EXPANDED PROJECT NOTIFICATION FORM

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

Submitted by:
Related Beal 177 Milk Street . Boston, MA 02109

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

In Association with:
Arrowstreet . **Nutter McClennen & Fish LLC** . **Vanasse & Associates, Inc.**
Nitsch Engineering . **Haley & Aldrich, Inc.** . **Tremont Preservation Services**

MARCH 25, 2015

Epsilon ASSOCIATES INC.

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ASSOCIATES INC.

Table of Contents

Table of Contents

Table of Contents (Continued)

Table of Contents (Continued)

Table of Contents (Continued)

Table of Contents (Continued)

List of Appendices

List of Figures

List of Figures (Continued)

List of Tables

Chapter 1.0

Introduction / Project Description

1.0 INTRODUCTION / PROJECT DESCRIPTION

1.1 Introduction

Related Beal (the Proponent), on behalf of its affiliate, RFM Block on Congress I, LLC, proposes to renovate six existing buildings located in the heart of Boston, including the construction of additions to three existing buildings (the Project). The site is located north of Post Office Square and is bound by the buildings at 46 Devonshire Street and 31 State Street to the north, Congress Street to the east, Water Street to the south, and Devonshire Street to the west. The Project will transform existing office buildings into three components with a mix of ground floor and lower level retail/restaurant uses with either office, residential or hotel uses on upper floors, providing appropriate 24-hour activity to the surrounding neighborhood. The Project includes approximately 458,300 square feet (sf), of which approximately 92,700 sf is new construction.

From their original conception in the late 19th Century as bank buildings, the existing buildings have conveyed an image of grandeur and security. For the last 40 years, these buildings have been restricted to private use and turned inward, cut off from the surrounding neighborhood and streets. The design for Congress Square restores these buildings and Quaker Lane to a destination within the heart of downtown Boston.

The existing buildings on the site, built between 1899 and 1921, are used for office space, and most of the ground floor windows have been covered creating a bland pedestrian experience. To reflect Congress Square's original identity, the ground floors will provide more visibility to the street and open up directly to outdoor dining areas on Quaker Lane and will include revitalized retail/restaurant spaces and lobby entrances. In the middle of the site, Quaker Lane—currently used for servicing the site—will be reimagined as an intimately scaled pedestrian way finished with catenary lighting, sculptural seating and landscaping.

The new additions to the buildings will fill in gaps, including the vacant lot at 54 Devonshire Street, and will provide a modern touch to the site without taking away from the original form and character of the existing buildings. Overall, the Project will bring new vitality to this block of downtown Boston with an improved pedestrian realm, new retail and restaurant space, hospitality, residential and office uses.

This Expanded Project Notification Form (PNF) is being submitted to the BRA to initiate review of the Project under Article 80B, Large Project Review, of the Boston Zoning Code. Although the Project is being presented as a unified development in order to allow for the most comprehensive review of the Project, including its possible impacts, when taken as a whole, it will be comprised of a mix of uses and held in separate ownership. As such, each Project Component, as described in detail in Section 1.3.3, may be developed by individual developers who will execute on its specific plans, including development agreements, with the BRA and other City agencies to the extent required.

1.2 Project Identification and Project Team

Address/Location:	40 Water Street, 33-35 Congress Street, 82 Devonshire Street, 68 Devonshire Street, 54 Devonshire Street, 15 Congress Street and 19 Congress Street
Proponent:	Related Beal 177 Milk Street Boston, MA 02109 (617) 451-2100 Peter Spellios Stephen Faber Bryan Lee
Architect:	Arrowstreet 10 Post Office Square, Suite 700N Boston, MA 02109 (617) 623-5555 Scott Pollack Amy Korté Jason King
Legal Counsel:	Nutter McClennen & Fish LLP Seaport West 155 Seaport Boulevard Boston, MA 02210 (617) 439-2000 Mary Marshall
Permitting Consultant:	Epsilon Associates, Inc. 3 Clock Tower Place, Suite 250 Maynard, MA 01754 (978) 897-7100 Geoff Starsiak
Transportation Consultant:	Vanasse & Associates, Inc. 10 New England Business Center Drive, Suite 314 Andover, MA 01810 (978) 474-8800 Giles Ham Shaun Kelly

Civil Engineer:	Nitsch Engineering 2 Center Plaza, Suite 430 Boston, MA 02108 (617) 338-0063 John Schmid
Geotechnical Consultant:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Boston, MA 02129 (617) 886-7400 Mike Atwood Keith Johnson
MEP/FP Engineer:	Cosentini Associates Building 200, 2nd Floor One Kendall Square Cambridge, MA 02139 (617) 494-9090 Bob Leber
Landscape Architect:	Halvorson Design Partnership, Inc. 25 Kingston Street Boston, MA 02111 (617) 536-0380 Robert Uhlig
Structural Engineer:	McNamara/Salvia, Inc. 160 Federal Street, 5th Floor Boston, MA 02110 (617) 737-0040 Joseph Salvia
Historic Consultant:	Tremont Preservation Services 374 Congress Street, Suite 301 Boston, MA 02210 (617) 482-0910 Leslie Donovan

1.3 Project Description

1.3.1 Area Context

The Project site is located in downtown Boston, just north of Post Office Square. The surrounding area includes a mix of buildings of varying heights, from eight floors to more than 40. Due to the location and existing development, little new development has occurred over the past several years in the surrounding area, but the area continues to be a prime location for office tenants and creates strong retail demand.

1.3.2 Project Site

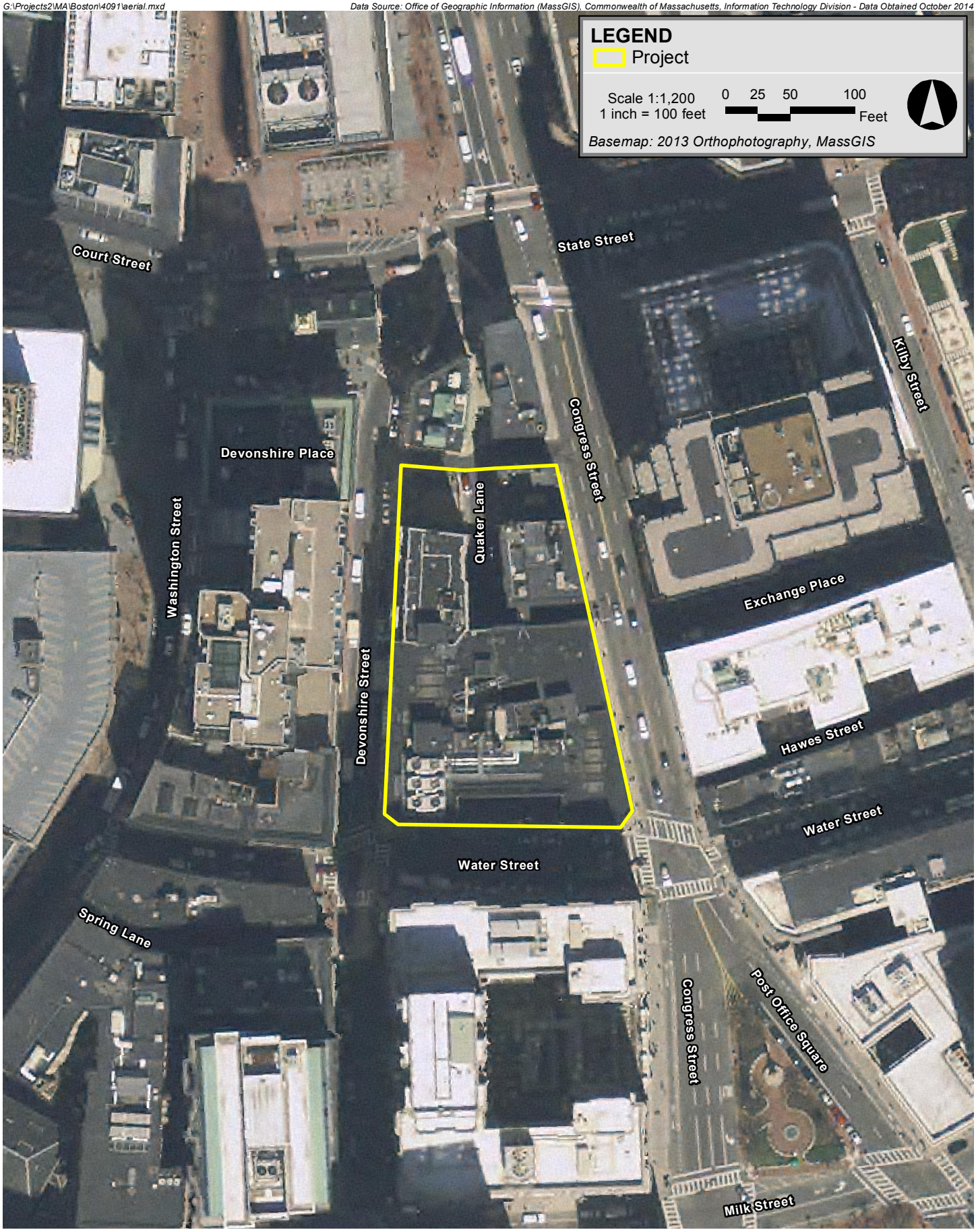
The Project site is an approximately 43,847 sf site that is bound by the buildings at 46 Devonshire Street and 31 State Street to the north, Congress Street to the east, Water Street to the south, and Devonshire Street to the west. See Figure 1-1 for an aerial locus map. The site currently consists of six existing buildings at 40 Water Street, 82 Devonshire Street, 68 Devonshire Street, 33-35 Congress Street, 15 Congress Street, and 19 Congress Street, all of which are dedicated entirely to office use. The site also includes the vacant lot at 54 Devonshire Street that is currently dedicated to surface parking. Between the buildings is Quaker Lane, which is used as a service way. A survey is included as Appendix A.

1.3.3 Proposed Development

Congress Square is located to the north of Post Office Square reaching towards the Washington / State Street retail corridor, at the epicenter of Boston's downtown just steps from Faneuil Hall and Boston's historic Freedom Trail. This ideal location provides outstanding commuter access and the ability to integrate a variety of uses into the property, activating a long-dormant street level and bringing new businesses to the area that would not have previously considered it a viable location.

The Project is comprised of six distinctive buildings, centrally located in the heart of Boston, currently used as office space. Rich in culture, these early 20th century buildings were known as Congress Square when they were first built between 1899 and 1921. As part of the Project, the Proponent is repurposing this special grouping of buildings in Boston's downtown to reflect its original identity. The ground floor and lower level spaces will be returned to retail and restaurant use, enlivening the streetscape while providing needed new highly desirable retail and restaurant opportunities. The upper floors of the buildings will be converted to modern offices, residences and boutique hotel rooms. Existing and proposed preliminary floor plans are included in Appendix B. See Figures 1-2 through 1-6 for existing and proposed site plans and sections.

Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division - Data Obtained October 2014

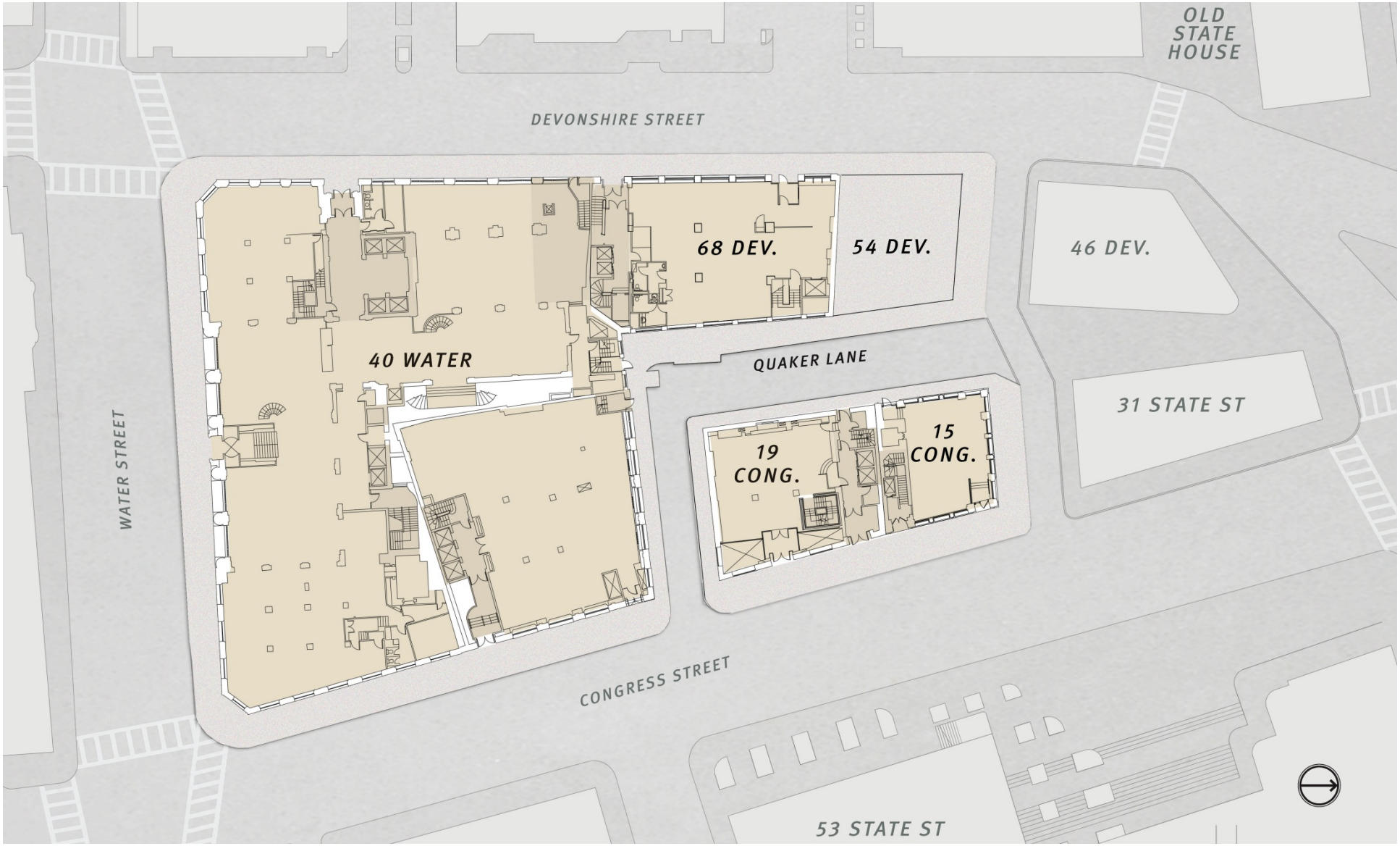


Congress Square Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 1-1

Aerial Locus Map



Congress Square Boston, Massachusetts

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Figure 1-2

Existing Site Plan

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Figure 1-3

Proposed Site Plan

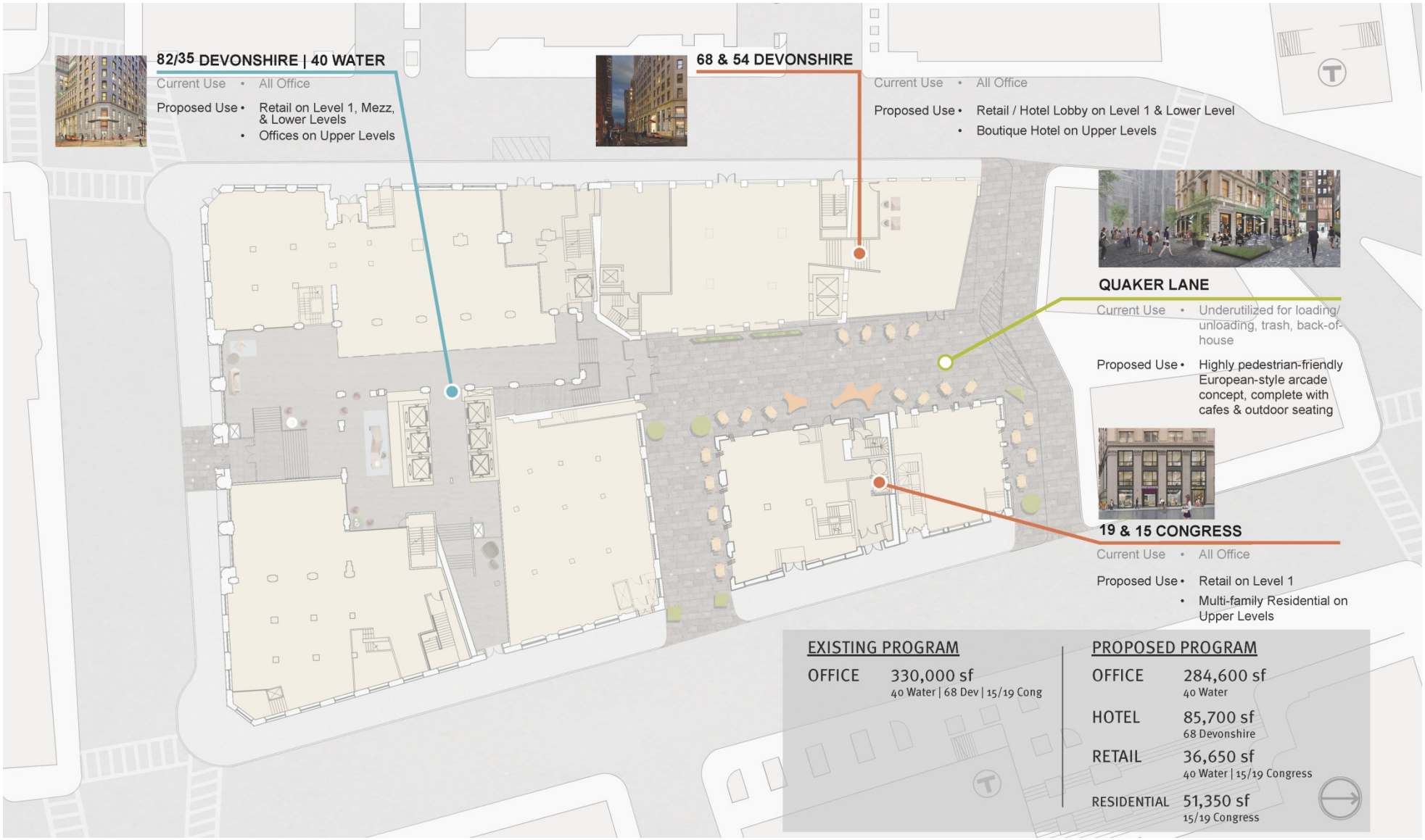

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Figure 1-4

Proposed Uses

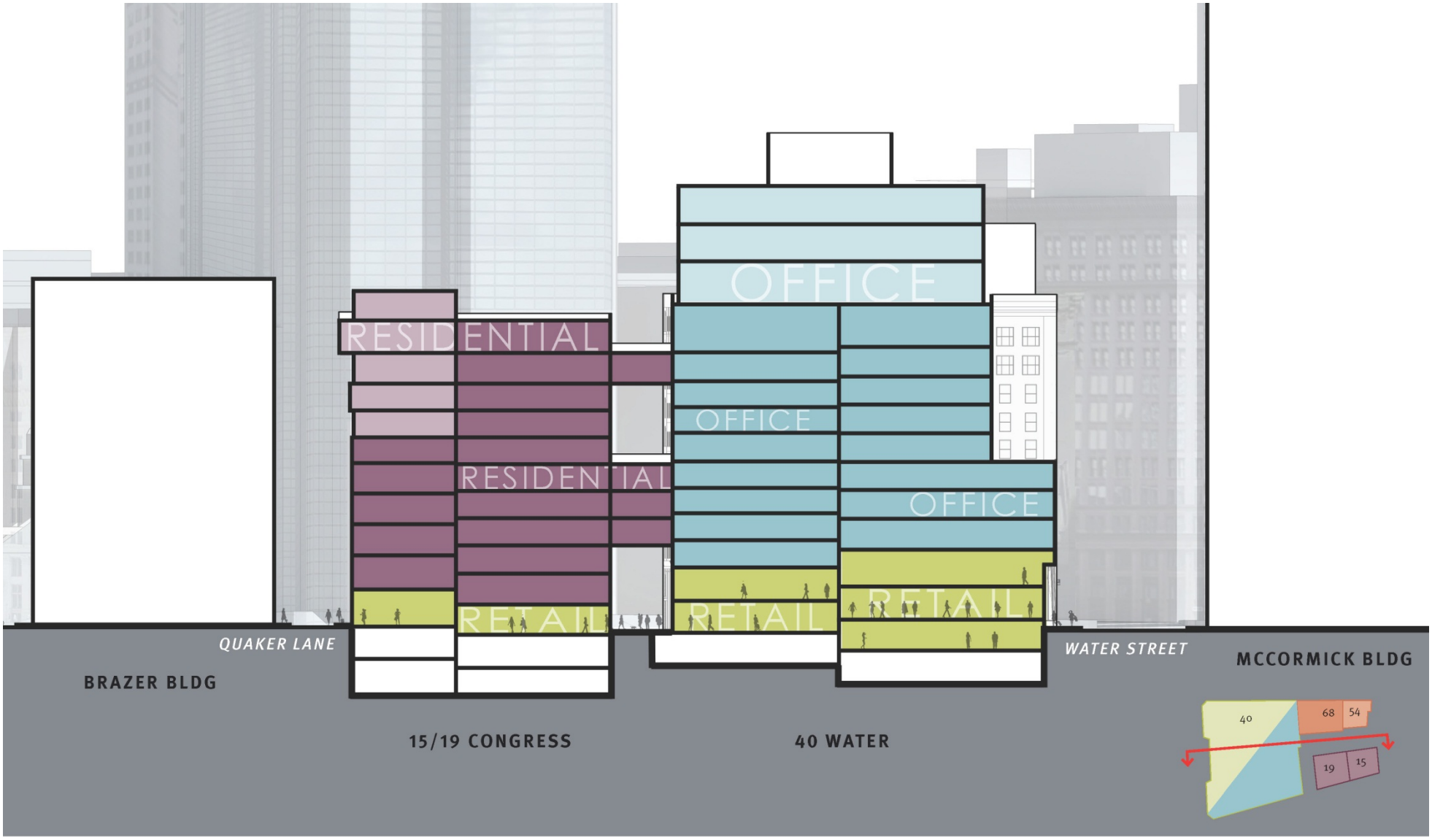

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Figure 1-5

Project Section - East

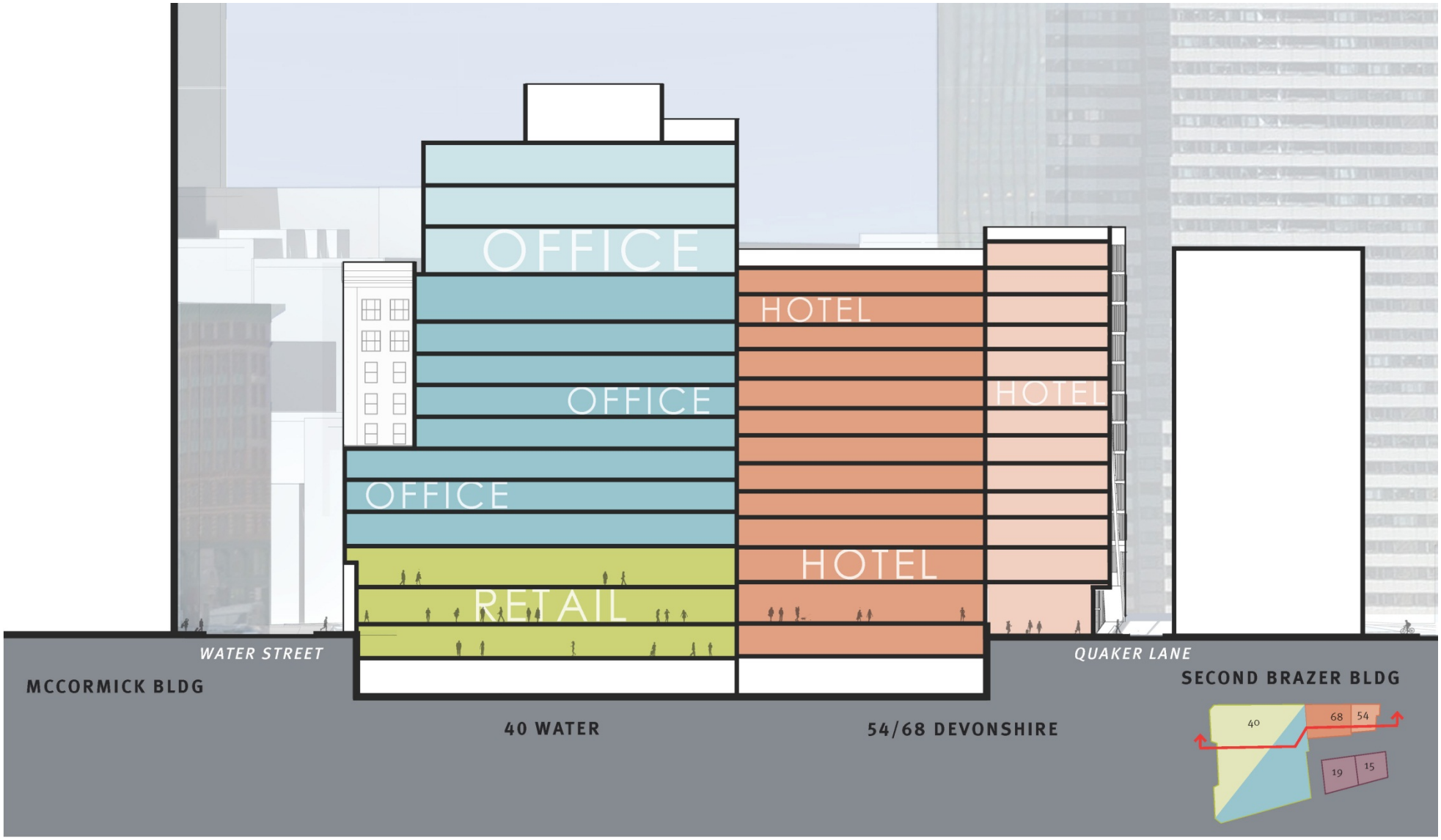

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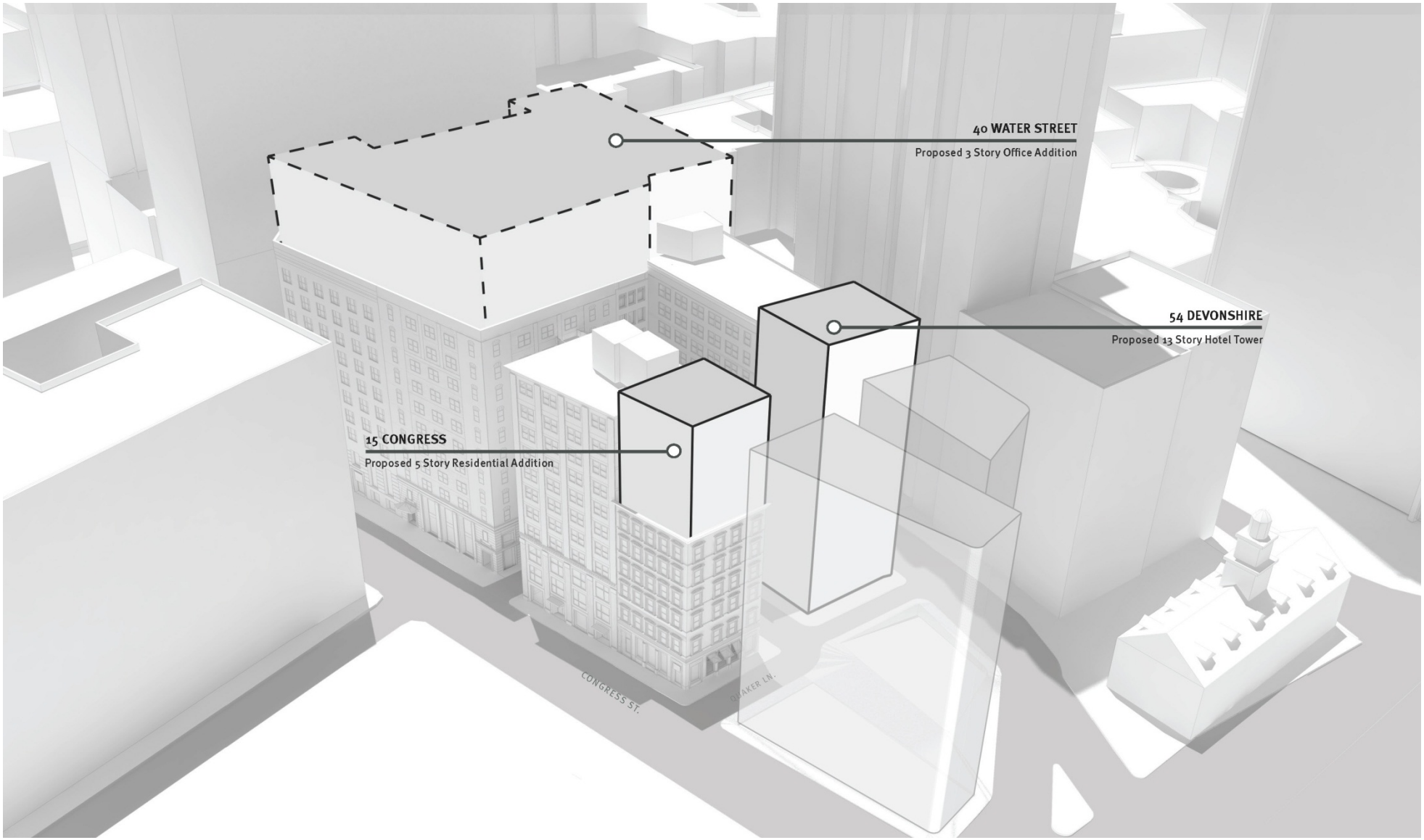
Figure 1-6

Project Section - West



Congress Square Boston, Massachusetts

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Figure 1-7
Aerial Site View

The development also proposes three new building additions: a three-story addition on top of 40 Water Street, a five-story addition above 15 Congress Street, and a 13-story addition on 54 Devonshire Street adjacent to and connecting with the existing 68 Devonshire Street building (see Figure 1-7). These additions will respect the integrity of the existing buildings, while also providing opportunities to create visual identities for the future office and hotel uses on site.

Together, the existing buildings and new additions will be grouped into three Project Components totaling approximately 458,300 sf:

40 Water Street includes the buildings of 40 Water Street, 82 Devonshire Street and 33-35 Congress Street. These buildings are being re-imagined as an innovation-economy office location with efficient and versatile floor plates, a double-height lobby and retail/restaurant on the ground floor and lower levels. The buildings will be combined into one cohesive building with one core, rather than the multiple cores currently existing, as well as a new pedestrian connection providing direct pedestrian access through the building from Water Street to Quaker Lane. New construction for this component includes a three-story addition to the top and the filling of an existing lightwell. This component includes approximately 284,600 sf of office space and approximately 30,900 sf of retail/restaurant space.

68 Devonshire Street includes the existing 68 Devonshire Street building and the new addition to be constructed on the vacant lot located at 54 Devonshire Street. The building will include an approximately 133-key boutique hotel and related uses.

15 Congress Street includes the existing 15 Congress Street and 19 Congress Street buildings, as well as a five-story addition to 15 Congress Street. This component includes approximately 35 residential condominiums and approximately 5,750 sf of street-level retail/restaurant space.

Tables 1-1a and 1-1b includes a detailed Project program.

Table 1-1a Project Program – Renovation and New Construction

Component	Approximate Dimension (SF)[1]
40 Water Street	
Renovation of Existing Usable Space	233,800
Conversion to Usable Space[2]	26,400
New Construction	55,300
Total Component	315,500
68 Devonshire Street	
Renovation of Existing Usable Space	50,300
Conversion to Usable Space[2]	5,700
New Construction	29,700
Total Component	85,700
15 Congress Street	
Renovation of Existing Usable Space	45,900
Conversion to Usable Space[2]	3,500
New Construction	7,700
Total Component	57,100
Total Project	
Renovation of Existing Space	**330,000**
Conversion to Usable Space[2]	**35,600**
New Construction	**92,700**
Total Project	**458,300**

1 As determined by the Boston Zoning Code.

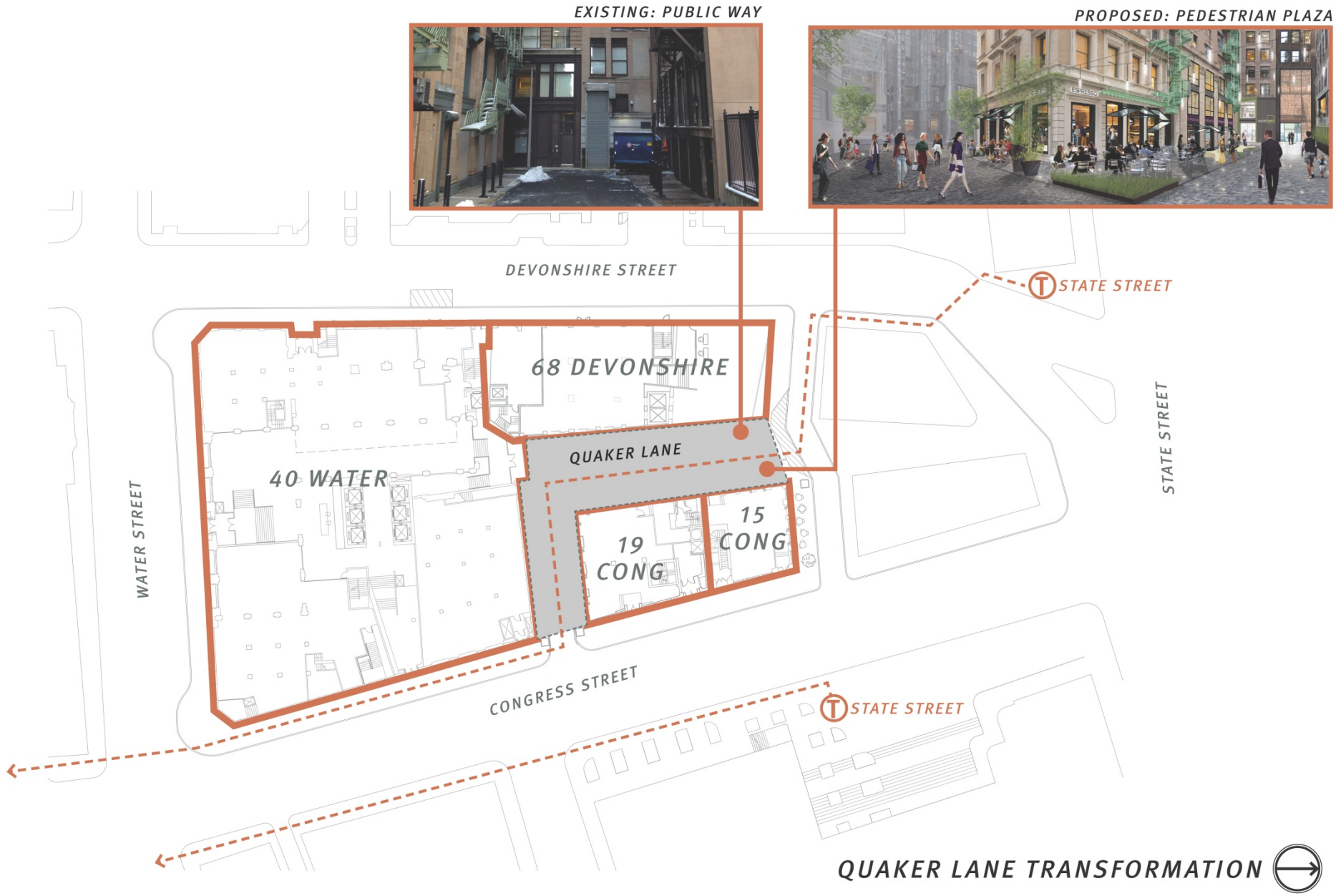
2 Refers to space that will be converted from space not included as "Floor Area, Gross" as defined by the Boston Zoning Code to space included as "Floor Area, Gross", such as mechanical space and the infilling of the existing lighwell at 40 Water Street.

Table 1-1b Project Program – Use Dimensions

Component	Existing Approximate Dimension[1]	Proposed Approximate Dimension[1]
40 Water Street		
Office	233,800 sf	284,600 sf
Retail/Restaurant	0 sf	30,900 sf
Height	131 feet	175 feet
68 Devonshire Street		
Office	50,300 sf	0 sf
Hotel	0 sf	85,700 sf / 133 keys
Height	129 feet	129 feet
15 Congress Street		
Office	45,900 sf	0 sf
Retail/Restaurant	0 sf	5,750 sf
Residential	0 sf	51,350 sf / 35 units
Height	83 feet/126 feet[2]	137 feet

[1] As determined by the Boston Zoning Code.
[2] 15 Congress Street is approximately 83 feet in height; 19 Congress Street is approximately 126 feet in height.

Integral to this Project is the revitalization of Quaker Lane, which bisects the property and connects Post Office Square to the Old State House. By opening up the ground floor interior spaces to Quaker Lane, through a series of outdoor dining areas and landscaped seating, Quaker Lane will be transformed from an under-utilized service way into an exceptional pedestrian experience, lined with boutiques, cafes and restaurants, nightlife attractions and distinct retail venues. The changes to the existing buildings include changes to the fenestration to open them up to the surrounding sidewalks and Quaker Lane. This experience will be extended to the exterior of the development: the many buildings that make up Congress Square, which historically welcomed customers through bank lobbies and retail, will be reopened at street level, engaging the public with a mix of uses and restored spaces that have been restricted to private use for the last 40 years. See Figures 1-8 and 1-9.



Congress Square Boston, Massachusetts

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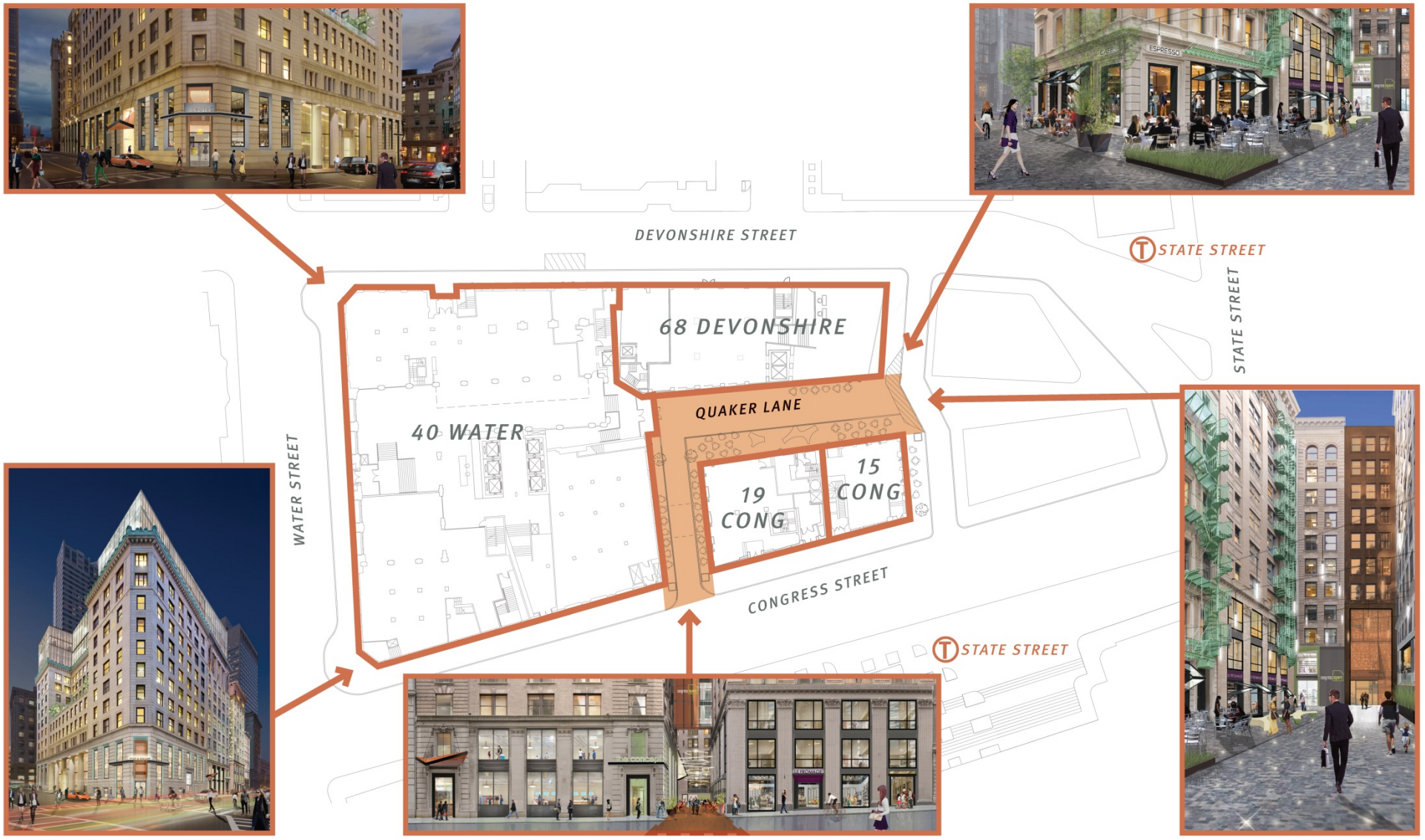
Figure 1-8

Quaker Lane Transformation



Congress Square Boston, Massachusetts

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Figure 1-9
Retail Presence

1.4 Public Benefits

The Project includes the renovation of several buildings, as well as new additions to the buildings to transition the site from office use to a mix of office, retail/restaurant and hotel uses. The Project will include numerous benefits to the neighborhood and the City of Boston, including but not limited to:

- The Project will create approximately 35 new residential units proximate to public transportation.
- The Project will comply with the BRA's inclusionary development policy.
- New hotel rooms within Downtown and the Financial District, providing more patrons for area businesses outside of typical office hours.
- Creating or supporting approximately 700 construction jobs and up to approximately 1,100 permanent full and part-time jobs.
- Generating new annual property taxes and hotel tax revenue for the City of Boston.

The Project will provide a variety of urban design benefits to the surrounding neighborhood, including:

- Combining classic architecture with upscale amenities and up-to-date systems, including outdoor spaces throughout the buildings and inviting public spaces, Congress Square will transform and reconnect a block of existing buildings back to the surrounding neighborhood.
- Transforming Quaker Lane from a service way to a pedestrian friendly European-style arcade concept with cafes and outdoor seating.
- Converting ground level office space into high-energy retail uses to enhance the public realm and connecting Faneuil Hall to Downtown Crossing.
- Creating a new pedestrian connection from Water Street, through the site toward State Street.
- Utilizing sustainable design and green building features to promote energy conservation, and to comply with the provisions of Article 37 of the Boston Zoning Code.

1.5 City of Boston Zoning

The Property is located within Subdistrict M, which is a "Medium Growth Subdistrict" of the Downtown Interim Planning Overlay District ("IPOD"), the zoning controls for which are set forth in Article 27D of the Boston Zoning Code. The Project, when taken as a whole, will either establish or change the uses of a gross floor area of 100,000 square feet or more; or substantially rehabilitate a building or structure having, or to have after rehabilitation, a gross floor area of more than 100,000 square feet, making the Project subject to Large Project Review in accordance with Article 80B of the Code. The Project will require IPOD Permits from the Boston Zoning Board of Appeal in accordance with Article 27D as well as Large Project Review in accordance with Article 80B of the Code. The Project, although composed of a mix of uses and in separate ownership, will be reviewed in a single Article 80 comprehensive process. As such, each individual Project Component, may be developed by individual developers who will obtain individual certifications of compliance and execute on its specific plans, including development agreements, with the BRA and other City agencies to the extent required.

1.6 Legal Information

1.6.1 Legal Judgments Adverse to the Proposed Project

The Proponent is not aware of any legal judgments which are adverse to the proposed Project.

1.6.2 History of Tax Arrears on Property

The Proponent is not aware of any history of non-payment of taxes with respect to the Property, having acquired it from Fidelity Investments Inc., the long-term owner of the Property.

1.6.3 Site Control / Public Easements

The Proponent owns the Property in fee simple. Quaker Lane, which abuts the Property, is a public way. However, the fee simple in Quaker Lane is privately owned. The Proponent owns the fee simple interest in the majority of Quaker Lane, including that portion of Quaker Lane which abuts the Property. The Proponent also has certain private easement rights with respect to the fee owned by others within the remainder of Quaker Lane, in addition to the rights held generally by the public by virtue of Quaker Lane being a public way.

1.7 Anticipated Permits and Approvals

Table 1-2 presents a preliminary list of permits and approvals from governmental agencies that are expected to be required for the Project. It is possible that only some of these permits or actions will be required, or that additional permits or actions will be required.

Table 1-2 List of Anticipated Permits and Approvals

AGENCY	APPROVAL
Local	
Boston Redevelopment Authority	Article 80 Large Project Review
Boston Civic Design Commission	Design Review and Approval in accordance with Article 28
Boston Water and Sewer Commission	Water and Sewer Connection Permits; General Service Application; Site Plan Review
Boston Transportation Department	Construction Management Plan; Transportation Access Plan Agreement
Boston Public Improvement Commission/Boston Department of Public Works	Curb Cut Permit; Street/Sidewalk Specific Repair Plan; Permits for street occupancy and opening permit
Boston Fire Department	Approval of Fire Safety Equipment; Fuel Oil Storage Permit
Boston Inspectional Services Department	Building Permit; Flammable Storage Permit; Certificate of Occupancy
Boston Board of Appeal	Zoning Relief
Boston Landmarks Commission	Article 85 Demolition Delay Review Accelerated Design Review (if required)
State	
Department of Environmental Protection, Division of Water Pollution Control	Self-certification for sewer discharges
Department of Environmental Protection	Notification of Demolition and Construction

1.8 Public Participation

A Letter of Intent was filed with the BRA on October 31, 2014 beginning the Project's formal public review process. The Proponent has met with abutters, local elected officials and area community groups, and will continue to discuss the Project with interested parties as the permitting process and design progress.

1.9 Schedule

Construction is anticipated to commence in the fall of 2015, with completion anticipated in the spring of 2017.

Chapter 2.0

Transportation

2.0 TRANSPORTATION COMPONENT

2.1 Introduction

Vanasse & Associates, Inc. (VAI) has conducted a Traffic Impact and Access Study (TIAS) in conjunction with this Expanded PNF to determine the potential impacts on the transportation infrastructure associated with the Project as described in Chapter 1. This study evaluates the following specific areas as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; and identifies and analyzes existing and future conditions, both with and without the Project, on the transportation infrastructure serving the Project site.

This study presents a comprehensive assessment of all elements of the transportation infrastructure serving the Project site. The study area evaluated as a part of this assessment includes all major roadways and intersections that are expected to convey vehicular and pedestrian traffic to and from the Project site, and includes 13 intersections located along Congress Street, Devonshire Street, State Street, Water Street and Milk Street. This expansive study area, determined through consultation with the Boston Transportation Department (BTD), allows for a full evaluation of the transportation system serving the Project site, both at present and with planned future development in the area. Further, the extent of the study area allows for the development of a transportation improvement program that is designed to incorporate a balanced approach to improving traffic flow, public transportation access, and accessibility for pedestrians and bicyclists. These goals have been advanced as part of the transportation improvement program developed for the Project.

2.1.1 Project Impact Summary

As compared to the current use of the site, the proposed redevelopment project is expected to primarily result in an increase in pedestrian traffic to and from the Project, with only minor vehicular traffic increases during peak hours due to the reduction of the amount of existing office space currently provided at the Project. As compared to the fully-occupied current use of the Project site, the Project is projected to result in 208 new automobile trips (two-way, 24-hour volume) on an average weekday, with 494 new transit trips and 2,672 new pedestrian/bicycle trips. During the weekday morning peak hour, the Project is projected to generate seven fewer automobile trips than the current use of the site, 19 fewer transit trips and 81 additional pedestrian/bicycle trips as compared to the current uses of the site. During the weekday evening peak hour, the Project is predicted to generate nine new automobile trips, 22 additional transit trips and 225 additional pedestrian/bicycle trips as compared to the current use of the site.

As a result of the analyses presented herein, a comprehensive transportation improvement program has been developed for the Project that has been designed to: i) address the potential impact of the Project on the transportation infrastructure; ii) encourage the use of alternative modes of transportation for those accessing the Project; and iii) address transportation infrastructure deficiencies identified as a part of this study or by the City.

The planned improvements encompass the following general elements:

- Sidewalk and streetscape improvements along the Quaker Lane corridor to transform the corridor from its current loading zone use to a pedestrian friendly environment;

- Conversion of the northern segment of Quaker Lane from a two-way roadway to a one-way roadway in the eastbound direction to minimize the level of vehicular activity along the corridor;

- Installation of removable bollards along the northern east-west segment of Quaker Lane to prohibit vehicular through traffic from the southern segment of the corridor outside of off-peak hours;

- Expansion of the existing sidewalk area at the intersections of Water Street with Congress Street and Devonshire Street to enhance pedestrian crossings at these locations;

- Reconstruction of segments of the existing sidewalk system that surrounds the Project site;

- Pedestrian and bicycle access and safety improvements, including provision of on-site bicycle storage for residents, employees and patrons of the Project;

- Advancement of a comprehensive Transportation Demand Management (TDM) program to include specific elements designed to encourage the use of public transportation services, car and vanpooling, and pedestrian and bicycle use; and

- Implementation of a detailed Construction Management Plan (CMP) that is designed to reduce impacts during the construction phase of the Project.

The implementation of the identified improvements will serve to provide additional capacity and enhancements to the transportation system, and facilitate access to the Project site in a safe and efficient manner.

2.1.2 Project Description

The Project will entail the redevelopment of, and new additions to, existing office buildings located in the block bound by Quaker Lane to the north, Devonshire Street to the west, Congress Street to the east and Water Street to the south to accommodate a proposed mixed-use development with retail, residential, hotel and office uses, as described in detail in Section 1.3.3. As part of the development program, Quaker Lane will be transformed from its current use as a service way that primarily serves loading activity into a pedestrian corridor with ground level commercial space. Consistent with the current use of the Project site, parking will not be provided on-site and will be continue to be accommodated within existing private off-site area parking facilities located proximate to the Project site. Figure 2-1 depicts the Project site location in relation to the existing roadway network.

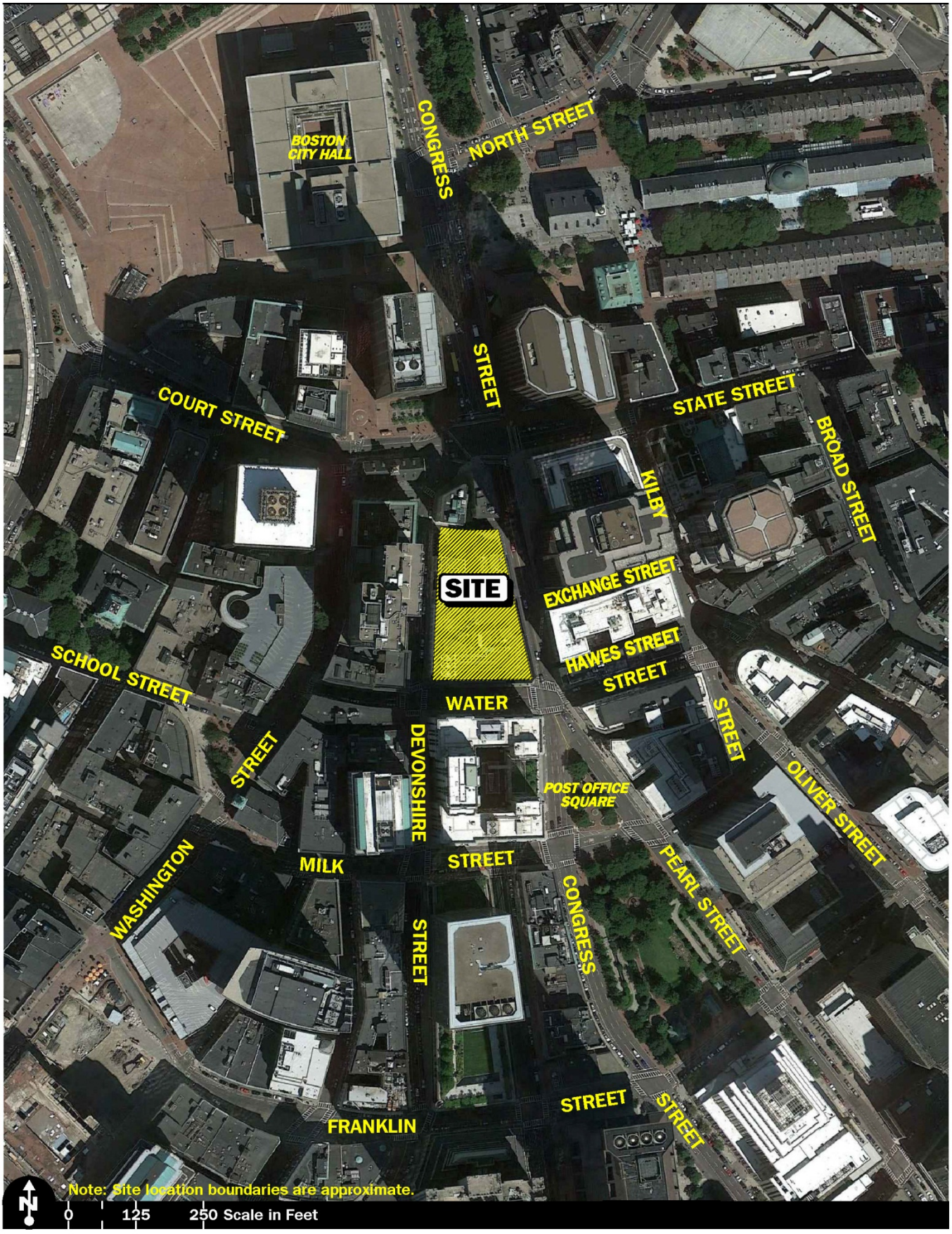
2.1.3 Study Methodology

This study was prepared in consultation with the City of Boston; was performed in accordance with the Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs (EEA)/Massachusetts Department of Transportation (MassDOT) Guidelines for Environmental Impact Report/Environmental Impact Statement Traffic Impact Assessments (TIAs), and the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports; and was conducted in three distinct stages.

The first stage involved an assessment of existing conditions in the study area and included an inventory of roadway geometrics; pedestrian and bicycle facilities; public transportation services; on- and off-street parking; observations of traffic flow; and collection of peak period pedestrian, bicycle and vehicle counts.

In the second stage of the study, future conditions were projected and analyzed. Specific travel demand forecasts for the Project were assessed along with future demands due to expected growth independent of the Project. A seven-year time horizon was selected for analyses consistent with state guidelines for traffic impact assessments. The future conditions analysis conducted in stage two identifies existing or projected future capacity, safety, and site access issues.

The third stage of the study presents and evaluates measures to address the projected impact of the Project on the transportation infrastructure as identified in stage two of the study, and to facilitate safe and efficient travel to and from the Project site.



Congress Square Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-1
Site Location Map

2.2 Existing Conditions

A comprehensive field inventory of the study area roadways and intersections was conducted in October and November 2014. The field investigation consisted of an inventory of existing roadway geometrics; pedestrian and bicycle facilities; on- and off-street parking; public transportation services; traffic volumes; operating characteristics; posted speed limits; and land use information within the study area.

2.2.1 Study Area

The study area assessed for the Project was identified in initial consultation meetings with the BTD and was selected to contain the major roadways providing access to the Project site including: Congress Street, Devonshire Street and Water Street; as well as 13 major intersections located along these roadways through which Project-related traffic will travel. The 13 study intersections, as depicted in Figure 2-2, include:

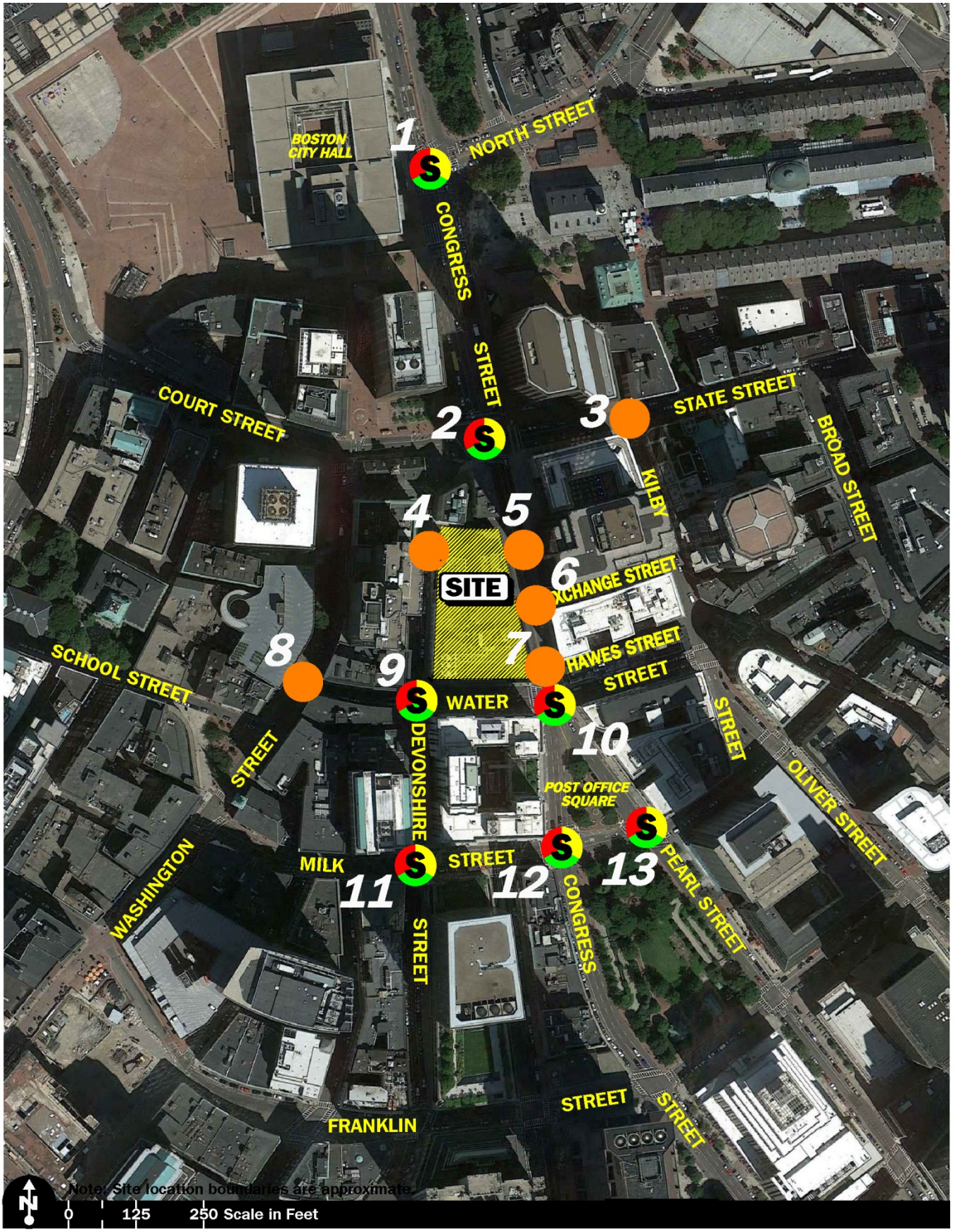
1. Congress Street at North Street and Boston City Hall driveway
2. Congress Street at State Street and Devonshire Street
3. State Street at Kilby Street
4. Devonshire Street at Quaker Lane
5. Congress Street at Quaker Lane (north)
6. Congress Street at Quaker Lane (south) and Exchange Street
7. Congress Street at Hawes Street
8. Washington Street at Water Street
9. Devonshire Street at Water Street
10. Congress Street at Water Street and Post Office Square
11. Devonshire Street at Milk Street
12. Congress Street at Milk Street
13. Pearl Street at Milk Street

2.2.2 Geometry

A field inventory of the study area roadways, intersection geometrics, pedestrian accommodations and bicycle facilities was conducted in October and November 2014 and is summarized in the following sections.

2.2.2.1 Roadways

Congress Street – Congress Street is an urban principle arterial under the jurisdiction of the City of Boston that traverses the study area in a general north-south orientation between New Chardon Street to the north and Seaport Avenue in the South Boston waterfront district to the south. North of State Street, Congress Street generally provides three lanes of travel in each direction, separated by a median island. In the vicinity of the Project site, Congress Street provides two lanes of travel in each direction, separated by a double-yellow



Congress Square Boston, Massachusetts

Figure 2-2
Study Area Intersections

centerline. South of Water Street, Congress Street provides three lanes of travel in the southbound direction. An exclusive bicycle lane is provided along Congress Street in the southbound direction south of Water Street. Sidewalks are provided along both sides of Congress Street throughout the study area with painted crosswalks provided at signalized intersections along the corridor. Within the study area, on-street parking is generally prohibited along the corridor. Land use along Congress Street is primarily a mix of commercial and office uses as well as Boston City Hall.

Devonshire Street – Devonshire Street is a one lane (one lane in the southbound direction), urban minor arterial roadway that is under City of Boston jurisdiction, and traverses the study area in a general north-south orientation between State Street to the north and Summer Street to the south. Sidewalks are provided along both sides of Devonshire Street with on-street commercial parking provided in designated areas along one or both sides of the roadway. Within the vicinity of the Project site, shared bicycle lane designation (sharrow) pavement markings are provided along the corridor. Land use along Devonshire Street in the vicinity of the Project site consists primarily of residential, commercial and office uses as well as a parking garage.

Water Street – Water Street is a one lane (one lane in the eastbound direction) local roadway that is under City of Boston jurisdiction and traverses the study area in a general east-west orientation between its western terminus at Washington Street and its eastern terminus at Broad Street. Sidewalks are provided continuously along both sides of Water Street throughout the study area. Land use along Water Street consists primarily of a mix of office and commercial uses.

2.2.2.2 Intersections

The following section provides a description of the roadway geometry, traffic control, parking restrictions and land uses for each study area location as observed in October and November 2014.

1. Congress Street at North Street and Boston City Hall Driveway - North Street and the Boston City Hall driveway approach meet Congress Street from the east and west, respectively, to form a four-way intersection that operates under traffic signal control. The Boston City Hall driveway provides a single approximately 17-foot wide driveway approach to this location. The North Street westbound approach provides an approximately 11-foot wide exclusive left-turn lane and an approximately 12-foot wide general purpose travel lane. The Congress Street northbound approach provides three approximately 11-foot wide general purpose travel lanes. The Congress Street southbound approach provides three approximately 11-foot wide general purpose travel lanes. Directional flow of traffic on all four intersection approaches is separated by a raised median island. Crosswalks are provided along all four approaches to this intersection. The traffic signal at this location operates under a four-phase signal cycle with a lead phase provided for southbound traffic

on Congress Street and an exclusive pedestrian phase. Land use in the vicinity of this intersection consists primarily of a mix of office and commercial uses as well as Boston City Hall.

2. Congress Street at State Street and Devonshire Street – Congress Street meets State Street and Devonshire Street from the north and south to form this five-way intersection that operates under traffic signal control. The State Street westbound approach provides an approximately 12-foot wide exclusive left-turn lane and two approximately 12-foot wide general purpose travel lanes. An approximately 8-foot wide parking aisle for taxi delivery is also provided on this approach. The Congress Street northbound approach provides two approximately 10-foot wide general purpose travel lanes from which turning movements are prohibited. The Congress Street southbound approach provides an approximately 11-foot wide through lane, an approximately 11-foot wide shared through/right-turn lane and an approximately 11-foot wide exclusive right-turn lane. Directional travel on Congress Street is separated by a raised median island north of State Street and a painted double-yellow centerline south of State Street. Crosswalks are provided along all five approaches to this intersection. The traffic signal at this location operates under a three-phase signal cycle with an exclusive pedestrian phase provided. Land use in the vicinity of this intersection consists primarily of a mix of office and commercial uses.

3. Congress Street at Kilby Street – Kilby Street meets Congress Street from the south to form a three-way intersection that operates under STOP-sign control. The Congress Street westbound approach provides three approximately 11-foot wide general purpose travel lanes. The Kilby Street northbound approach provides an approximately 8-foot wide exclusive bicycle lane, an approximately 12-foot wide left-turn only lane and an approximately 8-foot wide parking lane on the eastern side of the roadway. The Kilby Street northbound approach operates under STOP-sign control. Crosswalks are provided across the northbound and westbound approaches to this intersection. Land use in the vicinity of this intersection consists primarily of a mix of office and commercial space.

4. Devonshire Street at Quaker Lane – Quaker Lane intersects Devonshire Street from the east to form a three-way intersection that operates under stop control. The Devonshire Street southbound approach provides a single approximately 12-foot wide general purpose travel lane that is designated as a shared roadway with bicycle traffic with painted sharrows provided along the corridor. The Quaker Lane westbound approach to Devonshire Street is approximately 10 feet in total width and accommodates two-way travel. On-street parking is provided along both sides of Devonshire Street in the vicinity of this intersection. Land use in the vicinity of this intersection consists of a mix of office and commercial uses.

5. Congress Street at Quaker Lane (north) – Quaker Lane intersects Congress Street from the west to form a three-way intersection that operates under stop control. The Congress Street northbound and southbound approaches provide two approximately 10-foot wide general purpose travel lanes in each direction that are separated by a double-yellow centerline. Quaker Lane provides an approximately 16-foot wide approach in the

eastbound direction that accommodates both entering and exiting traffic flows. On-street parking is prohibited along both sides of Congress Street and along Quaker Lane in the vicinity of this intersection. Land use in the vicinity of this intersection is primarily office uses.

6. Congress Street at Quaker Lane (south) and Exchange Place – Quaker Lane and Exchange Place intersect Congress Street from the west and east, respectively, to form a four-way offset intersection that operates under stop control. The Congress Street northbound and southbound approaches provide two approximately 10-foot wide general purpose travel lanes in each direction that are separated by a double-yellow centerline. Quaker Lane provides an approximately 14-foot wide approach in the eastbound direction that accommodates both entering and exiting traffic flows. Exchange Place provides an approximately 25-foot wide approach that accommodates one-way traffic in the westbound direction. On-street parking is prohibited along both sides of Congress Street in the vicinity of this intersection. Land use in the vicinity of this intersection is primarily office uses.

7. Congress Street at Hawes Street – Hawes Street intersects Congress Street from the east to form a three-way intersection that operates under stop control. The Congress Street northbound and southbound approaches provide two approximately 10-foot wide general purpose travel lanes in each direction that are separated by a double-yellow centerline. Hawes Street provides an approximately 8-foot wide approach in the westbound direction that accommodates one-way westbound traffic flows. On-street parking is prohibited along both sides of Congress Street and along Hawes Street in the vicinity of this intersection. Land use in the vicinity of this intersection is primarily office uses.

8. Washington Street at Water Street – Water Street and a parking garage exit driveway intersect Washington Street from the east and west, respectively, to form a four-way intersection that operates under stop control. The parking garage exit driveway provides two separate exit driveways that are controlled by mechanical exit bars. The Washington Street northbound approach provides an approximately 12-foot wide through lane and an approximately 12-foot wide exclusive right-turn lane. A painted crosswalk is provided across the westbound Water Street approach to this intersection. Land use in the vicinity of this intersection includes a mix of office and commercial uses as well as a parking garage.

9. Devonshire Street at Water Street – Water Street intersects Devonshire Street from the east and west to form a four-way intersection that operates under traffic signal control. The Water Street eastbound approach provides a single approximately 16-foot wide general purpose travel lane. On-street parking is allowed along the southern side of Water Street at this intersection. The Devonshire Street southbound approach provides an approximately 13-foot wide general purpose travel lane that is designated as a shared roadway with bicycle traffic with painted sharrows provided along the corridor. The traffic signal at this location operates under a two-phase signal cycle. Crosswalks are provided across all four

intersection approaches with concurrent pedestrian signal phasing provided to accommodate pedestrian crossings at this intersection. Land use in the vicinity of this intersection consists of a mix of office and commercial uses.

10. Congress Street at Water Street and Post Office Square – Water Street intersects Congress Street and Post Office Square from the east and west to form a five-way intersection that operates under traffic signal control. The Water Street eastbound approach provides an approximately 12-foot wide exclusive left-turn lane and an approximately 12-foot wide shared through/right-turn lane. On-street parking is provided along both sides of Water Street at this location. The Congress Street southbound approach provides two approximately 10-foot wide general purpose travel lanes. On-street parking is prohibited along both sides of Congress Street at this location. The Post Office Square northbound approach provides two approximately 12-foot wide general purpose travel lanes and an approximately 6-foot wide bicycle lane. On-street parking is provided along the western side of the Post Office Square northbound approach to this location. The traffic signal at this location operates under a two-phase signal cycle with concurrent pedestrian signal phasing provided to accommodate pedestrian crossings at this intersection. Crosswalks are provided across all four intersection approaches to this intersection. Land use in the vicinity of this intersection consists primarily of a mix of office and commercial uses.

11. Devonshire Street at Milk Street – Milk Street intersects Devonshire Street from the east and west to form a four-way intersection that operates under traffic signal control. The Milk Street eastbound approach provides two approximately 11-foot wide general purpose travel lanes, with the inside lane designated as a shared roadway with bicycle traffic with painted sharrows provided. On-street parking is prohibited along both sides of Milk Street at this location. The Devonshire Street southbound approach provides a single approximately 18-foot wide general purpose travel lane that is designated as a shared roadway with bicycle traffic with painted sharrows provided. On-street parking is provided along the western side of Devonshire Street at this location. The traffic signal at this location operates under a two-phase signal cycle with concurrent pedestrian signal phasing provided to accommodate pedestrian crossings at this intersection. Crosswalks are provided across all four intersection approaches to this intersection. Land use in the vicinity of this intersection consists primarily of a mix of office and commercial uses.

12. Congress Street at Milk Street – Milk Street intersects Congress Street from the east and west to form a four-way intersection that operates under traffic signal control. The Milk Street eastbound approach provides two approximately 11-foot wide general purpose travel lanes and an approximately 11-foot wide exclusive right-turn lane. On-street parking is prohibited along both sides of Milk Street at this location. The Congress Street southbound approach provides an approximately 11-foot wide exclusive left-turn lane, two approximately 10-foot wide through lanes and an approximately 11-foot wide exclusive right-turn lane. On-street parking is prohibited along both sides of Congress Street at this location. An approximately 6-foot wide exclusive bicycle lane is provided along Congress

Street in the southbound direction. The traffic signal at this location operates under a two-phase signal cycle with concurrent pedestrian signal phasing provided to accommodate pedestrian crossings at this intersection. Crosswalks are provided across all four intersection approaches to this intersection. Land use in the vicinity of this intersection consists primarily of a mix of office and commercial uses.

13. Pearl Street at Milk Street – Milk Street intersects Pearl Street from the east and west to form a four-way intersection that operates under traffic signal control. The Milk Street eastbound approach provides an approximately 16-foot wide exclusive left-turn lane that is designated as a shared roadway with bicycle traffic with painted sharrows provided, an approximately 13-foot wide through lane and an approximately 6-foot wide exclusive bicycle lane. On-street parking is prohibited along the Milk Street eastbound approach to this intersection. The Pearl Street northbound approach provides an approximately 10-foot wide general purpose travel lane and an approximately 5-foot wide bicycle lane. On-street parking is provided along the western side of Pearl Street at this location. A Hubway shared bicycle station is provided along the eastern side of Pearl Street at this location. The traffic signal at this location operates under a two-phase signal cycle with concurrent pedestrian signal phasing provided to accommodate pedestrian crossings at this intersection. Crosswalks are provided across all four intersection approaches to this intersection. Land use in the vicinity of this intersection consists primarily of a mix of office and commercial uses.

2.2.3 Traffic Volumes

To determine existing traffic-volume demands and flow patterns within the study area, manual turning movement counts (TMCs) and vehicle classification counts were completed in October and November 2014. The TMCs were conducted at the study intersections during the weekday morning (7:00 to 9:00 a.m.) and weekday evening (4:00 to 6:00 p.m.) peak periods, the critical time periods for both the Project and the adjacent roadway network.

Seasonal Adjustments

In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, MassDOT weekday seasonal factors for Group 6 roadways (urban arterials, collectors and rural arterials, the MassDOT functional classification for the study area roadways) were reviewed.[1] Based on a review of this data, it was determined that traffic volumes for the months of October and November are approximately 8 and 3 percent above average-month conditions, respectively. In order to provide a conservative (above average) analysis

[1] MassDOT Traffic Volumes for the Commonwealth of Massachusetts; 2011 Weekday Seasonal Factors, Group 6 – Urban Arterials, Collectors and Rural Arterials.

scenario, the traffic volumes collected as a part of this study were not adjusted downward to average-month conditions. The 2014 Existing weekday morning and weekday evening peak-hour traffic volumes are depicted on Figures 2-3 and 2-4, respectively.

A review of the peak-period traffic counts indicates that the weekday morning peak hour generally occurs between 8:00 and 9:00 a.m., while the weekday evening peak hour generally occurs between 5:00 and 6:00 p.m. In all instances, the individual peak hours of intersection traffic were utilized for analysis purposes.

2.2.4 Pedestrian and Bicycle Facilities

A comprehensive field inventory of pedestrian and bicycle facilities was performed in October and November 2014. The field inventory consisted of a review of the location of sidewalks and pedestrian crossing locations along the study roadways and at the study intersections, as well as the location of existing bicycle facilities. Pedestrian and bicycle counts were conducted at each of the study intersections during weekday morning (7:00 to 9:00 a.m.) and weekday evening (4:00 to 6:00 p.m.) peak periods.

Figures 2-5 and 2-6 depict the 2014 Existing weekday morning and weekday evening peak hour pedestrian volumes, respectively. In general, pedestrian flows along the Congress Street corridor are more heavily distributed in the southbound direction towards Post Office Square during the weekday morning peak hour, and more heavily distributed in the northbound direction away from Post Office Square during the weekday evening peak hour.

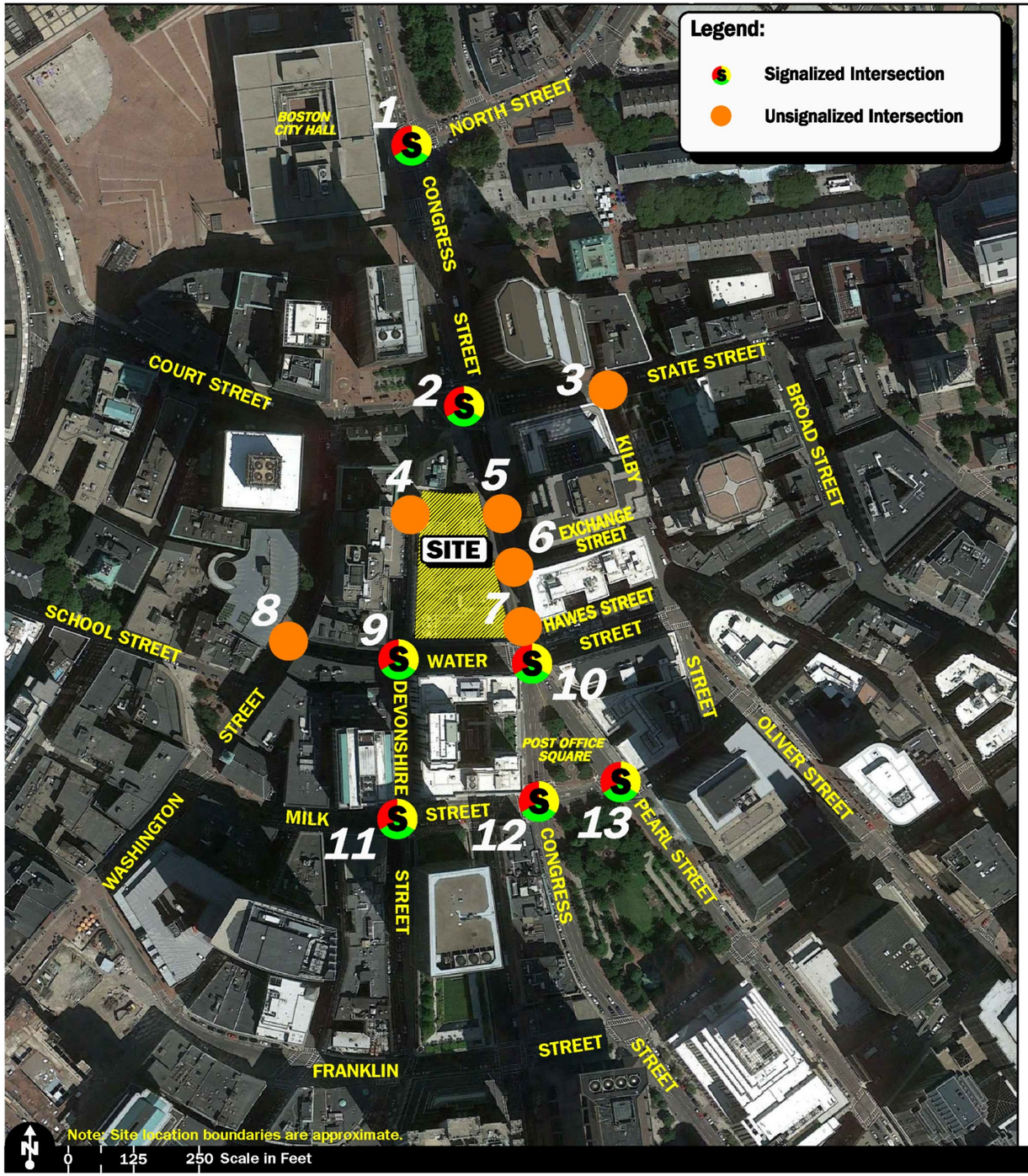
2.2.4.1 Pedestrian Facilities

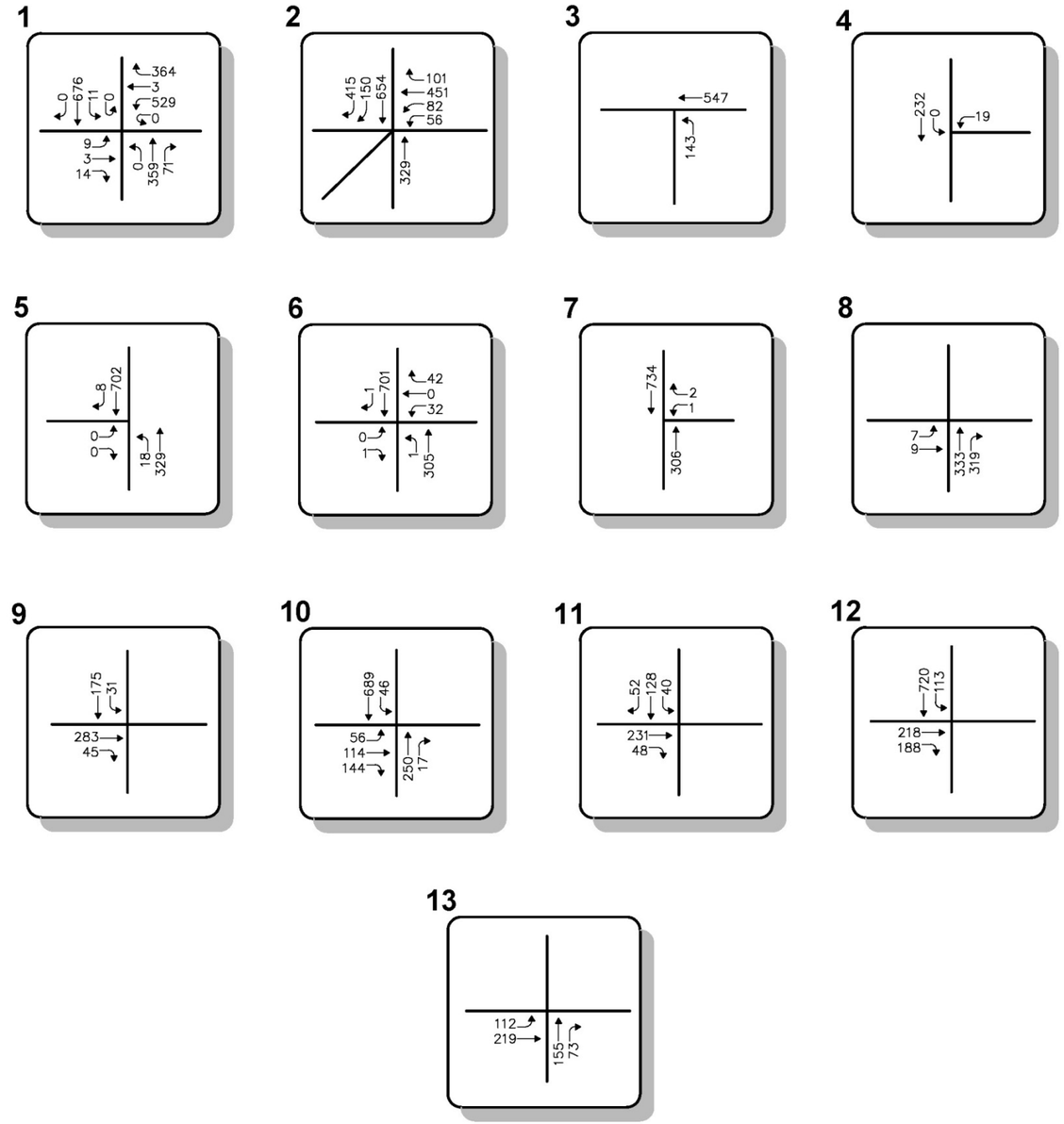
Sidewalks are generally provided along both sides of each study area roadway proximate to the Project site, with painted crosswalks provided at signalized and unsignalized intersections within the study area. At the majority of study area locations, signalized pedestrian crossings occur concurrent with vehicular movements, with the exceptions of the intersections of Congress Street with North Street and State Street.

2.2.4.2 Bicycle Facilities

Within the study area, bicycle accommodations are provided along segments of Congress Street, Devonshire Street, Milk Street and Pearl Street. Specifically, sharrows are provided along segments of each of these corridors alerting motorists to share the corridor with bicycle traffic. Additionally, segments of Congress Street and Pearl Street, south of Water Street, provide exclusive bicycle lanes within the study area.

Within close proximity of the Project site, the Hubway bicycle sharing program provides two bicycle stations along the eastern side of Post Office Square south of Milk Street, and along the northern side of Court Street, immediately west of the intersection of Devonshire Street and State Street. The Hubway bike sharing program was introduced in the City of



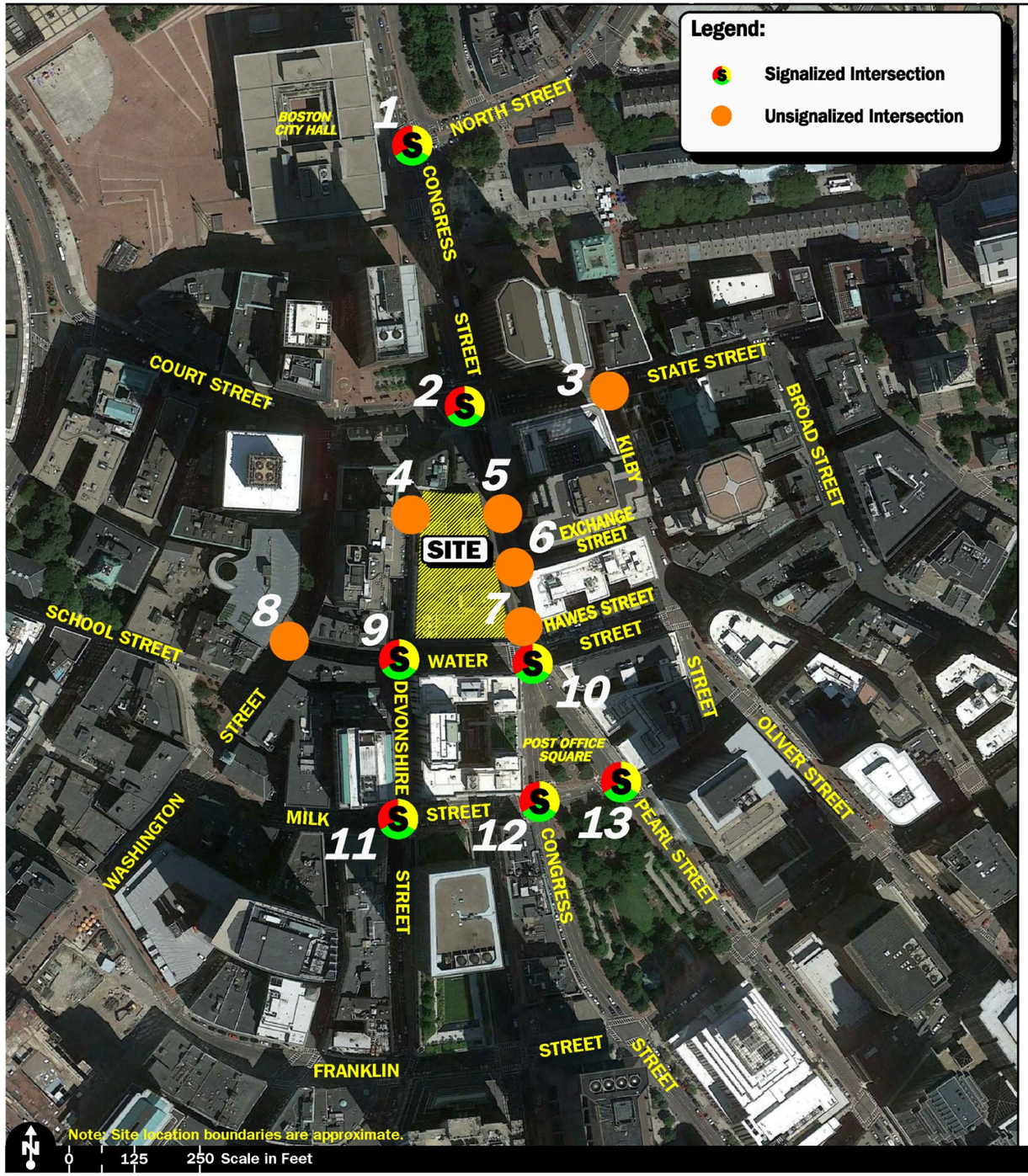


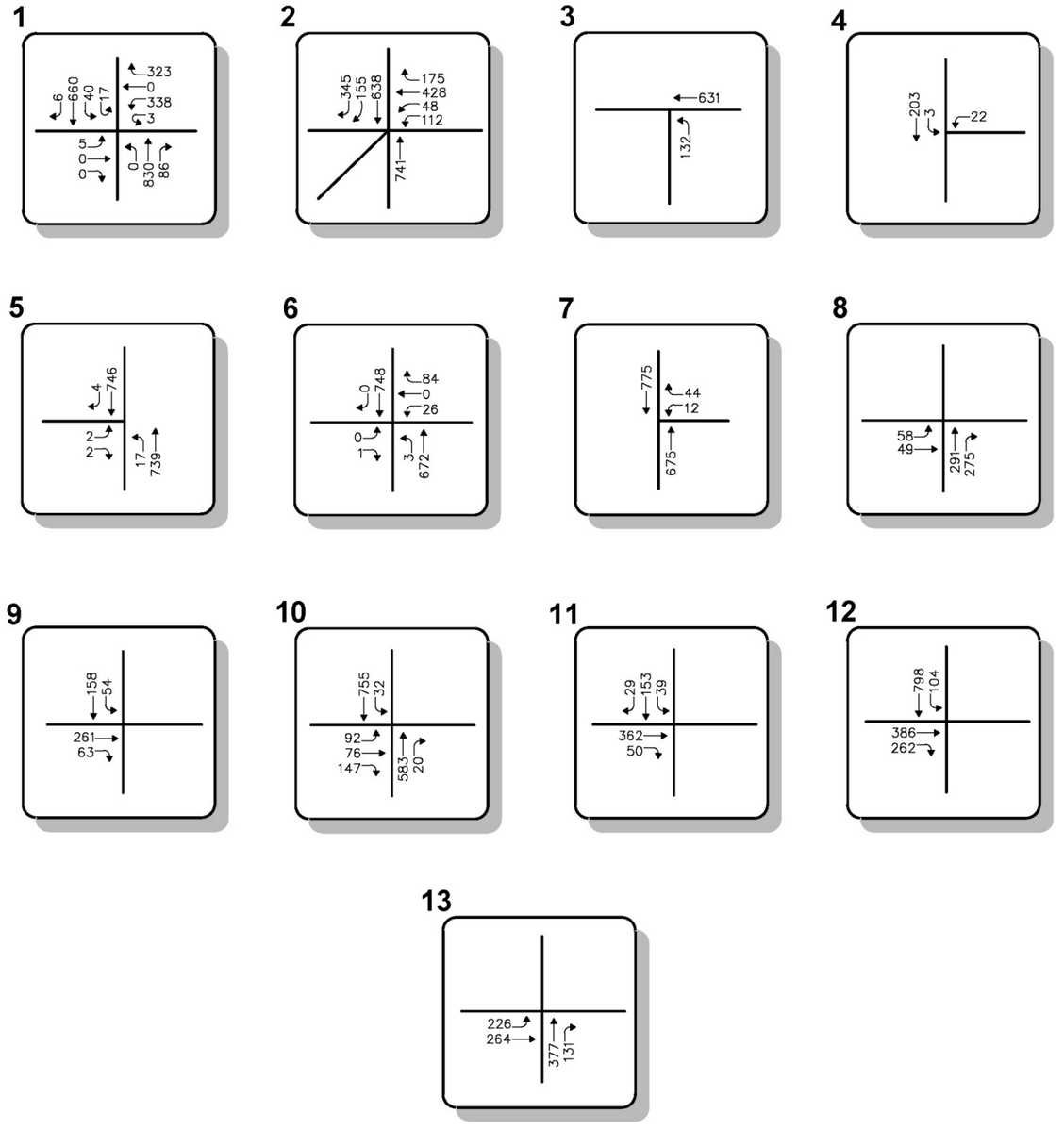
Note: Imbalances exist due to intersection and curb cuts not depicted on this figure.

Congress Square Boston, Massachusetts

Figure 2-3

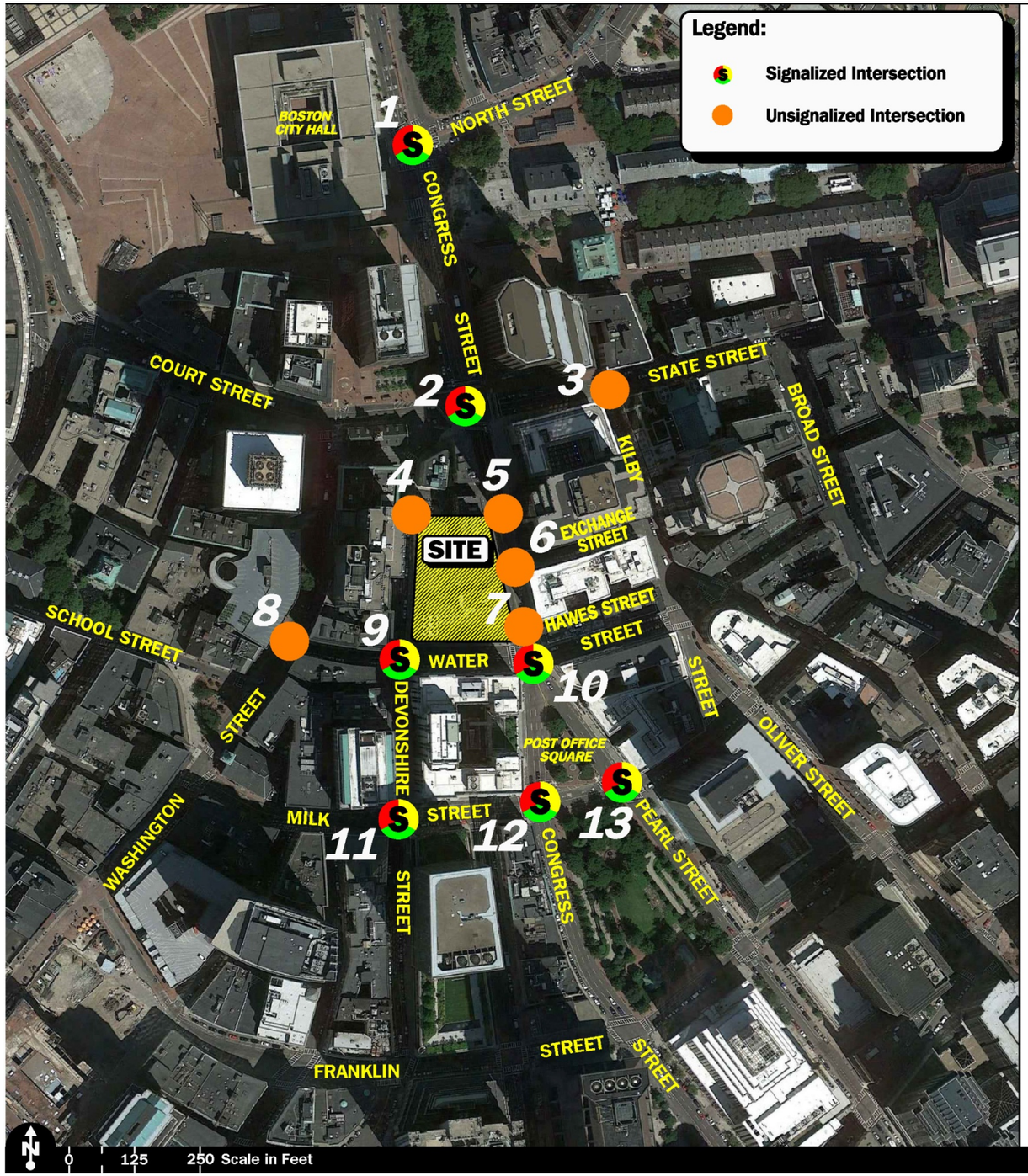
2014 Existing Weekday Morning Peak Hour Traffic Volumes

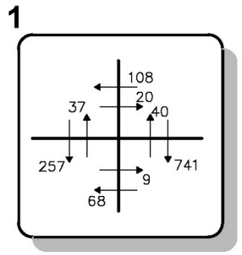


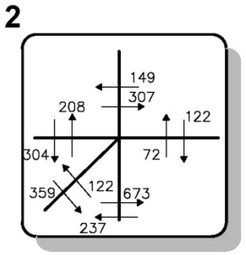


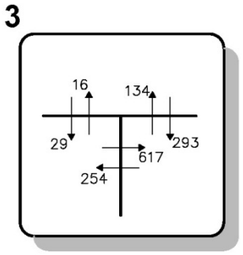
Note: Imbalances exist due to intersection and curb cuts not depicted on this figure.

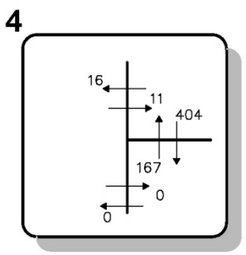
Congress Square Boston, Massachusetts

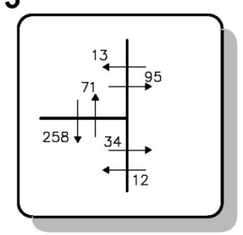


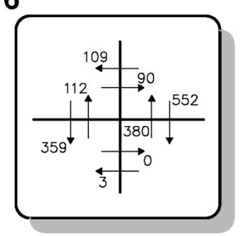


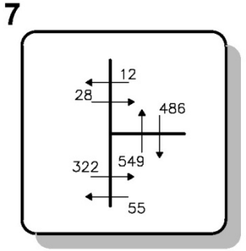


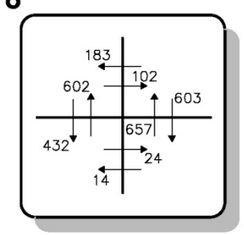


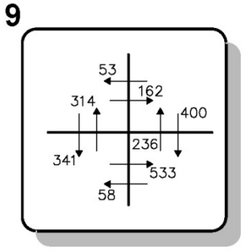


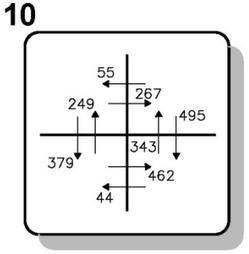


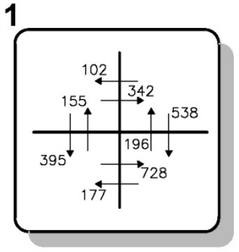


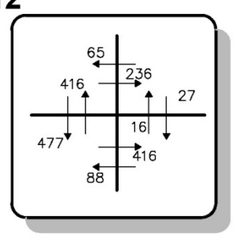


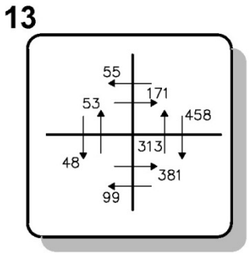








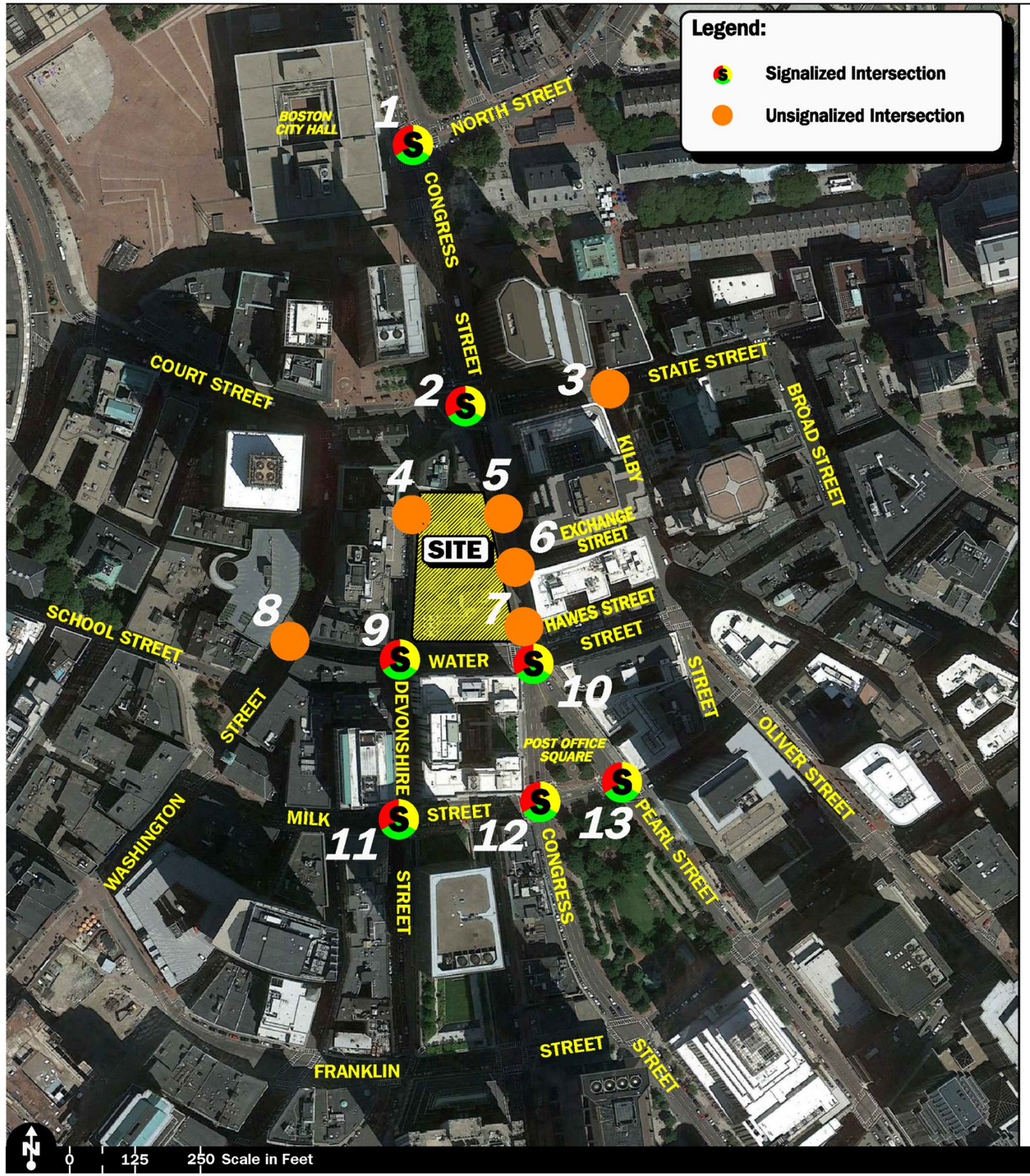


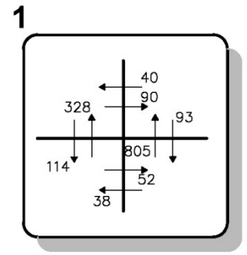


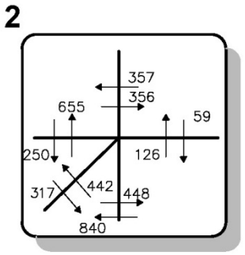
Congress Square Boston, Massachusetts

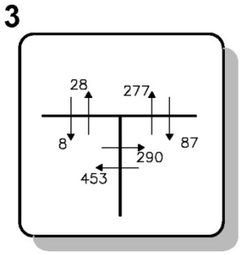
Figure 2-5

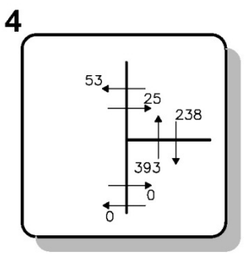
2014 Existing Weekday Morning Peak Hour Pedestrian Volumes

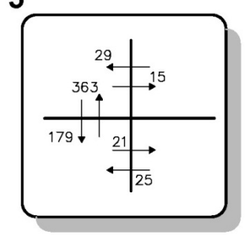


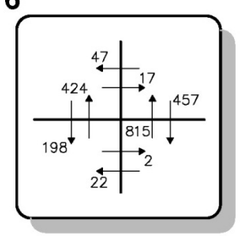


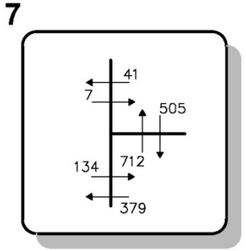


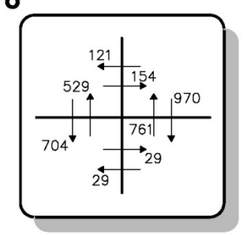


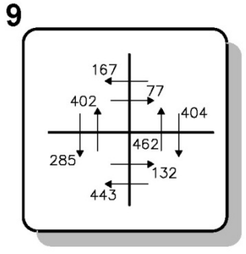


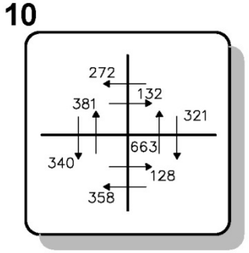


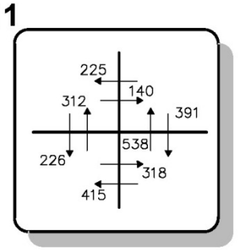


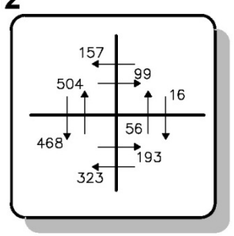


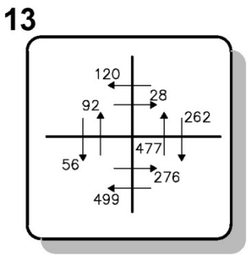












Congress Square Boston, Massachusetts

Figure 2-6

2014 Existing Weekday Evening Peak Hour Pedestrian Volumes

Boston in July 2011 and included 600 bicycles at 60 stations located throughout the City. Since its introduction, the program has expanded to include over 140 stations and in excess of 1,300 bicycles, with the service area extended to Brookline, Cambridge and Somerville.

2.2.5 Public Transportation

The Project site is ideally situated in close proximity to transit service offered by the Massachusetts Bay Transit Authority (MBTA). The Project site is served by a number of public transportation services, including bus service and subway service via the Orange, Blue, Red and Green Lines. The State Street Station Orange Line/Blue Line headhouses are located on the southwest corner of the intersection of Devonshire Street with Water Street, as well as the northwest corner of Devonshire Street and Court Street, immediately adjacent to the Project site. In addition, the Government Center Station, which provides access to the Green Line, is located in close walking distance to the Project site at City Hall Plaza. As discussed in subsequent sections of this report, the Government Center station is currently closed to the public as part of ongoing improvements to make the station fully accessible to all MBTA patrons in accordance with the Americans with Disabilities Act (ADA). Lastly, Red Line service is accessible via the Downtown Crossing Station which is within walking distance of the site and also available via connections from the Orange Line at the State Street Station.

Figure 2-7 depicts the available public transportation services in the area. The following sections describe the available public transportation services within the study area that serve the Project site, with detailed system maps, schedules and fare information provided in Appendix C.

2.2.5.1 Bus Service

The MBTA operates the following six public bus routes within the study area:

- ***Route 4: North Station – Tide Street*** – via World Trade Center.
- ***Route 92: Assembly Square Mall - Downtown*** – via Main Street.
- ***Route 93: Sullivan Square Station - Downtown*** – via Bunker Hill Street.
- ***Route 352: Burlington Express - Boston*** – via Route 128 and I-93.
- ***Route 354: Woburn Express - Boston*** – via Woburn Square and I-93.

Table 2-1 summarizes the MBTA bus service capacity and ridership information as provided by the Central Transportation Planning Staff (CTPS) for the five public bus routes serving the study area, and indicates reserve capacity is available to accommodate additional passenger loadings associated with the Project.

Congress Square Boston, Massachusetts

Figure 2-7
Public Transportation Map

Table 2-1 MBTA Bus Service and Capacity

Bus Route Number	Bus Route	Weekday Morning Peak Period			Weekday Evening Peak Period		
		Peak Period Headway (minutes)	Ridership[a] (Inbound and Outbound Total)	Maximum Load Capacity[b] (Inbound and Outbound Total)	Peak Period Headway (minutes)	Ridership[a] (Inbound and Outbound Total)	Maximum Load Capacity[b] (Inbound and Outbound Total)
4	North Station – Tide Street	13	226	1,216	20	170	912
92	Assembly Square Mall – Downtown	15	324	1,064	15	335	1,216
93	Sullivan Square Station – Downtown	7	1,191	2,280	8	1,069	2,204
352	Burlington Express – Boston	20	454	912	20	377	912
354	Woburn Express – Boston	20	307	912	15	426	1,216

Source: MBTA/CTPS.

[a]Ridership for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.)

[b]Passenger capacity for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.). Maximum load capacity is equal to 76 passengers.

2.2.5.2 Subway Service

The Project site and the immediate study area is served by MBTA subway service provided by way of both the Orange and Blue Lines. The State Street Station Orange Line/Blue Line headhouse is located on the southwest corner of Devonshire Street and Water Street, on the opposite intersection quadrant of the Project site. Connections to the MBTA Red Line and Green Line can be made at Downtown Crossing or Haymarket, respectively. Additionally, connections to the MBTA Commuter Rail at North Station can be made via the Orange Line, located two stops from the State Street Station.

Table 2-2 summarizes the service capacity and ridership information for the Orange and Blue Lines at State Street Station, and indicates reserve capacity is available to accommodate additional passenger loadings associated with the Project.

Table 2-2 MBTA State Station Orange and Blue Line Service and Capacity

Subway Line	Peak Period Headway (Minutes)	Policy Load Capacity (Passengers)	Crush Load Capacity (Passengers)	Ridership in Passengers	
				Weekday Morning Peak-Period	Weekday Evening Peak-Period
Orange Line:	4 – 5 mins.				
Inbound		6,681	11,424	13,634	5,140
Outbound		6,681	11,424	4,911	11,860
Total		13,362	22,848	18,545	17,000
Blue Line:	5 -9 mins.				
Inbound		2,280	3,480	2,460	859
Outbound		2,280	3,480	404	2,023
Total		4,560	6,960	2,864	2,882

Source: MBTA/CTPS.

[a]Ridership for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.).

[b]Passenger capacity for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.).

2.2.5.3 Commuter Rail Service

As stated previously, efficient connections between the Project site and the MBTA Commuter Rail systems at both South Station and North Station is provided via the Orange Line from State Street Station. The Orange Line provides a direct connection to North Station, with access from South Station available via a transfer from the Red Line at Downtown Crossing. North Station is served by four of the 12 MBTA Commuter Rail lines:

- Newburyport/Rockport
- Haverhill

- Lowell
- Fitchburg

South Station is served by the remaining eight MBTA Commuter Lines:

- Framingham/Worcester
- Needham
- Franklin
- Providence/Stoughton
- Fairmount
- Plymouth/Kingston
- Middleborough/Lakeville
- Greenbush

Table 2-3 and Table 2-4 summarize the service capacity and ridership information for the Commuter Rail Lines that serve North Station and South Station. As shown, within the two-hour commuter service period, the majority of commuter rail lines provide excess capacity during peak commuter hours. It was noted that there are trains that currently operate over their service capacity resulting in passengers standing or finding other accommodations within the train. However, reserve capacity is afforded within the overall Commuter Rail system serving North Station and South Station to accommodate additional ridership, with passengers shifting to either an earlier or later train as work schedules permit.

Table 2-3 MBTA South Station Commuter Rail Service and Capacity

Commuter Rail Line	Weekday Morning Peak Period		Weekday Evening Peak Period	
	Ridership[a]	Maximum Load Capacity[b]	Ridership[a]	Maximum Load Capacity[b]
Framingham/Worcester:				
Inbound	5,229	7,644	244	6,798
Outbound	359	7,644	4,710	6,798
Total	5,588	15,288	4,954	13,596
Needham:				
Inbound	2,384	3,264	107	4,740
Outbound	204	3,264	2,227	4,740
Total	2,584	6,528	2,334	9,580
Franklin:				
Inbound	4,151	8,820	142	7,560
Outbound	107	8,820	4,007	7,560
Total	4,258	17,640	4,149	15,120
Providence/Stoughton:				
Inbound	8,848	12,720	611	9,096
Outbound	492	12,720	7,568	9,096
Total	9,340	25,440	8,179	18,192
Fairmont:				
Inbound	301	2,280	24	2,280
Outbound	11	2,280	326	2,280
Total	312	4,560	350	4,560
Plymouth/Kingston:				
Inbound	2,614	4,938	30	4,056
Outbound	43	4,938	2,136	4,056
Total	2,657	9,876	2,166	8,112
Middleborough/Lakeville:				
Inbound	1,791	3,792	158	3,792
Outbound	133	3,792	1,953	3,792
Total	1,924	7,584	2,111	7,584
Greenbush:				
Inbound	2,035	4,410	58	4,410
Outbound	17	4,410	1,903	4,410
Total	2,052	8,820	1,961	8,820

Source: CTPS counts, Spring 2012.

[a]Ridership for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.).

[b]Passenger capacity for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.).

Table 2-4 MBTA North Station Commuter Rail Service and Capacity

Commuter Rail Line	Weekday Morning Peak Period		Weekday Evening Peak Period	
	Ridership[a]	Maximum Load Capacity[b]	Ridership[a]	Maximum Load Capacity[b]
Newburyport/Rockland:				
Inbound	5,436	5,600	333	5,600
Outbound	405	5,600	4,890	5,600
Total	5,841	11,200	5,223	11,200
Haverhill:				
Inbound	2,834	2,240	98	1,680
Outbound	109	2,240	2,374	1,680
Total	2,943	4,480	2,472	3,360
Lowell:				
Inbound	3,953	2,520	323	2,940
Outbound	236	2,520	3,329	2,940
Total	4,189	5,040	3,652	5,880
Fitchburg:				
Inbound	2,858	2,100	554	2,100
Outbound	569	2,100	2,543	2,100
Total	3,427	4,200	3,097	4,200

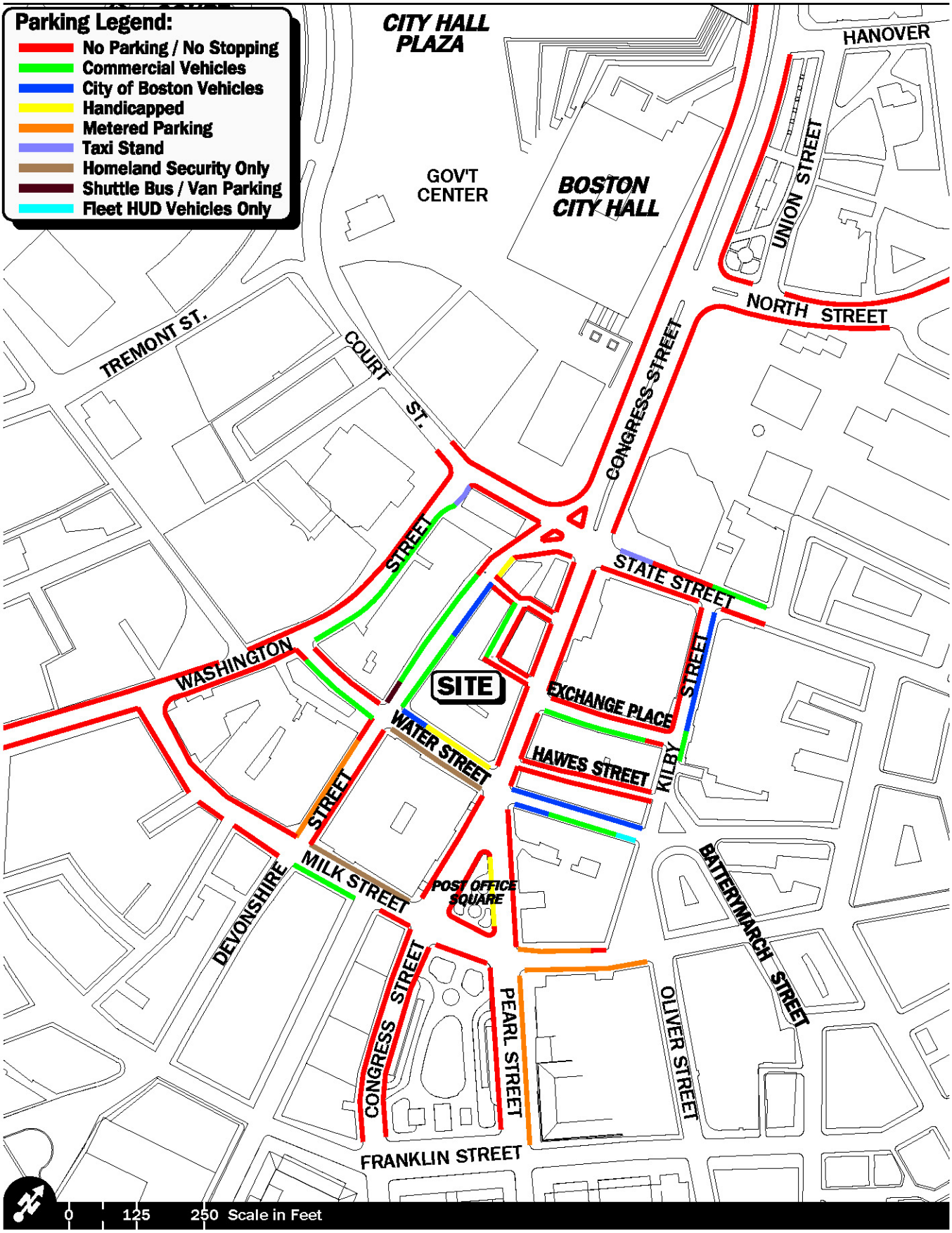
Source: CTPS counts, Spring 2012.

[a]Ridership for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.).

[b]Passenger capacity for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.).

2.2.6 Parking

To assess the availability of parking proximate to the Project site, an inventory of public parking located within the study area was conducted in November 2014. The inventory included publicly available parking located on-street or within surface parking lots or garages. Within the study area, parking is primarily provided within area parking garages, with limited on-street or surface lot parking provided. As previously noted, consistent with the current use of the site, parking demand for the Project will be served via off-site private parking facilities. Given their proximity to the Project site, it is anticipated that the majority of site-generated parking demand will be accommodated within the Post Office Square subsurface parking garage or the 1 Devonshire Street parking garage located proximate to the Project site. Additional area parking facilities are also provided within close proximity to the Project site. On-street parking restrictions and available on-street parking within the study area are depicted on Figure 2-8. Table 2-5 summarizes the inventory of available off-street public parking spaces within the study area.



Congress Square Boston, Massachusetts

Figure 2-8
On-Street Curbside Parking Inventory

Table 2-5 Existing Area Public Parking Facilities

Parking Facility/Address	Number of Spaces
Garages:	
Garage at Post Office Square – Zero Post Office Square	1,400
Pi Alley Garage – 275 Washington Street	500
Icon Parking Systems - 1 Devonshire Street	175
LAZ Parking – 33 Arch Street	850
One Parking Inc. – 1 Federal Street	240
TOTAL	3,165

2.3 Future Conditions

Existing conditions in the study area were projected to the year 2021, which reflects a seven-year planning horizon consistent with state traffic study guidelines. Independent of the Project, conditions on the transportation system in the year 2021 under No-Build conditions are influenced by changes in the transportation system resulting from: i) specific development projects by others; ii) population and demographic shifts; and iii) capital investments made by the local, state and/or federal government or private interests. Anticipated Project-generated trips superimposed upon the 2021 No-Build condition transportation network reflect 2021 Build conditions with the Project.

2.3.1 Future Growth

Future growth is a function of the expected land development in the immediate area and the surrounding region. Several methods can be used to estimate this growth. A procedure frequently employed estimates an annual percentage increase in traffic growth and applies that percentage to all volumes under study. The drawback to such a procedure is that some volumes may actually grow at either a higher or a lower rate at particular intersections.

An alternative procedure identifies the location and type of planned development, estimates the trips that are to be generated, and assigns the resultant values to the area transportation network. This procedure produces a more realistic estimate of growth for local conditions; however, the drawback of this procedure is that potential growth in population and development external to the study area would not be accounted for in the projections.

To provide a conservative analysis framework, both procedures were used, the salient components of which are described below.

2.3.1.1 Specific Development by Others

The BTD was contacted in order to determine if there are any projects planned within the study area that would have an impact on future traffic conditions at the study area intersections. Based on these discussions, the following projects were identified for inclusion in this study:

- ***Government Center Garage Redevelopment.*** This project consists of the redevelopment of the Government Center Garage to include: approximately 651 apartment units; approximately 120 residential condominium units; an approximately 204-room hotel; approximately 82,500 sf of retail/restaurant space (37,602 sf existing and 44,898 sf new); and approximately 1,303,300 sf of office space (256,532 sf existing and 1,046,768 sf new). Additional traffic volumes expected to be generated by this development were obtained from the traffic study prepared for this project and have been included in the analysis of future 2021 No-Build and Build traffic conditions.

- ***Congress Square Office Space Occupancy.*** Under existing conditions, portions of the Congress Square redevelopment site that were previously occupied as office uses have been vacated resulting in an existing traffic generation that falls below the prior use of the site when fully occupied. For the purpose of this assessment, it is assumed that if the proposed Congress Square redevelopment project did not move forward the vacant office space within the Project would be leased to an office tenant consistent with the historical use of the site. In order to account for the additional traffic demand that would be associated with the full leasing of the existing buildings located on-site, trip generation calculations were performed based on the total number of employees at the site when data collection was conducted, as well as for the full occupancy of the total square footage of the office buildings. Based on these calculations, the additional traffic demand for the full occupancy of the site as an office use was determined and has been included in the analysis of future 2021 No-Build traffic conditions.

No other projects were identified at this time that are expected to impact future traffic volumes within the study area beyond the general background traffic growth rate.

2.3.1.2 General Background Traffic Growth

Traffic-volume data and historic traffic counts in the area were reviewed in order to determine general traffic growth trends. Based on a review of this data, it was determined that traffic volumes within the City of Boston have remained relatively stable over the past 10 years (i.e., none or nominal growth). In order to account for future traffic growth and presently unforeseen development within the study area, a 0.50 percent per year compounded annual background traffic growth rate was applied to the existing traffic volumes over the seven-year planning horizon.

2.3.1.3 Planned Transportation Improvements

The BTD was consulted in order to determine if there were any planned transportation improvement projects expected to be completed within the study area. Based on this consultation, the following improvement projects were identified:

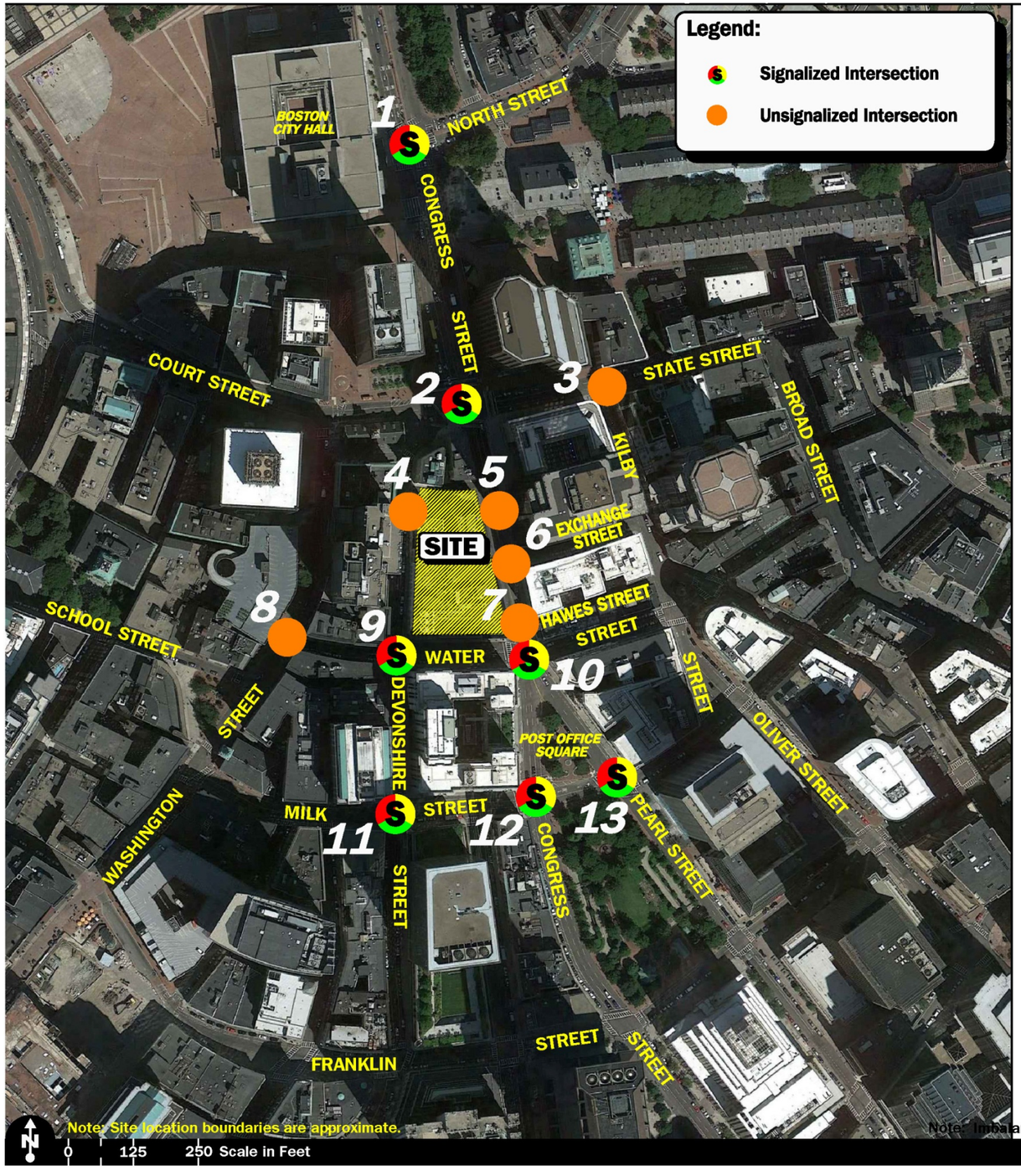
- *Government Center Station Improvements Project* – The MBTA is currently in the process of constructing improvements to the Government Center Station, including the Green Line and Blue Line stations as well as Cambridge Street and the Government Center Plaza, which will enhance Government Center Station, making it fully accessible to all MBTA passengers in compliance with the ADA. The project includes modifications to the plaza area adjacent to the new station entrances and exits to create a more accessible route to City Hall and the surrounding sidewalk system. In order to accommodate the improvements the Government Center Station has been closed since March 2014 with the construction expected to be completed in the fourth quarter of 2016.

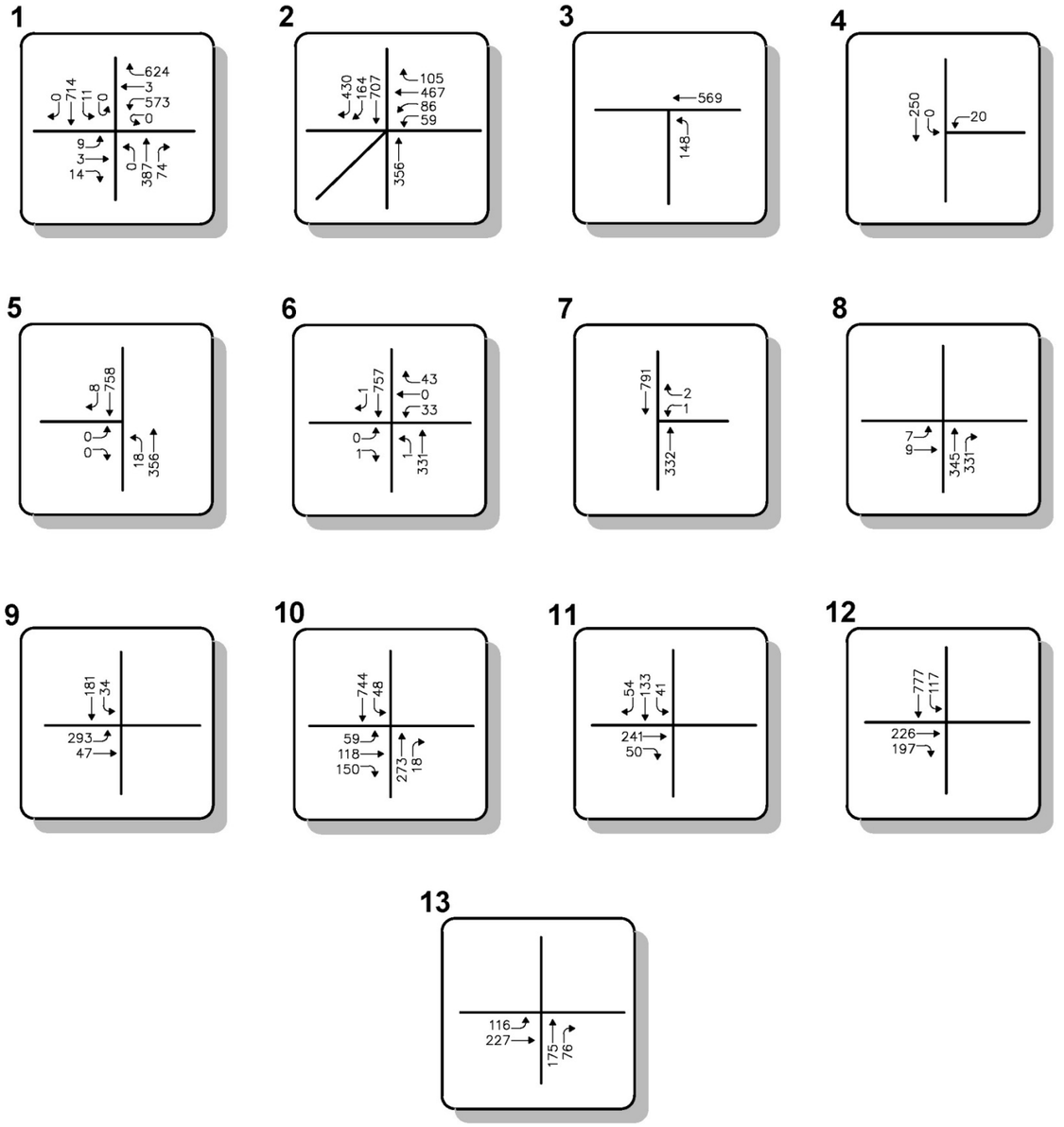
- *Haymarket Station Improvements Project* – In conjunction with the proposed redevelopment of the Government Center Garage, improvements are proposed to the Haymarket Station, including the integration of the Station's ingress and egress into the project's East Parcel public plaza. The project will reconfigure and optimize the MBTA Haymarket bus facility to better utilize the existing space for a new public plaza and pedestrian connector between Government Center and North Station.

No other roadway improvement projects aside from routine maintenance activities were identified to be planned within the study area at this time.

2.3.1.4 No-Build Traffic Volumes

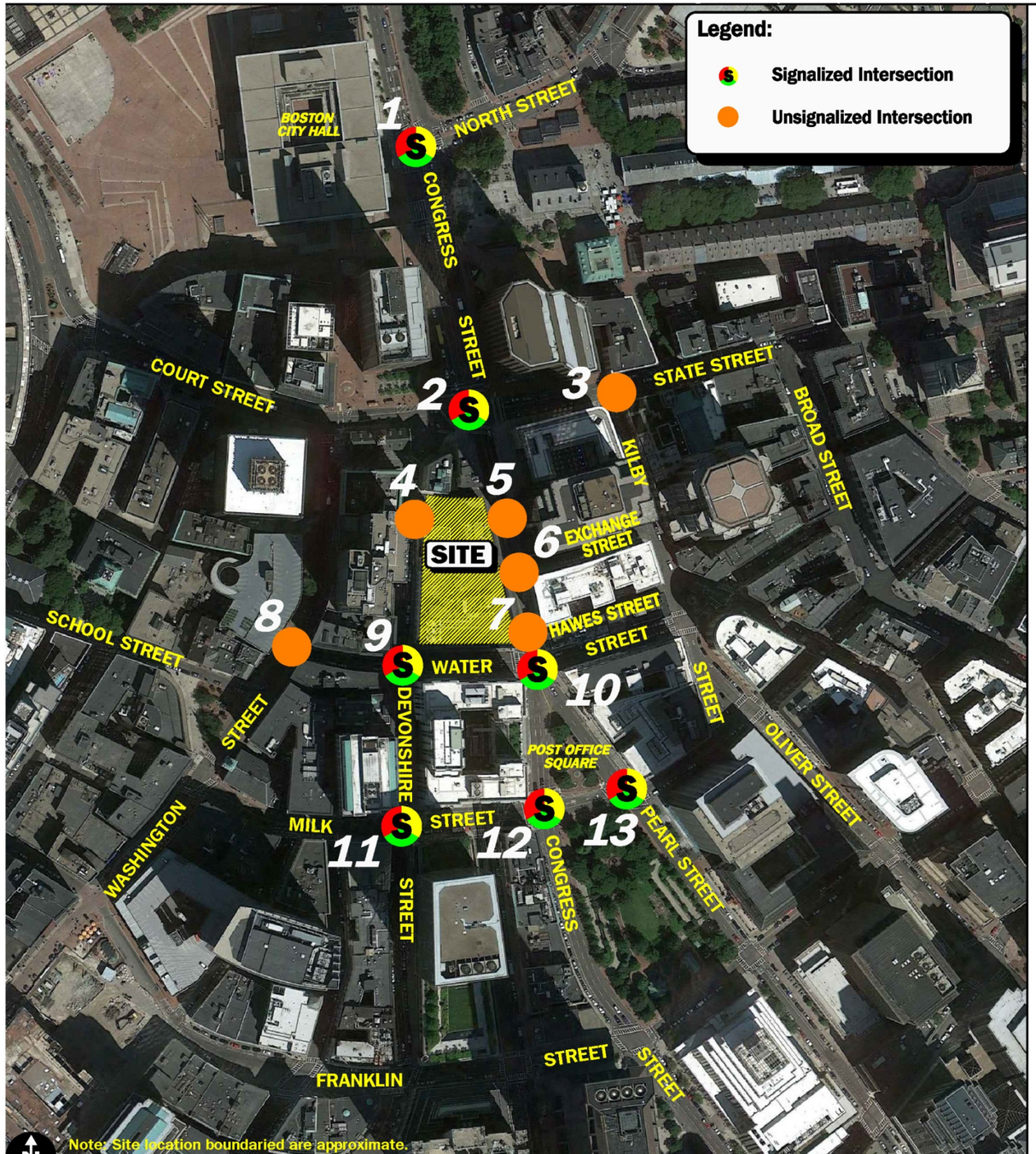
The 2021 No-Build condition peak-hour traffic-volume networks were developed by increasing the 2014 Existing peak-hour traffic volumes by 0.50 percent per year between 2014 and 2021 and then superimposing the peak-hour traffic volumes expected to be generated by the previously identified development projects. The resulting 2021 No-Build condition weekday morning and weekday evening peak-hour traffic-volume networks are shown on Figures 2-9 and 2-10, respectively.

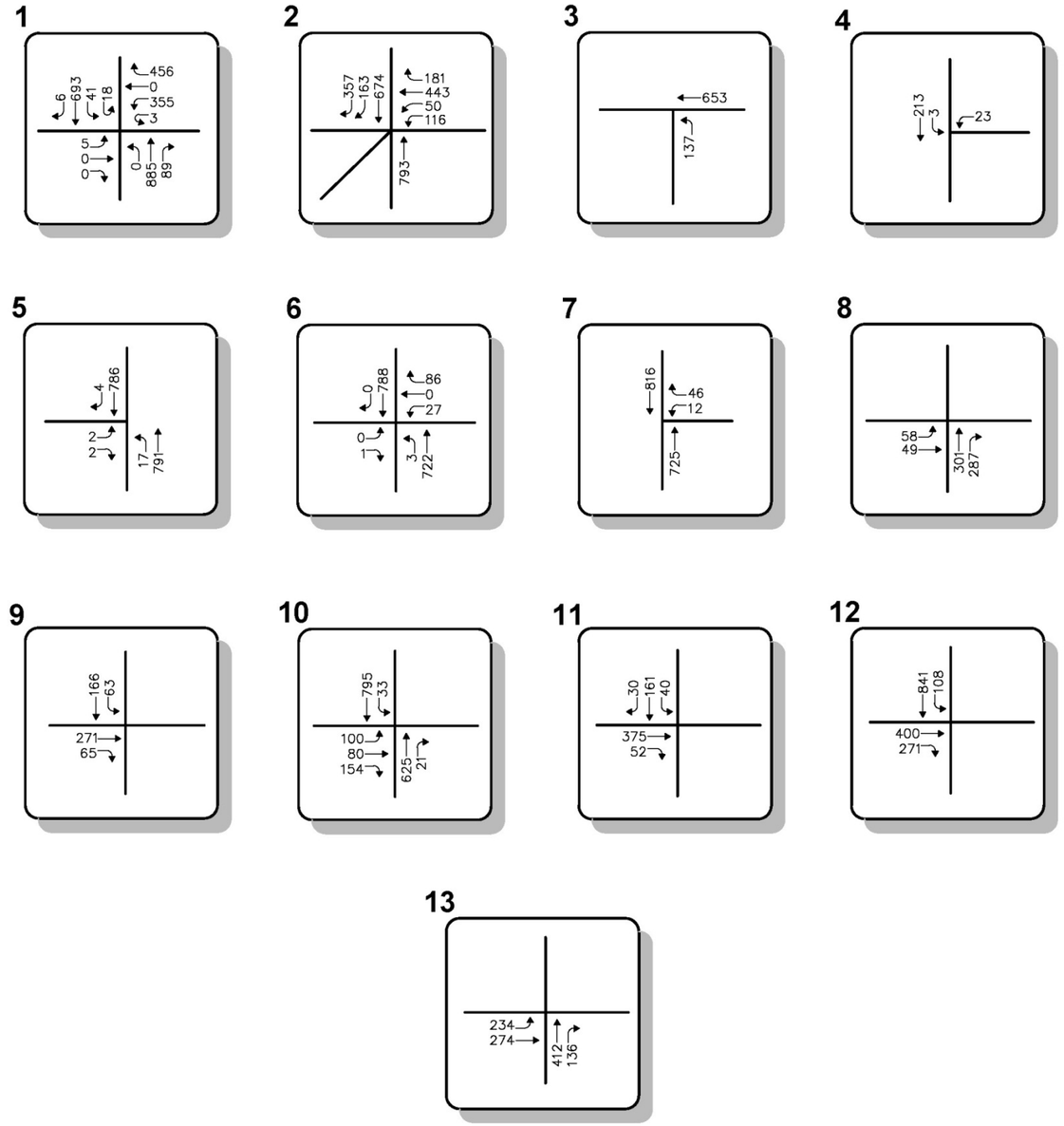




Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Congress Square Boston, Massachusetts





Congress Square Boston, Massachusetts

2.3.1.5 No-Build Pedestrian Volumes

The future 2021 No-Build condition pedestrian volume networks were developed by applying a 0.5 percent per year compounded annual growth rate to the 2014 Existing peak-hour pedestrian volumes, consistent with the methodology used for developing the future condition traffic volume networks beyond 2021. The resulting 2021 No-Build weekday morning and weekday evening peak-hour pedestrian-volume networks are shown on Figures 2-11 and 2-12, respectively.

2.3.2 Project-Generated Trips

Design year (2021 Build) automobile, pedestrian and public transportation trips for the study area were determined by estimating the trip characteristics of the Project and assigning these volumes on the transportation system. The following sections describe the procedures used to develop Build conditions (with the Project) within the study area.

2.3.2.1 Methodology

As described previously, the Project includes the construction of a mixed-use, transit-oriented development with office, residential, hotel and retail uses. In order to develop the base trip characteristics of the Project, trip-generation statistics published by the ITE[2] for similar land uses as those proposed were used. ITE Land Use Codes (LUCs) 230, *Residential Condominium/Townhouse;* 310, *Hotel*; 710, *General Office Building* and 820, *Shopping Center*; were used to develop the base trip estimates for the Project.

Given the availability of public transportation to the Project site (bus and subway service) and the extensive sidewalk network that links the Project site to downtown Boston and the Financial District, it is expected that a significant portion of the trips generated by the Project will be made by public transportation or will include pedestrian/bicycle trips. In order to disseminate the ITE trip characteristics of the Project, which are expressed in vehicle trips, to the modes of travel that will be available to the Project (automobile, public transportation and pedestrian/bicycle), vehicle occupancy ratios (VORs) and travel mode data obtained from BTD were reviewed. Table 2-6 summarizes the VOR and travel mode data used for the individual components of the Project.

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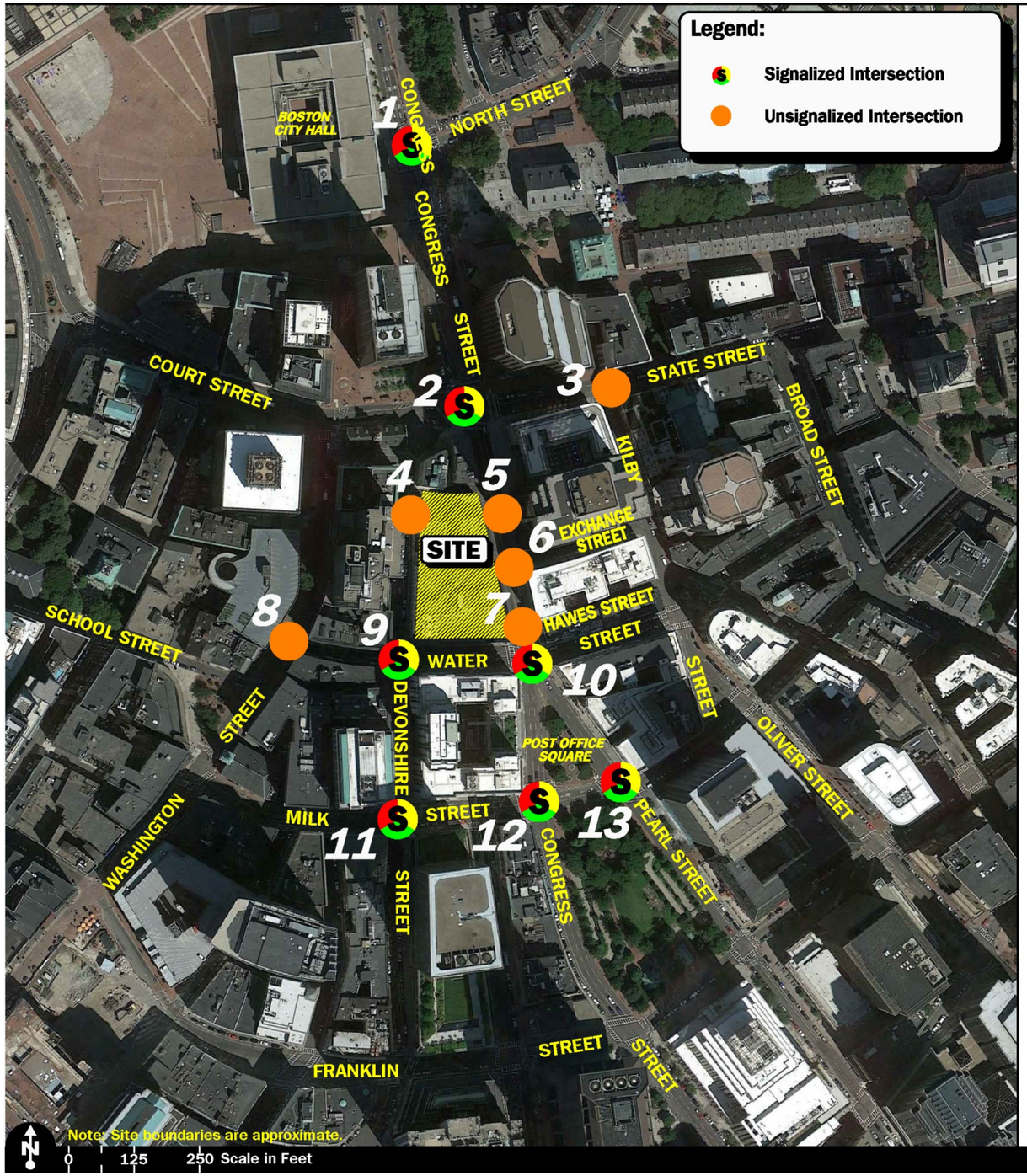
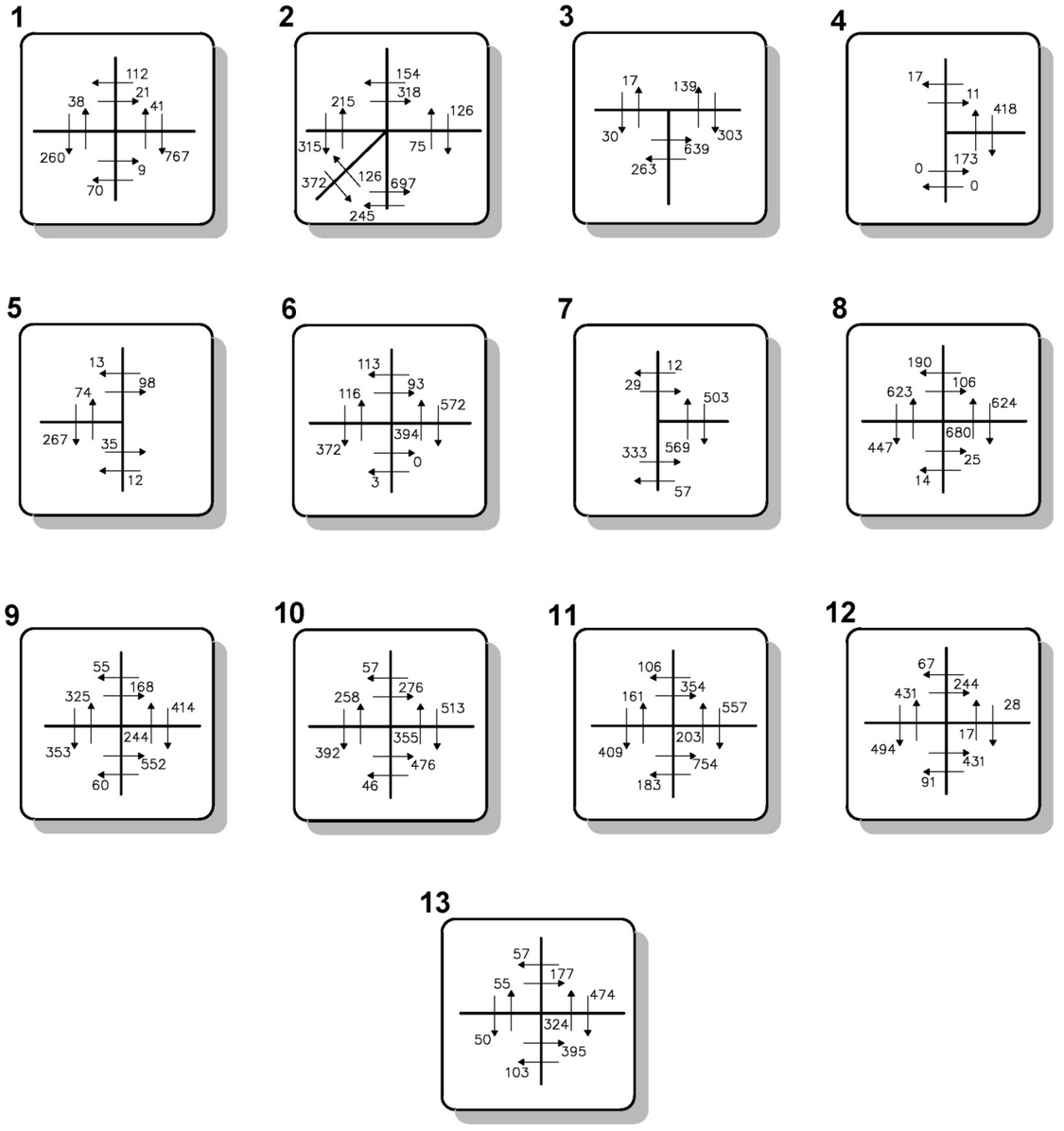
[2] Ibid.

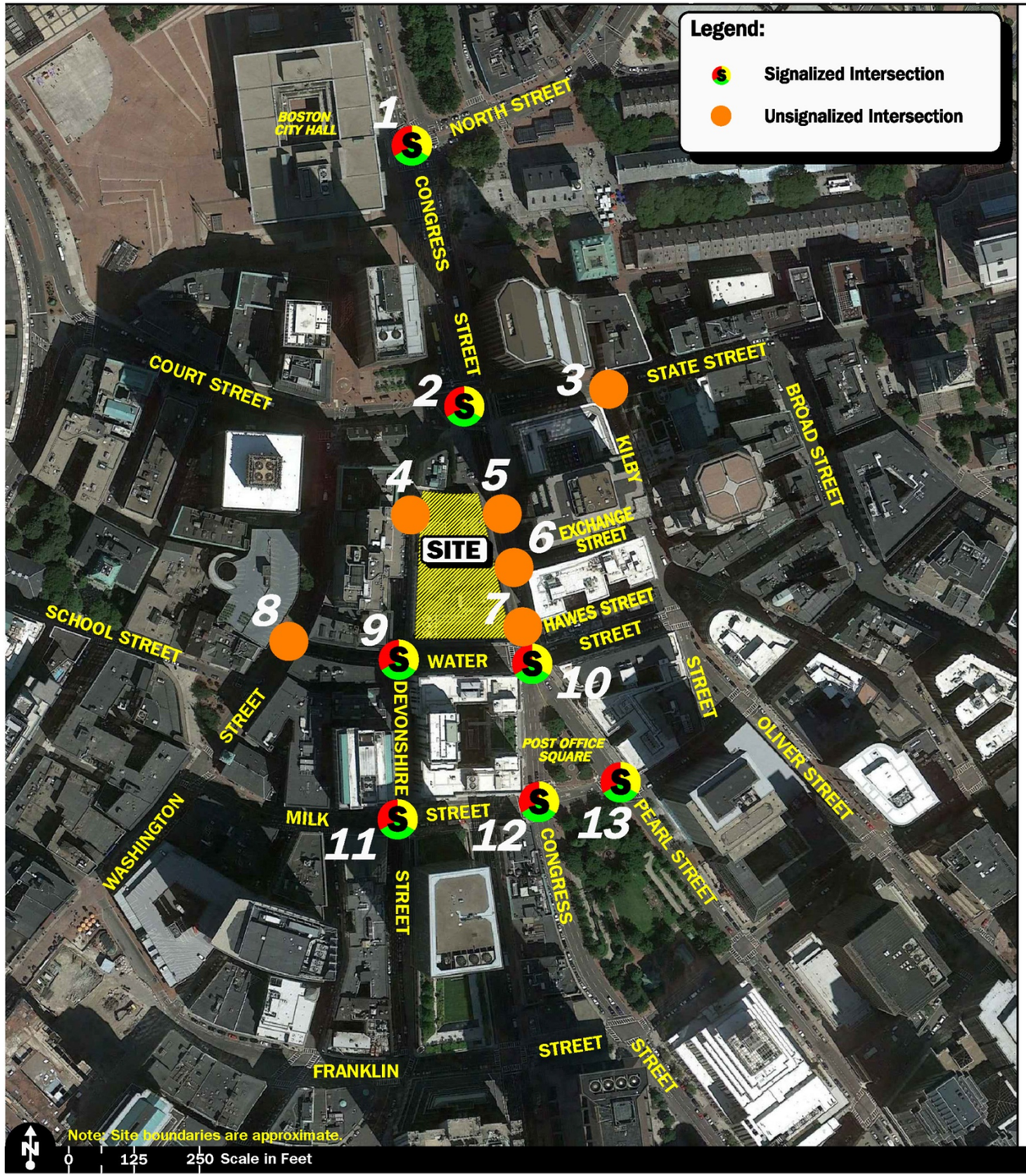


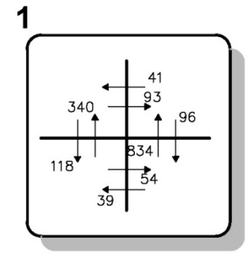


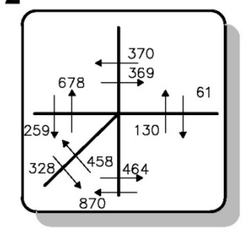
Congress Square Boston, Massachusetts

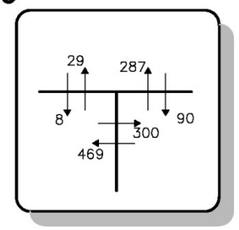
Figure 2-11

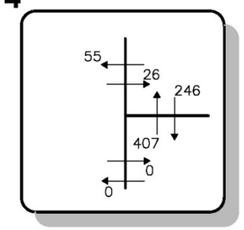
2021 No-Build Weekday Morning Peak Hour Pedestrian Volumes

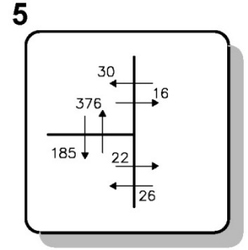


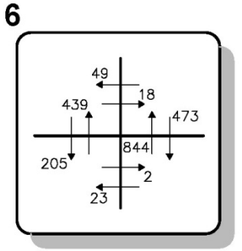


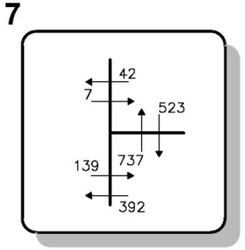


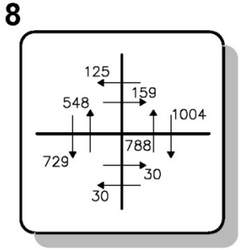


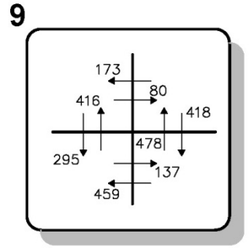


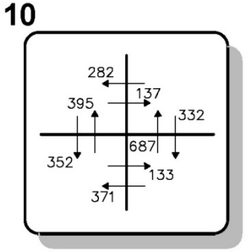


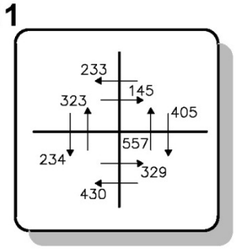


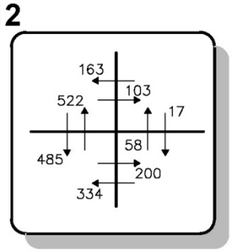


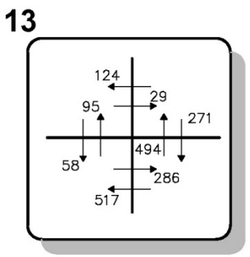












Congress Square Boston, Massachusetts

Figure 2-12

2021 No-Build Weekday Evening Peak Hour Pedestrian Volumes

Table 2-6 Travel Mode Split and Vehicle Occupancy Ratio[a]

Land Use	Mode of Travel									VOR (Persons per Vehicle)
	Automobile (Percent)			Transit (Percent)			Pedestrian/Bicycle (Percent)			
	Weekday Daily	AM Peak Hour	PM Peak Hour	Weekday Daily	AM Peak Hour	PM Peak Hour	Weekday Daily	AM Peak Hour	PM Peak Hour	
Residential:										
Entering	28	28	28	30	30	30	42	42	42	1.2
Exiting	28	28	28	30	30	30	42	42	42	1.2
Office:										
Entering	26	26	26	43	43	43	31	31	31	1.2
Exiting	26	26	26	43	43	43	31	31	31	1.2
Hotel:										
Entering	21	21	21	20	20	20	59	59	59	1.8
Exiting	21	21	21	20	20	20	59	59	59	1.8
Retail:										
Entering	11	11	11	18	18	18	71	71	71	1.8
Exiting	11	11	11	18	18	18	71	71	71	1.8

[a]Source: *Access Boston 2000-2010 - Boston Transportation Fact Book and Neighborhood Profiles,* Boston Transportation Department, Central Transportation Planning Staff, Boston Metropolitan Planning Organization.

Table 2-7 summarizes the anticipated trip characteristics of the Project using the above methodology, with the trip-generation calculations for the individual components of the Project provided in Appendix C.

Table 2-7 Project Trip-Generation Summary

Time Period/Direction	ITE Trips	Person Trips				Vehicle Trips
		Total Person Trips	Automobile Trips	Transit Trips	Pedestrian/ Bicycle Trips	Automobile Trips
Average Weekday Daily:						
Entering	1,532	2,544	417	563	1,564	262
Exiting	1,532	2,544	417	563	1,564	262
Total	3,064	5,088	834	1,126	3,128	524
Weekday Morning Peak Hour:						
Entering	124	187	40	53	94	28
Exiting	61	97	20	22	55	14
Total	185	284	60	75	149	42
Weekday Evening Peak Hour:						
Entering	127	215	36	44	135	22
Exiting	166	264	46	65	153	31
Total	293	479	82	109	288	53

2.3.2.2 Project-Generated Trip Summary

As summarized in Table 2-7, the Project is projected to result in 524 new automobile trips (262 vehicles entering and 262 exiting) on an average weekday, with 1,126 transit trips and 3,128 pedestrian/bicycle trips. During the weekday morning peak hour, the Project is projected to generate 42 new automobile trips (28 vehicles entering and 14 exiting), with 75 transit trips and 149 pedestrian/bicycle trips. During the weekday evening peak hour, the Project is projected to generate 53 new automobile trips (22 vehicles entering and 31 exiting), with 109 transit trips and 288 pedestrian/bicycle trips.

2.3.2.3 Trip Generation Comparison

As previously noted, the 2021 No-Build analysis scenario assumes the existing vacant space within the Congress Square development site would be leased and occupied to office tenants, consistent with the prior use of the Project site. In order to provide a comparison of the vehicular traffic impacts of the proposed Project versus the reuse of the vacant space as an office use, the peak hour trip generation estimates were compared. Based on the projected trip generation, adjusted for modal split, the proposed development would result

in 7 fewer vehicle trips (14 fewer vehicle trips entering and 7 additional vehicle trips exiting) during the weekday morning peak hour, and 9 additional vehicle trips (14 additional entering and 5 fewer exiting) during the weekday evening peak hour.

2.3.2.4 Vehicle Trip Distribution and Assignment

The directional distribution of automobile trips to and from the Project site was determined based on a review of existing travel patterns within the study area and the roadway network serving the Project site. In general, automobile trips associated with the office, residential and commercial components of the Project were distributed to and from area parking facilities expected to accommodate the Project, specifically the Post Office Square subsurface parking garage and 1 Devonshire Street parking garage. A portion of site-generated traffic was also distributed onto Quaker Lane to account for drop-off and pick-up activity associated with the proposed hotel use.

The additional automobile trips expected to be generated by the Project were assigned on the study area roadway network as shown on Figures 2-13 and 2-14 for the weekday morning and weekday evening peak hours, respectively.

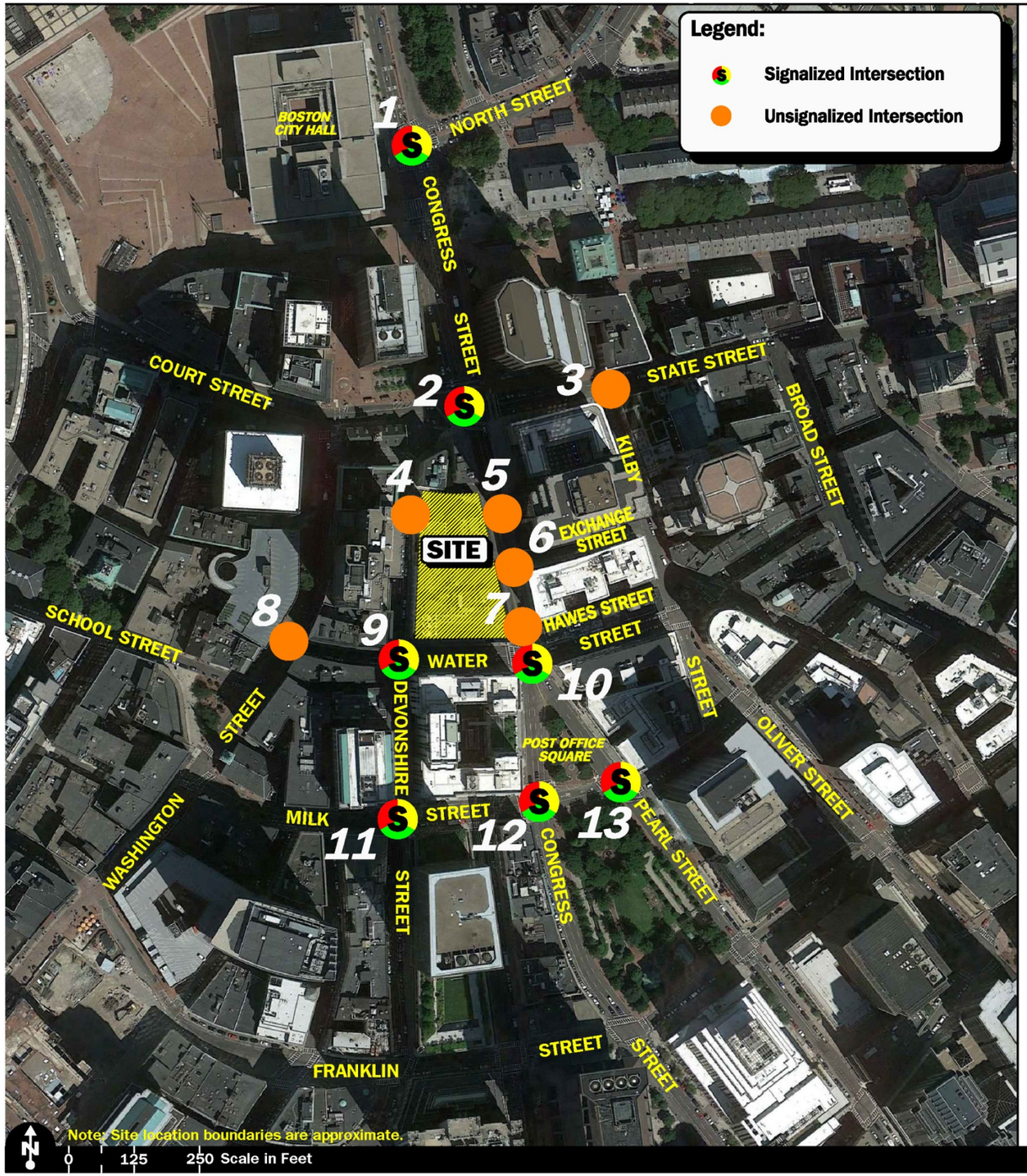
2.3.2.5 Pedestrian Trip Distribution and Assignment

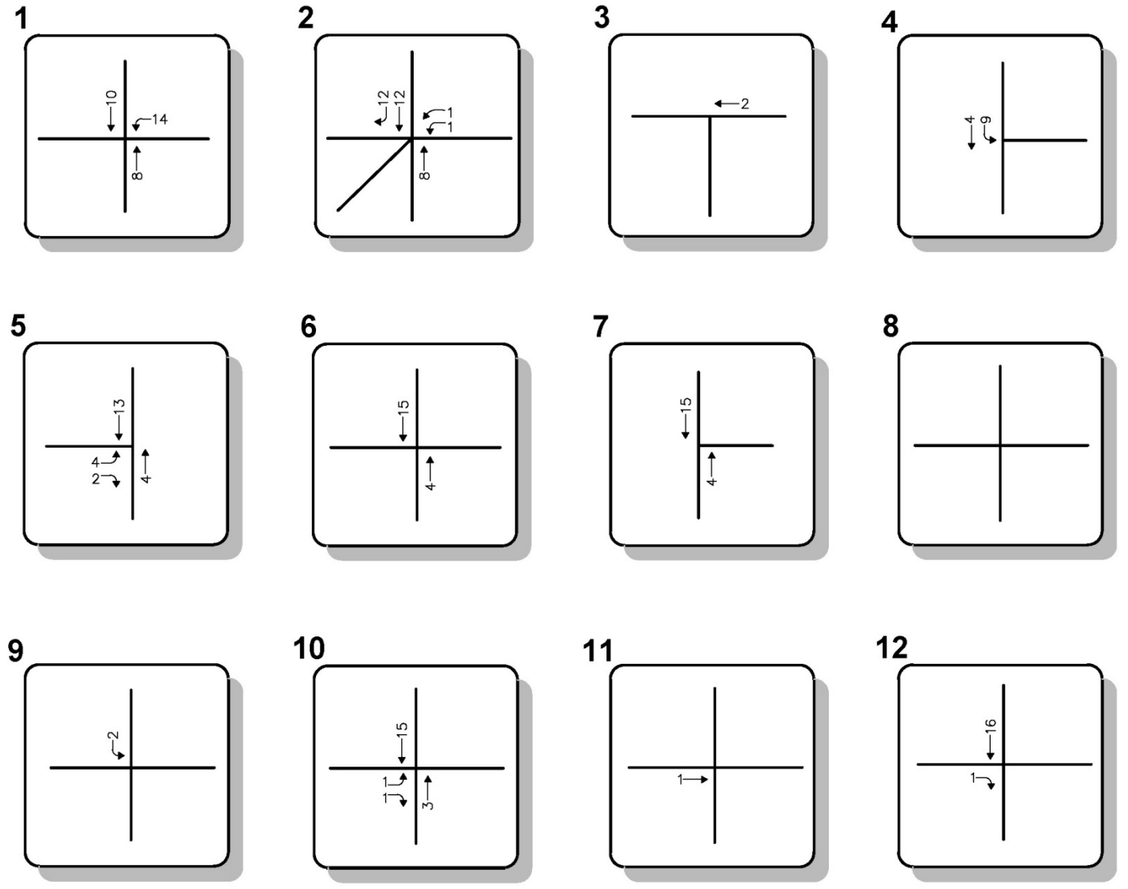
The distribution of pedestrian trips to and from the Project was developed based on a review of existing pedestrian volumes and patterns along Congress Street, Devonshire Street and State Street, and was then refined to include pedestrian trips from nearby MBTA subway stations and area parking garages. The additional pedestrian trips expected to be generated by the Project were assigned on the study area pedestrian network as shown on Figures 2-15 and 2-16 for the weekday morning and weekday evening peak hours, respectively.

2.3.3 Future Build Condition

2.3.3.1 Build Traffic Volumes

The 2021 Build condition traffic volumes were developed by adding the anticipated Project-generated automobile trips to the respective 2021 No-Build condition peak-hour traffic volumes, accounting for the removal of traffic associated with the existing office space that would be converted to commercial and residential uses. The resulting 2021 Build condition weekday morning and weekday evening peak-hour traffic-volume networks are graphically depicted on Figures 2-17 and 2-18, respectively.

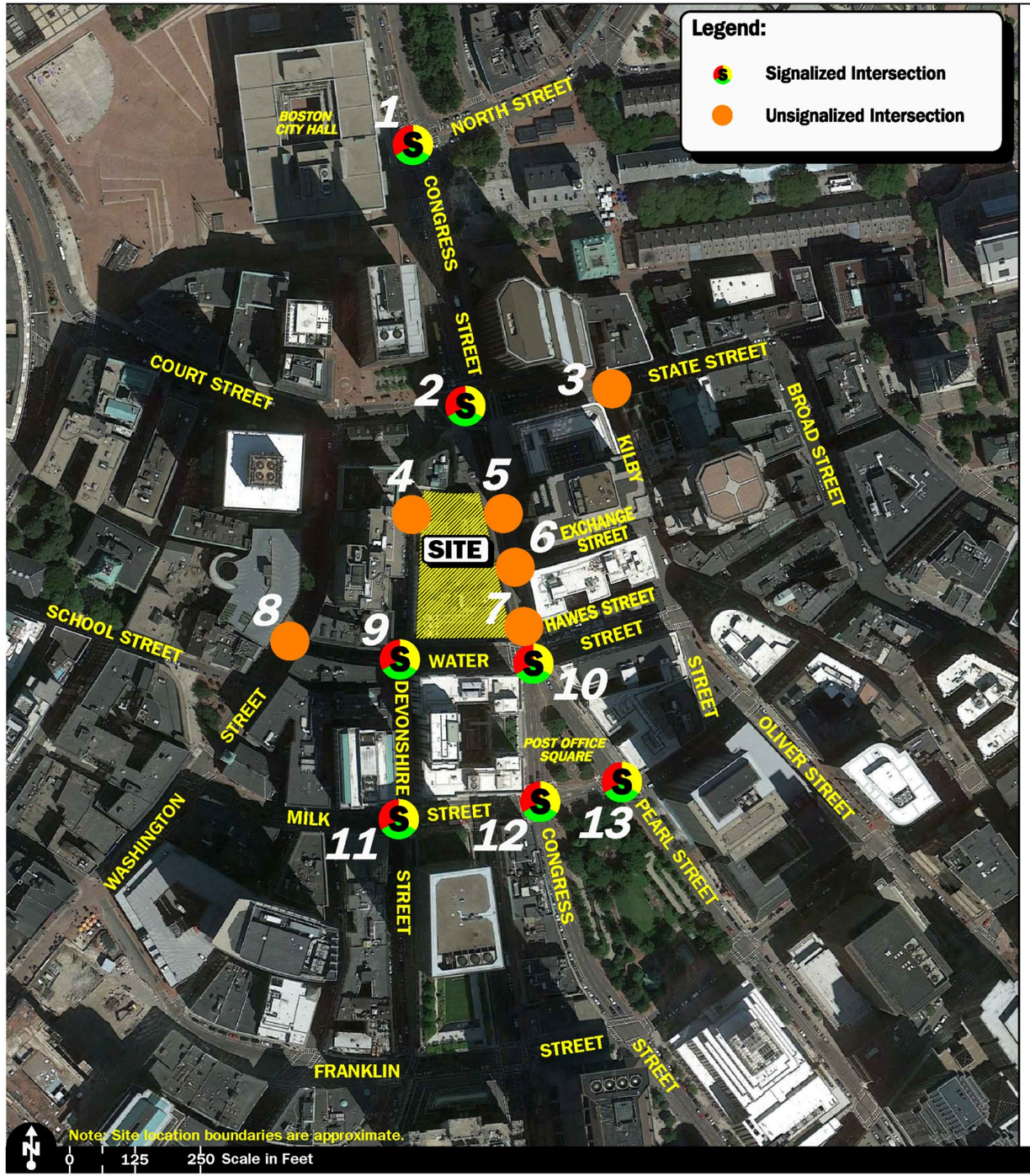


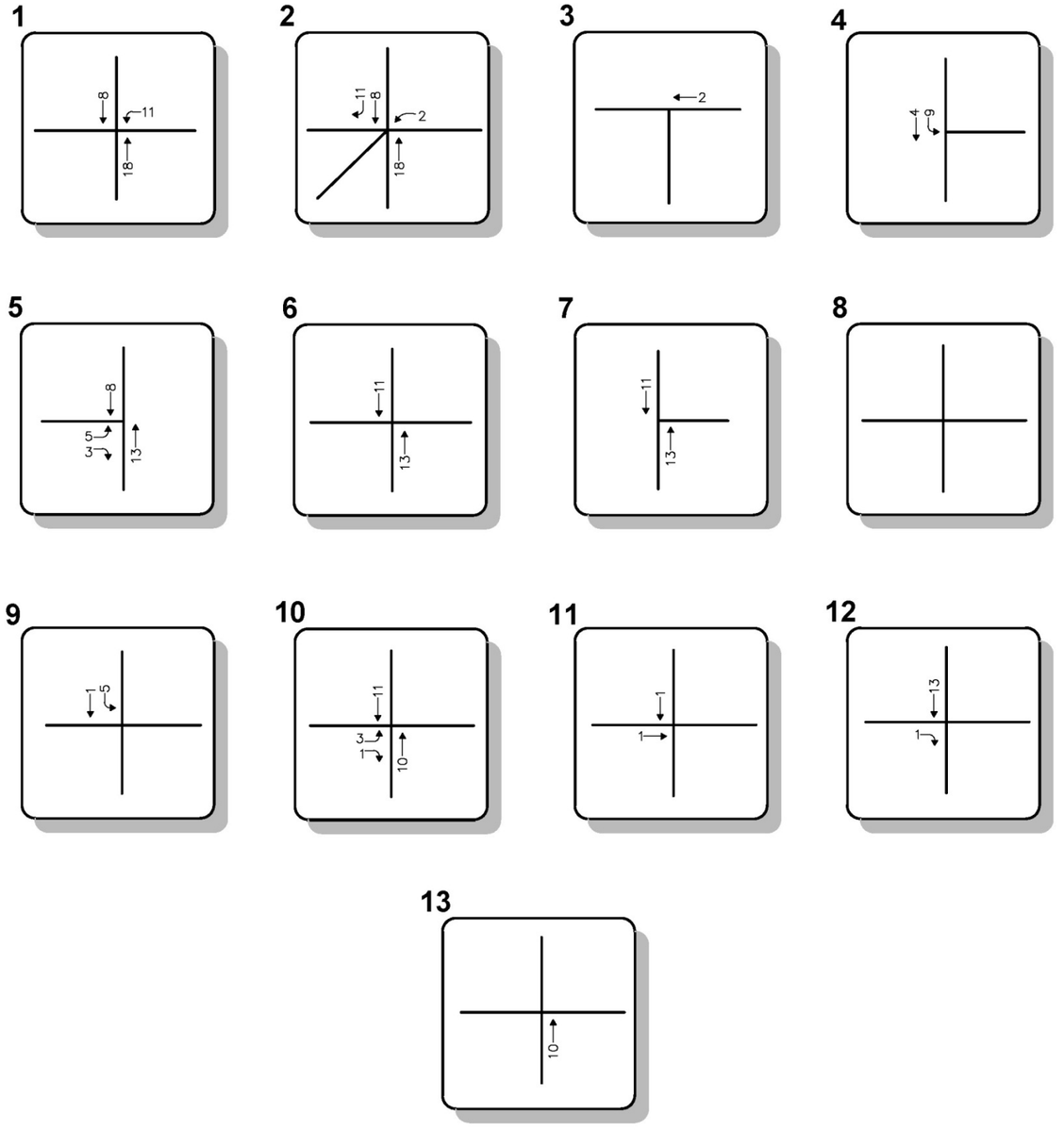


Congress Square Boston, Massachusetts

Figure 2-13

Site-Generated Weekday Morning Peak Hour Traffic Volumes

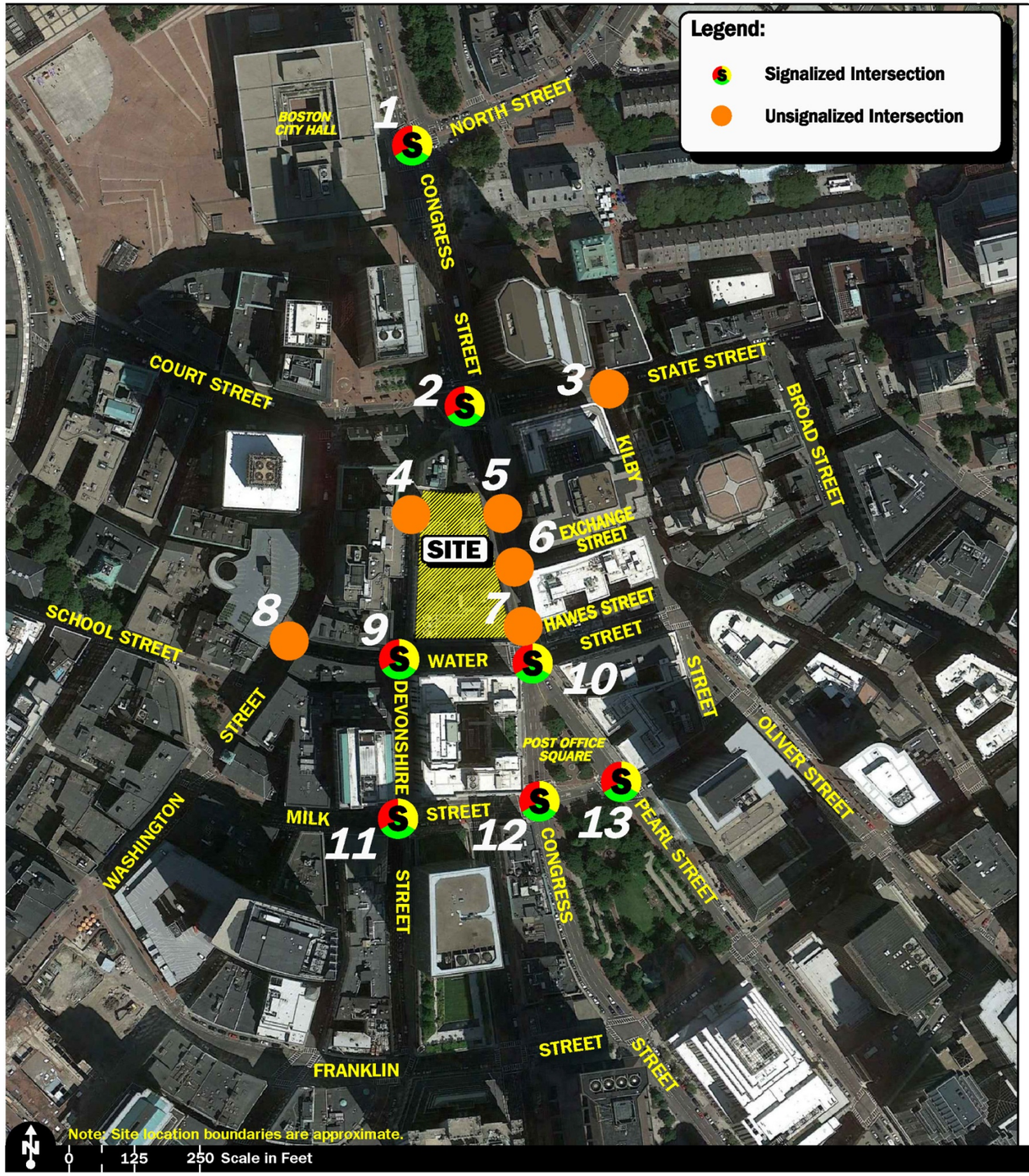


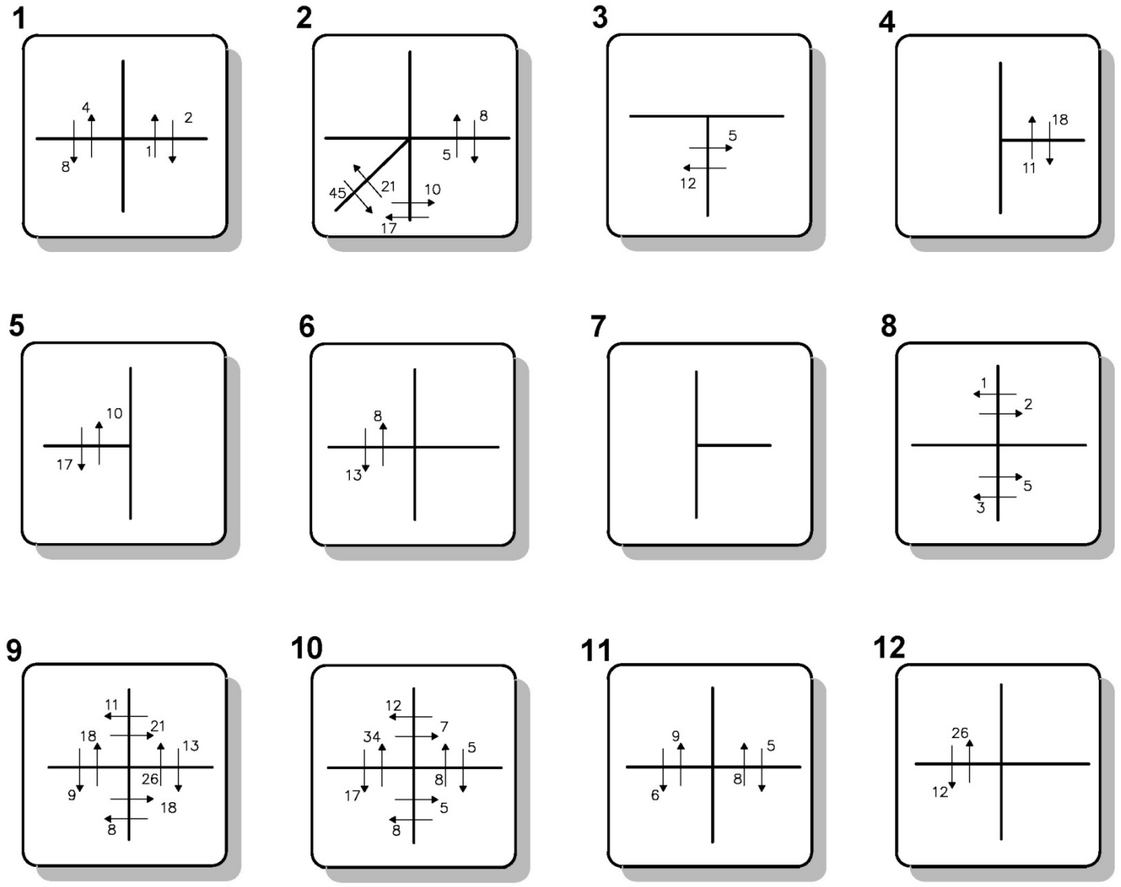


Congress Square Boston, Massachusetts

Figure 2-14

Site-Generated Weekday Evening Peak Hour Traffic Volumes

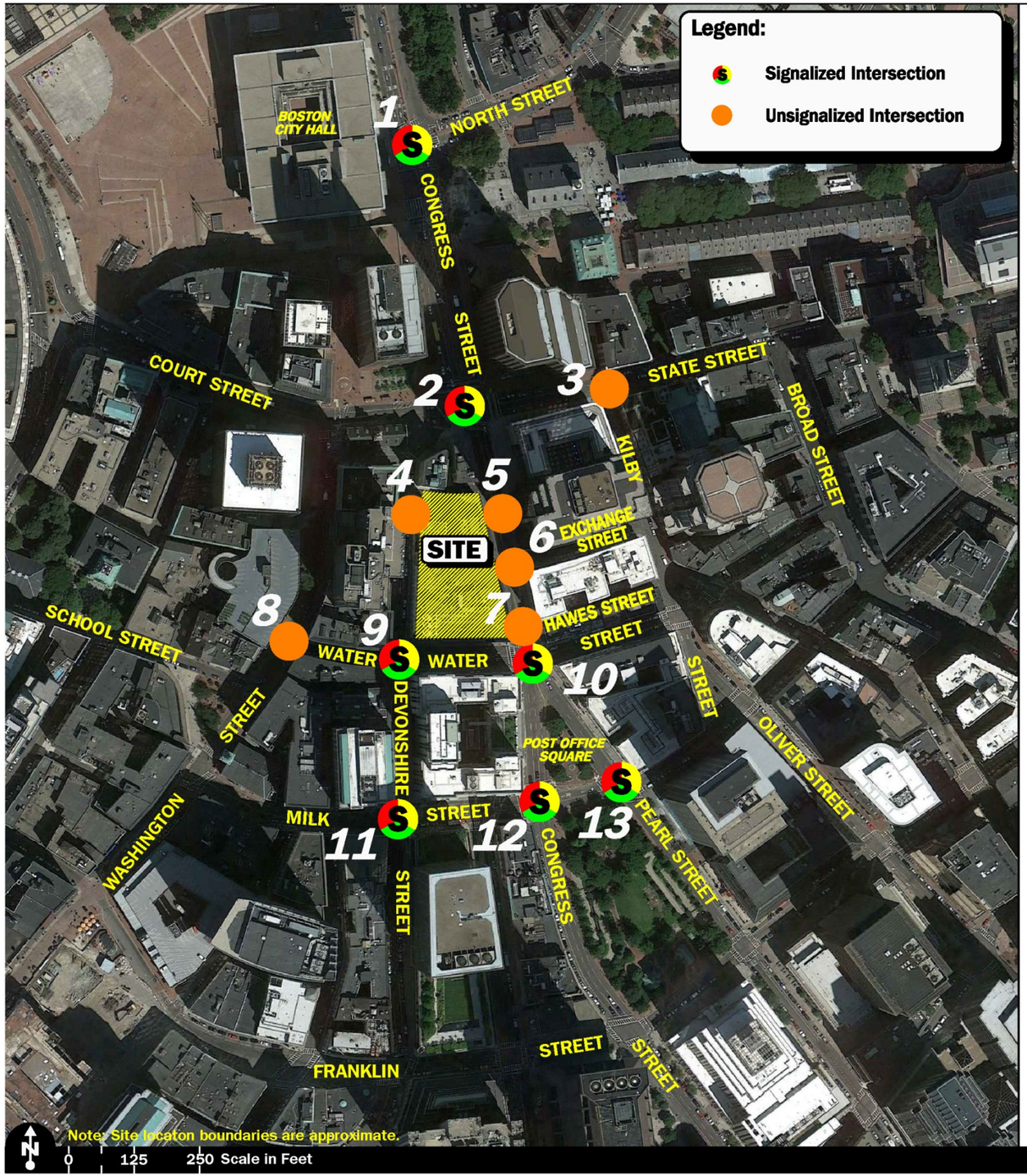


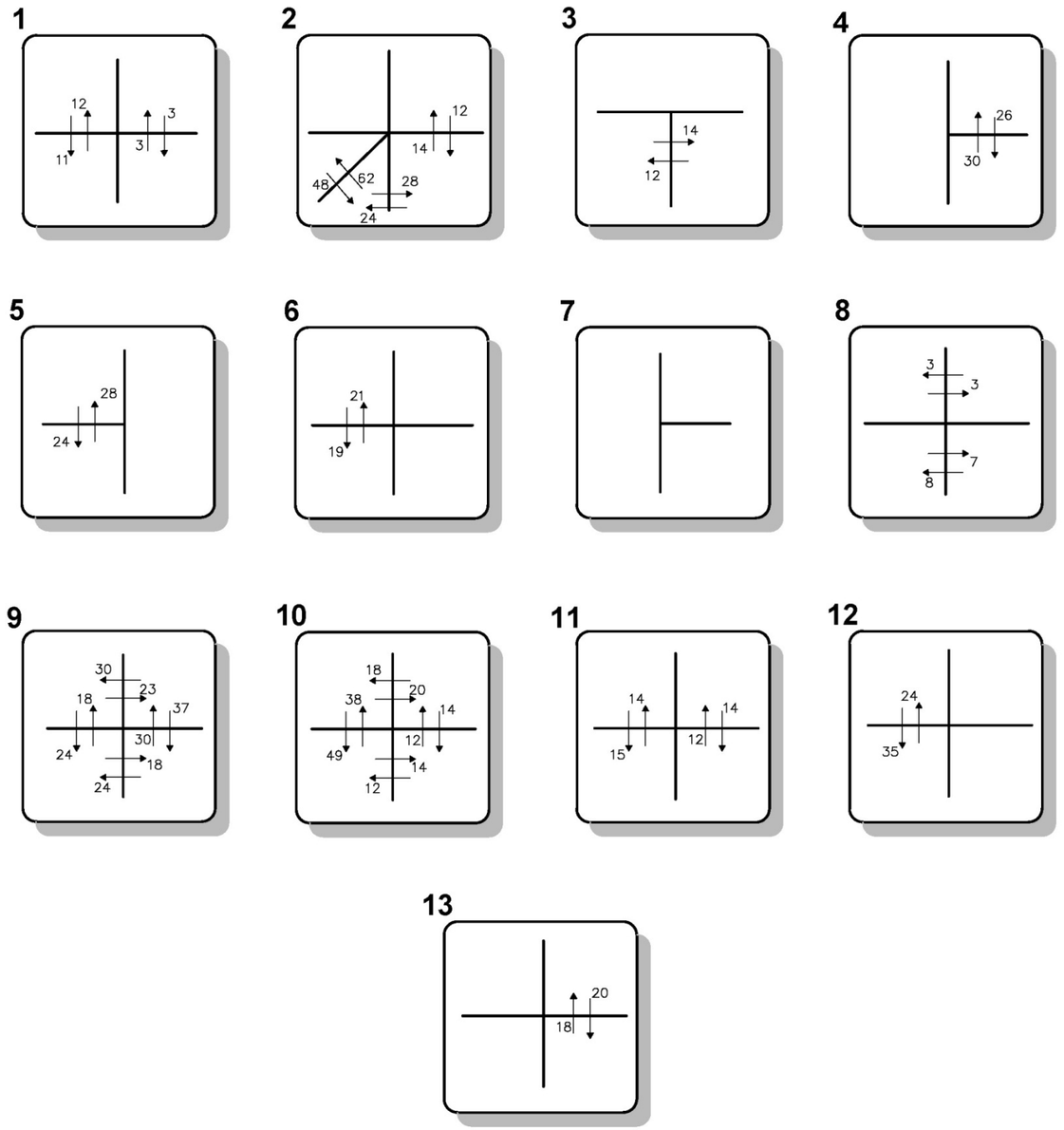


Congress Square Boston, Massachusetts

Figure 2-15

Site-Generated Weekday Morning Peak Hour Pedestrian Volumes



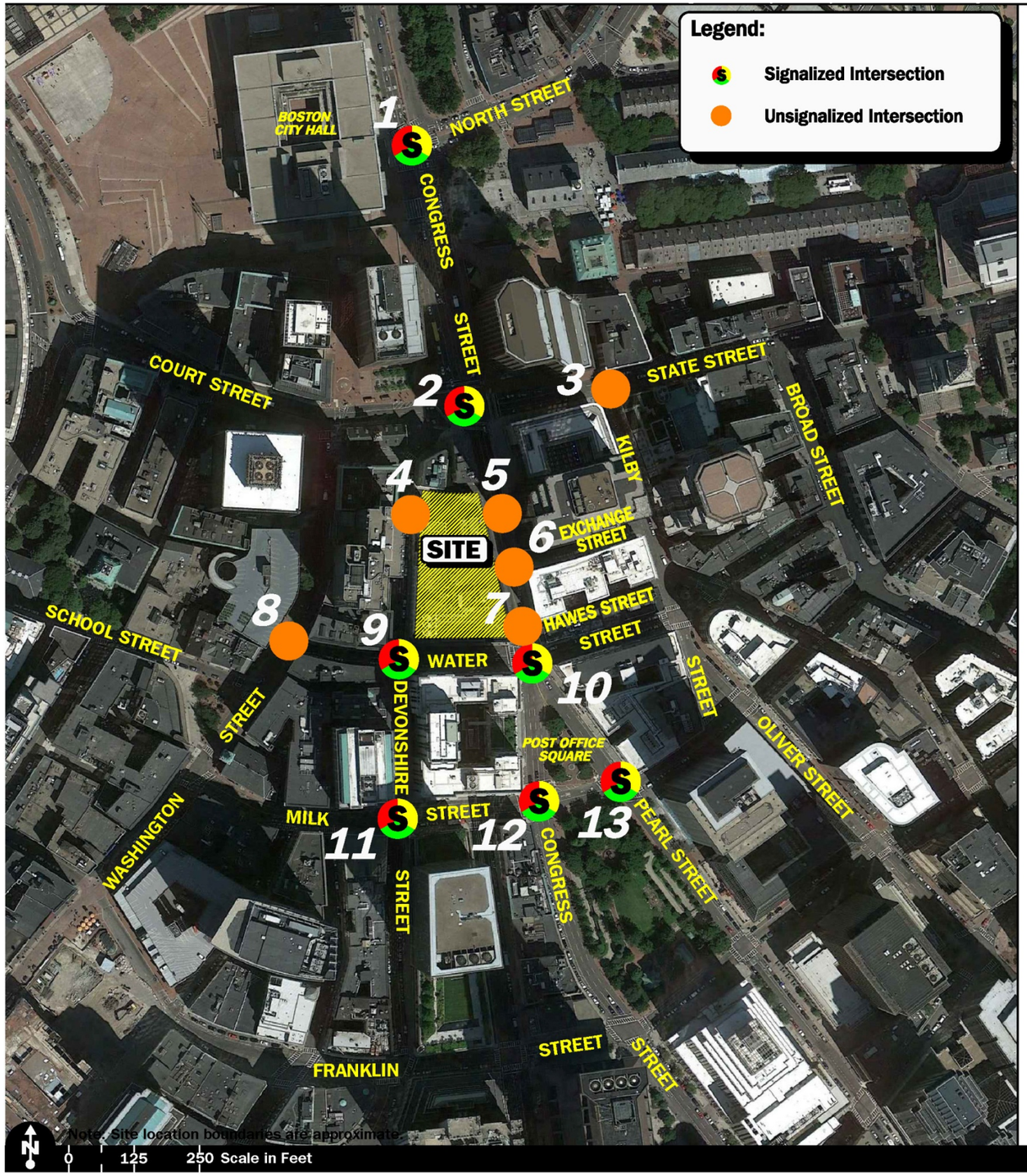


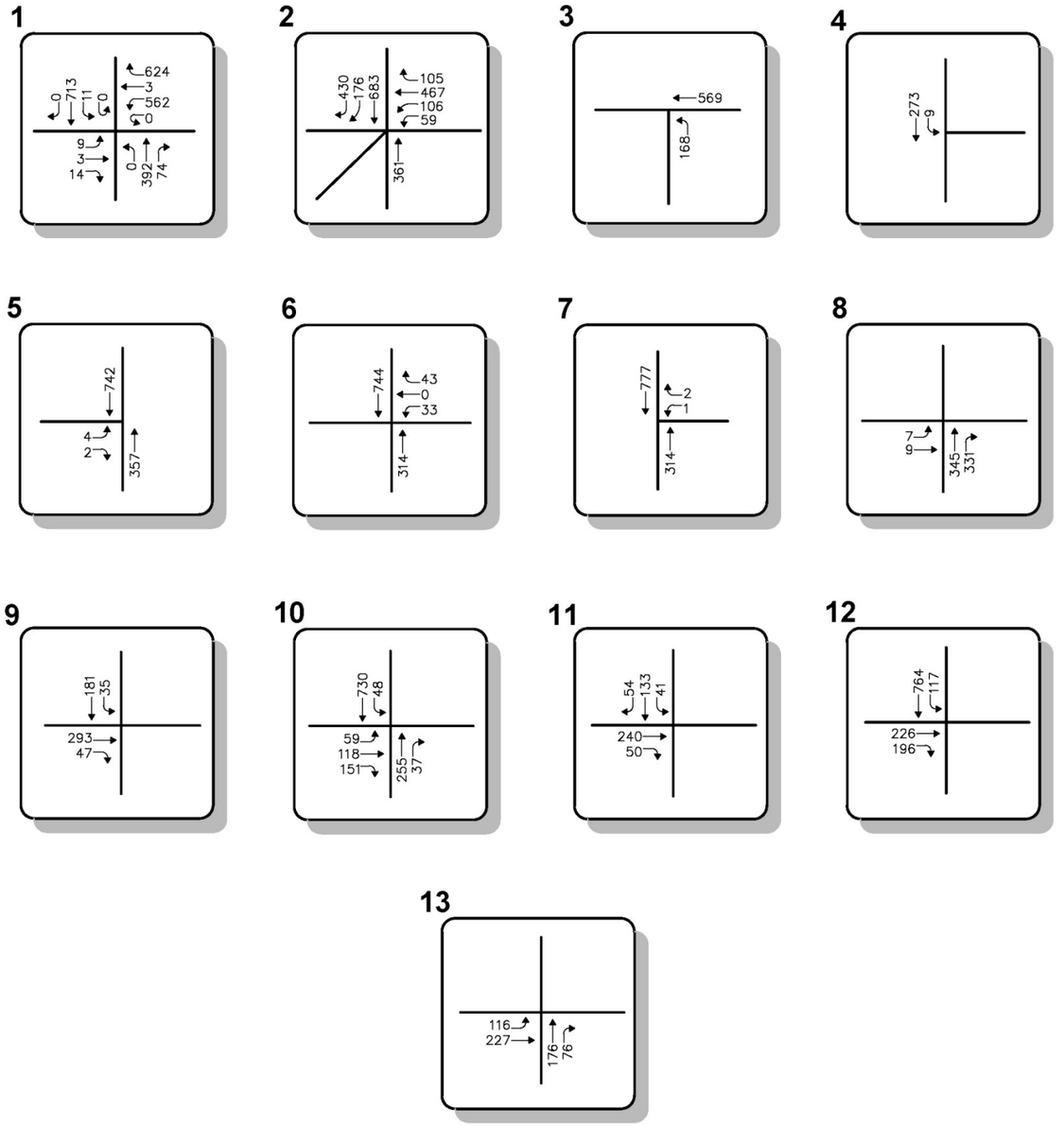
Congress Square Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-16

Site-Generated Weekday Evening Peak Hour Pedestrian Volumes





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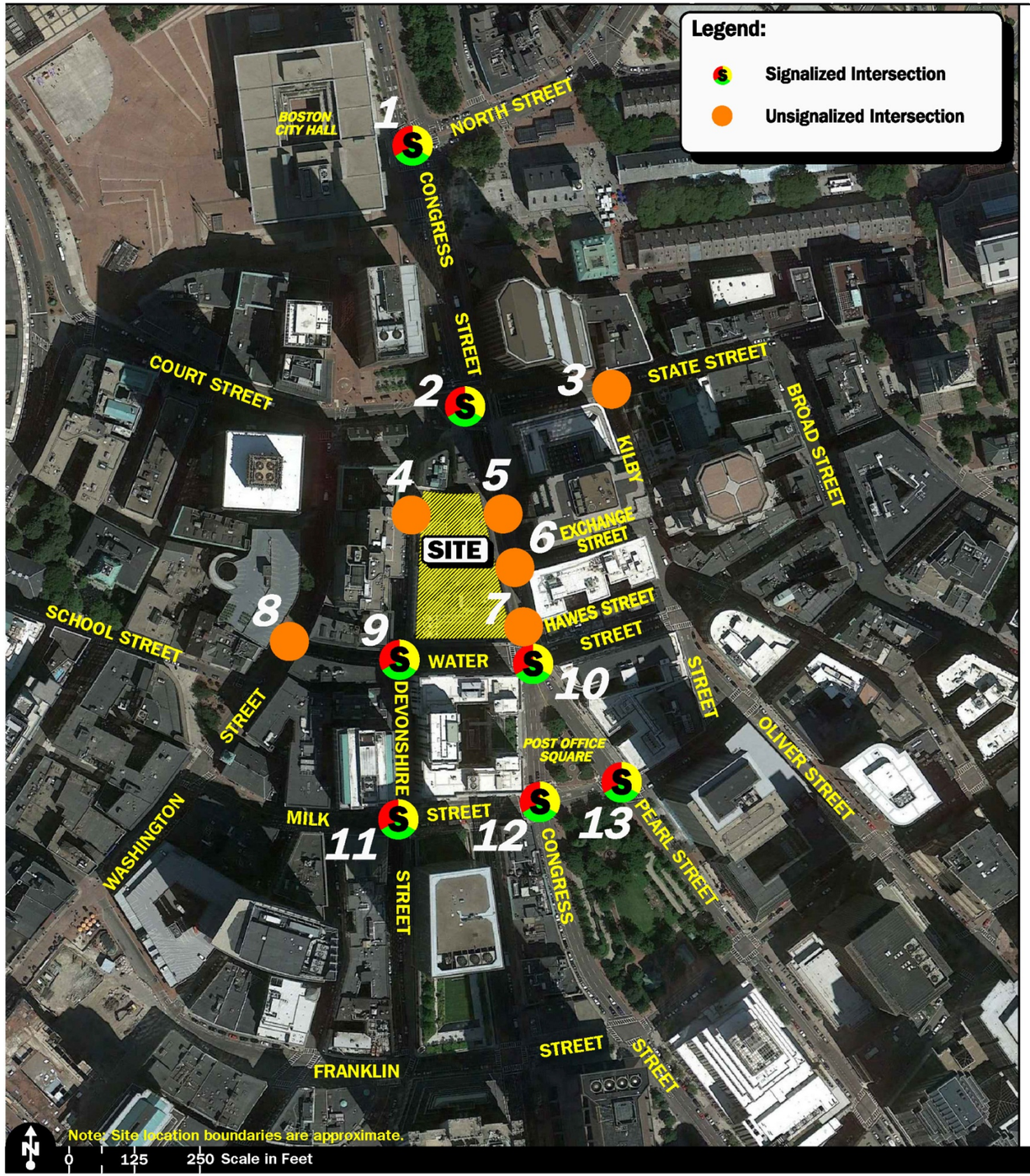

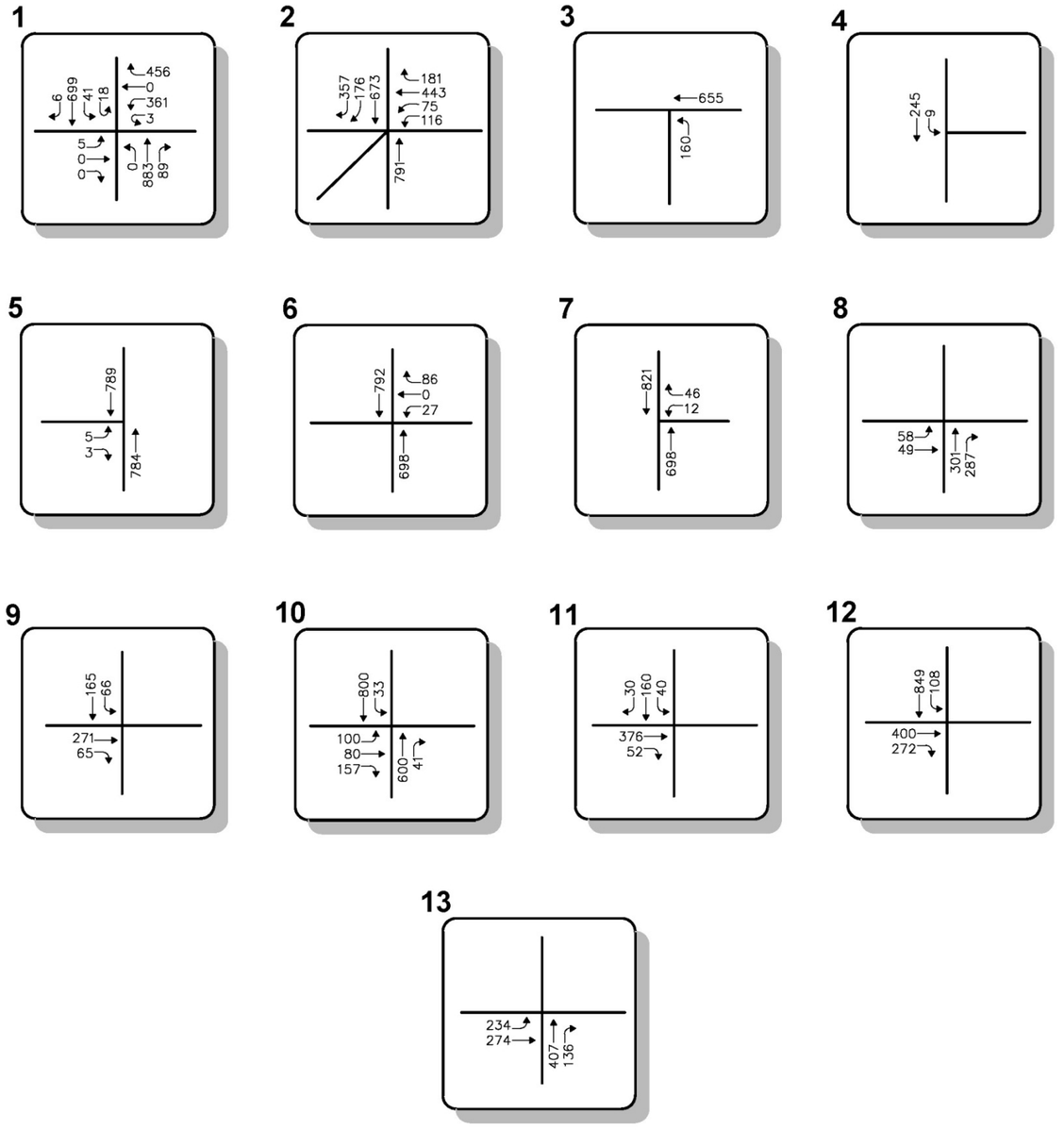

Congress Square Boston, Massachusetts

Figure 2-18

2021 Build Weekday Evening Peak Hour Traffic Volumes

2.3.3.2 Build Pedestrian Volumes

The 2021 Build condition peak-hour pedestrian volume networks were developed by adding the anticipated peak-hour Project-generated pedestrian volumes to the 2021 No-Build pedestrian volumes. The resulting 2021 Build condition weekday morning and weekday evening peak-hour pedestrian-volume networks are graphically depicted on Figures 2-19 and 2-20, respectively.

2.4 Transportation System Operations Analysis

Measuring existing and future vehicle, pedestrian, bicycle and transit volumes quantifies flow within the study area. To assess the quality of operation of the transportation system, roadway, pedestrian facility and transit capacities were evaluated, as well as vehicle queuing at the study intersections, under Existing, No-Build, and Build conditions. Capacity analyses provide an indication of how well the transportation system serves the demands placed upon the system, with vehicle queue analyses providing a secondary measure of the operational characteristics of an intersection or section of roadway under study.

2.4.1 Intersection Capacity Analysis

2.4.1.1 Methodology

Levels of Service - A primary result of capacity analyses is the assignment of level of service (LOS) to traffic facilities under various traffic-flow conditions.[3] The concept of LOS is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A LOS definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience and safety.

Six levels of service are defined for each type of facility. They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F representing congested or constrained operating conditions.

Since the LOS of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service, depending on the time of day, day of week, or period of year.

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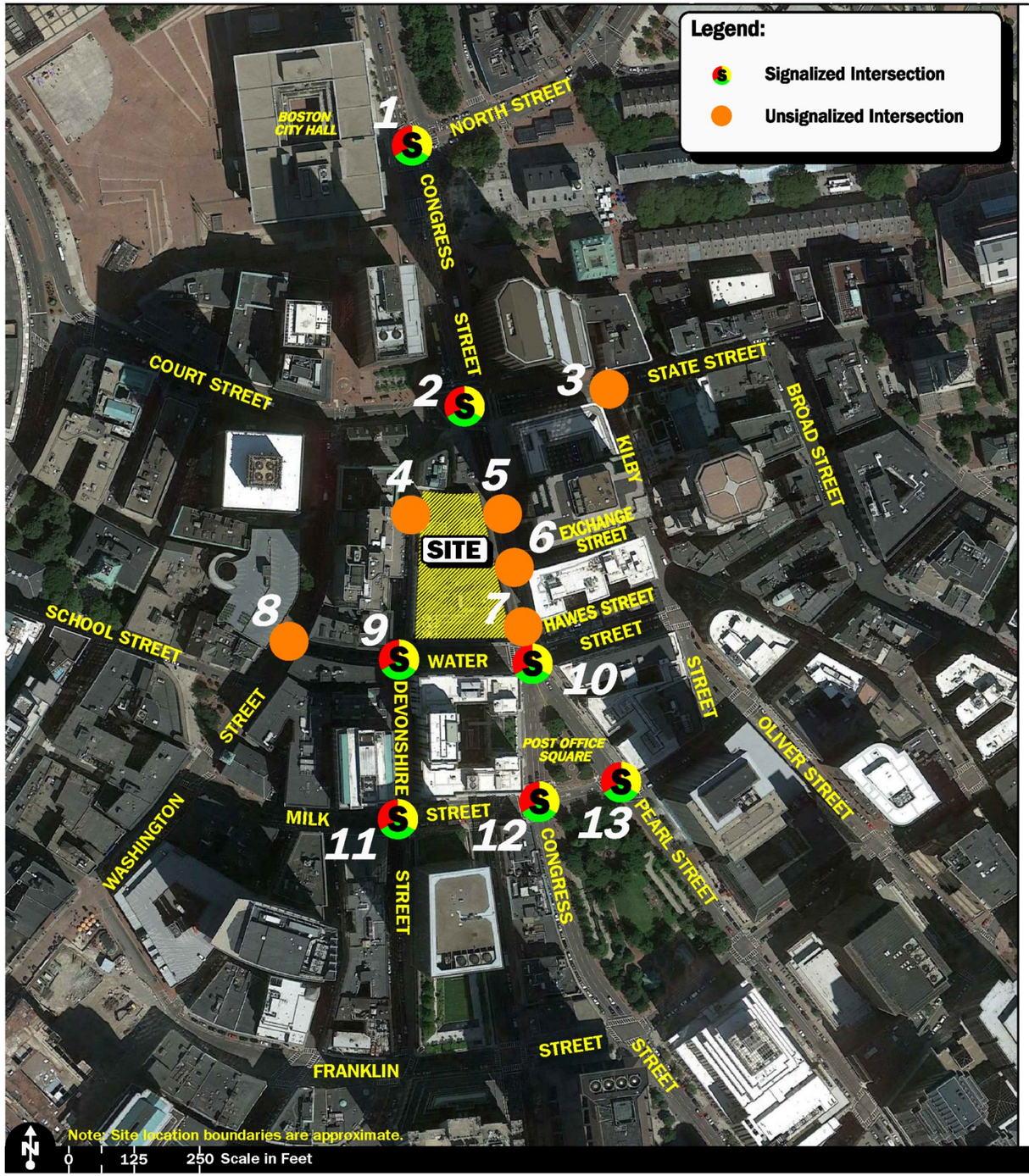
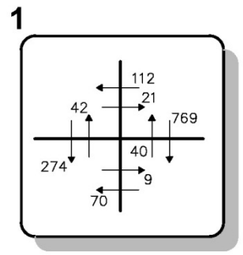
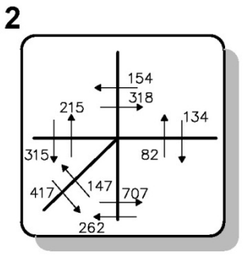
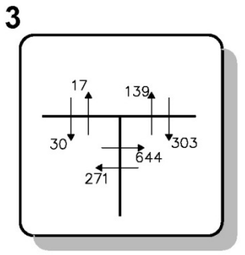
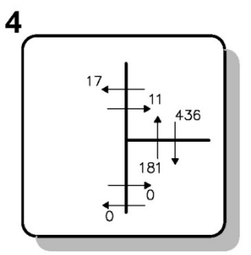
[3] The capacity analysis methodology is based on the concepts and procedures presented in the *Highway Capacity Manual;* Transportation Research Board; Washington, DC; 2000.

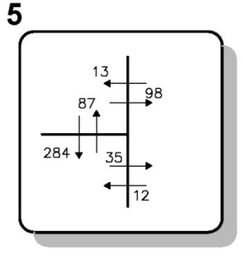


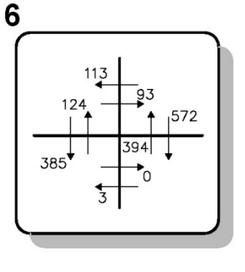


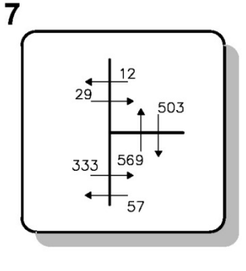


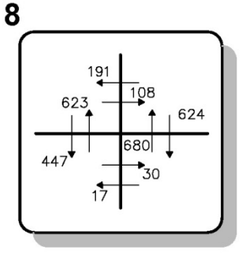


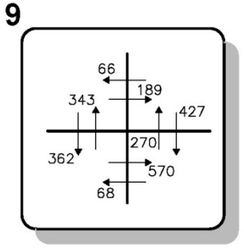


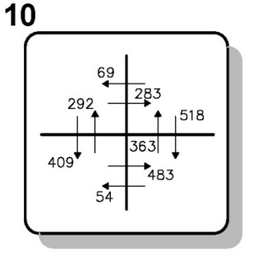


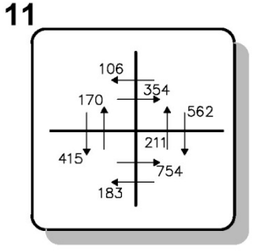


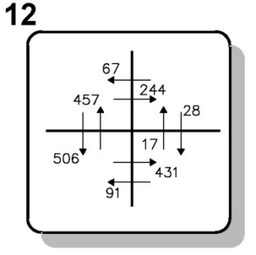


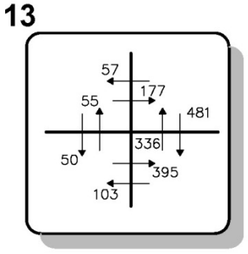








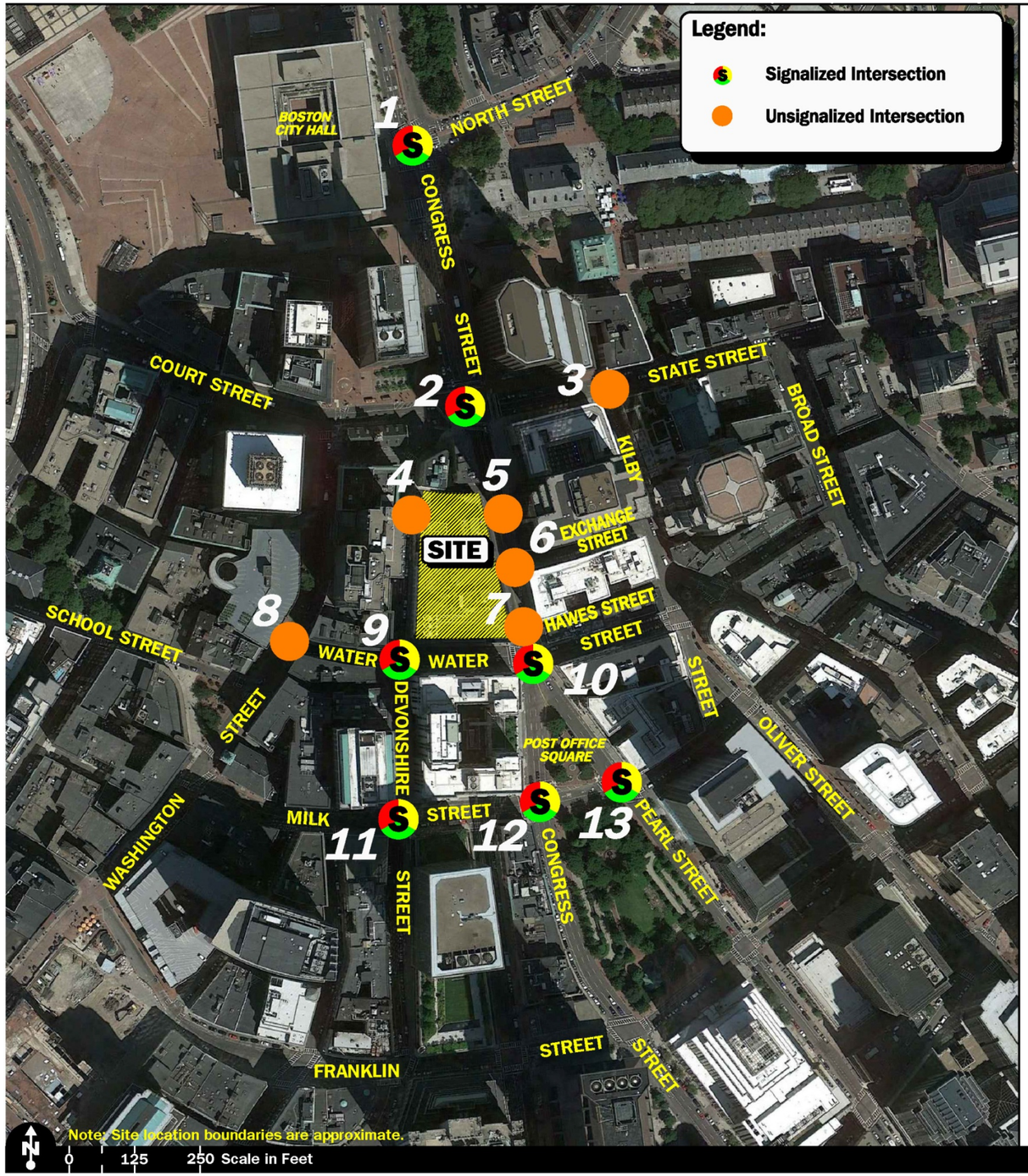


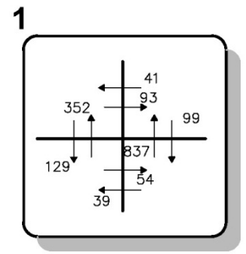


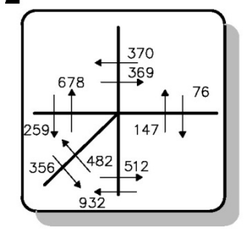
Congress Square Boston, Massachusetts

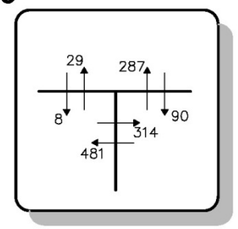
Figure 2-19

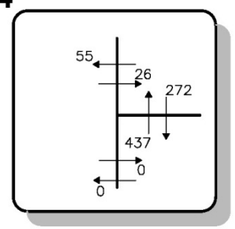
2021 Build Weekday Morning Peak Hour Pedestrian Volumes

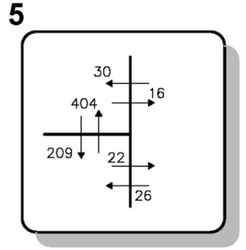


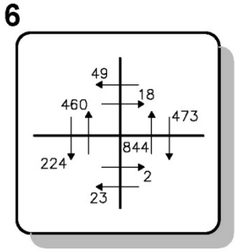


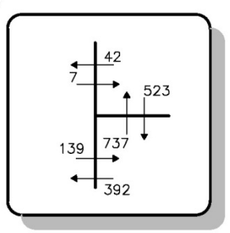


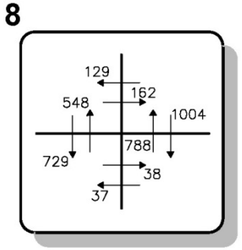


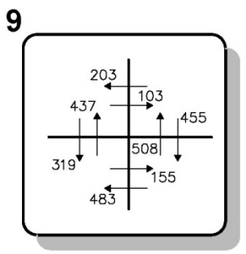


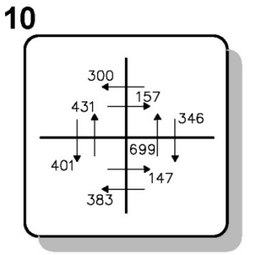


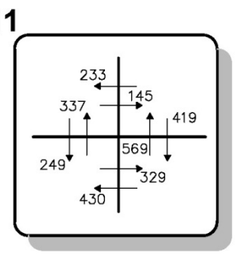


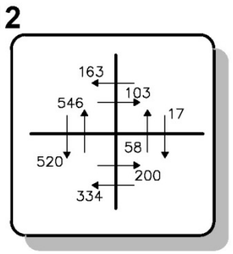


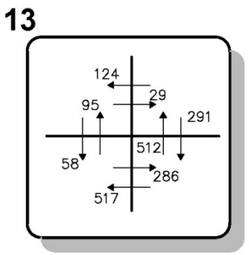












Congress Square Boston, Massachusetts

Signalized Intersections - The six levels of service for signalized intersections may be described as follows:

- *LOS A* describes operations with very low control delay; most vehicles do not stop at all.
- *LOS B* describes operations with relatively low control delay. However, more vehicles stop than LOS A.
- *LOS C* describes operations with higher control delays. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
- *LOS D* describes operations with control delay in the range where the influence of congestion becomes more noticeable. Many vehicles stop and individual cycle failures are noticeable.
- *LOS E* describes operations with high control delay values. Individual cycle failures are frequent occurrences.
- *LOS F* describes operations with high control delay values that often occur with over-saturation. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Levels of service for signalized intersections are calculated using the operational analysis methodology of the 2000 *Highway Capacity Manual*. This method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on delay. LOS designations are based on the criterion of control or signal delay per vehicle. Control or signal delay is a measure of driver discomfort, frustration, and fuel consumption, and includes initial deceleration delay approaching the traffic signal, queue move-up time, stopped delay and final acceleration delay. Table 2-8 summarizes the relationship between LOS and control delay. The tabulated control delay criterion may be applied in assigning LOS designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table 2-8 Level of Service Criteria for Signalized Intersections

Level of Service	Control (Signal) Delay Per Vehicle (Seconds)
A	≤10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	>80.0

Unsignalized Intersections - The six levels of service for unsignalized intersections may be described as follows:

- *LOS A* represents a condition with little or no control delay to minor street traffic.
- *LOS B* represents a condition with short control delays to minor street traffic.
- *LOS C* represents a condition with average control delays to minor street traffic.
- *LOS D* represents a condition with long control delays to minor street traffic.
- *LOS E* represents operating conditions at or near capacity level, with very long control delays to minor street traffic.
- *LOS F* represents a condition where minor street demand volume exceeds capacity of an approach lane, with extreme control delays resulting.

The levels of service of unsignalized intersections are determined by application of a procedure described in the 2000 *Highway Capacity Manual.* LOS is measured in terms of average control delay. Mathematically, control delay is a function of the capacity and degree of saturation of the lane group and/or approach under study and is a quantification of motorist delay associated with traffic control devices such as traffic signals and STOP signs. Control delay includes the effects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. Definitions for LOS at unsignalized intersections are also given in the 2000 *Highway Capacity Manual*. Table 2-9 summarizes the relationship between LOS and average control delay for unsignalized intersections.

Table 2-9 Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (Seconds Per Vehicle)
A	≤ 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	> 50.0

2.4.1.2 Analysis Results

LOS and vehicle queue analyses were conducted for 2014 Existing, 2021 No-Build, and 2021 Build conditions for the intersections within the study area. The results of the intersection capacity and vehicle queue analyses are summarized for the signalized and unsignalized study intersections in Tables 2-10 and 2-11, respectively, and are described in the following sections. The detailed analysis results are presented in Appendix C.

2.4.1.3 Signalized Intersections

The addition of Project-related traffic to the signalized study area intersections is not predicted to result in a reduction to overall levels of service as compared to future No-Build conditions. The majority of study area locations were found to be operating at LOS D or better during the peak hours under all analysis conditions, which is considered acceptable in an urban environment. The following is a summary of the analysis results for each of the signalized study area intersections.

Congress Street at North Street and Boston City Hall Driveway – Under 2014 Existing conditions, this signalized intersection currently operates at an overall LOS C and B during the weekday morning and weekday evening peak hours, respectively. Under 2021 No-Build conditions, this location is projected to operate at an overall LOS E and C during the weekday morning and weekday evening peak hours, respectively. Under 2021 Build conditions, this location is projected to continue to operate at LOS E and C during the weekday morning and weekday evening peak hours, respectively. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Table 2-10 Signalized Intersection Level of Service and Vehicle Queue Summary

Signalized Intersection/Peak Hour/Movement	2014 Existing				2021 No-Build				2021 Build			
	V/C[a]	Delay[b]	LOS[c]	Queue[d] Avg/95th	V/C	Delay	LOS	Queue Avg./95th	V/C	Delay	LOS	Queue Avg./95th
Congress Street at North Street/Boston City Hall Drive												
Weekday Morning:												
City Hall Garage EB LT/TH/RT	0.06	18	B	1/1	0.08	18	B	1/1	0.08	18	B	1/1
North Street WB LT	0.94	54	D	14/23	1.01	80	E	18/27	1.02	75	E	17/26
North Street WB TH/RT	0.74	30	C	11/17	1.16	>80	F	26/36	1.16	>80	F	26/35
Congress Street NB TH/RT	0.22	24	C	3/4	0.23	24	C	4/5	0.23	24	C	4/5
Congress Street SB LT/TH	0.36	18	B	5/6	0.38	18	B	5/6	0.38	18	B	5/6
Overall	**0.69**	**30**	**C**	--	**0.81**	**60**	**E**	--	**0.81**	**59**	**E**	--
Weekday Evening:												
City Hall Garage EB LT/TH/RT	0.06	25	C	0/0	0.13	26	C	0/0	0.13	26	C	0/0
North Street WB LT	0.81	44	D	8/14	0.85	49	D	8/15	0.87	50	D	9/15
North Street WB TH/RT	0.82	43	D	9/12	1.13	>80	F	16/25	1.13	>80	F	16/25
Congress Street NB TH/RT	0.33	5	A	2/3	0.36	5	A	2/3	0.35	5	A	2/3
Congress Street SB LT/TH	0.34	10	A	3/4	0.35	10	A	3/4	0.36	10	A	4/5
Overall	**0.55**	**18**	**B**	--	**0.67**	**33**	**C**	--	**0.68**	**34**	**C**	--
Congress Street at State Street and Devonshire Street												
Weekday Morning:												
State Street WB LT	0.37	34	C	4/61	0.39	35	C	4/6	0.45	35	D	4/7
State Street WB TH/RT	0.76	42	D	8/11	0.79	43	D	9/11	0.79	43	D	9/11
Congress Street NB TH	0.19	9	A	2/3	0.20	9	A	2/3	0.20	9	A	2/3
Congress Street SB TH/BR	0.43	17	B	7/9	0.47	17	B	8/9	0.46	17	B	8/9
Congress Street SB RT	0.35	67	E	4/5	0.36	67	E	4/5	0.36	67	E	4/5
Overall	**0.55**	**33**	**C**	--	**0.58**	**33**	**C**	--	**0.58**	**33**	**C**	--
Weekday Evening:												
State Street WB LT	0.42	33	C	4/6	0.44	33	C	4/6	0.51	34	C	5/7
State Street WB TH/RT	0.75	39	D	7/10	0.77	40	D	8/10	0.77	40	D	8/10
Congress Street NB TH	0.43	4	A	1/2	0.46	4	A	1/2	0.46	4	A	2/2
Congress Street SB TH/BR	0.43	8	A	5/6	0.46	8	A	6/6	0.46	8	A	6/6
Congress Street SB RT	0.31	7	A	1/1	0.32	6	A	1/1	0.32	6	A	0/1
Overall	**0.54**	**15**	**B**	--	**0.57**	**15**	**B**	--	**0.57**	**15**	**B**	--

See notes at end of table.

Table 2-10 Signalized Intersection Level of Service and Vehicle Queue Summary (Continued)

Signalized Intersection/Peak Hour/Movement	2014 Existing				2021 No-Build				2021 Build			
	V/C[a]	Delay[b]	LOS[c]	Queue[d] Avg/95th	V/C	Delay	LOS	Queue Avg./95th	V/C	Delay	LOS	Queue Avg./95th
Devonshire Street at Water Street												
Weekday Morning:												
Water Street EB TH/RT	0.52	14	B	3/5	0.54	14	B	3/5	0.54	14	B	3/5
Devonshire SB LT	0.02	9	A	0/1	0.02	9	A	0/1	0.02	9	A	0/1
Devonshire ST TH	0.27	11	B	1/3	0.28	11	B	1/3	0.28	11	B	1/3
Overall	**0.40**	**12**	**B**	–	**0.41**	**13**	**B**	–	**0.41**	**13**	**B**	–
Weekday Evening:												
Water Street EB TH/RT	0.43	9	A	2/4	0.45	9	A	2/4	0.45	9	A	2/4
Devonshire SB LT	0.04	23	C	0/1	0.04	23	C	0/1	0.04	23	C	0/1
Devonshire ST TH	0.34	18	B	2/4	0.35	18	B	3/4	0.35	18	B	3/4
Overall	**0.39**	**13**	**B**	–	**0.41**	**14**	**B**	–	**0.41**	**13**	**B**	–
Congress Street at Water Street												
Weekday Morning:												
Water Street EB LT	0.08	13	B	1/2	0.08	14	B	1/2	0.08	14	B	1/2
Water Street EB TH/RT	0.58	22	C	5/8	0.61	23	C	5/8	0.61	23	C	5/8
Congress Street SB LT/TH	0.56	22	C	7/10	0.63	23	C	8/11	0.62	23	C	8/11
Post Office Square NB TH/RT	0.27	22	C	3/4	0.30	22	C	3/4	0.30	22	C	3/4
Overall	**0.57**	**22**	**C**	–	**0.62**	**22**	**C**	–	**0.61**	**22**	**C**	–
Weekday Evening:												
Water Street EB LT	0.17	20	B	2/3	0.18	20	C	2/3	0.18	21	C	2/3
Water Street EB TH/RT	0.77	40	D	5/9	0.81	43	D	5/11	0.82	45	D	5/11
Congress Street SB LT/TH	0.53	10	A	5/5	0.56	10	A	5/5	0.56	10	A	5/5
Post Office Square NB TH/RT	0.52	19	B	9/9	0.55	20	C	10/10	0.55	20	C	10/10
Overall	**0.62**	**17**	**B**	–	**0.66**	**18**	**B**	–	**0.66**	**18**	**B**	–
Congress Street at Milk Street												
Weekday Morning:												
Milk Street EB TH	0.25	26	C	2/3	0.26	26	C	2/3	0.26	27	C	2/3
Milk Street EB RT	0.32	40	D	1/2	0.45	37	D	1/3	0.43	38	D	1/3
Congress Street SB LT	0.08	44	D	1/2	0.08	47	D	1/2	0.08	47	D	1/2
Congress Street SB TH	0.27	17	B	5/6	0.30	18	B	5/7	0.29	18	B	5/7
Overall	**0.28**	**25**	**C**	–	**0.35**	**25**	**C**	–	**0.34**	**25**	**C**	–
Weekday Evening:												
Water Street EB LT	0.41	29	C	5/6	0.43	30	C	5/7	0.43	30	C	5/7
Water Street EB TH/RT	0.75	50	D	4/10	0.83	59	E	5/11	0.85	61	E	5/11
Congress Street SB LT/TH	0.08	8	A	0/1	0.09	8	A	0/1	0.09	8	A	0/1
Post Office Square NB TH/RT	0.31	10	A	4/4	0.33	10	A	4/5	0.33	10	A	4/5
Overall	**0.46**	**21**	**C**	–	**0.49**	**22**	**C**	–	**0.50**	**22**	**C**	–

See notes at end of table.

Table 2-10 Signalized Intersection Level of Service and Vehicle Queue Summary (Continued)

Signalized Intersection/Peak Hour/Movement	2014 Existing				2021 No-Build				2021 Build			
	V/C[a]	Delay[b]	LOS[c]	Queue[d] Avg/95th	V/C	Delay	LOS	Queue Avg./95th	V/C	Delay	LOS	Queue Avg./95th
Pearl Street at Milk Street												
Weekday Morning:												
Milk Street EB LT	0.08	58	E	1/3	0.09	58	E	1/3	0.09	58	E	1/3
Milk Street EB TH	0.31	19	B	5/7	0.32	19	B	5/7	0.32	19	B	5/7
Pearl Street NB TH/RT	0.20	10	B	1/1	0.22	10	B	1/2	0.22	10	B	1/2
Overall	**0.26**	**23**	**C**	–	**0.27**	**23**	**C**	–	**0.27**	**23**	**C**	–
Weekday Evening:												
Milk Street EB LT	0.19	17	B	0/2	0.19	17	B	0/2	0.19	17	B	0/2
Milk Street EB TH	0.32	18	B	5/7	0.33	18	B	5/7	0.33	18	B	5/7
Pearl Street NB TH/RT	0.45	21	C	5/6	0.48	21	C	5/7	0.47	21	C	5/7
Overall	**0.38**	**19**	**B**	–	**0.40**	**19**	**B**	–	**0.40**	**19**	**B**	–
Devonshire Street at Milk Street												
Weekday Morning:												
Milk Street EB TH/RT	0.24	10	A	1/2	0.25	10	A	1/2	0.25	10	A	1/2
Devonshire Street SB LT/TH/RT	0.40	28	C	2/4	0.42	28	C	2/4	0.42	28	C	2/4
Overall	**0.32**	**18**	**B**	–	**0.33**	**18**	**B**	–	**0.33**	**18**	**B**	–
Weekday Evening:												
Milk Street EB TH/RT	0.32	10	B	2/3	0.33	10	B	2/3	0.33	10	B	2/3
Devonshire Street SB LT/TH/RT	0.40	22	C	3/4	0.42	22	C	3/5	0.42	22	C	3/4
Overall	**0.36**	**14**	**B**	–	**0.37**	**15**	**B**	–	**0.37**	**15**	**B**	–

[a]Volume-to-capacity ratio

[b]Control (signal) delay per vehicle in seconds rounded to nearest second – rounded value may not correspond to LOS designation.

[c]Level of Service

[d]Queue length in vehicles

[e]95th percentile queue is metered by upstream signal

EB = eastbound; WB = westbound; NB = northbound; SB = southbound; LT = left-turning movements; TH = through movements; RT = right-turning movements

Table 2-11 Unsignalized Intersection Level of Service and Vehicle Queue Summary

Unsignalized Intersection/Peak Hour/Movement	2014 Existing				2021 No-Build				2021 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue[d] 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th
Kilby Street at State Street												
Weekday Morning:												
State Street WB TH	547	0	A	0	569	0	A	0	569	0	A	0
Kilby Street NB LT	143	11	B	1	148	11	B	1	168	11	B	1
Weekday Evening:												
State Street WB TH	631	0	A	0	653	0	A	0	655	0	A	0
Kilby Street NB LT	132	11	B	1	137	12	B	1	160	12	B	1
Congress Street at Quaker Lane												
Weekday Morning:												
Quaker Lane EB LT/RT	0	0	A	0	0	0	A	0	6	14	B	0
Congress Street NB LT/TH	347	0	A	0	374	0	A	0	357	0	A	0
Congress Street SB TH/RT	710	0	A	0	766	0	A	0	742	0	A	0
Weekday Evening:												
Causeway Street EB TH/RT	4	18	C	0	4	19	C	0	8	21	C	0
Causeway Street WB LT/TH	756	0	A	0	808	0	A	0	784	0	A	0
Causeway Street WB TH	750	0	A	0	790	0	A	0	789	0	A	0
Quaker Lane at Devonshire Street												
Weekday Morning:												
Quaker Lane WB LT	19	10	B	0	20	10	B	0	0	0	A	0
Devonshire Street SB LT/TH	232	0	A	0	250	0	A	0	273	0	A	0
Weekday Evening:												
Quaker Lane WB LT	22	10	B	0	23	11	B	0	0	0	A	0
Devonshire Street SB LT/TH	205	0	A	0	216	0	A	0	254	0	A	0
Congress Street at Quaker Lane/Exchange Street												
Weekday Morning:												
Quaker Lane EB LT/TH/RT	1	9	A	0	1	9	A	0	0	0	A	0
Exchange Street LT/TH/RT	74	13	B	1	76	14	B	1	76	13	B	1
Congress Street NB LT/TH	306	0	A	0	332	0	A	0	314	0	A	0
Congress Street SB TH/RT	702	0	A	0	758	0	A	0	744	0	A	0
Weekday Evening:												
Quaker Lane EB LT/TH/RT	1	9	A	0	1	9	A	0	0	0	A	0
Exchange Street LT/TH/RT	110	20	C	1	113	22	C	2	113	21	C	2
Congress Street NB LT/TH	675	0	A	0	725	0	A	0	698	0	A	0
Congress Street SB TH/RT	748	0	A	0	788	0	A	0	792	0	A	0

See notes at end of table.

Table 2-11 Unsignalized Intersection Level of Service and Vehicle Queue Summary (Continued)

Unsignalized Intersection/Peak Hour/Movement	2014 Existing				2021 No-Build				2021 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue[d] 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th
Washington Street at Water Street												
Weekday Morning:												
Parking Garage Driveway EB LT/TH	15	14	B	0	16	14	B	0	16	14	B	0
Washington Street NB TH/RT	652	0	A	0	676	0	A	0	676	0	A	0
Weekday Evening:												
Parking Garage Driveway EB LT/TH	107	14	B	1	107	15	B	1	107	15	B	1
Washington Street NB TH/RT	566	0	A	0	588	0	A	0	588	0	A	0
Congress Street at Hawes Street												
Weekday Morning:												
Hawes Street WB LT/RT	3	13	B	0	3	14	B	0	3	13	B	0
Congress Street NB TH	306	0	A	0	332	0	A	0	314	0	A	0
Congress Street SB TH	734	0	A	0	791	0	A	0	777	0	A	0
Weekday Evening:												
Hawes Street WB LT/RT	56	25	C	1	58	29	D	1	58	27	D	1
Congress Street NB TH	675	0	A	0	725	0	A	0	698	0	A	0
Congress Street SB TH	775	0	A	0	816	0	A	0	821	0	A	0

[a]Demand in vehicles per hour

[b]Average control delay per vehicle (in seconds) rounded to nearest second – rounded value may not correspond to LOS designation

[c]Level of Service

[d]Queue length in vehicles

EB = eastbound; WB = westbound; NB = northbound; SB = southbound; LT = left-turning movements; TH = through movements; RT = right-turning movements

Congress Street at State Street and Devonshire Street – Under 2014 Existing conditions, this signalized intersection currently operates at an overall LOS C and B during the weekday morning and weekday evening peak hours, respectively. Under 2021 No-Build conditions, this location is projected to continue to operate at an overall LOS C and B during the weekday morning and weekday evening peak hours, respectively. Under 2021 Build conditions, this location is projected to continue to operate at LOS C and B during the weekday morning and weekday evening peak hours, respectively. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Devonshire Street at Water Street – Under 2014 Existing conditions, this signalized intersection currently operates at an overall LOS B during the weekday morning and weekday evening peak hours. Under 2021 No-Build conditions, this location is projected to continue to operate at an overall LOS B during the weekday morning and weekday evening peak hours. Under 2021 Build conditions, this location is projected to continue to operate at LOS B during the weekday morning and weekday evening peak hours. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Congress Street at Water Street – Under 2014 Existing conditions, this signalized intersection currently operates at an overall LOS C and B during the weekday morning and weekday evening peak hours, respectively. Under 2021 No-Build conditions, this location is projected to continue to operate at an overall LOS C and B during the weekday morning and weekday evening peak hours, respectively. Under 2021 Build conditions, this location is projected to continue to operate at LOS C and B during the weekday morning and weekday evening peak hours, respectively. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Congress Street at Milk Street – Under 2014 Existing conditions, this signalized intersection currently operates at an overall LOS C during the weekday morning and weekday evening peak hours. Under 2021 No-Build conditions, this location is projected to continue to operate at an overall LOS C during the weekday morning and weekday evening peak hours. Under 2021 Build conditions, this location is projected to continue to operate at LOS C during the weekday morning and weekday evening peak hours. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Pearl Street at Milk Street – Under 2014 Existing conditions, this signalized intersection currently operates at an overall LOS C and B during the weekday morning and weekday evening peak hours, respectively. Under 2021 No-Build conditions, this location is projected to continue to operate at an overall LOS C and B during the weekday morning and weekday evening peak hours, respectively. Under 2021 Build conditions, this location is projected to continue to operate at LOS C and B during the weekday morning and

weekday evening peak hours, respectively. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Devonshire Street at Milk Street – Under 2014 Existing conditions, this signalized intersection currently operates at an overall LOS B during the weekday morning and weekday evening peak hours. Under 2021 No-Build conditions, this location is projected to continue to operate at an overall LOS B during the weekday morning and weekday evening peak hours. Under 2021 Build conditions, this location is projected to continue to operate at LOS B during the weekday morning and weekday evening peak hours. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

2.4.1.4 Unsignalized Intersections

The addition of Project-related traffic to the unsignalized study area intersections was not shown to result in a change in the overall LOS over anticipated future conditions without the Project (i.e., No-Build conditions). Only one of the eight unsignalized study intersections was found to have a movement that was operating below a LOS D independent of the Project.

Kilby Street at State Street – Under 2014 Existing conditions, critical movements at this intersection (left-turns from Kilby Street) were shown to operate at LOS B during both the weekday morning and weekday evening peak hours. Under 2021 No-Build conditions, critical movements are projected to continue to operate at LOS B during both the weekday morning and weekday evening peak hours. Under 2021 Build conditions, critical movements are projected to continue to operate at LOS B conditions during both the weekday morning and weekday evening peak hours. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Devonshire Street at Quaker Lane – Under 2014 Existing conditions, critical movements at this intersection (left-turns from Quaker Lane) were shown to operate at LOS B during the weekday morning and weekday evening peak hours. Under 2021 No-Build conditions, critical movements are projected to continue to operate at LOS B during the weekday morning and weekday evening peak hours. Under 2021 Build conditions, it is proposed that this segment of Quaker Lane be converted to a one-way roadway in the eastbound direction thereby eliminating exiting movements onto Devonshire Street.

Congress Street at Quaker Lane (north) – Under 2014 Existing conditions, critical movements at this intersection (left- and right-turns from Quaker Lane) were shown to operate at LOS A and C during the weekday morning and weekday evening peak hours, respectively. Under 2021 No-Build conditions, critical movements are projected to continue to operate at LOS A and C during the weekday morning and weekday evening

peak hours, respectively. Under 2021 Build conditions, critical movements are projected to operate at LOS B and C conditions during the weekday morning and weekday evening peak hours, respectively. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Congress Street at Quaker Lane (south) and Exchange Street – Under 2014 Existing conditions, critical movements at this intersection (left- and right-turns from Quaker Lane and Exchange Street) were shown to operate at LOS C or better during the weekday morning and weekday evening peak hours. Under 2021 No-Build conditions, critical movements are projected to continue to operate at LOS C or better during the weekday morning and weekday evening peak hours. Under 2021 Build conditions, critical movements are projected to continue to operate at LOS C or better during the weekday morning and weekday evening peak hours. The addition of project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Washington Street at Water Street – Under 2014 Existing conditions, critical movements at this intersection (left-turns and through movements from the parking garage driveway) were shown to operate at LOS B during both the weekday morning and weekday evening peak hours. Under 2021 No-Build conditions, critical movements are projected to continue to operate at LOS B during both the weekday morning and weekday evening peak hours. Under 2021 Build conditions, critical movements are projected to continue to operate at LOS B conditions during both the weekday morning and weekday evening peak hours. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Congress Street at Hawes Street – Under 2014 Existing conditions, critical movements at this intersection (left- and right-turns from Hawes Street) were shown to operate at LOS B and D during the weekday morning and weekday evening peak hours, respectively. Under 2021 No-Build conditions, critical movements are projected to continue to operate at LOS B and D during the weekday morning and weekday evening peak hours, respectively. Under 2021 Build conditions, critical movements are projected to continue to operate at LOS B and D conditions during the weekday morning and weekday evening peak hours, respectively. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

2.4.2 Pedestrian Impact Analysis

2.4.2.1 Introduction

A LOS analysis at intersection crossings was conducted under Existing, No-Build, and Build conditions in order to assess Project-related impacts on the pedestrian infrastructure.

2.4.2.2 Methodology

In order to analyze the quality of service provided to pedestrians, a pedestrian facility analysis was conducted using the methodologies described in the 2010 *Highway Capacity Manual*. The concept of LOS for pedestrian facilities is similar to that discussed previously for signalized and unsignalized intersections, and is evaluated separately for each crosswalk and intersection corner. A five step evaluation process is used to determine the pedestrian LOS as follows:

1. Determine street corner circulation area;
2. Determine crosswalk circulation area;
3. Determine pedestrian delay;
4. Determine pedestrian LOS score for intersection; and
5. Determine overall LOS.

This five step approach allows for a holistic definition of the pedestrian experience at an intersection between the initial wait on the corner to the crossing within the crosswalk. Aggregating the LOS score for each of these experiences results in an overall pedestrian LOS score for an intersection.

Six levels of service scores are defined for pedestrian facilities and are a measure of the pedestrian's experience as it relates to pedestrian density, crossing delay, crossing distance and perceived exposure to traffic. They are given letter designations from "A" to "F", with LOS A representing the "best" crossing conditions and LOS F representing the "worst" crossing conditions. Table 2-12 summarizes the relationship between LOS and the perceived LOS score for pedestrian facilities at signalized intersections.

Table 2-12 Pedestrian Level of Service Criteria at Signalized Intersections[a]

Level of Service	LOS Score (Seconds)
A	≤ 2.00
B	> 2.00 to 2.75
C	> 2.75 to 3.50
D	> 3.50 to 4.25
E	> 4.25 to 5.00
F	> 5.00

[a]Source: *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010; Exhibit 18-5.

For two-way Stop-controlled intersections, the pedestrian LOS is related to the average pedestrian delay associated with pedestrian crossings, and follows a six step evaluation procedure as follows:

1. Identify two-stage crossings (i.e., locations where a median refuge island is available);
2. Determine critical headway;
3. Estimate probability of a delayed crossing;
4. Calculate average delay to wait for adequate gap;
5. Estimate delay reduction due to yielding vehicles; and
6. Calculate average pedestrian delay and determine the LOS.

Table 2-13 summarizes the relationship between LOS and average pedestrian delay (control delay) for pedestrian facilities at two-way Stop-controlled intersections.

Table 2-13 Pedestrian Level of Service Criteria at Two-Way Stop-Controlled Intersections[a]

Level of Service	Control Delay (Seconds per Pedestrian)
A	≤ 5
B	> 5 to 10
C	> 10 to 20
D	> 20 to 30
E	> 30 to 45
F	> 45

[a]Source: *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010; Exhibit 19-2.

The *Highway Capacity Manual* does not provide a definition for pedestrian LOS at all-way Stop-controlled intersections, but does provide general guidance to determine the potential pedestrian delay that may be incurred as a result of intersection geometry, traffic volumes and pedestrian demand. The nature of the operation of all-way Stop-controlled intersections implies that, depending on driver behavior, pedestrian crossing delay should be less than that experienced at a similar intersection that is under two-way Stop-control.

2.4.2.3 Analysis Results

Pedestrian LOS analyses were conducted for 2014 Existing, 2021 No-Build and 2021 Build conditions for the pedestrian crossings within the study area located adjacent to the City block bordered by State Street, Congress Street, Devonshire Street and Water Street, given that pedestrian activity (and impacts) associated with the Project will be concentrated and therefore more pronounced at these crossings providing direct access to the Project site. The results of the analyses are summarized for the signalized and unsignalized study intersections in Tables 2-14 and 2-15, respectively. The detailed analysis results are presented in Appendix C.

Table 2-14 Pedestrian Level of Service Summary Signalized Intersections

	2014 Existing			2021 No-Build			2021 Build		
Intersection/Time Period/Crossing Path	Demand[a]	LOS[b]	LOS[c]	Demand	LOS	LOS	Demand	LOS	LOS
Congress Street at State Street and Devonshire Street									
Weekday Morning:									
Crossing State Street (east)	194	2.16	B	201	2.17	B	214	2.17	B
Crossing State Street (west)	481	1.81	A	530	1.81	A	564	1.85	A
Crossing Congress Street (north)	456	2.53	B	472	2.55	B	472	2.55	B
Crossing Congress Street (south)	910	2.38	B	942	2.40	B	969	2.39	B
Weekday Evening:									
Crossing State Street (east)	185	2.17	B	191	2.17	B	217	2.19	B
Crossing State Street (west)	759	1.80	A	786	1.80	A	838	1.82	A
Crossing Congress Street (north)	713	2.62	B	739	2.62	B	739	2.65	B
Crossing Congress Street (south)	1,288	2.48	B	1,334	2.48	B	1,444	2.50	B
Devonshire Street at Water Street									
Weekday Morning:									
Crossing Water Street (east)	636	1.80	A	658	1.81	A	697	1.81	A
Crossing Water Street (west)	655	1.85	A	678	1.86	A	705	1.86	A
Crossing Devonshire Street (north)	215	1.91	A	223	1.92	A	255	1.92	A
Crossing Devonshire Street (south)	591	1.80	A	612	1.80	A	638	1.80	A
Weekday Evening:									
Crossing Water Street (east)	866	1.81	A	896	1.82	A	963	1.83	A
Crossing Water Street (west)	687	1.90	A	711	1.91	A	753	1.92	A
Crossing Devonshire Street (north)	244	1.89	A	253	1.90	A	306	1.90	A
Crossing Devonshire Street (south)	575	1.79	A	596	1.80	A	638	1.80	A
Congress Street at Water Street									
Weekday Morning:									
Crossing Water Street (east)	838	1.85	A	868	1.86	A	881	1.89	A
Crossing Water Street (west)	628	1.83	A	650	1.83	A	701	1.83	A
Crossing Congress Street (north)	322	2.43	B	333	2.46	B	352	2.48	B
Crossing Congress Street (south)	506	2.56	B	522	2.59	B	537	2.59	B
Weekday Evening:									
Crossing Water Street (east)	984	1.79	A	1,019	1.80	A	1,045	1.84	A
Crossing Water Street (west)	721	1.81	A	747	1.82	A	832	1.82	A
Crossing Congress Street (north)	404	2.54	B	419	2.56	B	457	2.58	B
Crossing Congress Street (south)	486	2.68	B	504	2.71	B	530	2.72	B

[a]Demand in pedestrians per hour.

[b]Seconds.

[c]Level of service.

Table 2-15 Pedestrian Level of Service Summary Unsignalized Intersections

Intersection/Time Period/Crossing Path	2014 Existing			2021 No-Build			2021 Build		
	Demand[a]	Delay[b]	LOS[c]	Demand	Delay	LOS	Demand	Delay	LOS
Devonshire Street at Quaker Lane									
Weekday Morning:									
Crossing Quaker Lane (east)	571	<1	A	591	<1	A	620	<1	A
Crossing Devonshire Street (north)	27	4	A	28	5	A	28	5	A
Weekday Evening:									
Crossing Quaker Lane (east)	631	<1	A	653	<1	A	709	<1	A
Crossing Devonshire Street (north)	78	4	A	81	4	A	81	5	A
Congress Street at Quaker Lane (north)									
Weekday Morning:									
Crossing Quaker Lane (west)	329	<1	A	341	<1	A	368	<1	A
Crossing Congress Street (north)	108	>45	F	111	>45	F	111	>45	F
Crossing Congress Street (south)	46	>45	F	47	>45	F	47	>45	F
Weekday Evening:									
Crossing Quaker Lane (west)	542	<1	A	561	<1	A	613	<1	A
Crossing Congress Street (north)	44	>45	F	46	>45	F	46	>45	F
Crossing Congress Street (south)	46	>45	F	48	>45	F	48	>45	F
Congress Street at Quaker Lane (south) and Exchange Street									
Weekday Morning:									
Exchange Street (east)	932	<1	A	966	<1	A	966	<1	A
Crossing Quaker Lane (west)	471	<1	A	488	<1	A	509	<1	A
Crossing Congress Street (north)	199	>45	F	206	>45	F	206	>45	F
Crossing Congress Street (south)	3	>45	F	3	>45	F	3	>45	F
Weekday Evening:									
Exchange Street (east)	622	<1	A	644	<1	A	684	<1	A
Crossing Quaker Lane (west)	1,272	2	A	1,317	2	A	1,317	2	A
Crossing Congress Street (north)	64	>45	F	67	>45	F	67	>45	F
Crossing Congress Street (south)	24	>45	F	25	>45	F	25	>45	F

[a]Demand in pedestrians per hour.

[b]Average delay per pedestrian.

[c]Level of service.

As shown in Table 2-14, the signalized pedestrian crossings of Congress Street, Devonshire Street, State Street and Water Street, adjacent to the Project site, were shown to operate at a pedestrian LOS B or better under 2014 Existing conditions, and are projected to maintain LOS B operations or better under both 2021 No-Build and 2021 Build conditions, with minimal impacts as a result of the addition of Project-related pedestrian activity.

As shown in Table 2-15, the unsignalized crossings of Quaker Lane at both Congress Street and Devonshire Street are shown to operate at LOS A under 2014 Existing, 2021 No-Build and 2021 Build conditions. Pedestrian crossings of Congress Street at unmarked locations currently operate at LOS F and are projected to continue to operate at LOS F under future conditions.

2.4.3 Public Transportation Impact Analysis

Under the 2021 Build conditions, it is estimated that the Project will generate 75 transit trips during the weekday morning peak hour and 109 transit trips during the weekday evening peak hour. These trips will be distributed across the various public transportation systems that serve the Project site, including the Orange Line, Blue Line, Green Line, commuter rail and bus service. Based on the peak period transit capacity and ridership information provided by the CTPS and documented in Section 2.2.5 above, sufficient capacity exists within the overall public transportation system serving the study area and the Project site to accommodate the additional ridership associated with the Project.

2.4.4 Loading/Delivery Impacts

Primary loading and delivery activities associated with the Project will occur in two designated off-street loading areas: Quaker Lane and Devonshire Street. Loading activities on Quaker Lane will be restricted to occur only during late night or early morning hours, and will not coincide with peak hours of daytime pedestrian activity along the corridor.

As currently planned, trash and recycling removal and loading for the residential, commercial and hotel uses proposed at 15 Congress Street and 68 Devonshire Street will occur off Quaker Lane during late night or early morning hours. Trash and recycling activities will be managed by a private trash and recycling disposal company. No trash removal activities associated with the 15 Congress Street or 68 Devonshire Street properties are proposed via either Congress Street or Devonshire Street.

Trash and recycling removal and loading for 40 Water Street are proposed via designated loading areas on Devonshire Street, as well as the southern leg of Quaker Lane off Congress Street. Consistent with the residential, commercial and hotel uses, trash and recycling activities on Quaker Lane will be managed by a private trash and recycling disposal company and will occur during late night or early morning hours and not coincide with peak hours of daytime pedestrian activity along the corridor.

2.5 Transportation Improvement Program

The previous sections of this assessment have quantified and evaluated in detail the impact of the Project on the transportation infrastructure. This section presents a summary of Project-related improvements that are designed to: 1) address existing deficiencies identified as a part of this assessment; 2) minimize the impact of the Project on the transportation system and proximate neighborhood areas; and 3) provide safe and efficient access to the Project site.

2.5.1 Recommendations

The Proponent is committed to the implementation of a comprehensive transportation improvement program that is designed to reduce the impact of the planned development on the transportation infrastructure. The major elements of the improvement program can be separated into three primary categories: i) Project site access accommodations; ii) off-site improvements; and iii) Transportation Demand Management (TDM) measures. In addition, the framework of a construction traffic management plan have also been developed for the Project. The elements of the planned transportation improvement program are discussed in detail in the following sections.

2.5.1.1 Project Site Access

As previously noted, on-site parking will not be provided for the Project, with Project-related parking demand accommodated within off-site private commercial parking facilities, consistent with the current use of the Project site. Vehicular traffic to and from the Project site is expected to be minimal and consist primarily of trash removal and loading activities, which will occur during late night and early morning hours, and pick-up/drop-off service to the proposed hotel uses. In order to accommodate vehicular access to and from the site and minimize conflicts with pedestrian activity along Quaker Lane, the following recommendations are made:

- The northern east-west segment of Quaker Lane that travels between Devonshire Street and Congress Street should be designated as a one-way roadway in the eastbound direction. Currently, Quaker Lane provides an opportunity for cut-through traffic for vehicles traveling northbound on Congress Street that are destined for Devonshire Street southbound. Furthermore, the narrow width of the corridor is not appropriate to accommodate two-way traffic flow. Conversion of this segment of Quaker Lane to a one-way eastbound roadway would eliminate existing cut-through traffic and minimize conflicts between vehicular and pedestrian traffic under post-development conditions.

- Consideration should be given to providing a designated off-street short-term parking zone area along the northern east-west segment of Quaker Lane in order to accommodate pick-up and drop-off activity associated with the proposed hotel uses at 1 68 Devonshire Street. Consistent with the proposed one-way traffic pattern for this segment of the corridor, the parking zone should be located on the southern side of the roadway adjacent to the hotel use, with a continuous ADA compliant sidewalk provided between the pick-up/drop-off area and the hotel entrance off Devonshire Street. Provision of a parking zone area would serve to ensure that hotel pick-up and drop-off activity does not adversely impact traffic flow along Quaker Lane or result in queuing that impacts Devonshire Street traffic operations.

- Vehicles exiting the Project via Quaker Lane onto Congress Street should be placed under STOP-sign control. Do Not Enter and One-Way signage should be installed at the northern terminus of Quaker Lane with Congress Street to designate this segment of Quaker Lane as one-way in the eastbound direction.

- It is recommended that removable bollards be installed along Quaker Lane to physically prohibit vehicular traffic outside of off-peak hours between the northern east-west portion of the corridor and the north-south segment that travels between 15 Congress Street and 68 Devonshire Street. This measure will serve to designate this segment of Quaker Lane as a pedestrian zone, with vehicular activity in this area consisting primarily of loading and trash removal activities which would occur only during late night and early morning hours.

- All signs and other pavement markings to be installed within the development shall conform to the applicable standards of the Manual on Uniform Traffic Control Devices (MUTCD).

2.5.1.2 Transportation Demand Management Program

Introduction

The Project site is ideally situated in close proximity to transit service offered by the MBTA. The Project site is served by a number of public transportation services, including bus service and subway service via the Orange, Blue, Red and Green Lines. The Orange Line/Blue Line State Street Station head houses are located on the southwest corner of the intersection of Devonshire Street with Water Street as well as the northwest corner of Devonshire Street and Court Street, immediately adjacent to the Project site. In addition, the Government Center Station, which provides access to the Green Line is located in close walking distance to the Project site at City Hall Plaza. Further, Government Center and Post Office Square both offer Hubway bicycle rental stations in walking distance of the site, offering non-automobile travel options to accommodate increased demands associated with the Project.

The following pedestrian and bicycle improvements/accommodations, TDM measures, and trip reduction strategies are proposed with the goal of further minimizing the Project's overall impact.

Pedestrian Improvements

As part of the Project, the Proponent will define and enhance pedestrian facilities as follows:

- Sidewalk and streetscape improvements along the Quaker Lane corridor to transform the corridor from its current loading zone use to a pedestrian friendly environment;

- Conversion of the northern segment of Quaker Lane from a two-way roadway to a one-way roadway in the eastbound direction to minimize the level of vehicular activity along the corridor;

- Installation of removable bollards along the northern east-west segment of Quaker Lane to prohibit vehicular through traffic from the southern segment of the corridor thereby minimizing conflicts between vehicular and pedestrian traffic;

- Expansion of the existing sidewalk area at the intersections of Water Street with Congress Street and Devonshire Street to enhance pedestrian crossings at these locations;

- Reconstruct portions of the existing sidewalks, as necessary, along the Project site frontage on Congress Street, Devonshire Street and Quaker Lane;

- Installation of new lighting along Quaker Lane;

- The Quaker Lane intersections with Congress Street will be constructed so as to be flush so that the sidewalk is maintained at a consistent grade along Congress Street.

Traffic Reduction Strategies

In order to reduce single occupant vehicle (SOV) travel to the Project site and encourage the use of alternative modes of transportation to reach the planned development, the following traffic reduction strategies may be implemented in conjunction with the Project:

- Parking will not be provided on-site for employees, residents, hotel guests or patrons of the Project;

- Promote the use of public transportation to hotel guests and employees in website based materials including links to the appropriate home pages of the MBTA and MassRIDES;

- Participate in the MBTA Corporate T-Pass Program to the extent practical and as allowable pursuant to corporate policies; and

- Promote bicycle use as an alternative to SOV travel by providing promotional material on bicycle commuting and bicycle safety, and offer incentives for bicycle use.

Alternative Work Schedules

Flexible working hours allow employees to choose their own starting and finishing times by establishing a required core time such as 9:00 a.m. to 4:00 p.m.; this allows employees to vary work schedules and reduces peak-hour demand. Project tenants will evaluate the feasibility of implementing a flextime policy and/or telecommuting for clerical/office employees in order to reduce peak-hour traffic demands.

On-Site Banking/Direct Deposit

Project tenants will be encouraged to offer employees the option of direct deposit of paychecks in order to reduce off-site trips and the overall volume of employee traffic.

2.5.1.3 Construction Management Plan (CMP)

An important component of the transportation improvement program is an effective series of measures designed to minimize traffic flow and safety impacts during the Project's construction phase. Summarized below are several measures which the Proponent and the general contractor will undertake during the construction phase of the Project.

- The Proponent will coordinate with BTD regarding all transportation-related construction impacts of the Project.

- Prior to the implementation of any planned construction activities within the public right-of-way, the contractor will submit to BTD for review and approval a traffic and pedestrian management plan.

- The general contractor, through the A Better City TMA, will implement a car/vanpool program in order to reduce construction-related traffic and parking demands associated with the Project.

- The general contractor will be encouraged to offer subsidies to workers that use public transportation to be used toward the purchase of MBTA "Charlie Cards". Employees that participate in the program would also be eligible for the "guaranteed-ride-home" program through the A Better City TMA.

- Designated truck routes will be established to govern how trucks access the Project site. The goal of this commitment is to have construction trucks use only the regional highway system (I-93) and to avoid using residential city streets to the extent practical. Construction contracts for the Project will include notification of this provision.

- Secure fencing and sidewalk staging protection will be provided in areas affected by the construction to protect nearby pedestrian and vehicular traffic. Gate entrances into the construction area(s) will be determined jointly with BTD.

- Secure on-site storage will be provided for tools and equipment in an effort to minimize construction-related vehicle trips to the site.

- Full or partial street closures will be avoided to the extent possible. Should a partial street closure be necessary in order to off-load construction materials and/or complete construction-related activities, the closure will be limited to off-peak periods as defined by the BTD so as to minimize the impact on vehicular and pedestrian flow. Police details will be utilized as required by the BTD.

- During construction activities, as required by BTD, a police detail will be placed on-site within the sidewalk/street area to control pedestrian, bicycle and construction vehicle conflicts.

- Construction worker parking will be prohibited along local roadways in the vicinity of the Project site. Construction contracts for the Project will include notification of this prohibition.

2.5.1.4 Traffic Monitoring Program

The Proponent, by and through the A Better City TMA, will conduct a post-development traffic monitoring and employee survey program in order to evaluate the success, and to refine the elements, of the TDM program. The monitoring program will include obtaining traffic volume information at the driveways serving the Project site and an employee and hotel guest survey of commuting modes. The results of the annual monitoring program will be provided to the BRA, BTD and MassDOT. The monitoring program will commence upon full completion and occupancy of the Project and will continue for a period of two-years thereafter.

2.5.2 Conclusion

With implementation of the elements of the transportation improvement program described in the previous section, the Project can be accommodated within the confines of the transportation system in a safe and efficient manner. The Proponent will formalize the commitments to mitigation as a part of the City of Boston Transportation Access Plan Agreement (TAPA) to ensure that proper Project mitigation will be implemented as may be required to accommodate the Project and commensurate with the planned build-out and occupancy of the development.

Chapter 3.0

Environmental Review Component

3.0 ENVIRONMENTAL REVIEW COMPONENT

3.1 Wind

Increases in pedestrian level wind speeds can be caused by tall buildings, especially those that protrude above their surroundings. Conversely, buildings that are surrounded by others of equivalent height tend to be protected from prevailing upper-level winds; therefore they do not intercept and deflect the faster winds downward and no significant changes to the local pedestrian level wind environment occur.

The Project buildings, including the proposed additions, range in height from 11 to 13 stories, similar in height to many of the surrounding buildings, including 50 Congress Street and 10 Post Office Square, but significantly lower than several buildings that surround the Project site on each side, including Exchange Place (40 stories), 60 State Street (38 stories), 28 State Street (40 Stories), One Devonshire Place (24 stories), Federal Building & J.W. McCormack Post Office (22 stories), and One Post Office Square (40 stories). Considering the surrounding conditions, the Project is anticipated to be protected from surrounding buildings, and is not anticipated to bring strong upper level winds downward and, therefore, increase wind speeds at the pedestrian level.

3.2 Shadow

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

The shadow analysis presents the existing shadow and new shadow that would be created by the proposed Project additions, illustrating the incremental impact of the Project. The analysis focuses on nearby open spaces, sidewalks and bus stops adjacent to and in the vicinity of the Project site. Shadows have been determined using the applicable Altitude and Azimuth data for Boston. Figures showing the net new pedestrian-level shadow from the Project are provided in Figures 3-1 to 3-4.

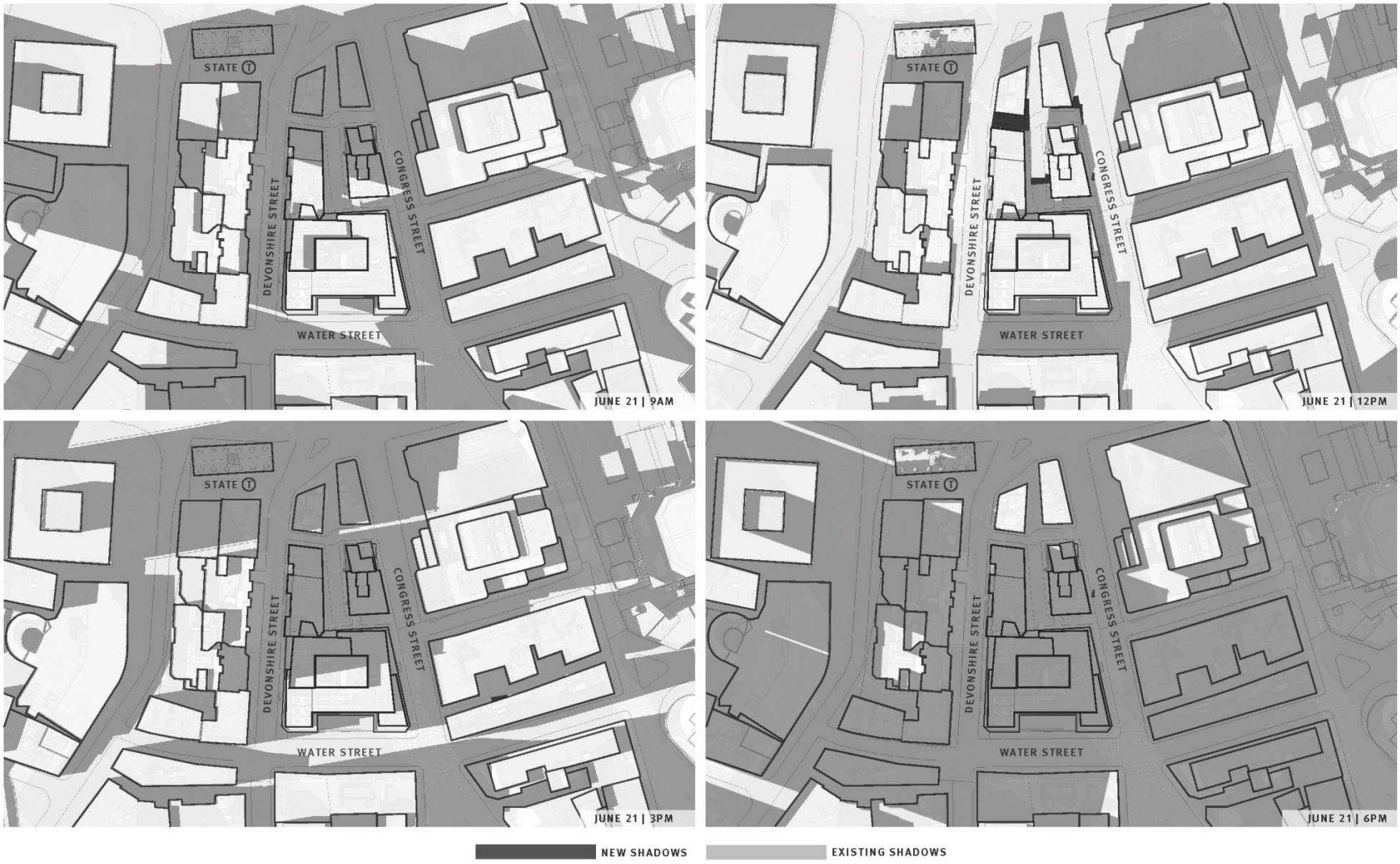
Due to the Project's location, proposed massing of new additions and immediate surroundings, new shadow from the proposed additions will be minimal. Only very small amounts of new shadow will fall on the immediately surrounding streets during the time periods studied. No new shadow will fall on nearby open spaces during any of the time periods studied. There will be limited new shadow on the Project's proposed space on Quaker Lane which is north of an existing building.

Congress Square Boston, Massachusetts

ARROWSTREET

Figure 3-1

Shadow Study – March 21

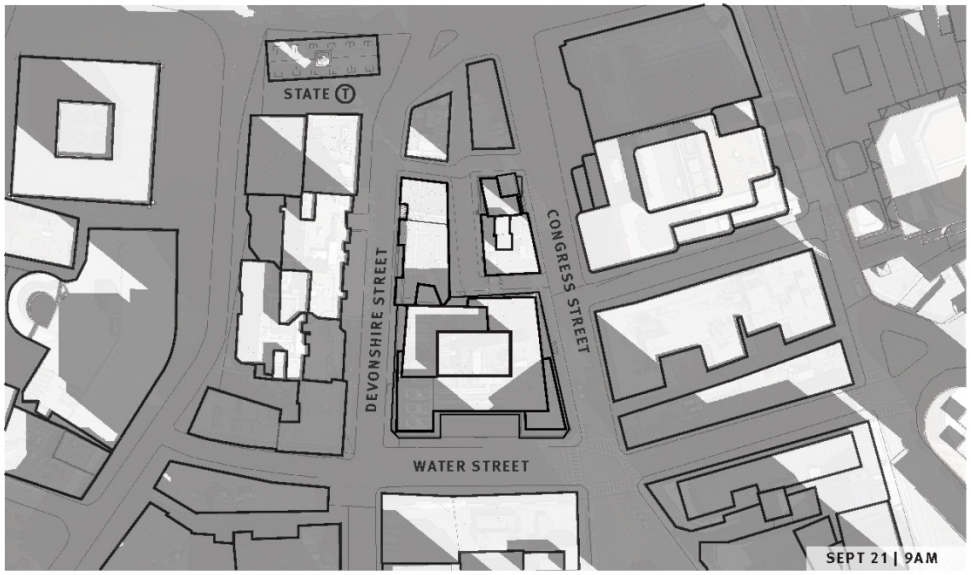


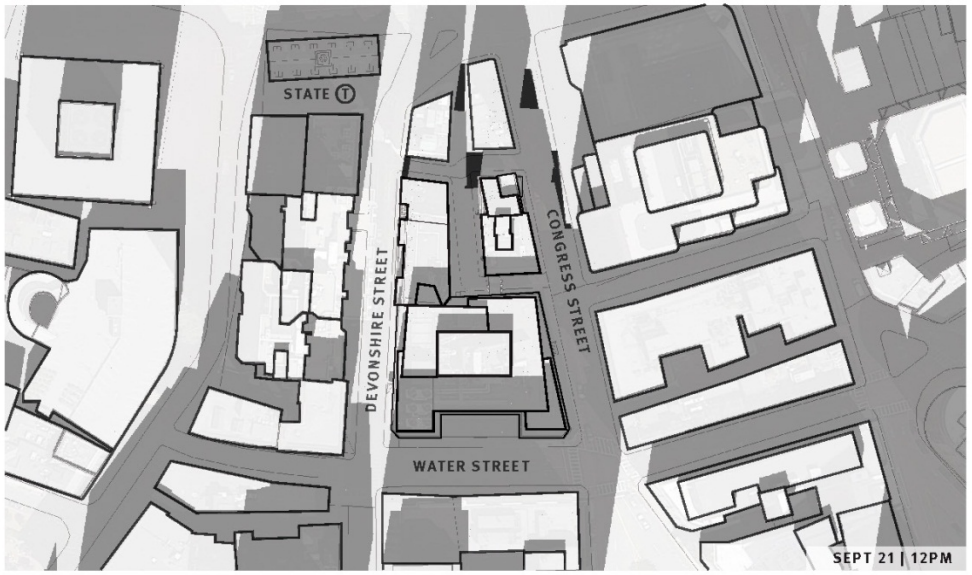
Congress Square Boston, Massachusetts

ARROWSTREET

Figure 3-2

Shadow Study – June 21





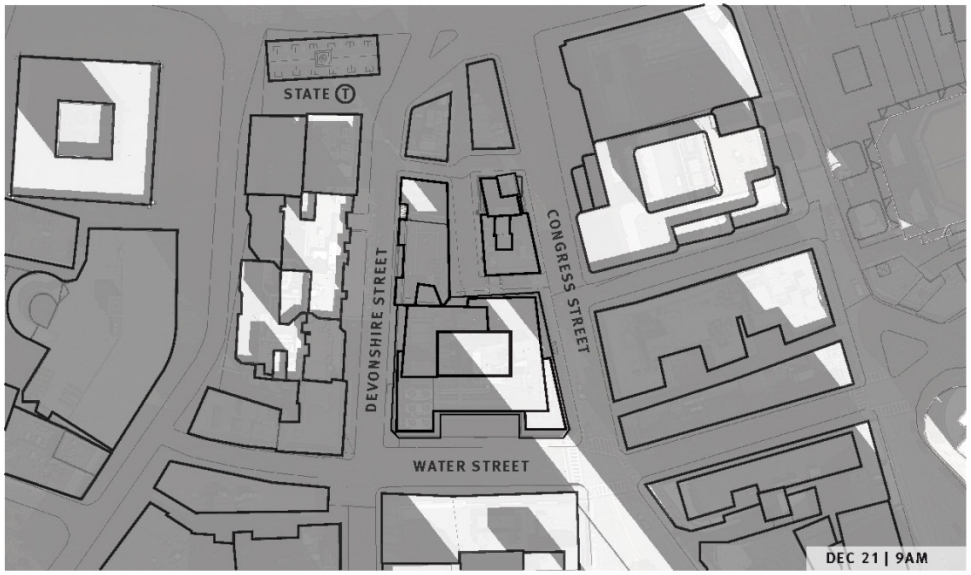
NEW SHADOWS
EXISTING SHADOWS

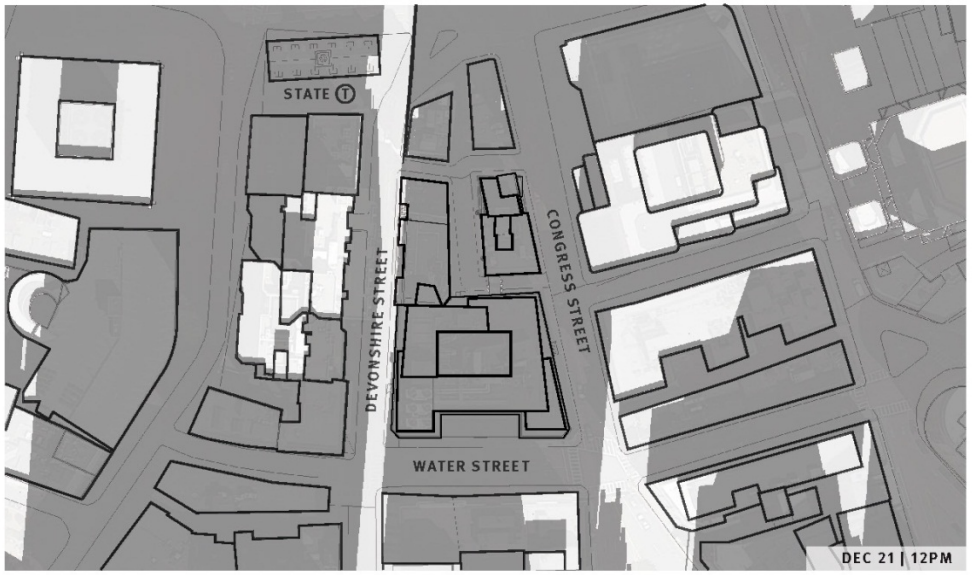
Note: No new pedestrian-level shadow is created at 6:00 p.m. on September 21.

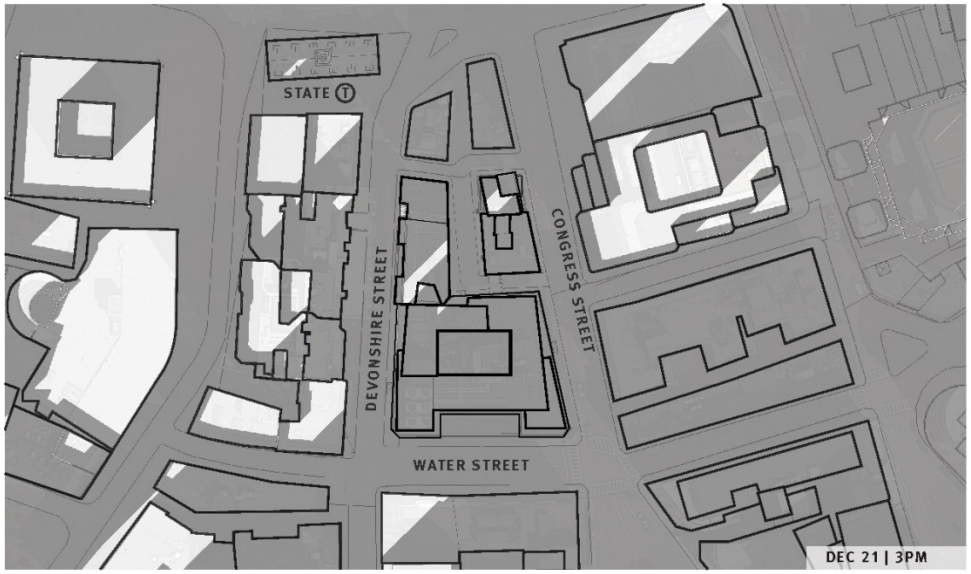
Congress Square Boston, Massachusetts

ARROWSTREET

Figure 3-3
Shadow Study – September 21







NEW SHADOWS

EXISTING SHADOWS

Congress Square Boston, Massachusetts

ARROWSTREET

Figure 3-4

Shadow Study – December 21

3.3 Daylight

If viewing the buildings alone, without the surrounding context, the new construction portions would result in a small increase of daylight obstruction. However, the site is surrounding by significantly taller buildings, as listed in Section 3.1, and therefore views of the sky from the streets surrounding the Project site are limited. The daylight obstruction resulting from the new construction will be minimal and significantly less than daylight obstruction from buildings within the surrounding area.

3.4 Solar Glare

The Project materials are still being studied and glazing of the windows will be determined as the design progresses. Due to the area context, type of potential glass and glazing used, solar glare impacts are not currently anticipated.

3.5 Air Quality

3.5.1 Introduction

An air quality analysis has been conducted to determine the impact of pollutant emissions from mobile sources generated by the Project. Specifically, a microscale analysis was performed to evaluate the potential air quality impacts of carbon monoxide (CO) resulting from traffic flow around the Project area. Any new or replaced stationary sources will be reviewed by the Massachusetts Department of Environmental Protection (MassDEP) during permitting under the Environmental Results Program (ERP), if required.

3.5.1.1 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, Environmental Protection Agency (EPA) promulgated National Ambient Air Quality Standards (NAAQS) for these criteria pollutants: nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM) (PM-10 and PM-2.5), carbon monoxide (CO), ozone (O_3), and lead (Pb). The NAAQS are listed in Table 3-1. 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 are applied when comparing to the modeling results for a Project.

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 standards were developed by EPA to protect the human health against adverse health effects with a margin of safety.

Table 3-1 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 [1,8]	80	None
	24-hour [2,8]	365	None
	3-hour [2]	None	1,300
	1-hour [7]	196	None
PM-10 [6]	Annual	50	Same
	24-hour [3]	150	Same
PM-2.5	Annual [4]	12	15
	24-hour [5]	35	Same
CO	8-hour [2]	10,000	Same
	1-hour [2]	40,000	Same
Ozone	8-hour [3]	147	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 three 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 PM-10 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 three-year average of the 98th (NO_2) or 99th (SO_2) percentile of the daily maximum one-hour concentrations.
[8]The Annual and 24-hour SO_2 standards were revoked on June 2, 2010. However, these standards remain in effect until one year after an area is designated for the one-hour standard, unless currently in nonattainment.
Source: 40 CFR 50 and 310 CMR 6.00

MassDEP guidance directs project proponents to use the three most recent years of available background air quality monitoring data from within 10 kilometers (km) of a project site. Background concentrations were determined from the closest available monitoring stations to the proposed Project from the most recent air quality monitor data reported by the MassDEP as available in its Annual Air Quality Reports for 2011 to 2013. The closest monitor is located at 175 North Street, but only samples PM-2.5. The next closest monitor is at One City Square, but only samples PM-10 and PM-2.5. The Harrison

Avenue monitor samples for ozone and lead. The Kenmore Square monitor samples for the remaining criteria pollutants. All monitors are located in Boston, and consistent with MassDEP guidance, are 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. The second highest concentration 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. The one-hour NO_2 standard is attained when the three-year average of the 98th percentile of the maximum daily one-hour concentrations do not exceed 188 $\mu g/m^3$.

A summary of the background air quality concentrations are presented in Table 3-2.

Table 3-2 Observed Ambient Air Quality Concentrations and Selected Background Levels

Pollutant	Averaging Time	Form	2010	2011	2012	Background Concentration ($\mu g/m^3$)	Location
SO_2 [1][7][8]	1-Hour	99th %	50.6	34.6	31.4	50.6	Kenmore Sq., Boston
	3-Hour	H2H	64.5	36.2	41.9	64.5	Kenmore Sq., Boston
	24-Hour	H2H	24.6	14.1	15.7	24.6	Kenmore Sq., Boston
	Annual	H	6.2	4.9	2.6	6.2	Kenmore Sq., Boston
PM-10	24-Hour	H2H	34	37	40	40.0	One City Sq., Boston
	Annual	H	15.9	16.8	18	18.0	One City Sq., Boston
PM-2.5	24-Hour [4]	98th %	23.9	20.9	20	21.6	174 North St, Boston
	Annual [5]	H	10.32	9.47	8.8	9.5	174 North St, Boston
NO_2 [3]	1-Hour [6]	98th %	99.5	92.1	90.2	93.9	Kenmore Sq., Boston
	Annual	H	38.3	35.9	33.4	38.3	Kenmore Sq., Boston
CO [2]	1-Hour	H2H	1710	1482	1482	1710.0	Kenmore Sq., Boston
	8-Hour	H2H	1368	1026	1026	1368.0	Kenmore Sq., Boston
O_3	8-Hr [9]	H4H	117.8	153.1	115.8	128.9	Harrison Ave, Boston
Pb	3-Mo	H	0.017	0.014	0.007	0.017	Harrison Ave, Boston

Notes:
From 2010-2013 MassDEP Annual Data Summaries
[1] SO_2 reported in ppb. Converted to $\mu g/m^3$ using factor of 1 ppb = 2.62 $\mu g/m^3$.
[2] CO reported in ppm or ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 1140 $\mu g/m^3$.
[3] NO_2 reported in ppb. Converted to $\mu g/m^3$ using factor of 1 ppb = 1.88 $\mu g/m^3$.
[4] Background level for 24-hour PM-2.5 is the average concentration of the 98th percentile for three years.
[5] Background level for annual PM-2.5 is the average for three years.
[6] Background level for one-hour NO_2 is the average of the 98th percentile of the daily maximum one-hour values a over three years.
[7] The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.
[8] The 2011 - 2013 SO_2 three-hour value is no longer reported by MassDEP. One-hour H2H used instead. 2013 24-hour value also no longer reported. Obtained from EPA AirData website.
[9] Annual fourth-highest daily maximum eight-hour concentration, averaged over three years.

3.5.2 Methodology

3.5.2.1 Microscale Analysis

The BRA typically requests an analysis of the effect on air quality of the increase in traffic generated by projects subject to Large Project Review. This "microscale" analysis is typically required for any intersection (including garage entrances/exits) where 1) Project traffic would impact intersections or roadway links currently operating at 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. The microscale analysis involves modeling of carbon monoxide (CO) emissions from vehicles idling at and traveling through signaled 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. The NAAQS 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 current vehicles has reduced the occurrences of CO hotspots. Air quality 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 analysis for the Project followed the procedure outlined in U.S. EPA's intersection modeling guidance.[1]

The microscale analysis has been conducted using the latest versions of EPA's MOVES and CAL3QHC programs to estimate CO concentrations at sidewalk receptor locations.

Baseline (2014) and future year (2021) emission factor data calculated from the MOVES model, along with traffic data, were input into the CAL3QHC program to determine CO concentrations due to traffic flowing through the selected intersections.

Existing background values of CO at the nearest monitor location at Kenmore Square were obtained from MassDEP. CAL3QHC results were then added to background CO values of 1.5 ppm (one-hour) and 1.2 ppm (eight-hour), as provided by MassDEP, to determine total air quality impacts due to the Project. These values were compared to the NAAQS for CO of 35 ppm (one-hour) and 9 ppm (eight-hour).

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

The modeling methodology was developed in accordance with the latest MassDEP modeling policies and Federal modeling guidelines.[2]

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

One signalized intersection included in the traffic study meets the conditions described in Section 3.5.2.1. The traffic volumes and LOS calculations provided in Chapter 2 form the basis of evaluating the traffic data versus the microscale thresholds. The only intersection found to meet the criteria for inclusion in the microscale analysis is the intersection of Congress Street and North Street.

Microscale modeling was performed for the intersection based on the aforementioned methodology. The 2014 Existing conditions, and the 2021 No Build and Build conditions were each evaluated for both morning (a.m.) and afternoon (p.m.) peak hours.

Emissions Calculations (MOVES)

The EPA MOVES computer program was used to estimate motor vehicle emission factors on the roadway network. Emission factors calculated by the MOVES 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 county specific vehicle age registration distribution, fleet mix, meteorology, and other inputs. The inputs for MOVES for the Existing (2014) and Build year (2021) are provided by MassDEP.

All link types for the modeled intersection were input into MOVES. Idle emission factors are obtained from factors for a link average speed of 0 miles per hour (mph). Moving emissions are calculated based on speeds at which free-flowing vehicles travel through the intersection as stated in traffic modeling (SYNCHRO) reports. 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. Roadway emissions factors were obtained from MOVES using EPA guidance.[3]

Winter CO emission factors are typically higher than summer. Therefore, January weekday emission factors were conservatively used in the microscale analyses.

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[2] 40 CFR 51 Appendix W, Guideline on Air Quality Models, 70 FR 68228, Nov. 9, 2005.

[3] U.S. EPA, 2010. Using MOVES in Project-Level Carbon Monoxide Analyses. EPA-420-B-10-041.

Receptors and Meteorology Inputs

Sets of up to 115 receptors were placed in the vicinity of the modeled intersection. Receptors extended approximately 300 feet on the sidewalks along the roadways approaching the intersection. The roadway links and receptor locations of the modeled intersection are presented in Figure 3-5.

For the CAL3QHC model, limited meteorological inputs are required. Following EPA guidance[4], a wind speed of one meter per second, stability class D (4), and a mixing height of 1,000 meters was used. To account for the intersection geometry, wind directions from 0° to 350°, every 10° were selected. A surface roughness length of 321 centimeters was selected.[5]

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 eight-hour concentrations.[6] The CAL3QHC methodology was based on EPA CO modeling guidance. Signal timings were provided directly from the traffic modeling outputs.

3.5.3 Microscale Analysis Results

The results of the maximum one-hour predicted CO concentrations from CAL3QHC are provided in Tables 3-3 through 3-5, at the end of this section, for the 2014 and 2021 scenarios. Eight-hour average concentrations are calculated by multiplying the maximum one-hour concentrations by a factor of 0.7.[7]

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 (0.5 ppm) plus background (1.5 ppm) is 2.0 ppm for the 2014 Existing a.m. and p.m. peak cases at the intersection of Congress Street and North Street. The highest eight-hour traffic-related concentration predicted in the area

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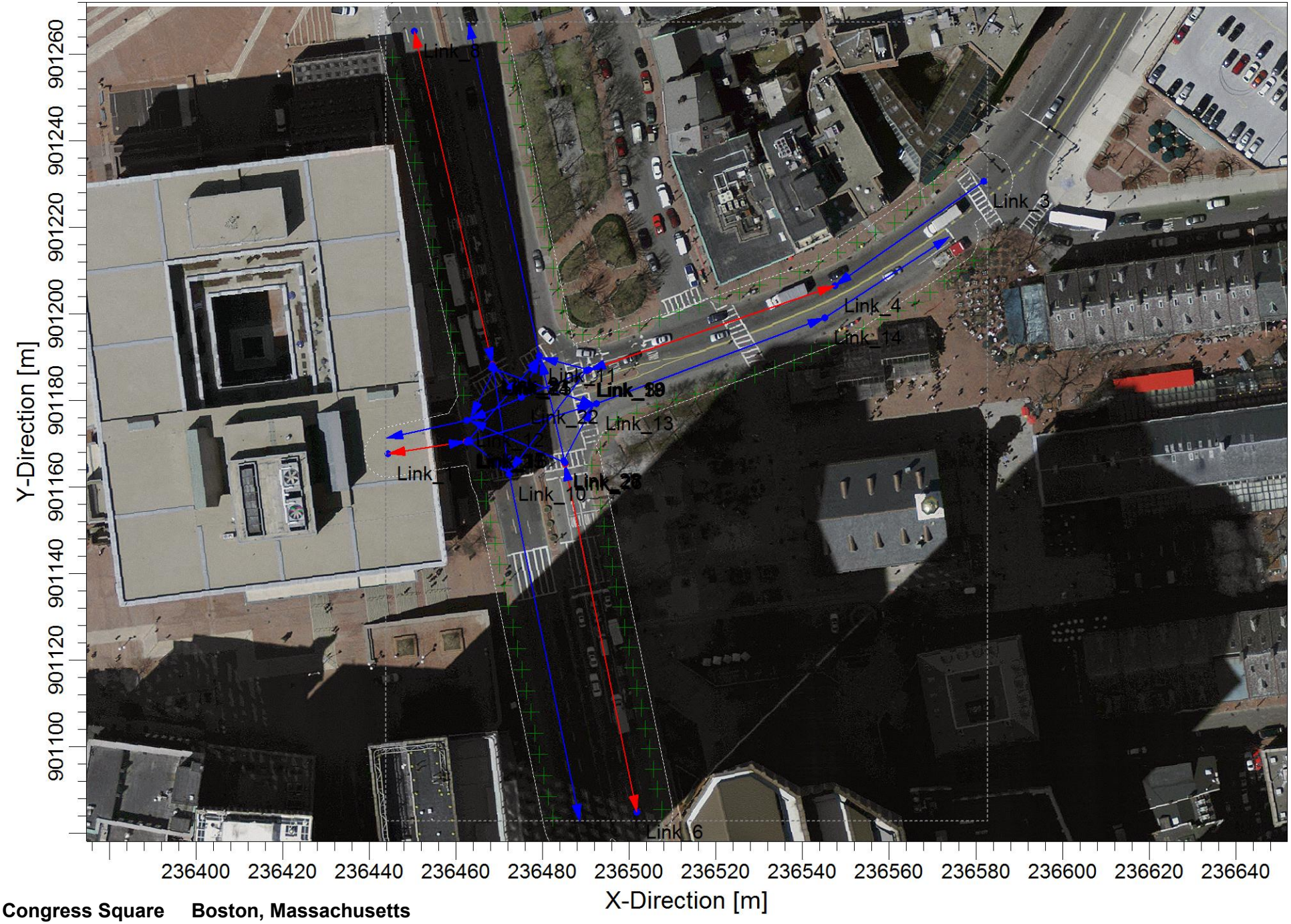
4 U.S. EPA, *Guideline for Modeling Carbon Monoxide from Roadway Intersections.* EPA-454/R-92-005, November 1992.

5 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.

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

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



Congress Square Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 3-5

Link and Receptor Locations for CAL3QHC modeling of Intersection of Congress St. and North St.

of the Project for the modeled conditions (0.4 ppm) plus background (1.2 ppm) is 1.6 ppm for the same location and scenario. All concentrations are well below the one-hour NAAQS of 35 ppm and the eight-hour NAAQS of 9 ppm.

3.5.4 Conclusions

3.5.4.1 Microscale Analysis

Results of the microscale analysis, as described in Section 3.5.3 show that all predicted CO concentrations are well below one-hour and eight-hour NAAQS. Therefore, it can be concluded that there are no anticipated adverse air quality impacts resulting from increased traffic in the area.

3.5.5 Stationary Sources

Stationary sources of air pollution are typically units that combust fuel. In this case, these sources consist of heating and hot water units and emergency electrical generators. Cooling towers, although not a combustion source, are a source of particulate emissions.

New stationary sources (boilers, engines, etc.) may be subject to the MassDEP's Environmental Results Program (ERP). The Proponent will confirm applicability of the ERP to the Project as the design progresses.

Table 3-3 Summary of Microscale Modeling Analysis (Existing 2014)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Congress Street and North Street	AM	0.5	1.5	2.0	35
	PM	0.5	1.5	2.0	35
8-Hour					
Congress Street and North Street	AM	0.4	1.2	1.6	9
	PM	0.4	1.2	1.6	9
Notes: CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.7.					

Table 3-4 Summary of Microscale Modeling Analysis (No-Build 2021)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Congress Street and North Street	AM	0.3	1.5	1.8	35
	PM	0.3	1.5	1.8	35
8-Hour					
Congress Street and North Street	AM	0.2	1.2	1.4	9
	PM	0.2	1.2	1.4	9
Notes: CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.7.					

Table 3-5 Summary of Microscale Modeling Analysis (Build 2021)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Congress Street and North Street	AM	0.3	1.5	1.8	35
	PM	0.3	1.5	1.8	35
8-Hour					
Congress Street and North Street	AM	0.2	1.2	1.4	9
	PM	0.2	1.2	1.4	9
Notes: CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.7.					

3.6 Stormwater/Water Quality

Please see Section 7.4 for a discussion of stormwater and water quality.

3.7 Tidelands/Flood Hazard Zones/Wetlands

The Project is not subject to M.G.L. Chapter 91.

The existing Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the Project site indicates that it is located outside of a designated flood zone (FIRM, City of Boston, Community-Panel Number 25025C0081G, Effective Date September 25, 2009). A "preliminary" revised floodplain map for the site area was recently released by FEMA which shows the site is expected to continue to be outside of the flood zone (FIRM, Suffolk County, Massachusetts; Panel 0081J, Map Number 25025C0081J, Map Revised, Preliminary November 15, 2013).

The site does not contain wetlands.

3.8 Geotechnical/Groundwater

Based on a subsurface exploration program conducted by Haley & Aldrich in 1989, fill soil encountered on site is described as "loose to very dense, brown to black, coarse to fine sand with varying amounts of silt, clay, coarse to fine gravel, wood cinders, ash, brick and building rubble." Marine deposits consisting of marine clay, sand and silt underlie the fill. Glacio-marine deposits ("very dense, gray coarse to fine sand with varying amounts of silt, clay and gravel") underlie the marine deposits. Glacial deposits consisting of glacial till ("very dense gray, silty coarse to fine sand to sandy silt, with varying amounts of coarse to fine gravel and clay") underlie the glacio-marine. The bedrock underlying the site is known as the Cambridge Argillite formation and described as very soft to moderately hard, and completely to moderately weathered. Bedrock is encountered at a depth of approximately 80 to 85 feet.

The existing buildings bear on spread and wall footing foundations in the marine deposits at approximately Elevation +5 Boston City Base (BCB) or approximately 14 to 23 feet below surrounding Street grades. New loads could be supported on high capacity drilled micropiles (less than 12 inch diameter) or drilled shafts specifically designed to support the column loads of the building. New foundations will require pre-excavation at the new column foundation locations to remove previous footing foundation elements. For the new construction on Devonshire Street, it is anticipated that the existing foundation walls will be used to the extent possible for lateral support along Devonshire Street.

Groundwater levels measured in on-site wells in July 2013 indicated relatively little change from the 1989 data. Depth to groundwater ranges from 11 to 26 feet below ground surface. Regional groundwater flow appears to flow to the east towards Boston Harbor. Groundwater sampling was conducted at two well locations in 2013. The groundwater samples were submitted to Alpha Analytical, Inc. for analysis for volatile organic compounds (VOCs) by EPA method 8260. No detectable concentrations of VOCs were reported for the groundwater samples.

3.9 Solid and Hazardous Waste

3.9.1 Hazardous Waste

One documented release of approximately 15 gallons of oil occurred at the site in 2000 during installation of a new utility vault. MassDEP was notified of the release and release tracking number (RTN) 3-20125 was assigned in response to the release. Response actions were conducted by Clean Harbors Environmental Services, Inc. (CHES) on behalf of NStar Electric and included removing oil impacted soils. Soil which must be removed as part of any new construction will be tested in-place to characterize and classify the material for off-site removal. Contaminated soil will be managed under the provisions of the MCP, 310 CMR 40.0000 and applicable MassDEP policies.

The presence of Asbestos Containing Materials (ACM) in the existing buildings at the site was identified in previous ASTM Phase I reports prepared by PES Associates for Fidelity RE Corp in December 2012 for the properties located at 54 Devonshire Street, 56 – 68 Devonshire Street, 82 Devonshire Street and 15 and 19 Congress Street. Lead paint and ACM will require abatement by a Massachusetts-licensed asbestos abatement contractor as part of the planned renovation and demolition.

3.9.2 Solid Waste and Recycling

The Project will generate solid waste typical of residential, office, retail/restaurant and hotel uses. Solid waste is expected to include wastepaper, cardboard, glass bottles and food. Recyclable materials will be recycled through a program implemented by building management. The Project is calculated to generate approximately 278 additional tons per year of solid waste.

With the exception of household hazardous wastes typical of residential, office, retail/restaurant and hotel developments (e.g., cleaning fluids and paint), the Project will not involve the generation, use, transportation, storage, release, or disposal of potentially hazardous materials. Typical waste generated by the uses will be handled in compliance with all local, state and federal regulations.

The Project will include recycling areas for items such as paper, plastic, glass and cans.

3.10 Noise

New noise associated with development projects are most commonly due to mechanical equipment required for the operation of the buildings. Minimal noise impacts are anticipated as existing equipment will be used, if possible, and new equipment would be anticipated to have a similar or less impact. The Project will include appropriate measures to ensure compliance with the City of Boston Zoning District Noise Standards and the MassDEP Noise Policy.

Construction period noise impacts and mitigation are discussed below in Section 3.11.9.

3.11 Construction

3.11.1 Introduction

A Construction Management Plan (CMP) in compliance with the City's Construction Management Program will be submitted to the Boston Transportation Department (BTD) once final plans are developed and the construction schedule is fixed. The construction contractor will be required to comply with the details and conditions of the approved CMP.

Proper pre-planning with the City and neighborhood will be essential to the successful construction of the Project. Construction methodologies, which ensure public safety and protect nearby residences and businesses, will be employed. Techniques such as barricades, walkways and signage will be used. The CMP will include routing plans for trucking and deliveries, plans for the protection of existing utilities, and control of noise and dust.

During the construction phase of the Project, the Proponent will provide the name, telephone number and address of a contact person to communicate with on issues related to the construction. The construction contact will be a person responsible for responding to the questions/comments/complaints of the residents and businesses in the neighborhood.

The Proponent intends to follow the guidelines of the City of Boston and the MassDEP, which direct the evaluation and mitigation of construction impacts.

3.11.2 Construction Methodology/Public Safety

Construction methodologies that ensure public safety and protect nearby tenants will be employed. Techniques such as barricades and signage will be used. Construction management and scheduling will minimize impacts on the surrounding environment and will include plans for construction worker commuting and parking, routing plans for trucking and deliveries, and the control of noise and dust.

As the design of the Project progresses, the Proponent will meet with BTD to discuss the specific location of barricades, the need for lane closures, pedestrian walkways, and truck queuing areas. Secure fencing, signage, and covered walkways may be employed to ensure the safety and efficiency of all pedestrian and vehicular traffic flows. In addition, sidewalk areas and walkways near construction activities will be well marked and lighted to protect pedestrians and ensure their safety. Public safety for pedestrians on abutting sidewalks will also include covered pedestrian walkways when appropriate. If required by BTD and the Boston Police Department, police details will be provided to facilitate traffic flow. These measures will be incorporated into the CMP which will be submitted to BTD for approval prior to the commencement of construction work.

3.11.3 Construction Schedule

Construction is anticipated to commence in the fall of 2015, which completion anticipated in the spring of 2017.

Typical construction hours will be from 7:00 a.m. to 6:00 p.m., Monday through Friday, with most shifts ordinarily ending at 3:30 p.m. No substantial sound-generating activity will occur before 7:00 a.m. 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. It is noted that some activities such as finishing activities could run beyond 6:00 p.m. 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.

3.11.4 Construction Staging/Access

Access to the site and construction staging areas will be provided in the CMP.

Although specific construction and staging details have not been finalized, the Proponent and its construction management consultant will work to ensure that staging areas will be located to minimize impacts to pedestrian and vehicular flow. Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic adjacent to the site. Construction procedures will be designed to meet all Occupational Safety and Health Administration (OSHA) safety standards for specific site construction activities.

3.11.5 Construction Mitigation

The Proponent will follow City and MassDEP guidelines which will direct the evaluation and mitigation of construction impacts. As part of this process, the Proponent and construction team will evaluate the Commonwealth's Clean Air Construction Initiative.

A CMP will be submitted to BTD for review and approval prior to issuance of a Building Permit. The CMP will include detailed information on specific construction mitigation measures and construction methodologies to minimize impacts to abutters and the local community. The CMP will also define truck routes which will help in minimizing the impact of trucks on City and neighborhood streets.

"Don't Dump - Drains to the Boston Harbor" plaques will be installed at storm drains that are replaced or installed as part of the Project.

3.11.6 Construction Employment and Worker Transportation

The number of workers required during the construction period will vary. It is anticipated that approximately 700 construction jobs will be created over the length of construction. The developer of each Project component will make reasonable good-faith efforts to have at

least 50% of the total employee work hours be for Boston residents, at least 25% of total employee work hours be for minorities and at least 10% of the total employee work hours be for women. The developer of each Project component will enter into jobs agreements with the City of Boston.

To reduce vehicle trips to and from the construction site, minimal construction worker parking will be available at the site and all workers will be strongly encouraged to use public transportation and ridesharing options. The general contractors will work aggressively to ensure that construction workers are well informed of the public transportation options serving the area. Space on-site will be made available for workers' supplies and tools so they do not have to be brought to the site each day.

3.11.7 Construction Truck Routes and Deliveries

Truck traffic will vary throughout the construction period, depending on the activity. The construction team will manage deliveries to the site during morning and afternoon peak hours in a manner that minimizes disruption to traffic flow on adjacent streets. Construction truck routes to and from the site for contractor personnel, supplies, materials, and removal of excavations required for the development will be coordinated with BTD. Traffic logistics and routing will be planned to minimize community impacts. Truck access during construction will be determined by the BTD as part of the CMP. These routes will be mandated as a part of all subcontractors' contracts for the development. The construction team will provide subcontractors and vendors with Construction Vehicle & Delivery Truck Route Brochures in advance of construction activity.

"No Idling" signs will be included at the loading, delivery, pick-up and drop-off areas.

3.11.8 Construction Air Quality

Short-term air quality impacts from fugitive dust may be expected during demolition, excavation and the early phases of construction. Plans for controlling fugitive dust during demolition, excavation and construction include mechanical street sweeping, wetting portions of the site during periods of high wind, and careful removal of debris by covered trucks. The construction contract will provide for a number of strictly enforced measures to be used by contractors to reduce potential emissions and minimize impacts, pursuant to this Article 80 approval. These measures are expected to include:

- Using wetting agents on areas of exposed soil on a scheduled basis;
- Using covered trucks;
- Minimizing spoils on the construction site;
- Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;

- Minimizing storage of debris on the site; and
- Periodic street and sidewalk cleaning with water to minimize dust accumulations.

3.11.9 Construction Noise

The Proponent is committed to mitigating noise impacts from the construction of the Project. Increased community sound levels, however, are an inherent consequence of construction activities. Construction work will comply with the requirements of the City of Boston Noise Ordinance. Every reasonable effort will be made to minimize the noise impact of construction activities.

Mitigation measures are expected to include:

- Instituting a proactive program to ensure compliance with the City of Boston noise limitation policy;
- Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on continuously running equipment, such as air compressors and welding generators;
- Replacing specific construction operations and techniques by less noisy ones where feasible;
- Selecting the quietest of alternative items of equipment where feasible;
- Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;
- Turning off idling equipment; and
- Locating noisy equipment at locations that protect sensitive locations by shielding or distance.

3.11.10 Construction Vibration

All means and methods for performing work at the site will be evaluated for potential vibration impacts on adjoining property, utilities, and adjacent existing structures. Acceptable vibration criteria will be established prior to construction, and vibration will be monitored, if required, during construction to ensure compliance with the agreed-upon standard.

3.11.11 Construction Waste

The Proponent will take an active role with regard to the reprocessing and recycling of construction waste. The disposal contract will include specific requirements that will ensure that construction procedures allow for the necessary segregation, reprocessing, reuse and recycling of materials when possible. For those materials that cannot be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per MassDEP Regulations for Solid Waste Facilities, 310 CMR 16.00. This requirement will be specified in the disposal contract. Construction will be conducted so that materials that may be recycled are segregated from those materials not recyclable to enable disposal at an approved solid waste facility.

3.11.12 Protection of Utilities

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

3.11.13 Rodent Control

A rodent extermination certificate will be filed with each building permit application for the Project. Rodent inspection monitoring and treatment will be carried out before, during, and at the completion of all construction work, in compliance with the City's requirements.

3.11.14 Wildlife Habitat

The Project site is in an established urban neighborhood and is developed. There are no wildlife habitats in or adjacent to the Project site.

Chapter 4.0

Sustainable Design and Climate Change

4.0 SUSTAINABLE DESIGN AND CLIMATE CHANGE

4.1 Green Building

4.1.1 Introduction

The Project team is committed to the advancement of sustainable and environmentally conscious design and construction. The three components of the Project will be designed to achieve the Certifiable level of the Leadership in Energy and Environmental Design (LEED) rating system appropriate for each component.

As part of the Concept Design phase, the Project team has identified a number of sustainable strategies within the LEED for Core and Shell Development rating system—used for 40 Water Street and 68 Devonshire Street, and LEED for New Construction—used for 15 Congress Street, that will be developed and refined during the design of the Project. Given the early stage of the design process, some of these strategies are expected to evolve and change with the design of the Project. The preliminary LEED Checklists are included at the end of this chapter. The Proponent will continue to research additional sustainable and energy efficient strategies as the Project design progresses.

To comply with the Stretch Energy provisions of the Massachusetts Building Code, the additions to the buildings will achieve a minimum 20% reduction in energy use below the ASHRAE 90.1-2007 energy standards based on the energy modeling requirements contained in ASHRAE 90.1-2007 Appendix G. The team will develop an energy model to test design assumptions. During subsequent design phases, the Project team will further explore the feasibility and implementation of three energy reducing strategies as outlined below:

1. Optimize the buildings' form, massing and orientation, and reduce internal loads through shell and lighting improvements.

2. Increase the efficiency and thermal performance of the buildings and appropriately size lighting and HVAC systems equipment.

3. Recover waste energy through exhaust air energy recovery systems.

4.1.1.1 40 Water Street

The Project team is anticipating reaching the level of LEED certifiable under the LEED for Core and Shell rating system by targeting 40 credit points for 40 Water Street. The following describes the Project team's approach in each of the credit categories.

Sustainable Sites

The Project is located in the heart of downtown Boston, within close proximity to public transportation and existing infrastructure, and is surrounded by a number of different basic services. The site is also located outside of the 100-year flood plain boundary.

The proposed building will place a three-story office addition onto the existing structure at 40 Water Street. The site is adjacent to the MBTA's State Street Station, and is a short walk to the Park Street Station and to South Station. As a result, the Project will not introduce new parking to the site. The new roof on the existing building and the roof of the new addition will make use of high albedo materials in order to minimize the heat island effect. The overall Project's mix of uses (office, residential, hotel, retail, and restaurant) complements and enhances the existing uses in the area, and its location near Post Office Square Park offers residents and tenants access to great community spaces. In addition, the proposed transformation of the Quaker Lane service way into a pedestrian-friendly plaza will further enhance the urban fabric of downtown Boston.

Prerequisite 1, Construction Activity Pollution Prevention: The Construction Manager shall submit and implement an Erosion and Sedimentation Control (ESC) Plan for construction activities related to the demolition of existing conditions and the construction of the new addition, specific to this project. The ESC Plan will conform to the erosion and sedimentation requirements of the 2012 EPA Construction General Permit and specific municipal requirements for the City of Boston.

Credit 1, Site Selection: The site is located on Water Street in downtown Boston. The site is not prime farmland, undeveloped, or occupied by endangered species.

Credit 2, Development Density and Community Connectivity: The site is located within a developed urban area with a surrounding community that includes housing, restaurants, shops, parks, and other amenities within walking distance, such as the Salem Five Bank located directly across the street on Congress Street.

Credit 4.1, Alternative Transportation, Public Transportation Access: The MBTA State Street subway station along the Orange Line stops within a one-quarter mile walking distance of the site. The Park Street subway station and South Station are located within a one-half mile distance. See Figure 2-7.

Credit 4.4, Alternative Transportation, Parking Capacity: No new parking is being provided.

Credit 7.2, Heat Island Effect, Roof: The roof will be a light colored, high albedo membrane roof product with a minimum SRI value of 78, which will cover a minimum of 75% of the building's total roof area.

Credit 9.0, Tenant Design and Construction Guidelines: Tenants will receive a Tenant Criteria Manual outlining the sustainable design and construction features incorporated into the building, as well as the overall sustainability goals and objectives for the tenant spaces.

Water Efficiency

The Proponent will strive for a water efficient development by specifying native plants, which require low or no irrigation and are known for their ability to withstand adverse conditions. The streetscape landscaping on Quaker Lane will be designed to minimize demand for water with non-invasive and drought-tolerant plant species. Plumbing fixtures will be specified to achieve a reduction in water use through low-flow water-closets, low-flow showers, and low-flow sinks.

Prerequisite 1, Water Use Reduction, 20% Reduction: Through the specification of low-flow and high efficiency plumbing fixtures, the building will implement water use reduction strategies that use, at a minimum, 20% less potable water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements.

Energy & Atmosphere

The Project team plans to optimize energy efficiency through an integrated approach to the building's envelope design and building systems. Attention will be focused on optimizing the new addition's massing and materials in order to address, as much as possible, optimal solar orientation, daylighting, and potential heat gain and loss.

Commissioning of the building's systems will be sought to ensure they are operating in accordance with the design goals. Other design strategies being explored to reduce energy consumption include energy efficient elevators and room occupancy sensors for lighting.

Prerequisite 1, Fundamental Commissioning of the Building Energy Systems: A Commissioning Agent (CxA) will be engaged by the owner for purposes of providing basic commissioning services for the building energy related systems including HVAC & R, lighting, and domestic hot water systems. The CxA will verify the building systems are installed, calibrated, and performing to the building owner's requirements and the Project team's basis of design.

Prerequisite 2, Minimum Energy Performance: The building's performance rating will demonstrate a minimum of a 10% improvement in energy use, meeting this prerequisite, when compared to a baseline building performance as calculated using the rating method in Appendix G of ANSI/ASHREA/IESNA Standard 90.1-2007.

Prerequisite 3, Fundamental Refrigerant Management: The specifications for refrigerants used in the building's HVAC & R systems will not permit the use of CFC-based refrigerants. The proposed design of the HVAC systems will achieve the prerequisite and compliant selections of any walk in freezers/coolers (installed by restaurant tenants) will be required.

Credit 1, Optimize Energy Performance: The building performance rating for the new addition will demonstrate a minimum of a 12% improvement in energy cost savings when compared to a baseline building performance as calculated using the rating method in Appendix G of ANSI/ASHREA/IESNA Standard 90.1-2007. Tenants will receive a Tenant Criteria Manual outlining the sustainable systems used to meet the 12% improvement in energy savings.

Materials & Resources

The development will exemplify responsible waste management practices by reusing at least 75% of the existing construction. Sustainable materials that are recycled, salvaged, and locally sourced will be incorporated as much as reasonably possible within the building's design. Building component materials that use recycled content, have low emissions, and are locally produced will be specified.

Prerequisite 1, Storage and Collection of Recyclables: Storage of collected recyclables will be accommodated within the design of the spaces. Occupants will bring their recyclables to a centrally located trash and recycling storage room. Recyclables will be collected by a contracted waste management company on a regular basis.

Credits 1, Building Reuse – Maintain Existing Walls, Floors, and Roof: The development will maintain 75% of the existing building's structure and envelope, and the new addition is less than six times the square footage of the existing building.

Credits 4.1, Recycled Content 10% (post-consumer & ½ pre-consumer): The design specifications will require certain materials to include pre- and/or post-consumer recycled content. During construction, materials and products submittals will include documentation of the percentage of pre/post-consumer recycled content. The Construction Manager shall track the recycled content with a goal to achieve 10% recycled-content materials based on overall materials costs for the building.

Credit 5.1, Regional Materials, 10% Extracted, Processed, and Manufactured Regionally: The design specifications will indicate materials to be extracted, harvested, recovered, and manufactured within a 500-mile radius of the job site. The Project team has established a target for 10% of the materials and products installed to be regional materials. The Construction Manager will track the submitted and installed materials and products with a goal to achieve the 10% threshold based on overall materials costs for the building.

Credits 6, Certified Wood: The Project team will incorporate the use of FSC certified wood products. The Construction Manager will track all wood materials installed as part of the development, as well as invoicing documentation for all FSC certified products installed.

Indoor Air Quality

The Project team is committed to designing an indoor environment that provides a healthy quality of life for tenants and guests. Materials chosen for the development, such as adhesives, paints, and flooring, will be low-emitting. A construction Indoor Air Quality Management plan during construction and prior to occupancy will be developed. Green housekeeping practices will be deployed to support healthy indoor air quality after building occupancy.

Prerequisite 1, Minimum IAQ Performance: The building's mechanical systems will be designed to meet or exceed the requirements of ASHRAE Standard 62.1-2007 sections 4 through 7 and/or applicable building codes. Any naturally ventilated spaces within the building will also comply with the applicable portions of ASHRAE 62.1.

Prerequisite 2, Environmental Tobacco Smoke (ETS) Control: The public spaces and common areas within the building will be non-smoking. Additionally, smoking will be prohibited within 25 feet of all building openings and air intakes. These provisions will be written into tenant agreement letters.

Credit 1, Outdoor Air Delivery Monitoring: New ventilation systems will include monitoring systems that provide feedback on performance to ensure that design minimum requirements are maintained. Monitoring equipment will generate an alarm when conditions vary by 10% or more from the set point.

Credit 3, Construction IAQ Management Plan, During Construction: The specifications will require the Construction Manager to develop an Indoor Air Quality Management Plan for the construction and pre-occupancy phases to meet/exceed the recommended Control Measures of the SMACNA IAQ Guidelines for Occupied Buildings Under Construction 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter 3).

Credit 4.1, Low-Emitting Materials, Adhesives & Sealants: The design specifications will include requirements for adhesives and sealants to meet low-VOC criteria for adhesives and sealants. The Construction Manager will be required to track all products used to ensure compliance.

Credit 4.2, Low-Emitting Materials, Paints, and Coatings: The specifications will include requirements for paints and coatings to meet low-VOC criteria for paints and coatings. The Construction Manager will be required to track all products used to ensure compliance.

Credit 4.3, Low-Emitting Materials, Flooring Systems: The specifications will include requirements for hard surface flooring materials to be Floor Score certified, and carpet systems will endeavor to comply with the Carpet Institute Green Label Program. The Construction Manager will be required to track all products used to ensure compliance.

Credit 4.4, Low Emitting Materials, Composite Wood, and Agrifiber Products: The development will specify and install composite wood and agrifiber products that contain no added urea-formaldehyde. The Construction Manager will use only compliant composite wood materials.

Credit 5, Indoor Chemical and Pollutant Source Control: The Project team will design to minimize and control the entry of pollutants into the building through entryways and operable openings, and provide the isolation of intake and exhaust systems.

Credit 8.2, Daylight & Views, Views for 90% of Spaces: The Project team intends to maximize views for all occupants by providing a direct line of site to the outdoors through the use of vision glazing located between 2'-6" and 7'-6" above finished flooring in 90% of all regularly occupied spaces. Once the final layout has been established, the views calculations will be performed to determine compliance.

Innovation & Design Process

Credit 1, Innovation In Design: The Project team is committed to achieving 2 of the 5 Innovation in Design Credits through: Green Housekeeping and providing Exemplary Views.

Credit 2, LEED Accredited Professional: A LEED AP will provide administrative services to oversee the LEED process.

Regional Priority Credits

Regional Priority Credits (RPC) are established LEED credits designated by the USGBC to have priority for a particular area of the country. When a project team achieves one of the designated RPCs an additional credit is awarded to the project. The Project team anticipates two RPCs for SSc7.2 Heat Island Effect, Roof and MRc1 Building Reuse 75%.

4.1.1.2 68 Devonshire Street

The Project team is anticipating reaching the level of LEED certifiable under the LEED for Core and Shell rating system by targeting 40 credit points for 68 Devonshire Street. The following describes the Project team's approach in each of the credit categories.

Sustainable Sites

The project is located in the heart of downtown Boston, within close proximity to public transportation and existing infrastructure, and is surrounded by a number of different basic services. The site is also located outside of the 100-year flood plain boundary.

The proposed building will tie a new 13-story addition on the vacant lot of 54 Devonshire Street to the existing building at 68 Devonshire Street. The site is adjacent to the MBTA's State Street Station, and is a short walk to the Park Street Station and to South Station. As a result, the Project will not introduce new parking to the site. The overall Project's mix of uses (office, residential, hotel, retail, and restaurant) complements and enhances the existing uses in the area, and its location near Post Office Square Park offers residents, tenants and guests access to great community spaces.

Prerequisite 1, Construction Activity Pollution Prevention: The Construction Manager shall submit and implement an Erosion and Sedimentation Control (ESC) Plan for construction activities related to the demolition of existing conditions and the construction of the new addition specific to this project. The ESC Plan will conform to the erosion and sedimentation requirements of the 2012 EPA Construction General Permit and specific municipal requirements for the City of Boston.

Credit 1, Site Selection: The site is located on Devonshire Street in downtown Boston. The site is not prime farmland, undeveloped, or occupied by endangered species.

Credit 2, Development Density and Community Connectivity: The site is located within a developed urban area with a surrounding community that includes housing, restaurants, shops, parks and other amenities within walking distance, such as the Devonshire residences located directly across the street.

Credit 4.1, Alternative Transportation, Public Transportation Access: The MBTA State Street subway station along the Orange Line stops within a one-quarter mile walking distance of the site. The Park Street subway station and South Station are located within a one-half mile distance. See Figure 2-7.

Credit 4.4, Alternative Transportation, Parking Capacity: No new parking is being provided.

Credit 7.2, Heat Island Effect, Roof: The roof of the new addition will be a light colored, high albedo membrane roof product with a minimum SRI value of 78, which will cover a minimum of 75% of the building's total roof area.

Credit 9.0, Tenant Design and Construction Guidelines: Tenants will receive a Tenant Criteria Manual outlining the sustainable design and construction features incorporated into the building, as well as the overall sustainability goals and objectives for the tenant spaces.

Water Efficiency

The Proponent will strive for a water efficient development by specifying plumbing fixtures to achieve a reduction in water-use through low-flow water-closets, low-flow showers, and low-flow sinks.

Prerequisite 1, Water Use Reduction, 20% Reduction: Through the specification of low-flow and high efficiency plumbing fixtures, the building will implement water use reduction strategies that use, at a minimum, 20% less potable water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements.

Energy & Atmosphere

The Project team plans to optimize energy efficiency through an integrated approach to the building's envelope design and building systems. Attention will be focused on optimizing the new addition's massing and materials in order to address, as much as possible, optimal solar orientation, daylighting and potential heat gain and loss.

Commissioning of the building's systems will be sought to ensure they are operating in accordance with the design goals. In addition, air conditioning refrigerant that is non-HCFC will be selected and tested to ensure proper performance and minimize contributions to ozone depletion and global warming. Other design strategies being explored to reduce energy consumption include: energy efficient elevators and room occupancy sensors for lighting.

Prerequisite 1, Fundamental Commissioning of the Building Energy Systems: A CxA will be engaged by the owner for purposes of providing basic commissioning services for the building energy related systems including HVAC & R, lighting, and domestic hot water systems. The CxA shall verify the building systems are installed, calibrated, and performing to the building owner's project requirements and the project team's basis of design.

Prerequisite 2, Minimum Energy Performance: The building's performance rating will demonstrate a minimum of a 10% improvement in energy use, meeting this prerequisite, when compared to a baseline building performance as calculated using the rating method in Appendix G of ANSI/ASHREA/IESNA Standard 90.1-2007.

Prerequisite 3, Fundamental Refrigerant Management: The specifications for refrigerants used in the building's HVAC & R systems will not permit the use of CFC-based refrigerants. The proposed design of the HVAC systems will achieve the prerequisite and compliant selections of any walk in freezers/coolers (installed by restaurant tenants) will be required.

Credit 1, Optimize Energy Performance: The building performance rating for the new addition will demonstrate a minimum of a 12% improvement in energy cost savings when compared to a baseline building performance as calculated using the rating method in

Appendix G of ANSI/ASHREA/IESNA Standard 90.1-2007. Tenants will receive a Tenant Criteria Manual outlining the sustainable systems used to meet the 12% improvement in energy savings.

Materials and Resources

The development will exemplify responsible waste management practices by diverting at least 75% of construction waste from disposal during construction. The development will also reuse at least 75% of the existing construction. Sustainable materials that are recycled, salvaged, and locally sourced will be incorporated as much as reasonably possible within the building's design. Building component materials that use recycled content, have low emissions, and are locally produced will be specified.

Prerequisite 1, Storage and Collection of Recyclables: Storage of collected recyclables will be accommodated within the design of the spaces. Occupants will bring their recyclables to a centrally located trash and recycling storage room. Recyclables will be collected by a contracted waste management company on a regular basis.

Credits 1, Building Reuse – Maintain Existing Walls, Floors, and Roof: The development will maintain 75% of the existing building's structure and envelope, and the new addition is less than six times the square footage of the existing building.

Credits 4.1, Recycled Content 10% (post-consumer & ½ pre-consumer): The design specifications will require certain materials to include pre- and/or post-consumer recycled content. During construction, materials and products submittals will include documentation of the percentage of pre/post-consumer recycled content. The Construction Manager will track the recycled content with a goal to achieve 10% recycled-content materials based on overall materials costs for the building.

Credit 5.1, Regional Materials, 10% Extracted, Processed, and Manufactured Regionally: The design specifications will indicate materials to be extracted, harvested, recovered, and manufactured within a 500-mile radius of the job site. The Project team has established a target for 10% of the materials and products installed to be regional materials. The Construction Manager will track the submitted and installed materials and products with a goal to achieve the 10% threshold based on overall materials costs for the building.

Credits 6, Certified Wood: The Project team will incorporate the use of FSC certified wood products. The Construction Manager will track all wood materials installed as part of the development, as well as invoicing documentation for all FSC certified products installed.

Indoor Air Quality

The Project team is committed to designing an indoor environment that provides a healthy quality of life for tenants and guests. Materials chosen for the development, such as adhesives, paints, and flooring, will be low-emitting. A construction Indoor Air Quality

Management plan during construction and prior to occupancy will be developed. Green housekeeping practices will be deployed to support healthy indoor air quality after building occupancy.

Prerequisite 1, Minimum IAQ Performance: The building's mechanical systems will be designed to meet or exceed the requirements of ASHRAE Standard 62.1-2007 sections 4 through 7 and/or applicable building codes. Any naturally ventilated spaces within the building will also comply with the applicable portions of ASHRAE 62.1.

Prerequisite 2, Environmental Tobacco Smoke (ETS) Control: The public spaces and common areas within the building will be non-smoking. Additionally, smoking will be prohibited within 25 feet of all building openings and air intakes. These provisions will be written into tenant agreement letters.

Credit 1, Outdoor Air Delivery Monitoring: New ventilation systems will include monitoring systems that provide feedback on performance to ensure that design minimum requirements are maintained. Monitoring equipment will generate an alarm when conditions vary by 10% or more from the set point.

Credit 3, Construction IAQ Management Plan, During Construction: The specifications will require the Construction Manager to develop an Indoor Air Quality Management Plan for the construction and pre-occupancy phases to meet/exceed the recommended Control Measures of the SMACNA IAQ Guidelines for Occupied Buildings Under Construction 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter 3).

Credit 4.1, Low-Emitting Materials, Adhesives & Sealants: The design specifications will include requirements for adhesives and sealants to meet low-VOC criteria for adhesives and sealants. The Construction Manager will be required to track all products used to ensure compliance.

Credit 4.2, Low-Emitting Materials, Paints, and Coatings: The specifications will include requirements for paints and coatings to meet low-VOC criteria for paints and coatings. The Construction Manager will be required to track all products used to ensure compliance.

Credit 4.3, Low-Emitting Materials, Flooring Systems: The specifications will include requirements for hard surface flooring materials to be Floor Score certified, and carpet systems will endeavor to comply with the Carpet Institute Green Label Program. The Construction Manager will be required to track all products used to ensure compliance.

Credit 4.4, Low Emitting Materials, Composite Wood, and Agrifiber Products: The development will specify and install composite wood and agrifiber products that contain no added urea-formaldehyde. The Construction Manager will use only compliant composite wood materials.

Credit 5, Indoor Chemical and Pollutant Source Control: The Project team will design to minimize and control the entry of pollutants into the building through entryways and operable openings, and provide the isolation of intake and exhaust systems.

Credit 8.2, Daylight & Views, Views for 90% of Spaces: The Project team intends to maximize views for all occupants by providing a direct line of site to the outdoors through the use of vision glazing located between 2'-6" and 7'-6" above finished flooring in 90% of all regularly occupied spaces. Once the final layout has been established, the views calculations will be performed to determine compliance.

Innovation & Design Process:

Credit 1, Innovation In Design: The Project team is committed to achieving 2 of the 5 Innovation in Design Credits through: Green Housekeeping and providing Exemplary Views.

Credit 2, LEED Accredited Professional: A LEED AP will provide administrative services to oversee the LEED process.

Regional Priority Credits

Regional Priority Credits (RPC) are established LEED credits designated by the USGBC to have priority for a particular area of the country. When a project team achieves one of the designated RPCs an additional credit is awarded to the project. The Project team anticipates two RPCs for SSc7.2 Heat Island Effect, Roof and MRc1 Building Reuse 75%.

4.1.1.3 15 Congress Street

The Project team is anticipating reaching the level of LEED certifiable under the LEED for New Construction rating system by targeting 40 credit points for 15 Congress Street. The following describes the Project team's approach in each of the credit categories.

Sustainable Sites

The Project is located in the heart of downtown Boston, within close proximity to public transportation and existing infrastructure, and is surrounded by a number of different basic services. The site is also located outside of the 100-year flood plain boundary.

The proposed building will tie the existing structures of 19 Congress Street and 15 Congress Street together into one building. In addition, a five-story addition will be constructed on top of 15 Congress Street. The site is adjacent to the MBTA's State Street Station, and is a short walk to the Park Street Station and to South Station. As a result, the Project will not introduce new parking to the site. The roof of the new addition will make use of high albedo materials in order to minimize the heat island effect. The overall Project's mix of

uses (office, residential, hotel, retail, and restaurant) complements and enhances the existing uses in the area, and its location near Post Office Square Park offers residents, tenants and guests easy access to great community spaces.

Prerequisite 1, Construction Activity Pollution Prevention: The Construction Manager shall submit and implement an Erosion and Sedimentation Control (ESC) Plan for construction activities related to the demolition of existing conditions and the construction of the new addition specific to this project. The ESC Plan will conform to the erosion and sedimentation requirements of the 2012 EPA Construction General Permit and specific municipal requirements for the City of Boston.

Credit 1, Site Selection: The site is located on Congress Street in downtown Boston. The site is not prime farmland, undeveloped, or occupied by endangered species.

Credit 2, Development Density and Community Connectivity: The site is located within a developed urban area, with a surrounding community that includes housing, restaurants, shops, parks, and other amenities within walking distance, such as the Salem Five Bank located directly across the street.

Credit 4.1, Alternative Transportation, Public Transportation Access: The MBTA State Street subway station along the Orange Line stops within a one-quarter mile walking distance of the site. The Park Street subway station and South Station are located within a one-half mile distance. See Figure 2-7.

Credit 4.4, Alternative Transportation, Parking Capacity: No new parking is being provided.

Credit 7.2, Heat Island Effect, Roof: The roof of the new addition shall be a light colored, high albedo membrane roof product with a minimum SRI value of 78, which shall cover a minimum of 75% of the project's total roof area.

Water Efficiency

The Proponent will strive for a water efficient development by specifying plumbing fixtures to achieve a reduction in water-use through low-flow water-closets, low-flow showers, and low-flow sinks.

Prerequisite 1, Water Use Reduction, 20% Reduction: Through the specification of low-flow and high efficiency plumbing fixtures, the building will implement water use reduction strategies that use, at a minimum, 20% less potable water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements.

Energy and Atmosphere

The Project team plans to optimize energy efficiency through an integrated approach to the building's envelope design and building systems. Attention will be focused on optimizing the new addition's massing and materials in order to address, as much as possible, optimal solar orientation, daylighting and potential heat gain and loss.

Commissioning of the building's systems will be sought to ensure they are operating in accordance with the design goals. In addition, air conditioning refrigerant that is non-HCFC will be selected and tested to ensure proper performance and minimize contributions to ozone depletion and global warming. Other design strategies being explored to reduce energy consumption include energy efficient elevators and room occupancy sensors for lighting.

Prerequisite 1, Fundamental Commissioning of the Building Energy Systems: A CxA will be engaged by the owner for purposes of providing basic commissioning services for the building energy related systems, including HVAC & R, lighting, and domestic hot water systems. The CxA will verify the building systems are installed, calibrated and performing to the building owner's requirements and the Project team's basis of design.

Prerequisite 2, Minimum Energy Performance: The building's performance rating will demonstrate a minimum of a 10% improvement in energy use, meeting this prerequisite, when compared to a baseline building performance as calculated using the rating method in Appendix G of ANSI/ASHREA/IESNA Standard 90.1-2007.

Prerequisite 3, Fundamental Refrigerant Management: The specifications for refrigerants used in the building's HVAC & R systems will not permit the use of CFC-based refrigerants. The proposed design of the HVAC systems will achieve the prerequisite and compliant selections of any walk in freezers/coolers (installed by restaurant tenants), will be required.

Credit 1, Optimize Energy Performance: The building performance rating for the new addition will demonstrate a minimum of a 14% improvement in energy cost savings when compared to a baseline building performance as calculated using the rating method in Appendix G of ANSI/ASHREA/IESNA Standard 90.1-2007.

Credit 4, Enhanced Refrigerant Management: In addition to specifying non-CFC based refrigerants, the refrigerants selected will attempt to minimize or eliminate the emission of compounds that contribute to ozone depletion and global warming.

Materials & Resources

The development will exemplify responsible waste management practices by by providing a designated room on each floor for residents to dispose of their recyclables. The development will also reuse at least 75% of the existing construction. Sustainable materials

that are recycled, salvaged, and locally sourced will be incorporated as much as reasonably possible within the building's design. Building component materials that use recycled content, have low emissions, and are locally produced will be specified.

Prerequisite 1, Storage and Collection of Recyclables: Storage of collected recyclables will be accommodated within the design of the spaces. Occupants will bring their recyclables to a centrally located trash and recycling storage room. Recyclables will be collected by a contracted waste management company on a regular basis.

Credits 1, Building Reuse – Maintain Existing Walls, Floors, and Roof: The development will maintain 75% of the existing building's structure and envelope, and the new addition is less than six times the square footage of the existing building.

Credit 4.1, Recycled Content 10% (post-consumer & ½ pre-consumer): The design specifications will require certain materials to include pre- and/or post-consumer recycled content. During construction, materials and products submittals will include documentation of the percentage of pre/post-consumer recycled content. The Construction Manager shall track the recycled content with a goal to achieve 10% recycled-content materials based on overall materials costs for the building.

Credit 5.1, Regional Materials, 10% Extracted, Processed and Manufactured Regionally: The development specifications will indicate materials to be extracted, harvested, recovered, and manufactured within a 500-mile radius of the job site. The development has established a target for 10% of the materials and products installed to be regional materials. The Construction Manager will track the submitted and installed materials and products with a goal to achieve the 10% threshold based on overall materials costs for the building.

Credits 7, Certified Wood: The Project team will incorporate the use of FSC certified wood products. The Construction Manager will track all wood materials installed as part of the development, as well as invoicing documentation for all FSC certified products installed.

Indoor Air Quality

The Project team is committed to designing an indoor environment that provides a healthy quality of life for tenants and guests. Materials chosen for the development, such as adhesives, paints, and flooring, will be low-emitting. A construction Indoor Air Quality Management plan during construction and prior to occupancy will be developed. Green housekeeping practices will be deployed to support healthy indoor air quality after building occupancy.

Prerequisite 1, Minimum IAQ Performance: The building's mechanical systems will be designed to meet or exceed the requirements of ASHRAE Standard 62.1-2007 sections 4 through 7 and/or applicable building codes. Any naturally ventilated spaces within the building will also comply with the applicable portions of ASHRAE 62.1.

Prerequisite 2, Environmental Tobacco Smoke (ETS) Control: The public spaces and common areas within the building will be non-smoking. Additionally, smoking will be prohibited within 25 feet of all building openings and air intakes. These provisions will be written into tenant agreement letters.

Credit 2, Increased Ventilation: The design will increase outdoor air ventilation rates to all occupied spaces by at least 30% above those required by ASHRAE Standard 62.1-2007.

Credit 3.1, Construction IAQ Management Plan, During Construction: The specifications will require the Construction Manager to develop an Indoor Air Quality Management Plan for the construction and pre-occupancy phases to meet/exceed the recommended Control Measures of the SMACNA IAQ Guidelines for Occupied Buildings Under Construction 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter 3).

Credit 4.1, Low-Emitting Materials, Adhesives & Sealants: The design specifications will include requirements for adhesives and sealants to meet low-VOC criteria for adhesives and sealants. The Construction Manager will be required to track all products used to ensure compliance.

Credit 4.2, Low-Emitting Materials, Paints and Coatings: The specifications will include requirements for paints and coatings to meet low-VOC criteria for paints and coatings. The Construction Manager will be required to track all products used to ensure compliance.

Credit 4.3, Low-Emitting Materials, Flooring Systems: The specifications will include requirements for hard surface flooring materials to be Floor Score certified, and carpet systems will endeavor to comply with the Carpet Institute Green Label Program. The Construction Manager will be required to track all products used to ensure compliance.

Credit 4.4, Low Emitting Materials, Composite Wood, and Agrifiber Products: The development will specify and install composite wood and agrifiber products that contain no added urea-formaldehyde. The Construction Manager will use only compliant composite wood materials.

Credit 5, Indoor Chemical and Pollutant Source Control: The Project team will design to minimize and control the entry of pollutants into the building through entryways and operable openings, and provide the isolation of intake and exhaust systems.

Credit 6.1, Controllability of Systems - Lighting: Occupant controls will be incorporated into the design of the building to help manage the building's overall energy use.

Credit 6.2, Controllability of Systems – Thermal Comfort: The building design will incorporate individual comfort controls for at least 50% of the occupants in order to suit individual task needs and preferences.

Credit 7.1, Thermal Comfort - Design: The HVAC systems will be designed to meet the requirements of ASHRAE Standard 55-2004.

Innovation & Design Process

Credit 1, Innovation In Design: The Project team is committed to achieving 3 of the 5 Innovation in Design Credits through: Green Housekeeping, creating an Education program for residents, and exploring the options of additional envelope commissioning or the creation of a TDM plan.

Credit 2, LEED Accredited Professional: A LEED AP will provide administrative services to oversee the LEED process.

Regional Priority Credits

Regional Priority Credits (RPC) are established LEED credits designated by the USGBC to have priority for a particular area of the country. When a project team achieves one of the designated RPCs an additional credit is awarded to the project. The Project team anticipates two RPCs for SSc7.2 Heat Island Effect, Roof and MRc1 Building Reuse 75%.

4.2 Climate Change Preparedness

4.2.1 Introduction

The Project team examined two areas of concern related to climate change: drought conditions and increased number of high-heat days. Due to the Project's location, elevation and topography, sea level rise will not impact the Project site, and impacts from heavy rain events are anticipated to be minimal. A copy of the preliminary Climate Change Checklist is included in Appendix E.

4.2.2 Drought Conditions

Under a high emissions scenario that would increase the potential climate change impacts, the occurrence of droughts lasting one to three months could go up by as much as 75% over existing conditions by the end of the century. To minimize the Project's susceptibility to drought conditions, the landscape design is anticipated to incorporate native and adaptive plant materials which require low or no irrigation and are known for their ability to withstand adverse conditions. Plumbing fixtures will be specified to achieve a reduction in water use through low-flow water-closets, low-flow showers, and low-flow sinks.

4.2.3 High Heat Days

The Intergovernmental Panel on Climate Change (IPCC) has predicted that in Massachusetts the number of days with temperatures greater than 90°F will increase from the current five-to-twenty days annually, to thirty-to-sixty days annually[1].

Energy modeling for the Project has not yet been completed; however, the Project includes improvements to the existing structure and mechanical improvements that will improve the energy efficiency of the building. Any new roofs will make use of high albedo materials in order to minimize the heat island effect. Other design strategies being explored to reduce energy consumption include: energy efficient elevators and room occupancy sensors for lighting.

4.3 Renewable Energy

The Project site is surrounding by buildings that cast shadow across the Project site through much of the day and year, limiting the efficiency and cost effectiveness of a solar photovoltaic (PV) system. As the Project progresses, the Proponent may evaluate the potential for solar PV and the availability of grants and funding.

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

LEED 2009 for Core and Shell Development

Project Checklist

40 Water St

26-Jan

Sustainable Sites — Possible Points: 28

Y	?	N			
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
	1		Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
	2		Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	2
	3		Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
	1		Credit 5.1	Site Development—Protect or Restore Habitat	1
	1		Credit 5.2	Site Development—Maximize Open Space	1
	1		Credit 6.1	Stormwater Design—Quantity Control	1
	1		Credit 6.2	Stormwater Design—Quality Control	1
	1		Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
	1		Credit 8	Light Pollution Reduction	1
1			Credit 9	Tenant Design and Construction Guidelines	1

Water Efficiency — Possible Points: 10

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

Energy and Atmosphere — Possible Points: 37

Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
3	2	16	Credit 1	Optimize Energy Performance	3 to 21
	4		Credit 2	On-Site Renewable Energy	4
	2		Credit 3	Enhanced Commissioning	2
	2		Credit 4	Enhanced Refrigerant Management	2
	3		Credit 5.1	Measurement and Verification—Base Building	3
	3		Credit 5.2	Measurement and Verification—Tenant Submetering	3
	2		Credit 6	Green Power	2

Materials and Resources — Possible Points: 13

Y	?	N			
Y			Prereq 1	Storage and Collection of Recyclables	
5			Credit 1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 5
	2		Credit 2	Construction Waste Management	1 to 2
		1	Credit 3	Materials Reuse	1
1	1		Credit 4	Recycled Content	1 to 2
1	1		Credit 5	Regional Materials	1 to 2
1			Credit 6	Certified Wood	1

Indoor Environmental Quality — Possible Points: 12

Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
	1		Credit 2	Increased Ventilation	1
1			Credit 3	Construction IAQ Management Plan—During Construction	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
		1	Credit 6	Controllability of Systems—Thermal Comfort	1
		1	Credit 7	Thermal Comfort—Design	1
	1		Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

	1		Credit 1.1	Innovation in Design: Specific Title	1
1			Credit 1.2	Innovation in Design: Specific Title	1
1			Credit 1.3	Innovation in Design: Specific Title	1
	1		Credit 1.4	Innovation in Design: Specific Title	1
	1		Credit 1.5	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

	1		Credit 1.1	Regional Priority: Specific Credit	1
1			Credit 1.2	Regional Priority: Specific Credit	1
	1		Credit 1.3	Regional Priority: Specific Credit	1
1			Credit 1.4	Regional Priority: Specific Credit	1

Total — Possible Points: 110

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

LEED 2009 for Core and Shell Development

Project Checklist

68 Devonshire

28-Jan

Sustainable Sites — Possible Points: 28

Y	?	N			
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
	1		Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
	2		Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	2
	3		Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
	1		Credit 5.1	Site Development—Protect or Restore Habitat	1
	1		Credit 5.2	Site Development—Maximize Open Space	1
	1		Credit 6.1	Stormwater Design—Quantity Control	1
	1		Credit 6.2	Stormwater Design—Quality Control	1
	1		Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
	1		Credit 8	Light Pollution Reduction	1
1			Credit 9	Tenant Design and Construction Guidelines	1

Water Efficiency — Possible Points: 10

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

Energy and Atmosphere — Possible Points: 37

Y	?	N			
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
3	2	16	Credit 1	Optimize Energy Performance	3 to 21
	4		Credit 2	On-Site Renewable Energy	4
	2		Credit 3	Enhanced Commissioning	2
	2		Credit 4	Enhanced Refrigerant Management	2
	3		Credit 5.1	Measurement and Verification—Base Building	3
	3		Credit 5.2	Measurement and Verification—Tenant Submetering	3
	2		Credit 6	Green Power	2

Materials and Resources — Possible Points: 13

Y	?	N			
Y			Prereq 1	Storage and Collection of Recyclables	
5			Credit 1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 5
	2		Credit 2	Construction Waste Management	1 to 2
		1	Credit 3	Materials Reuse	1
1	1		Credit 4	Recycled Content	1 to 2
1	1		Credit 5	Regional Materials	1 to 2
1			Credit 6	Certified Wood	1

Indoor Environmental Quality — Possible Points: 12

Y	?	N			
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
	1		Credit 2	Increased Ventilation	1
1			Credit 3	Construction IAQ Management Plan—During Construction	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
		1	Credit 6	Controllability of Systems—Thermal Comfort	1
		1	Credit 7	Thermal Comfort—Design	1
	1		Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

?				
	1		Credit 1.1	Innovation in Design: Specific Title	1
1			Credit 1.2	Innovation in Design: Specific Title	1
1			Credit 1.3	Innovation in Design: Specific Title	1
	1		Credit 1.4	Innovation in Design: Specific Title	1
	1		Credit 1.5	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

?				
	1		Credit 1.1	Regional Priority: Specific Credit	1
1			Credit 1.2	Regional Priority: Specific Credit	1
	1		Credit 1.3	Regional Priority: Specific Credit	1
1			Credit 1.4	Regional Priority: Specific Credit	1

Total — Possible Points: 110

40	49	21

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

LEED 2009 for New Construction and Major Renovations

Project Checklist

15 Congress St

######

Y	?	N			
15	10	1	**Sustainable Sites**	Possible Points:	**26**
Y	?	N			
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
		1	Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
	1		Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
	3		Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
	1		Credit 5.1	Site Development—Protect or Restore Habitat	1
	1		Credit 5.2	Site Development—Maximize Open Space	1
	1		Credit 6.1	Stormwater Design—Quantity Control	1
	1		Credit 6.2	Stormwater Design—Quality Control	1
	1		Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
	1		Credit 8	Light Pollution Reduction	1
	6	4	**Water Efficiency**	Possible Points:	**10**
Y			Prereq 1	Water Use Reduction—20% Reduction	
	2	2	Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
	4		Credit 3	Water Use Reduction	2 to 4
4	13	18	**Energy and Atmosphere**	Possible Points:	**35**
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
2	4	13	Credit 1	Optimize Energy Performance	1 to 19
	2	5	Credit 2	On-Site Renewable Energy	1 to 7
	2		Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
	3		Credit 5	Measurement and Verification	3
	2		Credit 6	Green Power	2
5	6	3	**Materials and Resources**	Possible Points:	**14**
Y			Prereq 1	Storage and Collection of Recyclables	
2	1		Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
	2		Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Y	?	N			
Materials and Resources, Continued					
1	1		Credit 4	Recycled Content	1 to 2
1	1		Credit 5	Regional Materials	1 to 2
	1		Credit 6	Rapidly Renewable Materials	1
1			Credit 7	Certified Wood	1
10	5		**Indoor Environmental Quality**	Possible Points:	**15**
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
	1		Credit 1	Outdoor Air Delivery Monitoring	1
1			Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
	1		Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
	1		Credit 7.2	Thermal Comfort—Verification	1
	1		Credit 8.1	Daylight and Views—Daylight	1
	1		Credit 8.2	Daylight and Views—Views	1
4	2		**Innovation and Design Process**	Possible Points:	**6**
	1		Credit 1.1	Innovation in Design: Specific Title	1
1			Credit 1.2	Innovation in Design: Specific Title	1
1			Credit 1.3	Innovation in Design: Specific Title	1
1			Credit 1.4	Innovation in Design: Specific Title	1
	1		Credit 1.5	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1
2	2		**Regional Priority Credits**	Possible Points:	**4**
	1		Credit 1.1	Regional Priority: Specific Credit	1
	1		Credit 1.2	Regional Priority: Specific Credit	1
1			Credit 1.3	Regional Priority: Specific Credit	1
1			Credit 1.4	Regional Priority: Specific Credit	1
40	44	26	**Total**	Possible Points:	**110**

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

Chapter 5.0

Urban Design

5.0 URBAN DESIGN

5.1 Introduction

From their original conception in the late 19th Century as bank buildings, 40 Water Street, 35 Congress Street, and 68 Devonshire Street have conveyed an image of grandeur and security. For the last 40 years, these buildings have been restricted to private use and turned inward, cut off from the surrounding neighborhood and streets. Quaker Lane, an underutilized public way running through the site, currently functions as a service way for the buildings and shortcut for commuters traveling from the State Street MBTA Station to Post Office Square.

The design for Congress Square restores these buildings and Quaker Lane to a destination within the heart of downtown Boston. The buildings will be transformed from today's office-only use to buildings with ground floor and lower level retail/restaurant and a mix of uses (office, residential and boutique hotel) on the upper floors, providing appropriate 24-hour activity to the surrounding neighborhood. The storefronts along Congress Street, Water Street and Quaker Lane will be updated with larger operable windows providing more visibility to the street and open up directly to outdoor dining areas on Quaker Lane. Quaker Lane will be re-invented as an intimately scaled, pedestrian-focused space finished with catenary lighting, sculptural seating and landscaping.

To further enhance the development, the design proposes building additions on 40 Water Street, 15 Congress Street and on the currently vacant lot at 54 Devonshire. Conceived as a hotel extension of 68 Devonshire Street, the new addition provides 13 floors of additional keys and a relocated lobby with direct access to Quaker Lane. Adding further 24-hour activity to the neighborhood, the residential addition at 15 Congress Street is designed as a complement to 54 Devonshire Street. Sited on top of the existing building, the 15 Congress Street addition is articulated through the use of glass and exposed floor plates, reducing the visual impact on the historic fabric beneath. Like 15 Congress Street, the design for 40 Water Street also minimizes the addition's effect on the surrounding context. The form is guided by views and the pedestrian experience below.

As required by the Boston Zoning Code, this PNF will be submitted to the Boston Civic Design Commission by the BRA as part of the Article 80 review process.

5.2 Urban Design Objectives

The Project team created a number of objectives to direct the design of the Project, including:

- Revitalizing Quaker Lane to create a vibrant destination and re-establish a pedestrian corridor between Quincy Market, City Hall, and Post Office Square.

- Restoring the street-level facades of Congress, Water and Devonshire streets to create more opportunities for active retail and restaurant spaces for the surrounding neighborhood.

- Supporting the growth of downtown Boston by expanding the mix of uses, services and 24-hour activity. The three new additions to the development will increase the viability of the Project and support the transformation of downtown Boston from an area that has historically been dominated by financial institutions into a mixed-use development with retail, restaurant, residential, hotel and office spaces.

- Crafting unique, yet contextual facades and public amenity spaces to enliven this area of the city.

These objectives are reflected in the proposed open space, massing, heights and materials proposed for the Project, as described below.

5.3 Open Space

The Project has been designed to transform Quaker Lane from a service way to a pedestrian friendly outdoor space (see Figure 5-1). Positioned at a direct crossroad between State Street MBTA Station and Post Office Square, the intimate urban pedestrian space will be lined by cafes, outdoor seating, and landscaping to complement the existing historic fabric. With clear views from Faneuil Hall and Government Center, the new open space provides access to new retail, residential and hospitality uses, as well as a connection to a new office lobby for 40 Water Street. Sited between Quaker Lane and Water Street, the once-private banking lobby will be opened at both ends and transformed into an active pedestrian corridor. This 'interior street' will be lined with additional retail linking Water Street and the surrounding neighborhood to the mix of uses at Quaker Lane.

Curb bump-outs are proposed at either end of Water Street to increase the sidewalk area and create room for new and/or restored building entries at these key intersections (see Figure 5-2).

5.4 New Construction Massing and Orientation

As designed, each new building addition is designed to respect the existing buildings while upgrading and expanding the existing use from office space to more open and modern spaces for living, working and entertaining.

40 Water Street

The massing of the 40 Water Street vertical expansion is designed to create a dynamic addition that does not overwhelm the existing building when viewed from key street level approaches. To achieve this, the addition is set back on all sides and angled inward along Congress Street to minimize the perception of the height, where it has greatest visibility

from Faneuil Hall and Post Office Square (see Figure 5-3). The addition steps down to two stories at its most visible corner at Water and Congress streets, creating opportunities for outdoor space at the roof level with direct views to Post Office Square. The resulting geometry creates a building mass that complements the historic building below, without overpowering it.

68 Devonshire Street

Positioned at the northernmost point of the site, the addition to be constructed on the vacant lot located at 54 Devonshire Street is designed as a modern extension of the adjacent 68 Devonshire (see Figure 5-4). Along Devonshire Street, the new façade takes note from its adjacent counterpart by maintaining a two-story height at the street level with an angled setback at the upper level. Rather than mimic the existing form, the setback angles outward to tie the geometry of the upper façade to the lower level, while also complementing the existing setbacks at 68 Devonshire Street. As the addition turns the corner from Devonshire Street to Quaker Lane, the façade is recessed at the ground level to emphasize the building entry, add a level of visual lightness, and reinforce the pedestrian connection between Quaker Lane and Devonshire Street.

15 Congress Street

The addition atop 15 Congress Street is conceived as a series of floating floor plates that step back from Congress Street (see Figure 5-5). The slight cantilevering of the floors provides direct views toward Post Office Square and Faneuil Hall for the condominiums, and maximizes opportunities for direct sunlight on outdoor balcony spaces.

5.5 Building Heights

The building heights of the new additions have been designed to complement the existing buildings, and have been evaluated through street level views as understood from key approaches to the site. Overall, the additions are significantly lower than the existing buildings immediately adjacent to the site. The addition to 68 Devonshire Street and the new addition to 15 Congress Street are designed to be one-story taller than the adjacent buildings they connect to, 68 Devonshire Street and 19 Congress Street, respectively, to provide variety to the streetscape. The building addition of 40 Water Street is substantially lower than the John W. McCormack U.S. Post Office and Courthouse at 5 Post Office Square and, for the most part, is obscured by this existing Art Deco building.

5.6 Materials

Congress Square has been designed to work as a cohesive urban development with distinct, yet complementary building forms. Through careful articulation of materials, the Project balances a modern aesthetic against a historic context.

Façades at the Ground Floor Levels

New glass storefronts will replace the existing grated windows, opening up views to the interior of the buildings and reconnecting these spaces to the pedestrian activity on the street (see Figure 5-3). Contemporary entry canopies, designed to complement the existing architecture, will identify the new retail/restaurant spaces. At Quaker Lane, new catenary lights hung between buildings, cobble pavers, and restored fire escapes will fuse the old with the new to create a signature destination at the heart of the development.

40 Water Street

The vertical addition at 40 Water Street is primarily composed of glass with a series of smaller outdoor spaces for the office tenants. The articulation of these outdoor spaces minimizes the scale of the addition, while the glazing maximizes the amount of interior daylighting for the flexible office space within. The addition's subtlety keeps the focus of the Project on the street level while still providing an attractive contemporary backdrop to the views from Post Office Square (see Figure 5-3).

68 Devonshire Street

The exterior façade of the addition to 68 Devonshire Street is proposed as a mix of solid masonry and glass curtainwall (see Figure 5-4). The masonry exterior is directly adjacent to the existing, limestone façade of 68 Devonshire Street, complementing the existing street wall while also becoming a modern reinterpretation of this façade. The more diagonal fenestration pattern of the new addition maintains the scale of the windows at 68 Devonshire Street while also drawing the eye around the facades, toward the activity and building entry on Quaker Lane. As the building turns the corner at Quaker Lane, the masonry façade transitions to glass at the lower levels connecting the interior spaces to the activity of Quaker Lane.

15 Congress Street

The addition at 15 Congress Street is predominately expressed in glass and dark mullions to take full advantage of views and create the perception of a visually light addition on top of the existing masonry building (see Figure 5-5).

Congress Square Boston, Massachusetts

ARROWSTREET

Figure 5-1

Proposed Quaker Lane

Congress Square Boston, Massachusetts

ARROWSTREET

Figure 5-2

Proposed Curb Revisions

Existing

Proposed

Congress Square Boston, Massachusetts

ARROWSTREET

Figure 5-3

View from Water and Congress Streets – Existing and Proposed

Congress Square Boston, Massachusetts

ARROWSTREET

Figure 5-4

68 Devonshire Street Addition

Congress Square Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 5-5
15 Congress Street Addition

Chapter 6.0

Historic and Archaeological Resources

6.0 HISTORIC AND ARCHAEOLOGICAL RESOURCES

6.1 Introduction

This section identifies significant historic resources within ¼ mile of the Project (see Figure 6-1; also see Table 6-1), and assesses potential impacts of the Project on these resources. The list of State and National Register-Listed properties (see Table 6-1) contains seven historic districts, 42 individual properties, two burial grounds and one private street. Nine properties at the end of the list have been surveyed and recommended by the Boston Landmarks Commission survey consultant for inclusion in a potential National Register District. The resources within one block of the Project are keyed by number on the map shown in Figure 6-1 and the corresponding MACRIS (MA Cultural Resource Inventory System) survey number is provided in Table 6-1.

6.2 Existing Project Site

The Project site contains six masonry structures built between 1899 and 1921. A later addition was added to 40 Water Street in 1963. Five of the structures are relatively cohesive in scale ranging from ten to twelve stories. One structure, at 15 Congress Street, is only six stories. The National Shawmut Bank Building, comprised of two structures (20 - 42 Water Street [1906] and 82 Devonshire Street [1922]) and the Monks Building (33-35 Congress Street [1903]) are under consideration for designation as a Boston Landmark. All six buildings on the Project site have been recommended for designation as contributing buildings in a proposed National Register District called the "Exchange National Register District." The National Shawmut Bank Building (20 - 42 Water Street) and the Monks Building (33-35 Congress Street) were determined eligible for listing in the National Register of Historic Places on August 7, 1986. As such, they are also listed in the State Register of Historic Places.

6.3 Reviews and Review Agencies

The Project will comply with local, state and federal laws and regulations with respect to impacts to historic and archeological resources. Such laws call for specific reviews in the event that there is state or federal involvement in a project or if a project involves demolition of a structure in Boston that is more than 50 years old, if a project is located within a local landmark district or if a property has been designated a local landmark.

No state or federal agency involvement in the Project relating to financing, permits, leases or licenses is anticipated, and therefore, the Project is not subject to review in compliance with M.G.L. Chapter 9, sections 26-27C, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00). Review in compliance with Section 106 of the National Historic Preservation Act of 1966 (36 CFR Part 800) also is not required.

A Study Report signed July 22, 2014 has been prepared by the Boston Landmarks Commission (BLC) for the National Shawmut Bank Building and Monks Building located on the Project site for the purpose of considering the property for designation as a Boston Landmark. The proposed landmark includes three structures: 40 Water Street, 33 – 35 Congress Street and 82 Devonshire Street. The Study Report prepared by BLC does not include the buildings at 15 and 19 Congress Street, the vacant lot at 54 Devonshire Street or Quaker Lane which are also part of the Project.

The buildings of the Project that are proposed to be landmarked are subject to review in accordance with the Study Report Guidelines Sections 8 and 9 relating to the parts of the buildings that are under consideration for landmark designation. While a property is under landmark consideration, the BLC will allow the owner to participate in accelerated design review, whereby the BLC will review the project plans. The three structures being considered for landmark designation are subject to design review by the BLC as part of the accelerated design review process.

The BLC will also consult with the BRA and provide comments during the Article 80 Review for the entire Project. In the event either state or federal review is triggered, BLC will participate in the review as an interested party.

6.4 Historic Districts and Properties

There are several historic districts and individual properties within ¼ mile of the Project site (see Table 6-1). In addition, Figure 6-1 locates geographically the historic buildings and districts identified within one block of the Project site.

Historic resources in the vicinity of the Project site were identified by consulting historic resource surveys undertaken by the City of Boston in downtown Boston. Buildings on the site and adjacent parcels were surveyed for the Boston Landmarks Commission in 1980. Several individual properties and districts have been listed in the National Register of Historic Places; additional properties have been recommended for listing in the National Register or as Boston Landmarks, but may not yet have been listed. Included at the end of the list of historic resources are nine properties which have been surveyed, but have not yet been designated at the local, state or federal level. Of these, eight have been recommended for listing as contributing structures in a proposed National Register District that has not yet been designated. The nine buildings are included here in order to create a clear understanding of the Project context.

6.5 Potential Impacts to Historic Resources

This section discusses the potential short-term and long-term impacts to historic resources. Short-term impacts are usually associated with construction and long-term impacts might include visual, shadow/reflections, wind and traffic. This section evaluates potential Project impacts relative to the building's design, construction, visual changes, shadows or reflections, and wind.

6.5.1 Design Impacts

The rehabilitation of the existing historic buildings has been designed to take into account significant historic architectural features, to re-establish an original access to 40 Water Street, to significantly improve and enhance public access through the site and to revitalize the street activity within and around the Project. The proposed 13-story addition to 68 Devonshire Street will fill a vacant lot that had historically been occupied by a building. A three-story rooftop addition is proposed for 40 Water Street and a five–story addition is proposed for 15 Congress Street.

For decades, this block of buildings has had extremely restricted access and entries, which have essentially cut off the block from the surrounding street activity. By reconnecting this block with pedestrian circulation on the neighboring streets and sidewalks, the presence of the buildings will once again be knitted back into this vital section of the financial district.

6.5.2 Visual Impacts

Visual impacts of the Project are related to the proposed additions. The new additions have been designed to be compatible with the scale of, and sensitive to, the existing buildings on the site and to the buildings immediately surrounding the site, while distinguishing the new construction from the historic fabric.

6.5.3 Shadow and Wind Impacts

6.5.3.1 Shadow

Shadow impact studies are provided in Section 3.2.

Shadow studies indicate that the Project will create minimal new shadows at Quaker Lane, at the section of Quaker Lane just north of the Project and at the south elevations of the buildings at 25 – 29 State Street and 33 State Street.

6.5.3.2 Wind

A discussion of wind impacts is included in Section 3.1. Due to the surrounding context and scale of the new additions, the Project is anticipated to be protected from surrounding buildings, and is not anticipated to bring strong upper level winds downward, which would increase wind speeds at the pedestrian level.

6.5.4 Construction Period Impacts

6.5.4.1 Geotechnical Impacts

Existing subsurface conditions and potential geotechnical impacts of the Project are under study. The Project's geotechnical consultant will provide consulting services associated with foundation design recommendations, prepare geotechnical specifications, and review the Construction Contractor's proposed procedures. Project design criteria will be established to avoid lowering area groundwater levels.

Based on the design and construction methodology developed for the Project, potential impacts to abutting facilities from foundation construction, such as ground movement, vibration, and groundwater lowering are anticipated to be negligible.

6.6 Archaeological Resources

The existing site has been developed and redeveloped numerous times. Each of the existing buildings has a basement and three of the buildings have an additional one or two sub-basements. It is therefore assumed that there has been repeated disturbance of the site below grade. According to the USGS archaeological map on file at the Massachusetts Historical Commission, there are no known or designated archaeological properties on the Project site.

The lot at 54 Devonshire Street had a five-story masonry building with a basement dating from 1855. It is expected that the new addition to be constructed on the vacant site will have a one story basement at approximately 14 to 16 feet below grade. Excavation is expected to extend approximately 18 feet below grade. Based on the history of past development, it is expected that construction below the footprint of the proposed building will encounter previously disturbed areas.

6.7 Summary

The design and visual impacts from the Project are anticipated to be minimal. Rooftop additions will be visible from Congress Street, State Street and nearby on Devonshire Street and Quaker Lane. The proposed new addition to 68 Devonshire Street will fill a vacant lot that had historically been developed. The new addition will be visible from Devonshire Street, Quaker Lane and partially visible from Congress Street.

Shadow impacts are expected to be minimal, and new shadows located in Congress Street will be minor and are considered not significant.

Construction impacts with respect to lowering of groundwater, vibration or ground movement due to excavation are expected to be negligible. A geotechnical instrumentation and monitoring program will be implemented at adjacent properties as needed.

Table 6-1 Properties Listed in the State Register of Historic Places within 1/4 mile of the Project Site

No.	MACRIS No.	Name of Property	Address	Designation	Date
1	BOS.1961	Atlantic National Bank Building	10 Post Office Square, 100 Milk	NRDOE	4/18/1990
2		Batterymarch Building	54 Batterywatch Street	NRDIS LL	5/11/73 8/8/95
3		5-7 Broad Street	5-7 Broad Street	NRDIS	5/11/73
4		9 Broad Street	9 Broad Street	NRDIS	5/11/73
5		50-52 Broad Street	50-52 Broad Street	NRDIS	5/11/73
6		64A - 64 Broad Street	64A-64 Broad Street	NRDIS	5/11/73
7		66 Broad Street	66 Broad Street	NRDIS	5/11/73
8		68-70 Broad Street	68-70 Broad Street	NRDIS	5/11/73
9		72 Broad Street	72 Broad Street	NRDIS	5/11/73
10		102 Broad Street	102 Broad Street	NRDIS	5/11/73
11		20-30 Bromfield Street	20-30 Bromfield Street	LL	3/8/83
12	BOS.1815	Codman Building	10 Liberty Square, 90-92 Water Street, 51-57 Kilby Street	NRIND	
13		Commercial Palace Historic District	Bounded by Bedford, Summer, Franklin, Hawley, and Chauncy	NRDOE	9/5/85
14		Custom House Historic District	Bounded by Kilby, JFK, Expressway, High, Batterymarch, Merchant's Row, South Market and State	NRDIS	10/3/96
15		Faneuil Hall	Dock Square and 1-10 Faneuil Hall	NHL NRIND LL	10/15/66 10/15/66 10/11/94
16		Federal Reserve Bank Building	9 Pearl Street, 27 Oliver Street	LL	10/10/78
17		Filene's Department Store	426 Washington Street	NRIND	7/24/86
18		Flour & Grain Exchange	177 Milk Street	NRDIS LL NRDIS	5/11/73 4/26/94 10/3/96

Table 6-1 Properties Listed in the State Register of Historic Places within 1/4 mile of the Project Site (Continued)

No.	MACRIS No.	Name of Property	Address	Designation	Date
19		Granary Burial Ground	83-115 Tremont	LHD NRDIS	12/12/55 5/11/74
20	BOS.1662	Hornblower and Weeks Building	60 Congress Street, 12 Post Office Square, 82 Water Street	NRDOE	4/18/1990
21		25 - 27 India Street		NRDIS LL	5/11/73 11/11/83
22		International Trust Company Building	39-47 Milk Street	LL NRIND	4/25/78 9/01/79
23		John Adams Courthouse	Pemberton Square	NRIND	5/8/74
24	BOS.1960	John W. McCormack Federal Building and Courthouse	5 Post Office Square	NRDOE LL	11/14/85 2/10/90
25		Kennedy's Building	26-38 Summer Street	NRDOE	9/5/85
26		King's Chapel	38 Tremont Street	MAArchHL NRIND NHL	4/1/66 5/2/74 5/2/74
27		King's Chapel Burying Ground	Tremont Street	NRIND	5/2/74
28		Locke-Ober Restaurant	3-4 Winter Street	NRIND	7/24/86
29	BOS.15948	National Shawmut Bank Building	20-42 Water Street, 70-84 Devonshire, 33-59 Congress	NRDOE	8/17/86
30	BOS.1669	Monks Building	33 Congress Street	NRDOE	8/7/86
31		Newspaper Row	322-328 Washington, 5-23 Milk, 11 Hawley	NRDIS	7/7/83
32		Old City Hall	41-45 School Street	NHL NRIND	12/30/70 10/11/08
33		Old Colony Trust Company Building	17 Court Street	NRDOE	5/13/86
34		Old Corner Bookstore	227-285 Washington Street	MNHL NRIND	6/9/70 4/11/73
35		Old South Meeting House	306 Washington Street	MAHL NRIND NHL	6/25/65 12/30/70 12/30/70
36	BOS.2107	Old State House	State Street, 206 Washington Street	NHL NRIND LL	10/15/66 10/15/66 12/13/94

Table 6-1 Properties Listed in the State Register of Historic Places within 1/4 mile of the Project Site (Continued)

No.	MACRIS No.	Name of Property	Address	Designation	Date
37		Park Street Historic District	Bounded by Park, Tremont, and Beacon Streets	NRDIS	5/11/74
38		Parker House	56-72 School Street	NRDOE	8/17/86
39		Quincy Market		NHL NRDIS	11/13/66
40		Quincy Market and Faneuil Hall	North and South Market Streets	NHL NRDIS LL	11/3/66 11/15/66 5/28/96
41		Richardson Block	109-119 High Street and 113-151 Pearl Street	NRIND NRDIS	8/9/86 12/3/14
42		Samuel Appleton Building	1 Liberty Square, I-II	NRDOE	8/7/86
43		Sear's Crescent and Block	38-68 &70-72 Cornhill	NRIND	8/9/86
44	BOS.2013	Second Brazer Building	25-29 State Street	LL	7/9/85
45		State Mutual Insurance Company Building	50 Congress Street, 13-17 Exchange Place, 35-43 Kilby Street	NRDOE	4/18/1990
46		Stock Exchange Building	53 State Street	LL	11/2/80
47		83-87 Summer Street		NRDOE	11/6/79 & 9/5/85
48		89-95 Summer Street		NRDOE	11/6/79 & 9/15/85
49		Textile District	Essex Street from Phillips to Columbia & Chauncy	NRDIS	11/29/90
50		The Ames Building	1 Court Street	NRIND LL	4/26/74 11/23/93
51		Tremont Temple Baptist Church	76-88 Tremont Street	NRDOE	8/17/86
52		United Shoe Machinery Corporation Building	160 Federal Street, 34 – 66 High Street and Matthews Street	NRIND LL	8/19/80 12/20/83
53		United States Custom House	3 McKinley Square	NRDIS LL	5/11/1973 9/2/1986
54		Wesleyan Association Building	32-38 Bromfield Street	NDOE	4/1/88

Table 6-1 Properties Listed in the State Register of Historic Places within 1/4 mile of the Project Site (Continued)

No.	MACRIS No.	Name of Property	Address	Designation	Date
55		Wigglesworth Building	83-89 Franklin Street	NRDOE NRIND	9/5/85 10/21/82
56		Winthrop Building	1-17 Water Street & 276-278 Washington Street	NRIND	4/18/74
57	BOS.2110	Boston Journal Newspaper Building	262-268 Washington Street, 2-8 Water Street	S	
58	BOS.1668	Congress Street Trust Building	19-25 Congress Street	S	
59	BOS.2012	Easton Building	45 Devonshire Street 11-17 State Street	S	
60	BOS.1684	William R. Lawrence Building	85 (formerly 83) Devonshire St. 16 Water Street	S	
61	BOS.1685	Minot Building	105 Devonshire Street	S	
62	BOS.1683	Newport Building	56 Devonshire Street	S	
63	BOS.2011	State Street Building	1-9 State Street, 212-228 Washington Street	S	
64	BOS.1667	Suffolk Trust	13 Congress Street	S	
65	BOS.2014	Worthington Building or Traveller Building	7-9 Congress Street	S	

NOTE: Gray shading identifies buildings on the Project site.

Congress Square Boston, Massachusetts

Tremont PRESERVATION SERVICES

Figure 6-1

Historic Resources

Chapter 7.0

Infrastructure

7.0 INFRASTRUCTURE

7.1 Introduction

The Infrastructure Systems Component outlines the existing utilities surrounding the Project site, the connections required to provide service to the Project, and any impacts on the existing utility systems that may result from the construction of the Project. The following utility systems are discussed herein:

- Sewer
- Domestic water
- Fire protection
- Drainage
- Natural gas
- Electricity
- Telecommunications

The Project includes the renovation of existing commercial buildings on Devonshire Street, Water Street, and Congress Street and three new additions, as well as an existing public way known as Quaker Lane, in downtown Boston. The Project site is bounded by State Street to the north, Congress Street to the east, Water Street to the south, and Devonshire Street to the west.

7.2 Wastewater

7.2.1 Sewer Infrastructure

Existing Boston Water and Sewer Commission (BWSC) combined sewer mains are located in Devonshire Street, Water Street and Congress Street adjacent to the Project site.

Devonshire Street

There is a 12-inch BWSC combined sewer main and a 16-inch by 16-inch BWSC combined sewer main, which both flow southerly to a 16-inch by 24-inch combined sewer main in Devonshire Street.

Water Street

The 16-inch by 24-inch BWSC combined sewer main flows southerly to the BWSC 30-inch by 32-inch combined sewer main in Water Street. The 30-inch by 32-inch combined sewer main in Water Street flows easterly.

Congress Street

There is a 20-inch BWSC combined sewer and a 16-inch by 12-inch BWSC combined sewer which flow southerly. These combined sewer mains both increase to the 24-inch by 28-inch and 16-inch by 12-inch BWSC combined sewer mains, then both flow to a single 24-inch by 24-inch BWSC combined sewer, which increases to a 15-inch combined sewer, and then to a 16-inch by 24-inch combined sewer, which flows to the 30-inch by 32-inch combined sewer in Water Street.

The 30-inch by 32-inch combined sewer in Water Street continues flowing easterly, increasing to a 48-inch by 68-inch combined sewer main, and then separates to a 24-inch BWSC sanitary sewer and a 42-inch BWSC storm drain main. The sanitary sewer continues to flow in a southerly direction and into the New East Side Interceptor which ultimately flows to the MWRA Deer Island Waste Water Treatment Plant for treatment and disposal. The existing sewer system is illustrated in Figure 7-1.

7.2.2 Wastewater Generation

The Project's sewage generation rates were estimated using 314 CMR 07.00 and the proposed building program. 314 CMR 07.00 lists typical sewage generation values for the proposed building use, as shown in Table 7-1. Typical generation values are conservative values for estimating the sewage flows from new construction. 314 CMR 07.00 sewage generation values are used to evaluate new sewage flows or an increase in flows to existing connections. The existing site is comprised of existing buildings and a vacant lot. Table 7-1 describes the increased sewage generation in gallons per day (gpd) due to the Project.

Table 7-1 Proposed Project Wastewater Generation

Proposed Building Sewer Flows

Use	Approximate Dimension	314 CMR Value (gpd/unit)	Total Flow (gpd)
40 Water Street			
Office	284,600 sf	75/1,000 sf	21,345
Retail	30,900	50/1,000 sf	1,545
68 Devonshire Street			
Hotel	133 hotel rooms	110/hotel room	14,630
15 Congress Street			
Retail	5,750	50/1,000 sf	288
Residential	52 bedrooms	110/bedroom	5,720
		Total Proposed Sewer Flows	43,528

Existing Conditions Sewer Flows

Use	Dimension	314 CMR Value (gpd/unit)	Total Flow (gpd)
40 Water Street			
Office	233,800	75/1,000 sf	17,535
54/68 Devonshire Street			
Office	50,300	75/1,000 sf	3,773
15/19 Congress Street			
Office	45,900	75/1,000 sf	3,443
		Total Existing Sewer Flows:	24,750

Increase in Sewer Flows:	18,778

7.2.3 Sewage Capacity & Impacts

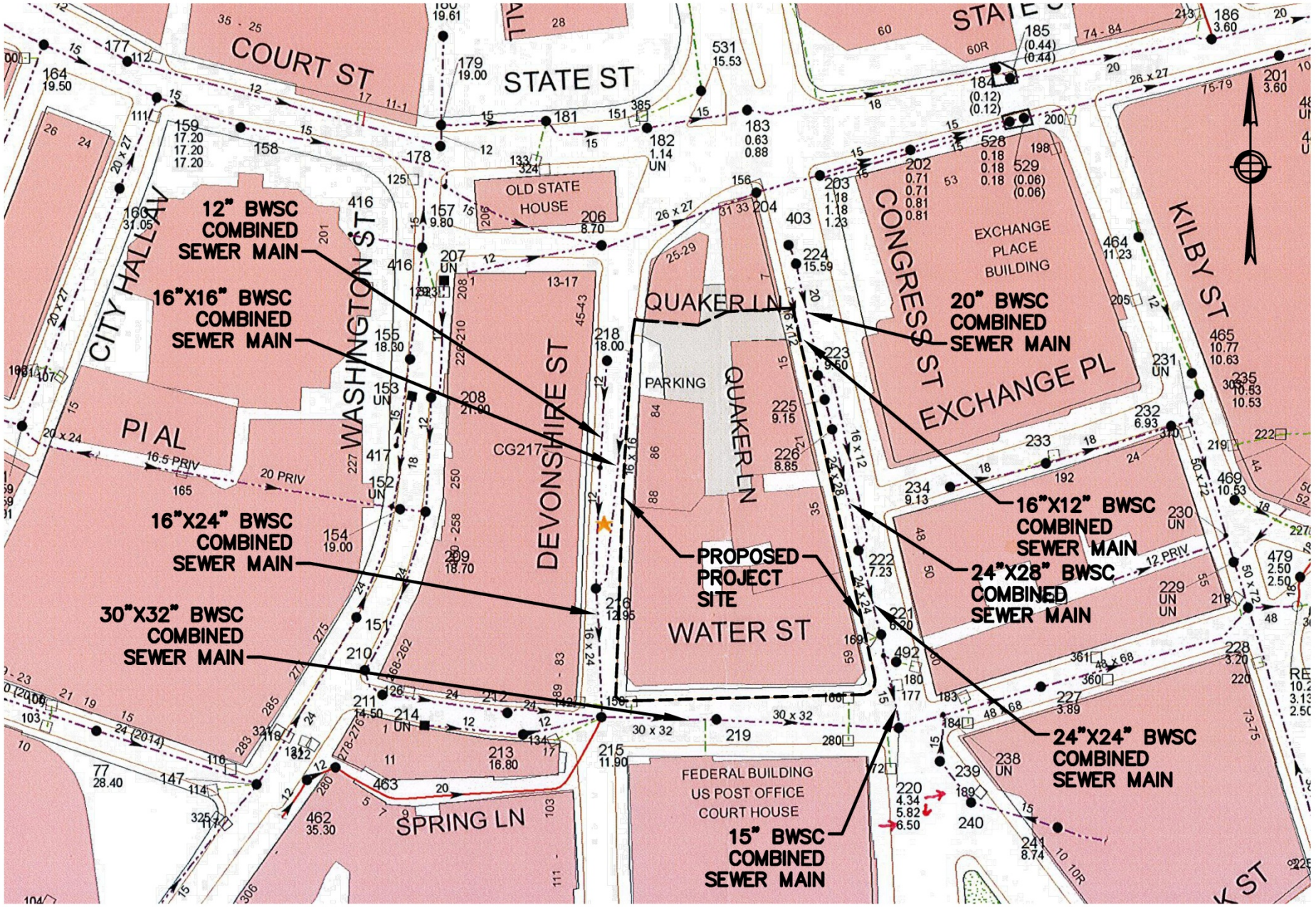
The Project's impact on the existing BWSC systems in Devonshire Street, Water Street and Congress Street were analyzed. The existing sewer system capacity calculations are presented in Table 7-2.

Table 7-2 Sewer Hydraulic Capacity Analysis

Manhole (BWSC Number)	Distance (feet)	Invert Elevation (up)	Invert Elevation (down)	Slope (%)	Diameter (inches)	Manning's Number	Flow Capacity (cfs)	Flow Capacity (MGD)
Devonshire Street								
218 to 216	180	18	12.95	2.8%	12	0.013	5.97	3.86
216 to 215	105	12.95	11.90	1.0%	16 x 24	0.013	12.83	8.29
						Minimum Flow Analyzed:	5.97	3.86
Water Street								
215 to 220	235	11.90	6.50	2.3%	30 x 32	0.013	67.72	43.77
						Minimum Flow Analyzed:	67.72	43.77
Congress Street								
224 to 223	105	15.59	9.50	5.8%	20	0.013	33.50	21.65
223 to 225	20	9.50	9.15	1.8%	24 x 28	0.013	36.61	23.66
225 to 226	25	9.15	8.85	1.2%	24 x 28	0.013	30.32	19.59
226 to 222	95	8.85	7.23	1.7%	24 x 28	0.013	36.14	23.36
222 to 221	70	7.23	6.20	1.5%	24 x 24	0.013	25.96	16.78
221 to 220	75	6.20	5.82	0.5%	15	0.013	4.60	2.97
223 to 222	140	9.50	7.23	1.6%	16 x 12	0.013	1.33	0.86

Note: 1. Manhole numbers taken from BWSC Sewer system GIS Map received on Monday, October 27, 2014.

2. Flow Calculations based on Manning Equation



SCALE: 1"=100'

Congress Square Boston, Massachusetts

Nitsch Engineering

Figure 7-1

Existing Combined Sewer System

7.2.4 Proposed Conditions

The Proponent will coordinate with the BWSC on the design and capacity of the proposed connections to the sewer system. The Project is expected to generate an increase in wastewater flows of approximately 18,778 gpd. Approval for the increase in sanitary flow will come from BWSC.

Sewer services for the existing buildings will be evaluated for capacity and condition and will be replaced as necessary. New sewer services resulting from the Project will connect to the existing sanitary sewer mains in Devonshire Street, Water Street and/or in the Congress Street.

Improvements and connections to BWSC infrastructure will be reviewed as part of the BWSC's site plan review process for the Project. This process will include a comprehensive design review of the existing and proposed service connections, an assessment of Project demands and system capacity, and the establishment of service accounts.

7.2.5 Proposed Impacts

The adjacent roadway sewer systems in Devonshire Street, Water Street, Congress Street, and potential building service connections to the sewer system were analyzed.

Table 7-2 indicates the hydraulic capacity of the existing 12-inch, 16-inch by 16-inch, and 16-inch by 24-inch combined sewer main in Devonshire Street, the 30-inch by 32-inch combined sewer main in Water Street, and the 20-inch, 16-inch by 12-inch, 24-inch by 28-inch, 24-inch by 24-inch and 15-inch combined sewer mains in Congress Street. The minimum hydraulic capacity is 3.8 million gallons per day (MGD) or 5.97 cubic feet per second (cfs) for the combined sewer system in Devonshire Street, 43.77 MGD or 67.72 cfs for the 30-inch x 32-inch combined sewer system in Water Street, and 2.97 MGD or 4.60 cfs for the combined sewer system in Congress Street. Based on an average increase in daily flow estimate for the Project of 18,778 GPD or 0.019 MGD; and with a factor of safety of 10 (total estimate = 0.019 MGD x 10 = 0.19 MGD), no capacity problems are expected within the Devonshire Street, Water Street, and Congress Street systems.

7.3 Water Supply

7.3.1 Water Infrastructure

Water for the Project site will be provided by the BWSC. There are five water systems within the City, and these provide service to portions of the City based on ground surface elevation. The five systems are southern low (commonly known as low service), southern high (commonly known as high service), southern extra high, northern low, and northern high. There are existing BWSC water mains in Devonshire Street, Water Street, Congress Street, and Quaker Lane.

There is a 12-inch Southern High Main and a 12-inch Southern Low Main in Devonshire Street. There is a 12-inch Southern High Main, a 12-inch Southern Low Main, a 24-inch Southern Low Main, and a 24-inch High Pressure Fire Service in Water Street. There is a 12-inch Southern High Main, a 12-inch High Pressure Fire Service, and a 10-inch Southern Low Main in Congress Street. Additionally, there is a 12-inch Southern Low Main in Quaker Lane. The existing water system is illustrated in Figure 7-2.

7.3.2 Water Consumption

The Project's water demand estimate for domestic services is based on the Project's estimated sewage generation, described above. A conservative factor of 1.1 (10%) is applied to the estimated average daily wastewater flows calculated with 314 CMR 07.00 values to account for consumption, system losses and other usages to estimate an average daily water demand. The Project's estimated domestic water demand is 20,656 gpd. The water for the Project will be supplied by the BWSC systems in Devonshire Street, Water Street, Congress Street, and/or Quaker Lane.

Efforts to reduce water consumption will be made. Aeration fixtures and appliances will be chosen for water conservation qualities. In public areas, sensor operated faucets and toilets will be installed.

New water services will be installed in accordance with the latest local, state, and federal codes and standards. Backflow preventers will be installed at both domestic and fire protection service connections. New meters will be installed with Meter Transmitter Units (MTU's) as part of the BWSC's Automatic Meter Reading (AMR) system.

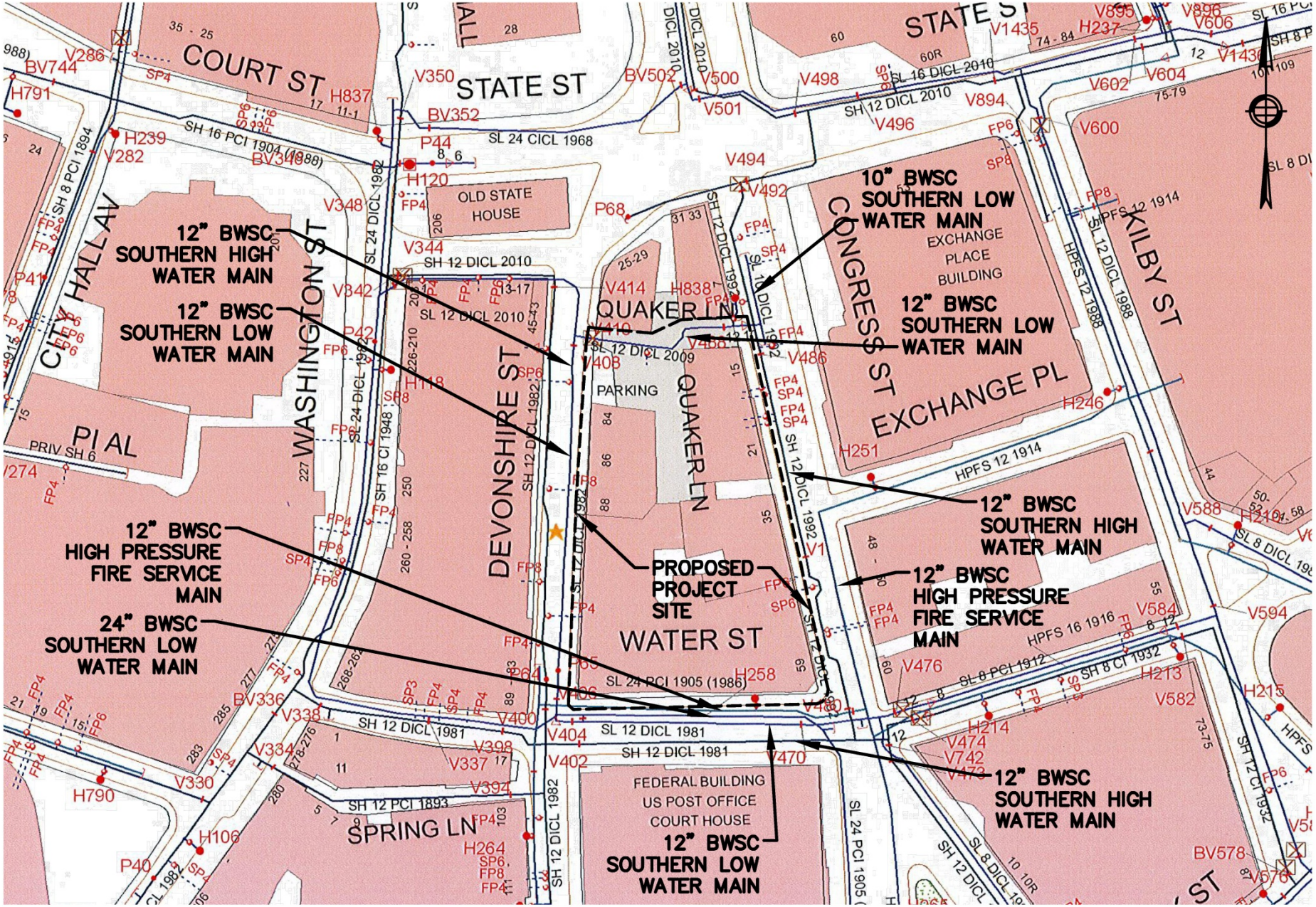
7.3.3 Proposed Project

The domestic and fire protection water services for the Project will connect to the existing BWSC water mains in Devonshire Street, Water Street, Congress Street, and/or Quaker Lane. The proposed Project's impacts to the existing water system will be reviewed as part of the BWSC's site plan review process.

The domestic and fire protection water service connections required for the Project will meet the applicable City and State codes and standards, including cross-connection backflow prevention. Compliance with the standards for the domestic water system service connection will be reviewed as part of BWSC's Site Plan Review Process. This review will include sizing of domestic water and fire protection services, calculation of meter sizing, backflow prevention design, and location of hydrants and siamese connections that conform to BWSC and Boston Fire Department requirements.

7.3.4 Proposed Impacts

Water capacity problems are not anticipated within this system as a result of the Project's construction.



Congress Square Boston, Massachusetts

Figure 7-2

Existing Water System

Nitsch Engineering

7.4 Stormwater

There are existing BWSC combined sewer mains in Devonshire Street, Water Street, and Congress Street, as previously described in Section 7.2.1. The existing combined sewer mains in Devonshire Street, Water Street, and Congress Street flow to the 30-inch by 32-inch combined sewer in Water Street, and continues flowing to the storm drain main in Central Street. The storm drain main continues flowing towards Central Wharf and ultimately discharges to the Boston Inner Harbor. The existing BWSC storm drain system is illustrated in Figure 7-1.

Existing storm water is currently captured by existing closed drainage systems at each building. Stormwater in the roadways is captured by existing catch basins, which flow to the existing BWSC combined sewer mains. Stormwater runoff from Quaker Lane sheet flows to the catch basins in the adjacent roadways.

7.4.1 Proposed Project

The existing site is comprised of six existing buildings and a compacted gravel parking lot, as well as concrete sidewalk, parking, and roadway, and is approximately 100 percent impervious. The Project will reduce the existing peak rates of stormwater discharge and volumes of stormwater runoff from the site and promote runoff infiltration/recharge to the greatest extent possible.

The Project will strive to infiltrate one-inch of stormwater runoff from impervious areas into the ground to the greatest extent possible. Different approaches to stormwater recharge will be assessed. It is anticipated that the stormwater recharge systems will work to passively infiltrate runoff into the ground with a gravity recharge system or a combination of storage tanks in the building and pumps. The underground recharge system, and any required site closed drainage systems, will be designed so that there will be no increase in the peak rate of stormwater discharge from the Project site in the developed condition compared to the existing condition.

Improvements and connections to BWSC infrastructure will be reviewed as part of the BWSC's site plan review process. The process will include a comprehensive design review of the proposed service connections, and assessment of project demands and system capacity.

If it is determined that groundwater recharge is not feasible, the Proponent will treat the stormwater runoff to adequately capture TSS and phosphorus prior to discharging to the BWSC system.

7.4.2 Water Quality Impact

The Project will not affect the water quality of nearby water bodies. Erosion and sediment control measures will be implemented during construction to minimize the transport of site soils to off-site areas and BWSC storm drain systems. During construction, existing catch basins will be protected with filter fabric, straw bales and/or crushed stone, to provide for sediment removal from runoff. These controls will be inspected and maintained throughout the construction phase until the areas of disturbance have been stabilized through the placement of pavement, structure, or vegetative cover.

All necessary dewatering will be conducted in accordance with applicable MWRA and BWSC discharge permits. Once construction is complete, the Project will be in compliance with local and state stormwater management policies, as described below.

7.4.3 MassDEP Stormwater Management Policy Standards

In March 1997, MassDEP adopted a new Stormwater Management Policy to address non-point source pollution. In 1997, MassDEP published the Massachusetts Stormwater Handbook as guidance on the Stormwater Policy, which was revised in February 2008. The Policy prescribes specific stormwater management standards for development projects, including urban pollutant removal criteria for projects that may impact environmental resource areas. Compliance is achieved through the implementation of Best Management Practices (BMPs) in the stormwater management design. The Policy is administered locally pursuant to MGL Ch. 131, s. 40.

A brief explanation of each Policy Standard and the system compliance is provided below:

Standard #1: No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

Compliance: The proposed design will comply with this Standard. The Project site is located near the Boston Inner Harbor, and the design will incorporate the appropriate stormwater treatment and no new untreated stormwater will be directly discharged to, nor will erosion be caused to wetlands or waters of the Commonwealth as a result of stormwater discharges related to the Project.

Standard #2: Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR.

Compliance: The proposed design will comply with this Standard. The existing discharge rate will be met or decreased as a result of the improvements associated with the Project.

Standard #3: Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmental sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

Compliance: The Project will comply with this standard to the maximum extent practicable.

Standard #4: Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:

a. *Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;*

b. *Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and*

c. *Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.*

Compliance: The proposed design will comply with this standard. Within the Project's limit of work, there will be mostly building roof and paved sidewalk and roadway areas. Runoff from paved areas that would contribute unwanted sediments or pollutants to the existing storm drain system will be collected by deep sump, hooded catch basins and conveyed through water quality units before discharging into the BWSC system.

Standard #5: For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

Compliance: The proposed design will comply with this standard. The Project is not associated with Higher Potential Pollutant Loads (per the Policy, Volume I, page 1-6).

Standard #6: Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "storm water discharge" as defined in 314 CMR 3.04(2)(a)1 or (b) to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.

Compliance: The proposed design will comply with this Standard. The Project will not discharge untreated stormwater to a sensitive area or any other area.

Standard #7: A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

Compliance: The proposed design will comply with this Standard. The Project complies with the Stormwater Management Standards as applicable to the redevelopment.

Standard #8: A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

Compliance: The Project will comply with this standard. Sedimentation and erosion controls will be incorporated as part of the design of these projects and employed during construction.

Standard 9: A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.

Compliance: The Project will comply with this standard. An O&M Plan including long-term BMP operation requirements will be prepared for the Proposed Project and will assure proper maintenance and functioning of the stormwater management system.

Standard 10: All illicit discharges to the stormwater management system are prohibited.

Compliance: The Project will comply with this standard. There will be no illicit connections associated with the Proposed Project.

7.5 Protection Proposed During Construction

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

The Proponent will continue to work and coordinate with the BWSC and the utility companies to ensure safe and coordinated utility operations in connection with the Project.

7.6 Conservation of Resources

The State Building Code requires the use of water-conserving fixtures. Water conservation measures such as low-flow toilets and restricted flow faucets will help reduce the domestic water demand on the existing distribution system. The installation of sensor-operated sinks with water conserving aerators and sensor-operated toilets in all non-residential restrooms will be incorporated into the design plans for the Proposed Project.

Chapter 8.0

Coordination with other Governmental Agencies

8.0 COORDINATION WITH OTHER GOVERNMENTAL AGENCIES

8.1 Architectural Access Board Requirements

The Project will comply with the requirements of the Massachusetts Architectural Access Board and will be designated to comply with the standards of the Americans with Disabilities Act. Appendix F includes the Accessibility Checklist as required by the City of Boston.

8.2 Massachusetts Environmental Policy Act (MEPA)

The Proponent does not expect that the Project will require review by the Massachusetts Environmental Policy Act (MEPA) Office of the Massachusetts Executive Office of Energy and Environmental Affairs. Current plans do not call for the Project to receive any state permits, state funding or involve any state land transfers.

8.3 Boston Civic Design Commission

The Project will comply with the provisions of Article 28 of the Boston Zoning Code. This PNF will be submitted to the Boston Civic Design Commission by the BRA as part of the Article 80 review process.

8.4 Boston Landmarks Commission (Article 85)

The buildings of the Project that are proposed to be landmarked are subject to review in accordance with the Study Report Guidelines Sections 8 and 9 relating to the parts of the buildings that are under consideration for landmark designation. While a property is under landmark consideration, the BLC will allow the owner to participate in accelerated design review, whereby the BLC will review the project plans. The three structures being considered for landmark designation are subject to design review by the BLC as part of the accelerated design review process.

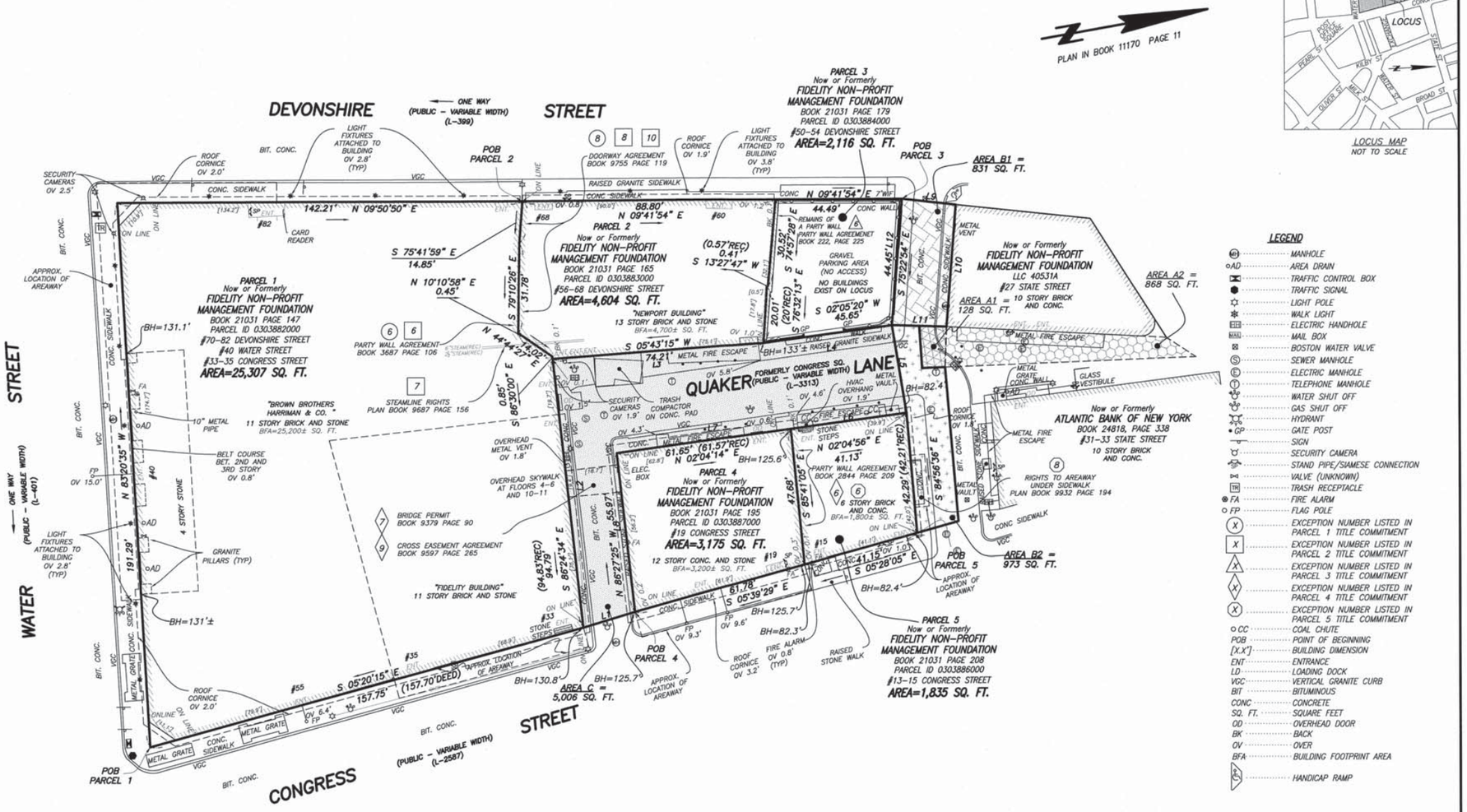
The BLC will also consult with the BRA and provide comments during the Article 80 Review for the entire Project.

8.5 Massachusetts Historical Commission

No state or federal agency involvement in the Project relating to financing, permits, leases or licenses is anticipated, and therefore, the Project is not subject to review by the Massachusetts Historical Commission in compliance with M.G.L. Chapter 9, sections 26-27C, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00).

Appendix A

Site Survey



LOCUS MAP
NOT TO SCALE

NOTES:

1) ZONING INFORMATION AS SHOWN HEREON WAS NOT PROVIDED BY THE TITLE INSURER AS REQUIRED BY ITEM 6 (A OR B) OF TABLE "A" IN THE 2011 ALTA SURVEY REQUIREMENTS.
2) THE PROPERTY SHOWN HEREON IS THE SAME PROPERTY DESCRIBED IN THE TITLE COMMITMENT.
3) THERE WAS NO OBSERVED EVIDENCE OF CURRENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS.
4) THERE WAS NO OBSERVED EVIDENCE OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.
5) TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO PROPOSED CHANGES IN STREET RIGHT OF WAY LINES.
6) BY GRAPHIC PLOTTING ONLY, THE PARCELS SHOWN HEREON LIE WITHIN A ZONE "X" (UNSHADED), AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD, AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (F.E.M.A.) FLOOD INSURANCE RATE MAP (F.I.R.M.) FOR SUFFOLK COUNTY, MASSACHUSETTS, CITY OF BOSTON MAP NUMBER 25025C0081G, HAVING AN EFFECTIVE DATE OF SEPTEMBER 25, 2009.
7) THIS DOCUMENT IS AN INSTRUMENT OF SERVICE OF HARRY R. FELDMAN, INC. ISSUED TO OUR CLIENT FOR PURPOSES RELATED DIRECTLY AND SOLELY TO HARRY R. FELDMAN INC.'S SCOPE OF SERVICES UNDER CONTRACT TO OUR CLIENT FOR THIS PROJECT. ANY USE OR REUSE OF THIS DOCUMENT FOR ANY REASON BY ANY PARTY FOR PURPOSES UNRELATED DIRECTLY AND SOLELY TO SAID CONTRACT SHALL BE AT THE USER'S SOLE AND EXCLUSIVE RISK AND LIABILITY, INCLUDING LIABILITY FOR VIOLATION OF COPYRIGHT LAWS, UNLESS WRITTEN CONSENT IS PROVIDED BY HARRY R. FELDMAN, INC.
8) THERE ARE NO STRIPED SURFACE PARKING SPACES ON LOCUS.
9) BUILDING HEIGHT SHOWN HEREON IS CALCULATED FROM THE AVERAGE GRADE PLANE AND THE TOP OF ROOF. BY CITY OF BOSTON ZONING CODE, THE DEFINITION OF BUILDING HEIGHT IS TO THE TOP OF THE HIGHEST ROOF BEAM; THIS WAS INACCESSIBLE AT TIME OF SURVEY. THEREFORE, THE BUILDING HEIGHT BY DEFINITION WOULD BE LESS THAN THE HEIGHT SHOWN HEREON.
10) THE TITLE COMMITMENT BEARING CASE NUMBER C20215 AND DATED EFFECTIVE AS OF JULY 24, 2013 ISSUED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY AND COVERING ALL OF THE PARCELS SHOWN HEREON INDICATES THE FEE INTEREST OF THE PARCELS SHOWN HEREON EXTENDS TO THE CENTER LINE OF THAT PORTION OF QUAKER LANE RUNNING ALONG THE RESPECTIVE BOUNDARY OF EACH SUCH PARCEL AND INCLUDES ALL OF PARCELS B1, B2 AND C SHOWN HEREON.

LEGEND

- MH ..... MANHOLE
- AD ..... AREA DRAIN
- TRAFFIC CONTROL BOX
- TRAFFIC SIGNAL
- LIGHT POLE
- WALK LIGHT
- ELECTRIC HANDHOLE
- MAIL BOX
- BOSTON WATER VALVE
- S SEWER MANHOLE
- E ELECTRIC MANHOLE
- T TELEPHONE MANHOLE
- WATER SHUT OFF
- GAS SHUT OFF
- HYDRANT
- GP GATE POST
- SIGN
- SECURITY CAMERA
- STAND PIPE/SIAMESE CONNECTION
- VALVE (UNKNOWN)
- TRASH RECEPTACLE
- FA FIRE ALARM
- FP FLAG POLE
- (X) EXCEPTION NUMBER LISTED IN PARCEL 1 TITLE COMMITMENT
- X EXCEPTION NUMBER LISTED IN PARCEL 2 TITLE COMMITMENT
- EXCEPTION NUMBER LISTED IN PARCEL 3 TITLE COMMITMENT
- EXCEPTION NUMBER LISTED IN PARCEL 4 TITLE COMMITMENT
- EXCEPTION NUMBER LISTED IN PARCEL 5 TITLE COMMITMENT
- CC ..... COAL CHUTE
- POB ..... POINT OF BEGINNING
- [XX'] ..... BUILDING DIMENSION
- ENT ..... ENTRANCE
- LD ..... LOADING DOCK
- VGC ..... VERTICAL GRANITE CURB
- BIT ..... BITUMINOUS
- CONC ..... CONCRETE
- SQ. FT. ..... SQUARE FEET
- OD ..... OVERHEAD DOOR
- BK ..... BACK
- OV ..... OVER
- BFA ..... BUILDING FOOTPRINT AREA
- HANDICAP RAMP

LIST OF VISIBLE ENCROACHMENTS

PARCEL 1

WATER STREET
SECURITY CAMERA OVER 2.5'
(6) LIGHT FIXTURES OVER 2.8'
CORNICES OVER 2.0'
FLAG POLE OVER 15.0'
BELT COURSE OVER 0.8'

DEVONSHIRE STREET
SECURITY CAMERA OVER 2.5'
(4) LIGHT FIXTURES OVER 2.8'
CORNICES OVER 2.0'

QUAKER LANE
SECURITY CAMERA OVER 1.9'
OVERHEAD DOOR OVER 1.5'
OVERHEAD METAL VENT OVER 1.8'
CORNICES OVER 2.0'

CONGRESS STREET
CORNICES OVER 2.0'

PARCEL 2

DEVONSHIRE STREET
(3) LIGHT FIXTURES OVER 3.8'
CORNICES OVER 1.9'
STANDPIPE OVER 0.8'

QUAKER LANE
SECURITY CAMERA OVER 1.9'
METAL FIRE ESCAPE OVER 5.9'

PARCEL 3

NONE

PARCEL 4

CONGRESS STREET
FIRE ALARM OVER 0.8'
FLAG POLES OVER 9.6' AND 9.3'
CORNICES OVER 3.2'

QUAKER LANE
METAL FIRE ESCAPE OVER 4.3'
OVERHEAD DOOR OVER 0.6'
CORNICE OVER 3.0'

PARCEL 5

QUAKER LANE
METAL FIRE ESCAPE OVER 4.6'
HVAC UNIT OVERHEAD OVER 1.9'
CORNICE 1.8'

CONGRESS STREET
STANDPIPE OVER 1.0'
FIRE ALARM OVER 0.8'
CORNICE OVER 1.8'

ZONING CLASSIFICATION – "B–10 & INTERIM PLANNING OVERLAY DISTRICT M"

PER ARTICLE 27D OF THE CITY OF BOSTON ZONING CODE: MEDIUM GROWTH SUBDISTRICT M

MAXIMUM FLOOR TO AREA RATIO AS OF RIGHT 8
MAXIMUM FLOOR TO AREA RATIO ENHANCED 10
MAXIMUM BUILDING HEIGHT AS OF RIGHT ..... 125 FEET
MAXIMUM BUILDING HEIGHT ENHANCED ..... 155 FEET

LOCUS IS ALSO WITHIN THE RESTRICTED PARKING (OVERLAY) DISTRICT

PER ARTICLE 23–6(A) OF THE CITY OF BOSTON ZONING CODE, NO OFF STREET PARKING IS REQUIRED WHERE THE MAXIMUM F.A.R. FOR A SITE SHOWN IN ARTICLE 13, TABLE B IS 8 OR 10.

PARCEL 2

DEVONSHIRE STREET
(3) LIGHT FIXTURES OVER 3.8'
CORNICES OVER 1.9'
STANDPIPE OVER 0.8'

QUAKER LANE
SECURITY CAMERA OVER 1.9'
METAL FIRE ESCAPE OVER 5.9'

PARCEL AREA TABLE

PARCEL 1 = 25,307 SQ. FT.
PARCEL 2 = 4,604 SQ. FT.
PARCEL 3 = 2,116 SQ. FT.
PARCEL 4 = 3,175 SQ. FT.
PARCEL 5 = 1,835 SQ. FT.
COMBINED PARCEL AREA = 37,037 SQ. FT. (0.850 ACRES)

QUAKER LANE AREA TABLE

AREA B1 = 831 SQ. FT.
AREA B2 = 973 SQ. FT.
AREA C = 5,006 SQ. FT.
COMBINED AREA = 6,810 SQ. FT. (0.156 ACRES)

AREA TO BE CONVEYED = 43,847 SQ. FT. (1.007 ACRES)

REFERENCES:

SUFFOLK COUNTY REGISTRY OF DEEDS
BOOK 21031 PAGE 147
BOOK 21031 PAGE 165
BOOK 21031 PAGE 179
BOOK 21031 PAGE 195
BOOK 21031 PAGE 208
PLAN BOOK 8179 PAGE 208
PLAN BOOK 3890 PAGE 381
PLAN BOOK 9687 PAGE 156
PLAN BOOK 11170 PAGE 11
PLAN BOOK 9932 PAGE 194

CITY OF BOSTON ENGINEERING DEPT.
FIELD BOOK 585 PAGE 34
FIELD BOOK 462 PAGE 11
PLAN NO. L–399
PLAN NO. L–401
PLAN NO. L–2587
PLAN NO. L–3313

TO: COMMONWEALTH LAND TITLE INSURANCE COMPANY, SHERIN AND LODGEN, LLP, RFM BLOCK ON CONGRESS I, LLC, NATIXIS REAL ESTATE CAPITAL LLC, TOGETHER WITH ITS SUCCESSORS AND/OR ASSIGNS AND HAYNES AND BOONE, LLP:

THIS IS TO CERTIFY THAT THIS PLAN AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 7(A), 7(B)(1), 7(C) 8, 9, 10(A), 11(A), 13, 14, 16, 17, 18, AND 21 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED UPDATED ON JULY 22, 2013.

HARRY R. FELDMAN, INC.

PAUL R. FOLEY, PLS (MA# 48355)
PFOLEY@HARRYRFELDMAN.COM

12/23/2013
DATE

COMMONWEALTH OF MASSACHUSETTS
PAUL R. FOLEY No. 48355 PROFESSIONAL LAND SURVEYOR

REVISED 12–20–2013: ADDITIONAL PARTIES ADDED TO CERTIFICATION
REVISED 12–17–2013: PARKING REQUIREMENTS ADDED TO ZONING CLASSIFICATION
REVISED 9–10–2013: AREAS IN QUAKER LANE REVISED
REVISED 9–3–2013: AREAS OF QUAKER LANE ADDED

ALTA/ACSM LAND TITLE SURVEY
CONGRESS BLOCK
BOSTON, MASS.

SCALE: 1"=20'
HARRY R. FELDMAN, INC.
112 SHAWMUT AVENUE
BOSTON, MASS. 02118

JULY 19, 2013
LAND SURVEYORS
PHONE: (617)357–9740
www.harryrfeldman.com

FELDMAN
Professional Land Surveyors

20 0 10 20 40 80
GRAPHIC SCALE

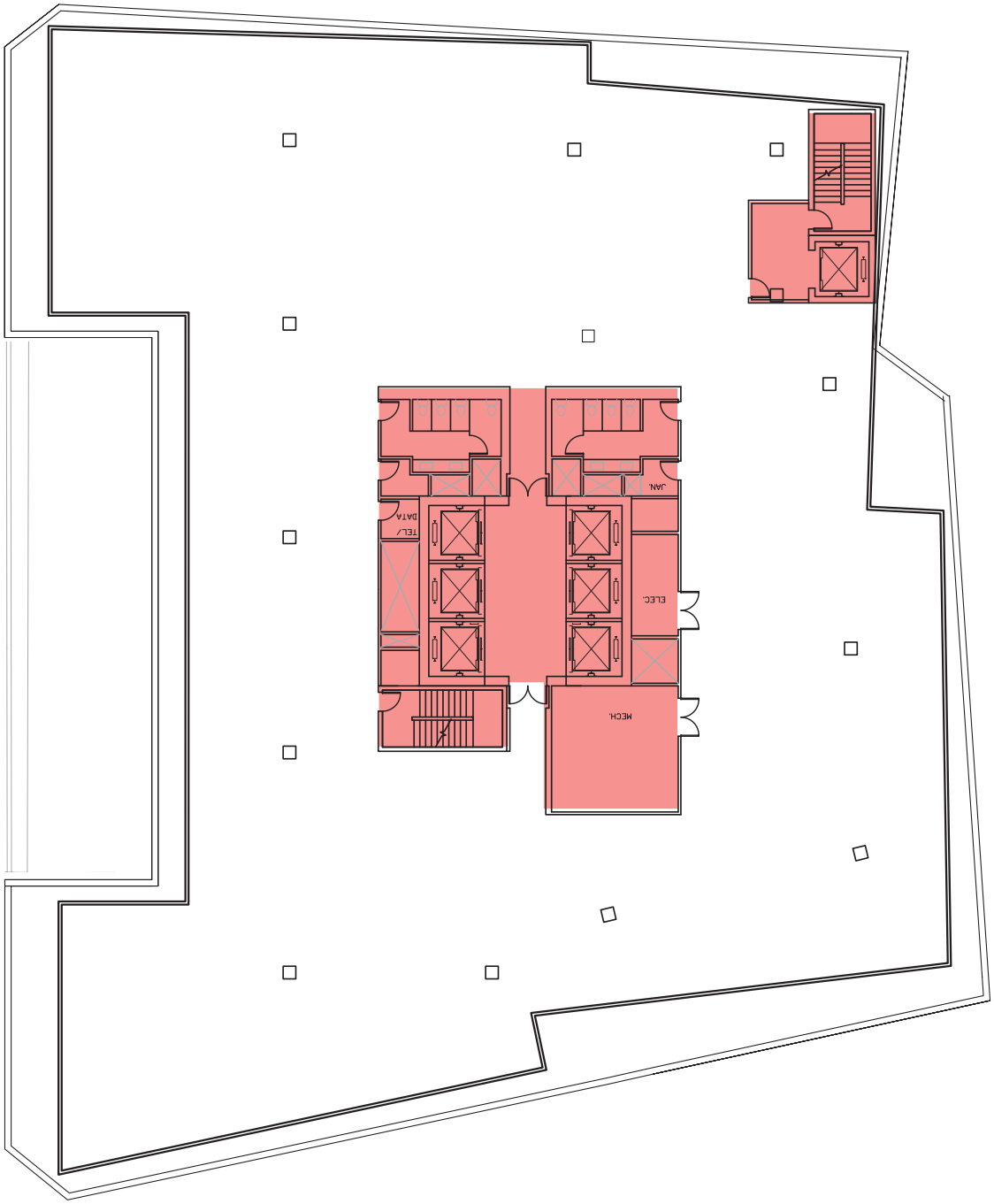
RESEARCH JBD	FIELD CHIEF	PROJ MGR PRF	APPROVED	SHEET NO. 1 OF 2
CALC JBD	CADD JBD	FIELD CHECKED	CRD FILE 13879	JOB NO. 13879

FILENAME: S:\PROJECTS\13800s\13879\DWG\13879–ALTA.dwg

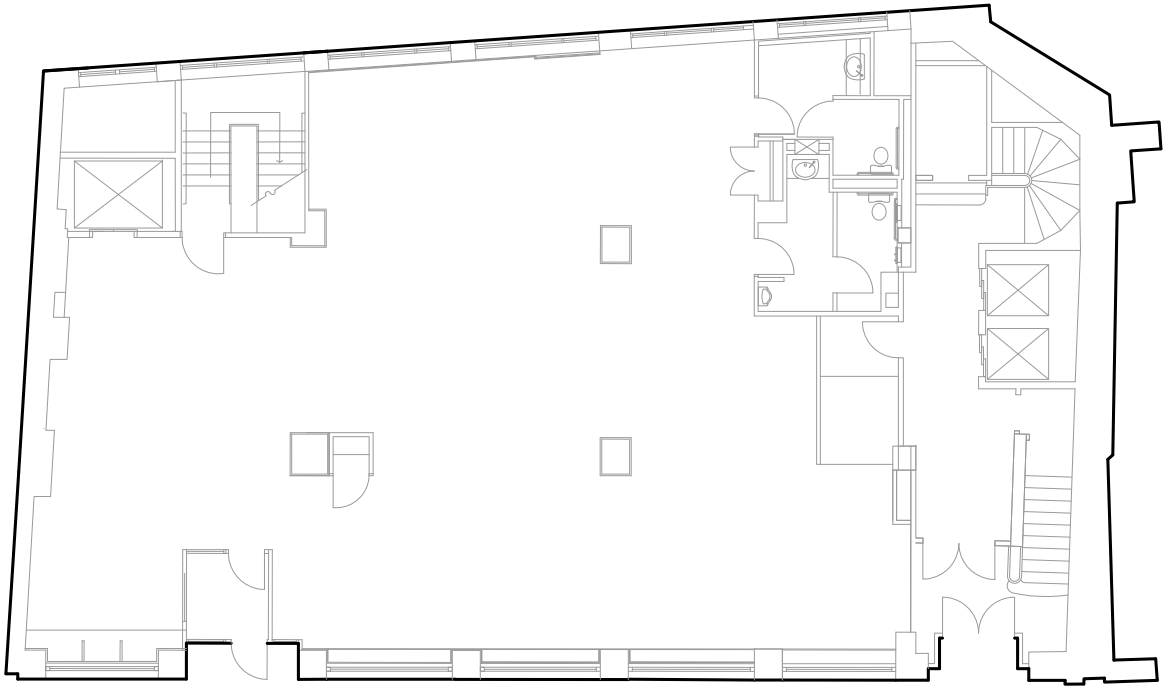
Appendix B

Floor Plans

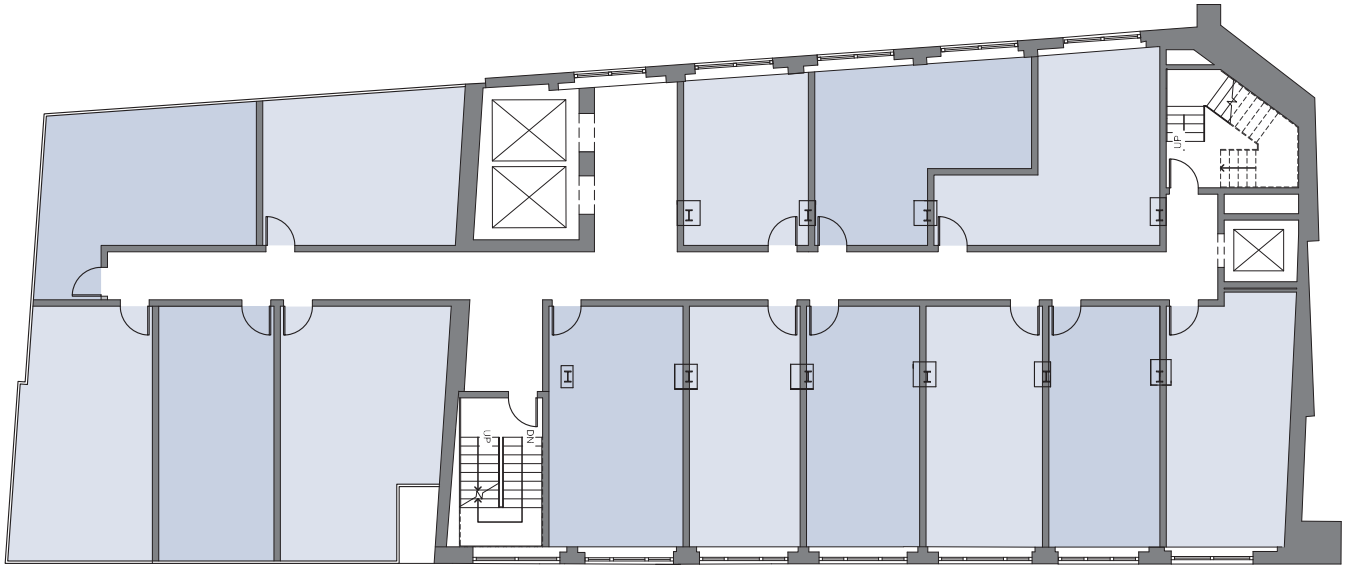
40 Water Street
Existing Typical Floor Plan



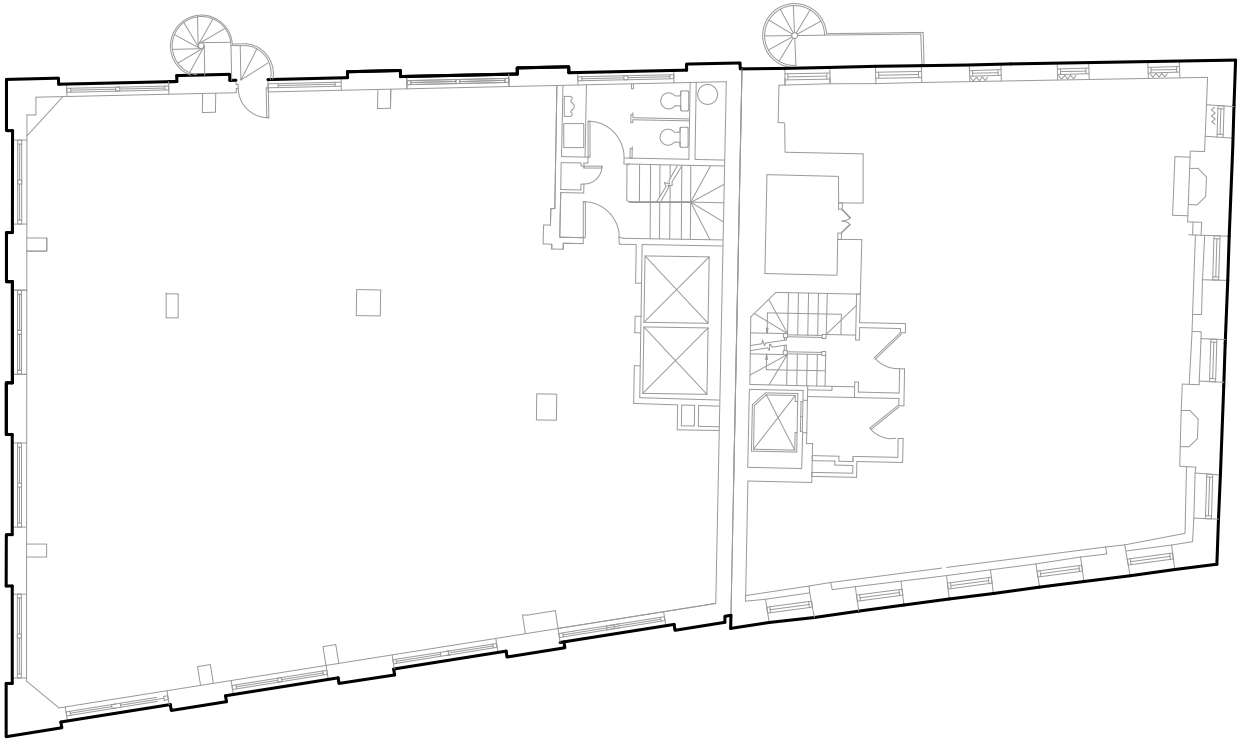
40 Water Street
Proposed Typical Floor Plan



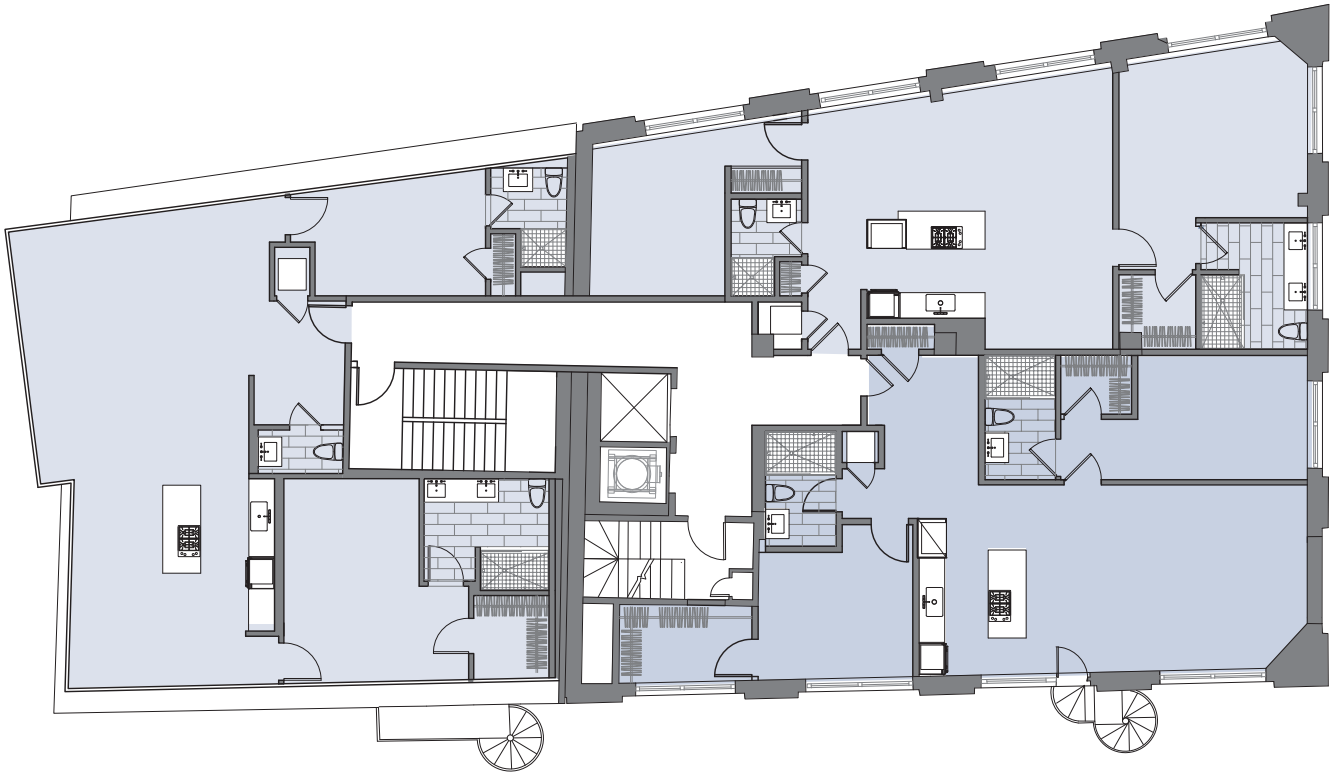
68 Devonshire Street
Existing Typical Floor Plan



15 Congress Street
Proposed Typical Floor Plan



15 Congress Street
Existing Typical Floor Plan



15 Congress Street
Proposed Typical Floor Plan

Appendix C

Transportation

Transportation Technical Appendix is available upon request.

Appendix D

Air Quality

AIR QUALITY APPENDIX

Introduction

This Air Quality Appendix provides modeling assumptions and backup for results presented in Section 4.5 of the report. Included within this documentation is a brief description of the methodology employed along with pertinent calculations and data used in the emissions and dispersion calculations supporting the microscale air quality analysis.

Motor Vehicle Emissions

The EPA MOVES computer program generated motor vehicle emissions used in the garage stationary source analysis along with the mobile source CAL3QHC modeling and mesoscale analysis. The model input parameters were provided by MassDEP. Emission rates were derived for 2014 and 2021 for speed limits of 0, 9, 15, and 30 mph for use in the microscale analyses.

CAL3QHC

For the intersection studied, the CAL3QHC model was applied to calculate CO concentrations at sensitive receptor locations using emission rates derived in MOVES. The intersection's queue links and free flow links were input to the model along with sensitive receptors at all locations nearby each intersection. The meteorological assumptions input into the model were a 1.0 meter per second wind speed, Pasquill-Gifford Class D stability combined with a mixing height of 1000 meters. For each direction, the full range of wind directions at 10 degree intervals was examined. In addition, a surface roughness (z_0) of 321 cm was used for the intersection. Idle emission rates for queue links were based on 0 mph emission rates derived in MOVES. Emission rates for speeds of 9, 15, and 30 mph were used for right turn, left turn, and free flow links, respectively.

Congress Square - Boston, MA
Background Concentrations

Background Concentrations										
POLLUTANT	AVERAGING TIME	Form	2011	2012	2013	Units	ppm to $\mu g/m^3$ Conversion Factor	Background Concentration ($\mu g/m^3$)	Standard ($\mu g/m^3$)	Location
SO_2 [1][7][8]	1-Hr	99th %	19.3	13.2	12	ppb	2.62	50.6	196	Kenmore Sq., Boston
	3-Hr	H2H	24.6	13.8	16	ppb	2.62	64.5	1300	Kenmore Sq., Boston
	24-Hr	H2H	9.4	5.4	6	ppb	2.62	24.6	365	Kenmore Sq., Boston
	Ann.	H	2.36	1.87	1	ppb	2.62	6.2	80	Kenmore Sq., Boston
PM-10	24-Hr	H2H	34	37	40	$\mu g/m^3$	1	40.0	150	One City Sq., Boston
	Ann.	H	15.9	16.8	18	$\mu g/m^3$	1	18.0	50	One City Sq., Boston
PM-2.5	24-Hr [4]	98th %	23.9	20.9	20	$\mu g/m^3$	1	21.6	35	174 North St, Boston
	Ann. [5]	H	10.32	9.47	8.8	$\mu g/m^3$	1	9.5	12	174 North St, Boston
NO_2 [3]	1-Hr [6]	98th %	52.9	49	48	ppb	1.88	93.9	188	Kenmore Sq., Boston
	Ann.	H	20.36	19.1	17.78	ppb	1.88	38.3	100	Kenmore Sq., Boston
CO [2]	1-Hr	H2H	1.5	1.3	1.3	ppm	1140	1710.0	40000	Kenmore Sq., Boston
	8-Hr	H2H	1.2	0.9	0.9	ppm	1140	1368.0	10000	Kenmore Sq., Boston
O_3	8-Hr [9]	H4H	0.060	0.078	0.059	ppm	1963	128.904	147	Harrison Ave, Boston
Pb	3-Mo	H	0.017	0.014	0.007	$\mu g/m^3$	1	0.017	0.15	Harrison Ave, Boston

From 2010-2013 MassDEP Annual Data Summaries

[1] SO_2 reported in ppb. Converted to $\mu g/m^3$ using factor of 1 ppb = 2.62 $\mu g/m^3$.

[2] CO reported in ppm or ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 1140 $\mu g/m^3$.

[3] NO_2 reported in ppb. Converted to $\mu g/m^3$ using factor of 1 ppb = 1.88 $\mu g/m^3$.

[4] Background level for 24-hour PM-2.5 is the average concentration of the 98^{th} percentile for three years.

[5] Background level for annual PM-2.5 is the average for three years.

[6] Background level for 1-hour NO2 is the average of the 98th percentile of the daily maximum 1-hour values a over three years.

[7] The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.

[8] The 2011 - 2013 SO_2 3-hr value is no longer reported by MassDEP. 1-hr H2H used instead. 2013 24-hr value also no longer reported. Obtained from EPA AirData website.

[9] Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years

Due to excessive size CAL3QHC, and MOVES input and output files are available on digital media upon request.

Appendix E

Climate Change Checklists

Climate Change Preparedness and Resiliency Checklist for New Construction

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

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

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

Climate Change Analysis and Information Sources:

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

Checklist

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

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

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

A.1 - Project Information

Project Name:	**Congress Square – 40 Water Street**
Project Address Primary:	**40 Water Street**
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	**Bryan Lee, Vice President, Related Beal, blee@relatedbeal.com, (617) 451-2100**

A.2 - Team Description

Owner / Developer:	**Related Beal**
Architect:	**Arrowstreet**
Engineer (building systems):	**Cosentini Associates**
Sustainability / LEED:	**Arrowstreet**
Permitting:	**Epsilon Associates**
Construction Management:	
Climate Change Expert:	**Epsilon Associates**

A.3 - Project Permitting and Phase

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

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

A.4 - Building Classification and Description

List the principal Building Uses:	Office, Retail
List the First Floor Uses:	*Retail, Lobby*

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

☐ Wood Frame	☑ Masonry	☑ Steel Frame	☑ Concrete

Describe the building?

Site Area:	*25,307 SF*	Building Area:	*315,500SF*
Building Height:	*175 Ft.*	Number of Stories:	*14 Flrs.*
First Floor Elevation (reference Boston City Base):	*21 feet*	Are there below grade spaces/levels, if yes how many:	*2 levels*

A.5 - Green Building

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

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

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

Registered:	*No*	Certified:	*No*

A.6 - Building Energy-

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

Electric:	*4,000 kW*	Heating:	*7,500 MMBtu/hr*
What is the planned building Energy Use Intensity:	*(kWh/SF)*	Cooling:	*700 Tons/hr*

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

Electric:	*1,000 kW*	Heating:	*7,500 MMBtu/hr*
		Cooling:	*250 Tons/hr (data center only)*

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

Electrical Generation:	*1,000 kW*		Fuel Source:	*diesel*
System Type and Number of Units:	☑ Combustion Engine	☐ Gas Turbine	☐ Combine Heat and Power	*2 Units*

B - Extreme Weather and Heat Events

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

B.1 - Analysis

What is the full expected life of the project?

Select most appropriate:	☐ 10 Years	☐ 25 Years	☑ 50 Years	☐ 75 Years

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

Select most appropriate:	☐ 10 Years	☑ 25 Years	☐ 50 Years	☐ 75 Years

What time span of future Climate Conditions was considered?

Select most appropriate:	☐ 10 Years	☐ 25 Years	☑ 50 Years	☐ 75 Years

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

8/91 Deg.	Based on ASHRAE Fundamentals 2013 99.6% heating; 0.4% cooling

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

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

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

30-90 Days	*0.2 Events / yr.*

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

45 Inches / yr.	*4 Inches*	*0.5 Events / yr.*

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

105 Peak Wind	*10 Hours*	*0.25 Events / yr.*

B.2 - Mitigation Strategies

What will be the overall energy performance, based on use, of the project and how will performance be determined?

Building energy use below code:	***TBD***
How is performance determined:	Energy model

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

Select all appropriate:	☐ High performance building envelop	☐ High performance lighting & controls	☐ Building day lighting	☐ EnergyStar equip. / appliances
	☐ High performance HVAC equipment	☐ Energy recovery ventilation	☐ No active cooling	☐ No active heating
Describe any added measures:				

What are the insulation (R) values for building envelop elements? (Values shown for addition only)

Roof:	*R = 25*	Walls / Curtain Wall Assembly:	*R = 13*
Foundation:	*R = 19*	Basement / Slab:	*R =10*
Windows:	*R =2.4 / U =0.42*	Doors:	*R =2.7 / U =0.37*

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

	☐ On-site clean energy / CHP system(s)	☐ Building-wide power dimming	☐ Thermal energy storage systems	☐ Ground source heat pump
	☐ On-site Solar PV	☐ On-site Solar Thermal	☐ Wind power	☑ None
Describe any added measures:				

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

Select all appropriate:	☐ Connected to local distributed electrical	☐ Building will be Smart Grid ready	☐ Connected to distributed steam, hot, chilled water	☐ Distributed thermal energy ready

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

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

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

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

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

Select all appropriate:	☐ High reflective paving materials	☐ Shade trees & shrubs	☑ High reflective roof materials	☐ Vegetated roofs
Describe other strategies:				

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

Select all appropriate:	☐ On-site retention systems & ponds	☐ Infiltration galleries & areas	☐ Vegetated water capture systems	☐ Vegetated roofs
Describe other strategies:	The Project team is studying methods of stormwater recharge.			

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

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

C - Sea-Level Rise and Storms

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

C.1 - Location Description and Classification:

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

	Yes / No

Describe site conditions?

Site Elevation – Low/High Points:	*Boston City Base Elev.(Ft.)*
Building Proximity to Water:	*1m700 Ft.*

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

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

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

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

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

1,150 Ft.

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

C - Sea-Level Rise and Storms

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

C.2 - Analysis

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

Sea Level Rise:	*Ft.*	Frequency of storms:	*per year*

C.3 - Building Flood Proofing

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

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

Flood Proof Elevation:	*Boston City Base Elev.(Ft.)*	First Floor Elevation:	*Boston City Base Elev. (Ft.)*

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

	Yes / No	If Yes, to what elevation	*Boston City Base Elev. (Ft.)*
If Yes, describe:			

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

☐ Systems located above 1st Floor.	☐ Water tight utility conduits	☐ Waste water back flow prevention	☐ Storm water back flow prevention

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

Yes / No

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

Yes / No	If yes, to what height above 100 Year Floodplain:	*Boston City Base Elev. (Ft.)*

Will the project employ hard and / or soft landscape elements as velocity barriers to reduce wind or wave impacts?

Yes / No

If Yes, describe:

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

Yes / No	If Yes, for how long:	*days*

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

C.4 - Building Resilience and Adaptability

Describe any strategies that would support rapid recovery after a weather event and accommodate future building changes that respond to climate change:

Will the building be able to withstand severe storm impacts and endure temporary inundation?

Select appropriate:	*Yes / No*	☐ Hardened / Resilient Ground Floor Construction	☐ Temporary shutters and or barricades	☐ Resilient site design, materials and construction

Can the site and building be reasonably modified to increase Building Flood Proof Elevation?

Select appropriate:	*Yes / No*	☐ Surrounding site elevation can be raised	☐ Building ground floor can be raised	☐ Construction been engineered
Describe additional strategies:				

Has the building been planned and designed to accommodate future resiliency enhancements?

Select appropriate:	*Yes / No*	☐ Solar PV	☐ Solar Thermal	☐ Clean Energy / CHP System(s)
		☐ Potable water storage	☐ Wastewater storage	☐ Back up energy systems & fuel
Describe any specific or additional strategies:				

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

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

Climate Change Preparedness and Resiliency Checklist for New Construction

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

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

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

Climate Change Analysis and Information Sources:

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

Checklist

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

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

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

A.1 - Project Information

Project Name:	**Congress Square**
Project Address Primary:	**68 Devonshire Street**
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	**Bryan Lee, Vice President, Related Beal, blee@relatedbeal.com, (617) 451-2100**

A.2 - Team Description

Owner / Developer:	**Related Beal**
Architect:	**Arrowstreet**
Engineer (building systems):	**Cosentini Associates**
Sustainability / LEED:	**Arrowstreet**
Permitting:	**Epsilon Associates**
Construction Management:	
Climate Change Expert:	**Epsilon Associates**

A.3 - Project Permitting and Phase

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

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

A.4 - Building Classification and Description

List the principal Building Uses:	Hotel
List the First Floor Uses:	*Lobby*

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

☐ Wood Frame	☑ Masonry	☑ Steel Frame	☑ Concrete

Describe the building?

Site Area:	*4,604 SF*	Building Area:	*83,500 SF*
Building Height:	*129 Ft.*	Number of Stories:	*13 Flrs.*
First Floor Elevation (reference Boston City Base):	*23 feet*	Are there below grade spaces/levels, if yes how many:	*2 levels*

A.5 - Green Building

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

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

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

Registered:	*Yes / No*	Certified:	*Yes / No*

A.6 - Building Energy

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

Electric:	*750 kW*	Heating:	*1,500 MMBtu/hr*
What is the planned building Energy Use Intensity:	*(kWh/SF)*	Cooling:	*150 Tons/hr*

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

Electric:	*300 (kW)*	Heating:	*0 (MMBtu/hr)*
		Cooling:	*0 (Tons/hr)*

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

Electrical Generation:	*300 (kW)*		Fuel Source:	*Diesel*
System Type and Number of Units:	☑ Combustion Engine	☐ Gas Turbine	☐ Combine Heat and Power	*1 (Units)*

B - Extreme Weather and Heat Events

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

B.1 - Analysis

What is the full expected life of the project?

Select most appropriate:	☐ 10 Years	☐ 25 Years	☑ 50 Years	☐ 75 Years

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

Select most appropriate:	☐ 10 Years	☑ 25 Years	☐ 50 Years	☐ 75 Years

What time span of future Climate Conditions was considered?

Select most appropriate:	☐ 10 Years	☐ 25 Years	☑ 50 Years	☐ 75 Years

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

8/91 Deg.	Based on ASHRAE Fundamentals 2013 99.6% heating; 0.4% cooling

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

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

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

30-90 Days	*0.2 Events / yr.*

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

45 Inches / yr.	*4 Inches*	*0.5 Events / yr.*

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

105 Peak Wind	*10 Hours*	*0.25 Events / yr.*

B.2 - Mitigation Strategies

What will be the overall energy performance, based on use, of the project and how will performance be determined?

Building energy use below code:	*25%*
How is performance determined:	Energy model

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

Select all appropriate:				
	☑ High performance building envelop	☑ High performance lighting & controls	☐ Building day lighting	☑ EnergyStar equip. / appliances
	☑ High performance HVAC equipment	☑ Energy recovery ventilation	☐ No active cooling	☐ No active heating
Describe any added measures:				

What are the insulation (R) values for building envelop elements? (Values for new addition only)

Roof:	*R = 25*	Walls / Curtain Wall Assembly:	*R = 13*
Foundation:	*R = 19*	Basement / Slab:	*R =10*
Windows:	*R =2.4 / U =0.42*	Doors:	*R = 2.7 / U =0.37*

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

	☐ On-site clean energy / CHP system(s)	☐ Building-wide power dimming	☐ Thermal energy storage systems	☐ Ground source heat pump
	☐ On-site Solar PV	☐ On-site Solar Thermal	☐ Wind power	☑ None
Describe any added measures:				

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

Select all appropriate:	☐ Connected to local distributed electrical	☐ Building will be Smart Grid ready	☐ Connected to distributed steam, hot, chilled water	☐ Distributed thermal energy ready

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

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

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

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

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

Select all appropriate:	☐ High reflective paving materials	☐ Shade trees & shrubs	☑ High reflective roof materials	☐ Vegetated roofs
Describe other strategies:				

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

Select all appropriate:	☐ On-site retention systems & ponds	☐ Infiltration galleries & areas	☐ Vegetated water capture systems	☐ Vegetated roofs
Describe other strategies:	The Project team is studying methods of stormwater recharge.			

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

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

C - Sea-Level Rise and Storms

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

C.1 - Location Description and Classification:

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

Yes / No

Describe site conditions?

Site Elevation – Low/High Points:	*Boston City Base Elev.(Ft.)*
Building Proximity to Water:	*1,700 Ft.*

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

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

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

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

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

1,150 Ft.

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

C - Sea-Level Rise and Storms

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

C.2 - Analysis

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

Sea Level Rise:	*Ft.*	Frequency of storms:	*per year*

C.3 - Building Flood Proofing

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

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

Flood Proof Elevation:	*Boston City Base Elev.(Ft.)*	First Floor Elevation:	*Boston City Base Elev. (Ft.)*

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

	Yes / No	If Yes, to what elevation	*Boston City Base Elev. (Ft.)*
If Yes, describe:			

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

☐ Systems located above 1st Floor.	☐ Water tight utility conduits	☐ Waste water back flow prevention	☐ Storm water back flow prevention

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

Yes / No

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

Yes / No	If yes, to what height above 100 Year Floodplain:	*Boston City Base Elev. (Ft.)*

Will the project employ hard and / or soft landscape elements as velocity barriers to reduce wind or wave impacts?

Yes / No	
If Yes, describe:	

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

Yes / No	If Yes, for how long:	*days*

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

C.4 - Building Resilience and Adaptability

Describe any strategies that would support rapid recovery after a weather event and accommodate future building changes that respond to climate change:

Will the building be able to withstand severe storm impacts and endure temporary inundation?

Select appropriate:	*Yes / No*	☐ Hardened / Resilient Ground Floor Construction	☐ Temporary shutters and or barricades	☐ Resilient site design, materials and construction

Can the site and building be reasonably modified to increase Building Flood Proof Elevation?

Select appropriate:	*Yes / No*	☐ Surrounding site elevation can be raised	☐ Building ground floor can be raised	☐ Construction been engineered
Describe additional strategies:				

Has the building been planned and designed to accommodate future resiliency enhancements?

Select appropriate:	*Yes / No*	☐ Solar PV	☐ Solar Thermal	☐ Clean Energy / CHP System(s)
		☐ Potable water storage	☐ Wastewater storage	☐ Back up energy systems & fuel
Describe any specific or additional strategies:				

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

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

Climate Change Preparedness and Resiliency Checklist for New Construction

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

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

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

Climate Change Analysis and Information Sources:

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

Checklist

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

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

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

A.1 - Project Information

Project Name:	**Congress Square**
Project Address Primary:	**15 Congress Street**
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	**Bryan Lee, Vice President, Related Beal, blee@relatedbeal.com, (617) 451-2100**

A.2 - Team Description

Owner / Developer:	**Related Beal**
Architect:	**Arrowstreet**
Engineer (building systems):	**Cosentini Associates**
Sustainability / LEED:	**Arrowstreet**
Permitting:	**Epsilon Associates**
Construction Management:	
Climate Change Expert:	**Epsilon Associates**

A.3 - Project Permitting and Phase

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

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

A.4 - Building Classification and Description

List the principal Building Uses:	Residential, retail/restaurant
List the First Floor Uses:	*Lobby, retail/restaurant*

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

☐ Wood Frame	☑ Masonry	☑ Steel Frame	☑ Concrete

Describe the building?

Site Area:	*5,010 SF*	Building Area:	*57,100 SF*
Building Height:	*137 Ft.*	Number of Stories:	*11 Flrs*
First Floor Elevation (reference Boston City Base):	*19 feet*	Are there below grade spaces/levels, if yes how many:	*2 levels*

A.5 - Green Building

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

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

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

Registered:	*Yes / No*	Certified:	*Yes / No*

A.6 - Building Energy-

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

Electric:	*750 kW*	Heating:	*1,500 MMBtu/hr*
What is the planned building Energy Use Intensity:	*(kWh/SF)*	Cooling:	*150 Tons/hr*

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

Electric:	*300 (kW)*	Heating:	*0 (MMBtu/hr)*
		Cooling:	*0 (Tons/hr)*

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

Electrical Generation:	*300 (kW)*		Fuel Source:	*Diesel*
System Type and Number of Units:	☑ Combustion Engine	☐ Gas Turbine	☐ Combine Heat and Power	*1 Units*

B - Extreme Weather and Heat Events

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

B.1 - Analysis

What is the full expected life of the project?

Select most appropriate:	☐ 10 Years	☐ 25 Years	☑ 50 Years	☐ 75 Years

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

Select most appropriate:	☐ 10 Years	☑ 25 Years	☐ 50 Years	☐ 75 Years

What time span of future Climate Conditions was considered?

Select most appropriate:	☐ 10 Years	☐ 25 Years	☑ 50 Years	☐ 75 Years

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

8/91 Deg.	Based on ASHRAE Fundamentals 2013 99.6% heating; 0.4% cooling

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

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

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

30-90 Days	*0.2 Events / yr.*

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

45 Inches / yr.	*4 Inches*	*0.5 Events / yr.*

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

105 Peak Wind	*10 Hours*	*0.25 Events / yr.*

B.2 - Mitigation Strategies

What will be the overall energy performance, based on use, of the project and how will performance be determined?

Building energy use below code:	*25%*
How is performance determined:	Energy model

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

Select all appropriate:	☑ High performance building envelop	☑ High performance lighting & controls	☐ Building day lighting	☑ EnergyStar equip. / appliances
	☑ High performance HVAC equipment	☑ Energy recovery ventilation	☐ No active cooling	☐ No active heating
Describe any added measures:				

What are the insulation (R) values for building envelop elements? (Values for new addition only)

Roof:	*R = 25*	Walls / Curtain Wall Assembly:	*R = 13*
Foundation:	*R = 19*	Basement / Slab:	*R =10*
Windows:	*R = 2.4 / U =0.42*	Doors:	*R =2.7 / U =0.37*

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

☐ On-site clean energy / CHP system(s)	☐ Building-wide power dimming	☐ Thermal energy storage systems	☐ Ground source heat pump
☐ On-site Solar PV	☐ On-site Solar Thermal	☐ Wind power	☑ None
Describe any added measures:			

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

Select all appropriate:	☐ Connected to local distributed electrical	☐ Building will be Smart Grid ready	☐ Connected to distributed steam, hot, chilled water	☐ Distributed thermal energy ready

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

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

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

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

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

Select all appropriate:	☐ High reflective paving materials	☐ Shade trees & shrubs	☑ High reflective roof materials	☐ Vegetated roofs
Describe other strategies:				

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

Select all appropriate:	☐ On-site retention systems & ponds	☐ Infiltration galleries & areas	☐ Vegetated water capture systems	☐ Vegetated roofs
Describe other strategies:	The Project team is studying methods of stormwater infiltration.			

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

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

C - Sea-Level Rise and Storms

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

C.1 - Location Description and Classification:

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

Yes / No

Describe site conditions?

Site Elevation – Low/High Points:	Boston City Base Elev.(Ft.)
Building Proximity to Water:	1,700 Ft.

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

Coastal Zone:	Yes / No	Velocity Zone:	Yes / No
Flood Zone:	Yes / No	Area Prone to Flooding:	Yes / No

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

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

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

1,150 Ft.

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

C - Sea-Level Rise and Storms

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

C.2 - Analysis

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

Sea Level Rise:	Ft.	Frequency of storms:	per year

C.3 - Building Flood Proofing

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

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

Flood Proof Elevation:	Boston City Base Elev.(Ft.)	First Floor Elevation:	Boston City Base Elev. (Ft.)

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

	Yes / No	If Yes, to what elevation	Boston City Base Elev. (Ft.)
If Yes, describe:			

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

☐ Systems located above 1st Floor.	☐ Water tight utility conduits	☐ Waste water back flow prevention	☐ Storm water back flow prevention

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

Yes / No

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

Yes / No	If yes, to what height above 100 Year Floodplain:	*Boston City Base Elev. (Ft.)*

Will the project employ hard and / or soft landscape elements as velocity barriers to reduce wind or wave impacts?

Yes / No

If Yes, describe:

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

Yes / No	If Yes, for how long:	*days*

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

C.4 - Building Resilience and Adaptability

Describe any strategies that would support rapid recovery after a weather event and accommodate future building changes that respond to climate change:

Will the building be able to withstand severe storm impacts and endure temporary inundation?

Select appropriate:	*Yes / No*	☐ Hardened / Resilient Ground Floor Construction	☐ Temporary shutters and or barricades	☐ Resilient site design, materials and construction

Can the site and building be reasonably modified to increase Building Flood Proof Elevation?

Select appropriate:	*Yes / No*	☐ Surrounding site elevation can be raised	☐ Building ground floor can be raised	☐ Construction been engineered
Describe additional strategies:				

Has the building been planned and designed to accommodate future resiliency enhancements?

Select appropriate:	*Yes / No*	☐ Solar PV	☐ Solar Thermal	☐ Clean Energy / CHP System(s)
		☐ Potable water storage	☐ Wastewater storage	☐ Back up energy systems & fuel
Describe any specific or additional strategies:				

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

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

Appendix F

Accessibility Checklist

Accessibility Checklist

(to be added to the BRA Development Review Guidelines)

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

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

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

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

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

Accessibility Analysis Information Sources:

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

Article 80 | ACCESSIBILTY CHECKLIST

Project Information

Project Name:	Congress Square
Project Address Primary:	40 Water Street, 68 Devonshire Street, 15 Congress Street
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	Bryan Lee, Vice President, Related Beal, blee@relatedbeal.com, (617) 451-2100

Team Description

Owner / Developer:	Related Beal
Architect:	Arrowstreet
Engineer (building systems):	Cosentini Associates
Sustainability / LEED:	Arrowstreet
Permitting:	Epsilon Associates, Inc.
Construction Management:	

Project Permitting and Phase

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

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

Article 80 | ACCESSIBILTY CHECKLIST

Building Classification and Description

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

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

What is the Construction Type – select most appropriate type?

Wood Frame	**Masonry**	**Steel Frame**	**Concrete**

Describe the building?

Site Area:	*43,847 SF*	Building Area:	*458,300 SF*
Building Height:	*Up to 175 Ft.*	Number of Stories:	*Up to 13 Flrs.*
First Floor Elevation:	*19 Elev.*	Are there below grade spaces:	**Yes** / *No*

Assessment of Existing Infrastructure for Accessibility:

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

Provide a description of the development neighborhood and identifying characteristics.	The Project site is located in downtown Boston, just north of Post Office Square. The surrounding area includes a mix of historic buildings and modern buildings of varying heights, from eight floors to 40.
List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter rail, subway, bus, etc.	State Street: <0.25 mile Downtown Crossing: <0.5 mile

List the surrounding institutions: hospitals, public housing and elderly and disabled housing developments, educational facilities, etc.	No major institutions within 0.25 mile
Is the proposed development on a priority accessible route to a key public use facility? List the surrounding: government buildings, libraries, community centers and recreational facilities and other related facilities.	No. City Hall, Courthouse

Surrounding Site Conditions – Existing:

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

Are there sidewalks and pedestrian ramps existing at the development site?	Yes
If yes above, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.	The majority of the sidewalks are concrete, with some areas of granite sidewalk adjacent to Quaker Lane and along Devonshire Street in front of 68 Devonshire. The pedestrian ramps at Quaker Lane on Devonshire and Congress Streets may be determined non-compliant.
Are the sidewalks and pedestrian ramps existing-to-remain? **If yes,** have the sidewalks and pedestrian ramps been verified as compliant? **If yes,** please provide surveyors report.	While we anticipate the majority of the sidewalk will remain, we anticipate modifications to sidewalk and roadway curb may occur in specific locations where cross pitches and pedestrian ramps are determined to be non-compliant. The overall site areas will be reviewed and non-compliant areas identified once a site survey is completed. The Quaker Lane area will receive new pavers flush with the existing adjacent sidewalks to create a pedestrian promenade.
Is the development site within a historic district? **If yes,** please identify.	No

Surrounding Site Conditions – Proposed

This section identifies the proposed condition of the walkways and pedestrian ramps in and around the development site. The width of the sidewalk contributes to the degree of comfort and enjoyment of walking

along a street. Narrow sidewalks do not support lively pedestrian activity, and may create dangerous conditions that force people to walk in the street. Typically, a five foot wide Pedestrian Zone supports two people walking side by side or two wheelchairs passing each other. An eight foot wide Pedestrian Zone allows two pairs of people to comfortable pass each other, and a ten foot or wider Pedestrian Zone can support high volumes of pedestrians.

Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? See: www.bostoncompletestreets.org	Yes, except for not having three distinct zones along Devonshire due to the existing sidewalk widths that are not proposed to be changed.
If yes above, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.	Downtown Commercial/Downtown Mixed Use; Quaker Lane is consistent with the Shared Street designation
What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.	Devonshire = 8' wide, Congress = 12' wide and Water = 10' wide
List the proposed materials for each Zone. Will the proposed materials be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way?	The existing and proposed sidewalks consist of concrete paving and existing historic granite paving to remain. Quaker lane is proposed to consist of cut granite cobbles with a thermal finish to be ADA compliant.
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the City of Boston Public Improvement Commission?	N/A
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way?	Yes, along Quaker Lane only.
If yes above, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be?	Quaker Lane is anticipated to be a pedestrian way that will be used for servicing the building during specified time periods. The dimensions have yet to be determined.

Proposed Accessible Parking:

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

What is the total number of parking spaces provided at the development site parking lot or garage?	No parking proposed.
What is the total number of accessible spaces provided at the development site?	No parking proposed.
Will any on street accessible parking spaces be required? If yes, has the proponent contacted the Commission for Persons with Disabilities and City of Boston Transportation Department regarding this need?	On-street accessible parking spaces are currently located on Devonshire Street and Water Street adjacent to the site.
Where is accessible visitor parking located?	No parking proposed.
Has a drop-off area been identified? If yes, will it be accessible?	Yes, Yes. See attached diagram.
Include a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations. Please include route distances.	No parking is proposed.

Article 80 | ACCESSIBILTY CHECKLIST

Circulation and Accessible Routes:

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

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

Provide a diagram of the accessible route connections through the site.	See figure at the end of this appendix.
Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.	40 Water Street: existing entrances on Water, Congress and Devonshire streets include stairs with ADA lifts. Proposed entrance on Quaker Lane is flush. 68 Devonshire Street: existing entrance on Devonshire is flush. Proposed entrance on Quaker Lane is flush. 15 Congress Street: existing entrances include stairs.
Are the accessible entrance and the standard entrance integrated?	Yes
If no above, what is the reason?	
Will there be a roof deck or outdoor courtyard space? If yes, include diagram of the accessible route.	40 Water Street will include roof decks that will be accessible and available for use by employees of the tenant that leases the floor to which the roof deck is connected.
Has an accessible routes way-finding and signage package been developed? If yes, please describe.	No

Accessible Units: (If applicable)

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

What is the total number of proposed units for the development?	35
How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?	35 for sale. Number of affordable will be consistent with the Inclusionary Development Policy.

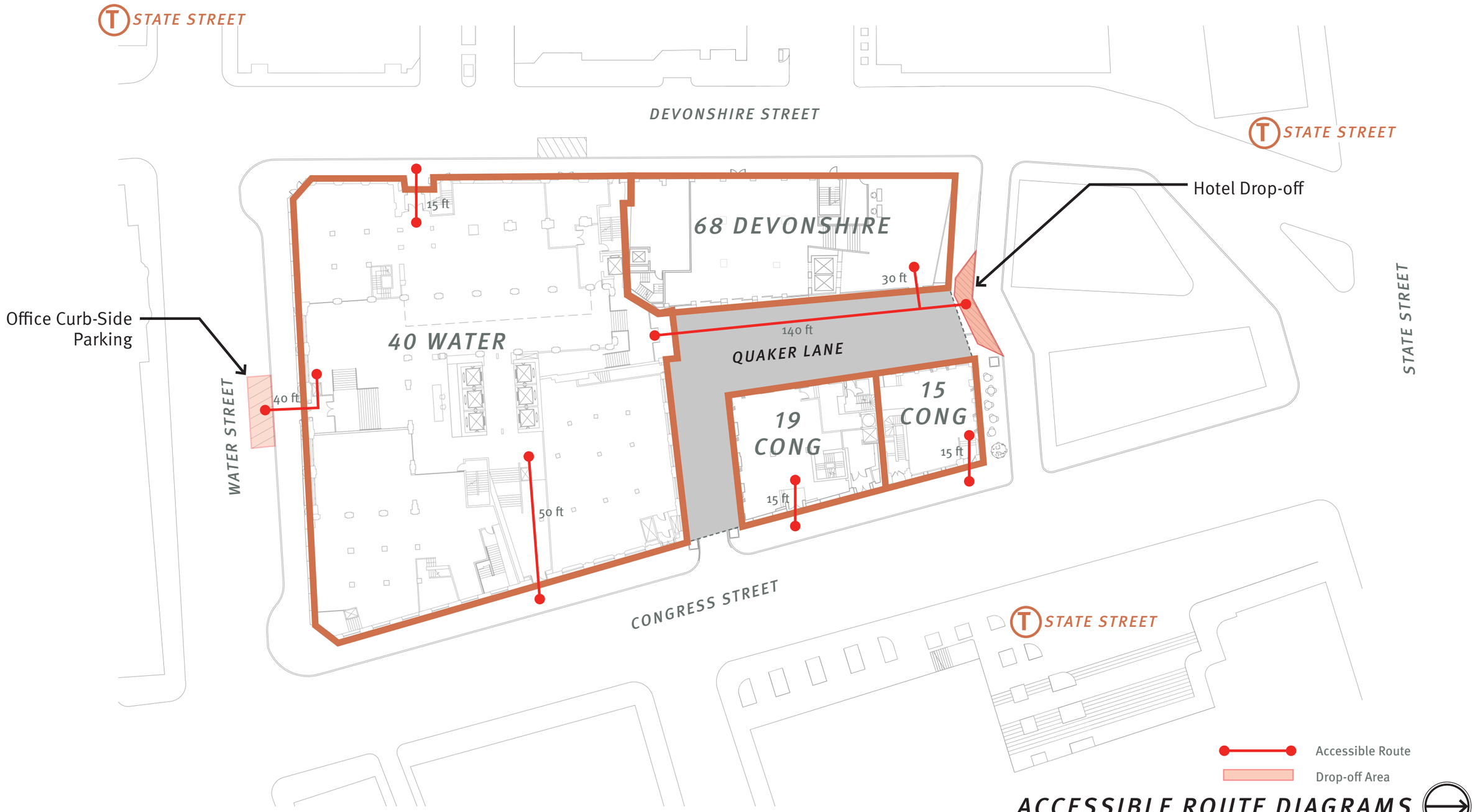
Article 80 | ACCESSIBILTY CHECKLIST

How many accessible units are being proposed?	2
Please provide plan and diagram of the accessible units.	See attached plan
How many accessible units will also be affordable? If none, please describe reason.	Number of affordable will be consistent with the Inclusionary Development Policy.
Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs at entry or step to balcony. **If yes,** please provide reason.	No
Has the proponent reviewed or presented the proposed plan to the City of Boston Mayor's Commission for Persons with Disabilities Advisory Board?	No
Did the Advisory Board vote to support this project? **If no,** what recommendations did the Advisory Board give to make this project more accessible?	

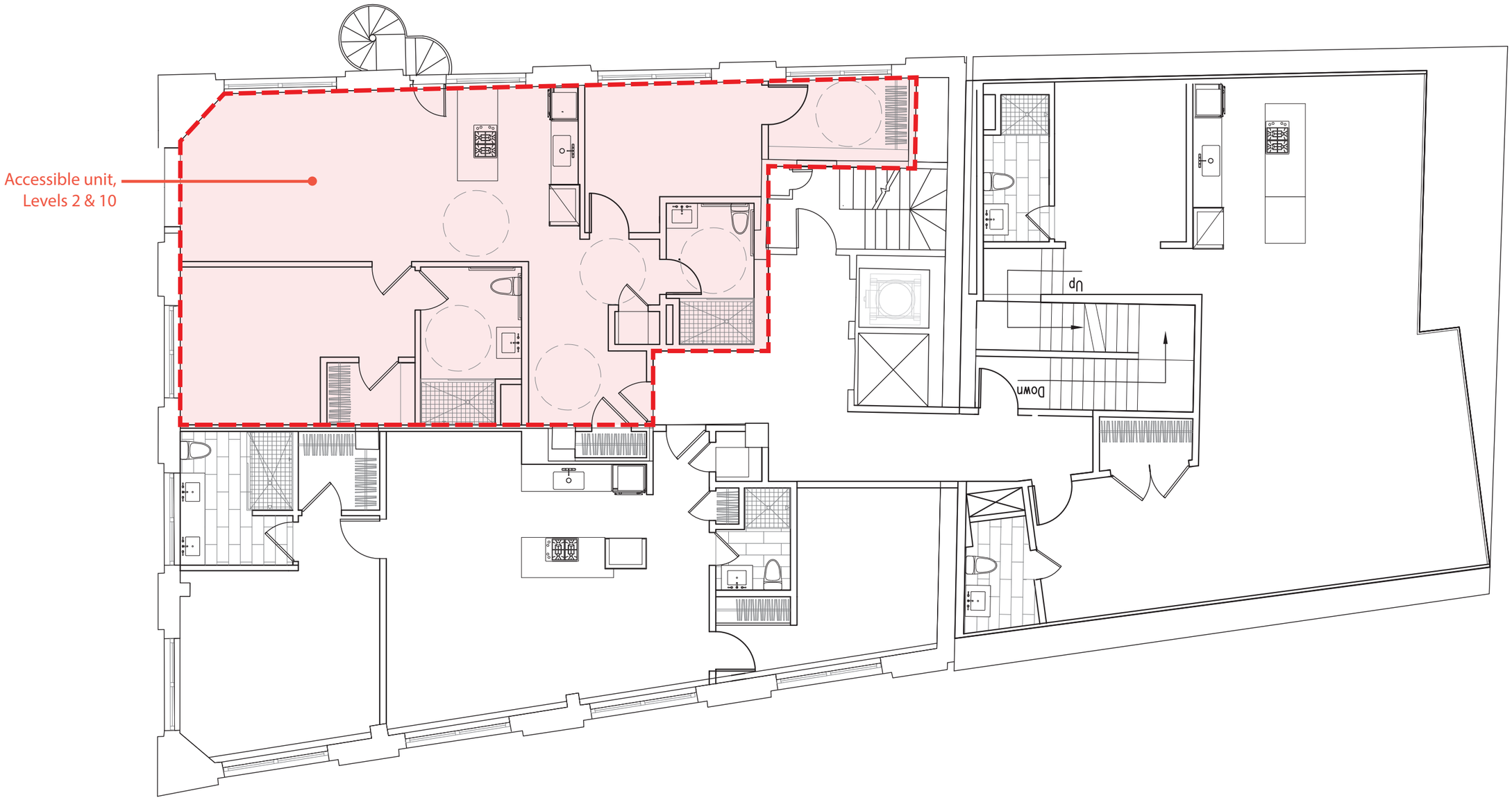
Thank you for completing the Accessibility Checklist!

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

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



ACCESSIBLE ROUTE DIAGRAMS



15 Congress Street
Accessible Unit Location Plan