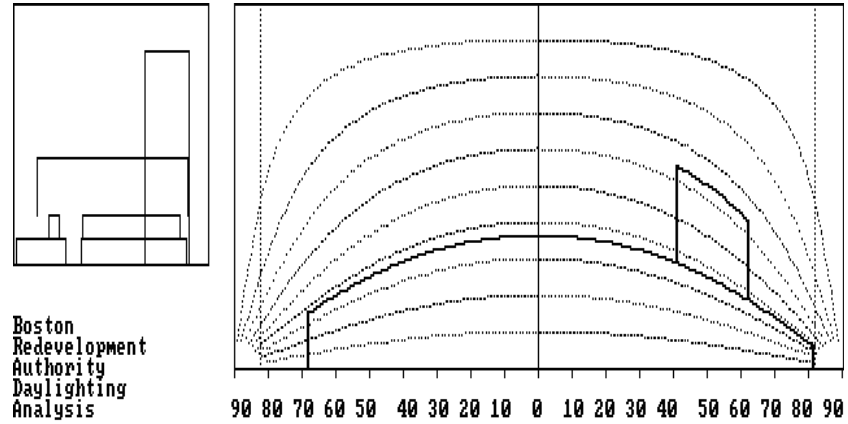
Figure 4.3-1
Viewpoint Locations



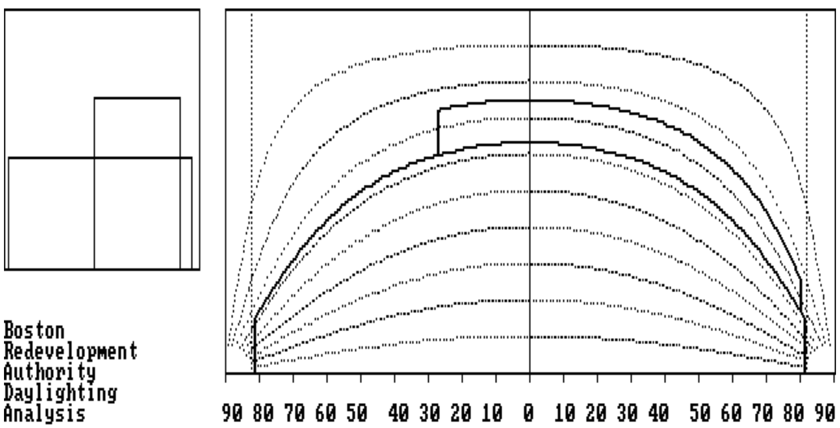
Obstruction of daylight by the building is 26.8 %

Viewpoint 1 – Guest Street facing north



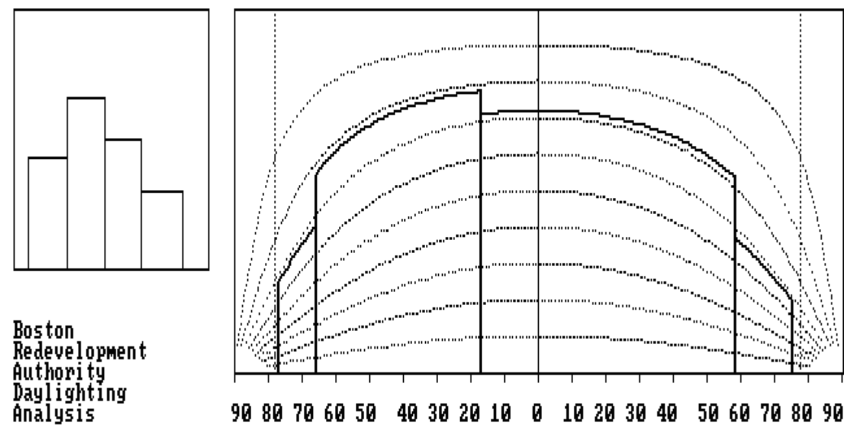
Obstruction of daylight by the building is 36.2 %

Viewpoint 2 – Guest Street facing north



Obstruction of daylight by the building is 69.4 %

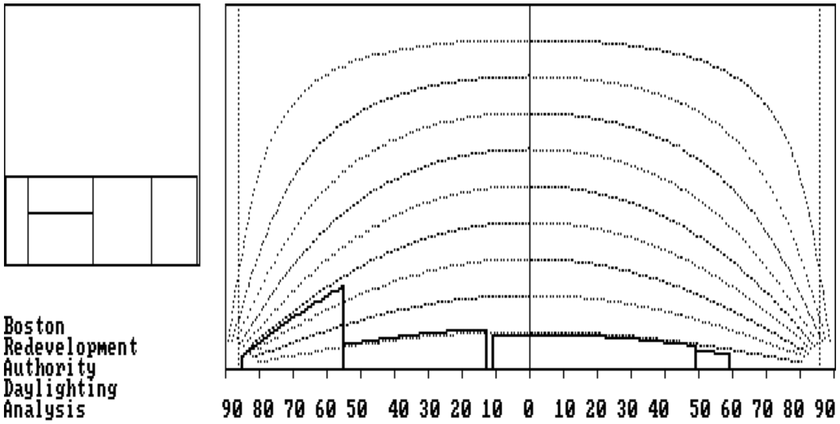
Viewpoint 3 – Guest Street facing south



Obstruction of daylight by the building is 70.9 %

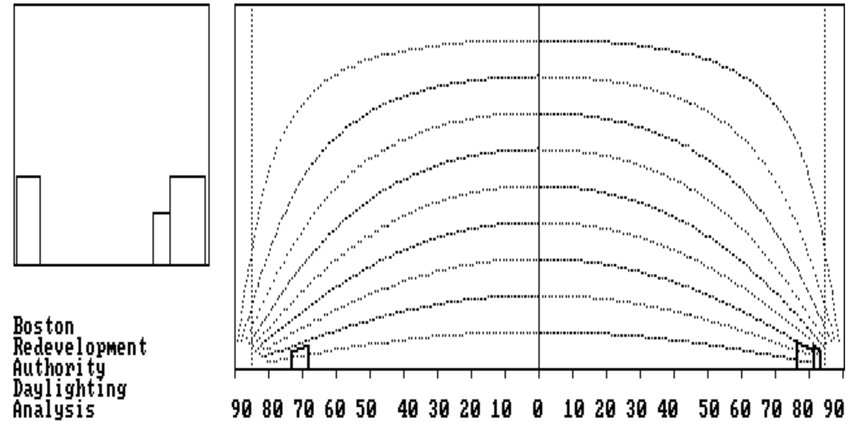
Viewpoint 4 – Life Street facing east

Figure 4.3-2
Viewpoints – Proposed Conditions Results



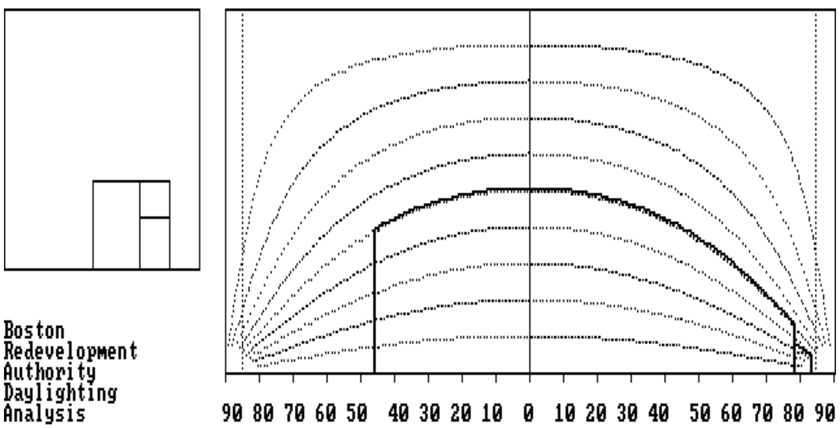
Obstruction of daylight by the building is 14.4 %

Viewpoint 1 – Guest Street facing north



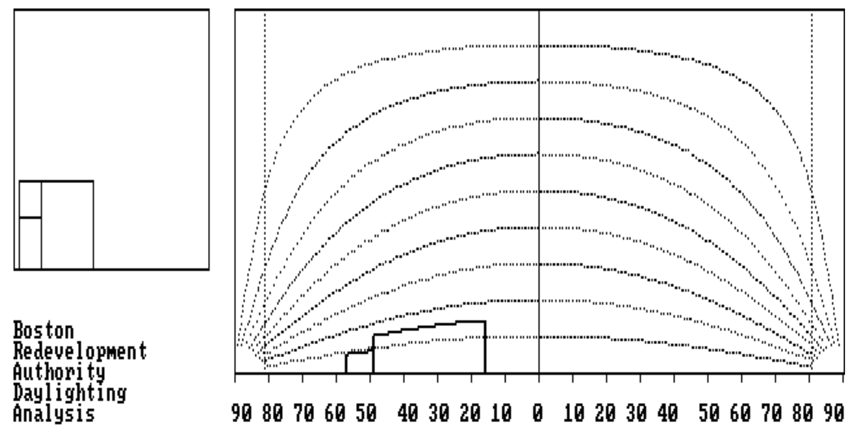
Obstruction of daylight by the building is 0.4 %

Viewpoint 2 – Guest Street facing north



Obstruction of daylight by the building is 38.0 %

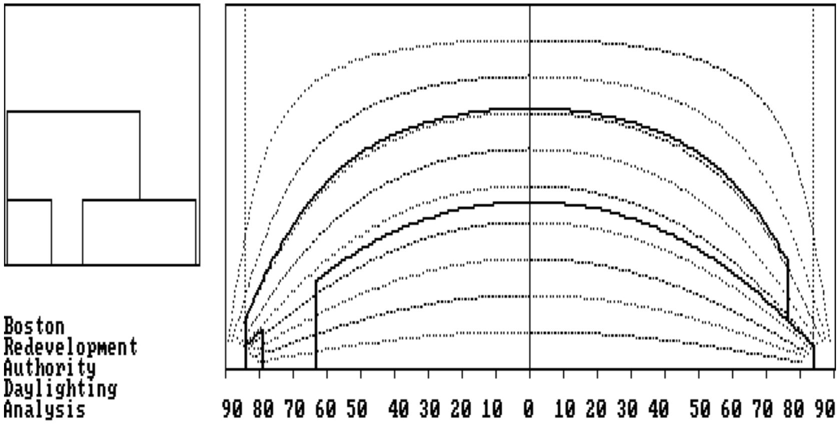
Viewpoint 3 – Guest Street facing south



Obstruction of daylight by the building is 3.6 %

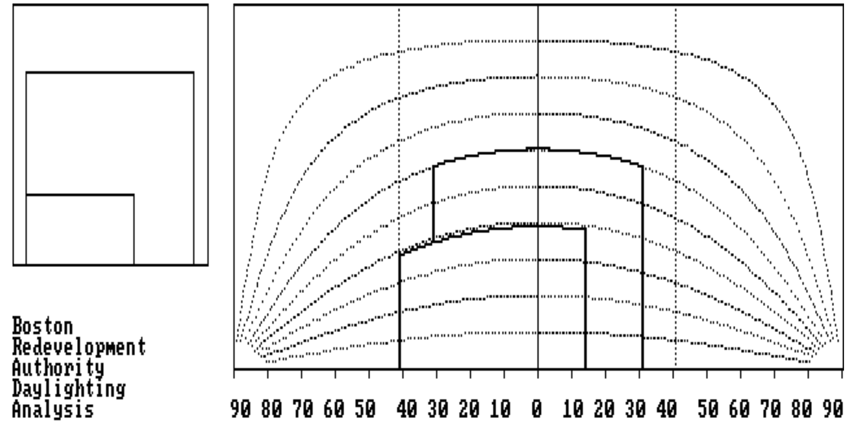
Viewpoint 4 – Life Street facing east

Figure 4.3-3
Viewpoints – Proposed Conditions Results



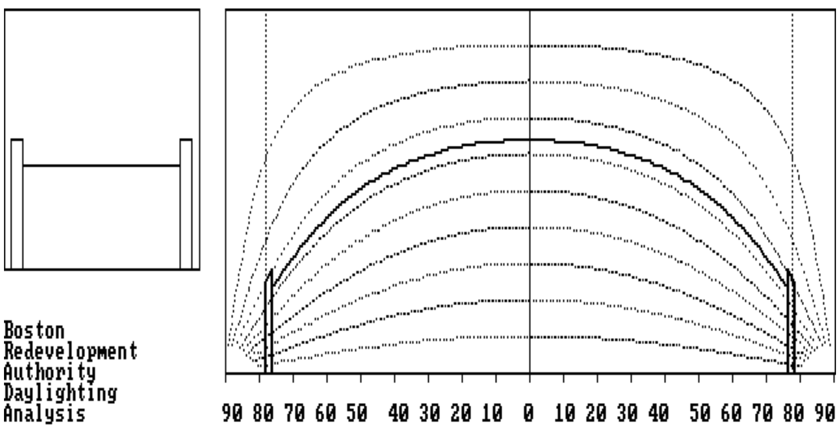
Obstruction of daylight by the building is 66.0 %

Area Context 1 – Market Street facing east toward WGBH building



Obstruction of daylight by the building is 50.6 %

Area Context 2 – Guest Street facing north toward existing New Balance building



Obstruction of daylight by the building is 64.3 %

Area Context 3 – Life Street facing west toward parking garage

Guest Street – Viewpoint 1

Guest Street runs between the northern and southern portions of the Project site. Viewpoint 1 was taken from the center of Guest Street, looking directly north at the western half of the Project site. The Project site is currently occupied by a long warehouse and has an existing daylight obstruction value of 14.4 percent. The development of the Project will increase daylight obstruction values to 26.8 percent. While this is an increase over existing conditions, the daylight obstruction value for the Project is less than other buildings in the Project vicinity.

Guest Street – Viewpoint 2

Viewpoint 2 was taken from the center of Guest Street, looking directly north at the eastern half of the Project site. The Project site is currently made up of a large parking lot between two buildings and has an existing daylight obstruction value of 0.4 percent. The development of the Project will increase daylight obstruction values to 36.2 percent. While this is an increase over existing conditions, the daylight obstruction value for the Project is less than other buildings in the Project vicinity.

Guest Street – Viewpoint 3

Viewpoint 3 was taken from the center of Guest Street, looking directly south at the Project site. The Project site currently consists of a large parking lot with one building in the middle and has an existing daylight obstruction value of 38.0 percent. The development of the Project will increase daylight obstruction values to 69.4 percent. While this is an increase over existing conditions, the daylight obstruction value for the Project is similar to other buildings in the Project vicinity, including AC1 and AC3 respectively.

Life Street – Viewpoint 4

Life Street runs along the southwestern edge of the Project site. Viewpoint 4 was taken from the center of Life Street, looking directly east at the Project site. The Project site currently consists of a large parking lot with one building near the northern edge of the parcel and has an existing daylight obstruction value of 3.6 percent. The development of the Project will increase daylight obstruction values to 70.9 percent. While this is an increase over existing conditions, the daylight obstruction value for the Project is similar to other buildings in the Project vicinity, including AC1 and AC3 respectively.

Area Context Views

The Project area is primarily characterized by industrial uses. The buildings in the Project vicinity are predominantly low-rise, ranging between one and ten stories. To provide a larger context for comparison of daylight conditions, obstruction values were calculated for the two Area Context Points described above and shown on Figure 4.3-1. The daylight obstruction values ranged from 50.6 percent on Guest Street (AC2) to 66.0 percent on Market Street (AC1). Daylight obstruction values for the Project are fully consistent with the Area Context values.

4.3.4 Conclusions

The daylight analysis conducted for the Project describes existing and proposed daylight obstruction conditions at the Project site and in the surrounding area. The results of the BRADA analysis indicate that while the development of the Project will result in increased daylight obstruction over existing conditions, the resulting conditions will be similar to the daylight obstruction values within the surrounding area and typical of densely built urban areas.

4.4 Solar Glare

The Proposed Project will incorporate low-E, high performance glass, that is non-reflective and which reduces heat loads in warm weather and lower heat loss during cool weather. Consequently, the Proponent does not anticipate the creation of either an adverse solar glare impact or any solar heat buildup in nearby buildings to be caused by window reflection.

The façade materials for the proposed buildings have not yet been finalized. The Proponent will, however, demonstrate that the materials selected will not create a visual nuisance and/or a hazard, (as it interferes with vision and concentration) during further design review, and will employ mitigation measures to eliminate any adverse reflective glare should it be necessary.

4.5 Air Quality

4.5.1 Introduction

The project is subject to the air quality requirements put forth by the Boston Redevelopment Authority (BRA) as well as the Massachusetts Environmental Policy Act (MEPA).

Both entities require that project-induced impacts to ambient air quality be addressed. An air quality analysis was conducted to determine the impact of pollutant emissions from combustion and mobile source emissions generated by the Project. A mesoscale analysis is often performed to determine whether and to what extent the Project will increase the amount of ozone precursors in the area, as well as to determine if the Project is consistent with the Massachusetts State Implementation Plan (SIP). A microscale analysis is typically performed to evaluate the potential air quality impacts of carbon monoxide (CO) due to traffic flow around the Project area. In addition, for stationary sources (i.e. combustion source stacks, and garage vents), United States Environmental Protection Agency (EPA) approved air dispersion models were used to estimate project-generated ambient concentrations of nitrogen oxides (NOx), particulate matter (PM-10 and PM-2.5), and sulfur dioxide (SO_2), in addition to CO.

National Ambient Air Quality Standards

The 1970 Clean Air Act was enacted by the U.S. Congress to protect the health and welfare of the public from the adverse effects of air pollution. As required by the Clean Air Act, EPA promulgated National Ambient Air Quality Standards (NAAQS) for these criteria pollutants: nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM) (PM10 and PM2.5), carbon monoxide (CO), ozone (O_3), and lead (Pb). The NAAQS are listed in Table 7-1. Massachusetts Ambient Air Quality Standards (MAAQS) are typically identical to NAAQS.

NAAQS specify concentration levels for various averaging times and include both “primary” and “secondary” standards. Primary standards are intended to protect human health, whereas secondary standards are intended to protect public welfare from any known or anticipated adverse effects associated with the presence of air pollutants, such as damage to vegetation. The more stringent of the primary or secondary standards were applied when comparing to the modeling results for this Project.

A new one-hour NO_2 standard was promulgated on January 22, 2010 to protect public health, including the health of sensitive populations (e.g., people with asthma, children, and the elderly). The final rule for the new hourly NO_2 NAAQS was published in the Federal Register on February 9, 2010 and became effective on April 12, 2010. The form of this standard is the three-year average of the 98th percentile of the daily maximum one-hour concentrations.

Similarly, a new one-hour SO_2 standard was promulgated on June 2, 2010 to protect public health, including the health of sensitive populations (e.g., people with asthma, children, and the elderly). The final rule for the new hourly SO_2 NAAQS was published in the Federal Register on June 22, 2010 and became effective on August 23, 2010. The form of this standard is the three-year average of the 99th percentile of the daily maximum one-hour concentrations.

Table 4.5-1 National Ambient Air Quality Standards

Pollutant	*Averaging Period*	*National Ambient Air Quality Standards and Massachusetts Ambient Air Quality Standards (micrograms per cubic meter)*	
		Primary	*Secondary*
NO_2	Annual [1]	100	Same
	1-hour [7]	188	None
SO_2	Annual [1]	80	None
	24-hour [2]	365	None
	3-hour [2]	None	1,300
	1-hour [7]	195	None
PM10 [6]	Annual	50	Same
	24-hour [3]	150	Same
PM2.5	Annual [4]	15	Same
	24-hour [5]	35	Same
CO	8-hour [2]	10,000	Same
	1-hour [2]	40,000	Same
Ozone	8-hour [3]	235	Same
Pb	3-month [1]	1.5	Same

Notes:
[1] Not to be exceeded
[2] Not to be exceeded more than once per year.
[3] Not to be exceeded more than an average of one day per year over three years.
[4] Not to be exceeded by the arithmetic average of the annual arithmetic averages from 3 successive years.
[5] Not to be exceeded based on the 98th percentile of data collection.
[6] Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, EPA revoked the annual PM10 standard in 2006 (effective December 17, 2006). However, the annual standard remains codified in 310 CMR 6.00
[7] Not to be exceeded. Based on the 3-yr average of the 98th (NO2) or 99th (SO2) percentile of the daily maximum 1-hour concentrations.
Source: 40 CFR 50 and 310 CMR 6.00

The NAAQS also reflect various durations of exposure. The short-term periods (24 hours or less) refer to exposure levels not to be exceeded more than once a year. Long-term periods refer to limits that cannot be exceeded for exposure averaged over three months or longer.

The inhalable particulate (PM10) NAAQS were promulgated on July 1, 1987 at the federal level with the intent of replacing the existing standards limiting ambient levels of Total Suspended Particulate (TSP). EPA also promulgated a Fine Particulate (PM2.5) NAAQS, effective December 2006, with an annual standard of 15 $\mu g/m^3$ and the 24-hour standard of 35 microgams per cubic meter ($\mu g/m^3$).

The impacts were added to monitored background values and compared to the Federal National Ambient Air Quality Standards (NAAQS). The standards were developed by EPA to protect the human health against adverse health effects with a margin of safety.

The modeling methodology was developed in accordance with the latest Massachusetts Department of Environmental Protection (MassDEP) modeling policies and Federal modeling guidelines.[4] The air quality analysis results show that CO, NOx, PM-10, PM-2.5, and SO_2 concentrations at all receptors studied are well under NAAQS thresholds.

Modeling assumptions and backup data for results presented in this section are provided in the Air Quality Appendix.

4.5.2 Methodology

4.5.2.1 Mesoscale Analysis

A mesoscale analysis is done to ensure that the proposed Project will not adversely impact the existing State Implementation Plan (SIP), which tracks how the state intends to maintain compliance with the National Ambient Air Quality Standards (NAAQS) or plans for reductions in emissions to attain compliance in the future. The analysis compares the future build condition to the no-build condition and, if emissions are greater for the build condition, evaluates reasonable and feasible mitigation measures. Methods and parameters for the mesoscale analysis follow those approved by the MassDEP.

A mesoscale analysis predicts the change in regional ozone precursor emissions (oxides of nitrogen, NOx, and volatile organic compounds [VOC]) due to the Project. The analysis includes a comparison of the future Build condition to the No-Build condition. If emissions are greater for the Build condition, reasonable and feasible mitigation measures will be evaluated. The methodology and parameters for the mesoscale analysis follow methodology approved by MassDEP.

The mesoscale analysis performed for this Project predicts the change in regional ozone precursor emissions due to the proposed redevelopment of the Project site. The total vehicle pollutant burden was estimated for the 2012 existing conditions and the No-Build and Build conditions for years 2014 (No-Build only) and 2017. The traffic conditions are described in more detail in Section 3.

The EPA's MOBILE6.2 computer program was used to estimate motor vehicle emission factors of VOC and NOx on the roadway network in the Project area. Conservatively, emission factors derived from MOBILE6.2 for VOC and NOx are based on the worst case of

4 40 CFR 51 Appendix W, Guideline on Air Quality Models, 70 FR 68228, Nov. 9, 2005

either wintertime or summertime conditions. Daily and yearly emission estimates were calculated using the vehicle count data, mileage between intersections, modeled signalized intersection delay times, and emission factors.

The traffic volumes provided in Section 3 form the basis of the mesoscale study. Approximately 160 roadway links and 48 intersections were included in the mesoscale analysis. Peak hour traffic volumes were provided by the transportation consultant. Estimates of ADT were made from the peak hour volumes assuming a 15% K-Factor. Average speeds of 30 miles per hour (mph) were used for all links based on the traffic analysis output. Distances for the links were estimated with mapping software.

Average per-vehicle idle times were based on SYNCHRO output reports provided by the transportation consultant (see Section 3) to calculate emissions from idling vehicles. Further idling on roadway links was included assuming a two-minute per hour per vehicle idling time.

4.5.2.2 Microscale Analysis

For projects in Boston, the BRA typically requires the analysis of the effect on air quality of the increase in traffic generated by the Project. The Proponent is required to analyze local effects of the potential increase in traffic on ambient air quality near specific intersections. This “microscale” analysis is required for the Project at intersections where 1) 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; 2) project traffic would increase traffic volumes on nearby roadways by 10% or more (unless the increase in traffic volume is less than 100 vehicles per hour); or, 3) the project will generate 3,000 or more new average daily trips on roadways providing access to a single location.[5] The microscale analysis involves modeling of carbon monoxide (CO) emissions from vehicles idling at and traveling through both signaled and unsignalized intersections. Predicted ambient concentrations of CO for the build and no-build cases are compared with federal (and state) ambient air quality standards for CO.

The microscale analysis typically examines ground-level CO impacts due to traffic queues in the immediate vicinity of a project. CO is used in microscale studies to indicate roadway pollutant levels since it is the most abundant pollutant emitted by motor vehicles and can result in so-called "hot spot" (high concentration) locations around congested intersections. NAAQS have been established by the EPA for CO to protect the public health (known as primary standards). These standards do not allow ambient CO concentrations to exceed 35 parts per million (ppm) for a one-hour averaging period and 9 ppm for an eight-hour averaging period, more than once per year at any location. The widespread use of CO catalysts on late-model vehicles has reduced the occurrences of CO hotspots. Air quality

[5] BRA, Development Review Guidelines, 2006.

modeling techniques (computer simulation programs) are typically used to predict CO levels for both existing and future conditions to evaluate compliance of the roadways with the standards. The analyses followed the procedure outlined in U.S. EPA's intersection modeling guidance.[6]

The microscale analysis has been conducted using the latest versions of EPA MOBILE6.2, CAL3QHC, and AERMOD to estimate CO concentrations at sidewalk receptor locations.

Baseline (2012) and future year (2014 and 2017) emission factor data calculated from the MOBILE6.2 model, along with traffic data, were input into the CAL3QHC program to determine CO concentrations due to traffic flowing through the selected intersections. AERMOD was used to estimate potential ground- level impacts due to emissions from the parking garage and combustion sources.

Existing background values of CO at the nearest monitor location in Kenmore Square were obtained from the MassDEP. CAL3QHC and AERMOD results were then added to background CO values of 1.9 ppm (1-hour) and 1.5 ppm (8-hour), as provided by the MassDEP, to determine total air quality impacts due to the Project. This value was compared to the NAAQS for CO of 35 ppm (1-hour) and 9 ppm (8-hour).

Intersection Selection

As stated previously, a "microscale" analysis is required for the Project at intersections where 1) 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; 2) project traffic would increase traffic volumes on nearby roadways by 10% or more (unless the increase in traffic volume is less than 100 vehicles per hour); or, 3) the project will generate 3,000 or more new average daily trips on roadways providing access to a single location. An analysis of the forty-four intersections from the traffic study was conducted (See Section 3, Transportation). Microscale modeling was performed for what was determined to be the worst four intersections that met the aforementioned criteria (1):

- the intersection of Birmingham Parkway, Market Street, & Lincoln Street;
- the intersection of Market Street & North Beacon Street;
- the intersection of North Beacon Street, Arthur Street, & Wingate Driveway; and,
- the intersection of North Beacon Street, Brighton Avenue, & Cambridge Street (Union Square).

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[6] U.S. EPA, Guideline for Modeling Carbon Monoxide from Roadway Intersections; EPA-454/R-92-005, November 1992.

The traffic volumes and LOS calculations provided in Section 3 form the basis of evaluating the traffic data versus the microscale thresholds.

Emissions Calculations (MOBILE6.2)

The EPA MOBILE6.2 computer program was used to estimate motor vehicle emission factors on the roadway network. Emission factors calculated by the MOBILE6.2 model are based on motor vehicle operations typical of daily periods. The Commonwealth's statewide annual Inspection and Maintenance (I&M) program was included, as well as the state specific vehicle age registration distribution. The input files for MOBILE6.2 for the existing (2012), interim (2014), and build year (2017) are provided by MassDEP. As is typical, minor edits to the files were necessary to allow the program to output emission factors for the various speeds used in the analyses.

The current version of MOBILE6.2 does not explicitly calculate idle emissions. However, idle emissions can be obtained from a vehicle speed of 2.5 mph (the lowest speed MOBILE6 will model). The resulting emission rate given in (grams/mile) is then multiplied by 2.5 mph to estimate idle emissions (in grams/hour). Moving emissions are calculated based on actual speeds at which free-flowing vehicles travel through the intersections. A speed of 30 mph is used for all free-flow traffic. Speeds of 10 and 15 mph were used for right (and U-turns, if necessary) and left turns, respectively.

Winter CO emission factors are typically higher than summer for CO. Therefore winter vehicular emission factors were conservatively used in the microscale analyses.

Receptors & Meteorology Inputs

Sets of up to 200 receptors were placed in the vicinity of each of the modeled intersections. Receptors extended approximately 100 to 300 feet on the sidewalks along the roadways approaching the intersection. The roadway links and receptor locations of the modeled intersections are presented in Figures 4.5-1 through, 4.5-4.

For the CAL3QHC model, limited meteorological inputs are required. Following EPA guidance[7], a wind speed of 1 m/s, stability class D (4), and a mixing height of 1000 meters was used. To account for the intersection geometry, wind directions from 0° to 350°, every 10° were selected. A surface roughness length of 175 cm was selected for all four intersections.[8]

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[7] U.S. EPA, *Guideline for Modeling Carbon Monoxide from Roadway Intersections.* EPA-454/R-92-005, November 1992.

[8] U.S. EPA, *User's Guide for CAL3QHC Version 2: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections.* EPA –454/R-92-006 (Revised), September 1995

Figure 4.5-1
Link and Receptor Locations for CAL3QHC modeling of Intersection 3:
Birmingham Parkway, Market Street, & Lincoln Street

Figure 4.5-2
Link and Receptor Locations for CAL3QHC modeling of Intersection 6:
Market Street & North Beacon Street

Figure 4.5-3
Link and Receptor Locations for CAL3QHC modeling of Intersection 10
North Beacon St, Arthur St, & Wingate Driveway

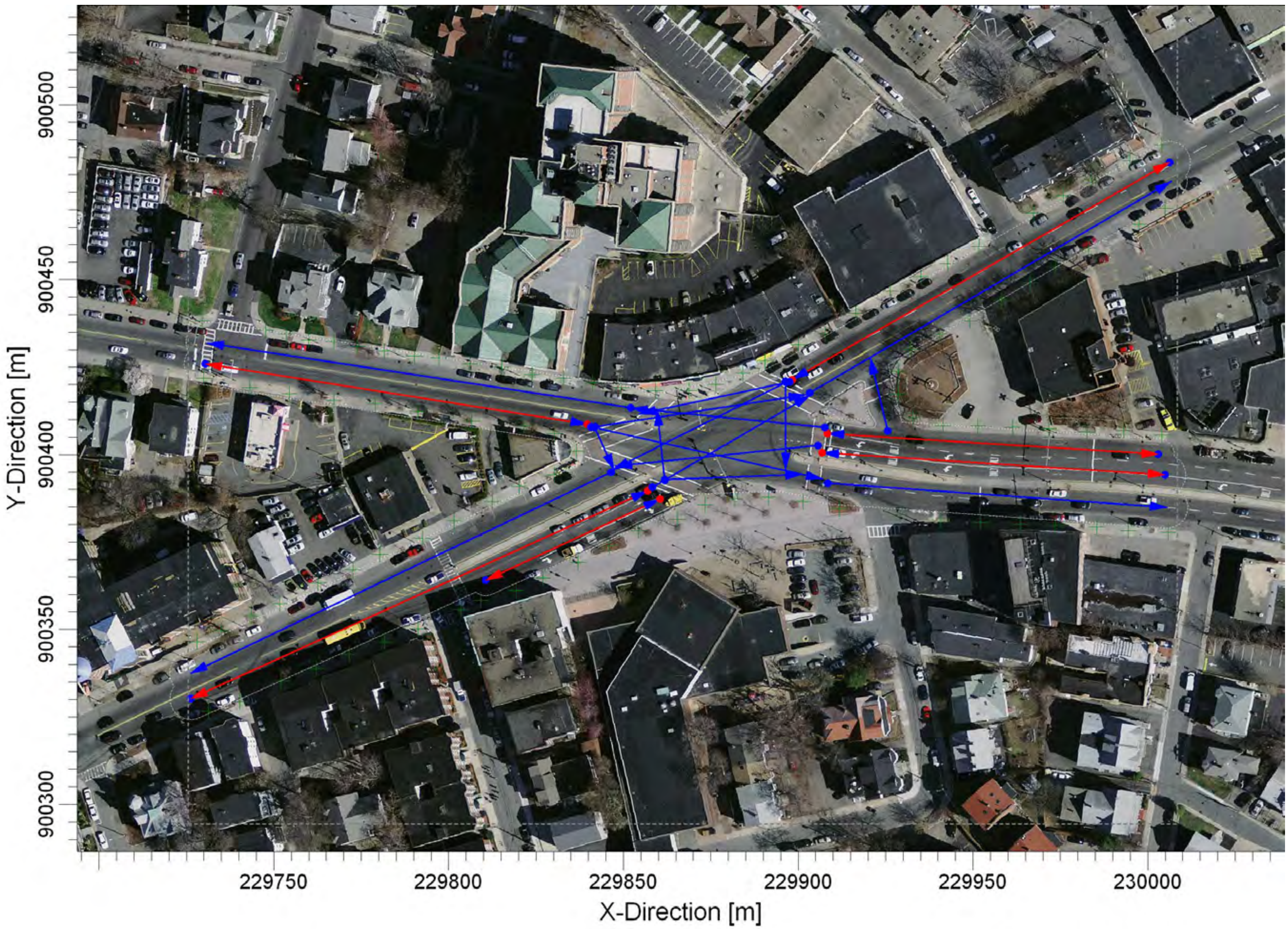


Figure 4.5-4
Link and Receptor Locations for CAL3QHC modeling of Intersection 13:
North Beacon St, Brighton Ave, & Cambridge St (Union Square)

Impact Calculations (CAL3QHC)

The CAL3QHC model predicts one-hour concentrations using queue-links at intersections, worst-case meteorological conditions, and traffic input data. The one-hour concentrations were scaled by a factor of 0.7 to estimate 8-hour concentrations.[9] The CAL3QHC methodology was based on EPA CO modeling guidance. Signal timings were provided directly from the traffic modeling outputs. The CAL3QHC input parameters are also described in the Air Quality Appendix.

4.5.2.3 Stationary Source Analysis

AERMOD Modeling Methodology

The most recent version of the U.S. EPA AERMOD refined dispersion model (Version 12060) was selected to predict concentrations from the stationary sources related to the project. AERMOD is the U.S. EPA's preferred model for regulatory applications. The use of AERMOD provides the benefits of using the most current algorithms available for steady state dispersion modeling.

The ISC-AERMOD View graphical user interface (GUI) Version 7.6.1, created by Lakes Environmental, was used to facilitate model setup and post-processing of data. The AERMOD model was selected for this analysis because it:

- is the required U.S. EPA model for all refined regulatory analyses for receptors within 50 km of a source;
- is a refined model for facilities with multiple sources, source types, and building-induced downwash;
- uses actual representative hourly meteorological data;
- incorporates direction-specific building parameters which can be used to predict impacts within the wake region of nearby structures;
- allows the modeling of multiple sources together to predict cumulative downwind impacts;
- provides for variable emission rates;

9 U.S. EPA, Screening Procedures for Estimating the Air Quality Impact of Stationary Sources; EPA-454/R-92-019, October 1992

- provides options to select multiple averaging periods between one-hour and one year (scaling factors can be applied to adjust the one-hour impact to a peak impact less than one-hour); and,

- allows the use of large Cartesian and polar receptor grids, as well as discrete receptor locations.

Regulatory default options adopted for the model include:

- *Use stack-tip downwash (except for building downwash).* Stack-tip downwash is an adjustment of the actual stack release height for conditions when the gas exit velocity is less than 1.5 times the wind speed. For these conditions, the effective release height is reduced a bit, based on the diameter of the stack and the wind and gas exit velocity. This option applies to point sources only, such as emergency generators, cooling towers, boiler units and garage vents.

- *Use the missing data and calms processing routines.* The model treats missing meteorological data in the same way as the calms processing routine, i.e., it sets the concentration values to zero for that hour, and calculates the short term averages according to U.S. EPA's calms policy, as set forth in the Guideline. Since only 1-hour averages are being used, concentrations predicted with calm or missing data would not affect model results.

The AERMOD model is able to assign sources to a rural or urban category to allow specified urban sources to use the effects of increased surface heating under stable atmospheric conditions. The urban dispersion classification was selected based on a visual inspection of the area within a three kilometer radius of the Project site. A population estimate of 650,000 was obtained from the U.S. Census website (www.census.gov) and is used in the AERMOD model to estimate the urban boundary layer height.

The regional meteorology in Boston is best approximated with meteorological data collected by the nearby Boston Logan International Airport in East Boston, MA. The station is located approximately 7 miles (11.3 km) to the east of the Project site at an elevation of 15 feet (4.57 m) above mean sea level. This station is the closest site for which extensive meteorological data are available which are representative of similar topographic influences that affect the proposed site. Five years (2005-2009) of hourly surface data collected at the station include wind speed and direction, temperature, cloud cover and ceiling height. Upper air data from Gray, Maine was processed along with the surface data. The processed meteorological files for use in AERMOD were provided by the MassDEP. These files have been used on other AERMOD applications in the area for review by MassDEP and are presumed to be of sufficient quality for regulatory applications.

A network of 1,614 receptors was used for the refined AERMOD modeling analysis. A nested grid of Cartesian receptors centered on the project was used. The entire modeling domain encompassed 25.2 square kilometers. The spacing of the receptors was as follows:

- A 750 meter by 750 meter area bounding the project with receptors spaced every 25 meters.
- An area extending 1,000 meters from the 20 meter grid with receptors spaced every 100 meters.

Receptors falling on project building footprints were removed from the analysis.

Terrain data were obtained from the U.S.G.S National Map Seamless Server (www.seamless.usgs.gov) according to guidance set forth by EPA.[10] Source, building, and receptor elevations were processed using the AERMAP processor by way of the Lakes AERMOD View interface. Figures 4.5-5 and 4.5-6 present the source and receptor locations, as well as the buildings used in the GEP stack height/downwash analysis described below.

Stationary Sources

Stationary sources of air pollution are typically units that combust fuel. In this case, these sources consist of heating units, electrical generating units, etc.

<u>Boilers</u>

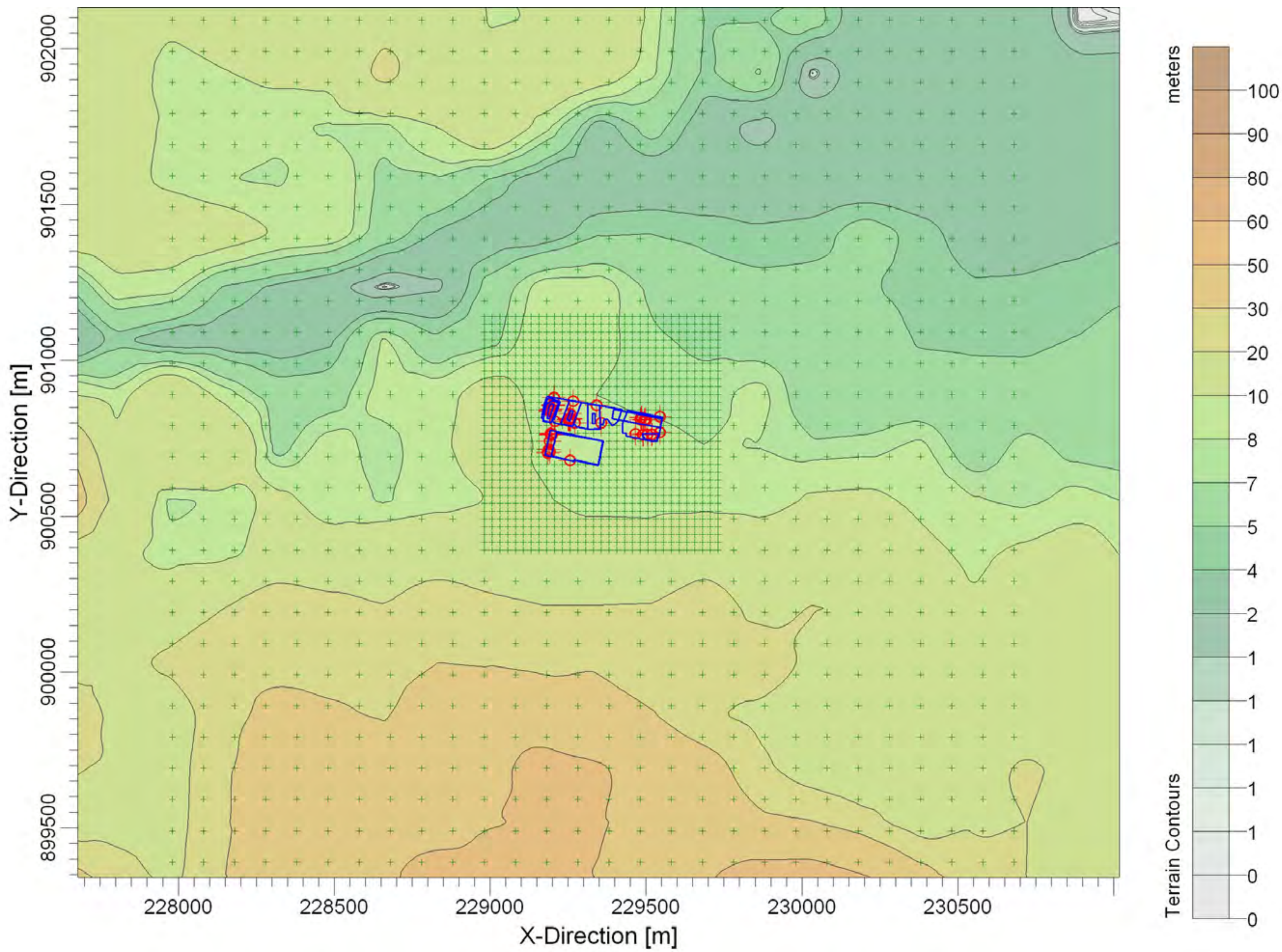
The current plans are include a number of small condensing boilers for heat and domestic hot water. All units will be natural gas-fired and located in a penthouse mechanical area on the roofs of the buildings. The units are expected to be exhausted through individual stacks. The number and size of the boilers on each building are approximately as follows:

- New Balance Headquarters: four (4) @ 2.7 MMBtu/hr each.
- Hotel: three (3) @ 2.7 MMBtu/hr each.
- Sports Complex: six (6) @ 2.5 MMBtu/hr each.
- Block “C1”: five (5) @ 2.7 MMBtu/hr each.
- Block “C2/C3”: Nine (9) @ 2.7 MMBtu/hr each.

The boilers will be within the requirements of the MassDEP’s Environmental Results Program (ERP) since individual estimated heat inputs are within or below the 10 to 40

10 U.S. EPA, AERMOD Implementation Guide, March 19, 2009.

mmBtu/hour ERP range. However, emissions were conservatively estimated for each boiler based on the MassDEP Boiler ERP program emission limits. Dispersion modeled impacts from the heating units were estimated from exhaust stacks 10 feet above the building roof heights above ground level. For all impacts, the heating equipment is assumed to be in operation 24 hours per day, seven days per week.



New Brighton Landing
Boston, Massachusetts

New Brighton Landing, LLC

Figure 4.5-5
AERMOD Stationary Source, Receptor, and Building Locations

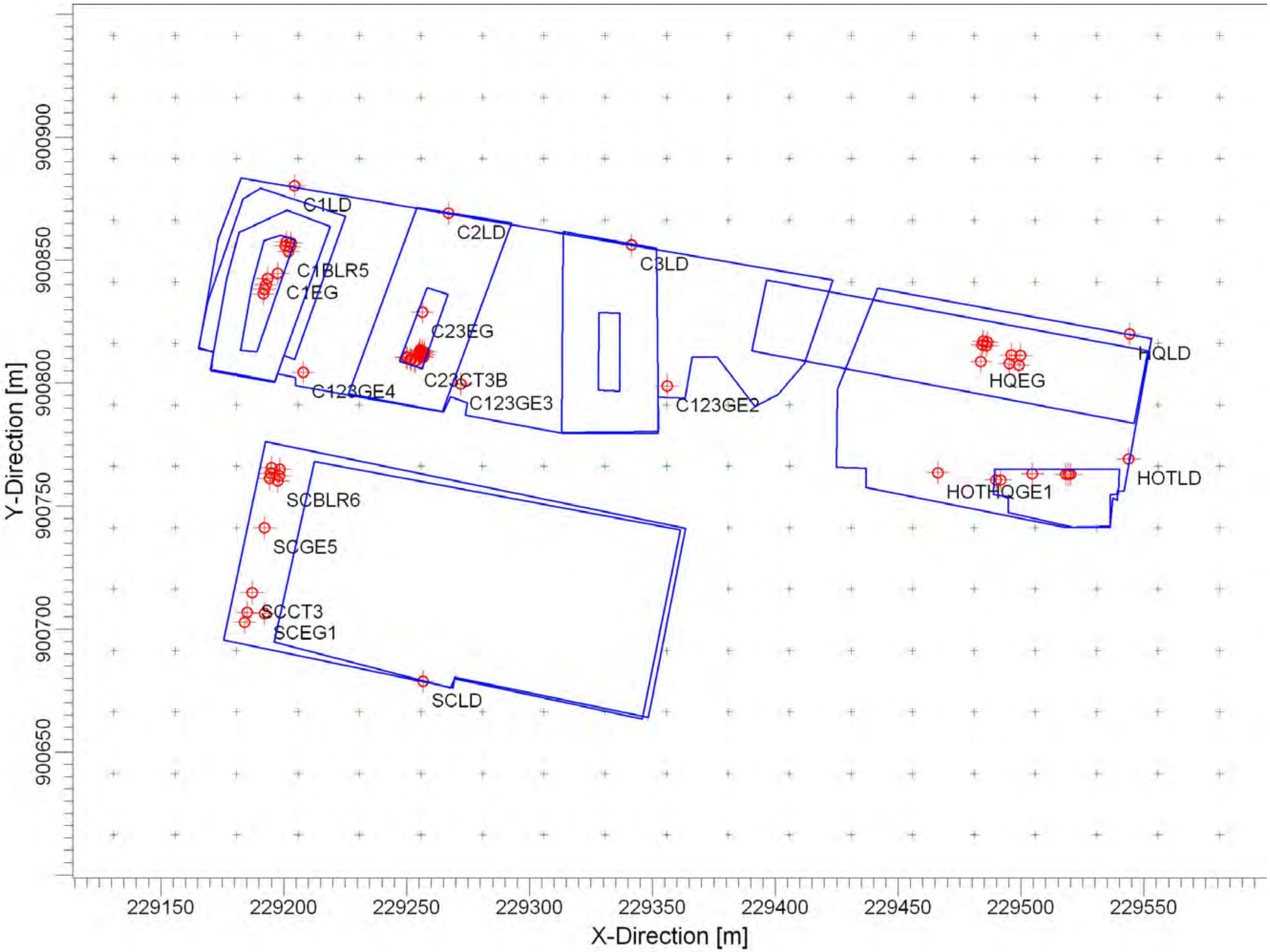


Figure 4.5-6
AERMOD Stationary Source, Receptor, and Building Locations (zoom)

Since current plans show all boilers to be below the ERP limits of 10 MMBTU/hour, registration with MassDEP would not be required.

Emergency Generators

Current design plans include emergency generators to be installed on the buildings to be constructed. The units will provide life safety and standby emergency power to the building. The units will be diesel-fired and located in a mechanical area on the roof of the building. The generators are assumed to be designed such that its exhaust stack extends at least 10 feet above the individual building roof height above ground level. The number and size of the generator on each building are approximately as follows:

- New Balance Headquarters: one (1) 500 kilowatt unit.
- Hotel: one (1) 250 kilowatt unit.
- Sports Complex: one (1) 1,000 kilowatt unit.
- Block "C1": one (1) 500 kilowatt unit.
- Block "C2/C3": one (1) 1,000 kilowatt unit.

Typically, the generators will operate for approximately one hour each month for testing and general maintenance. The ERP regulation applies to new emergency generators greater than 37 kW. The regulation is similar to the boiler ERP in that new engines are subject to emission standards, recordkeeping, certification, and compliance with the MassDEP noise policy. Since the generator maximum rating capacity is greater than the ERP limit of 37 kW, it will be subject to the new ERP program. Per the ERP, the generator owner will limit operation of the generator to less than 300 hours per year and submit a certification form to MassDEP within 60 days of installation.

Emissions were estimated for the emergency generators based on vendor supplied data. Comparable equipment was assumed where not provided by the architects or design engineers. The generator is assumed to operate 300 of 8,760 hours per year in the modeling for annual averaging times.

Cooling Towers

Current plans call for cooling towers to be installed on the buildings to be constructed. These units will remove the excess heat generated by the building's mechanical equipment. All units will be located on the roofs of the buildings. The number and size of the cooling towers on each building are as follows:

- New Balance Headquarters: two (2) 410-ton two celled cooling towers.

- Hotel: two (2) 150-ton two celled cooling towers.
- Sports Complex: three (3) 693-ton two celled cooling towers.
- Block "C1": two (2) 463-ton two celled cooling towers.
- Block "C2/C3": three (3) 680-ton two celled cooling towers.

Only emissions of particulate matter are assumed to be produced by the cooling tower cells. The cooling towers are assumed to operate at 100% capacity for 8,760 hours per year. Emissions of all other pollutants from the cooling towers are expected to be negligible.

Emissions and exhaust parameters were based on vendor supplied data and/or engineering judgment.

Loading Dock Exhausts

Loading docks with mechanical ventilation will be part of the proposed buildings. Carbon monoxide monitors will be installed within enclosed areas idling vehicles to insure that levels of CO do not exceed health standards. Monitors will be used to control abatement ventilation when necessary.

Emissions from the loading docks were calculated using MOBILE6.2 and an estimate of the total idling time permitted under Massachusetts law (90 MGL Section 16A). It was conservatively assumed that the docks would be 100% utilized from 24/7 and that trucks would idle for 5 minutes per hour, the Massachusetts legal limit.

To provide a conservative assumption for emissions from the loading docks, an emission rate from MOBILE6.2 of 2.5 miles per hour was conservatively assumed for the build year of 2017. As is accepted, the 2.5 mph emission rate in g/mile is multiplied by 2.5 miles per hour to get an idling emission rate in mass/time. The higher of the summer or winter factors were used, depending on pollutant. Additionally, emission factors were weighted such that only factors for heavy duty gasoline and heavy duty diesel vehicle classes (MOBILE6.2 designations HDGV and HDDV) were used for dock emissions.

High velocity air intake louvers and the dock entry will supply make-up air for the dock's ventilation systems. Based on mechanical estimates, a ventilation air requirement of 10,000 cubic feet per minute per vent was used. A single vent is expected to be exiting vertically at 35 ft above the sidewalk grade and is assumed to be 6.25 square feet in area. It is expected that there will be a total six loading docks amongst the three complexes.

Parking Garage Exhausts

Three separate underground parking garages are planned for the project. Carbon monoxide monitors will be installed within the garages to insure that levels of CO do not exceed health standards and will be used to control abatement ventilation when necessary.

Emissions from the parking garage were calculated using MOBILE6.2 and an estimate of the total miles traveled within the garages during the AM and PM peak hours. Estimates of vehicle turnover by usage were provided by the transportation consultant. The total vehicle miles traveled (VMT) are calculated by multiplying the average distance a car would travel in the garage by the number of cars entering and leaving the garage.

To provide a conservative assumption for emissions from the garages, an emission rate from MOBILE6.2 of 10 miles per hour was assumed for the 2017 conditions. The higher of the summer or winter factors were used, depending on pollutant. Additionally, emission factors were weighted such that only factors for light duty gasoline and diesel vehicle classes (MOBILE6.2 designations LDGV, LDGT, LDDV, and MCY) were used for garage emissions.

Therefore, the emission rates from the garage vents can be calculated as follows:

Mobile 6.2 emission factor in grams/mile
x garage VMT/hour
x 1 hour/3600 seconds
= grams/second

High velocity air intake louvers and the main garage entry will supply make-up air for the garage's ventilation systems. Total ventilation air requirements, as well as sizes, numbers, and locations of vents were provided by the mechanical design engineers. Vents are assumed to be exiting vertically at 35 ft above sidewalk grade.

Detailed calculations, assumptions, and exhaust parameters for all stationary sources are presented in the Air Quality Appendix.

GEP Stack Height Analysis

The Good Engineering Practice (GEP) stack height evaluation of the facility has been conducted in accordance with the EPA revised Guidelines for Determination of Good Engineering Practice Stack Height (EPA, 1985). A GEP stack is sufficiently high to avoid aerodynamic downwash effects from nearby buildings or structures. As defined by the EPA guidelines, the formula for computing GEP stack height is the greater of:

1. 65 meters, or

2. for stacks constructed after January 12, 1979,

$$H_{GEP} = H_b + 1.5L$$

where H_{GEP} = GEP stack height,

H_b = Height of adjacent or nearby structures,

L = Lesser of height or maximum projected width of adjacent or nearby building (*i.e.*, the critical dimension), and nearby is within 5L of the stack from downwind (trailing edge) of the building.

The GEP formula was applied to each input building. Facility grade is approximately at mean sea level. The EPA's Building Profile Input Program Prime Version (BPIP-Prime) was run to confirm the GEP height and to calculate direction-specific building dimensions for use in AERMOD.

The point sources subject to building influences are the boiler stacks, dock vents, the cooling towers, and the emergency generator stacks.

The proposed boiler stacks, the cooling towers, dock vents, and emergency generator stacks are all below GEP height; therefore, building downwash effects were considered in the air quality modeling. The AERMOD model determines when and if to include downwash in its calculations. In addition, if downwash applies, the AERMOD downwash algorithm will be used to estimate concentrations in the building cavity areas.

4.5.3 Background Concentrations

To estimate background pollutant levels representative of the area, the most recent air quality monitor data reported by the MassDEP in their Annual Air Quality Reports was obtained for 2008 to 2010. MassDEP guidance specifies the use of the latest three years of available monitoring data from within 10 km of the project site.

The Clean Air Act allows for one exceedance per year of the CO and SO_2 short-term NAAQS per year. The highest second-high accounts for the one exceedance. Annual NAAQS are never to be exceeded. The 24-hour PM-10 standard is not to be exceeded more than once per year on average over three years. To attain the 24-hour PM-2.5 standard, the three-year average of the 98th percentile of 24-hour concentrations must not exceed 35 $\mu g/m^3$. For annual PM-2.5 averages, the average of the highest yearly observations was used as the background concentration. A new 1-hr NO_2 standard was recently promulgated. To attain this standard, the 3-year average of the 98^{th} percentile of the maximum daily 1-hour concentrations must not exceed 188 $\mu g/m^3$.

Background concentrations were determined from the closest available monitoring stations to the proposed development. The closest monitor is located at Kenmore Square, in

Boston. A summary of the background air quality concentrations are presented in Table 4.5-2.

Table 4.5-2 Observed Ambient Air Quality Concentrations and Selected Background Levels

Pollutant	Averaging Time	2008	2009	2010	Background Concentration (μg/m³)	Location
SO_2 [4]	1 HOUR	75.4	65	69.94	75.4	Kenmore Sq., Boston
	3 HOUR	62.4	49.4	N/A	62.4	Kenmore Sq., Boston
	24 HOUR	46.8	23.4	21.84	46.8	Kenmore Sq., Boston
	ANNUAL	10.4	6.5	5.824	10.4	Kenmore Sq., Boston
PM-10	24 HOUR	53	69	40	69	One City Sq., Boston
	ANNUAL	23	20.6	15.5	23	One City Sq., Boston
PM-2.5	24 HOUR [1]	26	19.1	21.9	22.33	174 North St., Boston
	ANNUAL [2]	11.14	8.98	9.31	9.81	174 North St., Boston
NO_2	1 HOUR [3]	133.48	114.68	119.38	133.48	Kenmore Sq., Boston
	ANNUAL	41.36	37.788	35.908	41.36	Kenmore Sq., Boston
CO	1 HOUR	1938	1596	2166	2166	Kenmore Sq., Boston
	8 HOUR	1482	1254	1710	1710	Kenmore Sq., Boston

From 2008-2010 MA DEP Annual Data Summaries

[1] Average of the 98th percentile 24-hour values.

[2] Average of the annual values.

[3] Maximum annual 1-hr concentrations (EPA "first tier" method).

[4] The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.
The 2010 3-hr value is not reported in the 2010 Annual Data Summary

For use in the microscale analysis, background concentrations of CO in ppm were required. The corresponding maximum background concentrations in ppm were 1.9 ppm for 1-hour and 1.5 ppm for 8-hour CO.

4.5.4 Air Quality Results

4.5.4.1 Mesoscale Analysis

Results of the mesoscale analysis are presented in Tables 4.5-3 and 4.5-4.

The decrease in total emissions from 2012 through 2014, even with the modest increases in traffic vehicle miles traveled (VMT) and delay times, is attributable to anticipated improvements in vehicle engine and emissions technologies, which are expected to reduce the per-vehicle emission rates.

Table 4.5-3 Regional Mesoscale (Indirect) Emissions Analysis Summary (Interim)

Pollutant	*VOC (lbs/day)*	*VOC (tons/yr)*	*NOx (lbs/day)*	*NOx (tons/yr)*
2012 Existing	56.03	7.3	78.00	10.1
2014 No-Build	42.48	5.52	57.32	7.45
Difference	-13.55 -24%	-1.76 -24%	-20.69 -27%	-2.69 -27%

For the entire proposed development, shown in Table 4.5-4, the 2017 No-Build condition shows reductions of NOx and VOC emissions compared to Existing conditions. Again, this is primarily due to anticipated improvements in vehicle technology, which are expected to improve future vehicular emission rates. However, due to an increase in vehicular traffic, results show increases of approximately 22.2% in VOC and 21.7% in NOx emissions for the 2017 Build condition compared to the 2017 No-Build condition.

Table 4.5-4 Regional Mesoscale (Indirect) Emissions Analysis Summary (Full Project)

Pollutant	*VOC (lbs/day)*	*VOC (tons/yr)*	*NOx (lbs/day)*	*NOx (tons/yr)*
2012 Existing	56.03	7.3	78.00	10.1
2017 No-Build	38.13	5.0	36.79	4.8
2017 Build	52.93	6.9	46.58	6.1
Difference	14.80 38.8%	1.9 38.8%	9.78 26.6%	1.3 26.6%
2017 Build with Mitigation	46.60	6.1	44.79	5.8
Difference compared to No-Build	8.47 22.2%	1.1 22.2%	8.00 21.7%	1.0 21.7%

Mitigation Measures

The Proponent has identified and reviewed reasonable and feasible reduction and mitigation measures to address traffic congestion and the resulting increase in emissions associated with the 2017 Build scenario. Section 3 provides a description of the TDM program that will be implemented to reduce Project-related vehicle trips. The Proponent is committed to implementing infrastructure and management improvements to minimize potential impacts to the transportation system, including signal improvements at area intersections, encouraging alternative modes of travel, rideshare programs, and telecommuting; these improvements were included in the 2017 Build with Mitigation scenarios for this analysis.

Table 4.5-5 presents results of the mitigated versus unmitigated Build conditions for 2017. Reductions (0.82 tpy or 12%) in VOC and (0.23 tpy or 3.8%) NOx are realized due to proposed intersection signalization improvements.

Table 4.5-5 Regional Mesoscale (Indirect) Emissions Analysis Summary (Full Project with Mitigation)

Pollutant	*VOC (lbs/day)*	*VOC (tons/yr)*	*NOx (lbs/day)*	*NOx (tons/yr)*
2017 Build (unmitigated)	52.93	6.9	46.58	6.1
2017 Build with Mitigation	46.60	6.1	44.79	5.8
Difference	-6.33 -12.0%	-0.82 -12.0%	-1.79 -3.8%	-0.23 -3.8%

Proposed transportation-related mitigation measures are further described in Section 3. Further reductions in delay can be achieved by optimizing signal phasing, lane configurations, or both. Reductions in delay correlate to reductions in vehicle idle time. Since VOC emissions are highest at low engine RPM, further reductions in idle time would result in further reductions of VOC emissions. Slight decreases in NOx emissions would also be realized.

4.5.4.2 Microscale Analysis

The results of the maximum one-hour predicted CO concentrations from CAL3QHC are provided in Tables 4.5-6 through 4.5-10 for the 2012, 2014 and 2017 scenarios. Eight-hour average concentrations are calculated by multiplying the maximum one-hour concentrations by a factor of 0.7.[11]

The results of the one-hour and eight-hour maximum modeled CO ground-level concentrations from CAL3QHC were added to EPA supplied background levels for comparison to the NAAQS. These values represent the highest potential concentrations at the intersection as they are predicted during the simultaneous occurrence of "defined" worst case meteorology. The highest one-hour traffic-related concentration predicted in the area of the Project, for the modeled conditions (2.2 ppm) plus background (1.9 ppm) is 4.1 ppm for the 2014 afternoon peak hour case at Birmingham Parkway, Market Street, and Lincoln Street. The highest eight-hour traffic-related concentration predicted in the area of the Project for the modeled conditions (1.5 ppm) plus background (1.5 ppm) is 3.0 ppm for at the same location and scenario. Both concentrations are well below the one-hour NAAQS of 35 ppm and the eight-hour NAAQS of 9 ppm.

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[11] U.S. EPA, Screening Procedures for Estimating the Air Quality Impact of Stationary Sources; EPA-454/R-92-019, October 1992

It would be expected that any other mitigation measures implemented to improve traffic flow at any of the modeled intersections would result in further improved air quality impacts.

Table 4.5-6 Summary of Microscale Modeling Analysis (Existing 2012)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
3.Birmingham Parkway, Market Street, & Lincoln Street	AM	1.9	1.9	3.8	35
	PM	2.0	1.9	3.9	35
6. Market Street & North Beacon Street	AM	1.5	1.9	3.4	35
	PM	1.6	1.9	3.5	35
10. North Beacon St, Arthur St, & Wingate Driveway	AM	0.9	1.9	2.8	35
	PM	1.3	1.9	3.2	35
13. North Beacon St, Brighton Ave, & Cambridge St (Union Square)	AM	1.5	1.9	3.4	35
	PM	1.7	1.9	3.6	35
8-Hour					
3.Birmingham Parkway, Market Street, & Lincoln Street	AM	1.3	1.5	2.8	9
	PM	1.4	1.5	2.9	9
6. Market Street & North Beacon Street	AM	1.1	1.5	2.6	9
	PM	1.1	1.5	2.6	9
10. North Beacon St, Arthur St, & Wingate Driveway	AM	0.6	1.5	2.1	9
	PM	0.9	1.5	2.4	9
13. North Beacon St, Brighton Ave, & Cambridge St (Union Square)	AM	1.1	1.5	2.6	9
	PM	1.3	1.5	2.8	9

Notes:
CAL3QHC 8-hour impacts were conservatively obtained by multiplying 1-hour impacts by a screening factor of 0.7.

Table 4.5-7 Summary of Microscale Modeling Analysis (No-Build 2014)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
3.Birmingham Parkway, Market Street, & Lincoln Street	AM	2.0	1.9	3.9	35
	PM	2.2	1.9	4.1	35
6. Market Street & North Beacon Street	AM	1.6	1.9	3.5	35
	PM	1.8	1.9	3.7	35
10. North Beacon St, Arthur St, & Wingate Driveway	AM	1.1	1.9	3.0	35
	PM	1.3	1.9	3.2	35
13. North Beacon St, Brighton Ave, & Cambridge St (Union Square)	AM	1.5	1.9	3.4	35
	PM	1.9	1.9	3.8	35
8-Hour					
3.Birmingham Parkway, Market Street, & Lincoln Street	AM	1.4	1.5	2.9	9
	PM	1.5	1.5	3.0	9
6. Market Street & North Beacon Street	AM	1.1	1.5	2.6	9
	PM	1.3	1.5	2.8	9
10. North Beacon St, Arthur St, & Wingate Driveway	AM	0.8	1.5	2.3	9
	PM	0.9	1.5	2.4	9
13. North Beacon St, Brighton Ave, & Cambridge St (Union Square)	AM	1.1	1.5	2.6	9
	PM	1.3	1.5	2.8	9

Notes:

CAL3QHC 8-hour impacts were conservatively obtained by multiplying 1-hour impacts by a screening factor of 0.7.

Table 4.5-8 Summary of Microscale Modeling Analysis (No-Build 2017)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
3.Birmingham Parkway, Market Street, & Lincoln Street	AM	1.7	1.9	3.6	35
	PM	1.9	1.9	3.8	35
6. Market Street & North Beacon Street	AM	1.2	1.9	3.1	35
	PM	1.5	1.9	3.4	35
10. North Beacon St, Arthur St, & Wingate Driveway	AM	0.9	1.9	2.8	35
	PM	1.1	1.9	3.0	35
13. North Beacon St, Brighton Ave, & Cambridge St (Union Square)	AM	1.3	1.9	3.2	35
	PM	1.5	1.9	3.4	35
8-Hour					
3.Birmingham Parkway, Market Street, & Lincoln Street	AM	1.2	1.5	2.7	9
	PM	1.3	1.5	2.8	9
6. Market Street & North Beacon Street	AM	0.8	1.5	2.3	9
	PM	1.1	1.5	2.6	9
10. North Beacon St, Arthur St, & Wingate Driveway	AM	0.6	1.5	2.1	9
	PM	0.8	1.5	2.3	9
13. North Beacon St, Brighton Ave, & Cambridge St (Union Square)	AM	0.9	1.5	2.4	9
	PM	1.1	1.5	2.6	9

Notes:
CAL3QHC 8-hour impacts were conservatively obtained by multiplying 1-hour impacts by a screening factor of 0.7.

Table 4.5-9 Summary of Microscale Modeling Analysis (Build 2017)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
3.Birmingham Parkway, Market Street, & Lincoln Street	AM	1.8	1.9	3.7	35
	PM	2.0	1.9	3.9	35
6. Market Street & North Beacon Street	AM	1.3	1.9	3.2	35
	PM	1.6	1.9	3.5	35
10. North Beacon St, Arthur St, & Wingate Driveway	AM	1.1	1.9	3.0	35
	PM	1.5	1.9	3.4	35
13. North Beacon St, Brighton Ave, & Cambridge St (Union Square)	AM	1.5	1.9	3.4	35
	PM	2.0	1.9	3.9	35
8-Hour					
3.Birmingham Parkway, Market Street, & Lincoln Street	AM	1.3	1.5	2.8	9
	PM	1.4	1.5	2.9	9
6. Market Street & North Beacon Street	AM	0.9	1.5	2.4	9
	PM	1.1	1.5	2.6	9
10. North Beacon St, Arthur St, & Wingate Driveway	AM	0.8	1.5	2.3	9
	PM	1.1	1.5	2.6	9
13. North Beacon St, Brighton Ave, & Cambridge St (Union Square)	AM	1.1	1.5	2.6	9
	PM	1.4	1.5	2.9	9

Notes:

CAL3QHC 8-hour impacts were conservatively obtained by multiplying 1-hour impacts by a screening factor of 0.7.

Table 4.5-10 Summary of Microscale Modeling Analysis (Mitigated Build 2017)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
3.Birmingham Parkway, Market Street, & Lincoln Street	AM	1.8	1.9	3.7	35
	PM	1.9	1.9	3.8	35
6. Market Street & North Beacon Street	AM	1.3	1.9	3.2	35
	PM	1.5	1.9	3.4	35
10. North Beacon St, Arthur St, & Wingate Driveway	AM	1.0	1.9	2.9	35
	PM	1.2	1.9	3.1	35
13. North Beacon St, Brighton Ave, & Cambridge St (Union Square)	AM	1.5	1.9	3.4	35
	PM	2.0	1.9	3.9	35
8-Hour					
3.Birmingham Parkway, Market Street, & Lincoln Street	AM	1.3	1.5	2.8	9
	PM	1.3	1.5	2.8	9
6. Market Street & North Beacon Street	AM	0.9	1.5	2.4	9
	PM	1.1	1.5	2.6	9
10. North Beacon St, Arthur St, & Wingate Driveway	AM	0.7	1.5	2.2	9
	PM	0.8	1.5	2.3	9
13. North Beacon St, Brighton Ave, & Cambridge St (Union Square)	AM	1.1	1.5	2.6	9
	PM	1.4	1.5	2.9	9

Notes:
CAL3QHC 8-hour impacts were conservatively obtained by multiplying 1-hour impacts by a screening factor of 0.7.

4.5.4.3 Stationary Source Analysis

In addition to the microscale analysis, a cumulative impact analysis was also conducted for comparison to the NAAQS for SO_2, NOx, PM-10, and PM-2.5. This analysis addresses emissions from the Project's heating boilers, emergency generators, cooling towers, and the loading dock vent.

Worst case maximum predicted impacts from these source groups were added to monitored background values obtained from MassDEP and compared to the NAAQS.

Table 4.5-11 presents the cumulative modeling results for the stationary sources plus monitored background values. The total impacts when combined with background are below the NAAQS for all pollutants and averaging periods.

Table 4.5-11 Summary of NAAQS Stationary Source Modeling Analysis

Pollutant	Averaging Time	Max Modeled Conc. ($\mu g/m^3$)	Modeled Year	Background Concentration ($\mu g/m^3$)	Total Conc. ($\mu g/m^3$)	Standard ($\mu g/m^3$)	% Of Standard
SO_2	1 HR (1)	0.93	2005-2009	75.4	76.3	195	39%
	3 HR (2)	0.78	2008	62.4	63.2	1300	5%
	24 HR (2)	0.40	2007	46.8	47.2	365	13%
	ANN. (3)	0.14	2007	10.4	10.5	80	13%
PM-10	24 HR (4)	7.94	2007	69.0	76.9	150	51%
	ANN. (3)	1.84	2007	23.0	24.8	50	50%
PM-2.5	24 HR (5)	8.23	2005-2009	22.3	30.6	35	87%
	ANN. (6)	2.55	2005-2009	9.8	12.4	15	82%
NO_2	1 HR (7,8)	47.90	2005-2009	133.5	181.4	188	96%
	ANN. (3,8))	7.45	2007	41.4	48.8	100	49%
CO	1 HR (2)	181.74	2008	2166.0	2347.7	40000	6%
	8 HR (2)	97.14	2008	1710.0	1807.1	10000	18%

Notes:
(1) Maximum 4th-Highest Maximum Daily 1-Hr Concentration Averaged Over 5 Years
(2) Highest 2nd-High Concentration Over 5 Years
(3) Highest Annual Concentration Over 5 Years
(4) Highest 6th-High Concentration Over 5 Years
(5) Maximum 1st-Highest 24-Hour Concentration Averaged Over 5 Years
(6) Maximum Annual Concentration Averaged Over 5 Years
(7) Maximum 8th Highest Maximum Daily 1-hour Concentrations Averaged Over 5 Years.
(8) Ambient Ratio Method used to incorporate conversion of modeled NOx to NO_2. Factor of 0.8 used for 1-hour and 0.75 used for annual.

When adding the high-second highest AERMOD-predicted one-hour CO concentrations from the stationary sources to the traffic-generated impacts for the 2017 Build case, the one-hour modeled concentration from stationary sources (181.7 $\mu g/m^3$, 0.16 ppm), moving vehicles (1.3 ppm), plus background (1.9 ppm) is 3.4 ppm. The total future build concentration includes the highest second-high predicted concentrations from AERMOD for the parking and loading dock exhaust vents, the heating boilers, and the emergency generators. This combined value is also well below the one-hour NAAQS standard of 35 ppm.

Similarly, when adding the high-second highest AERMOD-predicted eight-hour CO concentrations from the stationary sources to the traffic-generated impacts for the future build case, the eight-hour modeled concentration from stationary sources (97.1 $\mu g/m^3$, 0.09 ppm), moving vehicles (0.9 ppm) plus background (1.5 ppm) is 2.5 ppm. These values are also below the eight-hour NAAQS standard of 9.0 ppm.

This is a highly conservative estimate, since the added values are irrespective of time and space (i.e., the modeled and background concentrations occur at different times and at different locations).

4.5.5 Conclusions

4.5.5.1 Mesoscale Analysis

Mesoscale analysis results show increases of about 22% in VOC and 22% in NOx emissions for the 2017 Build with Mitigation condition relative to the 2017 No-Build condition; compared to the unmitigated 2017 Build condition, these results show that proposed mitigation measures will *prevent* a significant amount of VOC (12%) and NOx (4%) emissions per year. These mitigated results are a significant improvement over the unmitigated 2017 Build conditions.

Traffic increases are the direct contributor to emissions increases from No Build to Build conditions for both 2014 and 2017. However, anticipated engine improvements will reduce emissions from 2011 baseline levels, even with the traffic increases.

Reduced intersection delay times would also result in a general increase in traffic speed along roadway links. In general, NOx emission rates decrease from idle to 30 mph. Therefore, any reduction in idling time and corresponding increase in speed up to the 30 mph limit would decrease NOx emissions. Since future changes in traffic speeds are speculative, exact reductions in emissions are not quantified.

In addition, implementation of any future mitigation measures not yet determined or discussed in Section 4.10 may further reduce emissions. Through discussions with the regional transportation agency, it is anticipated that additional mitigation measures will be implemented to alleviate traffic congestion and thereby reduce emissions.

4.5.5.2 Microscale Analysis

Results of the microscale analysis show that all predicted CO concentrations are well below 1-hour and 8-hour NAAQS. Therefore, it can be concluded that there are no adverse air quality impacts resulting from increased traffic in the area.

4.5.5.3 Stationary Source Analysis

Using conservative estimates, the CO concentrations at the nearest receptors for impacts from the intersection, the heating boilers, and emergency generator units, plus monitored background values, are well under the CO NAAQS thresholds. In addition, maximum cumulative impacts from the heating boilers, garage vents, cooling towers, and emergency generators plus monitored background values are also below the NAAQS thresholds for SO_2, NOx, PM-10, and PM-2.5.

4.5.6 Permitting

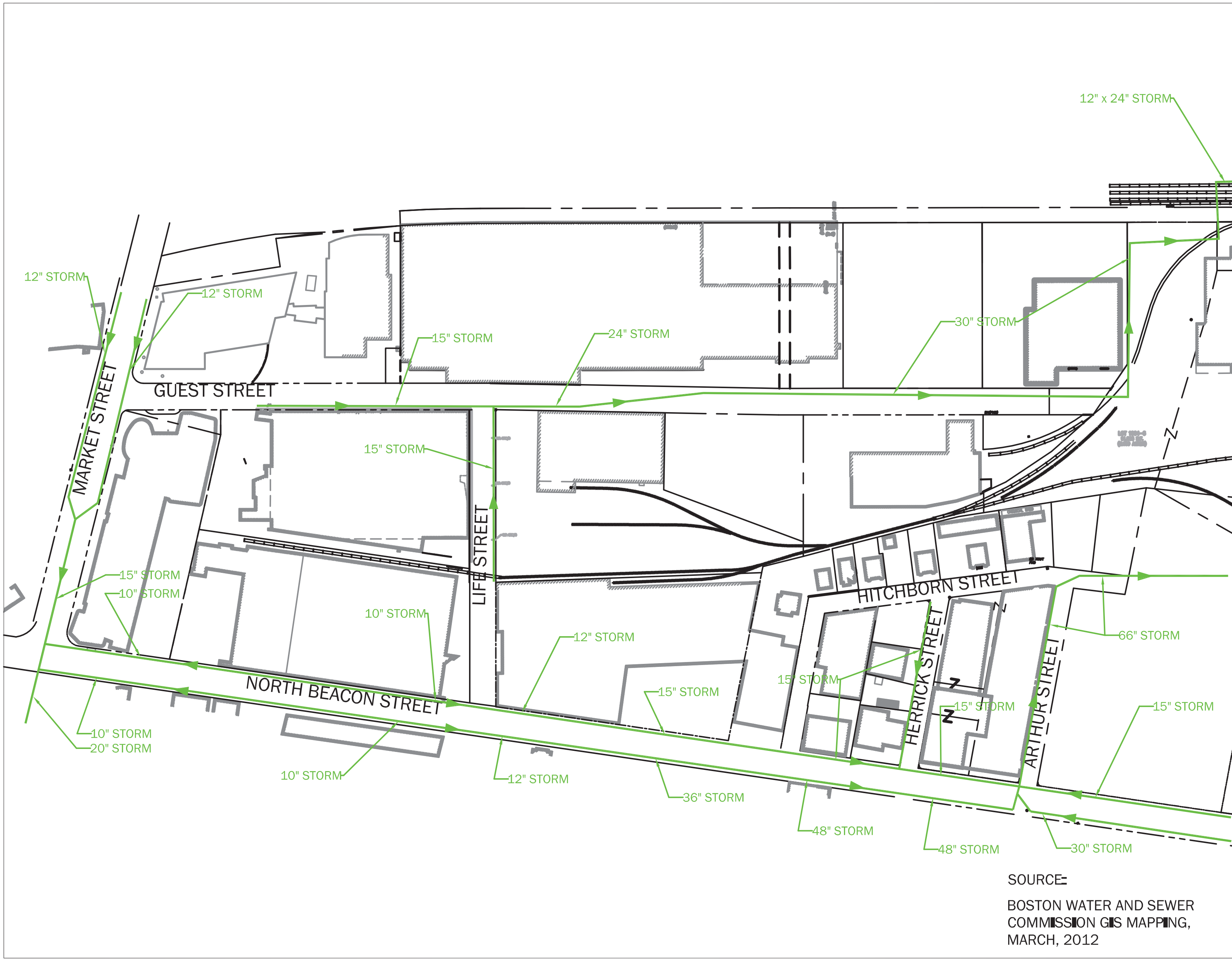
It's expected that the majority of stationary sources (boilers, engines, etc.) would be subject to the MassDEP's Environmental Results Program. However, other air quality regulations may apply if total facility emissions or future project emissions exceed thresholds for other air pollution control requirements, including New Source Review (NSR), Operating Permits, and Prevention of Significant Deterioration (PSD).

4.6 Water Quality/Stormwater Management

4.6.1 Existing Storm Drainage System

The existing site is essentially entirely impervious, having just a few very small scattered landscaped areas. The pavement structures across the site vary in terms of overall quality and there are several low lying pockets where minor amounts of stormwater runoff collect and evaporate.

Runoff from the site is currently collected through a series of catch basins and roof drains that discharge to a subsurface storm drainage system owned and operated by the Boston Water and Sewer Commission (BWSC). Storm drains in the project vicinity initiate at the west end of Guest Street and the south end of Life Street, with 15-inch collector drains that feed into a 24-inch drain at the intersection of Life and Guest Streets. The 24-inch drain flows east under Guest Street, transitioning into a 30-inch drain that eventually turns north behind Stop & Shop and crosses beneath the MBTA tracks. This segment of the storm drain is a 12-inch by 24-inch drain that turns and runs parallel to the tracks until jointing a storm drain main at Everett Street. The 66-inch by 87-inch drain in Everett Street continues under the Massachusetts Turnpike, and ultimately discharges to the Charles River. See Figure 4.6-1.



PREPARED FOR:

NEW BRIGHTON LANDING, LLC

BEALS · ASSOCIATES INC.
2 THIRTEENTH STREET CHARLESTOWN, MA 02129
PHONE: 617-242-1120 FAX: 617-242-1190

GRAPHIC SCALE

(IN FEET)

NO.	REVISION/ISSUE	DATE

EXISTING STORM DRAIN MAINS

EXHIBIT PLAN
NEW BRIGHTON LANDING
IN THE CITY
BOSTON, MASSACHUSETTS

PROJECT G-674.01	DESIGN GMS	SHEET
DATE APRIL 26, 2012	CHECKED LMB	
SCALE AS NOTED	REVISED GMS	

Figure 4.6-1
Existing Storm Drain Mains

4.6.2 *Proposed Storm Drainage System*

The Proposed Project will reduce the quantity of and improve the quality of stormwater runoff at the site, and provide some recharge benefits where none exists today. The project proposes an overall integrated approach to storm water management that will utilize low impact development techniques as well as emerging technologies to enhance the quality of the storm water runoff that will enter the BWSC system. Low-impact development is an innovative way to deal with stormwater management. In general, LID measures attempt to mimic a site's predevelopment hydrology using techniques that infiltrate, filter, store, evaporate, and detain stormwater runoff. Due to the location of the project site within the Charles River watershed, phosphorus reduction will be a key element in treating the storm water runoff that will be generated by the project.

The storm water runoff that is generated by the project will be collected through a series of inlets and catch basins and will discharge to the existing storm drain system within Guest Street. Due to the inclusion of expansive rooftops and newly created public spaces, there will be modest opportunities to introduce rain gardens and recharge areas to the project site. This will help reduce the quantity of runoff generated as well as enhance the quality of the runoff by removing sediment and pollutants from the overall site discharge.

The storm drain system will be designed in accordance with BWSC design standards and requirements. Site Plan Approval will be required for the connections to the BWSC storm drain system. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared which will include spill contingency plans, short term and long term operation and maintenance information and construction operations discussions, all relating to the storm water management of the project.

4.6.3 *Compliance with DEP Stormwater Management Policies*

A discussion of how the redevelopment of the site will be will comply with the DEP's Stormwater Management Policy is presented below.

Standard 1: No New Untreated Discharges

The project will treat all of the stormwater runoff from the entire site. The runoff will be treated through various LID measures.

Standard 2: Peak Rate Attenuation

The post-redevelopment of the site will result in a net decrease in impervious area as compared to existing conditions. As a result of the decrease in impervious area and implementation of best management practices (BMPs), the post-redevelopment discharge rate and volume will be less than the existing runoff discharge rate. Therefore, the redevelopment of the site is expected to improve the existing drainage conditions at the site.

Standard 3: Recharge

The Project's designers will size groundwater recharge systems in accordance with the DEP's Stormwater Handbook. The required recharge volume will be determined using the "static method" and all the subsurface infiltration basins sized to more than accommodate that volume.

Standard 4: Water Quality

The long-term stormwater pollution plan will incorporate all items described under this standard. The overall water quality discharged from the site will be dramatically improved compared to existing conditions. The proposed drainage system will reduce the total suspended solids (TSS) and nutrient pollution by using control devices such as hooded deep sump catch basins, rain gardens, and subsurface infiltration/retention basins.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

The project site does not contain land uses with higher potential pollutant loads (LUHPPLs). However, recently phosphate pollution has become a large concern within the Charles River watershed. The design team expects that the EPA acting under the Clean Water Act will require a 65% decrease in the phosphorous discharges. Currently this is not a requirement, but the design will include BMPs that will minimize the total phosphate loads leaving the site.

Standard 6: Critical Areas

The project site does not contain any critical areas.

Standard 7: Redevelopments and Other Projects Subject to the Standards Only to the Maximum Extent Practicable

The redevelopment of the site will decrease the impervious area and meet all of the stormwater management standards to the maximum extent practicable. Overall, the stormwater runoff will improve in quality and quantity compared to the existing condition.

Standard 8: Construction-Period Pollution Prevention and Erosion and Sedimentation Control

A stormwater pollution and prevention plan will be created as part of the NPDES permit requirements. The construction documents for the project will include measures and specifications for all erosion and sediment control techniques. These may include items like siltation fences, hay bales, erosion control blankets, seeding, mulching, inlet protection devices, silt sacks, construction entrance details, vehicle washdown area details, and any other measures needed to minimize site erosion.

Standard 9: Operation and Maintenance Plan

An Operation and Maintenance Plan will be developed for both the construction and post-construction phases. It will provide the system ownership information, parties responsible for operation and maintenance, and maintenance schedules. Routine maintenance will include catch basin cleaning, vacuum sweeping of pervious sidewalks parking areas, removal of debris, infiltration basin cleaning, and the mulching of rain gardens.

Standard 10: Prohibition of Illicit Discharges

The Proposed Project will not have any such discharges.

4.7 Flood Hazard Zone/Wetlands

The Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map ("FIRM") indicates the FEMA Flood Zone Designations for the site areas (City of Boston, Community-Panel Number, 25025C0057G, September 25, 2009). The map for the Proposed Project Site shows the Proposed Project is located in a Zone X, an area determined to be outside the 0.2 percent annual chance of flooding; therefore, flooding is not a concern. There are no wetland resource areas on or near the site.

The Proponent has also evaluated the susceptibility of the Proposed Project to sea-level rise in the next 500 years and has determined that there is little to no such susceptibility due to the elevation of the Proposed Project Sites above current sea level.

The Proponent reviewed a large amount of the available literature regarding sea level rise, including the Climate Change 2007: Synthesis Report - Issued by the Intergovernmental Panel on Climate Change (IPCC). The IPCC report is a comprehensive document that was referenced in many of the other studies and articles that were reviewed. The report utilized an evaluation of sea level change for various conditions. The study generally dealt with a 100-year timeframe from 1999 to 2099. The IPCC study predicted that sea levels will rise from between 0.6 feet to 1.9 feet over current levels through 2099. The Proponent reviewed the relationship of the proposed building finish floor as it relates to the 100-year flood elevation. Given the evolving understanding of sea level rise as a result of climate change, the Proponent wanted to design their facility to anticipate a continued increase in the 100-year flood elevation. The existing 100-year flood elevation is at about elevation 15.65 related to Boston City Base as an elevation datum. Site elevations range from 33 to 40 feet. The buildings' first floors are set at approximately elevation 34.0, providing approximately 18 feet of freeboard.

4.8 Noise

4.8.1 Introduction

This section describes the noise analysis conducted for the Project, including a noise-monitoring program to determine existing background levels and an estimate of future sound levels when the Project is completed. The scope of the analysis is consistent with BRA requirements for noise studies.

Baseline noise levels were measured in the vicinity of the Project and were compared to predicted noise levels based on reference sound data provided by the client. These predicted noise levels were compared to the City of Boston Zoning District Noise Standards and the Massachusetts Department of Environmental Protection (MassDEP) Noise Policy. The analysis indicates that predicted noise levels from Project mechanical equipment with appropriate noise mitigation will comply with the City of Boston Noise Zoning requirements, and will result in sound level increases which are below the limit established by the MassDEP Noise Policy.

4.8.2 Noise Terminology

There are several ways in which sound (noise) levels are measured and quantified, all of which use the logarithmic decibel (dB) scale. The following information defines the noise measurement terminology used in this analysis.

The logarithmic decibel scale is used to accommodate the wide range of sound intensities found in the environment. A property of the decibel scale is that the sound pressure levels of two distinct sounds are not directly additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is only a three-decibel increase (to 53 dB), not a doubling to 100 dB. In other words, every three-decibel change in sound level represents a doubling or halving of sound energy. Related to this is the fact that a change in sound level of less than three decibels is imperceptible to the human ear.

Another property of the decibel scale is that if one source of noise is 10 dB or more louder than another source, then the quieter source does not contribute significantly to the overall sound level which remains the same as that of the louder source. For example, a source of sound at 60 dB plus another source of sound at 47 dB is simply 60 dB.

The sound level meter used to measure noise is a standardized instrument.[12] It contains "weighting networks" to adjust the frequency response of the instrument to approximate that of the human ear under various conditions. One network is the A-weighting network (there are also B- and C-weighting networks), which most closely approximates how the

[12] *American National Standard Specification for Sound Level Meters*, ANSI S1.4-1983, published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

human ear responds to sound at various frequencies, and is the accepted scale used for community sound level measurements. A-weighted sound levels emphasize the middle frequencies (*i.e.,* middle pitched – around 1,000 Hertz sounds), and de-emphasize lower and higher frequency sounds. A-weighted sound levels are reported in decibels designated as "dBA."

Because the sounds in our environment vary with time, they cannot be described with a single number. Two methods are used for describing variable sounds: exceedance levels and the equivalent level. Both of these methods are derived from a large number of moment-to-moment A-weighted sound level measurements. Exceedance levels are values from the cumulative amplitude distribution of all of the sound levels observed during a measurement period. Exceedance levels are designated L_n, where n can have a value of 0 to 100 percent. Several sound level metrics that are commonly reported in community noise studies are described below.

- L_{90} is the sound level in dBA exceeded 90 percent of the time during the measurement period. The L_{90} is close to the lowest sound level observed. It is essentially the residual sound level, which is the sound level observed when there are no obvious nearby intermittent noise sources.

- L_{50} is the median sound level: the sound level in dBA exceeded 50 percent of the time during the measurement period.

- L_{10} is the sound level in dBA exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the intrusive sound level because it is caused by occasional louder noises such as those from passing motor vehicles.

- L_{max} is the maximum instantaneous sound level observed over a given period.

L_{eq}, the equivalent level, is the level of a hypothetical steady sound that would have the same energy (*i.e.,* the same time-averaged mean square sound pressure) as the actual fluctuating sound observed. The equivalent level is designated L_{eq} and is also A-weighted. The equivalent level represents the time average of the fluctuating sound pressure, but because sound is represented on a logarithmic scale and the averaging is done with linear mean square sound pressure values, the L_{eq} is mostly determined by occasional loud noises.

By using various noise metrics it is possible to separate prevailing, steady sounds (the L_{90}) from occasional, louder sounds (L_{10}) in the noise environment or combined average levels (L_{eq}). This analysis of sounds expected from the Project treats all noises as though they will be steady and continuous and hence the L_{90} exceedance level was used.

4.8.3 *Noise Regulations and Criteria*

The primary set of regulations relating to the potential increase in noise levels is the City of Boston Zoning District Noise Standards (City of Boston Code – Ordinances: Section 16–26 Unreasonable Noise and City of Boston Air Pollution Control Commission Regulations for the Control of Noise in the City of Boston). Results of the baseline ambient noise level survey and the modeled noise levels were compared to the City of Boston Zoning District Noise Standards. Separate regulations within the Standards provide criteria to control different types of noise. Regulation 2 is applicable to the effects of the completed proposed buildings and was considered in this noise study. Table 4.8-1 includes the Zoning District Standards.

Additionally, MassDEP regulates community noise under its Noise Policy: DAQC policy 90-001. The MassDEP policy limits source sound levels to a 10-dBA increase in the ambient measured noise level (L_{90}) at the Project property line and at the nearest residences. The policy further prohibits pure tone conditions — when any octave band center frequency sound pressure level exceeds the two adjacent center frequency sound pressure levels by three decibels or more.

Table 4.8-1 City of Boston Zoning District Noise Standards, Maximum Allowable Sound Pressure Levels

Octave Band Center Frequency (Hz)	Residential Zoning District Daytime (dB)	Residential Zoning District All Other Times (dB)	Residential-Industrial Zoning District Daytime (dB)	Residential-Industrial Zoning District All Other Times (dB)	Business Zoning District Anytime (dB)	Industrial Zoning District Anytime (dB)
32	76	68	79	72	79	83
63	75	67	78	71	78	82
125	69	61	73	65	73	77
250	62	52	68	57	68	73
500	56	46	62	51	62	67
1000	50	40	56	45	56	61
2000	45	33	51	39	51	57
4000	40	28	47	34	47	53
8000	38	26	44	32	44	50
A-Weighted (dBA)	60	50	65	55	65	70

Notes:
- Noise standards are extracted from Regulation 2.5, City of Boston Air Pollution Control Commission, "Regulations for the Control of Noise in the City of Boston", adopted December 17, 1976.
- All standards apply at the property line of the receiving property.
- dB and dBA based on a reference pressure of 20 micropascals.
- Daytime refers to the period between 7:00 a.m. and 6:00 p.m. daily except Sunday.

4.8.4 *Baseline Noise Environment*

An ambient noise level survey was conducted to characterize the existing "baseline" acoustical environment in the vicinity of the Project. Existing noise sources include vehicular traffic (including trucks) on Interstate 90 (I-90) and the local roadways, pedestrian traffic, nearby mechanical equipment located in and on surrounding buildings, and the general din of the city.

4.8.5 *Noise Measurement Locations*

The selection of the sound monitoring locations was based upon a review of the current land uses in the Project area. Four noise-monitoring locations were selected as representative in obtaining a sampling of the ambient baseline noise environment. The measurement locations are depicted in Figure 4.8-1 and are described below.

- ♦ Location L1 is adjacent to the residence on Lincoln Street which is north of I-90 and the Project.
- ♦ Location L2 is adjacent to two residential buildings in a restaurant parking lot at the corner of Market Street and Vineland Street.
- ♦ Location L3 is near residences on North Beacon Street which is south of the Project.
- ♦ Location L4 is located near a residence on Hichborn Street at the southeast corner of the Project.

4.8.6 *Noise Measurement Methodology*

Sound level measurements were taken for 20 minutes per location during the daytime (12:00 p.m. to 2:30 p.m.) on March 15, 2012, and during nighttime hours (12:00 a.m. to 2:00 a.m.) on March 16, 2012. Since noise impacts are greatest at night when existing noise levels are lowest, the study was designed to measure community noise levels under conditions typical of a "quiet period" for the area. Daytime measurements were scheduled to exclude peak traffic conditions.

The sound levels were measured at publicly accessible locations at a height of approximately 1.5 meters above the ground. The measurements were made under low wind conditions, and roadway surfaces were dry. Wind speed measurements were made with a Davis Instruments TurboMeter electronic wind speed indicator, and temperature and humidity measurements were made using a General Tools digital psychrometer. Unofficial observations about meteorology, including wind speed, temperature, and humidity, as well as land use in the community were made solely to characterize the existing sound levels in the area and to estimate the noise sensitivity at properties near the proposed Project.

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New Brighton Landing
Boston, Massachusetts

Epsilon ASSOCIATES INC

NEW BRIGHTON LANDING, LLC

Figure 4.8-1
Background Sound Level Measurement Locations

4.8.7 Measurement Equipment

A Larson-Davis (LD) model 831 Sound Level Analyzer, equipped with a LD Type 1 Preamplifier, a LD 377B20 half-inch microphone, and a four-inch windscreen were used to collect broadband and octave band ambient sound pressure level data. The instrumentation meets the "Type 1 – Precision" requirements set forth in American National Standards Institute (ANSI) S1.4 for acoustical measuring devices. The meter was tripod-mounted at a height of five feet above ground level (AGL). The meter has data logging capability and was programmed to log statistical data for each 20-minute sampling period for the following parameters: L_{10}, L_{50}, L_{90}, L_{max}, L_{min}, and L_{eq}. The meter time-weighting was set for the "fast" response.

All measurement equipment was calibrated in the field before and after the surveys with a LD CAL200 acoustical calibrator which meets the standards of IEC 942 Class 1L and ANSI S1.40-1984. The meters were calibrated and certified as accurate to standards set by the National Institute of Standards and Technology. These calibrations were conducted by an independent laboratory within the past 12 months.

4.8.8 Baseline Ambient Noise Levels

The existing ambient noise environment consists primarily of vehicular traffic on I-90 and nearby roadways, building mechanical systems, and pedestrian activity. Baseline noise monitoring results are presented in Table 4.8-2, and summarized below.

- The daytime residual background (L_{90}) measurements ranged from 50 to 70 dBA;
- The nighttime residual background (L_{90}) measurements ranged from 43 to 55 dBA;
- The daytime equivalent level (L_{eq}) measurements ranged from 55 to 73 dBA; and
- The nighttime equivalent level (L_{eq}) measurements ranged from 49 to 65 dBA.

Table 4.8-2 Baseline Ambient Noise Measurements

ID	Start Time	L_{10} (dBA)	L_{50} (dBA)	L_{90} (dBA)	L_{eq} (dBA)	L_{max} (dBA)	L_{90} Sound Level (dB) per Octave Band Center Frequency (Hz)								
							31.5	63	125	250	500	1000	2000	4000	8000
Daytime															
1	01:48 PM	75	73	70	73	89	64	67	66	61	60	67	64	54	42
2	12:17 PM	63	61	59	63	89	62	62	58	53	53	56	50	40	27
3	12:46 PM	73	65	54	69	88	57	58	56	52	49	50	46	36	25
4	01:13 PM	56	52	50	55	79	56	56	52	46	44	47	41	28	20
Nighttime															
1	01:28 AM	68	62	55	65	77	53	57	50	46	46	52	47	32	19
2	12:55 AM	60	54	49	57	71	62	62	58	53	53	56	50	40	27
3	12:28 AM	66	52	43	62	77	48	51	47	42	38	38	33	23	19
4	12:02 AM	51	46	44	49	67	48	50	46	42	38	41	35	22	19

Notes:

1. Daytime weather: Temperature = 46˚ F, Relative Humidity = 46%, clear skies, northeast winds 2-9 miles per hour.
   Nighttime weather: Temperature = 39˚ F, Relative Humidity = 70%, clear skies, south winds 0-5 miles per hour.
2. All road surfaces were dry during measurements.
3. All sampling periods were 20 minutes in duration.
4. Daytime measurements were collected on March 15, 2012.
   Nighttime measurements were collected on March 16, 2012.

4.8.9 Overview of Potential Project Noise Sources

The Project will consist of a new world headquarters building for New Balance Athletic Shoe, Inc., a hotel, a sports complex, and three office towers. The primary sources of continuous sound exterior to the Project will consist of ventilation, cooling, and emergency power noise sources. The majority of the noise sources will be rooftop in nature with exception of several exhaust and intake fans related to garage and loading dock ventilation.

4.8.9.1 Headquarters and Hotel Complex

The major sources of sound exterior to the proposed headquarters and hotel complex will be two two-cell cooling towers (headquarters), two single-cell cooling towers (hotel), four 50,000 CFM garage exhaust fans, one 10,000 CFM kitchen exhaust fan, two 10,000 CFM loading dock fans, one 500 kW standby generator (headquarters), and one 250 kW standby generator (hotel).

The proposed cooling towers for the headquarters building are two-cell Baltimore Aircoil Company PT2-1218A-3K1 cooling towers which will be located on the roof of the building (117′ AGL). The proposed cooling towers for the hotel are single-cell Baltimore Aircoil Company PT2-0709A-2J1 cooling towers which will be located on the roof of the building (204′ AGL). Four garage fans, each with a 50,000 CFM rating will exhaust out a lower tier roof of the complex (25′). Each fan will be a Cook 540LCD06 fan. The kitchen exhaust fan will also exhaust out of the 25′ roof and will be a Cook 210CPS fan. One loading dock fan will exhaust at a height of 22′ AGL along the northern façade of the headquarters building while one loading dock fan will exhaust at a height of 22′ AGL along the eastern façade of the headquarters/hotel complex. Each fan will be Cook 270TCNB fan. The 500 kW Caterpillar C15 standby generator will be located on the roof of the headquarters building (117′ AGL). The 250 kW Caterpillar C9 standby generator will be located on the roof of the hotel (204′ AGL). The exhaust stack for each generator will extend above the roof by 10 feet. A tabular summary of the modeled mechanical equipment proposed for these buildings is presented below in Table. 4.8-3-a. Manufacturer specifications indicating the sound power for each of piece of equipment except for the emergency generators was provided by the client and is presented in Table 4.8-3-b. The sound power of the mechanical and exhaust components of the emergency generators were calculated using the sound pressure levels provided at a reference distance. These values are presented in Table 4.8-3-b. At this time, it is assumed that intake fans will not be necessary for the ventilation of the garage. Other mechanical equipment (chillers, condenser pumps, air handling units) will be located in two enclosed mechanical penthouses on the roof of the headquarters building and in one enclosed mechanical penthouse on the roof of the hotel. Each enclosed mechanical penthouse was assumed to be constructed in such a manner that the noise sources inside would be insignificant as compared to the modeled noise sources.

The Project includes various noise control measures which are necessary to achieve compliance with the noise regulations. Duct or discharge silencers were assumed in the modeling for each of the garage exhaust fans and for the kitchen exhaust. Each emergency generator will be controlled using an exhaust silencer and an acoustical enclosure. To further limit impacts from the generators, the required periodic routine testing of the generators will be during daytime hours when background sound levels are highest. It is assumed for modeling purposes that the emergency generator and the cooling towers on the headquarters building will be surrounded by noise barriers extending 22 feet above the roof and will be composed of materials with significant transmission loss (i.e. that are highly sound attenuating). In addition, the emergency generator and the cooling towers on the hotel will be surrounded by noise barriers extending 15 feet above the roof and will be composed of materials with significant transmission loss. The enclosed mechanical penthouse to the east of these sources on the hotel roof will act as barrier in the easterly direction as the noise barriers will connect to this structure. A summary of the noise mitigation proposed for the headquarters and hotel is presented below in Table 4.8-3-c.

Table 4.8-3-a Modeled Noise Sources – Headquarters & Hotel Complex

Noise Source	Quantity	Location	Size/Capacity
Two-Cell Cooling Tower (HQ)	2	19.5 ' Tower on Roof at 117' AGL	410 tons per unit
Single-Cell Cooling Tower (Hotel)	2	14.7 ' Tower on Roof at 204' AGL	150 tons per unit
Garage Exhaust Fan	4	Roof – 25' AGL	50,000 CFM per unit
Kitchen Exhaust Fan	1	Roof – 25' AGL	10,000 CFM per unit
Loading Dock Fan	2	Façade (1 north, 1 east) – 22' AGL	10,000 CFM per unit
Generator (HQ)	1	Roof – 117' AGL	500 kW
Generator (Hotel)	1	Roof – 204' AGL	250 kW

Table 4.8-3-b Modeled Sound Power Levels per Noise Source – Headquarters & Hotel Complex

Noise Source	Broadband (dBA)	Sound Level (dB) per Octave Band Center Frequency (Hz)								
		31.5[1]	63	125	250	500	1k	2k	4k	8k
Two-Cell Cooling Tower (HQ) – Baltimore PT2-1218A-3K1	92	95	95	89	87	87	85	85	84	84
Single-Cell Cooling Tower (Hotel) – Baltimore PT2-0709A-2J1	88	95	95	90	84	83	81	80	79	77
Garage Exhaust Fan – Cook 540PLCD06	100	99	99	105	99	96	95	93	87	80
Kitchen Exhaust Fan – Cook 210CPS	100	94	94	99	97	98	95	92	91	85
Loading Dock Fan – Cook 270TCNB	83	76	76	85	86	80	75	73	68	62

Table 4.8-3-b Modeled Sound Power Levels per Noise Source – Headquarters & Hotel Complex (Continued)

Noise Source	Broadband (dBA)	Sound Level (dB) per Octave Band Center Frequency (Hz)								
		31.5[1]	63	125	250	500	1k	2k	4k	8k
500 kW Generator (HQ) – Mechanical	121	118	118	111	114	114	115	113	109	116
500 kW Generator (HQ) – Exhaust	130	131	131	138	133	126	122	118	113	104
250 kW Generator (HQ) – Mechanical	116	114	114	107	114	109	113	109	104	98
250 kW Generator (HQ) – Exhaust	132	128	128	126	130	126	126	128	120	112

Notes:
Sound power levels do not include mitigation.
1. Sound level assumed to be equal to level in 63 Hz band.

Table 4.8-3-c Attenuation Values Applied to Mitigate Each Noise Source – Headquarters & Hotel Complex

Noise Source	Form of Mitigation	Sound Level (dB) per Octave Band Center Frequency (Hz)								
		31.5	63	125	250	500	1k	2k	4k	8k
Garage Exhaust Fan – Cook 540PLCD06	Duct / Discharge Silencer	0	4	6	17	26	30	26	18	13
Kitchen Exhaust Fan – Cook 210CPS	Duct / Discharge Silencer	0	3	6	14	26	38	32	23	15
500 kW Generator (HQ) – Mechanical	Enclosure[1]	6	13	25	25	25	25	25	25	25
500 kW Generator (HQ) – Exhaust	Silencer – Critical Grade[2]	0	5	20	27	28	24	28	31	30
250 kW Generator (HQ) – Mechanical	Enclosure[1]	6	13	25	25	25	25	25	25	25
250 kW Generator (HQ) – Exhaust	Silencer – Critical Grade[2]	0	5	20	27	28	24	28	31	30

Notes:
Sound power levels do not include mitigation.
1. Pritchard Brown; 25 dBA reduction; octave band data assumed
2. Silex HP-CU Series

4.8.9.2 Sports Complex

The major sources of sound exterior to the proposed sports complex will be three one-cell cooling towers, one 50,000 CFM garage exhaust fan, one 50,000 CFM garage intake fan, one 10,000 CFM kitchen exhaust fan, two 10,000 CFM loading dock fans, and one 1,000 kW standby generator.

The proposed cooling towers for the sports complex are one-cell Baltimore Aircoil Company 3725C cooling towers which will be located on the roof of a lower tier of the building (22′ AGL). The Cook 480CA-SWSI garage exhaust fan will exhaust out of the eastern façade of the complex at a height of 20′ AGL. The intake for the Cook 480CA-SWSI fan will be located on the eastern façade of the complex at a height of 3′ AGL. The kitchen exhaust fan will be located on a lower tier roof (44′ AGL) roof will be a Greenheck CUBE-360HP-75 fan. Two loading dock fans will exhaust at a height of 22′ AGL along the southern façade of the building. Each fan will be Cook 270TCNB fan. The 1,000 kW Caterpillar C32 standby generator will be located on a lower tier roof (22′ AGL). The exhaust stack for the generator will extend above the roof by 10 feet. A tabular summary of the modeled mechanical equipment proposed for the sports complex is presented below in Table. 4.8-4-a. Manufacturer specifications indicating the sound power for each of piece of equipment except for the emergency generator was provided by the client and is presented in Table 4.8-4-b. The sound power of the mechanical and exhaust components of the emergency generator were calculated using the sound pressure levels provided at a reference distance. These values are presented in Table 4.8-4-b. An enclosed mechanical penthouse will be located adjacent to the cooling towers. This penthouse was assumed to be constructed in such a manner that the noise sources inside would be insignificant as compared to the modeled noise sources.

The Project includes various noise control measures which are necessary to achieve compliance with the noise regulations. Duct or discharge silencers were assumed in the modeling for each of the garage fans and for the kitchen exhaust. The emergency generator will be controlled using an exhaust silencer and an acoustical enclosure. To further limit impacts from the generators, the required periodic routine testing of the generators will be during daytime hours when background sound levels are highest. It is assumed for modeling purposes that noise barriers will be located along the western and southern edges of the building extending to a height of 14′ above the roof. A summary of the noise mitigation proposed for the headquarters and hotel is presented below in Table 4.8-4-c.

Table 4.8-4-a Modeled Noise Sources – Sports Complex

Noise Source	Quantity	Location	Size/Capacity
One-Cell Cooling Tower	3	12′ Tower on Roof at 22′ AGL	-
Garage Exhaust Fan	1	Façade - East – 20′ AGL	50,000 CFM per unit
Garage Intake Fan	1	Façade - East – 3′ AGL	50,000 CFM per unit
Kitchen Exhaust Fan	1	Roof – 44′ AGL	10,000 CFM per unit
Loading Dock Fan	2	Façade – South – 22′ AGL	10,000 CFM per unit
Generator	1	Roof – 22′ AGL	1,000 kW

Table 4.8-4-b Modeled Sound Power Levels per Noise Source – Sports Complex

Noise Source	Broadband (dBA)	Sound Level (dB) per Octave Band Center Frequency (Hz)								
		31.5[1]	63	125	250	500	1k	2k	4k	8k
One-Cell Cooling Tower – Baltimore 3725C	105	108	108	107	108	103	98	92	86	83
Garage Exhaust Fan – Cook 480CA-SWSI	98	102	102	106	98	95	93	89	82	80
Garage Intake Fan – Cook 480CA-SWSI	98	102	102	106	98	95	93	89	82	80
Kitchen Exhaust Fan – Cook 210CPS	100	94	94	99	97	98	95	92	91	85
Loading Dock Fan – Cook 270TCNB	83	76	76	85	86	80	75	73	68	62
1,000 kW Generator – Mechanical	120	109	109	122	119	114	114	113	108	106
1,000 kW Generator – Exhaust	125	109	109	129	131	120	116	115	105	90

Notes:
Sound power levels do not include mitigation.
1. Sound level assumed to be equal to level in 63 Hz band.

Table 4.8-4-c Attenuation Values Applied to Mitigate Each Noise Source – Sports Complex

Noise Source	Form of Mitigation	Sound Level (dB) per Octave Band Center Frequency (Hz)								
		31.5	63	125	250	500	1k	2k	4k	8k
One-Cell Cooling Tower – Baltimore 3725C	Quieter Fan	2	4	8	8	8	8	8	0	0
Garage Exhaust Fan – Cook 480CA-SWSI	Duct / Discharge Silencer	0	8	12	21	36	42	37	23	16
Garage Intake Fan – Cook 480CA-SWSI	Duct Silencer	0	5	7	16	28	39	32	21	13
Kitchen Exhaust Fan – Cook 210CPS	Duct / Discharge Silencer	0	5	10	16	17	20	18	16	13
1,000 kW Generator (HQ) – Mechanical	Enclosure[1]	6	13	25	25	25	25	25	25	25
1,000 kW Generator (HQ) – Exhaust	Silencer – Critical Grade[2]	0	5	20	27	28	24	28	31	30

Notes:
Sound power levels do not include mitigation.
1. Pritchard Brown; 25 dBA reduction; octave band data assumed
2. Silex HP-CU Series

4.8.9.3 Office Buildings

The major sources of sound exterior to the proposed office buildings will be two two-cell cooling towers (C1), three two-cell cooling towers (C2), 12 50,000 CFM garage exhaust fans, one 10,000 CFM kitchen exhaust fan, two 10,000 CFM loading dock fans, one 500 kW standby generator (C1), and one 1,000 kW standby generator (C2). All equipment on C3 will be enclosed in a mechanical penthouse

The proposed cooling towers for C1 are two-cell Baltimore Aircoil Company PT2-1218A-3L1 cooling towers which will be located on the roof of the building (150′ AGL). The proposed cooling towers for C2 are two-cell Baltimore Aircoil Company PT2-1218A-3Q1 cooling towers which will be located on the roof of the building (138′ AGL). 12 garage fans, each with a 50,000 CFM rating will exhaust out a lower tier roof of the complex (25′). Each fan will be a Cook 490PLCD06 fan. The kitchen exhaust fan will also exhaust out of the 25′ roof and will be a Cook 210CPS fan. Two loading dock fan will exhaust at a height of 22′ AGL along the northern façade of the complex. Each fan will be Cook 270TCNB fan. The 500 kW Caterpillar C15 standby generator will be located on the roof of C1 (150′ AGL). The 1,000 kW Caterpillar C32 standby generator will be located on the roof of C2 (138′ AGL). The exhaust stack for each generator will extend above the roof by 10 feet. A tabular summary of the modeled mechanical equipment proposed for these buildings is presented below in Table. 4.8-5-a. Manufacturer specifications indicating the sound power for each of piece of equipment except for the emergency generators was provided by the client and is presented in Table 4.8-5-b. The sound power of the mechanical and exhaust components of the emergency generators were calculated using the sound pressure levels provided at a reference distance. These values are presented in Table 4.8-5-b. At this time, it is assumed that intake fans will not be necessary for the ventilation of the garage. Other mechanical equipment (chillers, condenser pumps, air handling units) will be located in an enclosed mechanical penthouse on the roof of each tower. Each enclosed mechanical penthouse was assumed to be constructed in such a manner that the noise sources inside would be insignificant as compared to the modeled noise sources.

The Project includes various noise control measures which are necessary to achieve compliance with the noise regulations. Duct or discharge silencers were assumed in the modeling for each of the garage exhaust fans and for the kitchen exhaust. Each emergency generator will be controlled using an exhaust silencer and an acoustical enclosure. To further limit impacts from the generators, the required periodic routine testing of the generators will be during daytime hours when background sound levels are highest. It is assumed for modeling purposes that the emergency generator and the cooling towers on C1 will be surrounded by the mechanical penthouse on three sides which is at a height of 165′ above ground level. A noise barrier to the west of the cooling towers and emergency generator will extend to 15′ above the roof and will be composed of materials with significant transmission loss (i.e. that are highly sound attenuating). In addition, the emergency generator and the cooling towers on C2 will be surrounded by a 3-sided noise barrier extending 22 feet above the roof and will be composed of materials with significant transmission loss. The enclosed mechanical penthouse will be located to the north of these sources on the roof (15′ tall). A summary of the noise mitigation proposed for the office towers is presented below in Table 4.8-5-c.

Table 4.8-5-a Modeled Noise Sources – Office Buildings

Noise Source	Quantity	Location	Size/Capacity
Two-Cell Cooling Tower (C1)	2	19.5′ Tower on Roof at 150′ AGL	463 tons per unit
Two-Cell Cooling Tower (C2)	3	20′ Tower on Roof at 138′ AGL	680 tons per unit
Garage Exhaust Fan	12	Roof – 25′ AGL	50,000 CFM per unit
Kitchen Exhaust Fan	1	Roof – 25′ AGL	10,000 CFM per unit
Loading Dock Fan	2	Façade - North – 22′ AGL	10,000 CFM per unit
Generator (C1)	1	Roof – 150′ AGL	500 kW
Generator (C2)	1	Roof – 138′ AGL	1,000 kW

Table 4.8-5-b Modeled Sound Power Levels per Noise Source – Office Buildings

Noise Source	Broadband (dBA)	Sound Level (dB) per Octave Band Center Frequency (Hz)								
		31.5[1]	63	125	250	500	1k	2k	4k	8k
Two-Cell Cooling Tower (C1) – Baltimore PT2-1218A-3L1	92	97	97	90	87	87	86	85	84	84
Two-Cell Cooling Tower (C2) – Baltimore PT2-1218A-3Q1	95	102	102	98	92	92	90	86	85	84
Garage Exhaust Fan – Cook 490PLCD06	97	96	96	102	96	92	91	90	82	74
Kitchen Exhaust Fan – Cook 210CPS	100	94	94	99	97	98	95	92	91	85
Loading Dock Fan – Cook 270TCNB	83	76	76	85	86	80	75	73	68	62
500 kW Generator (C1) – Mechanical	121	118	118	111	114	114	115	113	109	116
500 kW Generator (C1) – Exhaust	130	131	131	138	133	126	122	118	113	104
1,000 kW Generator (C2) – Mechanical	120	109	109	122	119	114	114	113	108	106
1,000 kW Generator (C2) – Exhaust	125	109	109	129	131	120	116	115	105	90

Notes:
Sound power levels do not include mitigation.
1. Sound level assumed to be equal to level in 63 Hz band.

Table 4.8-5-c Attenuation Values Applied to Mitigate Each Noise Source – Office Buildings

Noise Source	Form of Mitigation	Sound Level (dB) per Octave Band Center Frequency (Hz)								
		31.5	63	125	250	500	1k	2k	4k	8k
Garage Exhaust Fan – Cook 490PLCD06	Duct / Discharge Silencer	0	5	10	16	17	20	18	16	13
Kitchen Exhaust Fan – Cook 210CPS	Duct / Discharge Silencer	0	5	10	16	17	20	18	16	13
500 kW Generator (C1) – Mechanical	Enclosure[1]	6	13	25	25	25	25	25	25	25
500 kW Generator (C1) – Exhaust	Silencer – Critical Grade[2]	0	5	20	27	28	24	28	31	30
1,000 kW Generator (C2) – Mechanical	Enclosure[1]	6	13	25	25	25	25	25	25	25
1,000 kW Generator (C2) – Exhaust	Silencer – Critical Grade[2]	0	5	20	27	28	24	28	31	30

Notes:
Sound power levels do not include mitigation.
1. Pritchard Brown; 25 dBA reduction; octave band data assumed
2. Silex HP-CU Series

4.8.10 Modeling Methodology

The noise impacts associated with the Project were predicted at the nearest receptors using the Cadna/A noise calculation software developed by DataKustik GmbH. This software uses the ISO 9613-2 international standard for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation). The benefits of this software are a more refined set of computations due to the inclusion of topography, ground attenuation, multiple building reflections, drop-off with distance, and atmospheric absorption. The Cadna/A software allows for octave band calculation of noise from multiple noise sources, as well as computation of diffraction around building edges.

4.8.11 Future Sound Levels – Nighttime

The analysis of sound levels at night considered all of the mechanical equipment without the emergency generators running, to simulate typical nighttime operating conditions at nearby receptors. 12 modeling locations were included in the analysis. The first four locations (A through D) correspond to measurement locations 1 through 4. The remaining locations consist of nearby residential, business and industrial locations. These locations are depicted in Figure 4.8-2. The predicted exterior Project-Only sound levels are expected to range from 26 to 53 dBA at nearby receptors. The range at residential modeling locations is 26 to 46 dBA. Predicted sound levels from Project-related equipment are within the most stringent broadband and octave band nighttime residential zoning limits for the City of Boston at closest residential receptors and also meet the business and industrial limits. This evaluation is presented in Table 4.8-6-a. In addition, the predicted future total sound levels (Project + Background) are below the MassDEP criteria of 10dBA over the quietest nighttime sound levels (the L_{90} level). This evaluation is presented in Table 4.8-6-b.

The Project's mechanical equipment is not expected to create any additional "pure-tone" conditions as defined by the MassDEP when combined with existing middle of the night background sound levels. As shown in Table 4.8-2 "pure-tones" were found at night at Locations 1 (A), 2 (B), and D (4). The predicted total sound levels per octave band are shown in Table 4.8-6-c.

Table 4.8-6-a Comparison of Future Predicted Project-Only Nighttime Sound Levels to the City of Boston Limits

Modeling Location ID	Land Use	Broadband (dBA)	Sound Level (dB) per Octave Band Center Frequency (Hz)								
			31.5[1]	63	125	250	500	1k	2k	4k	8k
A	Residential	41	52	50	47	44	38	33	29	23	8
B	Residential	26	43	40	34	29	23	18	12	4	0
C	Residential	33	49	45	41	36	31	26	20	12	0
D	Residential	43	61	55	57	43	38	32	30	25	18
E	Residential	38	48	46	43	41	36	32	28	20	6
F	Residential	46	64	58	60	47	39	34	32	28	21
G	Residential	45	55	52	48	48	44	39	30	26	9
H	Business	42	54	50	48	45	40	34	29	22	4
I	Business	41	56	51	52	43	37	32	29	23	11
J	Industrial	52	64	62	57	56	49	42	35	31	22
K	Industrial	53	52	49	56	57	51	46	44	38	30
L	Industrial	50	67	62	64	48	41	36	37	30	26
City of Boston Limits	Residential	50	68	67	61	52	46	40	33	28	26
	Business	65	79	78	73	68	62	56	51	47	44
	Industrial	70	83	82	77	73	67	61	57	53	50

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New Brighton Landing
Boston, Massachusetts

Epsilon ASSOCIATES INC

NEW BRIGHTON LANDING, LLC

Figure 4.8-2
Background Sound Level Modeling Locations

Table 4.8-6-b Comparison of Future Predicted Nighttime Sound Levels with Existing Background – MassDEP Policy

Modeling Location ID	Land Use	Project-Generated Sound Levels (dBA)	Existing L_{90} – Nighttime (dBA)	Future L_{90} – Nighttime Total (dBA)[1]	Increase (dBA)[1]
A	Residential	41	55	55	0
B	Residential	26	49	49	0
C	Residential	33	43	43	0
D	Residential	43	44	47	3
E	Residential	38	55[2]	55	0
F	Residential	46	44[3]	48	4
G	Residential	45	43[4]	47	4
H	Business	42	49[5]	50	1
I	Business	41	55[2]	55	0
J	Industrial	52	44[3]	52	8
K	Industrial	53	44[3]	54	9
L	Industrial	50	44[3]	51	6

Notes:

1. Calculation performed using existing and project sound levels rounded to one decimal place.
2. Ambient sound level assumed to be comparable to Location A (Measurement Location 1).
3. Ambient sound level assumed to be comparable to Location D (Measurement Location 4).
4. Ambient sound level assumed to be comparable to Location C (Measurement Location 3).
5. Ambient sound level assumed to be comparable to Location B (Measurement Location 2).

Table 4.8-6-c MassDEP "Pure-Tone" Evaluation of Future Predicted Nighttime Sound Levels

Modeling Location ID	Land Use	Sound Level (dB) per Octave Band Center Frequency (Hz)[1]								
		31.5	63	125	250	500	1k	2k	4k	8k
A	Residential	56	58	52	48	47	*52*	47	33	20
B	Residential	62	62	58	53	53	*56*	50	40	27
C	Residential	52	52	48	43	39	38	33	23	19
D	Residential	61	56	57	46	41	42	36	27	21
E	Residential	55	57	51	47	46	*52*	47	33	19
F	Residential	64	58	60	48	42	42	37	29	23

Table 4.8-6-c MassDEP "Pure-Tone" Evaluation of Future Predicted Nighttime Sound Levels (Continued)

Modeling Location ID	Land Use	Sound Level (dB) per Octave Band Center Frequency (Hz)[1]								
		31.5	63	125	250	500	1k	2k	4k	8k
G	Residential	55	55	51	49	45	41	35	28	19
H	Business	62	62	58	53	53	*56*	50	40	27
I	Business	58	58	54	48	46	*52*	47	33	20
J	Industrial	64	62	57	57	50	45	38	32	23
K	Industrial	53	52	56	57	51	47	44	38	30
L	Industrial	67	62	64	49	43	42	39	31	26

Notes:
Numbers in italics indicate "pure-tones". These are due existing pure tones – see Table 4.8-2.
1. Calculation performed using existing and project sound levels rounded to one decimal place.

4.8.12 Future Sound Levels – Daytime

The emergency generator will only operate during the day for brief, routine testing when the background sound levels are high, or during an interruption of the electrical grid; therefore, a second analysis combined the mechanical equipment and the emergency generators, to reflect worse-case conditions during brief, routine, daytime testing of the generators when ambient levels are higher. The sound levels were calculated at the same receptors as in the nighttime analysis. The sound levels were evaluated against daytime limits and daytime ambient sound levels were incorporated where applicable.

The predicted exterior Project-Only daytime sound levels are expected to range from 38 to 54 dBA at nearby receptors. The range at residential modeling locations is 38 to 49 dBA. Predicted sound levels from Project-related equipment are within the daytime broadband and octave band zoning limits for the City of Boston at each of the modeling locations. This evaluation is presented in Table 4.8-7-a. In addition, the predicted future total sound levels (Project + background) are below the MassDEP criteria of 10dBA over the quietest nighttime sound levels (the L_{90} level). This evaluation is presented in Table 4.8-7-b. The Project's mechanical equipment is not expected to create any additional "pure-tone" conditions as defined by the MassDEP when combined with existing middle of the night background sound levels. As shown in Table 4.8-2 "pure-tones" were found during the day at Locations 1 (A), 2 (B), and D (4). The predicted total sound levels per octave band are shown in Table 4.8-7-c.

Table 4.8-7-a Comparison of Future Predicted Project-Only Daytime Sound Levels to the City of Boston Limits

Modeling Location ID	Land Use	Broadband (dBA)	Sound Level (dB) per Octave Band Center Frequency (Hz)								
			31.5[1]	63	125	250	500	1k	2k	4k	8k
A	Residential	47	73	66	57	48	40	37	31	23	8
B	Residential	38	67	59	49	38	28	24	17	5	0
C	Residential	41	67	60	51	43	35	34	27	13	0
D	Residential	47	71	65	59	47	39	37	32	25	18
E	Residential	46	73	67	57	45	38	36	31	21	9
F	Residential	49	73	68	61	49	41	38	34	28	21
G	Residential	48	69	62	55	51	45	41	34	27	9
H	Business	45	70	61	55	48	41	36	31	23	7
I	Business	45	72	65	56	45	38	35	32	23	12
J	Industrial	54	72	66	63	58	50	44	37	32	22
K	Industrial	54	65	58	58	57	51	46	44	38	30
L	Industrial	51	76	69	65	50	42	39	38	31	26
City of Boston Limits	Residential	60	76	75	69	62	56	50	45	40	38
	Business	65	79	78	73	68	62	56	51	47	44
	Industrial	70	83	82	77	73	67	61	57	53	50

Table 4.8-7-b Comparison of Future Predicted Daytime Sound Levels with Existing Background – MassDEP Policy

Modeling Location ID	Land Use	Project-Generated Sound Levels (dBA)	Existing L_{90} – Nighttime (dBA)	Future L_{90} – Nighttime Total (dBA)[1]	Increase (dBA)[1]
A	Residential	47	70	70	0
B	Residential	38	59	59	0
C	Residential	41	54	54	0
D	Residential	47	50	52	2

Table 4.8-7-b Comparison of Future Predicted Daytime Sound Levels with Existing Background – MassDEP Policy (Continued)

Modeling Location ID	Land Use	Project-Generated Sound Levels (dBA)	Existing L_{90} – Nighttime (dBA)	Future L_{90} – Nighttime Total (dBA)[1]	Increase (dBA)[1]
E	Residential	46	70[2]	70	0
F	Residential	49	50[3]	53	2
G	Residential	48	54[4]	55	1
H	Business	45	59[5]	59	0
I	Business	45	70[2]	70	0
J	Industrial	54	50[3]	55	5
K	Industrial	54	50[3]	55	5
L	Industrial	51	50[3]	54	3

Notes:
1. Calculation performed using existing and project sound levels rounded to one decimal place.
2. Ambient sound level assumed to be comparable to Location A (Measurement Location 1).
3. Ambient sound level assumed to be comparable to Location D (Measurement Location 4).
4. Ambient sound level assumed to be comparable to Location C (Measurement Location 3).
5. Ambient sound level assumed to be comparable to Location B (Measurement Location 2).

Table 4.8-7-c MassDEP "Pure-Tone" Evaluation of Future Predicted Daytime Sound Levels

Modeling Location ID	Land Use	Sound Level (dB) per Octave Band Center Frequency (Hz)[1]								
		31.5	63	125	250	500	1k	2k	4k	8k
A	Residential	73	69	66	61	60	*67*	64	54	42
B	Residential	68	64	58	53	53	*56*	50	40	27
C	Residential	67	62	57	53	49	50	46	36	25
D	Residential	71	66	60	49	45	*48*	42	30	22
E	Residential	74	70	66	61	60	*67*	64	54	42
F	Residential	73	68	62	51	46	48	42	31	24
G	Residential	69	64	59	55	50	51	46	37	25
H	Business	70	65	59	54	53	*56*	50	40	27
I	Business	73	69	66	61	60	*67*	64	54	42

Table 4.8-7-c MassDEP "Pure-Tone" Evaluation of Future Predicted Daytime Sound Levels (Continued)

Modeling Location ID	Land Use	Sound Level (dB) per Octave Band Center Frequency (Hz)[1]								
		31.5	63	125	250	500	1k	2k	4k	8k
J	Industrial	72	67	63	59	51	49	42	33	24
K	Industrial	65	60	59	58	52	50	46	38	30
L	Industrial	76	69	65	51	46	48	43	33	27

Notes:
Numbers in italics indicate "pure-tones". These are due existing pure tones – see Table 4.8-2.
1. Calculation performed using existing and project sound levels rounded to one decimal place.

4.8.13 Conclusions

Baseline noise levels were measured in the vicinity of the proposed Project during the day and at night. These levels were compared to modeled sound levels which were calculated based information provided by the manufacturers of the expected mechanical equipment. Project-Only and future sound levels (Project + Background) were compared to applicable limits.

Predicted mechanical equipment noise levels from the Project at each receptor location, taking into account attenuation due to distance, structures, and noise control measures, will be equal to or below the City of Boston Noise Zoning broadband requirements based on land-use maps provided by the BRA, and will comply with all MassDEP A-weighted noise limits. When the aforementioned mitigation efforts are included, the predicted sound levels from Project-related equipment are expected to remain below 50 dBA, within the most stringent nighttime residential zoning limits for the City of Boston at the nearest residential receptors. The results in Section 4.8 indicate that the Proposed Project can operate without significant impact on the existing acoustical environment and will result in a noise experience similar to that of a typical urban setting.

Concerns have been raised with regards to how this development will impact the noise at homes due to vehicular traffic along the Massachusetts Turnpike (I-90). Sound level increases in the community to the north of the turnpike due to reflections off of the proposed buildings are theoretically possible but, due to the distances involved, they would be minimal and not likely to be perceptible to the human ear.

At this time, the mechanical equipment and noise controls are conceptual in nature. During the final design phase of the Project, mechanical equipment and noise controls will be specified and designed to meet the applicable City of Boston broadband noise limit and the corresponding octave band limits, as well as the MassDEP noise criteria. Additional mitigation may include the selection of quieter units, acoustical louvers, screening walls, mufflers, or equipment enclosures, as needed.

4.9 Hazardous Materials

4.9.1 Hazardous Materials

Phase I Environmental Site Assessments have been conducted for the various parcels comprised by the redevelopment site. For certain parcels Phase II Environmental Site Assessments also have been conducted. General findings related to environmental conditions are provided below.

4.9.1.1 Site History

The redevelopment site is situated in an area that is primarily characterized by commercial and industrial properties. Portions of the various parcels that comprise the redevelopment site were historically stock yards. In more recent years, portions of the redevelopment site have been used for warehousing and distribution, manufacturing, railroad storage, vehicle storage and repair, office space, and parking.

4.9.1.2 Hazardous Materials Summary

Soil and groundwater at and in the vicinity of the redevelopment site have been impacted by petroleum and hazardous materials as a result of historical industrial use in this area. Prior subsurface investigations of the redevelopment site have identified chlorinated volatile organic compounds and petroleum impacts in soil and groundwater, as well as urban fill conditions. In several cases, groundwater impacts have been attributed to upgradient sources of contamination, resulting in the filing of Down gradient Property Status (DPS) Opinions with the Massachusetts Department of Environmental Protection (DEP) for 38-40 Guest Street, 77 Guest Street, and 180 Guest Street. In several other cases, Response Action Outcome (RAO) Statements have been submitted to DEP.

4.9.1.3 Hazardous Materials Management

Prior to building renovation or demolition, a comprehensive oil and/or hazardous material survey, including but not limited to PCBs, asbestos, and lead-based paint in equipment and building materials, will be conducted. Any materials identified during such survey will be managed in accordance with applicable regulations.

All subsurface work at the redevelopment site will be conducted under the supervision of a Licensed Site Professional (LSP) in accordance with the Massachusetts Contingency Plan, 310 CMR 40.0000 (MCP). In particular, regulations pertaining to sites for which DPS Opinions or RAO Statements already have been filed will be complied with. Soil Management Plans and Health and Safety Plans will be developed by the LSP, as necessary, and will be complied with during the course of construction activities.

Excavation and removal of soils from the redevelopment site will be necessary to accommodate underground parking garages and building foundations. Impacted soils encountered during construction will be managed in accordance with applicable regulations, and appropriate arrangements will be made for proper disposal or reuse of the soils in accordance with applicable regulations. To the extent that impacted groundwater is encountered during construction, it also will be managed in accordance with applicable regulations.

As noted above, CVOCs have been identified in soil and groundwater at portions of the redevelopment site. CVOCs can travel from groundwater into a gas and move through the tiny open spaces between soil particles. This "soil gas," as it is called, can gather under buildings and possibly enter buildings through cracks or holes present in a floor slab or a basement (for example, where utility services enter a home). The movement of CVOCs from groundwater into soil gas and then into a building is referred to as vapor intrusion.

The potential for vapor intrusion is primarily a concern in residential settings, and the Proposed Project does not include any residential uses. That said, the vapor intrusion pathway will be considered in the design and construction of the Proposed Project. For new construction, such as the Proposed Project, the potential vapor intrusion pathway can be mitigated or eliminated though engineering and design. Buildings may be constructed with parking structures below occupied space, or with sub-slab vapor barriers or venting systems, for example. Such engineering and design measures will be incorporated into the Proposed Project as necessary to mitigate the vapor intrusion pathway in accordance with the MCP.

4.10 Geotechnical and Groundwater Conditions

4.10.1 Site Conditions

The general site grades vary. Site grades on Block A range from 34 to 35 feet; Block B ranges from 34 to 40 feet; and Block C ranges from 33 to 35 feet (Boston City Base datum (BCB)).

All of the existing buildings on the site, and abutting buildings, are supported by spread footings. Some nearby buildings are supported on Pressure Injected Footings (PIFs) There are numerous above- and below-grade utilities along Guest Street.

4.10.1.1 Geotechnical Site Conditions

Based upon a review of the geotechnical information related to site investigations along Guest Street, subsurface conditions are expected to consist of the following (listed from the ground surface down):

- Approximately six to 20 feet (but typically eight to 12 feet) of loose, urban fill, with discontinuous layers of organic silt;

- A natural sand deposit consisting of varying amounts of sand and silt to a depth of approximately 26 feet below ground surface;
- Approximately 30 to 60 feet of medium stiff to hard, silty clay, and clay interbedded with silt and sand seams;
- Approximately 5 to 45 feet of dense to very dense glacial till that consists of sand and silt deposits interbedded with stiff to hard layers of sandy silt, and/or silty clay; and
- Bedrock consisting of hard, moderately fractured, quartzite at depths of approximately 105 to more than 110 feet below grade.

4.10.2 Groundwater

Groundwater is anticipated to be between 10 to 12 feet below the existing grade across the entire site. The groundwater table has been investigated in the vicinity of Block A and found to be relatively flat, and flowing gently to the northeast. Groundwater elevations range between approximately elevation 23 and 24 feet (BCB) over the footprint of Block A; however, given the flat gradient, the groundwater elevation is estimated to be similar at Blocks B and C.

4.10.3 Proposed Construction

Table 4.10-1 lists the estimated amount of soil that will need to be excavated and disposed of off site to accommodate the proposed construction of the building basements and foundations. The excavated soils will be pre-characterized, managed, and disposed of in accordance with the Massachusetts Contingency Plan (MCP).

Table 4.10-1 Estimated Soil Excavation and Removal

	Building(s) Footprint (Square Feet)	Amount of Soil to be Excavated and Removed (Cubic Yards)
Block A	155,000	83,000
Block B	144,000	103,000
Block C	169,000	90,000

The Proponent anticipates that the proposed buildings will be supported by spread footings with the lowest floor level being a slab-on-grade with a subslab drainage system to relieve hydrostatic pressure.

Temporary excavation support for below-grade excavations will be designed to reduce the volume of groundwater that will enter the excavations for the basements. Excavation support options include: steel sheeting, soil mixing, or other alternatives to cut-off groundwater flowing through the relatively permeable marine sands at or near the bottom of the urban fill layer.

4.10.4 Measures to Minimize Impacts of Below-grade Construction

In general, potential impacts for any below-grade excavation and foundation construction include temporary lowering of area groundwater levels, ground vibrations and noise, dust, and ground movements outside of the excavation. The Project's foundation design and construction will be conducted to control and minimize potential adverse impacts to adjacent structures and to protect groundwater levels. Programs will be implemented to monitor groundwater levels, vibrations, and lateral movements, as appropriate. Specific mitigation measures will include the following.

- The design approach will be to limit the amount of water that enters the excavation during construction, as well as, the amount of water collected in the subslab drainage systems (long-term). The Proponent proposes to incorporate a groundwater cutoff system (steel sheeting, soil mixing, or other alternative) into the temporary excavation support and long-term building systems.

- Prior to construction, groundwater monitoring wells (within each respective block) will be installed to collect groundwater data in support of a construction dewatering permit. Based on the Site history, the Proponent believes that a Notice of Intent (NOI) for a National Pollutant Discharge Elimination System (NPDES) Remediation General Permit (RGP) will be required. At this time, the Proponent anticipates that dewatering discharge will need to be treated with at least solids removal utilizing a frac tank and bag filters. Additional treatment such as carbon and other items will be evaluated following the collection of groundwater data. The dewatering discharge will meet the requirements of the receiving authority.

- Depending on the specific constituents identified during soil pre-characterization and the applicable exemptions under the MCP, a reporting obligation may exist to comply with the MCP. As such, the excavated soils will be pre-characterized, managed and disposed of in accordance with the MCP.

- The design team will conduct studies, prepare designs and specifications, and review contractor's submittals for conformance to the Project contract documents with specific attention to protection of nearby structures and facilities. At this time, based on the proposed construction and the location of adjacent structures and their foundations, the Proponent does not envision any significant adjacent building/structure protection issues. As design proceeds, this item will be re-evaluated as necessary.

- Performance criteria will be established for the lateral earth support systems with respect to movements, noise, and ground vibrations. The construction sequence of the below-grade portion will be controlled by specific requirements in the Project specifications. The contractor will be required to modify construction methods and take necessary steps during the work to protect nearby buildings and other facilities.

- Geotechnical instrumentation will be installed and monitored during the below-grade portion of work to observe the performance of the excavation, adjacent buildings and structures, and area groundwater levels. Groundwater observation wells will be monitored before and during construction. When construction begins, observation wells will be monitored for the duration of below-grade construction.

4.11 Construction Impacts and Management Plan

Planning with the City and continuous communication with abutters and neighborhood residents will be essential to the successful development of the Proposed Project. A detailed Construction Management Plan ("CMP") will be developed and submitted to the Boston Transportation Department (BTD) for review and approval prior to construction. This section outlines the main components of the CMP.

4.11.1 General Plan for Construction

The first phase of the project will begin approximately in fall of 2012 and will take approximately three months to complete. The existing buildings located at 38-40 Guest, 180 Guest (Blocks A & C) and 77 Guest Street (Block B) will have a full perimeter construction fence and construction vehicle entry gates installed. A rodent control program will be put in place and maintained by a licensed vendor for the complete duration of the project. Erosion & dust control mitigation devices and programs will be established and all of the existing buildings as noted above will be demolished and the below grade foundations removed. Once demolition is completed, a flat and level site will be left in its place. Before, during, and after demolition we will comply with the regulatory environmental inspections and controls to ensure that all controlled materials they we may encounter are properly identified, removed and transported, as required to be in full compliance with regulatory agencies having jurisdiction over the Proposed Project.

Subsequent phases will occur as follows, subject to change based on market conditions. The second phase will be the construction of the below-grade garage structures for Blocks A and B. During this period of time, Block C will be used as a staging area to support the construction of Blocks A & B.

The third phase of construction will be construction of the New Balance World headquarters on Block A and the Sports Building on Block B.

The fourth phase of construction will be construction of the hotel on Block A.

The fifth phase of construction will include the below grade portion of the Block C parking garage.

The sixth and final phase of construction will be the construction of the office buildings on Block C1, C2 and/or C3.

4.11.2 Construction Schedule

Typical construction hours will be from 7:00 am to 6:00 pm, Monday through Friday. No sound-generating activity will occur before 7:00 am. If longer hours, additional shifts, or Saturday work is required, the construction manager will place a work permit request to the Boston Air Pollution Control Commission and BTD in advance. Notification should occur during normal business hours, Monday through Friday. It is noted that some activities such as finishing activities could run beyond 6:00 pm to ensure the structural integrity of the finished product; certain components must be completed in a single pour, and placement of concrete cannot be interrupted.

4.11.3 Construction Staging Areas

Construction staging plans will be designed to isolate the construction from the surrounding neighborhood while providing safe access for pedestrians and automobiles during normal day-to-day activities, operations and emergencies. The initial site mobilization will include installation of a screened chain-link fence around the perimeter of each block to isolate the construction areas. Covered walkways and temporary pedestrian crossings will be provided along Guest Street when needed. If necessary, construction traffic to and from the site will be controlled by police detail officers and will be posted as determined by the BTD. The majority of material staging will occur within the area bordered by the Proposed Project barriers; occasionally we will require adjacent areas for special construction operations, and then only with City approval. The majority of truck queuing will take place at an off-site location to be specified in the CMP.

Construction activity will be kept within the designated areas set forth in the CMP. There will be no stockpiling of fill, equipment, or materials, including pipe, on public property or public ways outside of the areas detailed in the CMP.

Temporary fencing, posts, barricades, and gates will secure the site and staging areas. The temporary fencing and gates will secure all construction areas and bar pedestrians from entering the site.

4.11.4 Signage

Signage will direct pedestrians around the site as well as directing truck traffic and deliveries. Proper signage will be placed along the site perimeter in those areas that may be confusing to pedestrians and vehicle drivers.

In addition, BTD requires all major construction sites to comply with its Public Awareness Campaign. Project signage (BTD-CWS signs) will be required of the Construction Manager for each specific site and shall contain the following:

- Official address of the site
- The Owner and the intended use of the Proposed Project
- The Construction Manager's corporate name
- The telephone number of the Construction Manager's on-site office
- A statement "Comments on Construction Impacts Welcome"
- BTD Construction Office telephone number.

The BTD-CWS signs shall be installed at the start of construction (including the utility work and sidewalk occupation) at each location as determined by the BTD Construction staff, and shall be maintained throughout the construction period. The BTD-CWS signs shall not be removed until the Certificate of Occupancy is issued by the City and all site work, including roadway and sidewalk reconstructions, are complete.

4.11.5 Perimeter Protection/Public Safety

Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic around the site. In addition, sidewalk areas and walkways near construction activities will be well-marked, protected for overhead exposures, and illuminated. Gates will be installed at locations indicated on the logistics plan for truck access and egress to and from the project site. Police details will be provided as necessary to facilitate traffic flow and ensure public safety.

The contractor's project management team will be directly accessible to the surrounding community throughout the duration of construction. The Proponent will maintain a Web site outlining the Proposed Project's progress and identifying the next phases of construction. A community construction hotline will be posted prominently at the site.

4.11.6 Construction Waste

The contractor will take an active role with regard to the reprocessing and recycling of construction waste in keeping with the Proposed Project's overall commitment to environmental sustainability. The demolition and excavation contracts will include specific requirements, to ensure construction procedures allow for the necessary segregation, reprocessing, re-use, and recycling of materials. A Construction Waste Management Plan will be developed to ensure that a minimal amount of waste debris is disposed of in landfills and to pursue the goal of diverting at least 75 percent of Project-generated construction waste from landfills. For those materials which cannot be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per the Department of Environmental Protection (DEP) Regulation for Solid Waste Facilities, 310 CMR 16.00. This requirement will be specified in the contract documents.

4.11.7 Construction Mitigation

New Brighton Landing, LLC intends to follow City and MassDEP guidelines that will direct the evaluation and mitigation of construction impacts. As part of this process, New Brighton Landing, LLC and its construction team will evaluate the Commonwealth's Clean Air Construction Initiative.

The CMP will be submitted to BTD for review and approval prior to issuance of a Building Permit. The CMP will include detailed information on construction activities, specific construction mitigation measures, and construction materials access and staging area plans to minimize impacts to abutters and the local community. The CMP will also define truck routes which will help minimize the impact of trucks on City and neighborhood streets (see Section 4.11.9 below).

4.11.8 Demolition

The Proposed Project requires the demolition of existing structures on the site.

Prior to demolition, a survey will be performed to ascertain the existence of any hazardous materials such as asbestos. Any hazardous materials will be treated as a special waste in accordance with MassDEP guidelines and addressed, transported, and disposed of accordingly. In addition, with respect to the demolition of the buildings, the demolition debris will be disposed of at a properly licensed solid waste disposal facility. Concrete, brick, and asphalt will be separated for crushing and possible re-use on site. During demolition, provisions will be made for the use of water spray to control the generation of dust.

Prior to the start of demolition, utilities to the existing buildings will be cut and capped.

4.11.9 Construction Traffic

4.11.9.1 Worker Parking

The number of on-site workers required during the construction period will vary, with an estimated work force ranging from approximately 85 workers during a typical foundation period to as many 400 workers during the peak of construction. Because the construction workers will arrive and depart during off-peak traffic periods, they are not expected to significantly affect traffic conditions in the Proposed Project area.

Personnel will arrive at the job site either by public transportation or by personal vehicles. Subcontractors will be instructed to encourage their employees to use public transportation. Trades people will be permitted to store tools in locked job boxes on site as another means to encourage public transit use.

4.11.9.2 Truck Routes and Volumes

Truck traffic will vary throughout the construction period, depending on the activity. Construction truck access to and from the site for delivery of supplies, materials, and removal of excavated materials and demolition debris required for the Proposed Project shall be limited to the truck routes set forth on the "Truck Routing Plan" of the Construction Management Plan. These routes will be mandated as a part of all subcontractors' contracts for the Proposed Project.

In general, it is expected that all truck traffic to the site will follow the route from the Massachusetts Turnpike Exit 17, north on Centre Street/Galen Street to Watertown Square, right onto Arsenal Street, across the Charles River, right onto Leo Birmingham Parkway/Market Street, and left onto Guest Street. Trucks leaving the site will take this route in reverse. In this way, truck traffic will not impact residential areas around the construction site.

No truck idling or queuing will be permitted prior to 7:00 am to prevent disturbance to the surrounding areas.

4.11.9.3 Off-site Staging

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

Trucks unable to immediately access the jobsite upon arrival shall be directed to off-site areas not on a public way.

During the excavation phase, the excavation subcontractor will be required to provide a staging area within one hour of the project.

During the superstructure phase, concrete trucks will be radio dispatched. Steel, rebar, and accessories will be managed to the site via daily delivery schedules (managed by the hour) where materials will be brought to the site during predetermined and specific timeframes. Once on-site, delivery trucks will be off-loaded within the queuing/off-loading lane along Guest Street. The site's perimeter barriers along Guest Street will separate this same operation from the adjacent public.

For local materials, including interior finishes, trim, etc., local vendors will supply material to either the off-loading lane on Guest Street or to the permanent loading dock within the new building. The site superintendent will stop deliveries for any subcontractor that does not comply with time dispatch.

Large equipment and out of state deliveries like façade panels, MEP Equipment, etc., will be managed through assignment to queuing and rigging yards in Everett, Chelsea, Somerville, Cambridge, or similar proximate location. These materials will then be brought to the site at predetermined off-loading times all as scheduled with the contractor's field operations. The construction contractor will identify alternative offsite staging areas subject to the approval by the Transportation Department thirty (30) days prior to the phase of work where the staging is needed.

4.11.10 Dust Control

To reduce emission of fugitive dust and minimize impacts on the local environment in the vicinity of the project site, the Construction Manager will adhere to a number of strictly enforced mitigation measures, including the following:

- Wetting agents will be used regularly to control and suppress dust that may come from construction materials and demolition debris.
- All trucks for transportation of construction debris will be fully covered and their wheels cleaned before exiting the site.
- Construction debris that is not placed directly into truck beds will be placed in onsite dumpsters for prompt removal. The dumpsters will be covered prior to removal.
- Construction practices will be monitored to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized and that any emissions of dust are minimized.
- Streets and sidewalks will be cleaned regularly to minimize debris and dust accumulations. Street cleaning shall be provided by mechanical street sweepers on a full time basis, from the time the first truck arrives until after the last truck leaves, during the excavation phase and at least one week there after. Sweeping limits shall encompass the entire truck route along which spoilage may be left.

4.11.11 Odor Control

Methods that will be used by the Construction Manager to control nuisance odor emissions associated with earthwork include:

- Improving site drainage in order to minimize standing water from remaining in excavated areas.

- Covering stockpiles of excavated material with polyethylene sheeting and securing it with sandbags or an equivalent method to prevent the cover from being dislodged by the wind.

- Reducing the amount of time that excavated material is exposed to the open atmosphere.

- Maintaining the construction site in a state free of trash, garbage, and debris.

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

- Maintaining an "idle free" work zone of fossil fuel trucks and equipment by providing supplemental electrical hoisting and pumping equipment along with "just-in-time" delivery methods. On-site idling will be limited to five minutes.

- Locating combustion engines away from sensitive receptors such as fresh air intakes, air conditioners and windows. The location of these sensitive receptors will be reflected on the logistics plan of the project CMP.

- Use of Low Sulfur Diesel for all trucks and construction machinery.

4.11.12 Noise Control

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

- Instituting a proactive program to ensure compliance with the City of Boston noise Limitation Policy.

- Work hours shall include any time necessary to perform equipment warm-up and no warm-up period shall occur before 7:00 am starting time.

- Using appropriate mufflers on all equipment and on-going maintenance of intake and exhaust mufflers.

- Muffling enclosures on continuously running equipment, such as air compressors and welding generators.

- Mandating that certain equipment have the proper sound attenuation devices.

- Using less noisy specific construction operations and techniques where feasible (e.g., mixing concrete off-site instead of on-site).

- Scheduling equipment operations to keep average noise levels low, synchronize noisiest operations with times of highest ambient noise levels, and to maintain relatively uniform noise levels.

- Turning off idling equipment.

- Locating noisy equipment as far as possible form sensitive areas (e.g., residential neighbors).

- Installation of a site barricade.

- Electric tower cranes utilized through the structural installation will reduce street noise associated with truck-mounted equipment.

- Enclosing specific areas with noise attenuation blankets and pads during nighttime work.

- Scheduling equipment operations to keep average levels low, to synchronize noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels.

- Posting a 24-hour construction noise hotline prominently on site signage and providing such information to residents located in close proximity to the Proposed Project.

4.11.13 Vibration

Means and methods for performing work at the Proposed Project site will be evaluated to minimize potential vibration impacts on the adjacent properties and other nearby buildings. Acceptable vibration criteria will be established prior to construction, and vibration will be monitored during construction to ensure compliance with the agreed-upon standard. Proximate buildings will be surveyed prior to commencement of construction and if required by the Engineer of Record vibration-sensitive components will be identified and monitored during construction.

4.11.14 Rodent Control

A rodent control program will be put in place and maintained by a licensed vendor for the complete duration of the project. This program will be in compliance with the City of Boston Building Permit and Ordinances. The Construction Manager will develop a rodent control program for the project prior to its construction start, and coordinate this program with the site abutters.

4.11.15 Utilities

Connections to existing utility services are being coordinated with the appropriate utility provider as well as with the Boston Water and Sewer Commission. The Construction Manager and its subcontractors will protect the existing sanitary and storm sewers running in Guest Street running along the Proposed Project for the duration of construction.

4.11.16 Snow Removal

The construction contractor and its subcontractors will remove snow from all public areas affected by their work. This will be done daily and continuously, as necessary, to ensure that all streets and sidewalks are clear of snow and ice. Under no condition will the removed snow be disposed of on public property.

4.11.17 Cleaning

Streets and sidewalks within the project limits will be cleaned daily or as needed; manually or by street sweeping machine. This requirement will be in effect from the start of trucking for excavation through the completion of the foundations work and then as required during the work until the Proposed Project's completion. Hauling routes will be monitored in the vicinity of the project site to ensure that the Proposed Project's street cleaning program appropriately covers the impacted routes of travel.

4.11.18 Coordination

In order to minimize the potential traffic and parking impacts of ongoing and proposed construction, the Construction Manager will coordinate its construction impact mitigation program with other projects in the vicinity of the project site and will work cooperatively with BTD to coordinate the Proposed Project's Construction Management Plan with the CMP's of such other projects.

4.12 Sustainable Design

The Project's location within a heavily urbanized area means that it will have only minimal impact on existing infrastructure. Because of its proximity to mass transit as well as vehicular access to highways, the Project supports the objectives of smart growth (i.e., new development at existing nodes of excellent transportation facilities).

Energy conservation and other sustainable design measures will be integral parts of the Proposed Project. The buildings will employ, where possible, energy and water efficient features for mechanical, electrical, architectural, and structural systems and assemblies. Sustainable design elements relating to building energy management systems, lighting, recycling, conservation measures, regional building materials, and clean construction vehicles will be included, as practicable.

The City of Boston requires sustainable design in new development projects. Article 37 of the Boston Zoning Code requires that projects be designed as certifiable under the U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) program based on the most appropriate LEED building rating system. The Project will comply with this Article 37 requirement for "LEED Certifiable" status. Figures 4.12-1 through 4.12-4 are LEED checklists for each of the separate building types that compose the project, and each identifies the sustainable design goals for each building. For each LEED prerequisite and credit identified as a goal by "yes" on the checklist, the following narrative provides a brief description of the implementation measures to the extent that they are defined at this stage of design.

The Proponent is proposing to design and construct a LEED-certifiable Project utilizing the appropriate LEED 2009 rating system for each of the building types.

The following narrative discusses the LEED credits applicable to the Project.

4.12.1 Sustainable Sites

Sustainable Sites, Prerequisite 1, Construction Activity Pollution Prevention:
The Project will include a full erosion and sedimentation control program. This program will include a Stormwater Pollution Prevention Plan (SWPPP) that describes how to protect the existing stormwater collection system during construction.

Sustainable Sites, Credit 1.0, Site Selection:
The Project meets the criteria for site selection: the Project site is not prime farmland, was previously developed, does not have endangered species habitat, is not within 100 feet of a wetland and is not a public park.

Sustainable Sites, Credit 2.0, Development Density & Community Connectivity:
The Project is located in a dense urban area with a mix of residential and commercial uses. The Project will pursue the compliance path for Option 2, Community Connectivity. Within a 1/2-mile radius of the Project, there are residential areas with an average density of 10 units per acre net. Within the same radius, there are also many basic services, all with pedestrian access.

Sustainable Sites, Credit 3.0, Brownfield Redevelopment:
The project will be constructed on an existing site with existing buildings that contain materials considered hazardous by the U.S. EPA. These contaminants will be assessed by an environmental consultant and remediated according to relevant regulations.

Sustainable Sites, Credit 4.1, Alternative Transportation - Public Transportation Access:
The Project is located within 0.25-mile walking distance of one or more stops for two or more public bus lines: MBTA Bus 57, 64 and 86. The proximity of the Project to public transportation fulfills the LEED credit requirement and helps avoid pollution from automobile usage and reduce parking demand.

Sustainable Sites, Credit 4.2, Alternative Transportation – Bicycle Storage and Changing Rooms:
The Project will provide secure bicycle racks and/or storage for project users; and provide shower and changing facilities for building occupants.

Sustainable Sites, Credit 5.1, Site Development – Protect or Restore Habitat:
To restore damaged areas for new habitat and biodiversity, the Project will restore 20 percent of the total site area (including the building footprints) with native or adapted vegetation.

Sustainable Sites, Credit 5.2, Site Development – Maximize Open Space:
To promote diversity by providing a high ratio of open space to development footprint, the Project's open space will exceed the local zoning requirement by 25 percent.

Sustainable Sites, Credit 7.1, Heat Island Effect – Non-Roof:
The Project will follow the guidance of Option 2 whereby a minimum of 50 percent of parking spaces will be under cover – either underground, under roof or under a building. Any roof used to cover the parking will have a solar reflectance index of at least SRI-29 or will be a vegetated green roof.

Sustainable Sites, Credit 7.2, Heat Island Effect - Roof:
The Project will follow the guidance of Option 3 whereby roof surfaces will have a combination of high-albedo roof membrane and vegetated green material to meet the credit requirements.

Sustainable Sites, Credit 9, Tenant Design and Credit Guidelines:
For the Core & Shell buildings within the Project, the owner will provide tenants with design and construction guidelines that will educate them about implementing sustainable design and construction features in their tenant improvement build-out.

4.12.2 Water Efficiency

Water Efficiency, Prerequisite 1, Water Use Reduction 20 Percent:
The Project will employ strategies that in aggregate will achieve a minimum 20 percent reduction in water use compared to the water use baseline calculated for the project.

Water Efficiency, Credit 1, Water Efficient Landscaping:
The Project will limit the use of potable water for landscape irrigation via the use of appropriate plant species and planting density, and the use of high-efficiency irrigation systems.

4.12.3 Energy and Atmosphere

Energy & Atmosphere, Prerequisite 1, Fundamental Commissioning of Building Energy Systems:
Building systems will be commissioned in accordance with the USGBC LEED requirements. The commissioning services provided will include the Owner's Project Requirements (OPR) and Basis of Design (BOD) documents, development of a commissioning plan, incorporation of a commissioning specification section into the construction documents, and verification through startup observation and functional testing that the installed systems are operating in accordance with the OPR, BOD, and construction documents. The aforementioned services will apply to the following commissioned systems: heating, ventilation, and air conditioning (HVAC); lighting controls, and domestic hot water systems.

Energy & Atmosphere, Prerequisite 2, Minimum Energy Performance:
The Project will be designed to meet or exceed the required energy usage improvement dictated by the prerequisite requirements for each building type.

Energy & Atmosphere, Prerequisite 3, Fundamental Refrigerant Management:
The Project will specify equipment and systems with zero chlorofluorocarbon (CFC)-based refrigerants for HVAC&R systems.

Energy & Atmosphere, Credit 1, Optimize Energy Performance:
The Project will be designed with the goal of exceeding the ASHRAE 90.1-2007 Energy Standard by 20 percent for each building type. This will be demonstrated with either whole-building energy simulations or prescriptive compliance paths for each of the different building types.

Energy & Atmosphere, Credit 3, Enhanced Commissioning:
In addition to the commissioning practices that will be implemented under the Prerequisite, the requirements for enhanced commissioning per the LEED credit will be followed. An independent third-party commissioning agent will perform the services.

Energy & Atmosphere, Credit 4, Enhanced Refrigerant Management:
Refrigerants, for the HVAC equipment will be selected based on their capacity to minimize the impact of ozone depletion and contribution to climate change.

4.12.4 *Materials and Resources*

Materials & Resources, Prerequisite 1, Storage and Collection of Recyclables:
Recycling areas that serve each building will be provided for the collection and storage of paper, corrugated cardboard, glass, plastics and metals.

Materials & Resources, Credit 2, Construction Waste Management:
The Proponent will implement a Construction Waste Management Plan to ensure that a minimal amount of waste debris is disposed of in landfills and to pursue the goal of diverting at least 75 percent of Project-generated construction waste from landfills.

Materials & Resources, Credit 7, (Credit 6 for C&S), Certified Wood:
To encourage environmentally responsible forest management the Project will be designed utilizing a minimum of 50 percent of wood-based materials and products that certified according to the Forest Stewardship Council's criteria.

4.12.5 *Indoor Environmental Quality*

Indoor Environmental Quality, Prerequisite 1, Minimum IAQ Performance:
The mechanical systems in the buildings will be designed to comply with the ASHRAE 62.1-2007 Ventilation Standard for indoor air quality.

Indoor Environmental Quality, Prerequisite 2, Environmental Tobacco Smoke Control:
Smoking will be prohibited inside all the buildings in the Project. On-property smoking will be prohibited within 25 feet of entries, outdoor air intakes, and operable windows. Signage will be provided to allow smoking in designated areas, prohibit smoking in designated areas, or to prohibit smoking on the entire property.

Indoor Environmental Quality, Credit 3.1, Construction IAQ Management Plan – During Construction:
The Project will implement a Construction Indoor Air Quality Management Plan (CIAQMP) per the LEED requirements to improve the indoor air quality during construction and occupancy.

Indoor Environmental Quality, Credit 3.2, Construction IAQ Management Plan – Before Occupancy:
The Project will develop and implement an IAQ management plan after all finishes have been installed and the building cleaned before occupancy.

Indoor Environmental Quality, Credit 4.1, Low-Emitting Materials – Adhesives & Sealants:
To reduce indoor air contaminants, the Project will specify and utilize interior adhesives and sealants that comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168 and Green Seal Standard.

Indoor Environmental Quality, Credit 4.2, Low-Emitting Materials – Paints & Coatings:
To reduce indoor air contaminants, the Project will specify that all paints and coatings applied inside the building envelope will comply with the Green Seal Standard GS-11 for paints and primers, Green Seal Standard GS-03 for anti-corrosive paints, and the SCAQMD Rule #1113 for wood finishes, stains, and sealers.

Indoor Environmental Quality, Credit 4.3, Low-Emitting Materials – Flooring Systems:
To reduce indoor air contaminants, the Project will specify that all flooring systems will comply with the appropriate low VOC standard for carpet, carpet cushion, carpet adhesive, hard surface flooring, floor sealers, stains and finishes, tile setting adhesives, and grouts.

Indoor Environmental Quality, Credit 4.4, Low-Emitting Materials – Composite Wood and Agrifiber Products:
To reduce indoor air contaminants, the Project will specify that all composite wood and agrifiber products used inside the building will not contain added urea-formaldehyde resins.

4.12.6 Innovation and Design Process

Innovation In Design, Credits 1.1-1.5:
The Proponent intends to achieve several credits for Innovation and Exceptional Performance. These will be defined during the design process for each building and the project site.

Innovation In Design, Credit 2.0, LEED Accredited Professional:
To support and encourage the design integration required by the LEED process, the Project team includes at least one LEED Accredited Professional (AP).

4.12.7 Regional Priority Credits

Regional Priority, Credits 1.1-1.4:
The Project will pursue the following Regional Priority Credits for this location, to address geographically specific environmental priorities:

Sustainable Sites Credit 3: Brownfield Redevelopment.

Sustainable Sites Credit 7.1: Heat Island Effect – Non-roof.

Sustainable Sites Credit 7.2: Heat Island Effect – Roof.

Project Checklist: A1 Building - NB Office Building
LEED 2009 New Construction
Project: New Brighton Landing / #11041
Elkus Manfredi Architects
Date April 12 2012

Y	N	?			Possible Points	Team	Strategy
46	19	45	**Total**		Possible Points: 110		
Y	N	?	Certified 40-49 Silver 50-59 Gold 60-79 Platinum 80-110				
18	1	7	**Sustainable Sites**		Possible Points: 26		
Y	N	?				Team	Strategy
Y			Prereq 1	Construction Activity Pollution Prevention	0		
1	0	0	Credit 1	Site Selection	1		
5	0	0	Credit 2	Development Density and Community Connectivity	5		
1	0	0	Credit 3	Brownfield Redevelopment	1		remediation of asbestos in existing buildings on site
6	0	0	Credit 4.1	Alternative Transportation - Public Transportation Access	6		
1	0	0	Credit 4.2	Alternative Transportation - Bicycle Storage and Changing Rooms	1		
0	0	3	Credit 4.3	Alternative Transportation - Low-Emitting and Fuel-Efficient Vehicles	3		
0	0	2	Credit 4.4	Alternative Transportation - Parking Capacity	2		meet but not exceed min parking zoning reqmnts
1	0	0	Credit 5.1	Site Development - Protect or Restore Habitat	1		restore 20% of site area (includes vegetated roof surfaces)
1	0	0	Credit 5.2	Site Development - Maximize Open Space	1		open space exceeds zoning by 25%
0	0	1	Credit 6.1	Stormwater Design - Quantity Control	1		implement stormwater management plan/design
0	1	0	Credit 6.2	Stormwater Design - Quality Control	1		
1	0	0	Credit 7.1	Heat Island Effect - Non-roof	1		50% parking under cover and roof is SRI-29 or vegetated
1	0	0	Credit 7.2	Heat Island Effect - Roof	1		
0	0	1	Credit 8	Light Pollution Reduction	1		follow design requirements
2	4	4	**Water Efficiency**		Possible Points: 10		
Y	N	?				Team	Strategy
Y			Prereq 1	Water Use Reduction - 20% Reduction	0		
2	0	2	Credit 1	Water Efficient Landscaping	2-4		reduce potable water for irrigation by 50% from baseline
0	2	0	Credit 2	Innovative Wastewater Technologies	2		
0	2	2	Credit 3	Water Use Reduction	2-4		30% reduction (2 pts) / 35% (3 pts) / 40% (4 pts)
9	7	19	**Energy and Atmosphere**		Possible Points: 35		
Y	N	?				Team	Strategy
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	0		
Y			Prereq 2	Minimum Energy Performance	0		
Y			Prereq 3	Fundamental Refrigerant Management	0		
5	0	14	Credit 1	Optimize Energy Performance	1-19		Boston Energy Stretch Code requires > 20% above Ashrae 90.1 2007
0	7	0	Credit 2	On-Site Renewable Energy	1-7		requires production of 1% (to 13%) of total building energy cost
2	0	0	Credit 3	Enhanced Commissioning	2		
2	0	0	Credit 4	Enhanced Refrigerant Management	2		
0	0	3	Credit 5	Measurement and Verification	3		
0	0	2	Credit 6	Green Power	2		
3	7	4	**Materials and Resources**		Possible Points: 14		
Y	N	?				Team	Strategy
Y			Prereq 1	Storage and Collection of Recyclables	0		
0	3	0	Credit 1.1	Building Reuse - Maintain Existing Walls, Floors, and Roof	1-3		
0	1	0	Credit 1.2	Building Reuse - Maintain 50% of Interior Non-Structural Elements	1		
2	0	0	Credit 2	Construction Waste Management	1-2		75% diverted from landfill
0	1	1	Credit 3	Materials Reuse	1-2		
0	1	1	Credit 4	Recycled Content	1-2		
0	1	1	Credit 5	Regional Materials	1-2		
0	0	1	Credit 6	Rapidly Renewable Materials	1		
1	0	0	Credit 7	Certified Wood	1		
7	0	8	**Indoor Environmental Quality**		Possible Points: 15		
Y	N	?				Team	Strategy
Y			Prereq 1	Minimum Indoor Air Quality Performance	0		
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	0		
0	0	1	Credit 1	Outdoor Air Delivery Monitoring	1		
0	0	1	Credit 2	Increased Ventilation	1		
1	0	0	Credit 3.1	Construction IAQ Management Plan - During Construction	1		
1	0	0	Credit 3.2	Construction IAQ Management Plan - Before Occupancy	1		
1	0	0	Credit 4.1	Low-Emitting Materials - Adhesives and Sealants	1		
1	0	0	Credit 4.2	Low-Emitting Materials - Paints and Coatings	1		
1	0	0	Credit 4.3	Low-Emitting Materials - Flooring Systems	1		
1	0	0	Credit 4.4	Low-Emitting Materials - Composite Wood and Agrifiber Products	1		
1	0	0	Credit 5	Indoor Chemical and Pollutant Source Control	1		
0	0	1	Credit 6.1	Controllability of Systems - Lighting	1		
0	0	1	Credit 6.2	Controllability of Systems - Thermal Comfort	1		
0	0	1	Credit 7.1	Thermal Comfort - Design	1		
0	0	1	Credit 7.2	Thermal Comfort - Verification	1		
0	0	1	Credit 8.1	Daylight and Views - Daylight	1		
0	0	1	Credit 8.2	Daylight and Views - Views	1		
4	0	2	**Innovation and Design Process**		Possible Points: 6		
Y	N	?				Team	Strategy
1	0	0	Credit 1.1	Innovation in Design: Specific Title	1		divert 95% of construction waste from landfill
1	0	0	Credit 1.2	Innovation in Design: Specific Title	1		
1	0	0	Credit 1.3	Innovation in Design: Specific Title	1		
0	0	1	Credit 1.4	Innovation in Design: Specific Title	1		
0	0	1	Credit 1.5	Innovation in Design: Specific Title	1		
1	0	0	Credit 2	LEED Accredited Professional	1		
3	0	1	**Regional Priority Credits**		Possible Points: 4		
Y	N	?		Zipcode 02135		Team	Strategy
1	0	0	Credit 1.1	Regional Priority:	1		SSc3: brownfield redevelopment
1	0	0	Credit 1.2	Regional Priority:	1		SSc7.2: heat island effect roof
1	0	0	Credit 1.3	Regional Priority:	1		SSc7.1: heat island effect non-roof
0	0	1	Credit 1.4	Regional Priority:	1		SSc6.1: stormwater design quantity control
0	0	0	Not Used	Regional Priority:			MRc1: 75% bldg reuse
0	0	0	Not Used	Regional Priority:			EAc2: onsite renewable
46	19	45	**Total**		Possible Points: 110		
Y	N	?	Certified 40-49 Silver 50-59 Gold 60-79 Platinum 80-110				

Figure 4.12-1
LEED Checklist

Project Checklist: A2 Building -- Hotel
LEED 2009 New Construction
Project: New Brighton Landing / #11041
Elkus Manfredi Architects
Date April 12 2012

Y	N	?			Possible Points	Team	Strategy
45	23	42	**Total**		Possible Points: 110		
Y	N	?	Certified 40-49 Silver 50-59 Gold 60-79 Platinum 80-110				
18	1	7	**Sustainable Sites**		Possible Points: 26		
Y	N	?				Team	Strategy
Y			Prereq 1	Construction Activity Pollution Prevention	0		
1	0	0	Credit 1	Site Selection	1		
5	0	0	Credit 2	Development Density and Community Connectivity	5		
1	0	0	Credit 3	Brownfield Redevelopment	1		remediation of asbestos in existing buildings on site
6	0	0	Credit 4.1	Alternative Transportation - Public Transportation Access	6		
1	0	0	Credit 4.2	Alternative Transportation - Bicycle Storage and Changing Rooms	1		
0	0	3	Credit 4.3	Alternative Transportation - Low-Emitting and Fuel-Efficient Vehicles	3		
0	0	2	Credit 4.4	Alternative Transportation - Parking Capacity	2		meet but not exceed min parking zoning reqmnts
1	0	0	Credit 5.1	Site Development - Protect or Restore Habitat	1		restore 20% of site area (includes vegetated roof surfaces)
1	0	0	Credit 5.2	Site Development - Maximize Open Space	1		open space exceeds zoning by 25%
0	0	1	Credit 6.1	Stormwater Design - Quantity Control	1		implement stormwater management plan/design
0	1	0	Credit 6.2	Stormwater Design - Quality Control	1		
1	0	0	Credit 7.1	Heat Island Effect - Non-roof	1		50% parking under cover and roof is SRI-29 or vegetated
1	0	0	Credit 7.2	Heat Island Effect - Roof	1		
0	0	1	Credit 8	Light Pollution Reduction	1		follow design requirements
2	4	4	**Water Efficiency**		Possible Points: 10		
Y	N	?				Team	Strategy
Y			Prereq 1	Water Use Reduction - 20% Reduction	0		
2	0	2	Credit 1	Water Efficient Landscaping	2-4		reduce potable water for irrigation by 50% from baseline
0	2	0	Credit 2	Innovative Wastewater Technologies	2		
0	2	2	Credit 3	Water Use Reduction	2-4		30% reduction (2 pts) / 35% (3 pts) / 40% (4 pts)
9	7	19	**Energy and Atmosphere**		Possible Points: 35		
Y	N	?				Team	Strategy
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	0		
Y			Prereq 2	Minimum Energy Performance	0		
Y			Prereq 3	Fundamental Refrigerant Management	0		
5	0	14	Credit 1	Optimize Energy Performance	1-19		Boston Energy Stretch Code requires > 20% above Ashrae 90.1 2007
0	7	0	Credit 2	On-Site Renewable Energy	1-7		requires production of 1% (to 13%) of total building energy cost
2	0	0	Credit 3	Enhanced Commissioning	2		
2	0	0	Credit 4	Enhanced Refrigerant Management	2		
0	0	3	Credit 5	Measurement and Verification	3		
0	0	2	Credit 6	Green Power	2		
3	7	4	**Materials and Resources**		Possible Points: 14		
Y	N	?				Team	Strategy
Y			Prereq 1	Storage and Collection of Recyclables	0		
0	3	0	Credit 1.1	Building Reuse - Maintain Existing Walls, Floors, and Roof	1-3		
0	1	0	Credit 1.2	Building Reuse - Maintain 50% of Interior Non-Structural Elements	1		
2	0	0	Credit 2	Construction Waste Management	1-2		75% diverted from landfill
0	1	1	Credit 3	Materials Reuse	1-2		
0	1	1	Credit 4	Recycled Content	1-2		
0	1	1	Credit 5	Regional Materials	1-2		
0	0	1	Credit 6	Rapidly Renewable Materials	1		
1	0	0	Credit 7	Certified Wood	1		
7	4	4	**Indoor Environmental Quality**		Possible Points: 15		
Y	N	?				Team	Strategy
Y			Prereq 1	Minimum Indoor Air Quality Performance	0		
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	0		
0	1	0	Credit 1	Outdoor Air Delivery Monitoring	1		
0	1	0	Credit 2	Increased Ventilation	1		
1	0	0	Credit 3.1	Construction IAQ Management Plan - During Construction	1		
1	0	0	Credit 3.2	Construction IAQ Management Plan - Before Occupancy	1		
1	0	0	Credit 4.1	Low-Emitting Materials - Adhesives and Sealants	1		
1	0	0	Credit 4.2	Low-Emitting Materials - Paints and Coatings	1		
1	0	0	Credit 4.3	Low-Emitting Materials - Flooring Systems	1		
1	0	0	Credit 4.4	Low-Emitting Materials - Composite Wood and Agrifiber Products	1		
1	0	0	Credit 5	Indoor Chemical and Pollutant Source Control	1		
0	0	1	Credit 6.1	Controllability of Systems - Lighting	1		
0	0	1	Credit 6.2	Controllability of Systems - Thermal Comfort	1		
0	1	0	Credit 7.1	Thermal Comfort - Design	1		
0	1	0	Credit 7.2	Thermal Comfort - Verification	1		
0	0	1	Credit 8.1	Daylight and Views - Daylight	1		
0	0	1	Credit 8.2	Daylight and Views - Views	1		
3	0	3	**Innovation and Design Process**		Possible Points: 6		
Y	N	?				Team	Strategy
1	0	0	Credit 1.1	Innovation in Design: Specific Title	1		divert 95% of construction waste from landfill
1	0	0	Credit 1.2	Innovation in Design: Specific Title	1		
0	0	1	Credit 1.3	Innovation in Design: Specific Title	1		
0	0	1	Credit 1.4	Innovation in Design: Specific Title	1		
0	0	1	Credit 1.5	Innovation in Design: Specific Title	1		
1	0	0	Credit 2	LEED Accredited Professional	1		
3	0	1	**Regional Priority Credits**		Possible Points: 4		
Y	N	?		Zipcode 02135		Team	Strategy
1	0	0	Credit 1.1	Regional Priority:	1		SSc3: brownfield redevelopment
1	0	0	Credit 1.2	Regional Priority:	1		SSc7.2: heat island effect roof
1	0	0	Credit 1.3	Regional Priority:	1		SSc7.1: heat island effect non-roof
0	0	1	Credit 1.4	Regional Priority:	1		SSc6.1: stormwater design quantity control
0	0	0	Not Used	Regional Priority:			MRc1: 75% bldg reuse
0	0	0	Not Used	Regional Priority:			EAc2: onsite renewable
45	23	42	**Total**		Possible Points: 110		
Y	N	?	Certified 40-49 Silver 50-59 Gold 60-79 Platinum 80-110				

Project Checklist: B Building -- Sports Facility
LEED 2009 New Construction
Project: New Brighton Landing / #11041
Elkus Manfredi Architects
Date April 12 2012

Y	N	?	Credit	Title	Possible Points	Team	Strategy
46	20	44	**Total**	Possible Points:	110		
Y	N	?	Certified 40-49 Silver 50-59 Gold 60-79 Platinum 80-110				
19	1	6	**Sustainable Sites**	Possible Points:	26		
Y	N	?				Team	Strategy
Y			Prereq 1	Construction Activity Pollution Prevention	0		
1	0	0	Credit 1	Site Selection	1		
5	0	0	Credit 2	Development Density and Community Connectivity	5		
1	0	0	Credit 3	Brownfield Redevelopment	1		remediation of asbestos in existing buildings on site
6	0	0	Credit 4.1	Alternative Transportation - Public Transportation Access	6		
1	0	0	Credit 4.2	Alternative Transportation - Bicycle Storage and Changing Rooms	1		
0	0	3	Credit 4.3	Alternative Transportation - Low-Emitting and Fuel-Efficient Vehicles	3		
0	0	2	Credit 4.4	Alternative Transportation - Parking Capacity	2		meet but not exceed min parking zoning reqmnts
1	0	0	Credit 5.1	Site Development - Protect or Restore Habitat	1		restore 20% of site area (includes vegetated roof surfaces)
1	0	0	Credit 5.2	Site Development - Maximize Open Space	1		open space exceeds zoning by 25%
0	0	1	Credit 6.1	Stormwater Design - Quantity Control	1		implement stormwater management plan/design
0	1	0	Credit 6.2	Stormwater Design - Quality Control	1		
1	0	0	Credit 7.1	Heat Island Effect - Non-roof	1		50% parking under cover and roof is SRI-29 or vegetated
1	0	0	Credit 7.2	Heat Island Effect - Roof	1		
1	0	0	Credit 8	Light Pollution Reduction	1		follow design requirements
2	4	4	**Water Efficiency**	Possible Points:	10		
Y	N	?				Team	Strategy
Y			Prereq 1	Water Use Reduction - 20% Reduction	0		
2	0	2	Credit 1	Water Efficient Landscaping	2-4		reduce potable water for irrigation by 50% from baseline
0	2	0	Credit 2	Innovative Wastewater Technologies	2		
0	2	2	Credit 3	Water Use Reduction	2-4		30% reduction (2 pts) / 35% (3 pts) / 40% (4 pts)
9	7	19	**Energy and Atmosphere**	Possible Points:	35		
Y	N	?				Team	Strategy
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	0		
Y			Prereq 2	Minimum Energy Performance	0		
Y			Prereq 3	Fundamental Refrigerant Management	0		
5	0	14	Credit 1	Optimize Energy Performance	1-19		Boston Energy Stretch Code requires > 20% above Ashrae 90.1 2007
0	7	0	Credit 2	On-Site Renewable Energy	1-7		requires production of 1% (to 13%) of total building energy cost
2	0	0	Credit 3	Enhanced Commissioning	2		
2	0	0	Credit 4	Enhanced Refrigerant Management	2		
0	0	3	Credit 5	Measurement and Verification	3		
0	0	2	Credit 6	Green Power	2		
3	7	4	**Materials and Resources**	Possible Points:	14		
Y	N	?				Team	Strategy
Y			Prereq 1	Storage and Collection of Recyclables	0		
0	3	0	Credit 1.1	Building Reuse - Maintain Existing Walls, Floors, and Roof	1-3		
0	1	0	Credit 1.2	Building Reuse - Maintain 50% of Interior Non-Structural Elements	1		
2	0	0	Credit 2	Construction Waste Management	1-2		75% diverted from landfill
0	1	1	Credit 3	Materials Reuse	1-2		
0	1	1	Credit 4	Recycled Content	1-2		
0	1	1	Credit 5	Regional Materials	1-2		
0	0	1	Credit 6	Rapidly Renewable Materials	1		
1	0	0	Credit 7	Certified Wood	1		
7	1	7	**Indoor Environmental Quality**	Possible Points:	15		
Y	N	?				Team	Strategy
Y			Prereq 1	Minimum Indoor Air Quality Performance	0		
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	0		
0	0	1	Credit 1	Outdoor Air Delivery Monitoring	1		
0	0	1	Credit 2	Increased Ventilation	1		
1	0	0	Credit 3.1	Construction IAQ Management Plan - During Construction	1		
1	0	0	Credit 3.2	Construction IAQ Management Plan - Before Occupancy	1		
1	0	0	Credit 4.1	Low-Emitting Materials - Adhesives and Sealants	1		
1	0	0	Credit 4.2	Low-Emitting Materials - Paints and Coatings	1		
1	0	0	Credit 4.3	Low-Emitting Materials - Flooring Systems	1		
1	0	0	Credit 4.4	Low-Emitting Materials - Composite Wood and Agrifiber Products	1		
1	0	0	Credit 5	Indoor Chemical and Pollutant Source Control	1		
0	0	1	Credit 6.1	Controllability of Systems - Lighting	1		
0	0	1	Credit 6.2	Controllability of Systems - Thermal Comfort	1		
0	0	1	Credit 7.1	Thermal Comfort - Design	1		
0	0	1	Credit 7.2	Thermal Comfort - Verification	1		
0	0	1	Credit 8.1	Daylight and Views - Daylight	1		
0	1	0	Credit 8.2	Daylight and Views - Views	1		
3	0	3	**Innovation and Design Process**	Possible Points:	6		
Y	N	?				Team	Strategy
1	0	0	Credit 1.1	Innovation in Design: Specific Title	1		divert 95% of construction waste from landfill
1	0	0	Credit 1.2	Innovation in Design: Specific Title	1		
0	0	1	Credit 1.3	Innovation in Design: Specific Title	1		
0	0	1	Credit 1.4	Innovation in Design: Specific Title	1		
0	0	1	Credit 1.5	Innovation in Design: Specific Title	1		
1	0	0	Credit 2	LEED Accredited Professional	1		
3	0	1	**Regional Priority Credits**	Possible Points:	4		
Y	N	?		Zipcode 02135		Team	Strategy
1	0	0	Credit 1.1	Regional Priority:	1		SSc3: brownfield redevelopment
1	0	0	Credit 1.2	Regional Priority:	1		SSc7.2: heat island effect roof
1	0	0	Credit 1.3	Regional Priority:	1		SSc7.1: heat island effect non-roof
0	0	1	Credit 1.4	Regional Priority:	1		SSc6.1: stormwater design quantity control
0	0	0	Not Used	Regional Priority:			MRc1: 75% bldg reuse
0	0	0	Not Used	Regional Priority:			EAc2: onsite renewable
46	20	44	**Total**	Possible Points:	110		
Y	N	?	Certified 40-49 Silver 50-59 Gold 60-79 Platinum 80-110				

Figure 4.12-3
LEED Checklist

Project Checklist: C1 C2 C3 C4 and A3 Buildings -- Core & Shell Retail and Office Buildings
LEED 2009 Core & Shell
Project: New Brighton Landing / #11041
Elkus Manfredi Architects
Date April 12 2012

Y	N	?	Credit	Description	Possible Points	Team	Strategy
48	**19**	**43**	**Total**	Possible Points:	**110**		
Y	N	?	Certified 40-49 Silver 50-59 Gold 60-79 Platinum 80-110				
20	**1**	**7**	**Sustainable Sites**	Possible Points:	**28**		
Y	N	?				Team	Strategy
Y			Prereq 1	Construction Activity Pollution Prevention	0		
1	0	0	Credit 1	Site Selection	1		
5	0	0	Credit 2	Development Density and Community Connectivity	5		
1	0	0	Credit 3	Brownfield Redevelopment	1		remediation of asbestos in existing buildings on site
6	0	0	Credit 4.1	Alternative Transportation - Public Transportation Access	6		
2	0	0	Credit 4.2	Alternative Transportation - Bicycle Storage and Changing Rooms	2		
0	0	3	Credit 4.3	Alternative Transportation - Low-Emitting and Fuel-Efficient Vehicles	3		
0	0	2	Credit 4.4	Alternative Transportation - Parking Capacity	2		meet but not exceed min parking zoning reqmnts
1	0	0	Credit 5.1	Site Development - Protect or Restore Habitat	1		restore 20% of site area (includes vegetated roof surfaces)
1	0	0	Credit 5.2	Site Development - Maximize Open Space	1		open space exceeds zoning by 25%
0	0	1	Credit 6.1	Stormwater Design - Quantity Control	1		implement stormwater management plan/design
0	1	0	Credit 6.2	Stormwater Design - Quality Control	1		
1	0	0	Credit 7.1	Heat Island Effect - Non-roof	1		50% parking under cover and roof is SRI-29 or vegetated
1	0	0	Credit 7.2	Heat Island Effect - Roof	1		
0	0	1	Credit 8	Light Pollution Reduction	1		follow design requirements
1	0	0	Credit 9	Tenant Design and Construction Guidelines	1		provide voluntary (not mandatory) guidelines to tenants
2	**4**	**4**	**Water Efficiency**	Possible Points:	**10**		
Y	N	?				Team	Strategy
Y			Prereq 1	Water Use Reduction - 20% Reduction	0		
2	0	2	Credit 1	Water Efficient Landscaping	2-4		reduce potable water for irrigation by 50% from baseline
0	2	0	Credit 2	Innovative Wastewater Technologies	2		
0	2	2	Credit 3	Water Use Reduction	2-4		30% reduction (2 pts) / 35% (3 pts) / 40% (4 pts)
12	**4**	**21**	**Energy and Atmosphere**	Possible Points:	**37**		
Y	N	?				Team	Strategy
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	0		
Y			Prereq 2	Minimum Energy Performance	0		
Y			Prereq 3	Fundamental Refrigerant Management	0		
7	0	14	Credit 1	Optimize Energy Performance	3-21		Boston Energy Stretch Code requires > 20% above Ashrae 90.1 2007
0	4	0	Credit 2	On-Site Renewable Energy	4		requires production of 1% of total building energy cost
2	0	0	Credit 3	Enhanced Commissioning	2		
0	0	2	Credit 4	Enhanced Refrigerant Management	2		
0	0	3	Credit 5.1	Measurement and Verification - Base Building	3		
3	0	0	Credit 5.2	Measurement and Verification - Tenant Sub-meeting	3		
0	0	2	Credit 6	Green Power	2		
3	**8**	**2**	**Materials and Resources**	Possible Points:	**13**		
Y	N	?				Team	Strategy
Y			Prereq 1	Storage & Collection of Recyclables	0		
0	5	0	Credit 1	Building Reuse - Maintain Existing Walls, Floors and Roof	1-5		
2	0	0	Credit 2	Construction Waste Management	1-2		75% diverted from landfill
0	1	0	Credit 3	Materials Reuse	1		
0	1	1	Credit 4	Recycled Content	1-2		
0	1	1	Credit 5	Regional Materials	1-2		
1	0	0	Credit 6	Certified Wood	1		
6	**2**	**4**	**Indoor Environmental Quality**	Possible Points:	**12**		
Y	N	?				Team	Strategy
Y			Prereq 1	Minimum Indoor Air Quality Performance	0		
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	0		
0	0	1	Credit 1	Outdoor Air Delivery Monitoring	1		
0	1	0	Credit 2	Increased Ventilation	1		
1	0	0	Credit 3	Construction IAQ Management Plan - During Construction	1		
1	0	0	Credit 4.1	Low-Emitting Materials - Adhesives and Sealants	1		
1	0	0	Credit 4.2	Low-Emitting Materials - Paints and Coatings	1		
1	0	0	Credit 4.3	Low-Emitting Materials - Flooring Systems	1		
1	0	0	Credit 4.4	Low-Emitting Materials - Composite Wood and Agrifiber Products	1		
1	0	0	Credit 5	Indoor Chemical and Pollutant Source Control	1		
0	0	1	Credit 6	Controllability of Systems - Thermal Comfort	1		
0	1	0	Credit 7	Thermal Comfort - Design	1		
0	0	1	Credit 8.1	Daylight and Views - Daylight	1		
0	0	1	Credit 8.2	Daylight and Views - Views	1		
2	**0**	**4**	**Innovation and Design Process**	Possible Points:	**6**		
Y	N	?				Team	Strategy
1	0	0	Credit 1.1	Innovation in Design: Specific Title:	1		divert 95% of construction waste from landfill
0	0	1	Credit 1.2	Innovation in Design: Specific Title: TBD	1		
0	0	1	Credit 1.3	Innovation in Design: Specific Title	1		
0	0	1	Credit 1.4	Innovation in Design: Specific Title	1		
0	0	1	Credit 1.5	Innovation in Design: Specific Title	1		
1	0	0	Credit 2	LEED Accredited Professional	1		
3	**0**	**1**	**Regional Priority Credits**	Possible Points:	**4**		
Y	N	?		Zipcode 02135		Team	Strategy
1	0	0	Credit 1.1	Regional Priority:	1		SSc3: brownfield redevelopment
1	0	0	Credit 1.2	Regional Priority:	1		SSc7.2: heat island effect roof
1	0	0	Credit 1.3	Regional Priority:	1		SSc7.1: heat island effect non-roof
0	0	1	Credit 1.4	Regional Priority:	1		SSc6.1: stormwater design quantity control
0	0	0	Not Used	Regional Priority:			MRc1: 75% bldg reuse
0	0	0	Not Used	Regional Priority:			EAc2: onsite renewable
48	**19**	**43**	**Total**	Possible Points:	**110**		
Y	N	?	Certified 40-49 Silver 50-59 Gold 60-79 Platinum 80-110				

4.13 Climate Change Adaptation

Impacts from climate change are anticipated to include more severe storms and more days with hotter temperatures. This section provides a discussion of the Project's plans in regard to adapting to anticipated effects of climate change.

4.13.1 Riverine and Severe Storm Impacts

The Project site is located more than 500 feet south of the Charles River and is several feet above the 100-year flood plain related to the river. Although no impacts on the Project from the Charles River are anticipated in the future, as the design of the Project moves forward, the Proponent will look at updated information and plan accordingly.

Climate change is anticipated to result in more severe storms than currently occur. Rains from these storms may result in localized flooding and stress the existing stormwater infrastructure.

The Project will be located at a higher elevation than much of the surrounding area within the neighborhood, minimizing the potential for local flooding to impact the building. As design of the project moves forward, the most up-to-date information will be analyzed to determine the potential impacts from localized flooding and any design adjustments that may be required to minimize the impact on the project.

Localized flooding can be minimized by proper stormwater infrastructure in the area of the Project. As part of the permitting process, the Project will submit stormwater management plans for the Project to the BWSC. Surface drain structures required by the Project will be developed to meet the latest city and state codes and standards. Compliance with the standards for the final site design will be reviewed as part of BWSC's Site Plan Review process.

4.13.2 Heat Waves

It is anticipated that Boston will have an increased number of days above 100°F. Sustained high temperatures (heat waves) will have a number of impacts, including stress on the electrical grid resulting in possible blackouts. There are a number of design and operational choices that can help minimize the impact of heat waves. Energy conservation and other energy management building systems will be integral components of the Proposed Project. In addition, the design concepts for each building of the Proposed Project offer a combination of high-albedo roof membrane and vegetated green material to minimize heat gain and by doing so reduce the energy needs of the Project.

Section 5.0

Urban Design

5.0 URBAN DESIGN

Overall, the Project will strengthen the surrounding urban fabric by creating new green spaces, instituting a more urban street grid, and vastly improving the pedestrian experience. The architectural character of the Project exemplifies a forward-thinking, innovative, and contemporary approach that will create a distinctive identity for the revitalized district.

5.1 Existing Urban Fabric

The Brighton Guest Street area is a distinct district within Boston, having unique history, identity, and character. During the nineteenth century, the district grew around the robust commercial railroad transportation system owned and operated by the Boston and Albany Railroad Company. Connectivity to the rail yard spawned significant industrial activity, particularly the meat processing industry. The Brighton Stock Yards Company and the Butchers Slaughtering and Melting Association were the two dominant companies, controlling significant tracks of land, and providing employment for many Boston residents. This important component of Boston's economy was supported by the extension of passenger railroad service connecting the neighborhood with two station stops which flanked the stockyards.

Defined by the rail lines to the north, Market Street to the west, North Beacon to the south and Everett Street to the east, the Guest Street district has remained relatively unchanged over the last century. Prior to the introduction of the Massachusetts Turnpike (I-90) in the 1960's, the district was dominated by large stockyard buildings with footprints in the excess of four acres and building facades exceeding 500 linear feet. Due to its industrial nature, the district never developed a true urban street grid. Instead, it primarily relied on service roads and driveways to provide access to the industrial buildings that dominated the area.

There is a common misconception that the introduction of the Turnpike interrupted the north/south connectivity of the urban street grid and divided previously existing neighborhoods. The historical record of this district shows that Market Street to the west and Everett Street to the east were the only streets ever developed connecting the district to the neighborhood to the north. By the time the Massachusetts Turnpike was constructed, the stockyards were gone and the district had been transformed into area defined by warehouse and light industrial uses.

In recent decades, office buildings, including the headquarters for WGBH and New Balance, have replaced some of the former warehouses and light industrial spaces. In addition to the new office buildings, a suburban style shopping center anchored by Stop & Shop has been developed to service the abutting residential neighborhoods. The design of the shopping center has perpetuated the large building footprints and ill-defined urbanity of the district which is punctuated by the large surface parking lots that surround the development.

Today, the district lacks green open space and is characterized by an unfriendly pedestrian public realm dominated by paved land consistent with a traditional industrial setting. There are also a handful of residential buildings originally constructed in the 1900's. However, over time a majority of these structures have been converted to commercial uses.

5.2 Urban Design Principles

The design of the Project embodies several key urban design principles specific to the Guest Street district and the Project site, which include:

- Embracing the history of the district while creating a new identity for the district's revitalization.
- Implementing development that recognizes, respects, and reinforces the scale and character of the surrounding uses within the district.
- Increasing connectivity of the district with improved pedestrian, bicycle and vehicular access into, through and around the sites.
- Fostering an active, pedestrian friendly Guest Street corridor.
- Creating a variety of new publicly accessible urban open spaces.
- Supporting the goals set forth by the Brighton Guest Street Area Planning Study whenever possible.

5.3 Establishing an Urban Street Grid

One of the primary urban design goals of the Project is to develop and enhance a new urban street grid throughout the Project boundaries. This new design will achieve one of the main objectives of the recently completed Brighton Guest Street Area Planning Study, which proposed the addition of a new urban street grid within the district. Although the Project does not control all of the land necessary to implement the entire new grid, wherever possible, the Proposed Project has strategically laid the groundwork for an improved street network by planning to redevelop existing streets, build new streets, and maintain flexibility as the district matures. The proposed site plan is shown on Figure 2.2-1 in Chapter 2. Figure 5.3-1 depicts the overall Project in context. The following streets are proposed to be either added or redeveloped as part of the Project.

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Figure 5.3-1
Aerial Perspective Looking Northwest

5.3.1 Guest Street

The redevelopment of the Guest Street corridor is planned to be the focal point of not only the Project, but the district as a whole. The current streetscape will be completely redesigned and reconstructed to include two vehicular travel lanes, two bicycle lanes, parallel parking, and wide pedestrian friendly sidewalks along both sides of the street. Guest Street will be lined with active uses including retail, restaurants, office lobby entrances, and well defined outdoor spaces for public use. The street will have continuous frontage by buildings on both sides and will be well landscaped with trees and street furniture. All utilities will be relocated below grade. Building services, including loading docks and mechanical equipment rooms, transformers, and other necessary infrastructure components will be located along the new service street to the north directly adjacent to the railroad ROW, ensuring continuous street frontage along Guest Street for a more pedestrian friendly environment. A Landscape Plan is shown on Figure 2.2-2 in Chapter 2.

The redevelopment of Guest Street will be continuous from Market Street to the intersection of Arthur Street. An important component of the traffic mitigation associated with the Project will be the new connection of Guest Street to Everett Street, ultimately allowing for significant improvements in east/west traffic flow. This connection was previously identified by the Brighton Guest Street Area Planning Study and is being planned for.

5.3.2 Life Street

Life Street, which currently connects North Beacon Street to Guest Street, will be modified to further define the proposed urban grid and enhance the pedestrian and vehicular connectivity of the neighborhood. The Proposed Project envisions rotating Life Street approximately eight degrees clockwise from its current location such that the north end of Life Street at its intersection with Guest Street is shifted slightly east and the south end at its intersection with North Beacon Street is shifted slightly west. This modification will result in three important urban design features for the district.

First, with construction of the Proposed Project, the realignment will allow Life Street to continue from North Beacon Street north all the way to the railroad ROW adjacent to the Massachusetts Turnpike. The extension of Life Street will increase the porosity of the urban grid and provide important view corridors from both the north and south. Shifting Life Street will also allow for the creation of an efficient development parcel to the east of the existing New Balance Headquarters. This site will come to define the urban edge of the intersection of Guest and Life Streets. If the street is not shifted, the building frontage facing the public realm will consist of loading docks and mechanical equipment rooms. This shift in the grid provides greater building frontage which supports active pedestrian uses abutting the public realm.

Secondly, the proposed realignment of Life Street will result in a new four-way intersection at North Beacon Street which corresponds to Etna Street on the south side of North Beacon. The new intersection will allow for a continuous northerly view corridor, streetscape, and better pedestrian, bicycle and vehicular circulation. Currently, Life Street intersects North Beacon Street slightly off center and asymmetrically to Etna Street, not allowing for a clear pedestrian crossing at this intersection. Additionally, shifting Life Street will result in improved alignment to match the orientation of the abutting north/south streets, including Market, Hichborn, and Arthur Streets respectfully.

The third advantage to the realignment of Life Street is the addition of a small developable parcel on the east side of the existing five-story parking garage located at the southwest corner of Life and Guest Streets. In its current state, the garage does little to support the pedestrian realm along Life Street. Shifting Life Street to the east will allow for the addition of retail frontage along the ground level of the garage thereby masking the garage from view and further activating the public realm.

The Proponent controls the land necessary to accomplish the Life Street realignment from the southeast corner of the existing parking garage (on the west side of Life Street) to the northern project boundary abutting the railroad ROW. The southern section of Life Street between the southeastern corner of the parking garage to North Beacon Street is outside the Proponent's control and would require realignment at a later date when the abutting parcels are redeveloped. It should be noted that the proposed street realignment may require replatting with the City of Boston as part of the redevelopment process.

5.3.3 Hichborn Street Extension

The Proposed Project suggests extending Hichborn Street beginning from where it currently turns east toward Arthur Street north across Guest Street to the Project's northern boundary at the railroad ROW. The Proposal envisions the creation of an approximately half-acre public plaza at the intersection of Hichborn and Guest Street. This plaza will be designed to be a focal point of the district. For now, the proposed street extension will only be developed north of Guest Street as the land south of Guest Street is not controlled by the Proponent. The parcel directly to the west of the proposed Hichborn Street extension, where the sports complex project will be located, includes additional outdoor landscaped space along the south side of Guest Street. In keeping with the spirit of the Brighton Guest Street Area Planning Study, the intent of this additional open space is to provide a variety of new public spaces for the local community to use and enjoy. Ideally, the open space proposed to the west of Hichborn Street will be extended southerly to North Beacon Street by subsequent development projects.

5.3.4 Arthur Street

As proposed by the Brighton Guest Street Area Planning Study, the Project embraces the redevelopment of Arthur Street into a grand boulevard. Although this boulevard is outside the Proponent's control, the Project as proposed, allows for and encourages the development of this boulevard in the future. The full intent of this boulevard will be to culminate in a new commuter rail station and a public green which would drastically transform the district and redefine the urban nature of the boulevard's abutting properties. The Project proposes to build the westerly boundary of "the green" north of Guest Street and provides the vehicular and pedestrian infrastructure required for its future implementation. Agreement between numerous stakeholders will be necessary to adopt the Brighton Guest Street Area Planning Study's vision, but the Proposed Project will act as a catalyst for future development along Arthur Street increasing the likelihood that this ambitious plan will be realized.

5.3.5 "New Street"

The Project proposes to build a "new street" running parallel to Guest Street to the south. The new street will begin at Life Street at the southeast corner of the existing parking garage and extend east for approximately 300 feet to Hichborn Street. This street is consistent with the street proposed by the Brighton Guest Street Area Planning Study and defines the southern boundary of the new city block containing the new athletic complex. This block, which is "sandwiched" between Guest Street and the new parallel street, will be partially completed as part of the Proposed Project. The continuation of this new street will be dependent on future development of abutting parcels to the south and east. Under the Proposed Project, approximately two thirds of the street will be constructed and utilized as a service drive for access to the sports complex's parking and loading infrastructure. The street will be developed with sidewalks, landscaping, and other improvements along the portions of land controlled by the Proponent. The completion of the new road to its full potential will be undertaken by future developments of the abutting properties.

5.3.6 "Service Street"

In order to service the proposed new development north of Guest Street, the Proponent plans on constructing a new service street that will run parallel to Guest Street and abut the northern boundary of the site along the railroad ROW. The proposed service street will provide access to parking and loading facilities servicing the new development. The introduction of this street removes all service related functions from Guest Street, thereby maximizing the revitalization of the public realm and providing a more pedestrian friendly environment reserved for retail, restaurant, office lobby, and open space uses.

5.4 Building Design

5.4.1 New Balance Headquarters (Building A1)

The new headquarters building for New Balance will be a 250,000 square foot building running parallel to the Massachusetts Turnpike with a maximum height of 130 feet. The horizontal orientation of the building was inspired by New Balance's existing facilities in Lawrence, Massachusetts which are located in an old 600-foot long mill building, with high floor to floor heights and a relatively narrow building width. This layout will allow for natural light to permeate into the building contributing to the structure's overall sustainability, while affording all employees access to daylight. Additionally, the building's configuration is intended to foster collaboration and innovation among employees, in part, by minimizing vertical separation of staff by limiting the overall number of floors.

The north and south facades will be composed of a glass curtain wall system to enclose the unique profile of the structure and afford views both into and out of the building. The five floors of office will hover over a raised base podium which will house the main office lobby, street level retail facing Guest Street, and two levels of above-grade parking. The roof of the podium will be a fully accessible green roof with extensive plantings and outdoor areas for employees and visitors. Public functions within the building will also be located on the podium level and will have direct access to outdoor space, maximizing their intended use and further activating the public realm. In addition to the podium level green space, the upper roof of the building will have an extensive green roof with an outdoor running/walking track around the perimeter. See Figure 5.4-1.

5.4.2 Hotel (Building A2)

The proposed hotel will have approximately 175 rooms, and total approximately 140,000 square feet, including a 3,000 square-foot ballroom, meeting rooms, and related back of the house spaces. The building's relatively small footprint is intended to anchor the corner of Guest and Arthur Streets with a height of approximately 205 feet and will act as a visual landmark for the New Brighton Landing District. The Guest Street façade and portions of the east and west façades will be composed of terra cotta panels and "punched" glass openings. The north façade will be composed of a curvilinear glass curtain wall which affords a clean, expressive image toward the Massachusetts Turnpike while maximizing views to the Charles River and Boston skyline. See Figure 5.4-2.

The base of the hotel, which fronts Guest Street and the future Arthur Street Boulevard, is designed to maximize pedestrian activity on the street. The public functions of the hotel, including the lobby, meeting spaces, and adjoining restaurant will be immediately accessible from the sidewalk at Guest Street with the intent to further activate the street with pedestrians. The easterly side of the base of the hotel may have the ballroom located at street level, which would serve as an active edge fronting the proposed Arthur Street Boulevard. The location and configuration will depend upon the hotel operator's design

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Figure 5.4-1
Eye Level Perspective Looking West from Turnpike

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Figure 5.4-2
Eye Level Perspective Looking Northeast from Guest Street

criteria and will evolve during the design process. The remainder of the podium base along the western end of Guest Street will have several retail stores fronting the main corridor and concealing the parking housed within the podium base beyond.

5.4.3 Sports Complex (Building B)

The sports complex will be a unique athletic facility housing a variety of publicly accessible sporting venues. The building will offer a diverse program of uses and will act as the backbone of the new health and wellness district.

A major component of the sports complex will be a ice hockey rink with approximately 1,000 seats. The rink will be located at the lower level of the building approximately 16 feet below grade. The hockey rink's entrance will front Guest Street between street level retail with the main concourse facilities located at grade. The spectator seating will slope down from the concourse level towards the rink below. Locker rooms will also be located adjacent to the rink on the lower level.

A fitness club will occupy the eastern half of the ground level of the building. Like the hockey rink, the fitness center will be entered between ground level retail stores that front Guest Street. The club will offer amenities such as weight rooms, cardio work out rooms, basketball, yoga studios, and the like. The fitness club will offer exceptionally high ceilings and expansive exterior glazing on its east and south facades, allowing views both into and out of the facility.

The second floor of the building has been contemplated to house approximately 30,000 square feet of third party medical office space. The medical office space is intended to be leased by third party users focused on sports related medicine. The medical office will be entered from a dedicated office lobby which fronts Guest Street with dedicated vertical transportation for the users.

The ground level of the sports complex fronting Guest Street will have near continuous retail frontage facing the sidewalk. The retail will be third party retail which will support the development, users of the sports complex and the surrounding neighborhood. The retail space is designed to be flexible, allowing for either future restaurant or dry retail use.

A state of the art, hydraulically banked 200-meter track will be occupy the upper most floor of the sports complex. The track will be used as a space for training and competition for track and field events. Located directly off the concourse overlooking Guest Street, the track facility is designed to allow approximately 3,500 spectators with ancillary facilities including concessions and bathrooms. The track and field facility will be entered off a grand outdoor stair located on the northeast corner directly opposite the outdoor plaza on the north side of Guest Street. The facility will be designed to accommodate all levels of competition.

The sports complex will also have a on-site below grade parking spaces. Parking will be accessed from the south side of the facility and is intended to be utilized by the fitness members with additional parking for sports complex users located directly across Guest Street beneath the proposed office buildings and World Headquarters building.

As designed, the facility will approximately be a 345,000 square foot, 95-foot high structure with an asymmetrically curved roof. The low point of the roof will be on the southern side of the building and gently slopes away from the neighborhood culminating with the highest point fronting Guest Street. The roof line will be punctuated with three horizontal roof monitors allowing diffused southern light into the track and field venue beneath. To the north and east, the building façades are primarily glazed, allowing for natural light and views into and out of the facility. The ground levels of the building fronting Guest Street to the north and Life Street to the west are designed as retail store fronts allowing retail tenants to maintain their own identity while maximizing the variety of architecture directly fronting the pedestrian realm. See Figure 5.4-3.

The eastern face of the building, which will front the future Hichborn Street extension, is where the roof form will reveal itself as an integral component of the building and ultimate extension of the ground plane. It is from the east that pedestrians will be able to view the grand stair case that will rise from Guest Street to the exterior balcony. From here it will gently turn upward becoming the roof form above culminating at the peak of the roof facing north back towards Guest Street. In the short term, this view will not reveal itself. Only when the final master plan and extension of Hichborn Street are realized will this façade become apparent and reach its full visual potential.

5.4.4 Office Buildings (Building C1, C2, and C3)

The final element of the Proposed Project are up to three additional office buildings, totaling approximately 650,000 square feet and having a maximum height of up to 165 feet. They will be located between the proposed new New Balance World Headquarters to the west and the existing headquarters building to the east.

The massing of the three buildings varies both in height and configuration. The variable heights and configurations were designed deliberately to maximize diversity of the architecture and cadence of the built form as viewed from both the north and the south. See Figures 5.4-4 and 5.4-5.

The three office buildings will have a variety of exterior wall finishes with the dominant material consisting of glass curtain walls. The curtain wall will vary on each building as will the glass color and level of transparency. The solid spandrel materials are still under development and will range from terra-cotta, painted composite metal panels, and/or precast concrete spandrel panels.

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Figure 5.4-3
Eye Level Perspective Looking Southwest from Guest Street

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Figure 5.4-4
Aerial Perspective Looking Southeast

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Boston, Massachusetts

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Figure 5.4-5
Eye Level Perspective Looking West from Turnpike

The two buildings to the west (C2 and C3) will rest on a 2-story above-grade podium similar to the proposed new Headquarters building. The 2-story podium will include ground level retail fronting on Guest Street, behind which will be a parking garage similar to the podium located within the A block. The roof of the podium will be a combination of planted and hardscape areas and is intended for use by the building occupants.

Buildings C2 and C3 will both front the Guest Street corridor with their main doors and respective lobbies accessible directly from the Guest Street sidewalk. Building C2 will be aligned to define the easterly street edge of the Life Street extension and the westerly edge of the raised podium. The ground level of the building will have active public edges fronting both Life Street and Guest Street, including retail, building lobbies, and bicycle parking areas. Building C3 will be aligned to hold the easterly edge of the podium and fronts both Guest Street and the westerly edge of the public plaza in front of the new Headquarters Building. The ground floor will contain similar types of public spaces as outlined for building C2. Building C1, the most westerly building, will front the westerly edge of the Life Street extension and Guest Street to the south. The ground floor will contain similar types of public spaces as outlined for buildings C2 and C3.

Section 6.0

Infrastructure Systems

6.0 INFRASTRUCTURE SYSTEMS

6.1 Introduction

This chapter discusses the existing and proposed utility infrastructure systems that will support the Project. Much of the existing infrastructure will be used to provide utility services to the various project components; however, during the design development process there may be methods of improving efficiency or expanding service that may prove to be beneficial to the Project and the surrounding neighborhood.

This section discusses sewer, water, electrical, telecommunications, gas, and steam. Note that stormwater is discussed in Section 4.6.

The proposed project includes the demolition of the existing structures at 38-40 Guest Street, 77 Guest Street and 180 Guest Street. The current utility service connections for these buildings will be abandoned and capped at the street line. It is not anticipated that the existing service connections will be reused for the Proposed Project.

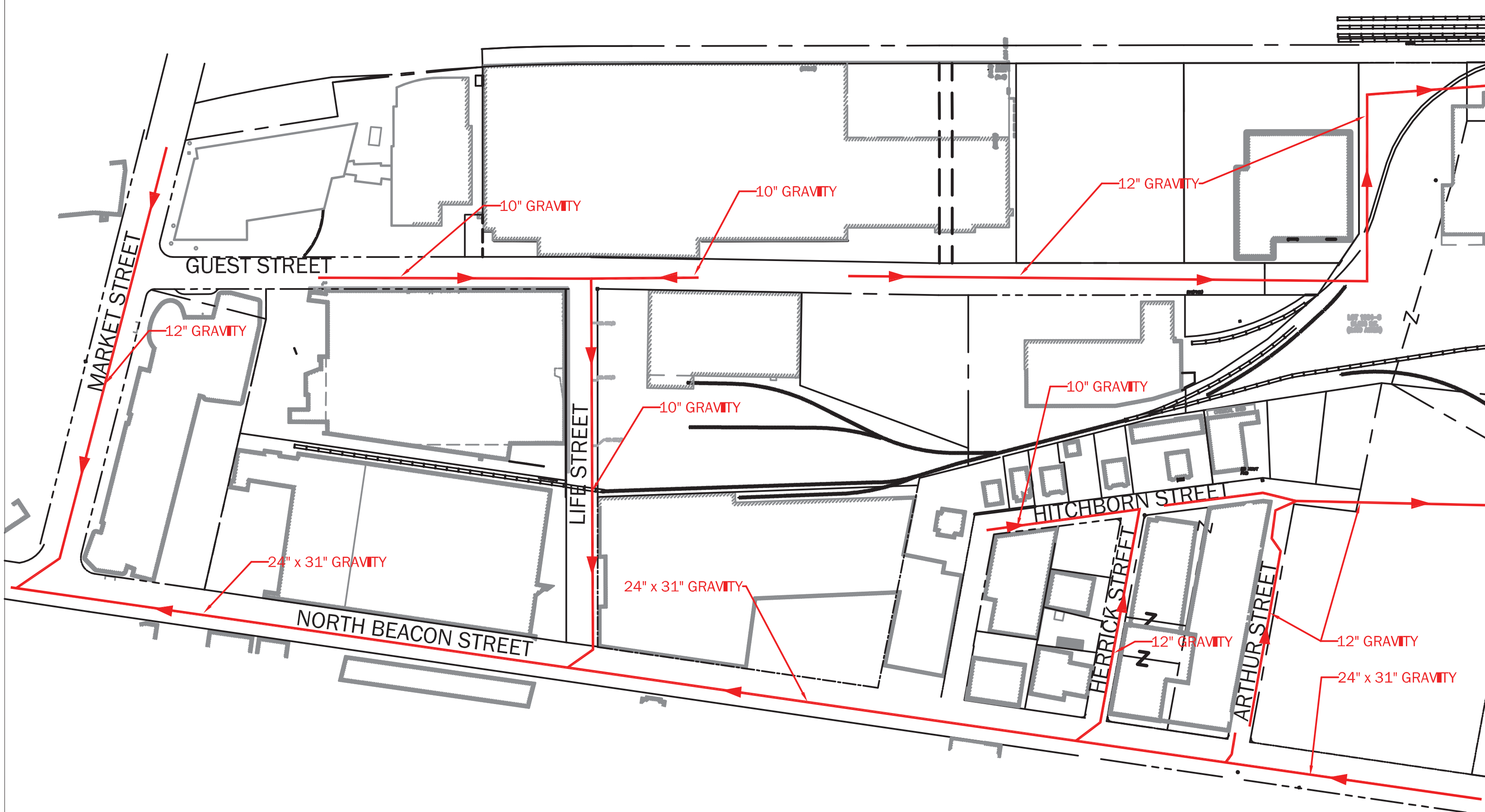
6.2 Wastewater

6.2.1 Existing Sanitary Sewer System

The Project site is currently served by two separate sanitary sewer mains owned and operated by the Boston Water and Sewer Commission (BWSC). 38-40 Guest Street and 77 Guest Street are both served by a 10-inch gravity main within the Guest Street right-of-way. This main flows to the intersection of Guest Street and Life Street and turns south to another 10-inch main in Life Street. This main connects to a 24-inch by 30-inch main that flows under North Beacon Street. This ultimately crosses Market Street and joins a 30-inch by 39-inch main which continues west under North Beacon Street.

180 Guest Street is served by a 12-inch gravity main within the Guest Street right-of-way. This main flows east before turning north for a short distance and turning east again to run behind the existing Stop & Shop building. The main transitions from 12 to 15 inches during the easterly run behind Stop & Shop. This main connects to a 28-inch by 42-inch brick main that flows northerly within Everett Street, crosses under the MBTA tracks and the Massachusetts Turnpike, and continues northerly.

These mains convey sanitary flows to the system owned and operated by the Massachusetts Water Resources Authority (MWRA) which carries the flow to the Deer Island Wastewater Treatment Plant for final treatment and disposal in Boston Harbor. These systems are shown on Figure 6.2-1.



PREPARED FOR:

NEW BRIGHTON LANDING, LLC

BEALS · ASSOCIATES INC.

2 Thirteenth Street Charlestown, MA 02129
Phone: 617-242-1120 Fax: 617-242-1190

NO.	REVISION/ISSUE	DATE

EXISTING SEWER MAINS

EXHIBIT PLAN
NEW BRIGHTON LANDING
IN THE CITY
BOSTON, MASSACHUSETTS

PROJECT C-674.01	DESIGN GMS	SHEET
DATE APRIL 26, 2012	CHECKED LMB	
SCALE AS NOTED	REVISED GMS	

PATH: S:\Data\C-674.01 Boston Public\Autocad\Site Plans\PNF Exhibits\PNF Exhibits 5-18-12.dwg

Figure 6.2-1
Existing Sewer Mains

6.2.2 *Project Generated Wastewater Flow*

As required by the BWSC, each of the Project's new buildings will have a separate sanitary sewer service connection. The Project is anticipated to generate the following net new flow to the sanitary sewer system:

Table 6.2-1 Wastewater Generation from Proposed Uses

Proposed Use	Size	Unit Flow	Total Flow (GPD)
Block A			
New Balance World Headquarters	250,000 sf	75 gpd/sf	18,750
Hotel	175 rooms	110 gpd/room	19,250
Hotel Restaurant	125 seats	35 gpd/seat	4,375
Block B			
Spectator Areas	3,500 seats	5 gpd/seat	17,500
Fitness Facility	400 lockers	20 gpd/locker	8,000
Medical Center	8 offices	250 gpd/office	2,000
Block C			
General Retail	65,000 sf	50 gpd/sf	3,250
General Restaurant	500 seats	35 gpd/seat	17,500
General Office	650,000 sf	75 gpd/sf	48,750
Total			139,375

Table 6.2-2 Wastewaster Generation from Existing Uses

Existing Use	Size	Unit Flow	Total Flow (GPD)
38-40 Guest Street	201,000 sf	75 gpd/sf	15,075
77 Guest Street	30,500 sf	75 gpd/sf	2,288
180 Guest Street	33,000 sf	75 gpd/sf	2,475
Total			19,838

The Proposed Wastewater Generation minus the existing generation that will be eliminated results in a net increase of 119,537 gallons per day.

The wastewater generation calculations are based on the requirements of 314 CMR 7.15, Massachusetts Division of Water Pollution Control Sewer Extension and Connection Permit as well as 310 CMR 15.203, Massachusetts Department of Environmental Protection State Environmental Code. Both of these sections provide guidelines on calculating wastewater flows. While these flows are generally considered conservative values for new construction given current technologies in water demand and wastewater generation, they are the accepted standard for determination of permitting thresholds and hydraulic capacity design.

The above tables indicate that the project will increase the existing wastewater flow to the system by approximately 120,000 gallons per day. As such, the project will require a Sewer Connection Permit from the Massachusetts Department of Environmental Protection (new flows in excess of 50,000 gpd) as well as review through the Massachusetts Environmental Policy Act (MEPA) Environmental Notification Form (ENF) (flows in excess of 100,000 gpd).

6.2.3 Sanitary Sewer Connection

At this time, it is envisioned that Block A will direct wastewater flow to the existing BWSC main that runs easterly along Guest Street, behind the Stop & Shop building, and then enters the larger main that flows north within Everett Street. Blocks B and C are anticipated to be directed toward the system that ultimately flows south down Life Street and west along North Beacon Street.

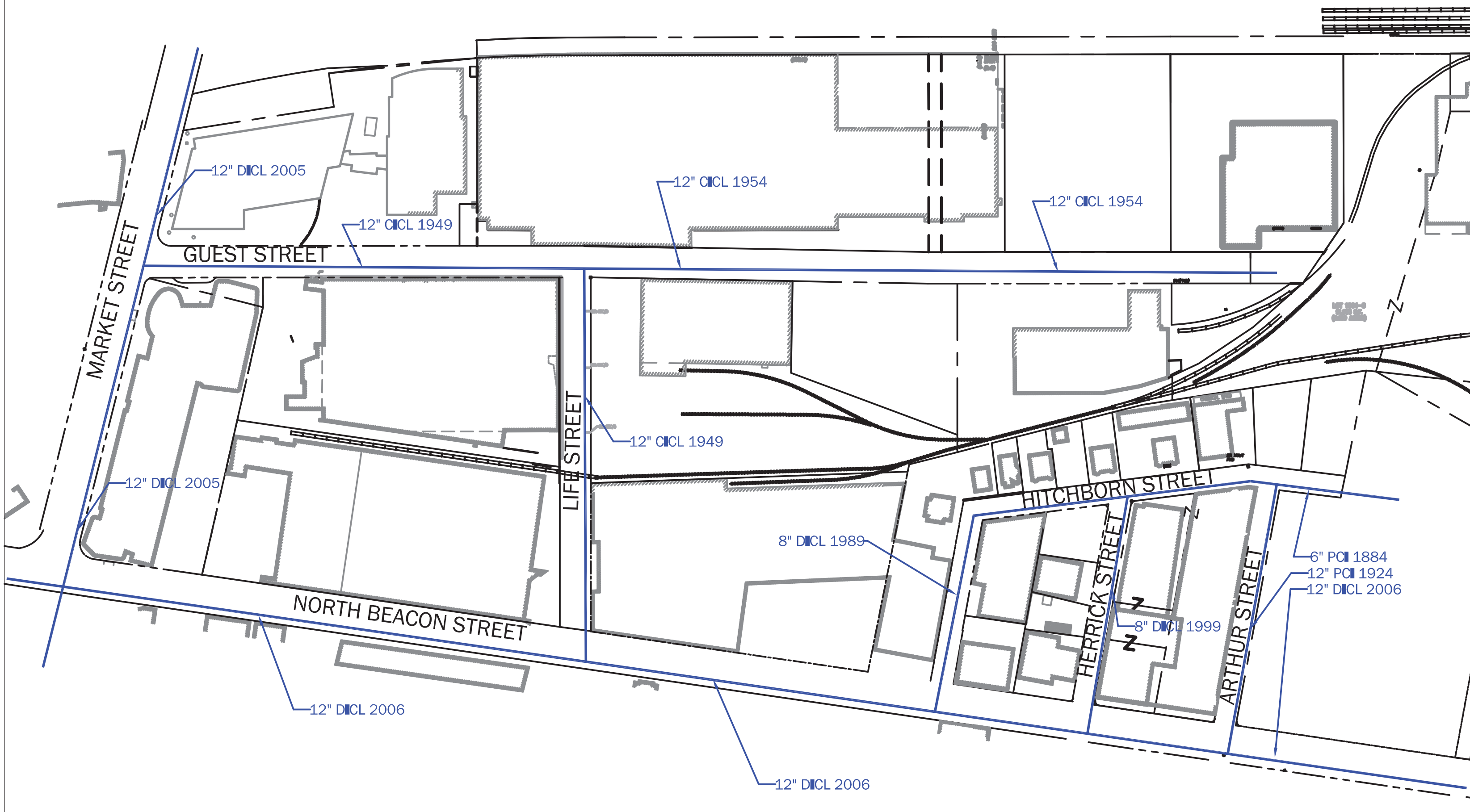
Preliminary discussions with BWSC staff indicate that the system will be able to accommodate the anticipated flows generated by the Project. In order to connect to the system, BWSC will require individual Site Plan Approvals for each separate building, a Sewer Use Discharge Permit and a Sewer Extension/Connection Permit. In addition, MWRA will likely require a Sewer Use Discharge Permit for the project.

6.3 Water System

6.3.1 Existing Water Service

The water mains in the site are owned and operated by BWSC. Water is purchased and supplied from MWRA. The MWRA water supply is considered an unlimited source from the Quabbin Reservoir in Central Massachusetts. Water to the project vicinity is delivered via the BWSC Low Pressure System for Brighton.

Guest Street, from Market Street to Life Street, is serviced by a looped 12-inch cast iron main (cement lined in 1949) that features connections to the overall water grid at both Market and Life Streets. Beyond Life Street, Guest Street is serviced by a 12-inch cast iron (cement lined in 1954) main that transitions to an 8-inch main near the easterly end of the building at 38-40 Guest Street. This main dead ends just west of the railroad track spur adjacent to the Stop & Shop parcel. The 12-inch cast iron main (cement lined in 1954) in Life Street serves as a gridded link between Guest Street and North Beacon Street where it connects to a 12-inch cast iron (cement lined in 2006) main. See Figure 6.3-1.



SOURCE:

BOSTON WATER AND SEWER COMMISSION GIS MAPPING, MARCH, 2012

PREPARED FOR:

NEW BRIGHTON LANDING, LLC

BEALS · ASSOCIATES INC.
2 Thirteenth Street Charlestown, MA 02129
Phone: 617-242-1120 Fax: 617-242-1190

NO.	REVISION/ISSUE	DATE

EXISTING WATER MAINS

EXHIBIT PLAN
NEW BRIGHTON LANDING
IN THE CITY
BOSTON, MASSACHUSETTS

PROJECT G-674.01	DESIGN GMS	SHEET
DATE APRIL 26, 2012	CHECKED LMB	
SCALE AS NOTED	REVISED GMS	

There are currently six hydrants along Guest Street. The hydrant at the western end of Guest Street was tested by BWSC on February 20, 2007. Results are presented in Table 6.3-1.

Table 6.3-1 Hydrant Test Results

Measure	Result
Static Pressure	62 psi
Residual Pressure	49 psi
Flow at Residual Pressure	1,486 gallons per minute
Calculated Flow @ 40 psi	1,985 gallons per minute
Calculated Flow @ 30 psi	2,420 gallons per minute

Existing water services (both domestic and fire) to be abandoned will be cut and capped at the main with the valve box, frame and cover removed. Fire protection service removal will be coordinated with BWSC, Boston Fire Department, and Inspectional Services Department. Prior to any demolition or abandonment of services, a Termination Verification Approval Form for Demolition will be submitted to BWSC for approval.

6.3.2 Project Generated Domestic Water Consumption

The overall project's estimated domestic water consumption can be calculated by applying a factor of 1.1 to the estimated wastewater generation calculations presented above. This will result in an additional 10 percent consumption that can be attributed to building cooling systems, overall system losses, and other consumption that is not converted into wastewater. The results of these calculations are presented below. Therefore, the total Project water demand will be 153,313 gallons per day.

BWSC has indicated that the system is anticipated to have adequate capacity to deliver this volume of water. This will be confirmed during the Site Plan Approval process with BWSC.

6.3.3 Proposed Water Service

The domestic water services to each proposed building will be tapped off the existing mains within Guest Street. Each service will have an individual meter that will be installed with meter transmitting units in accordance with BWSC's Automatic Meter Reading System. The exact size and location of each service will be determined during the final design and Site Plan Approval process.

Fire protection to each building will also be tapped from the Guest Street mains. It is anticipated that each building will utilize an 8-inch fire service. Any new hydrant locations will be coordinated with BWSC and Boston Fire Department. The building exteriors will also feature Siamese Connections for additional fire protection.

All services, both domestic and fire protection shall have backflow prevention devices.

6.3.4 Water Supply Conservation and Mitigation Measures

In order to minimize water consumption, the Project will utilize low consumption plumbing fixtures including low flow water closets and showers, aerated faucets in lavatories, and sensor operated devices in public areas.

At this time, the Project is not proposing irrigation. As part of the Leadership in Energy and Environmental Design (LEED) practices, the project will feature drought tolerant landscaping and rain gardens to provide any necessary irrigation.

6.4 Energy Systems

6.4.1 Electrical

Electrical service for the Project will be provided by NStar. The existing buildings along Guest Street are serviced by overhead lines. It is anticipated that the Guest Street lines will be relocated underground as part of the overall redevelopment project. Utility owned pad mounted transformers will be installed for each building with underground primary and secondary cables feeding the proposed structures. Switchgear will be located in electrical rooms within each building. Capacity issues are not anticipated for this project.

6.4.2 Natural Gas

The Project site is served by low pressure natural gas mains owned by National Grid. Each proposed building will have individual services that will provide energy to the heating, cooling and water heating units. These units will be high efficiency Energy Star compliant units and will be designed to function in accordance with the LEED design criteria.

6.4.3 Energy Conservation

The proposed buildings will be highly energy efficient; designed and constructed to Leadership in Energy and Environmental Design (LEED) standards. While specific design and construction examples have yet to be determined, the project team is committed to providing a highly functional project that incorporates current technologies to maximize emery efficiency to the extent practical.

6.5 Telecommunications Systems

Verizon provides telephone service in the Project area. There are existing telephone manholes and overhead telephone lines along Guest Street. The telephone facilities in this area, both overhead and underground, consist primarily of copper and fiber-optic cables. As part of the Project, it is anticipated that all telephone lines will be relocated underground within the Project limits.

During the final design of the Project, the applicant will work with Verizon to determine the proper sizing and number of pairs for the conduit and cables for each building. As with other utilities, capacity is not anticipated to be an issue.

Cable television and internet services are provided by Comcast in the Project area. Like the telephone services, there is a mix of above ground and below ground lines. The Project will ultimately relocate all lines underground. Each building will have service connections to these lines that will be designed by the applicant in consultation with Comcast.

6.6 Utility Protection during Construction

Prior to construction, the contractor will notify all utility owners and DigSafe prior to excavation. During construction, existing infrastructure will be protected using sheeting, shoring, temporary relocations and construction staging as required. The contractor will be required to coordinate all protection measures, temporary supports, and temporary shutdowns of all utilities with the appropriate utility owners, BWSC, Boston Public Works and other necessary agencies. The contractor will also be required to provide adequate notification to the utility owner prior to any work commencing on their utility. Also, in the event a utility cannot be maintained in service during a switch over to a temporary or permanent system, the contractor will be required to coordinate the shutdown with the utility owners and Project abutters to minimize impacts and inconveniences accordingly.

Section 7.0

Historic and Archaeological Resources

7.0 HISTORIC AND ARCHAEOLOGICAL RESOURCES

7.1 Historic Resources

This section identifies and describes the existing buildings on and in the vicinity of the Proposed Project site and evaluates the potential impacts that the Proposed Project may have on these resources.

7.2 Buildings on the Proposed Project Sites

A review of the Massachusetts Historical Commission (MHC) and Boston Landmarks Commission (BLC) files indicates the Project site does not contain any structures that are listed in the State or National Register of Historic Places, listed as Boston Landmarks, or included in the Inventory of Historic and Archaeological Assets of the Commonwealth (Inventory). The project site encompasses three buildings at 38-40 Guest Street, 77 Guest Street, and 180 Guest Street, as well as paved surface parking lots.

The building at 38-40 Guest Street is an industrial warehouse building, constructed ca.1954-1960. This building was previously the subject of an Article 85 (Demolition Delay) application (Application No. 08.596D1297) by the owner, Boston Super Markets, to demolish a portion of the building. At that time, the BLC determined that the warehouse is not a significant structure under the criteria for determining significance in Section 85-5.3(a-e) of the Demolition Delay ordinance. The partial demolition was undertaken in February 2008. The Project proponent will submit another application for Article 85 review for the remainder of the building.

The buildings at 77 Guest Street and 180 Guest Street are also mid-twentieth century industrial warehouse buildings, constructed ca. 1951 and 1950, respectively.

7.3 Historic Resources in the Proposed Project Vicinity

A review of the MHC and BLC files identified one State Register listed property and four inventoried properties within an approximately one-quarter mile radius of the Project site. The Charles River Reservation Parkways (Soldiers Field Road and Leo Birmingham Parkway), listed on the State and National Registers in 2006, and the former Roddy Hall at 58 Leo Birmingham Parkway, listed in the Inventory, are both located to the northwest of the Project site on the opposite side of the Massachusetts Turnpike. The former Alexander Fraser triple-decker at 112 Murdock Street, also listed in the Inventory, is located south of the Project site. And the Thomas Sinclair House at 1 Sinclair Road and the Jedediah Tracy House at 2 Sinclair Road are located to the east of the Project site. The properties are listed in Table 7.3-1 and shown on Figure 7.3-1.

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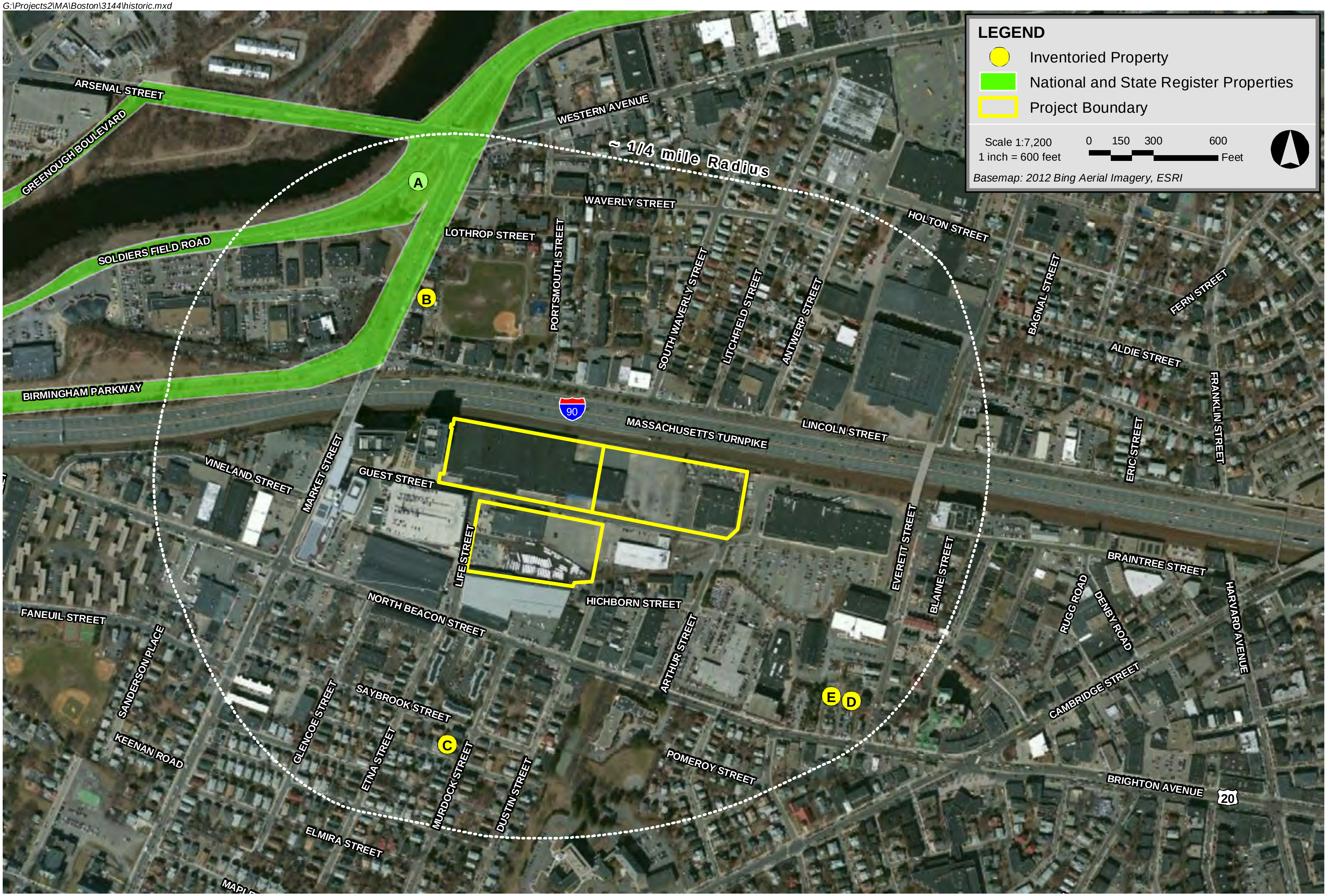

New Brighton Landing
Boston, Massachusetts

Epsilon ASSOCIATES INC.

NEW BRIGHTON LANDING, LLC

Figure 7.3-1
Historic Resources

Table 7.3-1 Historic Resources in the Vicinity of the Project Area

Map ID	Property	Address
Properties listed in the State and National Registers of Historic Places		
A	Charles River Reservation Parkways	Soldiers Field Road Birmingham Parkway
Properties included in the Inventory of Historic and Archaeological Assets		
B	Roddy Hall	58 Birmingham Parkway
C	Fraser House	112 Murdock Street
D	Sinclair House	1 Sinclair Road
E	Tracy House	2 Sinclair Road

7.4 Archaeological Resources

There are no known archaeological resources listed in the State and National Registers of Historic Places or included in the Inventory of Historic and Archaeological Assets of the Commonwealth within the Project site. The Project site consists of previously developed urban parcels. Due to previous development activities and disturbances, it is not anticipated that the site contains significant archaeological resources.

7.5 Impacts to Historic Resources

Historic resources in the vicinity of the project area are limited to the Charles River Reservation Parkways (Soldiers Field Road and Leo Birmingham Parkway) and four inventoried properties. The properties are separated from the Project site by the Massachusetts Turnpike to the northwest and by industrial development and residential neighborhoods to the south and east. The proposed Project is not anticipated to have any direct or indirect construction, noise, or shadow impacts on significant historic resources.

7.6 Status of Project Review with Historical Agencies

Boston Landmarks Commission Article 80 Review

The submission of this PNF initiates review of the Project by the BLC under the City's Article 80 Review process.

Boston Landmarks Commission Article 85 Review

The proposed demolition of the existing buildings on the Project site at 38-40 Guest Street, 77 Guest Street, and 180 Guest Street will be subject to review by the Boston Landmarks Commission under Article 85 of the Boston Zoning Code. An Article 85 Application for each property will be submitted to the BLC.

Massachusetts Historical Commission State Register Review

The MHC has review authority over projects requiring state funding, licensing, permitting, and/or approvals that may have direct or indirect impacts to properties listed in the State Register of Historic Places. The State Register Review process will be initiated through the filing of an ENF under MEPA.

Appendix

Transportation Study

Transportation Study

New Brighton Landing

Expanded Project Notification Form

Submitted Pursuant to Article 80 of the Boston Zoning Code

Prepared for
New Brighton Landing, LLC

Prepared by
Howard/Stein-Hudson Associates, Inc.

May 2012

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

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Appendix A (bound separately)

1.0 INTRODUCTION

This transportation study presents existing and future transportation conditions associated with the proposed New Brighton Landing (the Project), to be located on Guest Street in the Allston/Brighton neighborhood of Boston, Massachusetts. New Brighton Landing, LLC, (the Proponent) hopes to create a health and wellness district with a new mixed-use development anchored by the New Balance World Headquarters, a sports complex housing a hockey rink, track and field facilities, and a state of the art fitness club. In total, the Project will have approximately 1.4 million square feet, with much of the land use devoted to office, sports, and health-related businesses and activities.

The transportation study developed for the PDA Master Plan of March 20, 2012, is resubmitted here for the Expanded Project Notification Form (EPNF) with several additions based on input from the community at both public meetings for the PDA Master Plan and from the Impact Advisory Group (IAG) reviewing the PDA Master Plan. Specifically, these additions include six new study area intersections and more detail on proposed mitigation, particularly as it relates to enhancing vehicular, pedestrian and bicycle conditions in the area.

Note that all referenced figures can be found at the end of this section.

1.1 Project Description and Planning Area

As shown in **Figure 1,** the 13.98–acre Project site is adjacent to New Balance headquarters at 20 Guest Street, straddles Guest Street, and includes parcels currently known as 77 Guest Street (south side) and 38-180 Guest Street (north side). Collectively, the parcels currently contain low-rise office space and various, low density industrial and warehouse buildings, some of which are vacant.

The Project's development program, as shown in **Table 1** will include a new world headquarters office building for New Balance, one or more separate general office buildings, and a hotel. The sports complex will include a hockey rink, track and field facilities, a fitness club, and a medical office. Supporting retail and restaurant establishments will be located throughout the Project, primarily at street level on Guest Street. Phased construction of the Project is expected to begin in 2013. As part of this Project, New Balance will vacate their existing office space at 20 Guest Street, and new tenants will eventually lease the space.

Table 1 New Brighton Landing – Development Program

Land Use	Year 2017 Full-Build
Office	
New Balance World Headquarters	250,000 sf
Other Office	650,000 sf
Sports Complex	
Hockey Facility	125,000 sf
Track and Field Facility	85,000 sf
Fitness Club	83,000 sf
Medical Office	30,000 sf
Hotel	175 rooms
Retail/Restaurant	65,000 sf
Parking Spaces[1)]	up to 1,750 spaces

1) The Project's parking supply will be located in two garages. One garage, with about 1,550 spaces, will be located on the north side of Guest Street, contiguously under several Project buildings. The second garage, with about 200 spaces, will be located under the sports complex on the south side of Guest Street.

The Project site is at the heart of a larger 100-acre district recently examined in the City's Brighton/Guest Street Area Planning Study[1]. The study establishes urban design guidelines that will help shape future development in this area of Brighton, focusing on creating a unique identity for the area through a blend of pedestrian scaled streets, public parks and plazas, and neighborhood amenities. Many of the recommended short-term and long-term transportation improvements in the study are supported by the Proponent and have been incorporated into the Project's proposed mitigation measures, as presented in **Section 5.0**.

1.2 Methodology

In accordance with the Boston Transportation Department's (BTD's) *Transportation Access Plan Guidelines* (2001), the *BRA Development Review Guidelines* (2006), and MEPA Regulations 301 CMR 11.00 (amended in 2008),, this report describes roadway, pedestrian, and bicycle conditions; transportation issues; parking and loading; and transportation goals for the proposed Project. Although the Boston Transportation Department (BTD) has not yet issued a formal Transportation Access Plan Scope, this report adheres to the general format requested by BTD.

Section 2.0 includes an inventory of existing (Year 2012) transportation conditions, with roadway capacities, parking, transit, and bicycle and pedestrian conditions. The Proponent is committed to improving existing traffic conditions in the area independent of any new

[1] "Brighton/Guest Street Area Planning Study, Final Report", prepared for the Boston Redevelopment Authority by Sasaki Associates and GLC Development Resources. February 2012.

development. Anticipating that these improvements can be implemented in the immediate short-term, the study team assessed Year 2014 conditions with the integration of "Baseline Improvements", as summarized in **Section 3.0**.

Long-term impacts are evaluated for Year 2017, based on a five-year horizon from the existing year (2012). Expected roadway, parking, transit, bicycle, and pedestrian conditions are identified. No-Build conditions, which include general background growth and additional vehicular traffic associated with specific planned developments near the Project site, are presented in **Section 4.1**. Full-Build conditions, which include specific travel demand forecasts for the Project, are presented in **Section 4.2.** Transportation mitigation measures are presented in **Section 5.0**.

The Proponent has had several meetings with BTD staff during development of both the PDA Master Plan Transportation Study and the EPNF transportation study, during which the Baseline Improvements have been refined. BTD staff has also provided guidance in identifying longer-term transportation mitigation elements and infrastructure improvements in the area. It is expected, for example, that some of the Baseline Improvements will be coupled with the City's initiative of installing bicycle lanes in the area.

In terms of transportation, coordination with the BRA helped establish and maintain consistency between the City's Brighton/Guest Street Area Planning Study and the Proponent's development plan and mitigation improvements.

Because the Department of Conservation and Recreation (DCR) control several key intersections in the study area, the Proponent has had discussions and a meeting with DCR to obtain their input. The Proponent has agreed to work closely with the DCR on mitigation elements as they may relate to the Birmingham Parkway corridor.

1.3 Study Area

The study area, coordinated with the BTD, comprises the following 36 intersections. The corresponding numbers are shown in **Figure 2**. The study area for the Saturday assessment, denoted by locations with an "*", is a subset of 19 intersections more proximate to the Project site. New site driveways and new intersections created by the Project development or mitigation proposals are also analyzed and listed in the appropriate analysis section.

- Western Avenue/Birmingham Parkway/Soldiers Field Road Ramps;*
- Birmingham Parkway/the Soldiers Field Road Off-Ramp and Lathrop Street*
- Birmingham Parkway/Market Street and Lincoln Street*
- Market Street/Guest Street/Stockyard Restaurant Driveway*
- Market Street/Vineland Street
- Market Street/North Beacon Street*
- North Beacon Street/Life Street/Etna Street*
- North Beacon Street/Murdock Street/EZ Storage Driveway*

- North Beacon Street/Dustin Street/Hichborn Street*
- North Beacon Street/Arthur Street/Wingate Driveway*
- North Beacon Street/Saunders Street*
- North Beacon Street/Everett Street*
- North Beacon Street//Brighton Avenue/Cambridge Street (Union Square)*
- Cambridge Street/Denby Road*
- Cambridge Street/Harvard Avenue/Franklin Street*
- Cambridge Street/Lincoln Street
- Cambridge Street/North Harvard Street
- Cambridge Street/Saunders Street*
- Cambridge Street/Dustin Street
- Cambridge Street/Murdock Street
- Washington Street/Market Street/Chestnut Hill Avenue
- Market Street/Arlington Street/Sparhawk Street
- Market Street/Faneuil Street*
- Guest Street/Life Street*
- Guest Street/Arthur Street/Stop & Shop Supermarket Driveway*
- Everett Street/Stop & Shop Supermarket Driveway*
- Everett Street Bridge/Everett Street local (north)
- Everett Street/Holton Street
- Western Avenue/Everett Street*
- Braintree Street/Denby Road*
- Western Avenue/North Harvard Street
- North Harvard Street/Franklin Street/Kingsley Street
- North Beacon Street/Goodenough Street
- Goodenough Street/Electric Avenue
- Faneuil Street/Goodenough Street
- Faneuil Street/Parsons Street

2.0 EXISTING TRANSPORTATION CONDITIONS

2.1 Existing Roadway Conditions

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

Birmingham Parkway – Birmingham Parkway is a principal arterial roadway that traverses the study area in a general north-south direction between Western Avenue and Soldiers Field Road. Birmingham Parkway predominately consists of three lanes in the northbound direction and two lanes in the southbound direction within the study area with additional turning lanes provided at major intersections. The two directions of travel are separated by a wide median. Sidewalks are provided continuously along the east side of Birmingham Parkway, with marked crosswalks provided at signalized intersections. Land use along Birmingham Parkway consists of a mix of commercial and industrial properties**.**

Market Street - Market Street is a two to four lane collector roadway that traverses the study area in a general northeast-southwest direction between Cambridge Street and Birmingham Parkway. Market Street provides two 11- to 13-foot wide travel lanes per direction between North Beacon Street and Birmingham Parkway. South of North Beacon Street, Market Street provides one 11- to 24-foot wide travel lane per direction, with additional turning lanes provided at major intersections.

Sidewalks are provided continuously along both sides of Market Street, with crosswalks provided at signalized intersections. Land use along Market Street consists of a mix of commercial and residential properties.

North Beacon Street - North Beacon Street is a two-lane collector roadway that traverses the study area in a general east-west direction between Goodenough Street and Cambridge Street. North Beacon Street provides two 11 to 29.5-foot wide travel lanes separated by a double-yellow centerline (one lane per direction), with additional turning lanes provided at major intersections. Sidewalks are provided continuously along both sides of North Beacon Street, with marked crosswalks provided at signalized intersections. Land use along North Beacon Street consists of a mix of commercial, industrial, and residential properties.

Cambridge Street - Cambridge Street is a four to six lane collector roadway that traverses the study area in a general northeast-southwest direction between Washington Street and Soldiers Field Road. Cambridge Street provides access to Interstate 90 (I-90) by way of the Allston-Brighton interchange. Cambridge Street generally provides two 11- to 13-foot wide travel lanes per direction between Washington Street and Harvard Avenue/Franklin Street, and three 10.5- to 16.5-foot wide travel lanes between Harvard Avenue/Franklin Street and

Soldiers Field Road. Additional turning lanes are provided at major intersections. Sidewalks are provided continuously along both sides of Cambridge Street, with crosswalks provided at signalized intersections. Land use along Cambridge Street consists of a mix of commercial and residential properties.

Western Avenue - Western Avenue is a two-lane collector roadway that traverses the study area in a general east-west direction between Soldiers Field Road and Arsenal Street/Birmingham Parkway. Within the study area, Western Avenue provides two 11- to 24.5 foot wide travel lanes separated by a double-yellow centerline (one lane per direction), with additional turning lanes provided at major intersections. Sidewalks are provided continuously along both sides of Western Avenue, with marked crosswalks provided at signalized intersections. Land use along Western Avenue consists primarily of commercial properties.

Everett Street - Everett Street is a two-lane local roadway that traverses the study area in a general north-south direction between Beacon Street and Western Avenue. Everett Street provides two 13- to 14-foot wide travel lanes generally separated by a double-yellow centerline (one lane per direction). Sidewalks are generally provided along both sides of Everett Street, although sections between North Beacon Street and overpass have only narrow asphalt walkways with no curbs. Crosswalks provided at Western Avenue and North Beacon Street. Land use along Everett Street consists primarily of residential properties, with commercial properties located proximate to Western Avenue and the Stop & Shop Supermarket situated adjacent to I-90.

Arthur Street – Arthur Street is a two-lane local roadway that traverses the study area in a general north-south direction between North Beacon Street and Guest Street. Arthur Street varies in width from approximately 26 feet at its northern end to approximately 40 feet at the southern end. Where Arthur Street meets North Beacon Street, it includes three lanes, a northbound lane, a southbound right turn lane, and a southbound left turn lane. Sidewalks are provided along both sides of Arthur Street with a crosswalk provided at the intersection with North Beacon Street. Land use along Arthur Street consists of commercial and retail properties including Wolfers' Lighting, Hollywood Video, and Boston Volvo Village.

Guest Street - Guest Street is a two-lane local roadway that traverses the study area in a general east-west direction between Market Street and Arthur Street/Stop & Shop Supermarket driveway. Guest Street is approximately 34 to 36 feet in width (paved area) and accommodates two-way travel. The eastern end of Guest Street and the Guest Street/Arthur Street intersection is a private-way that provides access to the Stop & Shop Supermarket, although there are no physical restrictions on access between Guest Street and Arthur Street. Substandard sidewalks are provided generally along both sides of Guest Street, with crosswalks provided at Market Street and proximate to WGBH/New Balance and the Stop & Shop Supermarket. Land use along Guest Street consists of commercial and industrial properties including WGBH, New Balance, Stop & Shop Supermarket, a parking garage, B. L. Makepeace, Mass Electric Construction Company, Crystal Transport, and the project site.

Life Street – Life Street is a two-lane local roadway that traverses the study area in a general north-south direction between North Beacon Street and Guest Street. Life Street is approximately 35 feet wide. Sidewalks are generally provided on one side of Life Street with the side varying depending on location. Crosswalks are not provided at any point on Life Street. Land use along life Street consists of office, retail and fitness properties including a small office building, Bally Total Fitness and the New Balance Shoe Outlet store.

North Harvard Street – North Harvard Street is a two lane urban minor arterial roadway that traverses the study area in a general northwest-southeast direction between Cambridge Street and Western Avenue. North Harvard Street provides an 11-foot wide travel lane and a 5-foot wide bicycle lane per direction between Cambridge Street and Western Avenue. Sidewalks are provided continuously along both sides of North Harvard Street, with crosswalks provided at signalized intersections. Land use along North Harvard Street consists of a mix of commercial and residential properties.

2.2 Existing Intersection Conditions

As a part of this assessment, the study area included all major intersections located within an approximate one-mile radius of the project, specifically 36 intersections located along Guest Street, Birmingham Parkway, Market Street, North Beacon Street, Cambridge Street, Western Avenue and Everett Street. This expansive study area allows for a full evaluation of the transportation system serving the Allston/Brighton neighborhoods, both at present and with planned future development in the area. Further, the extent of the study area allows for the development of a neighborhood-focused transportation improvement program that is designed to incorporate a balanced approach to improving traffic flow, public transportation access, and accessibility for pedestrians and bicyclists.

2.2.1 Signalized Intersections

Western Avenue/Birmingham Parkway/Soldiers Field Road Ramps is a group of three interconnected, adjacent, signalized intersections. Western Avenue is intersected from the north by the Soldiers Field Road eastbound on-ramp and from the south by Birmingham Parkway to form the eastern intersection. The Western Avenue eastbound approach to this intersection consists of one 10.5-foot wide left-turn lane and two 10- to 10.5-foot wide general-purpose travel lanes. The Western Avenue westbound approach consists of one 11-foot wide left-turn lane and two 11-foot wide general-purpose travel lanes. The Birmingham Parkway northbound approach consists of a 10-foot wide left-turn lane, an 11.5-foot wide shared left-turn/through lane, a 12-foot wide through lane, and a 20-foot wide right-turn lane. The Soldiers Field Road eastbound on-ramp consists of a 21-foot wide roadway accommodating northbound vehicles only (vehicles exiting the intersection). The middle intersection consists of Arsenal Street, Western Avenue and the Soldiers Field Road westbound off-ramp. The Arsenal Street eastbound approach to this intersection consists of two 8.5- to 17-foot wide general-purpose travel lanes. The Western Avenue westbound approach consists of three 10- to 11-foot wide through lanes. The Soldiers Field Road westbound off-ramp southbound approach consists of an 11-foot wide through lane and a 10-foot wide shared through/right-turn lane. The western intersection consists of Arsenal Street and the Soldiers Field Road westbound ramps. The Arsenal Street eastbound approach consists of one 11-foot wide through lane and one 10.5-foot wide shared through/right-turn lane. Right turns enter the Soldiers Field Road westbound on-ramp by way of a 17-foot wide, channelized, right-turn slip ramp. The Arsenal Street westbound approach consists of a 10-foot wide left-turn lane and two 11-foot wide through lanes. The Soldiers Field Road westbound off-ramp southbound approach consists of an 11.5-foot wide shared through/right-turn lane and an 11.5-foot wide right-turn lane. The Soldiers Field Road on-ramp consists of a 24-foot wide roadway that accommodates southbound vehicles only. Trucks and buses are prohibited from accessing Soldiers Field Road. Sidewalks are provided along both sides of Western Avenue and Arsenal Street; along the east side of Birmingham Parkway and the Soldiers Field Road eastbound on-ramp; and along the west side of the Soldiers Field Road westbound on and off-ramps. A marked crosswalk is provided across the western leg of Arsenal Street.

Birmingham Parkway/Soldiers Field Road Off-Ramp/Lothrop Street is a signalized intersection with four approaches. The Birmingham Parkway northbound approach consists of three 10- to 12-foot wide through lanes. The Birmingham Parkway southbound approach consists of two 11-foot wide through lanes. The Soldiers Field Road off-ramp eastbound approach consists of two 13-foot wide left-turn lanes. Right turns exit the Soldiers Field Road off-ramp prior to the intersection by way of a 23-foot wide, channelized, right-turn slip-ramp. The Soldiers Field Road off-ramp accommodates eastbound vehicles only (vehicles entering the intersection). The Lothrop Street westbound approach consists of one 17-foot wide general purpose travel lane. Lothrop Street is a one-way roadway accommodating westbound vehicles only (vehicles entering the intersection). Sidewalks are provided along the east side of Birmingham Parkway; along the west side of Birmingham Parkway south of the Soldiers Field Road off-ramp; along both sides of Lothrop Street; and along the south side of the Soldiers Field Road off-ramp. Crosswalks are not provided at the intersection. An MBTA bus stop is located along the east side of Birmingham Parkway, south of Lothrop Street.

Birmingham Parkway/Market Street/Lincoln Street is a signalized intersection with four approaches. The Market Street northbound approach consists of two 12-foot wide general purpose travel lanes. The Birmingham Parkway southbound approach consists of two 11-feet wide through travel lanes and one 9-foot wide right-turn lane. The Birmingham Parkway eastbound approach consists of two 13-foot wide general-purpose travel lanes. The Lincoln Street westbound approach consists of one 15-foot wide left-turn lane and one 15-foot wide general-purpose travel lane. Lincoln Street is a one-way roadway accommodating westbound traffic only (vehicles entering the intersection). Sidewalks are provided along the east side of Market Street, along the west side of Market Street south of Birmingham Parkway, and along both sides of Lincoln Street. A marked crosswalk is provided across the south leg of Market Street and along the Lincoln Street leg of the intersection.

Market Street/ Guest Street/Stockyard Restaurant Driveway is a signalized intersection with four approaches. The Market Street north and southbound approaches consist of two 11- to 12.5-foot wide general purpose travel lanes. The Stockyard Restaurant driveway eastbound approach consists of a 12.5-foot wide general-purpose lane. The Guest Street westbound approach consists of an 11-foot wide shared left-turn/through lane and an 11-foot wide right-turn lane. Sidewalks are provided along both sides of Market Street and Guest Street. A marked crosswalk is provided across the south leg of Market Street and the Guest Street leg of the intersection. An MBTA bus stop and bus shelter is located on the east side of Market Street, south of Guest Street. A drop-off area* with a 5-minute time limit is provided on the south side of Guest Street for the WGBH studios. "No Stopping Any Time" signs are posted along both sides of Market Street and along the north side of Guest Street.

Market Street/North Beacon Street is a signalized intersection with four approaches. The Market Street north and southbound approaches consist of two 11- to 14-foot wide general purpose travel lanes. The North Beacon Street east and westbound approaches consist of two 10-foot wide general purpose travel lanes. Sidewalks are provided along both sides of the intersecting roadways, with marked crosswalks provided across all legs of the intersection. "No Stopping Any Time" signs are posted along both sides of Market Street and North Beacon Street. MBTA bus stops are located on the northwest and southeast corners of Market Street and on the northeast corner of North Beacon Street, with a bus shelter provided at the North Beacon Street stop.

North Beacon Street/Life Street/Etna Street is a signalized intersection with offset approaches on Life Street and Etna Street. The North Beacon Street east and westbound approaches consist of a 20-foot wide general purpose travel lane. The Life Street southbound approach consists of an 18-foot wide general purpose travel lane. The Etna Street south leg of the intersection is offset slightly to the west of Life Street and consists of a 25.5-foot wide paved roadway that accommodates one-way southbound travel. On street parking is permitted along the south side of North Beacon Street. Sidewalks are provided along both sides of the intersecting roadways, with a marked crosswalk provided across North Beacon Street, between Etna Street and Life Street. An MBTA bus stop is located on the south side of North Beacon Street, west of Etna Street, with a bus shelter provided.

North Beacon Street/Arthur Street/Wingate Driveway is a signalized intersection with offset approaches on Arthur Street and the Wingate driveway. The North Beacon Street east and westbound approaches consist of a 20-foot wide general purpose travel lane. The Arthur Street southbound approach consists of 12-foot wide left and right-turn lanes. "No

Stopping Any Time" signs are posted along both sides of North Beacon Street and Arthur Street. The Wingate at Brighton driveway is offset slightly to the east of Arthur Street and accommodates two-way travel. Sidewalks are provided along both sides of North Beacon Street and Arthur Street. A marked crosswalk is provided across the west leg of North Beacon Street and across Arthur Street.

North Beacon Street/Everett Street is a signalized intersection with three approaches, although a commercial driveway curb cut is located along the southern curb for entering vehicles only. The North Beacon Street east and westbound approaches consist of a 20-foot wide general purpose travel lane. Everett Street consists of a 27.5-foot wide paved roadway that accommodates two-way travel. Right-Turns-On-Red are prohibited from Everett Street. Parking is permitted along the north side of North Beacon Street except on weekdays between 4:00 and 6:00 p.m. A "No Parking, Tow Zone" sign is posted on the east side of Everett Street. The KFC driveway accommodates vehicles entering the KFC parking lot (away from North Beacon Street). Sidewalks are provided along both sides of North Beacon Street and Everett Street. A marked crosswalk is provided across the west leg of North Beacon Street.

North Beacon Street/Brighton Avenue/Cambridge Street (Union Sq.) is a signalized intersection with four approaches. The Brighton Avenue eastbound approach consists of two 11-foot wide left-turn lanes and one 11-foot wide general purpose travel lane. Right-turns exit the Brighton Avenue approach prior to the intersection by way of an 11-foot wide, channelized, right-turn slip-ramp. The North Beacon Street westbound approach consists of two 11-foot wide general purpose travel lanes. "No Stopping Any Time" signs are posted along the south side of North Beacon Street and Brighton Avenue. A "No Parking 4:00 to 6:00 p.m. except Saturday and Sunday" sign is posted on the north side of North Beacon Street. The Cambridge Street northbound approach consists of two 11-feet wide through travel lanes and one 10-foot wide right-turn lane. Left turns are prohibited from the Cambridge Street northbound approach. The Cambridge Street southbound approach consists of two 11- to 12-foot wide general purpose travel lanes, with a 9-foot wide on-street parking lane provided parallel to the curb. South of North Beacon Street, on-street parking with a 30 minute limit is permitted along the west side of Cambridge Street. Sidewalks are provided along both sides of North Beacon Street, Brighton Avenue, and Cambridge Street, north of North Beacon Street; and along the west side of Cambridge Street, south of North Beacon Street. Marked crosswalks are provided across all legs of the intersection.

Cambridge Street/Harvard Avenue/Franklin Street is a signalized intersection with four approaches. The Cambridge Street eastbound approach consists of two 11- to 13-foot wide general purpose travel lanes. The Cambridge Street westbound approach consists of two 10.5-foot wide general purpose travel lanes and a 14-foot wide right-turn lane. The Harvard Avenue northbound approach consists of one 22-foot wide general purpose travel lane that functions as a two-lane approach providing a general purpose travel lane and a right-turn lane. On-street parking is permitted along the west side of Harvard Avenue, with a two-hour parking limit on weekdays between 8:00 a.m. and 6:00 p.m. Franklin Street consists of a 29.5-foot wide paved roadway accommodating two-way travel. On-street parking is permitted along Franklin Street, with a two-hour parking limit on weekdays between 8:00 a.m. and 6:00 p.m. Sidewalks are provided along both sides of Cambridge Street, Harvard Avenue, and Franklin Street. Marked crosswalks are provided across all legs of the intersection. "No-Turn-On-Red" signs are posted on all approaches to the intersection. An MBTA bus stop is located on the north side of Cambridge Street, east of Franklin Street.

Cambridge Street/Lincoln Street is a signalized intersection with four approaches. The Cambridge Street east and westbound approaches consist of a 9.5- to 10-foot wide left-turn lane and three 10.5- to 12-foot wide general purpose travel lanes. The commercial driveway consists of a 34-foot wide paved driveway accommodating both entering and exiting vehicles. The Lincoln Street southbound approach consists of one 24-foot wide general-purpose travel lane. Sidewalks are provided along both sides of Cambridge Street and Lincoln Street. A marked crosswalk is provided across Lincoln Street and the east leg of Cambridge Street.

Cambridge Street/North Harvard Street is a signalized intersection with four approaches. The Cambridge Street eastbound approach consists of an 11-foot wide left-turn lane and three 10.5- to 11-foot wide general purpose travel lanes. The Cambridge Street westbound approach consists of one 10.5-foot wide left-turn lane, two 11-feet wide through travel lanes, and one 11.5-foot wide right-turn lane. The North Harvard Street southbound approach consists of one 23-foot wide general purpose travel lane. A "No Stopping Any Time" sign is posted along the west side of North Harvard Street. On-street, 15-minute parking is permitted along the north side of Cambridge Street, west of North Harvard Street. Sidewalks are provided along both sides of Cambridge Street and North Harvard Street. A marked crosswalk is provided across North Harvard Street, the Harvard University driveway, and the west leg of Cambridge Street. An MBTA bus stop is located on the south side of Cambridge Street, west of the Harvard University driveway.

Cambridge Street/Dustin Street is a pedestrian actuated intersection with three approaches. The Cambridge Street eastbound approach consists of one 10.5-foot wide left-turn lane and one 20-foot wide general-purpose travel lane. The Cambridge Street westbound approaches consist of one 25-foot wide general-purpose travel lane. Dustin Street consists of a 25.5-foot wide paved roadway that accommodates one-way northbound travel (away from Cambridge Street). Sidewalks are provided along both sides of Cambridge Street and Dustin Street. A marked crosswalk is provided across Dustin Street and the east leg of Cambridge Street. MBTA bus stops are located on the north side of Cambridge Street, east of Dustin Street, and on the south side of Cambridge Street, west of Dustin Street. A bus shelter is provided on the south side of Cambridge Street, west of Dustin Street. On-street parking is permitted along Cambridge Street.

Washington Street/Market Street/Chestnut Hill Avenue is a signalized intersection with four approaches. The Washington Street east and westbound approaches consist of a 25-foot wide general purpose travel lane, with on-street parking permitted. The Chestnut Hill Avenue northbound approach consists of a 21-foot wide general purpose travel lane. The Market Street southbound approach consists of an 11.5-foot wide left-turn lane, an 11-foot wide through travel lane, and a 17.5-foot wide channelized right-turn lane. On-street parking is permitted along both sides of Washington Street and Market Street, with a two-hour parking limit on weekdays between 8:00 a.m. and 6:00 p.m. The on-street parking along the south side of the east leg of Washington Street is restricted to commercial vehicles only between the hours of 8:00 a.m. and 12:00 noon, Monday through Saturday. "No-Turn-On-Red" signs are posted on all approaches of the intersection. Sidewalks are provided along both sides of the intersecting roadways, with marked crosswalks provided across all legs of the intersection. MBTA bus stops (two) are located on the northeast corner of Washington Street and Market Street.

Market Street/Arlington Street/Sparhawk Street is a signalized intersection with four approaches. The Market Street north and southbound approaches consist of a 21- to 23-foot wide general purpose travel lane. The Arlington Street eastbound approach consists of a 17-foot wide general purpose travel lane. The Sparhawk Street east leg of the intersection consists of a 26-foot wide paved roadway that accommodates two-way travel. "No-Turn-On-Red" signs are posted on the Market Street northbound approach and the Arlington Street westbound approach to the intersection. Trucks over 2 ½ tons are prohibited from Arlington Street. Sidewalks are provided along both sides of the intersecting roadways, with marked crosswalks provided across all legs of the intersection. MBTA bus stops are located on the east and west side of Market Street, south of Arlington Street and Sparhawk Street.

Market Street/Faneuil Street is a signalized intersection with three approaches. The Market Street northbound approach consists of a 23-foot wide general purpose travel lane. The Market Street southbound approach consists of an 11-foot wide general-purpose travel lane and an 11-foot wide right-turn lane. The Faneuil Street eastbound approach consists of an 18-foot wide general purpose travel lane. Sidewalks are provided along both sides of the intersecting roadways, with marked crosswalks provided across all legs of the intersection.

Western Avenue/Everett Street is a signalized intersection with four approaches. The Western Avenue eastbound approach consists of two 11- to 14-foot wide general-purpose travel lanes. The Western Avenue westbound approach consists of one 21.5-foot wide general-purpose travel lane. The Everett Street northbound approach consists of one 19.5-foot wide general-purpose travel lane. The Everett Street southbound approach consists of one 13-foot wide general-purpose travel lane. Sidewalks are provided along both sides of Western Avenue and Everett Street. Marked crosswalks are provided across all legs of the intersection. An MBTA bus stop and bus shelter are located on the north side of Western Avenue, west of Everett Street. "No Stopping Any Time" signs are posted on the north and south sides of Western Avenue, west of Everett Street, and on the east side of Everett Street, south of Western Avenue. Right-Turns-On-Red are prohibited from the Everett Street north and southbound approaches, and from the Western Avenue eastbound approach.

Western Avenue at North Harvard Street is a signalized intersection with four approaches. The Western Avenue eastbound approach consists of one 22.5-foot wide general purpose travel lane. The Western Avenue westbound approach consists of one 11-foot exclusive left-turn lane, one 11.5-foot exclusive through lane, and one 24.5-foot wide, channelized right-turn lane. The North Harvard Street northbound approach consists of one 11-foot exclusive left-turn lane, one 11-foot shared through/right-turn lane with a sharrow. The North Harvard Street southbound approach consists of one 10.5- to 11-foot wide left-turn lane, one 5-foot wide bicycle lane, and one 10.5- to 11-foot wide through/right-turn travel lane. Sidewalks are provided along both sides of Western Avenue and North Harvard Street. Marked crosswalks are provided across all legs of the intersection. MBTA bus stops are located on the north and south sides of Western Avenue, east of North Harvard Street, and on the east and west side of North Harvard Street, north of Western Avenue. "No Stopping Any Time" signs are posted on the north and south side of Western Avenue, west of North Harvard Street. A "No Parking" sign is posted on the west side of North Harvard Street.

North Harvard Street/Franklin Street/Kingsley Street is a signalized intersection with four approaches. The Franklin Street eastbound approach consists of one 11-foot wide general purpose travel lane. The Kinsley Street westbound approach is a one-way westbound approach with one 10-foot wide general purpose travel lane with 8-foot wide 2-hour/residential parking lanes on both sides of the travel lane. The North Harvard northbound approach consists of one 11-foot wide general purpose travel lane, one 5-foot wide bicycle lane, and one 7-foot wide bus stop lane. The North Harvard southbound approach consists of one 11-foot wide general purpose travel lane, one 5-foot wide bicycle lane, and one 7-fot side parking lane. MBTA bus stops are located on the east and west sides of the North Harvard northbound approach. Sidewalks are provided along both sides of all approaches and marked crosswalks are provided across all legs of the intersection.

Faneuil Street/Parsons Street is a signalized intersection with four approaches. The Faneuil Street east and westbound approaches consist of one 19- to 20-foot wide general-purpose travel lane, with on-street parking permitted. The Parsons Street north and southbound approaches consist of one 16.5-foot wide general-purpose travel lane. Trucks over 2 ½ tons are restricted from the north leg of the intersection. Right-Turns-On-Red are prohibited from all approaches. "No Parking During Snow Emergency" signs are posted on Faneuil Street and Parsons Street. Sidewalks are provided along both sides of Faneuil Street and Parsons Street. Marked crosswalks are provided across all legs of the intersection.

2.2.2 Unsignalized Intersections

Market Street/Vineland Street is an unsignalized intersection with three approaches. The Market Street north and southbound approaches consist of two 11- to 12-foot wide through travel lanes. Vineland Street consists of a 26-foot wide paved roadway that accommodates one-way eastbound travel, with vehicles approaching Market Street under STOP-sign control. "No Stopping Any Time" signs are posted along both sides of Market Street. Two-hour parking is permitted along the south side of Vineland Street. Sidewalks are provided along both sides of Market Street and along the south side of Vineland Street. Marked crosswalks are not provided at the intersection.

North Beacon Street/ Murdock Street/EZ Storage Driveway is an unsignalized intersection with four approaches. The North Beacon Street east and westbound approaches consist of one 20-foot wide general-purpose travel lane. Murdock Street consists of a 25.5-foot wide paved roadway that accommodates two-way travel. The EZ Storage driveway is 31.5 feet wide and accommodates two-way travel, with vehicles approaching North Beacon Street under STOP control, although a STOP-sign is not currently provided. Parking is permitted along both sides of North Beacon Street, except on weekdays between 4:00 and 6:00 p.m. along the north side, west of the EZ Storage driveway, and along the west side of Murdock Street. Trucks over 2 ½ tons are prohibited from Murdock Street. Sidewalks are provided along both sides of North Beacon Street and Murdock Street. Marked crosswalks are not provided at the intersection.

North Beacon Street/Dustin Street/Hichborn Street is an unsignalized intersection with four approaches. The North Beacon Street east and westbound approaches consist of one 20-foot wide general-purpose travel lane. Dustin Street consists of a 25.5-foot wide paved roadway that accommodates one-way northbound travel (toward North Beacon Street), with vehicles approaching North Beacon Street under STOP control, although a STOP-sign is not currently provided. Hichborn Street consists of a 22.5-foot wide paved roadway that accommodates two-way travel and vehicles approaching North Beacon Street under STOP control, although a STOP sign is not currently provided. Parking is prohibited along both sides of Hichborn Street. West of Hichborn Street, parking is permitted along both sides of North Beacon Street, except on weekdays between 4:00 and 6:00 p.m. along the north side. East of Hichborn Street, a 15-minute parking limit is posted along the south side of North Beacon Street for drop-off and pick-up activities. Sidewalks are provided along both sides of the intersecting roadways, with marked crosswalks provided across all legs of the intersection.

North Beacon Street/Saunders Street is an unsignalized intersection with three approaches. The North Beacon Street east and westbound approaches consist of one 20-foot wide general-purpose travel lane. A "No Stopping Any Time" sign is posted along the south side of North Beacon Street, west of Saunders Street, and a "No Parking 7:00 a.m. to 9:30 a.m. except Saturday and Sunday" sign is posted east of Saunders Street. Saunders Street consists of a 25.5-foot wide paved roadway that accommodates one-way northbound travel (toward North Beacon Street), with vehicles approaching North Beacon Street under STOP control, although a STOP-sign is not currently provided. MBTA bus stops are located on both sides of North Beacon Street, east of Saunders Street. Sidewalks are provided along both sides of the intersecting roadways, with marked crosswalks provided across Saunders Street and the east leg of North Beacon Street.

Cambridge Street/ Saunders Street is an unsignalized intersection with three approaches. The Cambridge Street east and westbound approaches consist of one 24-foot wide general-purpose travel lane. Saunders Street consists of a 26-foot wide paved roadway that accommodates one-way northbound travel (away from Cambridge Street). Sidewalks are provided along both sides of Cambridge Street and Saunders Street. Marked crosswalks are not provided at the intersection. "No Parking During Snow Emergency" signs are posted along Cambridge Street. Advance school zone pedestrian Lowe's Allston-Brighton Page 3-22 General Information crossing warning signs are provided along the north side of Cambridge Street.

Cambridge Street/Murdock Street is an unsignalized intersection with three approaches. The Cambridge Street east and westbound approaches consist of one 23- to 23.5-foot wide general purpose travel lane. Murdock Street consists of a 25.5-foot wide paved roadway that accommodates one-way southbound travel (toward Cambridge Street), with vehicles approaching Cambridge Street under STOP-sign control. Sidewalks are provided along both sides of Cambridge Street and Murdock Street. A marked crosswalk is provided across Murdock Street. On-street parking is permitted along Cambridge Street and is limited to two hours on weekdays between 8:00 a.m. and 6:00 p.m.

Guest Street/Life Street is an unsignalized intersection with three approaches. The Guest Street eastbound approach consists of one 22-foot wide general-purpose travel lane, with two-hour, on-street parking permitted. The Guest Street westbound approach consists of one 15-foot wide general-purpose travel lane. The Life Street northbound approach consists of one 14-foot wide general-purpose travel lane, with vehicles approaching Guest Street under STOP-sign control. "No Stopping Any Time" signs are posted along the north side of Guest Street, and along the south side of Guest Street east of Life Street. Two-hour on-street parking is permitted along the south side of Guest Street, west of Life Street. Sidewalks are provided along both sides of Guest Street and along the west side of Life Street. Marked crosswalks are not provided at the intersection.

Guest Street/Arthur Street/Stop & Shop Supermarket Driveway is an unsignalized intersection with three approaches. The Guest Street eastbound approach consists of one 18.5-foot wide general purpose travel lane. The east leg of Guest Street (driveway to the Stop & Shop Supermarket) consists of a 31-foot wide paved roadway that accommodates two-way travel. Vehicles traveling eastbound on Guest Street are under STOP-sign control. Arthur Street consists of a 40-foot wide paved roadway that accommodates two-way travel. Vehicles approaching Guest Street are under STOP-sign control. Sidewalks are provided along both sides of Guest Street, east of Arthur Street; along the south side of Guest Street, west of Arthur Street; and along both sides of Arthur Street. A marked crosswalk is provided across the west leg of Guest Street. MBTA bus stops and associated shelters are located on both sides of Arthur Street.

Everett Street/Stop & Shop Supermarket Driveway is an unsignalized intersection with three approaches. The Everett Street northbound approach consists of one 13.5-foot wide through travel lane. Left turns into the Stop & Shop Supermarket driveway are prohibited from the Everett Street northbound approach, however, these were observed to occur. The Everett Street southbound approach consists of one 13-foot wide general-purpose travel lane and one 11-foot wide right-turn lane. The Stop & Shop Supermarket driveway consists of a 21-foot wide paved driveway that accommodates vehicles entering the Stop & Shop parking lot. While exiting maneuvers are prohibited from this driveway, they were also observed. Sidewalks are provided along both sides of Everett Street. Parking is prohibited along both sides of Everett Street. Marked crosswalks are not provided at the intersection.

North Beacon Street/Goodenough Street is a three-legged intersection under STOP-sign control. The North Beacon Street east and westbound approaches consist of one 26 and 22.5-foot wide general-purpose travel lane, respectively. Both the eastbound and westbound approaches behave as two-lane approaches. The directions of travel along North Beacon Street are separated by a raised median at the intersection. The northbound leg of Goodenough Street consists of a 25.5-foot wide paved roadway that accommodates two-way travel with no marked centerline or shoulders provided, and vehicles approaching North Beacon Street under STOP-sign control. Sidewalks are provided along both sides of North Beacon Street and Goodenough Street. Marked crosswalks are not provided at the intersection.

Goodenough Street/Electric Avenue is a three-legged, T-type intersection under STOP control. Goodenough Street consists of a 25.5-foot wide paved roadway that accommodates two-way travel with no marked centerline or shoulders provided. Electric Avenue consists of a 28.5-foot wide paved roadway that accommodates two-way travel with no marked centerline or shoulders provided and vehicles approaching Goodenough Street under STOP control, although a STOP-sign is not currently provided. A loading and parking area is located opposite Electric Avenue. Sidewalks are provided along both sides of Goodenough Street and Electric Avenue. Marked crosswalks are not provided at the intersection.

Faneuil Street/Goodenough Street is a four-legged intersection under STOP-sign control. The Faneuil Street east and westbound approaches consist of one 20-foot wide general-purpose travel lane, with on-street parking permitted. The directions of travel along Faneuil Street are separated by a double-yellow centerline. The southbound approach of Goodenough Street consists of a 25.5-foot wide paved roadway that accommodates two-way travel with no marked centerline or shoulders provided. Vehicles traveling toward Faneuil Street are under STOP-sign control. The northbound approach of Goodenough Street consists of a 25.5-foot wide paved roadway that accommodates one-way northbound travel (toward Faneuil Street), with vehicles traveling northbound toward Faneuil Street under STOP-sign control. A "No Stopping Any Time" sign is posted on the east side of the north leg of Goodenough Street. On-street parking is permitted along Faneuil Street and the northbound leg of Goodenough Street. Sidewalks are provided along both sides of Faneuil Street and Goodenough Street. Marked crosswalks are not provided at the intersection.

2.3 Existing Traffic Volumes

In 2010, Lowe's Home Centers had proposed building a new store on a portion of the current Project site and, as part of the environmental permitting process, conducted significant transportation evaluation of existing and forecasted future conditions in the study area.[2] Based on discussion with the BTD, the study team developed Year 2012 traffic volumes for the New Brighton Landing's transportation analysis by adopting the Year 2007 traffic data from the Lowe's work and increasing the volumes by an annual growth factor.

The study area intersection of North Harvard Street/Kinglsey Street/Franklin Street was not evaluated in the Lowes' study, but was included in Harvard University's Allston Science Complex[3] traffic study. The study team adopted the Year 2006 data and increased the volumes to Year 2012 using the annual growth factor.

A series of 48-hour automatic traffic recorder (ATR) counts, taken the week of January 9, 2012 and adjusted by seasonal factors, revealed that traffic volumes generally increased in the study area by 0.5% annually between 2007 and 2012.

The annual factor of 0.5% was applied to the Year 2007 counts to produce existing condition volumes for weekday a.m. peak hour (8:00 – 9:00 a.m.), weekday p.m. peak hour (5:00 – 6:00 p.m.) and Saturday Midday Peak hour (12:45 – 1:45 p.m.). Intersection volumes are shown in **Figure 3**, **Figure 4**, and **Figure 5**, for each peak hour respectively.

2.4 Crash Data

Motor vehicle crash data from the MassHighway Crash Records System were compiled from the available data for the most recent three-year period (2007-2009). Crash rates for the study area intersections were calculated and compared to the district averages for signalized and unsignalized intersections.

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[2] "Lowe's Allston-Brighton, Guest Street, Boston, Massachusetts, Draft Project Impact Report" submitted to the Boston Redevelopment Authority by Lowe's Home Centers, Inc. Prepared by Tetra Tech Rizzo with transportation work by Vanasse & Associates, Inc. March 10, 2010.

[3] "Allston Science Complex, Harvard University, Draft Project Impact Report" submitted to the Boston Redevelopment Authority by Harvard University through the Allston Development Group. Prepared by Epsilon Associates with transportation work prepared by Vanasse Hangen and Brustlin, Inc, June 25, 2007.

In Mass Highway District 6, where the Project site is located, the average number of crashes at a signalized intersection is 0.77 crashes per million entering vehicles (MEV). For unsignalized intersections, the average is 0.57 crashes per MEV. During the three year period, two fatalities were reported - one at the North Beacon Street/Cambridge Street/Brighton Avenue (Union Sq.) and one at Cambridge Street/Harvard Street/Franklin Street. It is understood that a recent fatality occurred at Washington Street/Market Street/Chestnut Hill Avenue. Of the 36 intersections studied, however, none has an average crash rate greater than the District average. A summary of crash data for all locations is included in Appendix A.

2.5 Existing Traffic Operations

The criterion for evaluating traffic operations is level of service (LOS), which is determined by assessing average delay incurred by vehicles at intersections and along intersection approaches. The study team calculated average delay and associated LOS at study area intersections using Trafficware's Synchro 6 software, which also evaluates the impact on traffic operations from closely spaced intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2010 Highway Capacity Manual (HCM).

Level of service and delay (in seconds) are based on intersection geometry and available traffic data for each intersection. BTD provided the intersection signal timing and phasing used in this analysis.

Table 2 summarizes the delay and LOS thresholds for signalized and unsignalized intersections, as defined in the HCM. LOS A defines the most favorable condition, with minimum traffic delay. LOS F represents the worst condition (unacceptable), with significant traffic delay. The threshold at LOS E/LOS F indicates that the intersection, or intersection approach, is theoretically at capacity. LOS D is generally considered acceptable in an urban environment, such as the New Brighton Landing study area, and below theoretical operating capacity.

Table 2 Level of Service Criteria (HCM Excerpt)

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

Table 3 shows the Existing Conditions level of service summary for study area intersections during the weekday a.m., weekday p.m., and Saturday Midday Peak hour.

Due to their length, the detailed level of service tables[4] and Synchro reports are provided in Appendix A.

In the ***a.m. peak hour***, no ***signalized*** intersections have an overall operation below LOS D.

For ***unsignalized*** locations, the list below shows the intersection and the associated individual approach that operate at LOS E or LOS F:

- North Beacon/Dustin Street/Hichborn Street, where the Dustin Street northbound approach operates at LOS E.
- North Beacon Street/Goodenough Street, where the Goodenough Street northbound approach operates at LOS F.

In the ***p.m. peak hour***, the following ***signalized*** intersections operate at overall LOS E:

- North Beacon Street/Cambridge Street/Brighton Avenue and
- Market Street/Faneuil Street.

[4] The detailed tables show level of service, average delay, volume to capacity ratio, and 95th percentile queue length (feet) for the overall intersection and each approach.

Table 3 Existing Conditions (2012) Peak Hour Level of Service Summary

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Signalized			
Western Avenue/Birmingham Parkway/ Soldiers Field Road	C	C	C
Birmingham Parkway/Soldiers Field Road Off-Ramp/Lothrop Street	A	B	A
Birmingham Parkway/ Market Street/ Lincoln Street	C	D	B
Market Street/Guest Street/ Stockyard Restaurant Driveway	A	B	A
Market Street/North Beacon Street	C	D	D
North Beacon Street/Life Street/ Etna Street	A	B	B
North Beacon Street/Arthur Street/ Wingate Driveway	B	D	C
North Beacon Street/Everett Street	B	B	B
North Beacon Street/Cambridge Street/ Brighton Avenue (Union Square)	D	E	E
Cambridge Street/Harvard Avenue/ Franklin Street	C	C	C
Cambridge Street/Lincoln Street	A	B	–
Cambridge Street/North Harvard Street	C	C	–
Cambridge Street/Dustin Street	A	A	–
Washington Street/Market Street/ Chestnut Hill Avenue	C	C	–
Market Street/Arlington Street/ Sparhawk Street	C	D	–
Market Street/Faneuil Street	C	E	C
Everett Street/Holton Street	B	B	–
Western Avenue/Everett Street	D	E	C

1) A subset of intersections was evaluated for Saturday conditions.

Table 3 Existing Conditions (2012) Peak Hour Level of Service Summary (cont'd)

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Signalized			
Western Avenue/North Harvard Street	C	C	-
North Harvard Street/Franklin Street/Kingsley Street	B	B	-
Faneuil Street/Parsons Street	D	C	-
Unsignalized			
Market Street/Vineland Street			
Vineland EB left/right	C	C	–
Market NB thru | thru	A	A	–
Market SB thru | thru	A	A	–
North Beacon Street/Murdock Street/EZ Storage Driveway			
N Beacon EB left/thru/right	A	A	A
N Beacon WB left/thru/right	A	A	A
EZ Storage SB left/thru/right	B	E	C
North Beacon Street/Dustin Street/Hichborn Street			
N Beacon EB left/thru	A	A	A
N Beacon WB thru/right	A	A	A
Dustin NB left/thru/right	E	F	E
Hichborn SB left/right	B	F	D
North Beacon Street/Saunders Street			
N Beacon EB thru	A	A	A
N Beacon WB thru	A	A	A
Saunders NB left/right	C	E	D
Cambridge Street/Denby Road			
Cambridge WB thru/right	A	A	–
Denby SB left/right	C	C	–
Cambridge EB left/thru	A	A	–
Cambridge Street/Saunders Street			
Cambridge EB left/thru	A	A	A
Cambridge WB thru/right	A	A	A
Cambridge Street/Murdock Street			
Cambridge EB thru	A	A	–
Cambridge WB thru	A	A	–
Murdock SB left/right	B	C	–

1) A subset of intersections was evaluated for Saturday conditions.

Table 3 Existing Conditions (2012) Peak Hour Level of Service Summary (cont'd)

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Unsignalized			
Guest Street/Life Street			
Guest EB thru/right	A	A	A
Guest WB left/thru	A	A	A
Life NB left/right	B	B	B
Guest Street/Arthur Street/Stop & Shop Driveway			
Guest EB thru/right	A	A	A
Stop and Shop WB left/thru	A	B	A
Arthur left/right	A	A	A
Everett Street/Stop & Shop Driveway			
Stop and Shop EB left/right (illegal maneuver)	B	B	B
Everett NB left/thru (observed lefts are illegal)	A	A	A
Everett SB thru	A	A	A
Everett SB right	A	A	A
Everett Street/Everett Street (north)			
Everett NB left/thru	A	A	–
Everett SB thru/right	A	A	–
Everett NWB left/right	B	C	–
Braintree Street/Denby Road			
Braintree EB thru/right	A	A	–
Braintree WB left/thru	A	A	–
Denby NB left/right	B	B	–
North Beacon Street/Goodenough Street			
N Beacon EB thru | thru/right	A	A	-
N Beacon WB right/thru | thru	A	A	-
Goodenough NB left/right	F	E	-
Goodenough Street/Electric Avenue			
Electric EB left/right	B	B	-
Goodenough NB left/thru	A	A	-
Goodenough SB thru/right	A	A	-
Faneuil Street/Goodenough Street			
Faneuil EB left/thru	A	A	-
Faneuil EB thru/right	A	A	-
Goodenough NB left/thru/right	F	C	-
Goodenough SB left/right	D	C	-

1) *A subset of intersections was evaluated for Saturday conditions.*

For ***unsignalized*** locations, the list below shows the intersection and the associated individual approach that operate at LOS E or LOS F:

- North Beacon/Murdock Street/EZ Storage Driveway, where the exiting traffic from the driveway operates at LOS E.
- North Beacon/Dustin Street/Hichborn Street, where the northbound moves from Dustin Street operate at LOS F and the southbound left turn from Hichborn Street operates at LOS F.
- North Beacon/Saunders Street, where the northbound left/right turns from Saunders Street operate at LOS E and the southbound left turn from Hichborn Street operates at LOS F.

In the ***Saturday Midday peak hour***, the following ***signalized*** intersection operates at LOS E:

- North Beacon Street/Cambridge Street/Brighton Avenue

For ***unsignalized*** locations, the list below shows the intersection and the associated individual approach that operate at LOS E or LOS F:

- North Beacon/Dustin Street/Hichborn Street, where the northbound moves from Dustin Street operate at LOS E and the southbound left turn from Hichborn Street operates at LOS F.

2.6 Parking

As shown in **Table 4**, the existing parcels on the Project site contain 585 parking spaces. All but five garage spaces at 180 Guest Street are in surface lots. Because much of the building space on these parcels is unoccupied, the Proponent estimates that about half of the parking spaces are unused on a daily basis.

Table 4 Existing Parking Spaces

Parcel Address/Tenants	Total Spaces
77 Guest Street Crystal Transport and other tenants	179
38-40 Guest Street Vacant	205
180 Guest Street Mass Electric & New Brighton Landing, LLC	201
Total	585

Nearby, at the corner of Guest Street and Life Street, is a 1,200 space parking garage for employees/visitors of New Balance (at 20 Guest Street), WGBH offices, Newbury Comics offices, Bally's and the New Balance Factory Outlet Store.

It should be noted that the parking demand generated by the new Project will be served entirely on the new site and will not need to use this existing parking garage. See **Section 4.2.7** for a discussion of future parking.

On-street parking regulations near the Project site were inventoried and are presented in **Figure 6**. In general, no parking is permitted along Guest Street, along the south curb between Market Street and Life Street has a pick-up/drop-off zone, a handicapped parking zone, and limited two-hour parking. No parking is permitted along Market Street, Arthur Street, and Everett Street, south of Adamson Street. On North Beacon Street, there is mix of unrestricted parking, p.m. peak period restrictions, and no parking.

2.7 Public Transportation

This section highlights the routes, schedules, and capacity of public transportation in the study area.

2.7.1 MBTA Bus Service

Within a half mile of the Project site, the MBTA operates around the project site is served by the five MBTA bus routes. Direct access to the site by transit is provided by Route 86 and Route 64 with stops located on Market Street and Guest Street respectively. Route 64 operates immediately adjacent to the project site with stops on Arthur Street and Life Street.

Route 70/70A operates on Soldiers' Field Road, which is separated from the Project site by the Massachusetts Turnpike. The walk between this route and the Project site, via Soldiers' Field Road, Market Street and over the Turnpike, would deter some pedestrians. Route 86 provides a connection via Market Street.

Public transportation with the study area is presented in **Figure 7** and summarized in **Table 5.**

Several additional MBTA services are available beyond the half-mile radius, at approximately 2/3 of a mile; however, this distance is generally considered further than what most people are willing to walk to access transit. These services include MBTA bus Routes 57 (Watertown Yard - Kenmore Station via Newton Corner & Brighton Center) and 65 (Brighton Center - Kenmore Station via Washington St., Brookline Village). Still further away at slightly over a mile is the B Branch of the MBTA Green Line at Harvard Avenue.

Table 5 Public Transportation in the Study Area

Route	Route Description	Rush-hour Headway (minutes)
Route 57	Watertown Square/Kenmore Square *via Newton Corner and Brighton Center*	5/6
Route 64	Oak Square/Central Square – via North Beacon Street and Cambridge Street.	18/28
Route 66	Harvard Square/Dudley Station – via Allston and Brookline Village	10
Route 70/70A*	Cedarwood or North Waltham/Central Square – via Arsenal Street and Western Avenue	13/10
Route 86	Sullivan Square/Cleveland Circle – via Harvard Square and Market Street	13/18

2.7.2 Private Shuttles

New Balance currently operates shuttle service between their offices at 20 Guest Street and nearby MBTA subway stations. Employees from New Balance and the adjacent WGBH office/studio (One Guest Street) are permitted to use the shuttles. Service is provided by 14 passenger vans.

The shuttle service provides a connection to the MBTA Red Line at Harvard Square and Green Line at Kenmore Square. A shuttle runs from Harvard Square at 7:50, 8:35, and 9:15 a.m. and from Kenmore Square at 7:55, 8:40, and 9:15 a.m. In the afternoon, shuttles depart from the site for both MBTA stations at 4:35, 5:10, and 5:45 p.m. According to information obtained from New Balance in January 2012, these shuttles are between ½ and 2/3 full on most weekdays.

Harvard University, Boston College, and the Arsenal on the Charles all run their own private shuttle services, however all three operate on routes ½ mile or further from the project site.

2.7.3 Commuter Rail

The Project site is directly adjacent to the MBTA Framingham/Worcester commuter rail line. Under current conditions, the nearest stations are to the west at Newtonville and to the east at Yawkey with no commuter rail service to the Brighton or nearby Allston neighborhoods. During peak commuting periods, trains on the Framingham/Worcester line are dispatched approximately every 30 minutes.

Prior to the construction of the Massachusetts Turnpike Extension, Allston/Brighton had regular commuter rail service and beginning in 1998, the idea of reviving the service has been studied in the context of the Urban Ring, the Harvard Allston Initiative and the Commonwealth's intent to purchase the Framingham/Worcester line from CSX. According to a 2009 presentation by the Executive Office of Transportation, the nearest new potential commuter rail station would be at Everett Street, roughly adjacent to the Project site.

According the MBTA Planning Department, restoration of commuter rail service to Allston/Brighton is still in the planning stage. In September 2012, one of the "triggers" associated with the restoration will be achieved when CSX relinquishes full control of the Framingham/Worcester line to the MBTA. While there are challenges to implementing commuter rail service to Allston/Brighton, the Proponent has had discussions with MassDOT and the MBTA regarding the potential of establishing a future commuter rail station adjacent to the site.

2.7.4 Local Impacts of MBTA Budget Issues

In early 2012, the MBTA was considering an array of fare and service changes as part of a system-wide cost-cutting evaluation. Initial MBTA service cut proposals included the elimination of Route 64 and the shortening of Route 70A. Route 64 is a key transit option for future travelers to study area: Route 70A less so, because of the walking distance to stops. As of March 2012, however, the MBTA is no longer recommending cuts on these routes and service is anticipated to continue unchanged.

The Proponent strongly supports continuation of all current MBTA service to the area not only to serve its current employees, visitors and local area residents, but also to service the future vision for the area as described in the City's recent Brighton/Guest Street study[5]. .

2.8 Pedestrian and Bicycle Facilities

Pedestrian counts were taken as part of the intersection turning movement counts in 2007. An inventory of sidewalks and crosswalks is provided in the intersection descriptions in **Section 2.2**. Sidewalks are generally provided along both sides of the study area roadways, with marked crosswalks provided at the signalized intersections. Significant exceptions to marked crosswalks are evident along the DCR controlled Birmingham Parkway, particularly at Western Avenue.

Bicycle accommodations vary within the study area. Brighton and Allston have many City of Boston designated bicycle routes, but very few have physical bicycle accommodation facilities. There are some bicycle lanes on Washington Street in Brighton Center heading

[5] Brighton/Guest Street Area Planning Study, Final Report", prepared for the Boston Redevelopment Authority by Sasaki Associates and GLC Development Resources. February 2012.

east to at least Sparhawk Street. Multi-use paths (pedestrians and bicyclists) are present along both sides of the Charles River, with designated bicycle routes (shared traveled way) provided along the following streets: Cambridge Street, Washington Street, Faneuil Street, Arlington Street, Market Street, North Beacon Street, Birmingham Parkway, Lincoln Street, Western Avenue, and Everett Street.

There are some bicycle lanes on Washington Street in Brighton Center heading east to at least Sparhawk Street. There are proposed bicycle lanes along Market Street between Washington and Lincoln Street that will be installed by the City later this year (2012). While these lanes are still in preliminary design, the study team has met with the City's design team in an effort to coordinate intersection improvements to be undertaken by the Proponent. These improvements are discussed under **Section 3.2**, Baseline Improvements.

2.9 Loading and Service

The Project site includes parcels at 77 Guest Street and 38-180 Guest Street. Collectively, the existing parcels contain low-rise office space and various, low density industrial and warehouse buildings, some of which are vacant. Loading and service activities all occur off-street. At 77 Guest Street, several loading docks are located along the building, with one along Guest Street, one on Life Street, and several along the back alley, south of the building. At 38 Guest Street, which is currently vacant, a multi-bay loading dock is located along Guest Street. At 180 Guest Street, two loading bays are located on Guest Street.

3.0 YEAR 2014 WITH BASELINE IMPROVEMENTS

For transportation impact studies, it is standard practice to evaluate No-Build conditions (without project) and Full-Build conditions (with project) and determine to what extent the traffic operations will be affected. The Proponent, in cooperation with permitting agencies, then develops and implements mitigation improvements to reduce the associated impacts. For the New Brighton Landing Project, however, The Proponent is committed to making immediate improvements to the existing roadway network *prior* to obtaining permitting approvals and/or during construction.

The study team identified poor levels of service from the Year 2012 Existing Conditions operations analysis (as presented in **Section 2.5**) and developed improvement measures to address the deficiencies. Anticipating that these improvements can be implemented in the short-term, the study team developed Year 2014 conditions (two years in the future) with the integration of "Baseline Improvements". The Proponent, who has already held preliminary meetings with BTD staff, will continue to work collaboratively with the City to support implementation of these improvements.

3.1 Year 2014 No-Build Volumes

Prior to evaluating the Baseline Improvements, Year 2014 No-Build volumes were developed based on existing volumes plus new traffic resulting from background growth and other development projects, but without any new development on the Project site.

The general background growth rate accounts for changes in demographics, auto usage and auto ownership. Based on a review of historical and recent traffic counts, a 0.5% growth rate was applied to the existing intersection volumes to account for background growth. The study team also incorporated future traffic increase anticipated from the following projects:

533 Cambridge Street Condominiums - This project involved the demolition of a 3-story building and construction of a new a 4 1/2-story condominium building having 44 ownership units with on-site parking included. *While this project is now complete, it was not included in the Year 2007 traffic counts adopted for this study. Therefore, trips were added to the background growth volumes.*

Charlesview Residences -This project, located on Western Avenue, within Brighton Mills and between Litchfield Street and Telford Street, includes 240 apartment units. This project has been approved by the BRA, is currently under construction, and should be completed by 2014.

Genzyme Phase II Expansion - This project is an expansion of the Genzyme facility located at 500 Soldiers Field Road. The construction will add 90,000 square feet of office and manufacturing support space, 56 at-grade parking spaces and a 25,000 square foot underground cogeneration plant. *While this project is now complete, it was not included in the Year 2007 traffic counts adopted for this study. Therefore, trips were added to the background growth volumes.*

Harvard's Allston Science Center Complex - As planned, this project will include a four-building complex containing 589,000 gross square feet of academic, research, and retail space. The Science Complex is located on the south side of Western Avenue east of North Harvard Street, between Travis Street and Hague Street. Changing economic conditions caused the University to reconsider the construction and occupancy timeline for this project. Although the re-evaluation is still ongoing, vehicle trips generated by this project were distributed to study area intersections using the data contained in the Harvard University Allston Science Complex Draft Project Impact Report (June 25, 2007).

Boston College Institutional Master Plan - This project will include a new recreation center; a 285,000 sf University Center; 790 new dormitory beds; a Brighton Athletics Center; a Fine Art District within the Brighton Campus; the addition of 400 parking spaces; and the construction of four academic buildings encompassing 385,000 sf of space.

The Year 2014 No-Build traffic volumes are shown **Figure 8**, **Figure 9**, and **Figure 10**, for the a.m. peak hour, p.m. peak hour, and Saturday Midday peak hour, respectively.

3.2 Baseline Improvements

As presented earlier, there are several locations with poor operating levels of service under Year 2012 existing conditions. The Proponent is committed to improving intersection operations in the short-term with measures, as presented in **Table 6,** which can be implemented relatively quickly and without significant design or construction time lags. These efforts include signal timing and phasing adjustments, signal coordination efforts, lane use changes, and changes to curbside regulations. It is expected that these Baseline Improvements may be installed in late 2012 or early 2013.

The Proponent has had several preliminary meetings with BTD staff, who are receptive to short-term improvements. BTD asked that these efforts complement any proposed bicycle accommodation efforts being undertaken by the City in the area. Market Street is presently slated for installation of bicycle lanes by the fall of 2012.

The Proponent is committed to providing financial support for implementation of these Baseline Improvements and will provide conceptual plans for BTD's review and comment. The City will review these improvements with neighborhood representatives prior to implementation.

Table 6 Baseline Improvements

1. North Beacon/Cambridge Street/Brighton Avenue (Union Square) intersection
On Brighton Avenue westbound, there are currently four travel lanes - two are designated as exclusive left turn lanes, one is an exclusive through lane, and one is a channelized right turn lane. The proposed improvement is to convert the right-most left turn lane to a shared use left-turn/through lane. This lane change will require parking restrictions along the north curb of North Beacon in front of 5 North Beacon Street. While parking is currently prohibited on this curb between 4:00 – 6:00 p.m., the additional through lane on the Brighton Avenue approach will require "no stopping anytime". Approximately four parking spaces will be displaced.
2. North Beacon/Arthur Street intersection
Restripe the eastbound North Beacon Street approach to accommodate a 100 foot left turn storage lane and one through lane. Signal timings would need to be adjusted to accommodate this change.
3. North Beacon Street Corridor
Modify the overall signal cycle length on the North Beacon Street corridor and optimize signal timings at: • North Beacon Street /Arthur Street • North Beacon Street /Everett Street • North Beacon Street/Cambridge Street/Brighton Avenue (Union Sq.)
4. Market Street Corridor
Modify the overall signal cycle length on the Market Street corridor and optimize signal timings at: • Birmingham Parkway/Market Street/Lincoln Street • Market Street/Guest Street/Stockyard Driveway • Market Street/North Beacon Street • Market Street/Faneuil Street • Market Street/Arlington Street/Sparhawk Street

Section 5.0, Transportation Mitigation Measures, presents additional improvements to be undertaken by the Proponent with the full build-out of the Project. In discussions with the BTD on the Baseline Improvements, the BTD has suggested that it may be beneficial to advance some of the longer-term recommendations sooner, to ensure a coordinated and efficient effort on the intersection improvements. For example, the Proponent is now working with the City and the City's bicycle consultant in advancing longer-term Market Street mitigation into forthcoming bicycle lane improvements at Faneuil Street and at Sparhawk Street/Arlington Street. The Proponent is also interested in advancing longer-term improvements at North Beacon Street/Arthur Street.

3.3 Year 2014 No-Build Conditions with Baseline Improvements

The Year 2014 analysis uses the methodology described in the Existing Conditions analysis.

Table 7 shows the Year 2014 No-Build Conditions with Baseline Improvements level of service summary for the weekday a.m., weekday p.m., and Saturday Midday Peak hour. Due to their length, the detailed level of service tables[6] and Synchro reports are provided in Appendix A.

In the tables below, note that black cells indicate an improvement in level of service as compared to Existing Conditions and grey cell indicate a worsening in level of service. As a result of the Baseline Improvements, the following upgrades in level of service would occur:

- Market Street/Guest Street/Stockyard Restaurant Driveway
- Market Street/North Beacon Street
- North Beacon Street/Arthur Street/Wingate Driveway
- North Beacon Street/Everett Street
- North Beacon Street/Cambridge Street/Brighton Avenue
- Market Street/Faneuil Street

At the Western Avenue/Everett Street intersection, planned traffic signal sequence and timing changes[7] have been incorporated into the 2014 conditions and result in LOS F during each peak period. These improvements are part of a corridor wide bicycle accommodation effort along Western Avenue coordinated with the City of Boston and implemented as part of a mitigation package by Harvard University for the Brighton Mills Redevelopment. As in the case here, bicycle accommodation often degrades overall intersection operations for vehicles but will improve overall safety at an intersection.

During the a.m. peak hour, the Faneuil Street/Goodenough Street southbound approach deteriorates from LOS D to LOS E due to increases in background traffic volumes.

[6] The detailed tables show level of service, average delay, volume to capacity ratio, and 95th percentile queue length (feet) for the overall intersection and each approach.
[7] Plan Set: Brighton Mills Redevelopment, Offsite Improvement Project, Western Avenue- 2 Locations (100% Submission – Not Approved for Construction, prepared by Vanasse Hangen Brustlin, Inc. for Boston Transportation Department, October 4, 2011.

Table 7 Year 2014 No-Build with Baseline Improvement Conditions Peak Hour Level of Service Summary

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Signalized			
Western Avenue/Birmingham Parkway/ Soldiers Field Road	C	C	C
Birmingham Parkway/Soldiers Field Road Off-Ramp/Lothrop Street	A	B	A
Birmingham Parkway/ Market Street/ Lincoln Street	C	D	B
Market Street/Guest Street/ Stockyard Restaurant Driveway	A	B	**B**
Market Street/North Beacon Street	C	D	**C**
North Beacon Street/Life Street/ Etna Street	A	B	B
North Beacon Street/Arthur Street/ Wingate Driveway	B	**C**	C
North Beacon Street/Everett Street	**A**	B	B
North Beacon Street/Cambridge Street/ Brighton Avenue (Union Square)	**C**	**D**	**D**
Cambridge Street/Harvard Avenue/ Franklin Street	C	C	C
Cambridge Street/Lincoln Street	A	B	–
Cambridge Street/North Harvard Street	C	C	–
Cambridge Street/Dustin Street	A	A	–
Washington Street/Market Street/ Chestnut Hill Avenue	D	C	–
Market Street/Arlington Street/ Sparhawk Street	C	D	–
Market Street/Faneuil Street	C	**D**	C
Everett Street/Holton Street	B	B	–
Western Avenue/Everett Street [2)]	F	F	F

1) A subset of intersections was evaluated for Saturday conditions.
2) Western Avenue bicycle corridor improvements (by others) degrade vehicular operation to LOS F, but improve overall safety.
Light grey cell shading indicates a worsening in LOS from Existing Conditions that bring operations to LOS E or LOS F.
Black shading indicates an improvement from Existing Conditions.

Table 7 Year 2014 No-Build with Baseline Improvement Conditions Peak Hour Level of Service Summary (cont'd)

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Signalized			
Western Avenue/North Harvard Street	C	D	-
North Harvard Street/Franklin Street/Kingsley Street	B	B	-
Faneuil Street/Parsons Street	D	C	-
Unsignalized			
Market Street/Vineland Street			
Vineland EB left/right	C	C	–
Market NB thru | thru	A	A	–
Market SB thru | thru	A	A	–
North Beacon Street/Murdock Street/EZ Storage Driveway			
N Beacon EB left/thru/right	A	A	A
N Beacon WB left/thru/right	A	A	A
EZ Storage SB left/thru/right	B	E	D
North Beacon Street/Dustin Street/Hichborn Street			
N Beacon EB left/thru	A	A	A
N Beacon WB thru/right	A	A	A
Dustin NB left/thru/right	E	F	E
Hichborn SB left/right	B	F	D
North Beacon Street/Saunders Street			
N Beacon EB thru	A	A	A
N Beacon WB thru	A	A	A
Saunders NB left/right	C	E	D
Cambridge Street/Denby Road			
Cambridge WB thru/right	A	A	–
Denby SB left/right	C	C	–
Cambridge EB left/thru	A	A	–
Cambridge Street/Saunders Street			
Cambridge EB left/thru	A	A	A
Cambridge WB thru/right	A	A	A
Cambridge Street/Murdock Street			
Cambridge EB thru	A	A	–
Cambridge WB thru	A	A	–
Murdock SB left/right	B	C	–

1) A subset of intersections was evaluated for Saturday conditions.
Light grey cell shading indicates a worsening in LOS from Existing Conditions that bring operations to LOS E or LOS F.
Black shading indicates an improvement from Existing Conditions.

Table 7 Year 2014 No-Build with Baseline Improvement Conditions Peak Hour Level of Service Summary (cont'd)

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Unsignalized			
Guest Street/Life Street			
Guest EB thru/right	A	A	A
Guest WB left/thru	A	A	A
Life NB left/right	B	B	B
Guest Street/Arthur Street/Stop & Shop Driveway			
Guest EB thru/right	A	A	A
Stop and Shop WB left/thru	A	B	A
Arthur left/right	A	A	A
Everett Street/Stop & Shop Driveway			
Stop and Shop EB left/right	B	B	B
Everett NB left/thru	A	A	A
Everett SB thru	A	A	A
Everett SB right	A	A	A
Everett Street/Everett Street (north)			
Everett NB left/thru	A	A	–
Everett SB thru/right	A	A	–
Everett NWB left/right	B	**B**	–
Braintree Street/Denby Road			
Braintree EB thru/right	A	A	–
Braintree WB left/thru	A	A	–
Denby NB left/right	B	B	–
North Beacon Street/Goodenough Street			
N Beacon EB thru | thru/right	A	A	-
N Beacon WB right/thru | thru	A	A	-
Goodenough NB left/right	F	E	-
Goodenough Street/Electric Avenue			
Electric EB left/right	B	B	-
Goodenough NB left/thru	A	A	-
Goodenough SB thru/right	A	A	-
Faneuil Street/Goodenough Street			
Faneuil EB left/thru	A	A	-
Faneuil EB thru/right	A	A	-
Goodenough NB left/thru/right	F	C	-
Goodenough SB left/right	E	C	-

1) A subset of intersections was evaluated for Saturday conditions.
Light grey cell shading indicates a worsening in LOS from Existing Conditions that bring operations to LOS E or LOS F.
Black shading indicates an improvement from Existing Conditions.

4.0 YEAR 2017 CONDITIONS

As stated earlier, it is standard practice to evaluate No-Build conditions (without project) and Full-Build conditions (with project) and determine to what extent the traffic operations will be affected. Because these conditions are typically projected to a future date five years from the Existing Conditions year, Year 2017 has been designated as the future design year.

4.1 Year 2017 No-Build Conditions

An annual background growth rate of 0.5% was added to existing volumes to create Year 2017 No-Build volumes. There are no additional background projects than those identified in **Section 3.1**.

The Year 2017 No-Build traffic volumes are shown **Figure 11**, **Figure 12**, and **Figure 13**, for the a.m. peak hour, p.m. peak hour, and Saturday Midday peak hour, respectively.

4.1.2 Year 2017 No-Build Traffic Operations

Because the Baseline Improvements, as presented in **Section 3.2**, are independent of the Project and would be implemented by 2014, they have been incorporated into the Year 2017 No-Build analysis.

Table 8 shows the Year 2017 No-Build Conditions with Baseline Improvements level of service summary for the weekday a.m., weekday p.m., and the Saturday Midday Peak hour. Due to their length, the detailed level of service tables[8] and Synchro reports are provided in Appendix A.

The resulting levels of service are very similar to the Year 2014 No-Build Conditions with Baseline Improvements, with no overall change at signalized intersections.

In the a.m. peak hour, for unsignalized locations, the list below shows the intersections and the associated individual approaches that operate at LOS E or LOS F.

- North Beacon Street/Dustin Street/Hichborn Street, where the northbound Dustin Street approach worsens from LOS E to LOS F and

- Faneuil Street/Goodenough Street, where the southbound Goodenough Street approach worsens from LOS E to LOS F.

No change in level of service occurs at unsignalized intersections during the p.m. peak hour.

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[8] The detailed tables show level of service, average delay, volume to capacity ratio, and 95th percentile queue length (feet) for the overall intersection and each approach.

Table 8 Year 2017 No-Build with (2014) Baseline Improvement Conditions Peak Hour Level of Service Summary

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Signalized			
Western Avenue/Birmingham Parkway/ Soldiers Field Road	D	C	C
Birmingham Parkway/Soldiers Field Road Off-Ramp/Lothrop Street	B	B	B
Birmingham Parkway/ Market Street/ Lincoln Street	C	D	B
Market Street/Guest Street/ Stockyard Restaurant Driveway	A	B	B
Market Street/North Beacon Street	C	D	C
North Beacon Street/Life Street/ Etna Street	A	B	B
North Beacon Street/Arthur Street/ Wingate Driveway	B	C	C
North Beacon Street/Everett Street	A	B	B
North Beacon Street/Cambridge Street/ Brighton Avenue (Union Square)	C	D	D
Cambridge Street/Harvard Avenue/ Franklin Street	D	D	D
Cambridge Street/Lincoln Street	A	B	–
Cambridge Street/North Harvard Street	C	C	–
Cambridge Street/Dustin Street	A	A	–
Washington Street/Market Street/ Chestnut Hill Avenue	D	C	–
Market Street/Arlington Street/ Sparhawk Street	C	D	–
Market Street/Faneuil Street	C	D	C
Everett Street/Holton Street	B	B	–
Western Avenue/Everett Street[2)]	F	F	F

1) A subset of intersections was evaluated for Saturday conditions.
2) Western Avenue bicycle corridor improvements (by others) degrade vehicular operation to LOS F, but improve overall safety.
Light grey cell shading indicates a worsening in LOS from Year 2014 No-Build Conditions that bring operations to LOS E or LOS F.
Black shading indicates an improvement from Year 2014 No-Build Conditions.

Table 8 Year 2017 No-Build with (2014) Baseline Improvement Conditions Peak Hour Level of Service Summary (cont'd)

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Signalized			
Western Avenue/North Harvard Street	C	D	-
North Harvard Street/Franklin Street/Kingsley Street	B	B	-
Faneuil Street/Parsons Street	D	C	-
Unsignalized			
Market Street/Vineland Street			
Vineland EB left/right	C	C	–
Market NB thru | thru	A	A	–
Market SB thru | thru	A	A	–
North Beacon Street/Murdock Street/EZ Storage Driveway			
N Beacon EB left/thru/right	A	A	A
N Beacon WB left/thru/right	A	A	A
EZ Storage SB left/thru/right	B	E	D
North Beacon Street/Dustin Street/ Hichborn Street			
N Beacon EB left/thru	A	A	A
N Beacon WB thru/right	A	A	A
Dustin NB left/thru/right	F	F	E
Hichborn SB left/right	B	F	D
North Beacon Street/Saunders Street			
N Beacon EB thru	A	A	A
N Beacon WB thru	A	A	A
Saunders NB left/right	C	E	D
Cambridge Street/Denby Road			
Cambridge WB thru/right	A	A	–
Denby SB left/right	C	C	–
Cambridge EB left/thru	A	A	–
Cambridge Street/Saunders Street			
Cambridge EB left/thru	A	A	A
Cambridge WB thru/right	A	A	A
Cambridge Street/Murdock Street			
Cambridge EB thru	A	A	–
Cambridge WB thru	A	A	–
Murdock SB left/right	B	C	–

1) A subset of intersections was evaluated for Saturday conditions.
Light grey cell shading indicates a worsening in LOS from Year 2014 No-Build Conditions that bring operations to LOS E or LOS F.
Black shading indicates an improvement from Year 2014 No-Build Conditions.

Table 8 Year 2017 No-Build with (2014) Baseline Improvement Conditions Peak Hour Level of Service Summary (cont'd)

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Unsignalized			
Guest Street/Life Street			
Guest EB thru/right	A	A	A
Guest WB left/thru	A	A	A
Life NB left/right	B	B	B
Guest Street/Arthur Street/Stop & Shop Driveway			
Guest EB thru/right	A	A	A
Stop and Shop WB left/thru	A	B	A
Arthur left/right	A	A	A
Everett Street/Stop & Shop Driveway			
Stop and Shop EB left/right	B	B	B
Everett NB left/thru	A	A	A
Everett SB thru	A	A	A
Everett SB right	A	A	A
Everett Street/Everett Street (north)			
Everett NB left/thru	A	A	–
Everett SB thru/right	A	A	–
Everett NEB left/right	B	C	–
Braintree Street/Denby Road			
Braintree EB thru/right	A	A	–
Braintree WB left/thru	A	A	–
Denby NB left/right	B	B	–
North Beacon Street/Goodenough Street			
N Beacon EB thru | thru/right	A	A	-
N Beacon WB right/thru | thru	A	A	-
Goodenough NB left/right	F	E	-
Goodenough Street/Electric Avenue			
Electric EB left/right	B	B	-
Goodenough NB left/thru	A	A	-
Goodenough SB thru/right	A	A	-
Faneuil Street/Goodenough Street			
Faneuil EB left/thru	A	A	-
Faneuil EB thru/right	A	A	-
Goodenough NB left/thru/right	F	C	-
Goodenough SB left/right	F	C	-

1) A subset of intersections was evaluated for Saturday conditions.
Light grey cell shading indicates a worsening in LOS from Year 2014 No-Build Conditions that bring operations to LOS E or LOS F.
Black shading indicates an improvement from Year 2014 No-Build Conditions.

4.1.3 Year 2017 No-Build Public Transportation

As presented in **Section 2.7.4**, the MBTA has recently considered transit service cuts to address budget issues. While no cuts are imminent in the study area, the Proponent will, if necessary, work with the local neighborhood and the City to ensure current levels of access to public transit are maintained.

4.1.4 Year 2017 No-Build Pedestrian and Bicycle Conditions

Without the Project, sidewalk conditions along Guest Street will remain as under existing conditions. Pedestrian volumes throughout the study area will remain generally unchanged from Existing Conditions.

The City is designing bicycle lanes along Market Street, between Washington Street and Western Avenue, that will likely completed by the end of 2012.

4.2 Year 2017 Full-Build Conditions

The Site Plan in **Figure 14** shows that the Project is separated into three distinct blocks, generally including:

- Block A - New Balance World Headquarters and hotel.
- Block B - Sports Complex, and
- Block C – Office Buildings

Retail and restaurant establishments will be distributed among the blocks. Medical office is located in Block B.

4.2.1 Site Access and Circulation

The Guest Street spine will have four intersections that will provide access/egress to the Projects' two parking garages. On Block A and Block C, three service roads will cross through the parcels, providing access/egress to the underground garage driveways. These access roads will extend north from Guest Street and connect to a new east-west service road, running the length of Block A and Block C, adjacent to the MBTA tracks. Together, these roads provide convenient access to the four loading docks on the north side of Block A and Block C.

At Block B, the Project will create a new service road along the south side of the sports complex that will provide access to the Block B parking garage and the loading dock.

The Guest Street corridor will be designed with a complete streets concept, providing on-street parking, adequate travel lanes, bicycle accommodations, and sidewalks that can provide for outdoor seating, sidewalk entertainment, comfortable walking, street trees, and street furniture.

4.2.2 Trip Distribution

Vehicular trip distribution was developed using origin-destination data form BTD for Area 17 and knowledge of the local area roadway network for each of the primary land uses in the Projects**.** **Figure 15**, **Figure 16**, and **Figure 17**, graphically show the regional trip distributions for office, hotel, and sports complex/retail trips, respectively. Hotel trips are assigned to fewer roadways, reflecting hotel guests' limited knowledge of the roadway network. The sports complex/retail trips have a higher proportion of locally generated trips.

4.2.3 Trip Generation

4.2.3.1 New Land Uses

Trip generation rates for the new Project land uses was derived from the Institute of Transportation Engineers' (ITE) publication *Trip Generation* (8^{th} edition, 2008), using the following Land Use Codes (LUC):

LUC 710 - General Office. A general office building houses multiple tenants. An office building typically contains a mixture of professional services. Calculations of the number of trips use ITE's average rate per 1,000 sf.

LUC 310 - Hotel. The hotel land use code is defined as a place of lodging that provides sleeping accommodations and supporting facilities such as restaurants, cocktail lounges, meeting and banquet rooms or convention centers, limited recreational facilities (e.g., pool, fitness room), and/or other retail services or shops. Calculation of the number of vehicle trips uses ITE's average rate per room.

LUC 720 - Medical Office. A medical/dental office building is a facility that provides diagnoses and outpatient care on a routine basis. One or more private physicians or dentists generally operate this type of facility. Calculations of the number of trips use ITE's fitted curve equation.

LUC 820 - Retail/Shopping. A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. Note that Land Use Code 814 for Specialty Retail was also reviewed for this analysis. Because Land Use Code 820 yields a higher number of trips, it was chosen to be most conservative (highest impact). Calculations of the number of trips use ITE's average rate per 1,000 sf.

LUC 831 - Quality Restaurant. This land use consists of eating establishments of high quality, with average turnover rates of at least one hour or longer. Generally, quality restaurants do not serve breakfast, some do not serve lunch, and all serve dinner. Calculations of the number of trips use ITE's average rate per 1,000 sf.

Sports Complex – No ITE trip generation data are available for the hockey rink and track and field facility uses. As such, trips for these uses were estimated based on the specific facility capacity and operating plan as developed by New Brighton Landing, LLC.

> *Ice Rink* – Generally, on weekdays, the rink will be used throughout the day by institutional, school teams, and youth hockey teams for practice. Games for most of these teams will occur in the evenings and on weekends. In general, attendance at most games will be limited to family and friends (youth hockey games and tournaments), but will be greater for higher profile competitions such as high school or club playoff games. Learn-to-skate programs and public skating times will also be scheduled on weekend days. While open all year, the rink will have limited activity over the summer, including hockey camps and free skate programs. Planned seating capacity = 1,000.
>
> *Track and Field* – Generally, on weekdays, the track and field will be used by institutional and school teams, with training sessions for private users, such as a running club or New Balance sponsored athlete. Track events will typically occur on weekends, with varying levels of attendance. Peak attendance will likely occur for championships occurring in mid-winter. As with the rink, the track and field facility will be open all year, but activity in the summer will be limited to training and no spectator events. Planned seating capacity = up to 3,000.

4.2.3.2 Existing Land Uses

The current, occupied land uses on the Project site along Guest Street include about 19,000 sf of light industrial space, about 36,000 of office space and about 11,000 sf for the Abundant Grace Church, which leases commercial space in a one-story warehouse-type building. Additional unoccupied warehouse space exists along the northern side of Guest Street.

It is standard practice to subtract the existing trips from the new Project trips to produce "net new Project trips". In additional to the office land use code (LUC 710) described above, the following ITE Land Use Codes were used to estimate existing trips.

LUC 560 — Church. A church is a building in which public worship services take place. Ancillary uses include meeting spaces or small classrooms. Calculations of the number of trips use ITE's average rate per 1,000 square feet.

LUC 110 — General Light Industrial. Light industrial facilities emphasize activities other than manufacturing and typically have minimal office space. Calculations of the number of trips use ITE's average rate per 1,000 square feet.

It should be noted that trips associated with the existing New Balance offices at 20 Guest Street have not been subtracted from the new Project trips. Regardless of whether 20 Guest Street continues to be occupied by New Balance or ultimately occupied by new tenants, the building at 20 Guest Street, given good economic conditions, will continue to generate trips commensurate with a fully occupied office building.

4.2.4 Pass -by and Internal Trips

A portion of trips to the Project, under each build phase, will be pass-by trips and internal trips. Pass-by trips are trips that are already in the transportation network and not specifically destined to the proposed uses. ITE defines pass-by trips as trips "made as intermediate stops on the way from an origin to a primary destination without a route diversion." This accounts for trips generated by people already in the area, as in common shopping districts or denser development blocks.

Internal trips are trips that occur between uses within a mixed-use redevelopment, such as an office worker who walks to a nearby restaurant for lunch. Based on ITE methodologies, the study team estimated the number of internal trips for the Project's mix of office, hotel, and retail/restaurant uses. Based on the marketing and management of the fitness club, the Proponent estimates that 50% of weekday users will be employees from nearby buildings. On weekends, only a minimal number of fitness trips will be generated internal to the Project site since the office will be minimally populated on weekends.

For all time periods, a pass-by rate of 25% was applied to the retail/restaurant uses, based on ITE data and the nature of the area around the Project site.

Synergy between the retail/restaurant establishments and office workers and hotel guests will help to create a vibrant area throughout the day and reduce vehicle trips.

The detailed trip generation sheets in Appendix A show the estimated pass-by trips and internal trips for each land use.

4.2.5 Travel Mode Shares

The BTD publishes vehicle, transit, and travel mode shares specific to each area of Boston. The Project site is located within BTD Area 17. As is standard practice, these specific neighborhood mode shares have been adopted and used to estimate the number of new vehicle-person trips, transit trips, and walk/bicycle trips generated by the project.

This methodology was used for all land uses except the sports complex. Based on the specific trip generation for typical weekday and typical Saturday conditions at the sports complex (hockey facility and track/field), it has been assumed that all trips will occur via private automobile or private team bus. For the occasional major, weekend event at the sports complex, some portion of attendees will arrive via transit or will walk from the neighborhood. To be conservative (highest impact), however, all ice rink and track and field facility trips have been assumed to arrive/depart by vehicle.

Local vehicle occupancy rates (VOR) are adopted from the 2009 *National Household Travel Survey* and the 2000 U.S. Census and were used to convert vehicle-person trips to vehicle trips. In the case of the sports complex, the VOR was based on the distribution of persons (athletes, coaches, attendees) to private automobiles and team buses.

The Project mode shares (by time of day and land use) and vehicle occupancy rates are shown in **Table 9**.

Based on the land use trip rates, mode split assumptions, and local vehicle occupancy rates, the resulting transit, walk/bicycle, and vehicle trips were identified. The Project-generated trips are summarized in **Table 10**, with detailed trip generation information provided in Appendix A.

Accounting for the vehicle activity generated by the existing land uses, the net new vehicle trips for Full-Build conditions were estimated and are shown in **Table 11.**

The Year 2017 Build traffic volumes are shown **Figure 18** and **Figure 19** for the a.m. peak hour, **Figure 20** and **Figure 21** for the p.m. peak hour, and **Figure 22** and **Figure 23** for the Saturday Midday peak hour. An outer study area figure and inner study area figure are shown for each time period.

Table 9 Travel Mode Shares

Land Use	Direction	Vehicle Share	Transit Share	Walk/Bicycle Share	Vehicle Occupancy Rate
Daily					
Office	In Out	69% 69%	12% 12%	19% 19%	1.1
Sports Complex	In Out	100% 100%	0% 0%	0% 0%	2.1
Hotel	In Out	52% 52%	8% 8%	40% 40%	1.8
Fitness Club	In Out	69% 69%	12% 12%	19% 19%	1.1
Retail/Restaurant	In Out	52% 52%	8% 8%	40% 40%	1.8
a.m. Peak hour					
Office	In Out	59% 65%	18% 12%	23% 23%	1.1
Sports Complex	In Out	100% 100%	0% 0%	0% 0%	2.2
Hotel	In Out	43% 47%	11% 7%	46% 46%	1.8
Fitness Club	In Out	59% 65%	18% 12%	23% 23%	1.1
Retail/Restaurant	In Out	43% 47%	11% 7%	46% 46%	1.8
p.m. Peak hour					
Office	In Out	65% 59%	12% 18%	23% 23%	1.1
Sports Complex	In Out	100% 100%	0% 0%	0% 0%	1.7
Hotel	In Out	46% 47%	7% 7%	47% 46%	1.8
Fitness Club	In Out	65% 59%	12% 18%	23% 23%	1.1
Retail/Restaurant	In Out	46% 47%	7% 7%	47% 46%	1.8
Saturday Midday Peak hour					
Office	In Out	76% 69%	8% 12%	16% 19%	1.1
Sports Complex	In Out	100% 100%	0% 0%	0% 0%	3.0
Hotel	In Out	53% 52%	7% 8%	40% 40%	1.8
Fitness Club	In Out	76% 69%	8% 12%	16% 19%	1.1
Retail/Restaurant	In Out	53% 52%	7% 8%	40% 40%	1.8

Table 10 Project Vehicle Trips by Land Use – Full-Build

Period	Office[1)]	Sports Complex	Hotel	Fitness Club	Retail[2)]	Total[3)]
Daily						
Entering	3,578	320	234	471	1,306	5,910
Exiting	3,578	320	234	471	1,306	5,910
a.m. Peak						
Entering	761	53	22	15	15	866
Exiting	115	14	19	20	9	177
p.m. Peak						
Entering	160	40	28	77	151	457
Exiting	711	38	21	59	147	976
Saturday Midday						
Entering	145	75	25	154	187	587
Exiting	105	95	18	171	126	516

1) *Includes general office and medical office*
2) *Includes retail and restaurants*
3) *Numbers may not add due to rounding.*

Table 11 Net New Peak Hour Vehicle Trip Generation – Full-Build

Period	Displaced Vehicle Trips (Existing Land Uses)	Project Generated Vehicle Trips	Net New Vehicle Trips[1)]
a.m. Peak			
Entering	56	866	810
Exiting	10	177	167
p.m. Peak			
Entering	18	456	440
Exiting	71	976	904
Saturday Midday			
Entering	21	586	566
Exiting	11	515	504

1) *Numbers may not add due to rounding.*

4.2.6 Year 2017 Full-Build Conditions Traffic Operations

Table 12 shows the Year 2017 Full- Build Conditions with Baseline Improvements level of service summary for the weekday a.m., weekday p.m., and Saturday Midday Peak hour. Due to their length, the detailed level of service tables[9] and Synchro reports are provided in Appendix A.

In addition to the initial set of 36 intersections, eight additional intersections at the new service roads, parking driveways, and street extensions were added to the evaluation.

Over all time periods, with the addition of the Project trips, eight of the signalized intersections will be reduced to LOS E or LOS F and four of the unsignalized intersections will have movements at LOS E or LOS F.

In the ***a.m. peak hour***, the following ***signalized*** intersections will operate at LOS E or LOS F.

- North Beacon Street/Arthur Street/Wingate Driveway;
- North Beacon Street/Cambridge Street/Brighton Avenue (Union Sq.);
- Cambridge Street/Harvard Avenue/Franklin Street;
- Washington Street/Market Street/Chestnut Hill Avenue, and
- Western Avenue/Everett Street.

For ***unsignalized*** locations, the list below shows the intersection and the associated individual approach that reduces to LOS E or LOS F:

- North Beacon/Dustin Street/Hichborn Street, where the southbound moves from Hichborn Street reduces to LOS B to LOS F.

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[9] The detailed tables show level of service, average delay, volume to capacity ratio, and 95th percentile queue length (feet) for the overall intersection and each approach.

Table 12 Year 2017 Full-Build with (2014) Baseline Improvement Conditions Peak Hour Level of Service Summary

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak [1)]
Signalized			
Western Avenue/Birmingham Parkway/ Soldiers Field Road	D	C	C
Birmingham Parkway/Soldiers Field Road Off-Ramp/Lothrop Street	B	B	B
Birmingham Parkway/ Market Street/ Lincoln Street	D	F	C
Market Street/Guest Street/ Stockyard Restaurant Driveway	B	C	B
Market Street/North Beacon Street	D	E	E
North Beacon Street/Life Street/ Etna Street	B	C	C
North Beacon Street/Arthur Street/ Wingate Driveway	F	F	F
North Beacon Street/Everett Street	B	C	C
North Beacon Street/Cambridge Street/ Brighton Avenue (Union Square)	E	F	F
Cambridge Street/Harvard Avenue/ Franklin Street	E	F	E
Cambridge Street/Lincoln Street	A	B	–
Cambridge Street/North Harvard Street	C	C	–
Cambridge Street/Dustin Street	A	A	–
Washington Street/Market Street/ Chestnut Hill Avenue	E	D	–
Market Street/Arlington Street/ Sparhawk Street	D	E	–
Market Street/Faneuil Street	D	F	F
Everett Street/Holton Street	B	B	–
Western Avenue/Everett Street[2)]	F	F	F

1) A subset of intersections was evaluated for Saturday conditions.
2) Western Avenue bicycle corridor improvements (by others) degrade vehicular operation to LOS F, but improve overall safety.
Light grey cell shading indicates a worsening in LOS from Year 2017 No-Build Conditions that bring operations to LOS E or LOS F.
Black shading indicates an improvement from Year 2017 No-Build Conditions.

Table 12 Year 2017 Full-Build with (2014) Baseline Improvement Conditions Peak Hour Level of Service Summary (cont'd)

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Signalized			
Western Avenue/North Harvard Street	C	D	-
North Harvard Street/Franklin Street/Kingsley Street	B	B	-
Faneuil Street/Parsons Street	D	C	-
Unsignalized			
Market Street/Vineland Street			
Vineland EB left/right	C	C	–
Market NB thru | thru	A	A	–
Market SB thru | thru	A	A	–
North Beacon Street/Murdock Street/EZ Storage Driveway			
N Beacon EB left/thru/right	A	A	A
N Beacon WB left/thru/right	A	A	A
EZ Storage SB left/thru/right	B	F	D
North Beacon Street/Dustin Street/ Hichborn Street			
N Beacon EB left/thru	A	A	A
N Beacon WB thru/right	A	A	A
Dustin NB left/thru/right	F	F	F
Hichborn SB left/right	F	F	F
North Beacon Street/Saunders Street			
N Beacon EB thru	A	A	A
N Beacon WB thru	A	A	A
Saunders NB left/right	D	F	F
Cambridge Street/Denby Road			
Cambridge WB thru/right	A	A	–
Denby SB left/right	D	C	–
Cambridge EB left/thru	A	A	–
Cambridge Street/Saunders Street			
Cambridge EB left/thru	A	A	A
Cambridge WB thru/right	A	A	A
Cambridge Street/Murdock Street			
Cambridge EB thru	A	A	–
Cambridge WB thru	A	A	–
Murdock SB left/right	B	C	–

1) A subset of intersections was evaluated for Saturday conditions.
Light grey cell shading indicates a worsening in LOS from Year 2017 No-Build Conditions that bring operations to LOS E or LOS F.
Black shading indicates an improvement from Year 2017 No-Build Conditions.

Table 12 Year 2017 Full-Build with (2014) Baseline Improvement Conditions Peak Hour Level of Service Summary (cont'd)

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Unsignalized			
Guest Street/Life Street/Block C Access Road			
Guest EB left/thru/right	A	A	A
Guest WB left/thru/right	A	A	A
Life NB left/thru/right	F	F	F
Access SB left/thru/right	D	F	F
Guest Street/Arthur Street Ext./Stop & Shop Driveway			
Guest EB left/thru/right	B	F	C
Stop and Shop WB left/thru/right	B	E	C
Arthur NB left/thru/right	C	F	C
Arthur SB left/thru/right	A	D	B
Everett Street/Stop & Shop Driveway			
Everett NB thru	A	A	A
Everett SB thru	A	A	A
Everett SB right	A	A	A
Everett Street/Everett Street (north)			
Everett NB left/thru	A	A	–
Everett SB thru/right	A	A	–
Everett NEB left/right	B	C	–
Braintree Street/Denby Road			
Braintree EB thru/right	A	A	–
Braintree WB left/thru	A	A	–
Denby NB left/right	B	B	–
Life Street/Block B Access Road			
Block B WB left/right	B	B	B
Life NB thru/right	A	A	A
Life SB left/thru	A	A	A
Block B Access Road/Block B			
Access EB left/thru	A	A	A
Access WB thru/right	A	A	A
Block B parking SB left/right	A	A	A
Guest Street/ Block A Access Road (Exit)			
Guest EB left/thru	A	A	A
Guest WB left/thru/right	A	A	A
Access SB left	B	D	B
Access SB right	A	B	B

1) A subset of intersections was evaluated for Saturday conditions.
Light grey cell shading indicates a worsening in LOS from Year 2017 No-Build Conditions that bring operations to LOS E or LOS F.
Black shading indicates an improvement from Year 2017 No-Build Conditions.

Table 12 Year 2017 Full-Build with (2014) Baseline Improvement Conditions Peak Hour Level of Service Summary (cont'd)

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak 1)
Unsignalized			
Block C Access Road/Block C Parking Garage			
Block C Parking WB left/right	B	B	B
Access NB thru/right	A	A	A
Access SB left/thru	A	A	A
Block A Access Road/Block A Parking Garage Exit			
Block A Parking Exit WB left	A	B	A
Access NB thru	A	A	A
Access SB thru	A	A	A
Block A Access Road/Parking Garage			
Block A Parking EB left/right	A	A	A
Access left/thru	A	A	A
Access thru/right	A	A	A
Everett Street/ Everett Street (south)			
Everett NB thru/right	A	A	A
Everett SB left/thru	A	A	A
Everett SWB left/right	B	B	B
North Beacon Street/Goodenough Street			
N Beacon EB thru | thru/right	A	A	-
N Beacon WB right/thru | thru	A	A	-
Goodenough NB left/right	F	E	-
Goodenough Street/Electric Avenue			
Electric EB left/right	B	B	-
Goodenough NB left/thru	A	A	-
Goodenough SB thru/right	A	A	-
Faneuil Street/Goodenough Street			
Faneuil EB left/thru	A	A	-
Faneuil EB thru/right	A	A	-
Goodenough NB left/thru/right	F	D	-
Goodenough SB left/right	F	C	-

1) A subset of intersections was evaluated for Saturday conditions.
Light grey cell shading indicates a worsening in LOS from Year 2017 No-Build Conditions that bring operations to LOS E or LOS F.
Black shading indicates an improvement from Year 2017 No-Build Conditions.

In the ***p.m. peak hour***, the following ***signalized*** intersections deteriorate into overall LOS E or LOS F:

- Birmingham Parkway/Market Street/Lincoln Street;
- Market Street/North Beacon Street;
- North Beacon Street/Arthur Street/Wingate Driveway;
- North Beacon Street/Cambridge Street/Brighton Avenue (Union Sq.);
- Cambridge Street/Harvard Avenue/Franklin Street;
- Market Street/Arlington Street/Sparhawk Street;
- Market Street/Faneuil Street; and
- Western Avenue/Everett Street.

For ***unsignalized*** locations, the list below shows the intersection and the associated individual approach that deteriorate into LOS E or LOS F:

- North Beacon/Murdock Street/EZ Storage, where the southbound driveway would deteriorate from LOS E to LOS F. Note that the driveway volumes are small (about five per hour).
- North Beacon/Saunders Street, where the northbound moves from Saunders Street deteriorate from LOS E to LOS F. While the level of service on Saunders Street is poor, the approach volumes are minor (less than 30 vehicles per hour) and the associated queues are short.
- Guest Street/Life Street, where the northbound approach deteriorates from LOS B to LOS F.
- Guest Street/Arthur Street/Stop & Shop Driveway, where the eastbound Guest Street approach, the Stop & Shop approach, and the Arthur Street northbound approach each deteriorates to LOS E or LOS F.

In the ***Saturday Midday peak hour***, the following ***signalized*** intersection operates at LOS E or LOS F:

- Market Street/North Beacon Street;
- North Beacon Street/Arthur Street/Wingate Driveway;
- North Beacon Street/Cambridge Street/Brighton Avenue (Union Sq.);

- Cambridge Street/Harvard Avenue/Franklin Street; and
- Market Street/Faneuil Street.

For ***unsignalized*** locations, the list below shows the intersection and the associated individual approach that deteriorate into LOS E or LOS F:

- North Beacon/Saunders Street, where the northbound moves from Saunders Street deteriorate from LOS D to LOS F. While the level of service on Saunders Street is poor, the approach volumes are minor (less than 30 vehicles per hour) and the associated queues are short.
- North Beacon/Dustin Street/Hichborn Street, where the northbound Dustin Street approach deteriorates from LOS E to LOS F and the southbound Hichborn Street deteriorates from LOS D to LOS F.
- Guest Street/Life Street/Block C Access, where the northbound Life Street approach deteriorates from Los B to LOS F.

Given the number of locations that are affected by the increased traffic volumes, a comprehensive package of traffic mitigation was developed to address each significantly affected location. These mitigation measures and the associated level of service results are presented in **Section 5.1.**

4.2.7 Full-Build Conditions Parking

On-site parking of up to 1,750 spaces will be provided in two underground parking garages, as described below:

- One contiguous garage at Block A and Block C, on the north side of Guest Street, will have up to 1,550 parking spaces for employees and visitors of the office, hotel, medical office, and retail/restaurant uses.
- The garage under the sports complex, Block B, will have up to 200 parking spaces for use by the hockey facility, track and field facility, and fitness club. These spaces will be reserved for employees associated with the sports complex and fitness club members.

Together, the parking supply in these two garages will meet the general weekday parking demands generated by the Project and the peak parking demand generated by a major weekend event at the sports complex.

Garage entrance and exit driveways are shown on the site plan in **Figure 14**.

4.2.7.1 Block A and Block C/Block C Garage

BTD has set parking space goals and guidelines throughout the City to establish the amount of parking supply provided with new developments. BTD's maximum parking ratio guidelines for non-residential uses in Allston/Brighton is 1.5 spaces per 1,000 sf.

The BTD ratio of 1.5 spaces per 1,000 sf is applicable to standard land uses such as office, hotel, medical, retail, and restaurant space and, as shown in **Table 13**, results in a recommended parking requirement of 1,703 spaces. The Project parking plan is to provide 1,550 spaces for these uses, resulting in a parking ratio of 1.4 spaces per 1,000 sf.

Table 13 Block A and Block C Parking Garage – Office, Hotel and Retail/Restaurant Uses

Land Use	BTD Parking Ratio	Parking Supply based on BTD Ratio	Project Parking Supply and ratio[1]
Office [2] 930,000 sf	1.5 spaces/1,000 sf	1,703 spaces	1,550 spaces at 1.4 spaces/1,000 sf
Hotel 140,000 sf	1.5 spaces/1,000 sf		
Retail/Restaurant 65,000 sf	1.5 spaces/1,000 sf		

1) *For office, hotel and retail/restaurant uses: ratio of 1.4 spaces/1,000 sf based on 1,550 spaces and 1,135,000 sf development*
2) *Includes general office and medical office.*

The resulting ratio is slightly below the BTD guidelines, but given the shared parking potential of the hotel and office space, this parking supply will be adequate. Shared parking is when two land uses compatibly share the same parking supply because the parking demand for each use peaks at different times, such as office and hotel, which have peak demand times of midday and overnight, respectively.

Three driveways, north of Guest Street, will be provided at this garage with 1) an entrance/exit on Arthur Street Extension, 2) an exit driveway on Guest Street between Arthur Street and Life Street and 3) an entrance/exit driveway located west of Life Street.

4.2.7.2 Block B Garage

The Block B garage under the sports complex will have up to 200 parking spaces for use by the hockey facility, track and field facility, and fitness club. These spaces will be reserved for employees within the sports complex and members of the fitness club and will not be used by employees or visitors to the office, hotel, medical office, or retail/restaurant uses.

On a typical weekday, the primary parking demand at the sports complex will be related to the 83,000 sf fitness club. The recommended BTD ratio of 1.5 spaces per 1,000 sf when applied to the fitness club portion of the sports complex, results in a recommended supply of about 125 spaces. The remaining spaces (about 75) will be designated to the employees/visitors of the hockey and track and field facilities.

One garage driveway will be located on the Block B Access Road, a new two-way street that will run east-west to Life Street.

4.2.7.3 Weekend Parking

As on weekdays, the 200 garage spaces under the sports complex (Block B) will be reserved on weekends for sports complex employees and members of the fitness club. No public spectator parking will be permitted in the Block B garage.

On a typical weekend, the other uses of the Project (office, hotel and retail/restaurant) will generate a demand for about 400 spaces in the Block A and Block C garage north of Guest Street, leaving about 1,150 spaces available for other users, such as spectators attending events at the sports complex.

The parking demand for a weekend sporting event will be from participants, coaches, support staff, and spectators. Depending on the event, participants and coaches will typically arrive via private bus, while the highest parking demand will be generated from spectators, who typically arrive at such events with about 3.0 persons per vehicle. (An average vehicle occupancy (AVO) rate of 3.0.)

The planned spectator capacity is 1,000 at the hockey facility and 3,000 at the track and field facility. Several Saturday/weekend event scenarios and associated parking demand are presented in **Table 14.**

The results show that parking for most combinations of events, except simultaneous major hockey event with a major track and field event, will be adequate. The Proponent will ensure that simultaneous (hockey *and* track and field) peak events are not scheduled. Simultaneous events with a combined attendance of less than about 3,500, however, could be accommodated with the proposed parking supply.

Table 14 Saturday Parking Demand for Sports Complex Events

	Typical Saturday (spaces)	Two Minor Events	One Major Event at Rink	One Major Event at Track	Two Major Events
Sports Complex Events					
Hockey (Rink)	Youth Games	Minor Event	Major Event	Youth Games	Major Event
Track and Field	Training	Minor Event	Training	Major Event	Major Event
Peak Parking Demand					
Office	140	140	140	140	140
Hotel	210	210	210	210	210
Retail/Restaurant	100	100	100	100	100
Subtotal Demand	450	450	450	450	450
Hockey (Rink)	80	200	333	80	333
Track and Field	80	500	80	500	1,000
Total Demand (vehicles)	610	1,150	866	1,030	1,783
Parking Supply (spaces)	1,550	1,550	1,550	1,550	1,550
Is Saturday parking supply adequate?	yes	yes	yes	yes	No. Cannot schedule two simultaneous major events.

Assumptions for number of spectators:
Minor Hockey Event = 600
Major Hockey Event = 1,000
Minor Track and Field Event = 1,500
Major Track and Field Event = 3,000

4.2.8 Full-Build Conditions Public Transportation

Based on the transit mode shares presented above, the future transit trips associated with the Project were estimated, as shown in **Table 15.** Accounting for the existing transit trips at the site, the net new trips are shown in **Table 16**.

The Project will generate about 298 new transit trips during the a.m. peak hour, 364 trips during the p.m. peak hour and about 170 trips during the Saturday midday peak. While the existing Route 64 and Route 86 can absorb additional peak hour riders in the peak direction, it is estimated that not all new Project transit trips can be accommodated on the existing bus routes. Accommodation of these additional transit riders is addressed in **Section 5.2** on transit mitigation.

Table 15 Project Transit Trips by Land Use – Full-Build

Period	Office[1)]	Sports Complex	Hotel	Fitness Club	Retail[2)]	Total[3)]
Daily						
Entering	703	0	66	90	358	1,217
Exiting	703	0	66	90	358	1,217
a.m. Peak						
Entering	262	0	10	5	6	284
Exiting	23	0	5	4	3	36
p.m. Peak						
Entering	34	0	8	13	40	95
Exiting	246	0	6	10	38	299
Saturday Midday						
Entering	17	0	6	18	42	85
Exiting	21	0	5	33	35	93

1) *Includes general office and medical office*
2) *Includes retail and restaurants*
3) *Numbers may not add due to rounding.*

Table 16 Net New Peak Hour Transit Vehicle Trip Generation – Full-Build

Period	Displaced Transit Trips (Existing Land Uses)	Project Generated Transit Trips	Net New Transit Trips[1)]
a.m. Peak			
Entering	20	283	265
Exiting	2	35	33
p.m. Peak			
Entering	4	95	91
Exiting	25	300	273
Saturday Midday			
Entering	5	83	80
Exiting	3	94	90

1) *Numbers may not add due to rounding.*

4.2.9 *Full-Build Conditions Pedestrian and Bicycle Conditions*

Based on the walk mode shares presented in **Section 4.2.5**, the future walk/bicycle trips were estimated and summarized in **Table 17**. Accounting for the existing walk/bicycle trips at the site, the net new trips are shown in **Table 18**.

Table 17 Project Walk/Bicycle Trips by Land Use – Full-Build

Period	Office[1]	Sports Complex	Hotel	Fitness Club	Retail[2]	Total[3]
Daily						
Entering	1,114	0	331	143	1,788	3,376
Exiting	1,114	0	331	143	1,788	3,376
a.m. Peak						
Entering	335	0	42	7	23	413
Exiting	45	0	35	8	15	104
p.m. Peak						
Entering	64	0	54	86	275	479
Exiting	313	0	38	64	254	669
Saturday Midday						
Entering	35	0	35	36	253	358
Exiting	32	0	26	52	173	284

1) *Includes general office and medical office*
2) *Includes retail and restaurants*
3) *Numbers may not add due to rounding.*

Table 18 Net New Peak Hour Walk/Bicycle Trip Generation – Full-Build

Period	Displaced Walk/Bicycle Trips (Existing Land Uses)	Project Generated Walk/Bicycle Trips	Net New Walk/Bicycle Trips[1]
a.m. Peak			
Entering	29	412	384
Exiting	7	103	96
p.m. Peak			
Entering	12	479	467
Exiting	35	669	634
Saturday Midday			
Entering	25	359	333
Exiting	11	283	273

1) *Numbers may not add due to rounding.*

With the Project, there will be about 480 new walk/bicycle trips into and out of the site during the a.m. peak hour, 1,101 during the p.m. peak hour, and about 606 during the Saturday peak hour. These trips include commuters walking/biking to/from work and taking midday walks for lunch or errands. Also included in this group are hotel guests walking to/from retail and restaurant establishments within the immediate area, shoppers walking among different stores/restaurants and nearby residents walking/biking to various uses within the Project.

4.2.10 Full-Build Conditions Loading and Service Accommodations

As shown in the site plan in **Figure 14**, above, the Project has six service areas with eleven loading docks. All service and loading will take place off street. The service driveway locations are listed below:

- Block A and Block C – Four loading docks will serve the parcel north of Guest Street. These four docks will be located along a new service road, which will run east-west behind the entire length of the Block A and Block C. A fifth dock will be located on Arthur Street, on the east side of Block A.

- Block B - One loading dock will be located on the new Block B service road, which runs along the south side of the sports complex.

Because pedestrian activity will be limited near all loading dock curb cuts, conflicts between delivery vehicles and pedestrians should be minimal.

The study team estimated the number of delivery trips associated with the Project. The primary source of delivery trip generation rates was taken from research data summarized from national studies and Boston specific studies. A description of the anticipated loading/ service activity by land use is presented below.

Office Use. Deliveries for office use are related primarily to office supplies and couriers, depending on the nature of the office tenants. Delivery trip estimates were based on NCHRP data for Boston.

Sports Complex. Deliveries include athletic equipment and supplies. Delivery trip estimates were based on Central Artery/Tunnel Project rates for recreation uses.

Hotel Use. Hotel deliveries include primarily linens and food. Delivery trip estimates were based on National Cooperative Highway Research Program (NCHRP) data for Boston.

Retail Use. Retail deliveries will have different sources for their particular merchandise. Delivery trip estimates were based on NCHRP data for Boston.

Restaurant. Delivery trip estimates were based on NCHRP data for Boston.

A summary of anticipated loading/service activity by land use is presented in **Table 19**.

Table 19 Summary of Anticipated Delivery Activity by Land Use

Land Use	Daily (Weekday) Deliveries
Office	11
Sports Complex	7
Hotel	3
Retail	10
Restaurant	7
Total	38

Overall, the Project will generate approximately 38 deliveries per day. It is anticipated that 90% of these deliveries will occur between 7:00 a.m. and 5:00 p.m. However, whenever possible, loading and service activities will be requested to occur during off-peak hours. Based on observations of deliveries at other Boston mixed-use developments, the average duration of a delivery is about 15 minutes. Based on this duration of 15 minutes per delivery, each dock could accommodate up to four deliveries per hour. Given the number of available delivery bays and the projected number of delivery deliveries, sufficient loading capacity is provided in the Project. While some deliveries will be via truck, most occur via cars/vans.

Note that trash trips are not included in the number of daily deliveries. Trash trips generally occur between 5:00 a.m. and 7:00 a.m. and do not coincide with the regular delivery activity at the loading docks.

5.0 TRANSPORTATION MITIGATION MEASURES

The Proponent is committed to continuing to work with the City to foster sustainable development that balances the needs of the various transportation modes and to implement infrastructure and management improvements that will mitigate the impact of development on the surrounding transportation system.

5.1 Intersection and Roadway Improvements

5.1.1 Project Mitigation

The following traffic improvement measures were incorporated into a revised analysis, presented below, of the Year 2017 Full-Build conditions. These mitigation measures are in addition to the Baseline Improvements outlined in **Section 3.0**, as already incorporated into the Year 2014 and Year 2017 analysis.

Guest Street Extension

The concept of extending Guest Street, from its intersection with Arthur Street through to Everett Street thus providing a connection to Braintree Street and on to Cambridge Street, was endorsed during the City's Brighton/Guest Street Area Planning Study. At the eastern end of this new corridor link, Denby Road would be modified into a one-way roadway southbound to connect Braintree Street to Cambridge Street. The intersection of Denby Road and Cambridge Street would be signalized and coordinated with adjacent Cambridge Street intersections to the east to optimize traffic flow along the extended Guest Street/Braintree Street corridor. Parking on both sides of Cambridge Street would be eliminated between Denby Road and Harvard Street/Franklin Street. Franklin Street would be converted to one-way from Cambridge Street to Braintree Street providing the inbound connection to the corridor.

The intent of this improvement is to provide additional connectivity from the Brighton/Guest Street study area to the regional roadway network (I-90's Allston/Brighton interchange and Storrow Drive specifically) via Cambridge Street. This transportation corridor would parallel and complement North Beacon Street and divert traffic away from busy and congested intersections along that corridor, and in particular away from Union Square (Cambridge Street/Brighton Street/North Beacon Street). The new corridor could also provide a less busy travel route for bicycles in the area.

The number of vehicle trips assigned to the Guest Street Extension/Braintree Street corridor was based on recommendations from the City's Planning Study. The City's planning study recommendations generally included about 16% of vehicle trips generated by all development along Guest Street, including the Project, WGBH, and office tenants at 20

Guest Street. Some diversion of traffic from North Beacon Street, that would have otherwise traversed Union Square, was also added to the new corridor.

The Guest Street corridor will be redesigned with a complete streets concept, providing on-street parking, adequate travel lanes, bicycle accommodations, and sidewalks that can provide for outdoor seating, sidewalk entertainment, comfortable walking, street trees, and street furniture.

Additional mitigation measures at other locations:

Western Avenue/Birmingham Parkway/Soldiers Field Road

- Prohibit left turns for the eastbound Inner Arsenal approach. This allows a signal phase to be removed. The affected drivers can use the channelized right turn on the eastbound inner Arsenal approach and merge onto Soldiers Field Road, or, if they are destined to a business on the on-ramp, they can travel eastbound on Inner Arsenal eastbound and access the businesses on Western Avenue.

- Prohibit left turns from Soldiers Field off-ramp onto Western Avenue eastbound to provide for Western Avenue crosswalk concurrent crossing.

- Provide infrastructure to connect the signal to BTD system.

- Coordinate signal with the adjacent signals to the south at Birmingham Parkway/Soldiers Field Road Off-Ramp/Lothrop Street and Birmingham Parkway/Market Street/Lincoln Street.

- Provide ADA compliant pedestrian crossings

Birmingham Parkway/Soldiers Field Road Off-Ramp/Lothrop Street

- Provide infrastructure to connect to the BTD system

- Coordinate signal with adjacent intersections to the north and south at Western Avenue/Birmingham Parkway/Soldiers Field Road and Birmingham Parkway/Market Street/Lincoln Street.

- Provide ADA compliant pedestrian crossings

Birmingham Parkway/ Market Street/Lincoln Street

- Change lane use. On westbound Lincoln Street, the approach has an exclusive left lane and a thru/right lane. Change to two general purpose lanes– a left/thru and a thru/right lane.

- Coordinate signal with adjacent intersections to the north at Birmingham Parkway/Soldiers Field Road Off-Ramp/Lothrop Street.

- Provide infrastructure to connect to the BTD system

- Provide ADA compliant pedestrian crossings

Market Street/North Beacon Street

- Prohibit southbound left turns from Market Street onto North Beacon Street during the p.m. peak period only. (Most affected drivers will instead turn left upstream at the Market Street/Guest Street intersection onto Guest Street westbound. From Guest Street, drivers will likely use Life Street, Arthur Street or Guest Street extension to reach Everett Street, North Beacon Street or continue onto Braintree Street.) These vehicles were reassigned in the mitigation analysis.

- Provide signage on the southbound side of the Birmingham Parkway to alert drivers that the no left turn is allowed onto North Beacon Street during the p.m. peak period

- Adjust signal phasing to include a leading green phase for westbound North Beacon Street traffic. The existing leading green phase for southbound Market Street traffic was removed.

North Beacon/Life Street/Etna Street

- Provide infrastructure for connection to BTD system

- Upgrade traffic signal. This signal, currently not tied to the BTD traffic control center, should be added to the BTD system.

- Adjust cycle length. The cycle length should be adjusted to coordinate with adjacent intersections at North Beacon Street /Dustin Street/Hichborn Street, North Beacon Street/Arthur Street, North Beacon Street/Everett Street, and North Beacon Street/Cambridge Street/Brighton Avenue (Union Sq.). This totals five coordinated signals along North Beacon Street.

- Provide ADA compliant pedestrian crossings

North Beacon/Dustin Street/Hichborn Street

- Signalize. Given the existing and projected future peak hour volumes at this intersection, it is likely that a traffic signal is warranted. A new signal would be coordinated with other traffic signals on the North Beacon Street corridor. The signal will also include concurrent pedestrian phases, providing a safer crossing for pedestrians travelling between the Dustin Street area and the Project site. A full traffic signal warrant analysis, however, is necessary.

North Beacon Street/Arthur Street/Wingate Driveway

- Add a 140-foot westbound right-turn storage lane on North Beacon Street onto Arthur Street. Some land taking along the northern curb line will be necessary to provide this additional lane.

- Install bicycle accommodations

- Provide ADA compliant pedestrian crossings

North Beacon Street/Cambridge Street/Brighton Avenue (Union Sq.)

- Add right turn lane on southbound Cambridge Street. Four or five parking spaces will need to be eliminated to provide adequate width for this additional lane.

- Add bicycle accommodations to all approaches

- Adjust signal phasing and timing

Cambridge Street/Denby Road

- See Guest Street Extension discussion, above.

Cambridge Street/Harvard Avenue/Franklin Street

- See Guest Street Extension discussion, above.

Cambridge Street/North Harvard Street

- Adjust signal timing.

Market Street/Arlington Street/Sparhawk Street

- Remove parking along both sides of Market Street, north of Arlington Street, would be restricted except during main mass times at the church (most likely Saturday afternoons and Sundays mornings)

- Add storage lanes. On the northbound and southbound Market Street approaches, add 80-foot and 100-foot storage lanes, respectively, for left turning vehicles.

- Relocate bus stop. The Route 86 bus stop on southbound Market Street located south of Arlington Street would be moved to just north of Bennett Street. The Route 86 bus stop on northbound Market Street located south of Arlington Street would be moved to just south of Mapleton Street. Seven to eight parking spaces will need to be eliminated at new bus stop locations.

Market Street/Faneuil Street

- Change pedestrian phase. The existing exclusive pedestrian phase can safely be replaced with concurrent phasing, with the following intersection modifications:
    - Remove one crosswalk. Eliminate the crosswalk across Market Street, north of the intersection. All pedestrians crossing Market Street would use the remaining crosswalk, south of the intersection.
    - Allow southbound right turn from Market Street onto Faneuil Street to proceed only with eastbound Faneuil Street movements. No Right Turn on Red would be allowed for southbound turns.
- Upgrade signal equipment to accommodate changes.
- Install additional signage to reinforce changes.

Guest Street/Life Street/Block C Access Road

- Signalize. Give the projected future volumes at this intersection and the high number of turning vehicles into and out of the Block C garage driveway, this location will likely require signalization. An exclusive pedestrian phase will ensure pedestrian safety. A full traffic warrant analysis, however, will be necessary.

Guest Street/Arthur Street Extension/Stop & Shop Driveway

- Signalize. Given the projected future volumes at this intersection, and the high number of turning vehicles (as opposed to through movements) it will likely require signalization.) A full traffic warrant analysis, however, would be necessary. An exclusive pedestrian phase has been added to ensure pedestrian safety. The signal will also be coordinated with the new Guest Street intersections at Life Street and at Block C Access Road.
- Add bicycle lanes to each approach.

Everett Street (foot of bridge)/Everett Street

- See Guest Street Extension discussion, above.
- Signalize intersection and cluster with new intersection of Guest Street/Everett Street to the south
- Provide ADA-compliant pedestrian crossings

Guest Street/Everett Street

- See Guest Street Extension discussion, above.
- Signalize intersection and cluster with new intersection of Everett Street/Everett Street to the north.
- Provide ADA-compliant pedestrian crossings

5.1.2 Year 2017 Full-Build Conditions Traffic Operations with Mitigation

The Year 2017 Build traffic volumes are shown **Figure 24** and **Figure 25** for the a.m. peak hour, **Figure 26** and **Figure 27** for the p.m. peak hour, and **Figure 28** and **Figure 29** for the Saturday Midday peak hour. An outer study area figure and inner study area figure are shown for each time period.

The mitigation measures described above have been incorporated into the Year 2017 Full-Build with Mitigation. The results are presented in **Table 20** for the weekday a.m., weekday p.m., and Saturday Midday Peak hour. **Table 21** shows the results associated with the two alternatives of connecting Braintree Street to Cambridge Street under the Guest Street Extension.

Due to their length, the detailed level of service tables[10] and Synchro reports are provided in Appendix A.

With incorporation of all the above mitigation measures, level of service would improve markedly at most locations for the Year 2017 Full-Build Conditions. Study area roadways, with these identified improvements, can accommodate the new Project trips. These mitigation measures fit into the City's vision for the Guest Street area as discussed in the next section.

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[10] The detailed tables show level of service, average delay, volume to capacity ratio, and 95th percentile queue length (feet) for the overall intersection and each approach.

Table 20 Year 2017 Full-Build with Mitigation Conditions Peak Hour Level of Service Summary

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Signalized			
Western Avenue/Birmingham Parkway/ Soldiers Field Road	**C**	D	C
Birmingham Parkway/Soldiers Field Road Off-Ramp/Lothrop Street	B	B	**A**
Birmingham Parkway/ Market Street/ Lincoln Street	D	**D**	**B**
Market Street/Guest Street/ Stockyard Restaurant Driveway	**A**	D	B
Market Street/North Beacon Street	D	**D**	**D**
North Beacon Street/Life Street/ Etna Street	**A**	C	**B**
North Beacon Street/Arthur Street/ Wingate Driveway	**B**	**D**	**C**
North Beacon Street/Everett Street	B	**B**	C
North Beacon Street/Cambridge Street/ Brighton Avenue (Union Sq.)	**D**	**D**	**D**
Cambridge Street/Harvard Avenue/ Franklin Street	**D**	**C**	**D**
Cambridge Street/Lincoln Street	A	B	–
Cambridge Street/North Harvard Street	C	C	–
Cambridge Street/Dustin Street	A	A	–
Washington Street/Market Street/ Chestnut Hill Avenue	E	D	–
Market Street/Arlington Street/ Sparhawk Street	**C**	**D**	–
Market Street/Faneuil Street	**C**	**D**	**C**
Everett Street/Holton Street	B	B	–
Western Avenue/Everett Street[2)]	F	E	F

1) A subset of intersections was evaluated for Saturday conditions.
2) Western Avenue bicycle corridor improvements (by others) degrade vehicular operation to LOS F, but improve overall safety.
Light grey cell shading indicates a worsening in LOS from Year 2017 Full-Build Conditions, without Mitigation.
Black shading indicates an improvement from Year 2017 Full-Build Conditions, without Mitigation.

Table 20 Year 2017 Full-Build with Mitigation Conditions Peak Hour Level of Service Summary (cont'd)

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Signalized			
Western Avenue/North Harvard Street	C	D	-
North Harvard Street/Franklin Street/Kingsley Street	B	B	-
Faneuil Street/Parsons Street	D	C	-
Proposed New Signal Locations under Mitigation			
North Beacon Street/Dustin Street/Hichborn Street	B	B	B
Cambridge Street/Denby Road	B	B	B
Guest Street/Life Street/Block C Access Road	B	D	B
Guest Street/Arthur Street/Block A Access Road	C	D	C
Everett Street/Everett Street (south)	C	D	C
Everett Street/Guest Street	C	D	B
Unsignalized			
Market Street/Vineland Street			
Vineland EB left/right	C	C	–
Market NB thru | thru	A	A	–
Market SB thru | thru	A	A	–
North Beacon Street/Murdock Street/EZ Storage Driveway			
N Beacon EB left/thru/right	A	A	A
N Beacon WB left/thru/right	A	A	A
EZ Storage SB left/thru/right	B	**E**	E
North Beacon Street/Saunders Street			
N Beacon EB thru	A	A	A
N Beacon WB thru	A	A	A
Saunders NB left/right	**C**	F	F

1) A subset of intersections was evaluated for Saturday conditions.
Light grey cell shading indicates a worsening in LOS from Year 2017 Full-Build Conditions, without Mitigation.
Black shading indicates an improvement from Year 2017 Full-Build Conditions, without Mitigation.

Table 20 Year 2017 Full-Build with Mitigation Conditions Peak Hour Level of Service Summary (cont'd)

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Unsignalized			
Cambridge Street/Murdock Street			
Cambridge EB thru	A	A	–
Cambridge WB thru	A	A	–
Murdock SB left/right	B	C	–
Everett Street/Stop & Shop Driveway			
Everett NB thru	A	A	A
Everett SB thru	A	A	A
Everett SB right	A	A	A
Everett Street/Everett Street (north)			
Everett NB left/thru	A	A	–
Everett SB thru/right	A	A	–
Everett NEB left/right	B	C	–
Braintree Street/Denby Road			
Braintree EB right	A	A	A
Braintree WB left/thru	A	A	A
Life Street/Block B Access Road			
Block B WB left/right	A	B	B
Life NB thru/right	A	A	A
Life SB left/thru	A	A	A
Block B Access Road/Block B Parking Garage			
Access EB left/thru	A	A	A
Access WB thru/right	A	A	A
Block B Parking SB left/right	A	A	A
Guest Street/Block A Access Road (Exit)			
Guest EB left/thru/right	A	A	A
Guest WB left/thru/right	A	A	A
Access SB left	B	F	B
Access SB right	A	B	B
Block C Access Road/Block C Parking Garage			
Block C Parking WB left/right	A	B	B
Access NB thru/right	A	A	A
Access SB left/thru	A	A	A
Block A Access Road/Block A Parking Garage Exit			
Block A Parking Exit WB left	A	B	A
Access NB thru	A	A	A
Access SB thru	A	A	A

1) A subset of intersections was evaluated for Saturday conditions.
Light grey cell shading indicates a worsening in LOS from Year 2017 Full-Build Conditions, without Mitigation.
Black shading indicates an improvement from Year 2017 Full-Build Conditions, without Mitigation.

Table 20 Year 2017 Full-Build with Mitigation Conditions Peak Hour Level of Service Summary (cont'd)

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
Unsignalized			
Block A Access Road/Parking Garage			
Block A Parking EB left/right	A	A	A
Access left/thru	A	A	A
Access thru/right	A	A	A
North Beacon Street/Goodenough Street			
N Beacon EB thru | thru/right	A	A	-
N Beacon WB right/thru | thru	A	A	-
Goodenough NB left/right	F	E	-
Goodenough Street/Electric Avenue			
Electric EB left/right	B	B	-
Goodenough NB left/thru	A	A	-
Goodenough SB thru/right	A	A	-
Faneuil Street/Goodenough Street			
Faneuil EB left/thru	A	A	-
Faneuil EB thru/right	A	A	-
Goodenough NB left/thru/right	F	D	-
Goodenough SB left/right	F	C	-

1) A subset of intersections was evaluated for Saturday conditions.
Light grey cell shading indicates a worsening in LOS from Year 2017 Full-Build Conditions, without Mitigation.
Black shading indicates an improvement from Year 2017 Full-Build Conditions, without Mitigation.

Table 21 Year 2017 Full-Build with Guest Street Extension via Braintree Street and Denby Road

Intersection	Weekday a.m. Peak	Weekday p.m. Peak	Saturday Midday Peak[1)]
With Guest Street Extension via Braintree Street and Denby Road			
Cambridge Street/Denby Road	B	B	B
Cambridge Street/Harvard Avenue/Franklin Street	D	C	D

5.1.3 Recommendations from City's Guest Street Study

In addition to setting urban design guidelines for the area, the City's recent Brighton/Guest Street study[11] presented a list of recommended transportation measures, paraphrased below, to help improve access and circulation within the area. These measures are listed below, along with the Proponent's supporting actions, most of which are included in proposed mitigation measures discussed in **Section 5.1.3**.

<u>Connect the study area streets to local grid</u>

Description: Guest and Braintree streets are currently underutilized and could, if connected, improve east-west flow, reduce volumes on North Beacon Street and at Union Square

Proponent's action: The Proponent supports the extension of Guest Street through to Braintree Street and incorporated it into the mitigation analysis. Further re-establishment of local street grid is reflected in the chosen location of Proponent's site driveways north of Guest Street and continuing further north to the Block A garage and service road. Arthur Street will be extended north of Guest Street to serve the Block A garage and service road.

<u>Connect and upgrade Arthur Street</u>

Description: Arthur Street officially ends at Hichborn Street and continues north on private property. Because the Guest Street/Arthur Street intersection will become a gateway location, its design should reflect its status as one of the area's gateways.

Proponent's action: The Proponent will construct an extension of Arthur Street, north of Guest Street to serve Block A access to the underground parking garage. It will extend further north to the service road that runs along the north side of Block A and Block C. The intersection of Guest Street/Arthur Street, which will be reconstructed with the proposed Guest Street Extension, will be signalized with an exclusive pedestrian phase to ensure safe pedestrian crossing. Should the MBTA establish a new commuter station at Everett Street (Framingham/Worcester Line), Arthur Street would likely become the main vehicular route for kiss-and-ride activity at the station. The extension of Arthur Street will be designed to accommodate this possible activity, including adequate turnaround space.

<u>Create a one-way pair out of Denby Road and Franklin Street</u>

Description: If the Cambridge Street/Harvard Street/Franklin Street intersection were simplified by removing Franklin Street volumes, the level of service would improve. Franklin Street and the eastern end of Braintree Street would then be one-way away from Cambridge Street. Denby Road could be made one-way toward Cambridge Street, with signalization of the Cambridge Street/Denby Road intersection.

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[11] Brighton/Guest Street Area Planning Study, Final Report", prepared for the Boston Redevelopment Authority by Sasaki Associates and GLC Development Resources. February 2012.

*Proponent's action***:** This improvement is an element in the successful implementation of the Guest Street Extension, as included in the Proponent's mitigation measures. The

Invest in Everett Street

Description: Between North Beacon Street and the foot of the bridge, Everett Street has mostly undefined asphalt sidewalks, with some less than four feet wide. Adequate right-of-way exists to construct new, wider sidewalks and street trees.

*Proponent's action***:** The Proponent supports the concept of upgrading Everett Street.

Improve traffic operations in Market Street/Birmingham Parkway corridor, north of Guest Street

Description: Solutions should be sought for the sluggish flow in the northern segment from Guest Street to the river. While some signals are under control of the Department of Conservation and Recreation, the capacity could be increased if signals were fully coordinated.

*Proponent's action***:** The Proponent has developed mitigation measures, as presented above, for the three signalized intersections along Birmingham Parkway. These measures, particularly the signal coordination, should improve traffic operations in this corridor.

Open an arterial connection from Guest Street to Braintree Street

Description: Both streets are well-suited for carrying general traffic. Linked together they would provide a direct connection from WGBH at Market Street to I-90 at the Allston/Brighton interchange. Short-term: Build a new street to travel between Arthur Street and Everett Street. Long-term: Utilize the existing underpass under the Everett Street Bridge to connect Braintree Street directly to development sites on the west side of Everett Street.

*Proponent's action***:** The Proponent is committed to building the Guest Street Extension from its existing terminus at Arthur Street eastward to Everett Street, with continuation via Braintree Street. This connection has been included in the Proponent's mitigation measures presented above. The Proponent supports the concept of a long-term connection via the Everett Street underpass if Stop & Shop redevelops its property in the future.

Improve transit services

Description: Short-term: Preserve and expand bus service. MBTA bus service should be improved to provide access to Back Bay, Longwood/Fenway, and Cambridge. Long-term: Restore commuter rail service. The MBTA's plan for a commuter rail (Framingham Line) stop should be pursued and incorporated into development adjacent to the tracks. Long-term: Build a pedestrian bridge across I-90 to connect to the Allston neighborhood.

*Proponent's action***:** The Proponent supports the concept of maintaining and expanding local MBTA bus service in the study area. The Proponent recognizes the potential benefit of a new commuter rail stop at Everett Street. While there are challenges to implementing commuter rail service to Allston/Brighton, the Proponent has had discussions with MassDOT and the MBTA regarding the potential of establishing a future commuter rail station adjacent to the site. Should the MBTA decide to construct a new station, the Proponent will support the concept and assist in funding the station design, permitting and construction.

5.2 Transit Mitigation

New Balance currently operates shuttle service between their offices at 20 Guest Street and nearby MBTA subway stations at the Red Line (Harvard Station) and Green Line (Kenmore Square). Service is provided by 14 passenger vans, which operate six round trips during each peak hour. While Route 64 and Route 86 can absorb some additional of the additional riders from the Project, the shuttle service will also need to absorb some of the new transit trips. It is estimated that about 50 new transit riders in the a.m. peak hour and about 130 new transit trips in the p.m. peak hour will use the New Balance shuttle buses to reach the Red Line and Green Line. With this higher demand for shuttle service, it is estimated that shuttle service should be expanded to run about every 15 minutes in the a.m. peak period and every seven minutes in the p.m. peak period. Midday shuttle service would run on a less frequent schedule of every 30 – 60 minutes. The Proponent is committed to increasing shuttle bus frequency to encourage public transportation use by Project tenants and visitors.

As stated in the last section, the Proponent has had discussions with MassDOT and the MBTA regarding the potential of establishing a future commuter rail station and, should the MBTA decide to construct a new station near Everett Street, the Proponent will support the concept and assist in funding the station design, permitting and construction.

5.3 Pedestrian and Bicycle Mitigation

As the various Blocks within the site area are developed, the Proponent will enhance the pedestrian environment adjacent to its buildings along the major east–west corridor of Guest Street as well as along the north–south streets of Life Street, Hichborn Extension, and Arthur Street. Restaurants and outdoor seating will enliven the area during day and evening hours.

The Proponent's continuing support of Hubway is discussed under travel demand measures in the next section.

5.4 Travel Demand Management Measures

The Proponent is committed to implementing a travel demand management (TDM) program that supports the City's efforts to reduce dependency on the automobile by encouraging travelers to use alternatives to driving alone, especially during peak periods. TDM will be facilitated by the mixed-use nature of the Project.

The Transportation Access Plan Agreement (TAPA) will confirm the commitments to TDM that will be outlined in the Article 80 review of the Project.

These TDM measures will include:

- Car-Sharing Service: The Proponent will promote the use of the nearby Zipcar station at 140 North Beacon Street. If merited, the Proponent will explore establishing a new Zipcar location at the Project.

- Car Pool/Van Pool Parking: The Proponent will provide preferential parking spaces in the Block A and Block C garage for employee car pools and vanpools.

- Transit Passes: The Proponent will encourage commercial tenants to subsidize transit passes for their employees.

- Commuter Tax Benefit Program: The Proponent will encourage tenants to treat employee payments for transit passes as a pre-tax deduction from paychecks.

- Orientation Packets: The Proponent will provide orientation packets to new tenants containing information on available transportation choices, including transit routes and schedules. On-site management will work with commercial tenants as they move in to help facilitate transportation for new arrivals.

- Transportation Coordinator: The Proponent will designate a Transportation Coordinator to oversee loading and service activities, and provide alternative transportation materials to tenants. Individual loading dock managers will be stationed at commercial building loading docks to oversee deliveries on-site.

- Bicycle Amenities: The Proponent will provide bicycle racks in secure, sheltered areas for tenants' employees. Additional bicycle parking will be provided on the sidewalks within New Brighton Landing, near main building entrances.

- Shared Bicycle Program: The Proponent will continue to sponsor the New Balance Hubway bicycle sharing throughout the City. The existing Hubway station at 20 Guest Street provides a docking station for retrieving and returning. The Proponent will make prospective tenants aware of the program in selling or leasing space, and assist tenants in registering for the program.

- Web Site: The Proponent will design and implement a Project web site that will include public transportation information for visitors.

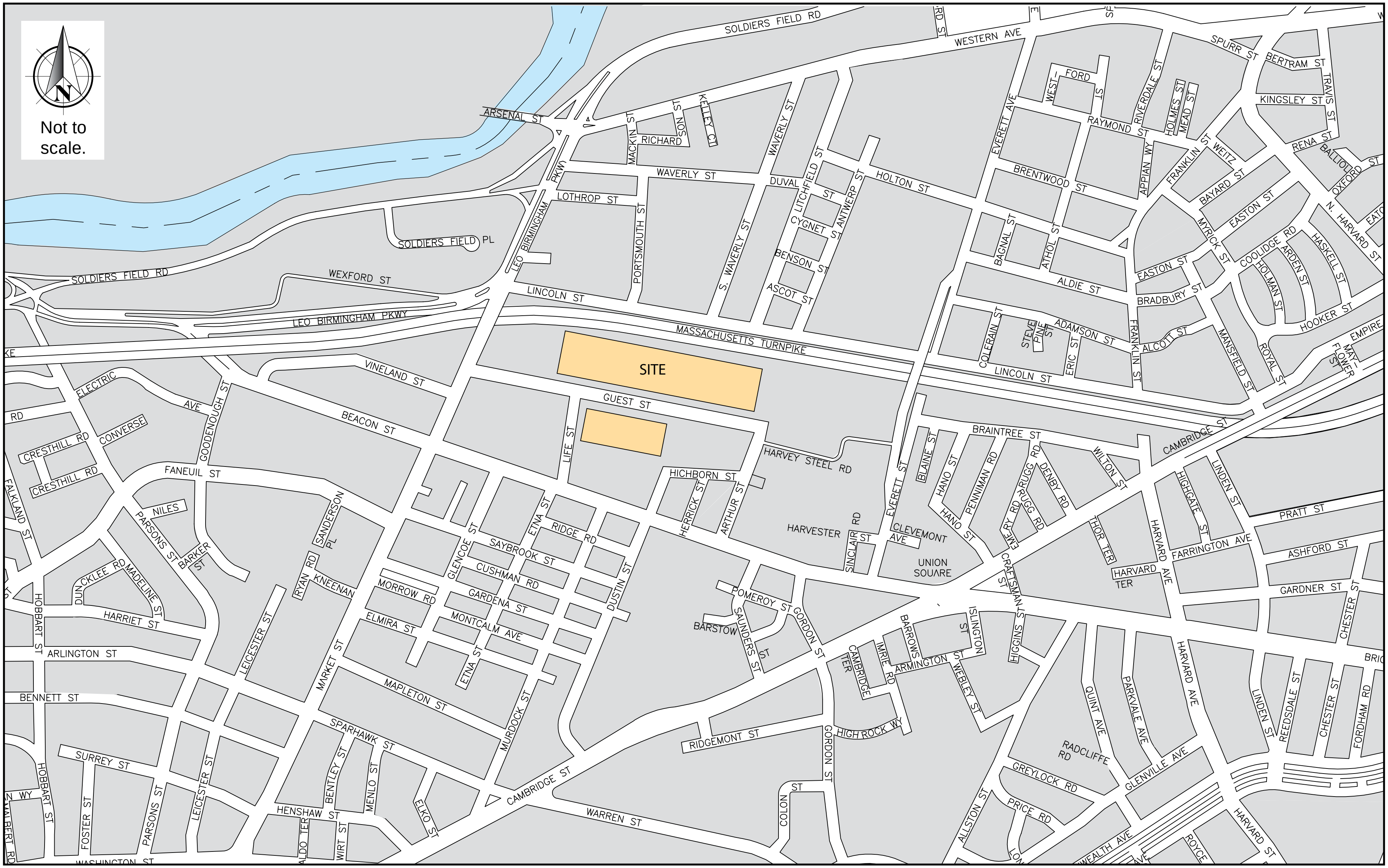

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Figure 1.
Locus Map

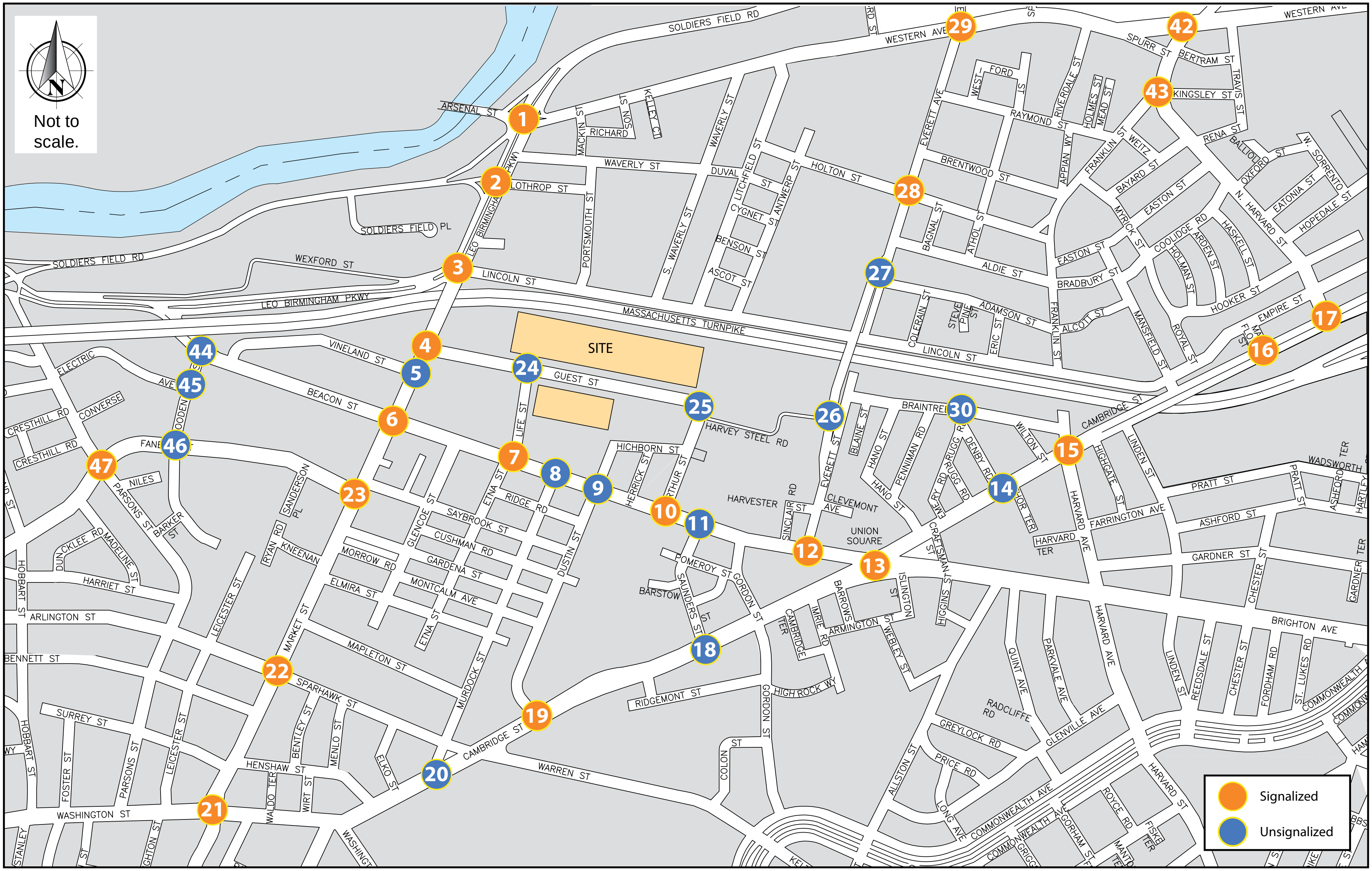

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Figure 2.

Study Area Intersections

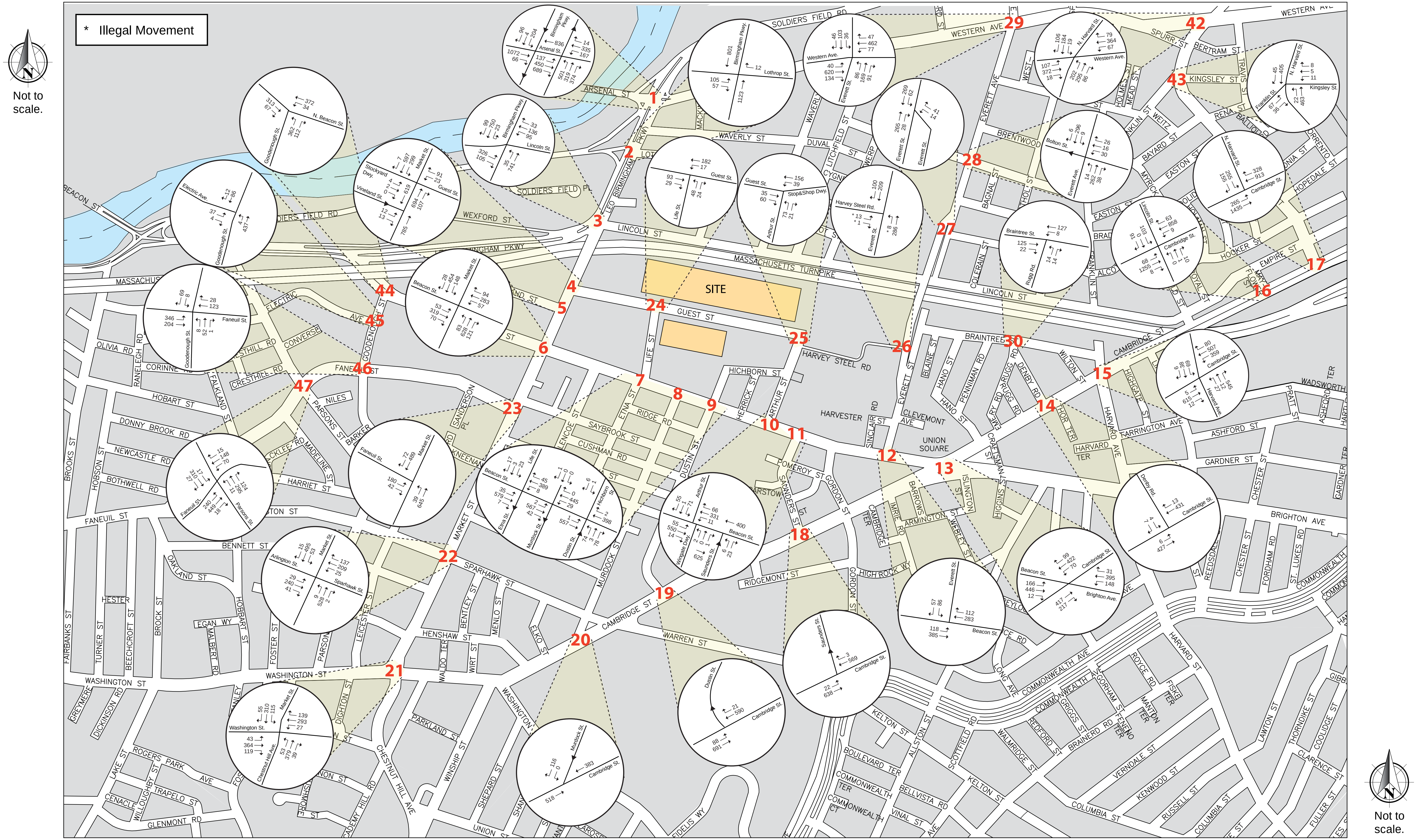

Figure 3.

Year 2012 Existing Conditions Turning Movement Counts, a.m. Peak Hour

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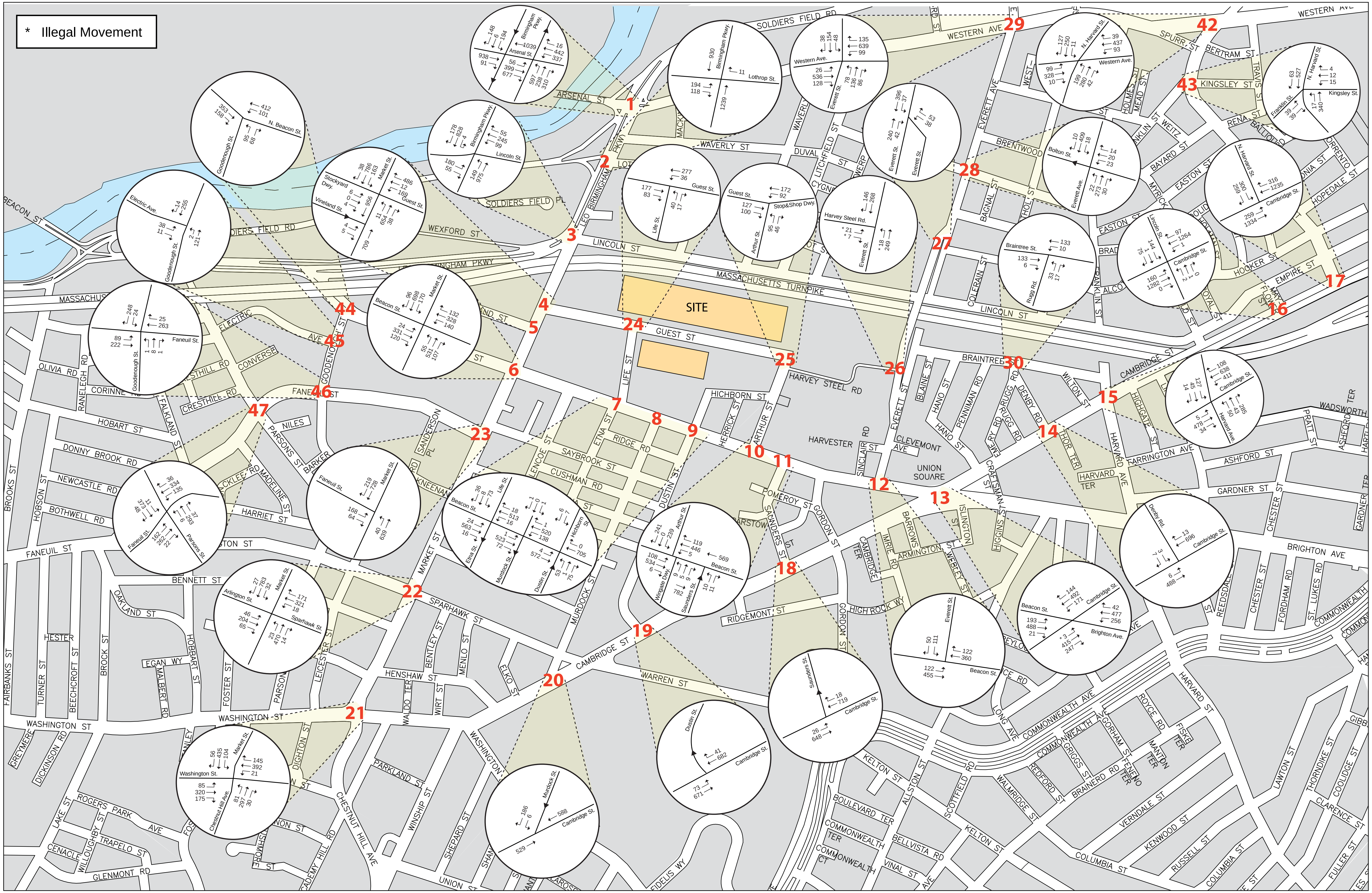
Not to scale.



Not to scale.

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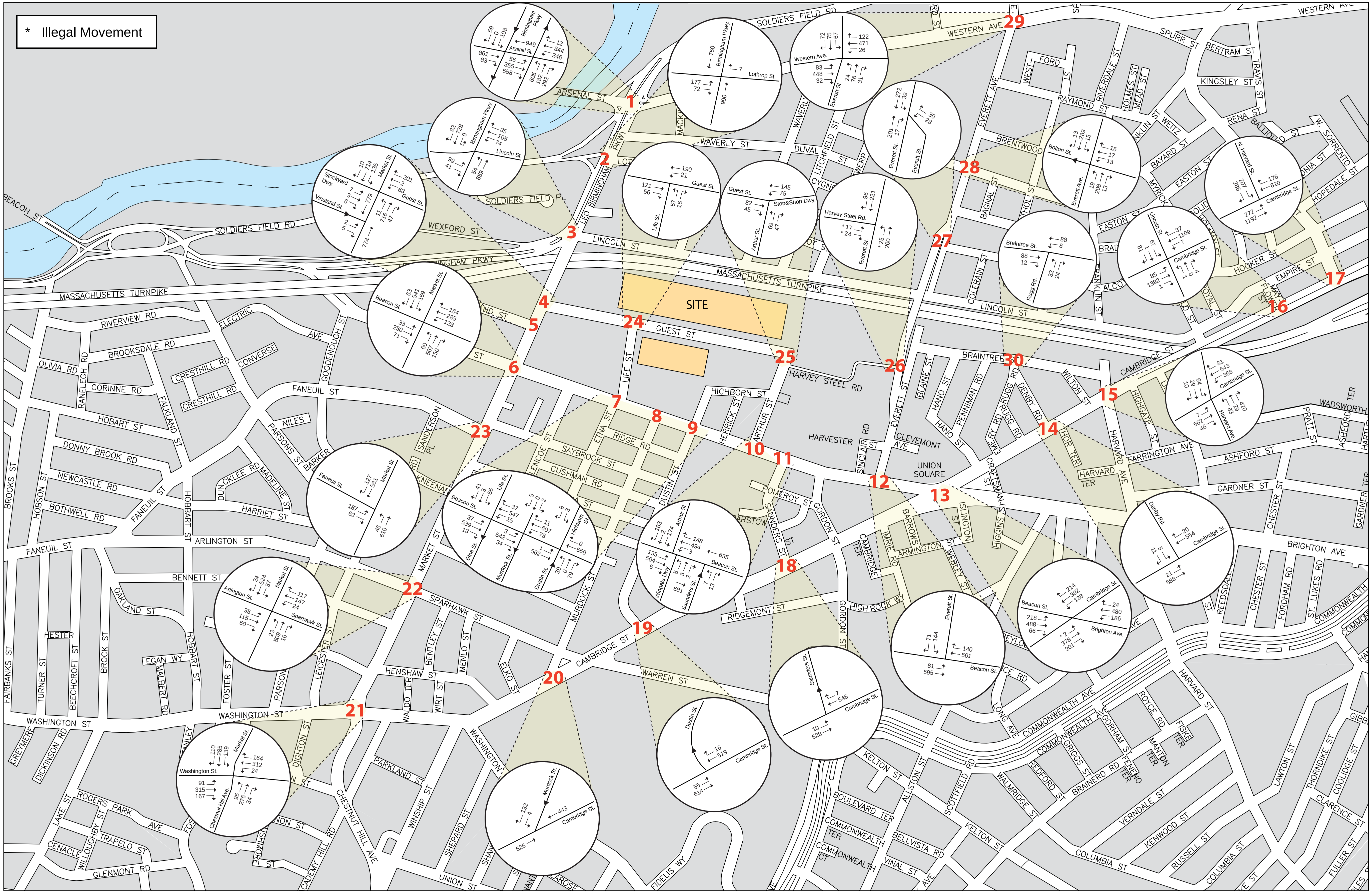
Figure 4.
Year 2012 Existing Conditions Turning Movement Counts, p.m. Peak Hour

Not to scale.



Not to scale.

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Figure 5.
Year 2012 Existing Conditions Turning Movement Counts, Saturday Midday Peak Hour

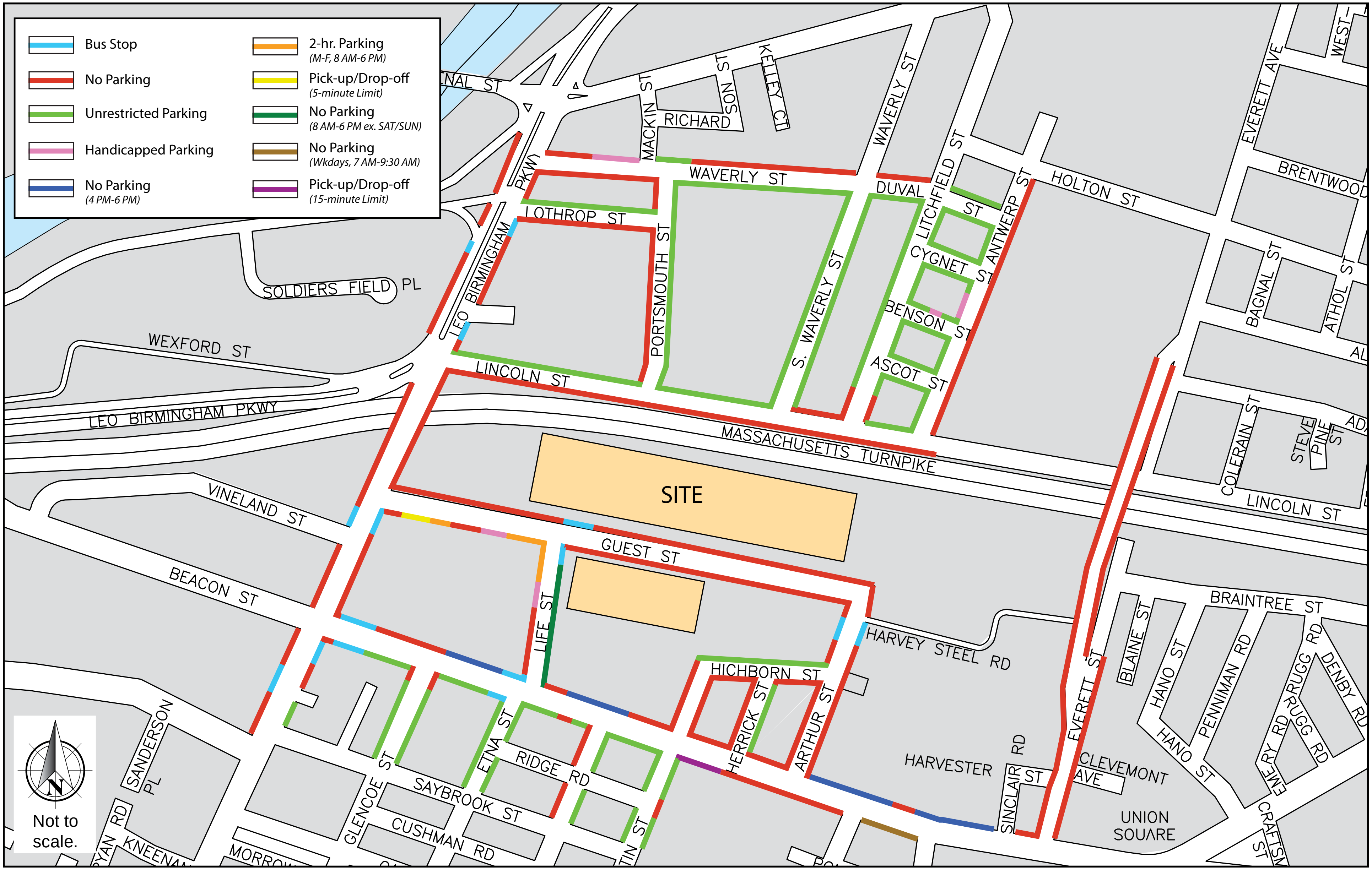

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Figure 6.
Curbside Regulations

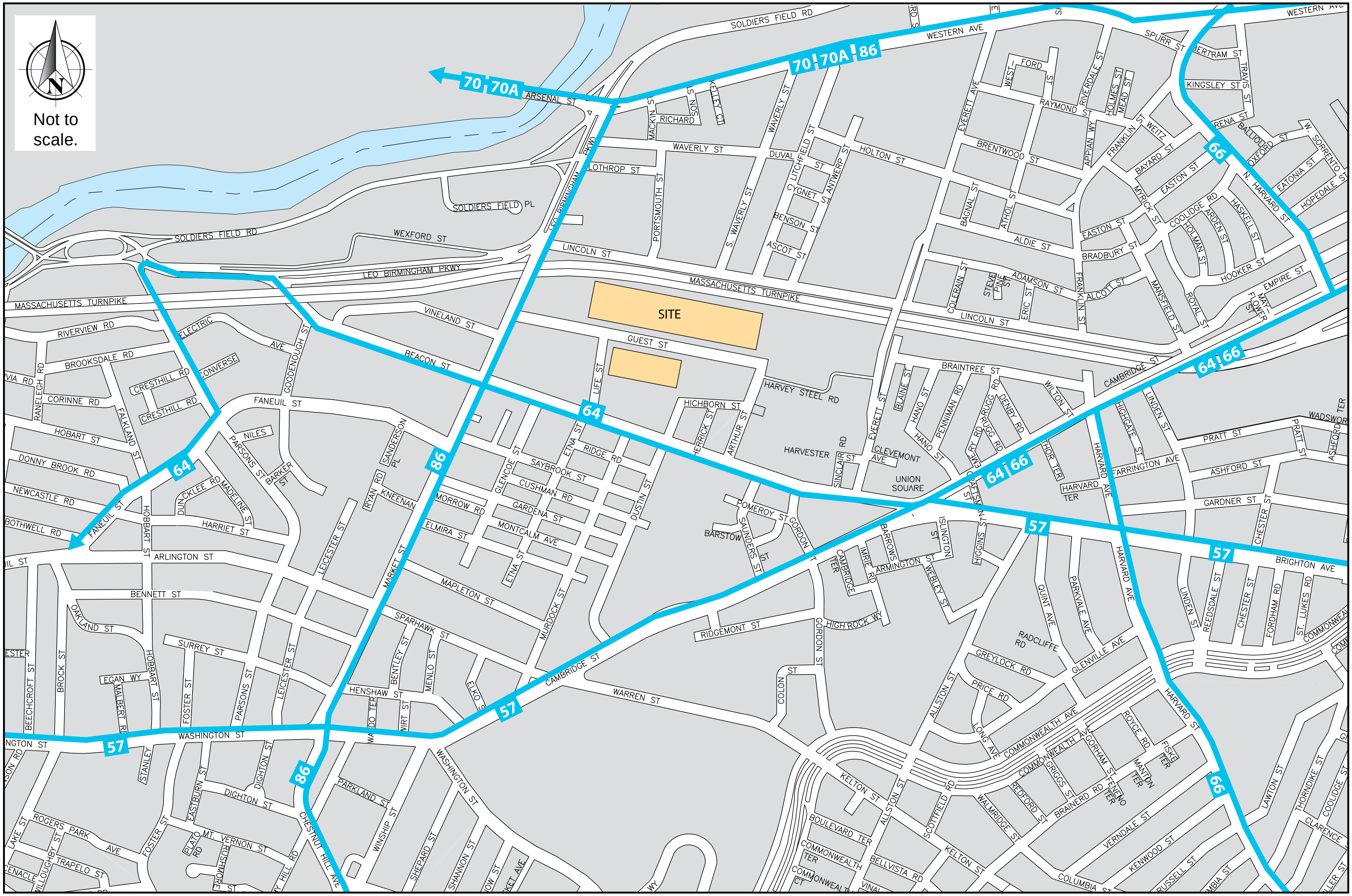

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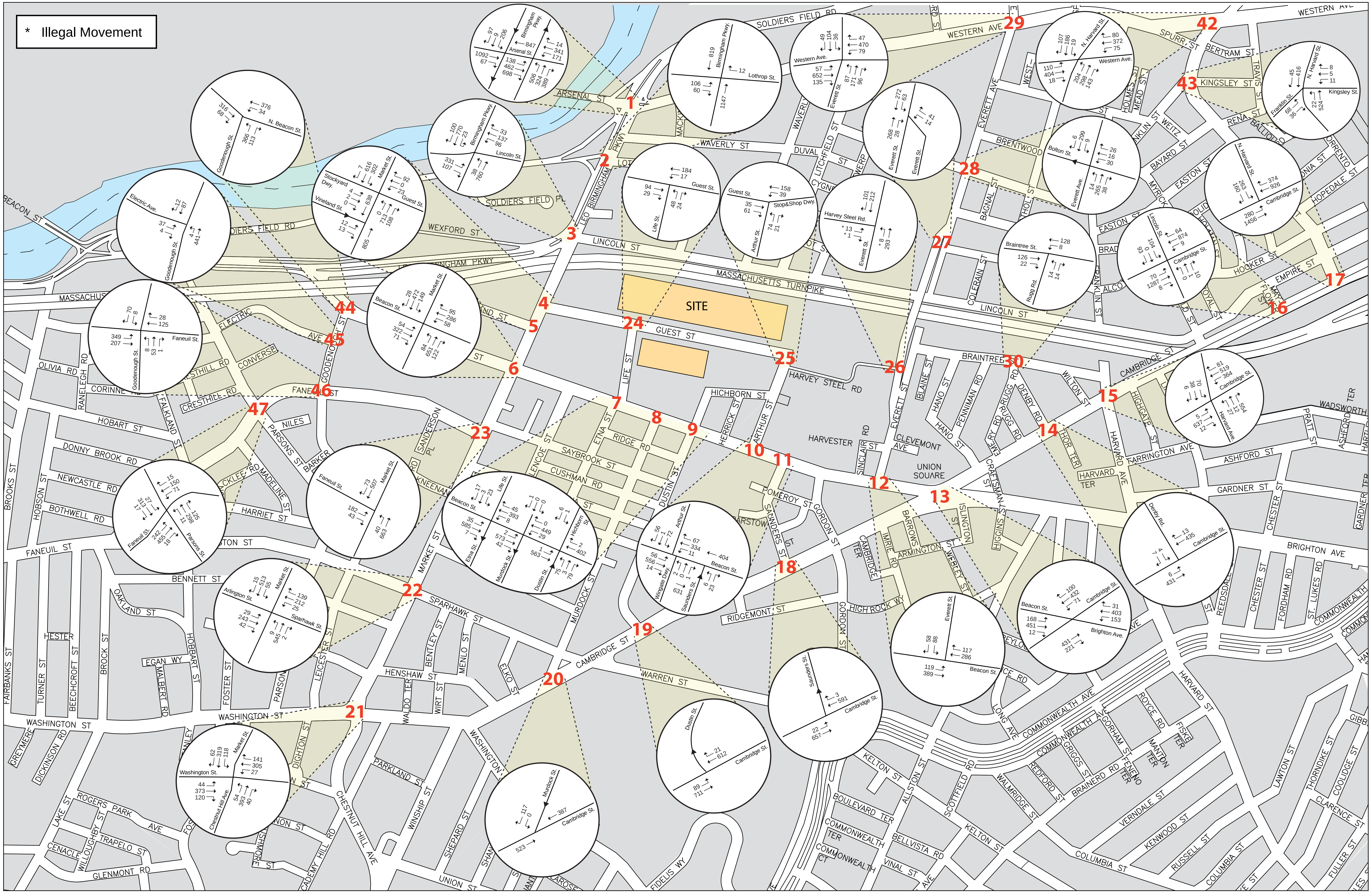
Figure 7.
Public Transportation in the Study Area

Not to scale.



Not to scale.

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Figure 8.
Year 2014 No-Build Volumes, a.m. Peak Hour

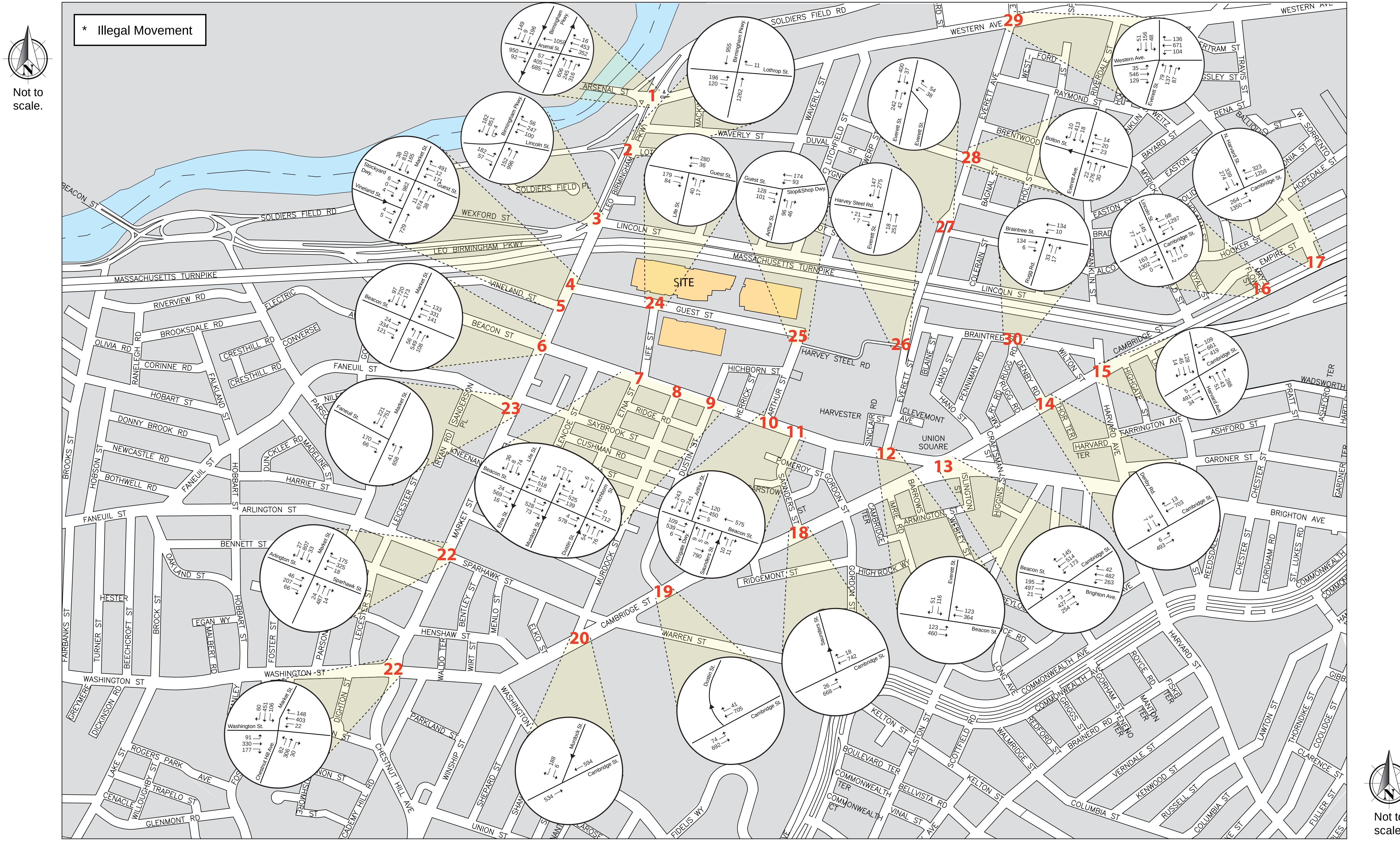

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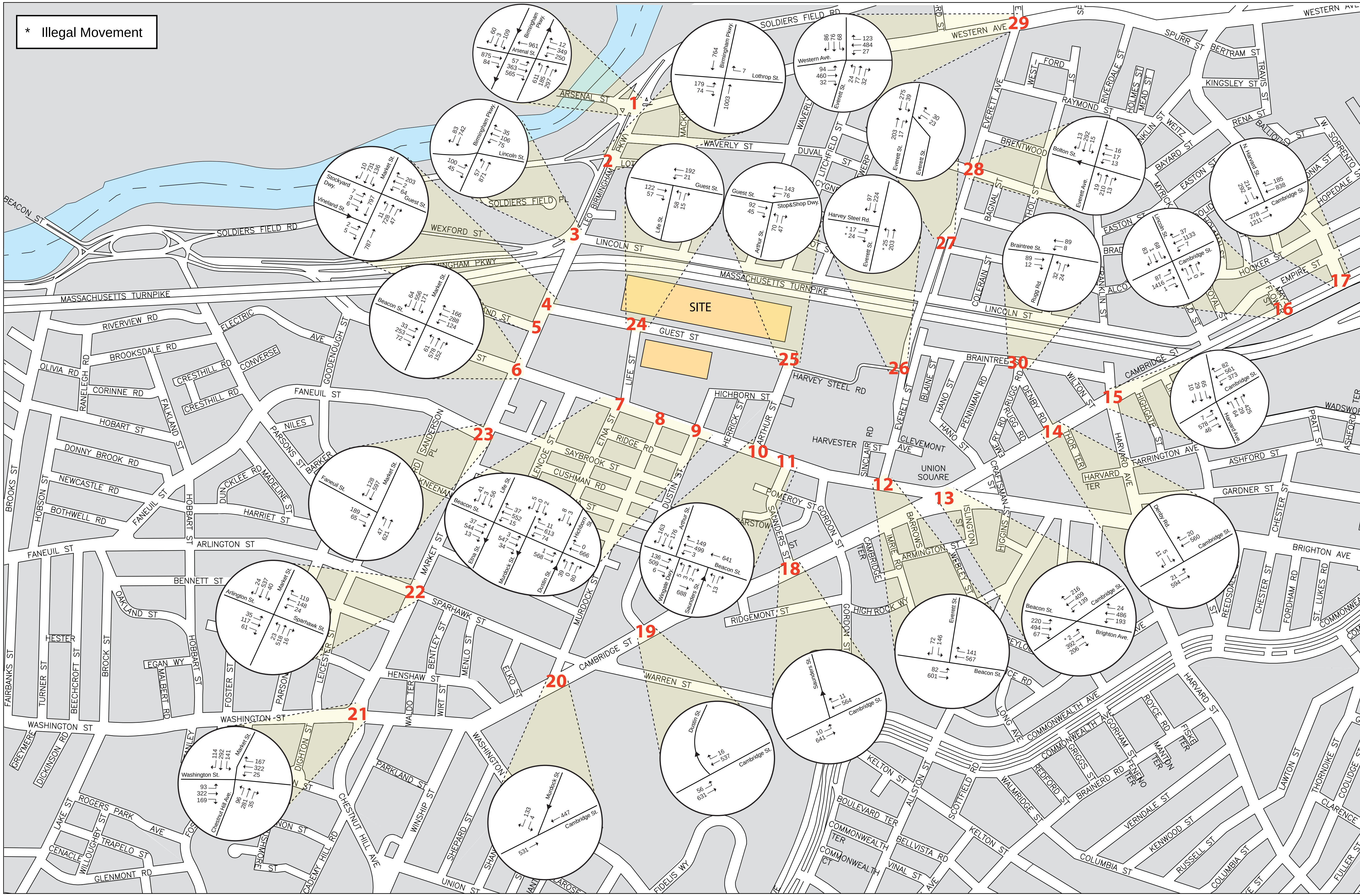
Figure 9.
Year 2014 No-Build Volumes, p.m. Peak Hour

Not to scale.



Not to scale.

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Figure 10.
Year 2014 No-Build Volumes, Saturday Midday Peak Hour

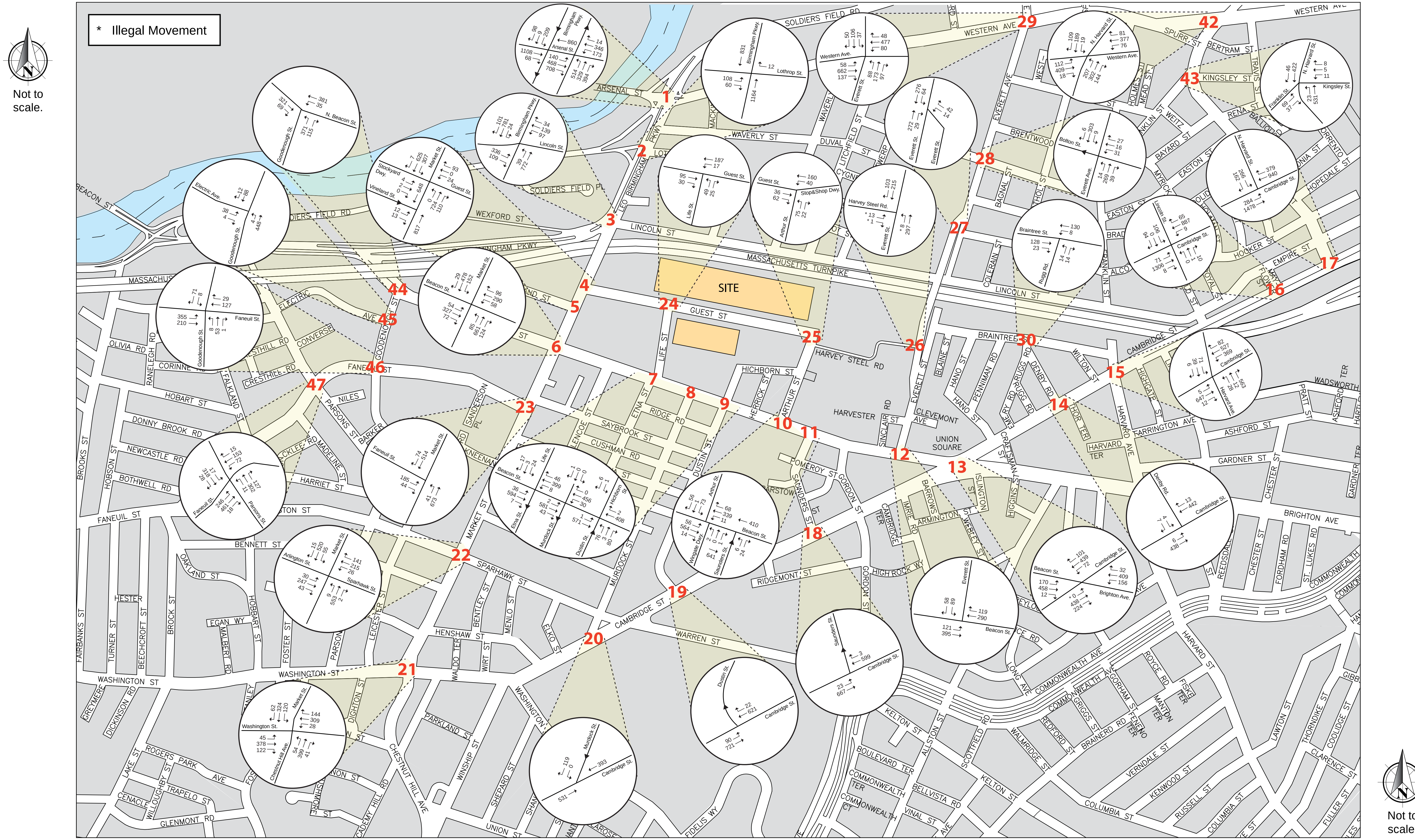

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Figure 11.
Year 2017 No-Build Volumes, a.m. Peak Hour

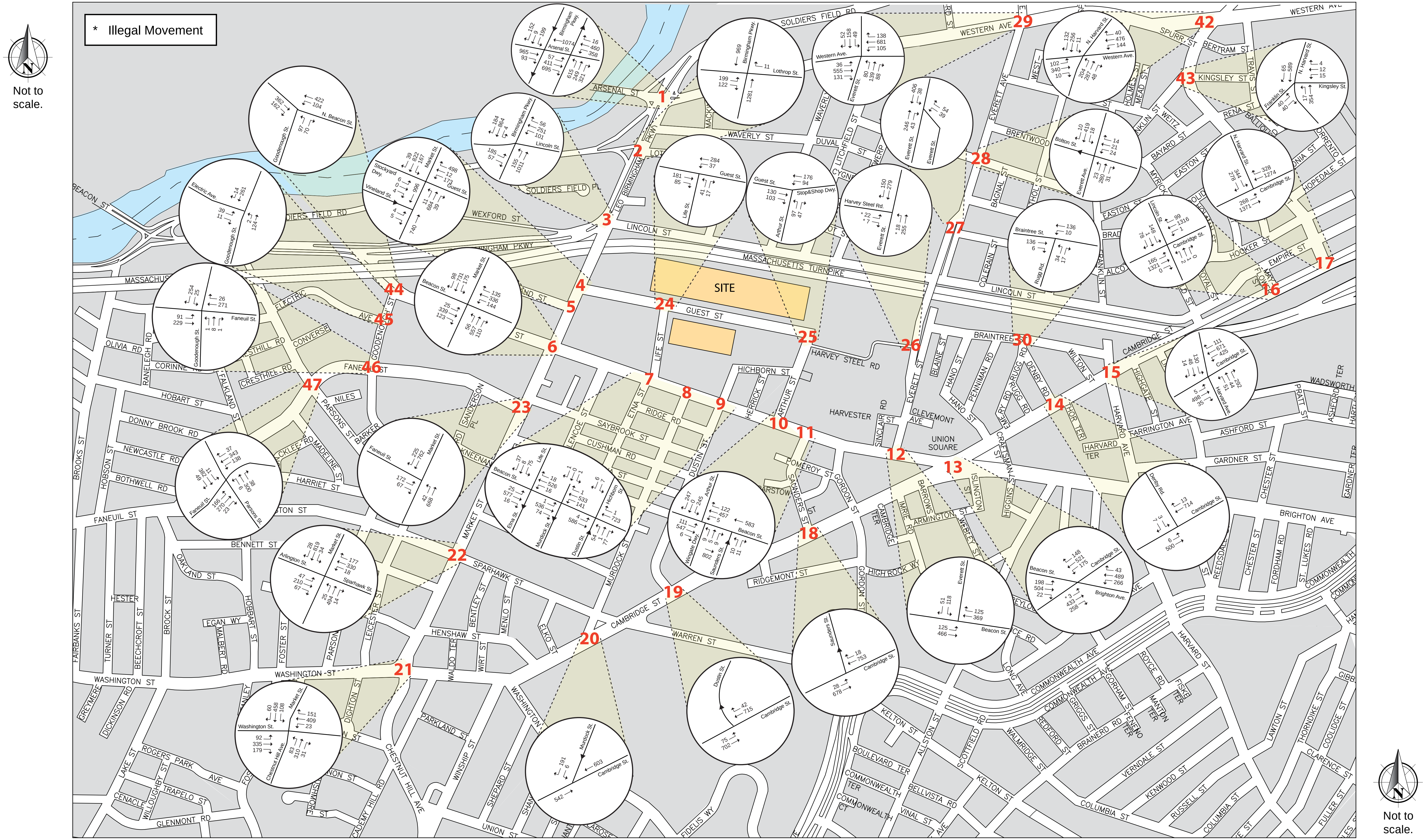

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Figure 12.
Year 2017 No-Build Volumes, p.m. Peak Hour

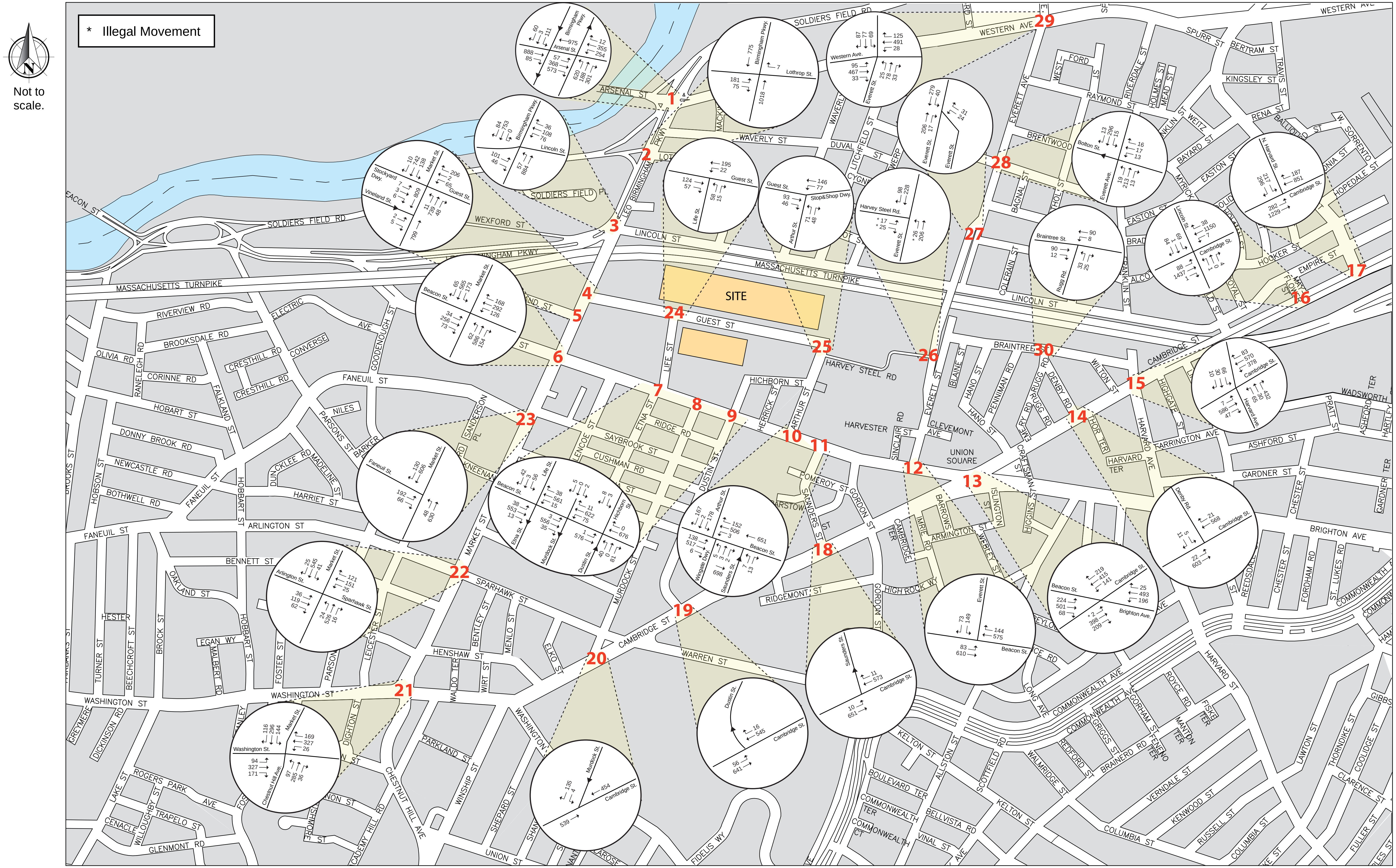

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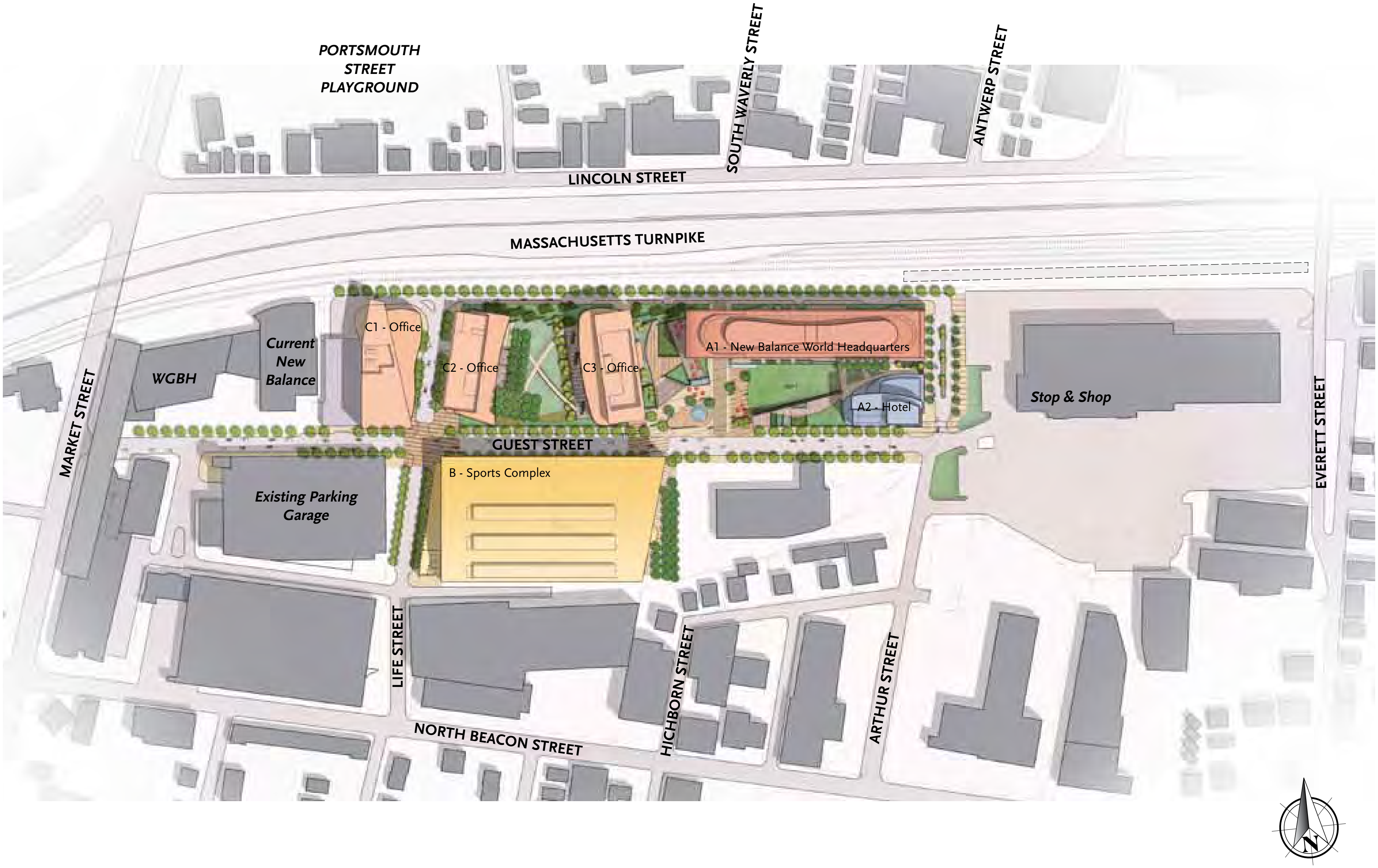
Figure 13.
Year 2017 No-Build Volumes, Saturday Midday Peak Hour



Not to scale.

Figure 14.
Site Plan

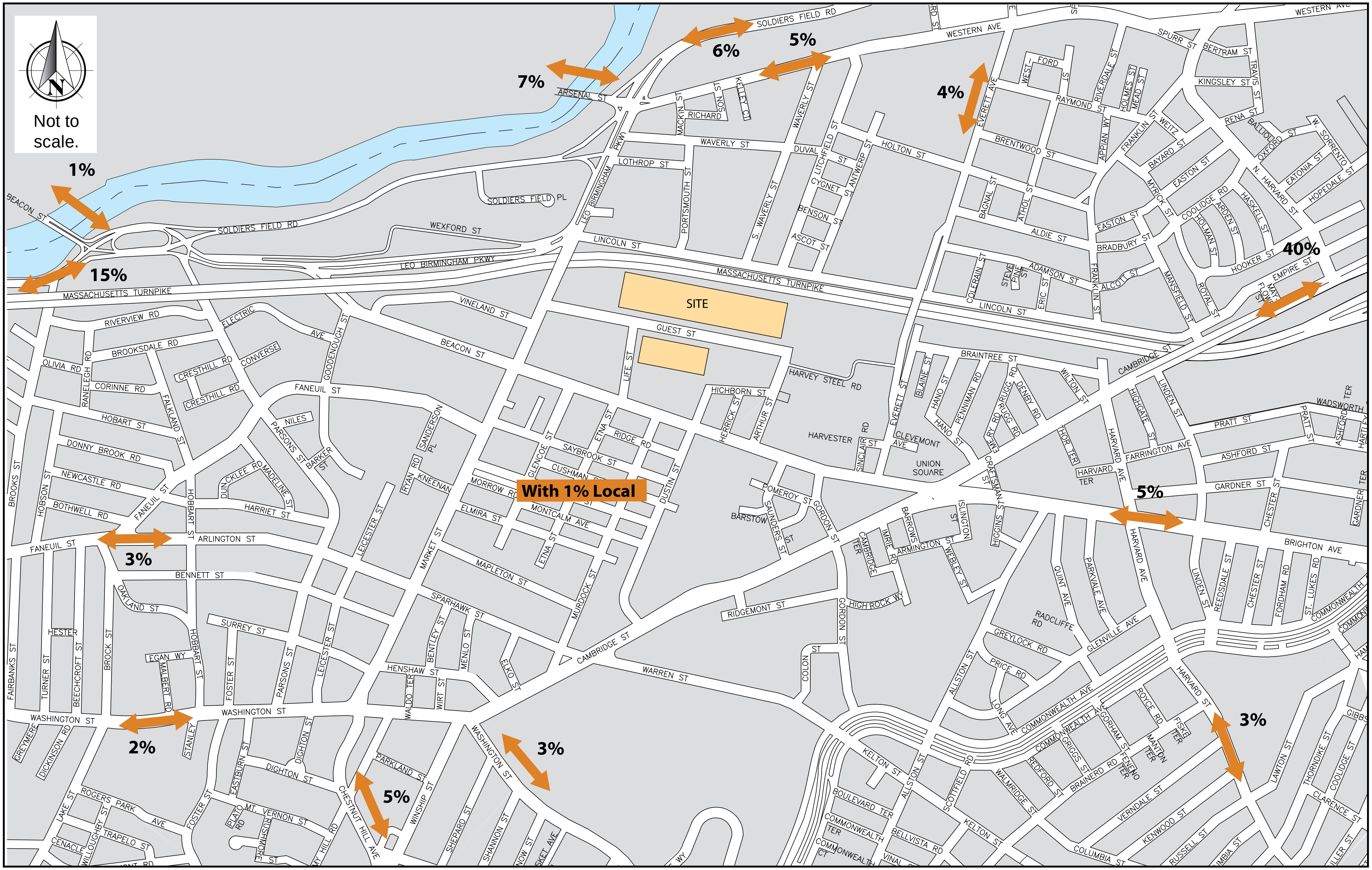


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Figure 15.
Regional Trip Distribution: Office Trips

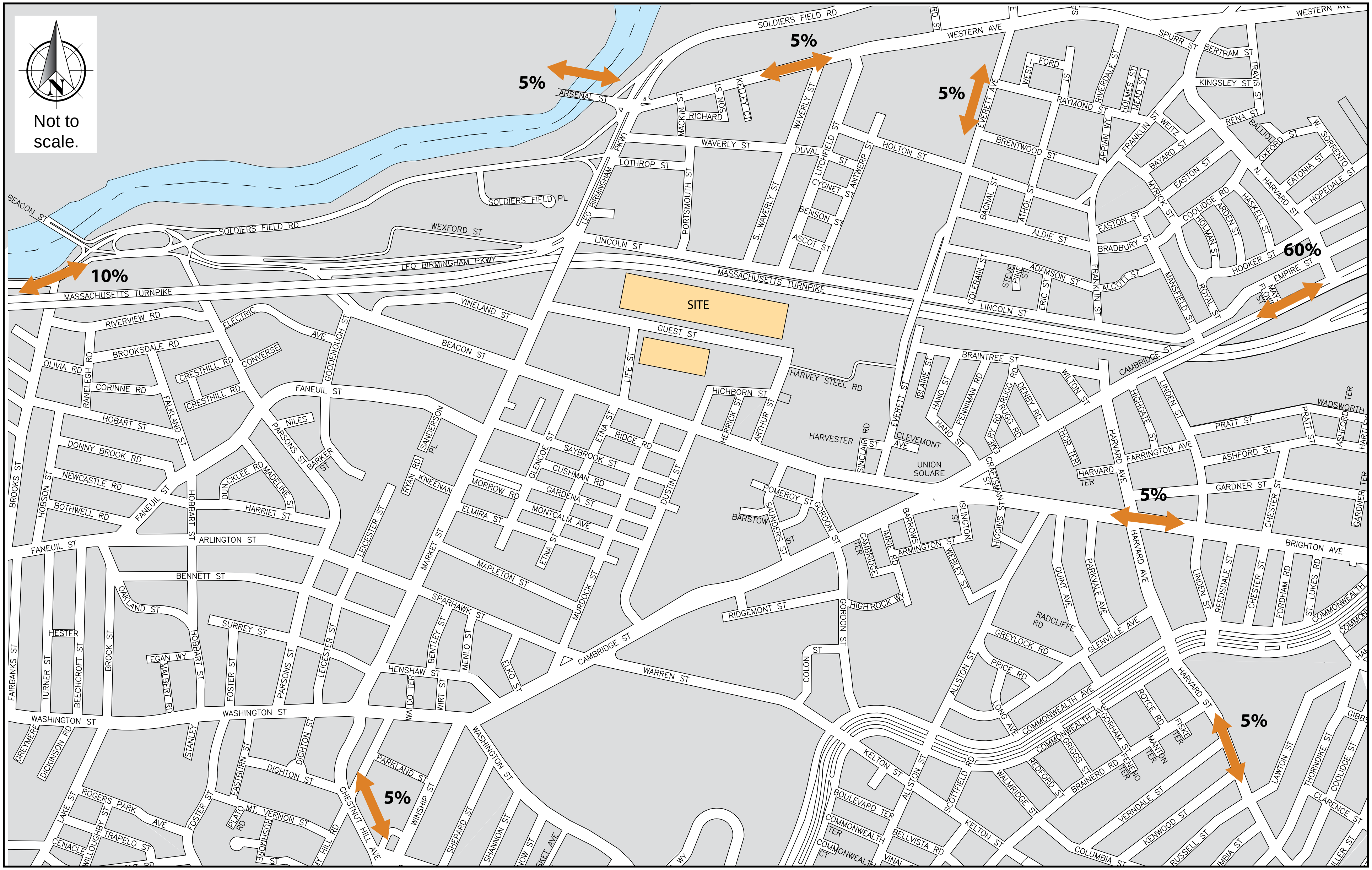

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Figure 16.
Regional Trip Distribution: Hotel Trips

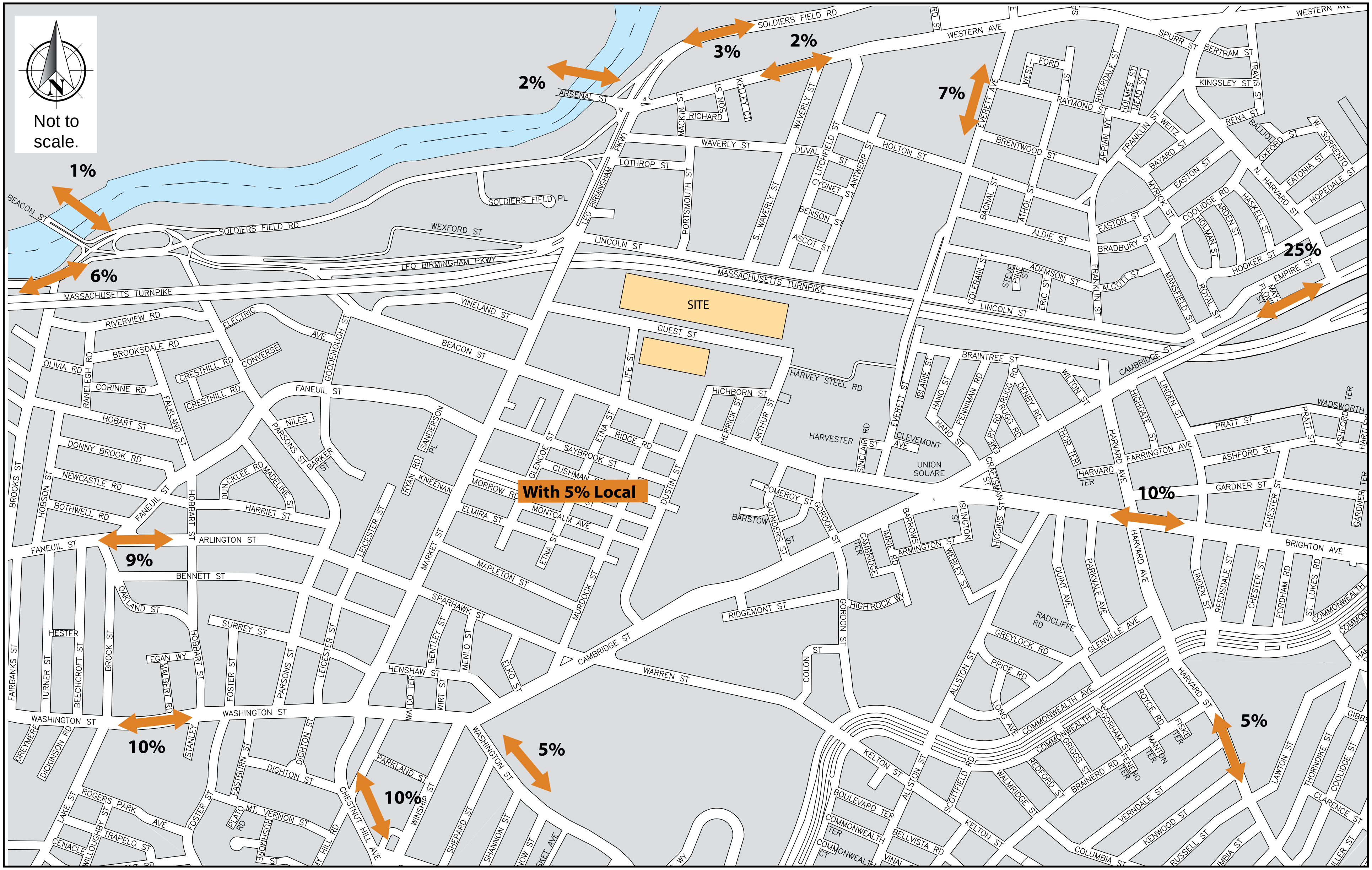

Figure 17.
Regional Trip Distribution: Sports Complex/Retail Trips

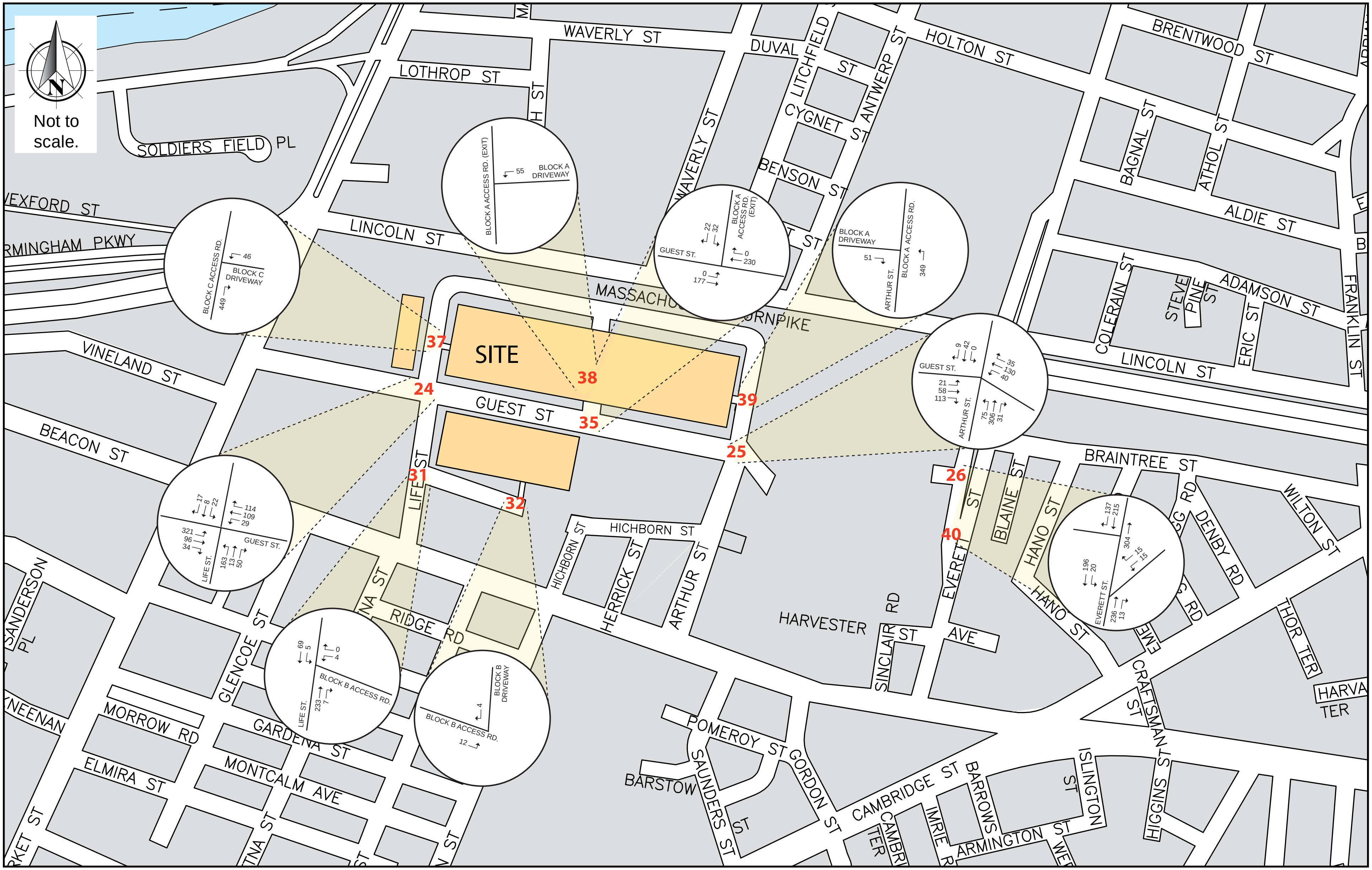

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Figure 18.
Year 2017 Full-Build Volumes, a.m. Peak Hour (inner)

Not to scale.

Not to scale.

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Figure 19.
Year 2017 Full-Build Volumes, a.m. Peak Hour (outer)

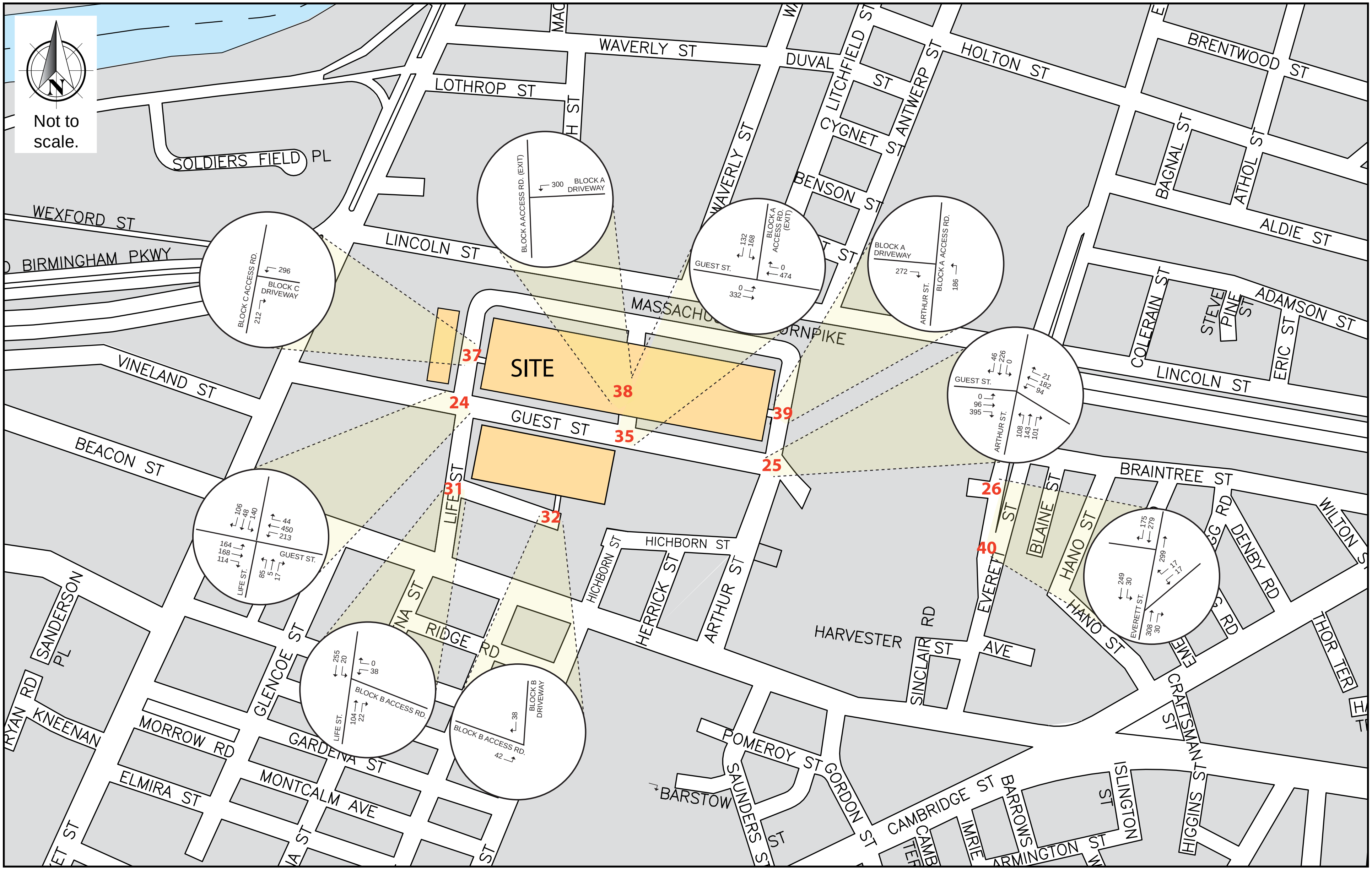

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Figure 20.
Year 2017 Full-Build Volumes, p.m. Peak Hour (inner)

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Figure 21.
Year 2017 Full-Build Volumes, p.m. Peak Hour (outer)

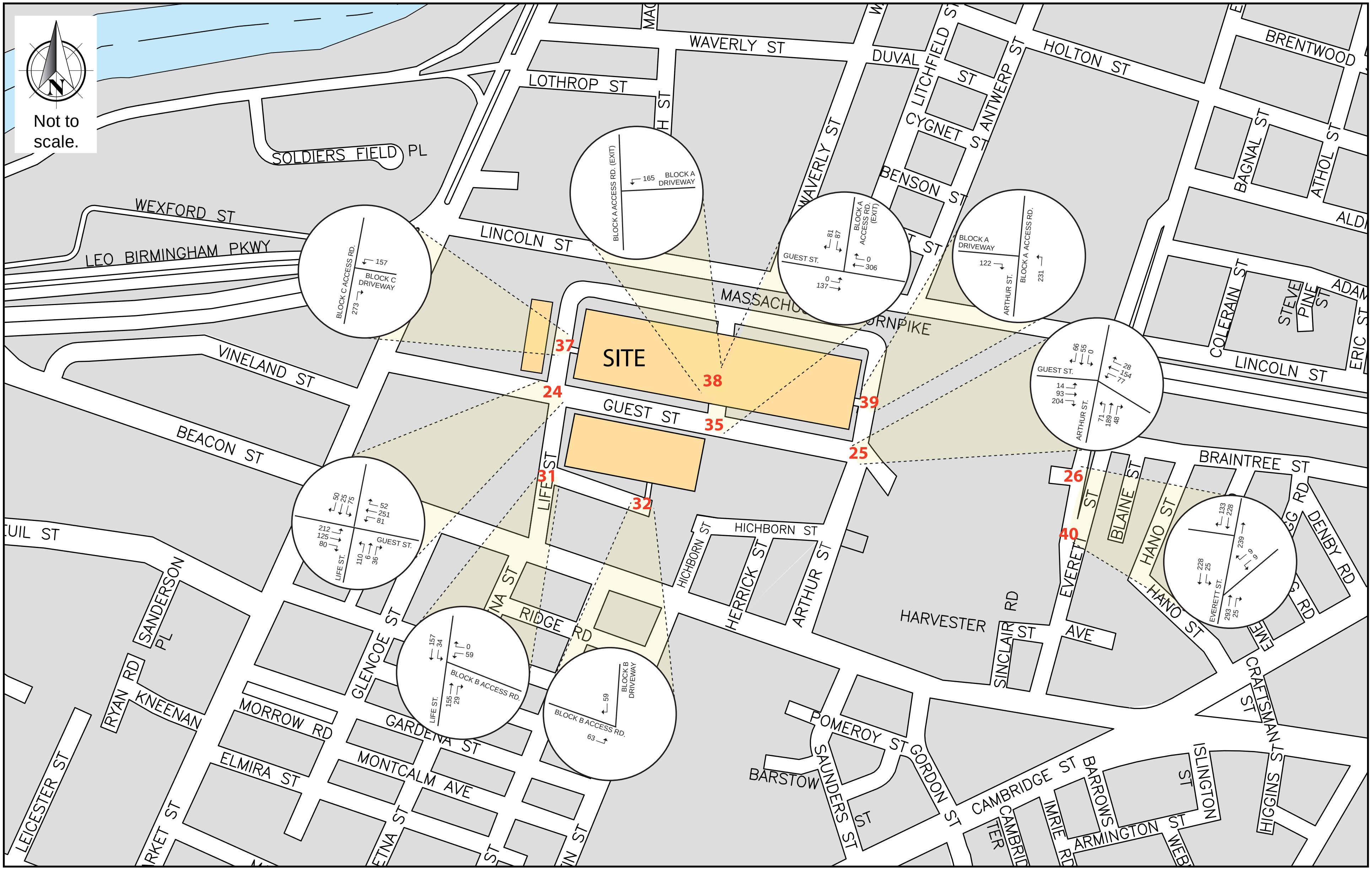

Figure 22.
Year 2017 Full-Build Volumes, Saturday Midday Peak Hour (inner)

Not to scale.

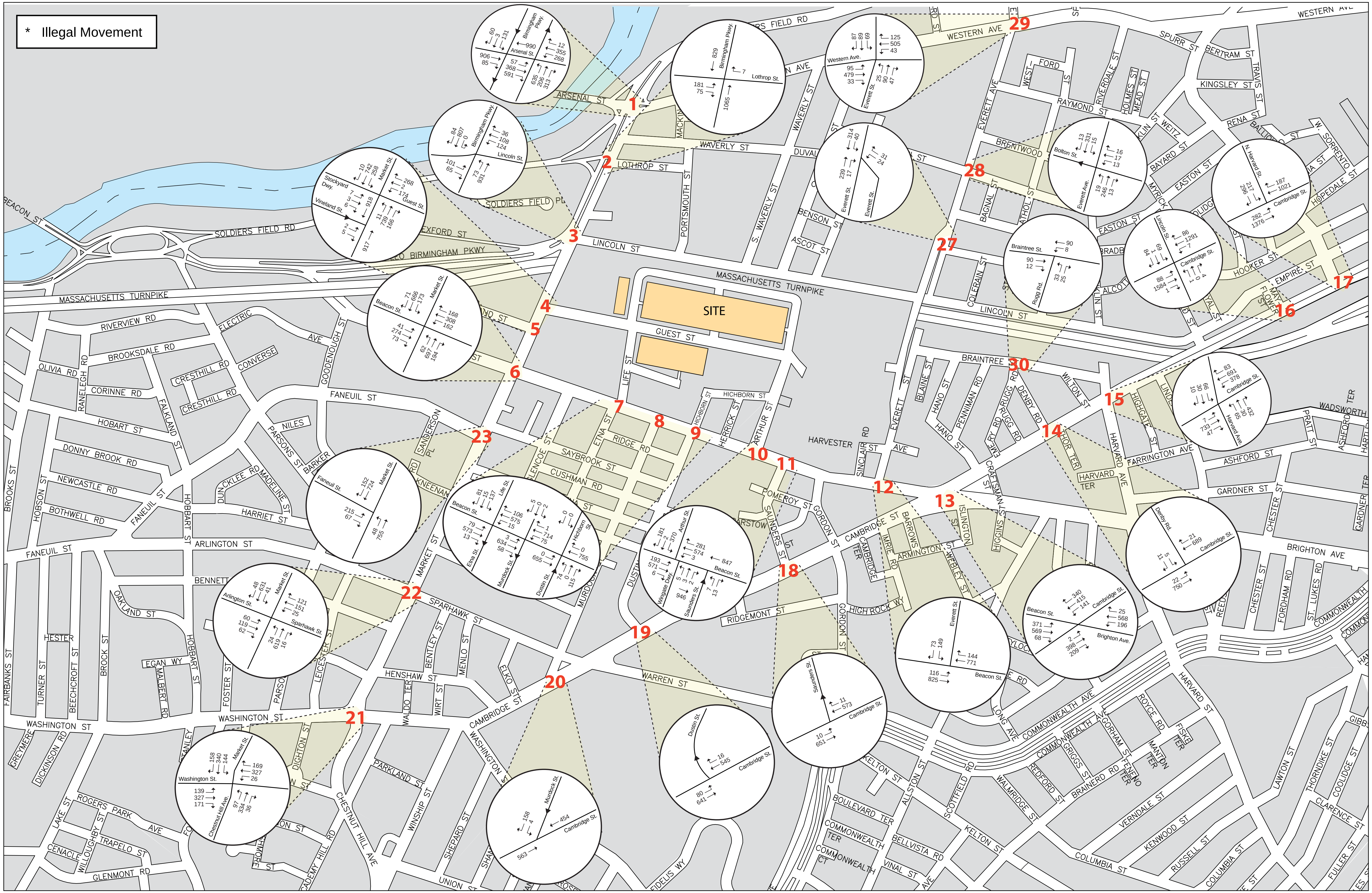

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Figure 23.
Year 2017 Full-Build Volumes, Saturday Midday Peak Hour (outer)

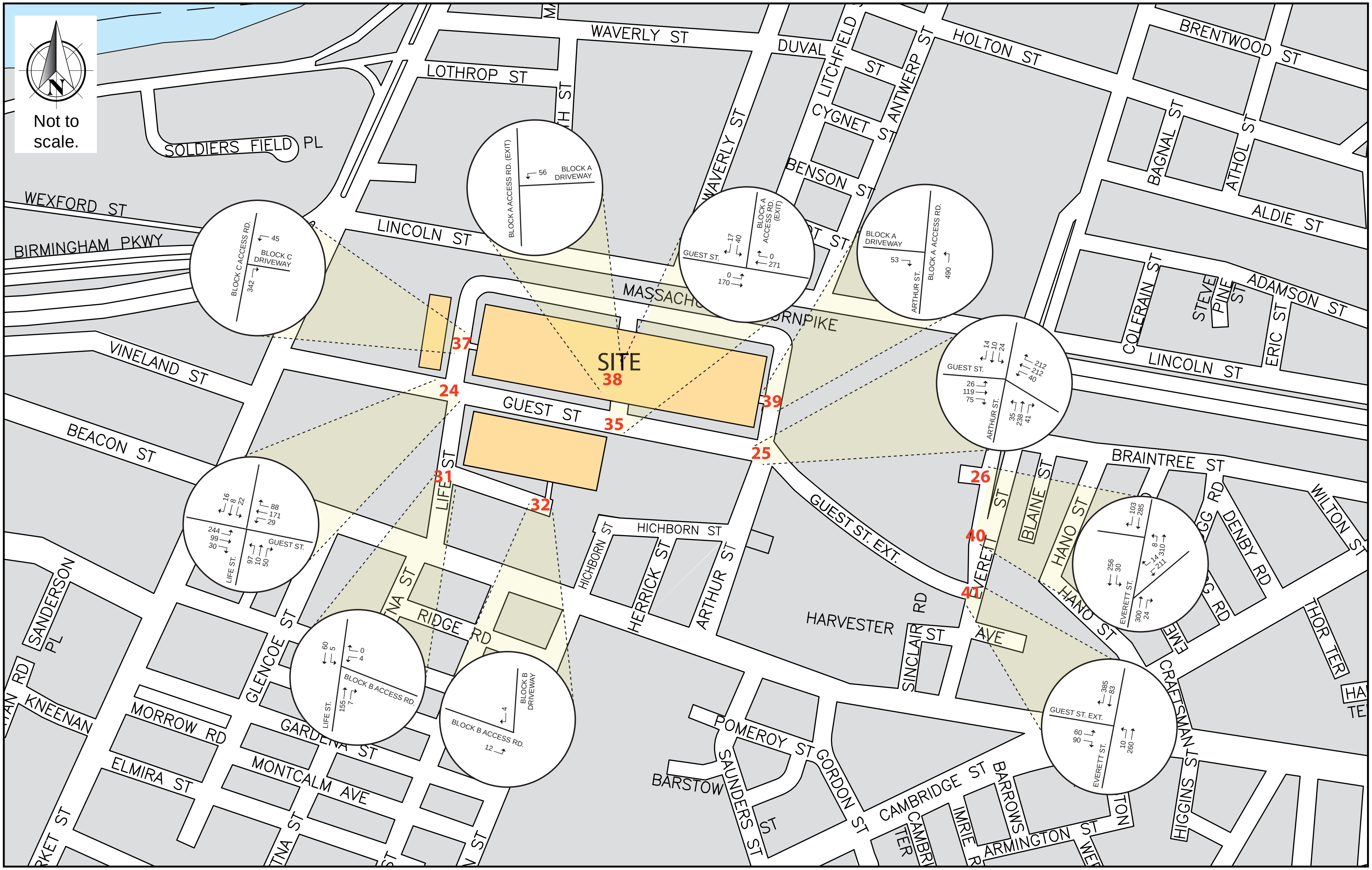

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Figure 24.
Year 2017 Full-Build with Mitigation Volumes, a.m. Peak Hour (inner)

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Figure 25.
Year 2017 Full-Build with Mitigation Volumes, a.m. Peak Hour (outer)

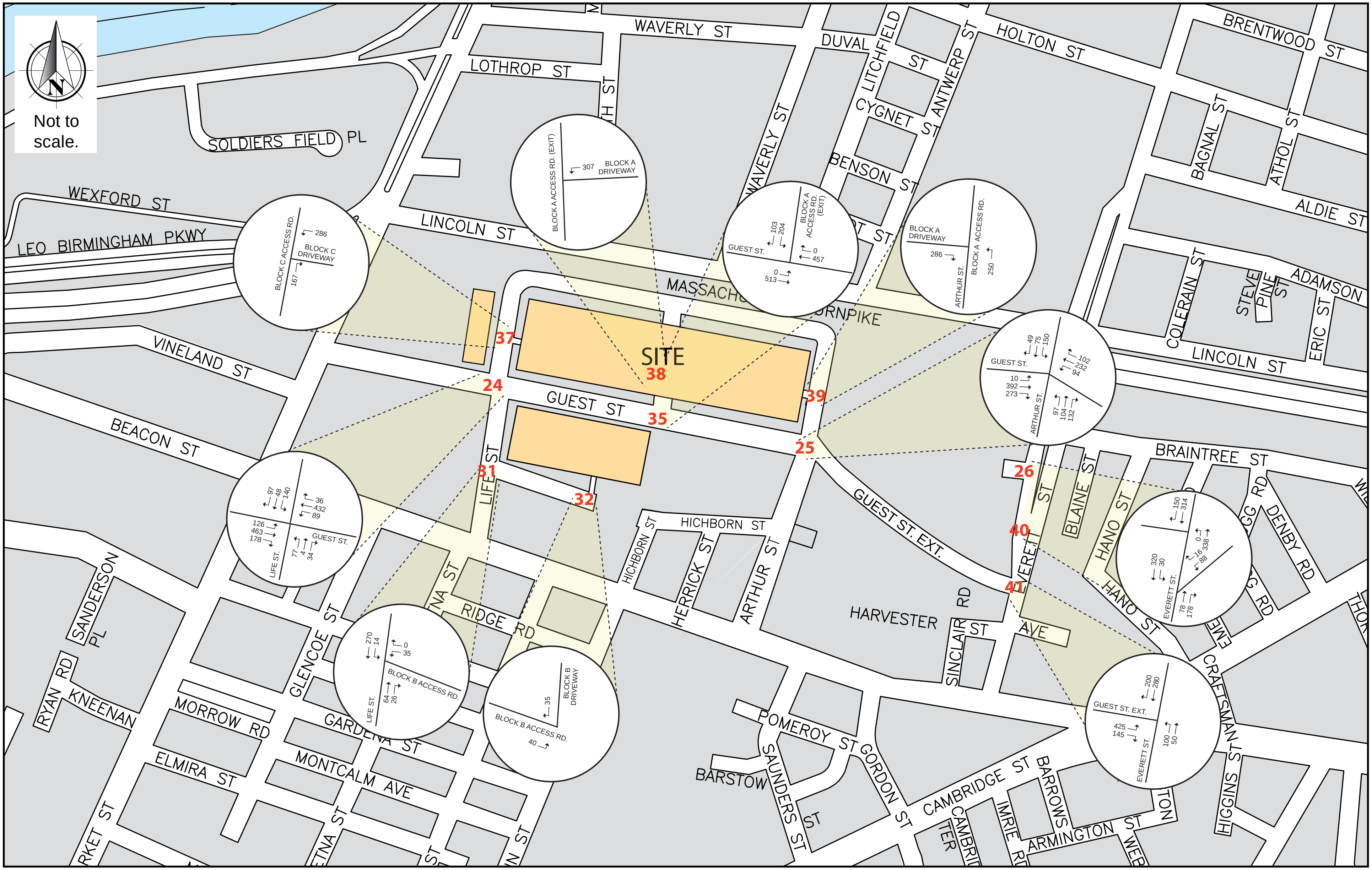

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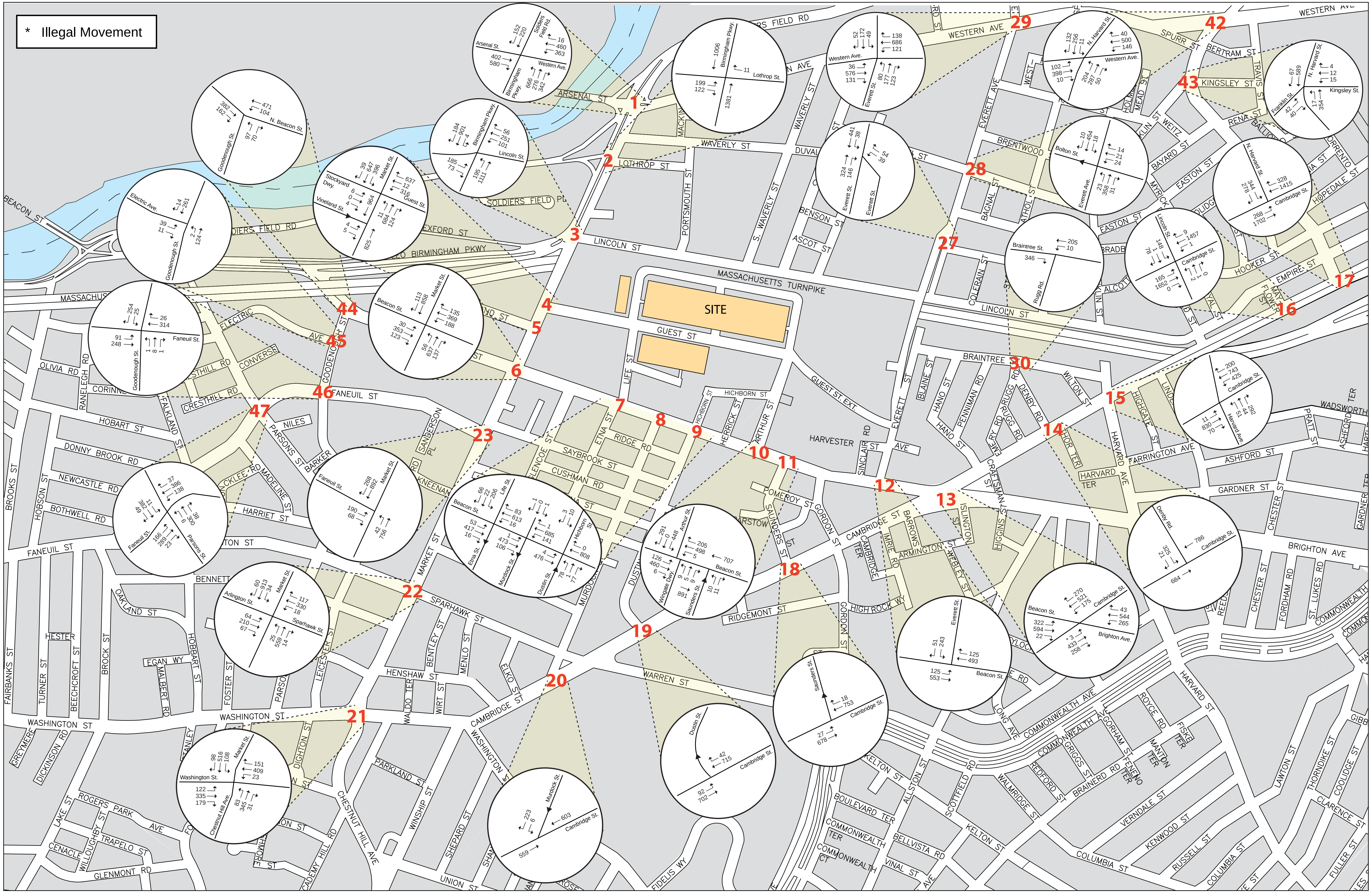
Figure 26.
Year 2017 Full-Build with Mitigation Volumes, p.m. Peak Hour (inner)

Not to scale.



Not to scale.

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Figure 27.
Year 2017 Full-Build with Mitigation Volumes, p.m. Peak Hour (outer)

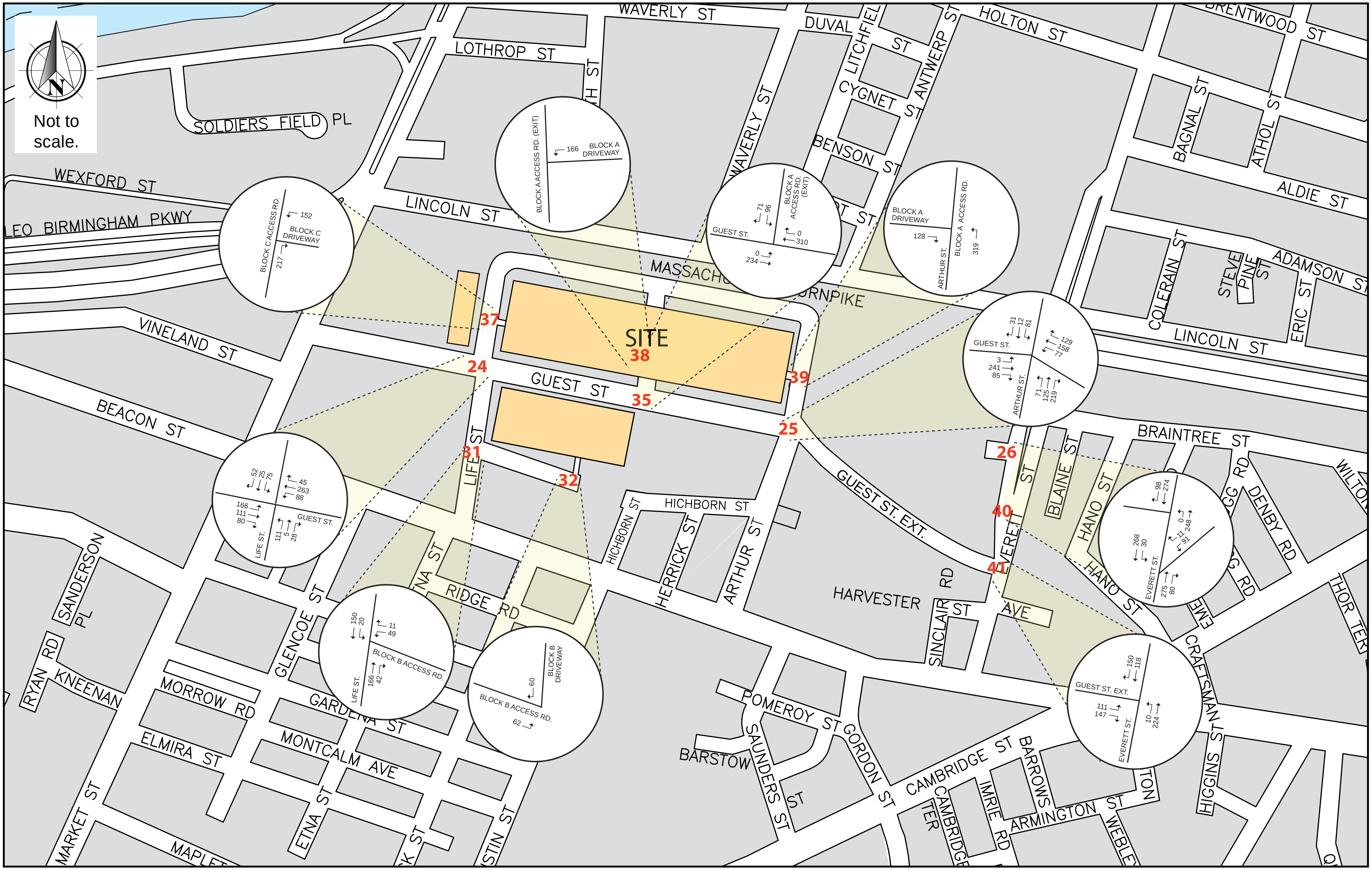

Figure 28.
Year 2017 Full-Build with Mitigation Volumes, Saturday Midday Peak Hour (inner)

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Figure 29.
Year 2017 Full-Build with Mitigation, Saturday Midday Peak Hour (outer)

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617.482.7080

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