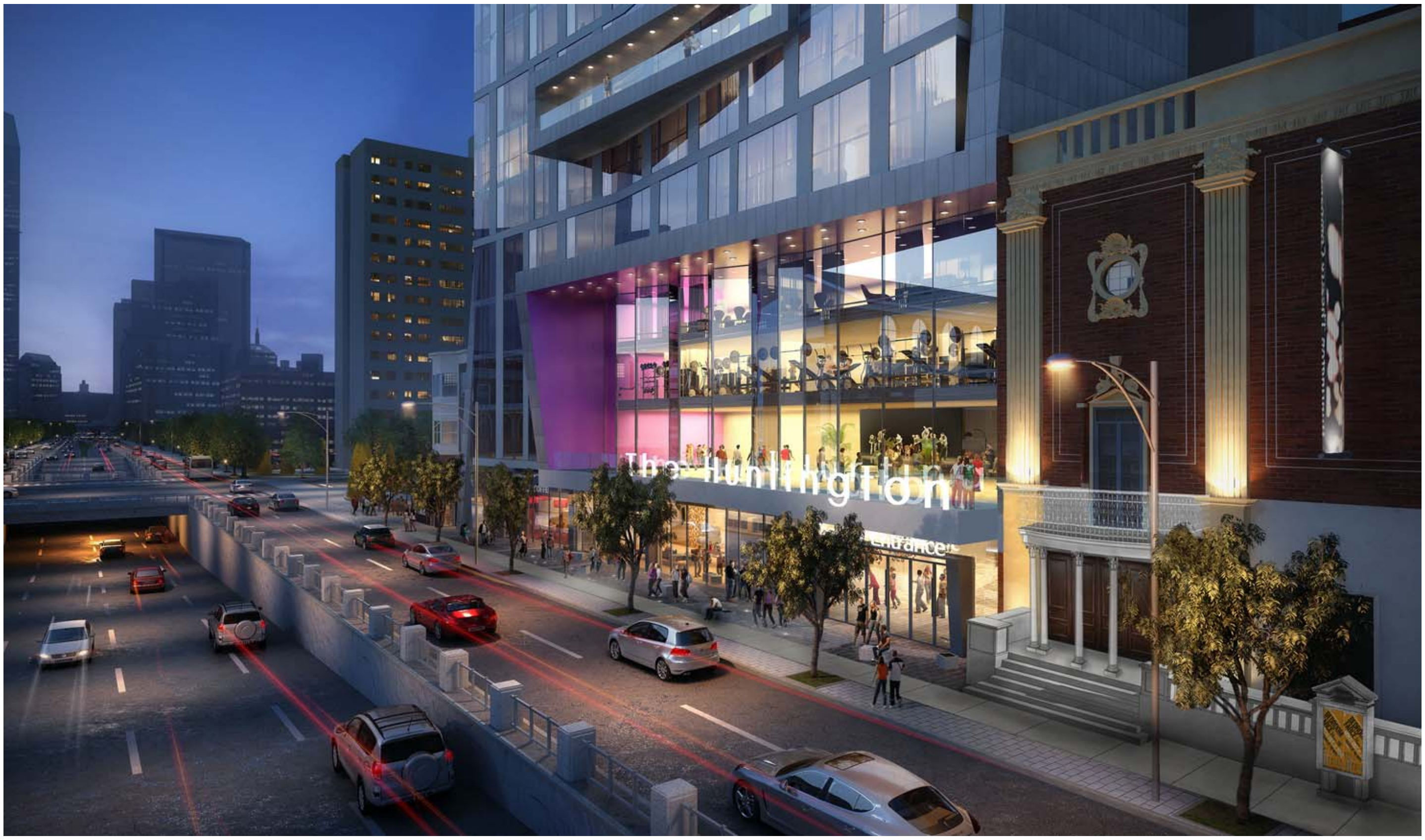
PROJECT NOTIFICATION FORM

252-264 Huntington Avenue



Submitted to:
Boston Planning and Development Agency
One City Hall Square
Boston, MA 02201

Submitted by:
QMG Huntington, LLC
133 Pearl Street
Boston, MA 02110

Prepared by:
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, MA 01754

In Association with:
Stantec Architecture
The Levi-Nielsen Company, Inc.
Dalton & Finegold, LLP
Howard Stein Hudson
Nitsch Engineering
Haley & Aldrich, Inc.
Nauset Strategies

June 26, 2017

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ASSOCIATES INC.

Table of Contents

Table of Contents

1.0	INTRODUCTION/ PROJECT DESCRIPTION		1-1
	1.1	Introduction	1-1
	1.2	Project Identification	1-3
	1.3	Project Description	1-4
		1.3.1 Project Site	1-4
		1.3.2 Area Context	1-6
		1.3.3 Evolution of Design	1-6
		1.3.4 Project Description	1-6
	1.4	Public Benefits	1-9
	1.5	Regulatory Controls and Permits	1-11
		1.5.1 Fenway Neighborhood District	1-11
		1.5.2 BCDC Schematic Design Review (Article 28)	1-12
		1.5.3 Barrier-Free Access (Article 30)	1-12
		1.5.4 Groundwater Conservation Overlay District (Article 32)	1-12
		1.5.5 Green Buildings (Article 37)	1-13
		1.5.6 Demolition Delay (Article 85)	1-13
		1.5.7 Inclusionary Affordable Housing	1-13
		1.5.8 Boston Water and Sewer Commission	1-14
	1.6	Legal Information	1-14
		1.6.1 Legal Judgments Adverse to the Proposed Project	1-14
		1.6.2 History of Tax Arrears on Property	1-14
		1.6.3 Site Control/ Public Easements	1-14
	1.7	Anticipated Permits	1-14
	1.8	Public Participation	1-16
	1.9	Schedule	1-16
2.0	TRANSPORTATION COMPONENT		2-1
	2.1	Introduction	2-1
		2.1.1 Project Description	2-1
		2.1.2 Study Methodology	2-3
		2.1.3 Study Area	2-3
	2.2	Existing (2017) Condition	2-5
		2.2.1 Existing Roadway Conditions	2-5
		2.2.2 Existing Intersection Conditions	2-6
		2.2.3 Existing Parking and Curb Use	2-7
		2.2.4 Car Sharing Services	2-9
		2.2.5 Existing Pedestrian Conditions	2-9

Table of Contents (Continued)

		2.2.6	Existing Bicycle Conditions	2-9
			2.2.6.1 Bicycle Sharing Services	2-13
		2.2.7	Existing Public Transportation	2-13
		2.2.8	Existing Traffic Data	2-13
			2.2.8.1 Seasonal Adjustment	2-16
		2.2.9	Existing (2017) Traffic Volumes	2-16
		2.2.10	Traffic Operations Analysis	2-16
	2.3	No-Build (2024) Condition		2-24
		2.3.1	Background Traffic Growth	2-24
		2.3.2	Specific Development Traffic Growth	2-24
		2.3.3	Proposed Infrastructure Improvements	2-26
		2.3.4	No-Build (2024) Condition Traffic Volumes	2-26
		2.3.5	No-Build (2024) Condition Traffic Operations Analysis	2-29
	2.4	Build (2024) Condition		2-33
		2.4.1	Vehicle Site Access and Circulation	2-33
		2.4.2	Parking	2-33
		2.4.3	Loading and Service Accommodations	2-33
		2.4.4	Bicycle Accommodations	2-34
		2.4.5	Trip Generation Methodology	2-34
		2.4.6	Project Trip Generation	2-35
		2.4.7	Trip Distribution	2-38
		2.4.8	Build (2024) Traffic Volumes	2-38
		2.4.9	Build (2024) Condition Traffic Operations Analysis	2-38
	2.5	Transportation Demand Management		2-46
	2.6	Transportation Mitigation Measures		2-47
	2.7	Evaluation of Short-term Construction Impacts		2-47
3.0	**ENVIRONMENTAL REVIEW COMPONENT**			**3-1**
	3.1	Wind		3-1
		3.1.1	Introduction	3-1
		3.1.2	Overview	3-1
		3.1.3	Methodology	3-2
			3.1.3.1 Test Configurations	3-2
			3.1.3.2 Meteorological Data	3-2
		3.1.4	BPDA Wind Criteria	3-9
		3.1.5	Predicted Wind Conditions	3-10
			3.1.5.1 No Build	3-10
			3.1.5.2 Build	3-10
			3.1.5.3 Build with Mitigation	3-17
		3.1.6	Conclusion	3-17

Table of Contents (Continued)

3.2 Shadow 3-17
3.2.1 Introduction and Methodology 3-17
3.2.2 Vernal Equinox (March 21) 3-18
3.2.3 Summer Solstice (June 21) 3-18
3.2.4 Autumnal Equinox (September 21) 3-18
3.2.5 Winter Solstice (December 21) 3-19
3.2.6 Conclusions 3-19
3.3 Daylight Analysis 3-20
3.3.1 Introduction 3-20
3.3.2 Methodology 3-20
3.3.3 Results 3-35
3.3.4 Conclusions 3-39
3.4 Solar Glare 3-39
3.5 Air Quality Analysis 3-39
3.5.1 Introduction 3-39
3.5.2 National Ambient Air Quality Standards and Background Concentrations 3-40
3.5.2.1 National Ambient Air Quality Standards 3-40
3.5.2.2 Background Concentrations 3-41
3.5.3 Methodology 3-42
3.5.3.1 Intersection Selection 3-44
3.5.3.2 Emissions Calculations (MOVES) 3-44
3.5.3.3 Receptors & Meteorology Inputs 3-44
3.5.3.4 Impact Calculations (CAL3QHC) 3-47
3.5.4 Air Quality Results 3-47
3.5.5 Conclusions 3-49
3.6 Stormwater/Water Quality 3-49
3.7 Flood Hazard Zones/ Wetlands 3-49
3.8 Geotechnical Impacts 3-50
3.8.1 Existing Site Conditions 3-50
3.8.2 Subsurface Soil and Bedrock Conditions 3-50
3.8.3 Groundwater 3-50
3.8.4 Proposed Foundation Construction 3-51
3.8.5 Monitoring Program 3-51
3.9 Solid and Hazardous Waste 3-51
3.9.1 Hazardous Waste 3-51
3.9.2 Operation Solid and Hazardous Waste Generation 3-52
3.9.3 Recycling 3-52
3.10 Noise Impacts 3-52
3.10.1 Introduction 3-52
3.10.2 Noise Terminology 3-52

3.10.3 Noise Regulations and Criteria 3-54
3.10.4 Existing Conditions 3-55
3.10.4.1 Noise Monitoring Methodology 3-55
3.10.4.2 Noise Monitoring Locations 3-56
3.10.4.3 Noise Monitoring Equipment 3-56
3.10.4.4 Measured Background Noise Levels 3-58
3.10.5 Future Conditions 3-60
3.10.5.1 Overview of Potential Project Noise Sources 3-60
3.10.5.2 Noise Modeling Methodology 3-62
3.10.5.3 Future Sound Levels - Nighttime 3-62
3.10.5.4 Future Sound Levels – Daytime 3-64
3.10.6 Conclusions 3-66
3.11 Construction Impacts 3-66
3.11.1 Introduction 3-66
3.11.2 Construction Methodology/Public Safety 3-67
3.11.3 Construction Schedule 3-67
3.11.4 Construction Staging/Access 3-67
3.11.5 Construction Mitigation 3-68
3.11.6 Construction Employment and Worker Transportation 3-68
3.11.7 Construction Truck Routes and Deliveries 3-68
3.11.8 Construction Air Quality 3-69
3.11.9 Construction Noise 3-69
3.11.10 Construction Vibration 3-70
3.11.11 Construction Waste 3-70
3.11.12 Protection of Utilities 3-70
3.11.13 Rodent Control 3-71
3.11.14 Wildlife Habitat 3-71

4.0 SUSTAINABLE DESIGN AND CLIMATE CHANGE RESILIENCY 4-1
4.1 Sustainable Design 4-1
4.2 Climate Change Resiliency 4-3
4.2.1 Introduction 4-3
4.2.2 Extreme Heat Events 4-4
4.2.3 Rain Events 4-4
4.2.4 Drought Conditions 4-4

5.0 URBAN DESIGN 5-1
5.1 Site Context 5-1
5.2 Project Design 5-1

Table of Contents (Continued)

6. 0 HISTORIC AND ARCHAEOLOGICAL RESOURCES 6-1
6.1 Buildings on the Project Site 6-1
6.2 Historic Resources in the Vicinity 6-3
6.3 Archaeological Resources 6-5
6.4 Potential Impacts to Historic Resources 6-6
6.4.1 Demolition of Existing Buildings 6-6
6.4.2 Urban Design 6-6
6.4.3 Visual Impacts to Historic Resources 6-6
6.4.4 Shadow Impacts to Historic Resources 6-7
6.4.5 Wind Impacts to Historic Resources 6-7
6.5 Consistency with Other Historic Reviews 6-7
6.5.1 Boston Landmarks Commission Article 80 Review 6-7
6.5.2 Boston Landmarks Commission Article 85 Review 6-7
6.5.3 Massachusetts Historical Commission 6-8

7.0 INFRASTRUCTURE 7-1
7.1 Wastewater 7-1
7.1.1 Existing Sewer System 7-1
7.1.2 Proposed Wastewater Generation 7-2
7.1.3 Sewage Capacity and Impacts 7-4
7.2 Water System 7-5
7.2.1 Existing Water Service 7-5
7.2.2 Anticipated Water Consumption 7-5
7.2.3 Existing Water Capacity and Impacts 7-5
7.2.4 Proposed Connection 7-7
7.3 Storm Drainage System 7-7
7.3.1 Existing Storm Drainage System 7-7
7.3.2 Proposed Storm Drainage System 7-8
7.3.3 Water Quality 7-9
7.3.4 Groundwater Conservation Overlay District 7-9
7.4 Other Utilities 7-12
7.4.1 Natural Gas Service 7-13
7.4.2 Electrical Service 7-13
7.4.3 Telecommunications Service 7-13
7.5 Utility Protection During Construction 7-13

Table of Contents (Continued)

8.0	**COORDINATION WITH OTHER GOVERNMENTAL AGENCIES**		**8-1**
	8.1	Architectural Access Board Requirements	8-1
	8.2	Massachusetts Environmental Policy Act (MEPA)	8-1
	8.3	Massachusetts Historical Commission State Register Review	8-1
	8.4	MassDOT	8-1
	8.5	Federal Aviation Administration	8-2
	8.6	Other Permits and Approvals	8-2

List of Appendices

Appendix A Floor Plans and Elevations
Appendix B Site Survey
Appendix C Transportation
Appendix D Wind
Appendix E Air Quality
Appendix F Climate Change Checklist
Appendix G Accessibility Checklist

List of Figures

Figure 1-1	Aerial Locus Map	1-2
Figure 1-2	Existing Conditions	1-5
Figure 1-3	Site Plan	1-7
Figure 2-1	Preliminary Site Plan	2-2
Figure 2-2	Study Area Intersections	2-4
Figure 2-3	Existing Curb Use	2-8
Figure 2-4	Car Sharing Services	2-10
Figure 2-5	Existing (2017) Condition Pedestrian Volumes, Weekday a.m. and p.m. Peak Hour	2-11
Figure 2-6	Existing (2017) Condition Bicycle Volumes, Weekday a.m. and p.m. Peak Hour	2-12
Figure 2-7	Hubway Stations	2-14
Figure 2-8	Public Transportation	2-15
Figure 2-9	Existing (2017) Condition Traffic Volumes, Weekday a.m. Peak Hour	2-17
Figure 2-10	Existing (2017) Condition Traffic Volumes, Weekday p.m. Peak Hour	2-18
Figure 2-11	Background Projects	2-25
Figure 2-12	No Build (2024) Condition Traffic Volumes, Weekday a.m. Peak Hour	2-27

List of Figures (Continued)

Figure 2-13	No Build (2024) Condition Traffic Volumes, Weekday p.m. Peak Hour	2-28
Figure 2-14	Trip Distribution	2-37
Figure 2-15	Project-Generated Trips, Weekday a.m. Peak Hour	2-39
Figure 2-16	Project-Generated Trips, Weekday p.m. Peak Hour	2-40
Figure 2-17	Build (2024) Condition Traffic Volumes, Weekday a.m. Peak Hour	2-41
Figure 2-18	Build (2024) Condition Traffic Volumes, Weekday p.m. Peak Hour	2-42
Figure 3.1-1	Wind Tunnel Study Model – No Build	3-3
Figure 3.1-2	Wind Tunnel Study Model – Build	3-4
Figure 3.1-3	Wind Tunnel Study Model – Build + Mitigation	3-5
Figure 3.1-4	Directional Distribution (%) of Winds (Blowing From) Boston Logan International Airport (1991-2016)	3-6
Figure 3.1-5	Directional Distribution (%) of Winds (Blowing From) Boston Logan International Airport (1991-2016)	3-7
Figure 3.1-6	Directional Distribution (%) of Winds (Blowing From) Boston Logan International Airport (1991-2016)	3-8
Figure 3.1-7	Pedestrian Wind Conditions – Mean Speed – No-Build	3-11
Figure 3.1-8	Pedestrian Wind Conditions – Mean Speed – Build	3-12
Figure 3.1-9	Pedestrian Wind Conditions – Mean Speed – Build + Mitigation	3-13
Figure 3.1-10	Pedestrian Wind Conditions – Effective Gust Speed – No-Build	3-14
Figure 3.1-11	Pedestrian Wind Conditions – Effective Gust Speed – Build	3-15
Figure 3.1-12	Pedestrian Wind Conditions – Effective Gust Speed – Build + Mitigation	3-16
Figure 3.2-1	Shadow Study: March 21, 9:00 a.m.	3-21
Figure 3.2-2	Shadow Study: March 21, 12:00 p.m.	3-22
Figure 3.2-3	Shadow Study: March 21, 3:00 p.m.	3-23
Figure 3.2-4	Shadow Study: June 21, 9:00 a.m.	3-24
Figure 3.2-5	Shadow Study: June 21, 12:00 p.m.	3-25
Figure 3.2-6	Shadow Study: June 21, 3:00 p.m.	3-26
Figure 3.2-7	Shadow Study: June 21, 6:00 p.m.	3-27
Figure 3.2-8	Shadow Study: September 21, 9:00 a.m.	3-28
Figure 3.2-9	Shadow Study: September 21, 12:00 p.m.	3-29
Figure 3.2-10	Shadow Study: September 21, 3:00 p.m.	3-30
Figure 3.2-11	Shadow Study: September 21, 6:00 p.m.	3-31
Figure 3.2-12	Shadow Study: December 21, 9:00 a.m.	3-32
Figure 3.2-13	Shadow Study: December 21, 12:00 p.m.	3-33
Figure 3.2-14	Shadow Study: December 21, 3:00 p.m.	3-34
Figure 3.3-1	Viewpoint Map	3-36
Figure 3.3-2	Existing and Proposed Conditions	3-37
Figure 3.3-3	Area Context	3-38
Figure 3.5-1	Link and Receptor Locations for CAL3QHC modeling of Intersection of Massachusetts Ave. and Huntington Ave	3-45

List of Figures (Continued)

Figure 3.5-2	Link and Receptor Locations for CAL3QHC modeling of Intersection of Massachusetts Ave. and St. Botolph St	3-46
Figure 3.10-1	Noise Measurement Locations	3-57
Figure 3.10-2	Noise Modeling Locations	3-63
Figure 5-1	View from Huntington Avenue	5-2
Figure 5-2	Aerial View facing Northeast	5-5
Figure 5-3	View facing Southeast	5-6
Figure 6-1	Historic Resources	6-4
Figure 7-1	Existing Sewer and Stormwater System	7-3
Figure 7-2	Existing Water System	7-6

List of Tables

Table 1-1	Project Program	1-8
Table 1-2	Anticipated Permits and Approvals	1-15
Table 2-1	Proposed Project Land Uses	2-3
Table 2-2	Public Transportation Services	2-13
Table 2-3	Vehicle Level of Service Criteria	2-19
Table 2-4	Existing (2017) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour	2-20
Table 2-5	Existing (2017) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour	2-21
Table 2-6	Other Development Projects in the Project Vicinity	2-26
Table 2-7	No-Build (2024) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour	2-29
Table 2-8	No-Build (2024) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour	2-30
Table 2-9	Travel Mode Shares	2-35
Table 2-10	Trip Generation Summary	2-36
Table 2-11	Build (2024) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour	2-43
Table 2-12	Build (2024) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour	2-44
Table 3.1-1	Boston Planning and Development Agency Mean Wind Criteria*	3-9
Table 3.3-1	Daylight Analysis Results	3-35
Table 3.5-1	National (NAAQS) and Massachusetts (MAAQS) Ambient Air Quality Standards	3-41

List of Tables (Continued)

Table 3.5-2	Observed Ambient Air Quality Concentrations and Selected Background Levels	3-42
Table 3.5-3	Summary of Microscale Modeling Analysis (Existing 2017)	3-48
Table 3.5-4	Summary of Microscale Modeling Analysis (No-Build 2024)	3-48
Table 3.5-5	Summary of Microscale Modeling Analysis (Build 2024)	3-49
Table 3.10-1	City Noise Standards, Maximum Allowable Sound Pressure Levels	3-55
Table 3.10-2	Summary of Measured Background Noise Levels – May 4, 2017 (Daytime) & May 9 and 10, 2017 (Nighttime)	3-59
Table 3.10-3	Modeled Noise Sources	3-60
Table 3.10-4	Modeled Sound Power Levels per Noise Source	3-61
Table 3.10-5	Attenuation Values Applied to Mitigate Each Noise Source	3-61
Table 3.10-6	Comparison of Future Predicted Project-Only Nighttime Sound Levels to the City of Boston Limits	3-64
Table 3.10-7	Comparison of Future Predicted Project-Only Daytime Sound Levels to the City of Boston Limits	3-65
Table 6-1	State and National Register-Listed Properties near the Project Site	6-5
Table 7-1	Proposed Project Wastewater Generation	7-4
Table 7-2	Sewer Hydraulic Capacity Analysis	7-4
Table 7-3	Existing Hydrant Flow Data	7-7

Chapter 1.0

Introduction/Project Description

1.0 INTRODUCTION/ PROJECT DESCRIPTION

1.1 Introduction

Project Summary: The goal of the 252-264 Huntington Avenue project is to redevelop former university property along Boston's Avenue of the Arts, while leaving intact the 890-seat theatre at 264 Huntington Avenue, known as the Boston University Theatre (B.U. Theatre or Theatre). To enable preservation of this cultural facility, QMG Huntington, LLC (Proponent or QMG) proposes to construct a new mixed-use building on the two adjacent parcels known as 252 and 258 Huntington Avenue.

Site: QMG owns the Project site, which comprises the three contiguous parcels at 252, 258, and 264 Huntington Avenue (site). Overall, the site has a total lot area of 34,173 square feet (sf) (See Figure 1-1). The B.U. Theatre, which includes a four-story masonry annex, has a gross floor area of approximately 36,000 square feet and sits upon 17,080 sf of land. Development of the site will be restricted to the land at 252 – 258 Huntington, which contains 17,093 sf.

Development Program: QMG has signed a license agreement with Huntington Theatre Company (HTC) and upon issuance of a building permit, will gift the Theatre and annex to HTC for $1 benefiting the City by offering long-term stability to this cultural institution. Development at the site will focus solely upon the 252 and 258 Huntington Avenue parcels, which the Proponent proposes to redevelop with a new, 32-story building with up to 426 residential units, up to 7,500 square feet of retail/restaurant space, and 14,000 square feet of cultural space on the first two levels for use by the Theatre (the Project). Once HTC has been gifted ownership of the Theatre and annex, they may renovate these buildings, however, the funding and timing for this work will be independent of the Project.

Active Lower-level Uses: Most of the new building's first and second floors will be made open to the public, with: up to 14,000 sf leased at a nominal rent and connected to the Theatre next door; approximately 7,500 sf of restaurant/retail space; and the residential lobby. A below-grade garage will provide approximately 114 parking spaces.

Location Context: Across Huntington Avenue from the Boston Symphony Hall, the new building will be a marker for the Avenue of the Arts. At the Avenue's eastern gateway, its design and height will add emphasis to one of the City's premier cultural areas. With striking architecture lit warmly at nighttime, the building will be visible along both Massachusetts and Huntington avenues, from all cardinal points.

Project Review: With over 50,000 square feet of gross floor space, the Project will be subject to Large Project Review under Section 80B of the Boston Zoning Code. Through submission of this Project Notification Form (PNF), the Proponent seeks to initiate comprehensive review of the Project's impacts on its surroundings and on City resources, and to identify any necessary mitigation measures.

252-264 Huntington Avenue Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 1-1

Aerial Locus

1.2 Project Identification

The Proponent has enlisted a team of professional, Boston-based planners, engineers, attorneys, architects and consultants to assist with the development of the proposed Project. The Project and the Project Team are identified below.

Address/Location:	252-264 Huntington Avenue
Proponent:	QMG Huntington, LLC 133 Pearl Street Boston, MA 02110 (617) 292-0101 Fan Du John Matteson Steve Goodman
Architect:	Stantec Architecture 311 Summer Street Boston, MA 02210 (617) 234-3100 B.K. Boley James Gray Zach Pursley
Development Consultant:	The Levi-Nielsen Company, Inc 171 Gray Street Amherst, MA 01002 (413) 575-8008 Scott Nielsen
Legal Counsel:	Dalton & Finegold, LLP 183 State Street, 5th Floor Boston, MA 02109 (617) 936-7777 Jared Eigerman, Esq.
Permitting Consultant:	Epsilon Associates, Inc. 3 Mill & Main Place, Suite 250 Maynard, MA 01754 (978) 897-7100 Cindy Schlessinger Talya Moked

Transportation and Parking Consultant:	Howard Stein Hudson 11 Beacon Street, Suite 1010 Boston, MA 02108 (617) 482-7080 Guy Busa Michael Santos
Civil Engineer:	Nitsch Engineering 2 Center Plaza, Suite 430 Boston, MA 02108 (617) 338-0063 Gary Pease John Schmid Brad Staples
Community Outreach:	Nauset Strategies One Design Place, Suite 638 Boston, MA 02210 (617) 523-3097 Michael K. Vaughan Christine McMahon

1.3 Project Description

1.3.1 Project Site

The approximately 34,173 square foot site comprises three parcels: 252, 258, and 264 Huntington Avenue. Located in a portion of the Fenway neighborhood known as the Avenue of the Arts district of Boston, the site is generally bounded: on the northwest by Huntington Avenue, on the northeast by a three-story, mixed-use building commonly known as 250 Huntington Avenue; on the southeast by Public Alley 821; and to the southwest by Public Alley 822. Existing conditions on the site are presented in Figure 1-2.

The northerly edge of the site is burdened by a highway easement measuring approximately 240-feet long by four-feet deep, which is improved and used as a public sidewalk. The parcel known as 264 Huntington Avenue includes the 890-seat Boston University Theatre and its four-story masonry annex, and 252 and 256 Huntington Avenue each have two-story, masonry buildings, with ancillary uses to the Theatre.

252-264 Huntington Avenue   Boston, Massachusetts

Stantec

Figure 1-2
Existing Conditions

1.3.2 Area Context

The Project site is located at the confluence of a diverse collection of neighborhoods including Fenway, Back Bay, Roxbury and the South End, and is in close proximity to the Back Bay Fens, providing residents access to the one of the most active public parks in the City. The Project site is at the beginning of the *Avenue of the Arts*, a unique corridor in the City of Boston that serves as a place for residents and visitors to engage in a wide range of cultural and academic opportunities. The area is home to many of Boston's greatest institutions dedicated to fine arts, architecture, music, theatre, and education, including the Boston Symphony Orchestra, New England Conservatory of Music, Northeastern University, the Wentworth Institute of Technology, Massachusetts College of Art and Design, and the Museum of Fine Arts, as well as the Huntington Theatre Company, located at the site itself.

The Project site is just a short walk from several nearby MBTA subway stations, including the Symphony Station (Green Line) within one half block, and the Massachusetts Avenue Station (Orange Line), two blocks away. Several bus routes are also nearby.

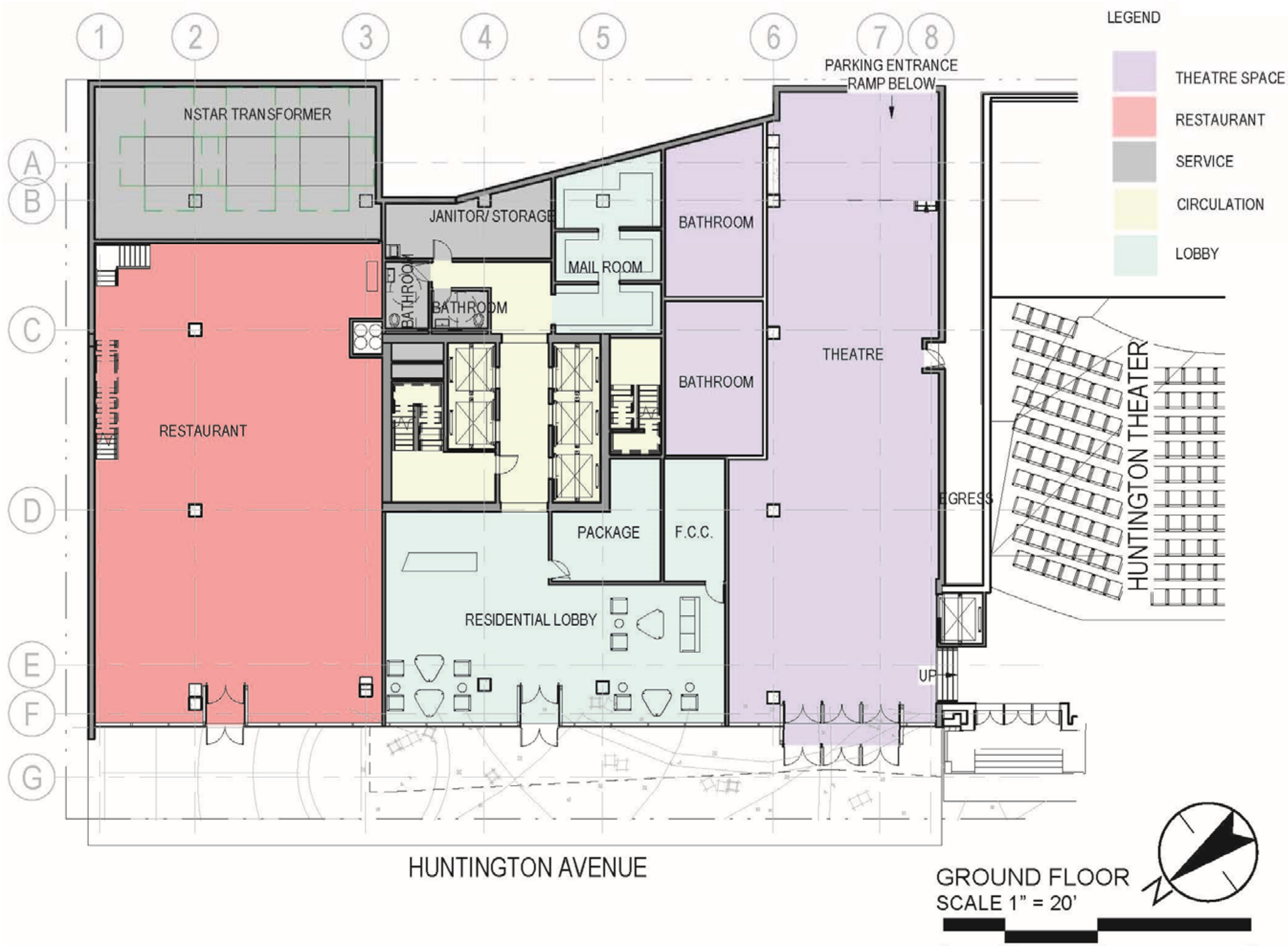
1.3.3 Evolution of Design

The Proponent initially explored an as-of-right alternative on the site, which would consist of demolishing the B.U. Theatre as well as the two other buildings at the site, and constructing a new, 130-foot-high building across the entire site, with a gross floor area of 315,300 sf. However, due to the importance of the B.U. Theatre to the Avenue of the Arts, the Proponent has revised its Project design to retain the theatre building. Instead, the Proponent will redevelop only half of the site and will preserve the Theatre, by building a new, 32 story (362 feet) building of approximately 405,000 sf, with first and second floor space opening into the Theatre.

1.3.4 Project Description

The Proponent will leave undisturbed the Boston University Theatre and annex, first opened in 1925 as the Jewett Repertory Theater, and gift them to the Huntington Theatre Company for $1. Redevelopment at the Project site will in turn focus upon the two adjacent parcels known as 252 and 258 Huntington Avenue. The existing buildings there will be demolished to construct a new, 32-story mixed-use building.

The Project, as shown in Table 1-1, includes construction of an approximately 405,500 square foot building that will include up to 426 residential units, approximately 7,500 square feet of retail/restaurant space on the first two levels, and approximately 114 parking spaces within a four-level underground garage. In addition, approximately 14,000 square feet on the first and second floors of the new building will be set aside for the use by the theatre operator, with direct, interior access to and from the adjacent theatre.



252-264 Huntington Avenue Boston, Massachusetts

Stantec

Figure 1-3
Project Ground Floor Plan

The residential units include a mix of studio, one-, and two-bedroom apartments. Covered, secure storage for bicycles will be provided on site for the residents. Loading, deliveries and trash collection will be through an off-street loading area on Public Alley No. 821. A site plan is presented in Figure 1-3, and floor plans and sections are provided in Appendix A.

Table 1-1 Project Program

Project Element	Approximate Dimension
New residential	Up to 426 units
New retail/restaurant	7,500 sf
New theatre space	14,000 sf
New Parking	114 spaces
New Gross Square Footage (GSF)	**405,500 sf**
Demolished university space	30,008 sf
Gifted theatre space	35,654 sf
Net change in GSF	**+375,492 sf**
Height of new building	32 stories/ 362 feet
Total lot area	34,173 sf
Total GSF at Project completion	441,154 sf
Resulting floor Area Ratio (FAR)	12.9

The Project façade is designed to serve as an extension of the B.U. Theatre, with theatre functions dominating the sidewalk and bringing the Theatre out to the street edge. The Project will provide a new lobby and accessible entrance for the Theatre, and new opportunities for retail/ restaurant space that will complement the surrounding cultural uses. A smaller residential lobby will also be located along Huntington Avenue, at the midpoint of the new building, and to the left of the residential lobby entrance, there will be a third entrance to a large retail/restaurant space. All three entrances will connect visually to the streetscape through full-height, exterior storefront windows. The second floor, above the new Theatre lobby, will provide break-out space for theatregoers during intermissions, and will include a large, outdoor balcony above the new Theatre lobby, distinguishing the new building to the east from the old Theatre façade.

The design of the new building is inspired by Greek drama masks. These “masks” manifest themselves as large light and dark bands that wrap the façade and will serve as an iconic focal point for the Avenue of the Arts, because of the site’s location near the intersection of Massachusetts Avenue and Huntington Avenue.

The Project site is located within the area of the Avenue of the Arts Design Guidelines Study, dated October 2015. The Proponent has designed the Project in accordance with the guidelines to the greatest extent feasible while preserving the B.U. Theatre and annex. The Project entails some deviation from the guidelines for building height.

1.4 Public Benefits

The Project will provide many public benefits for the surrounding neighborhood and the City of Boston as a whole, both during construction and on an ongoing basis upon its completion.

Gifting the B.U. Theatre

As noted above, the Project will leave intact the 890-seat theatre at 264 Huntington Avenue, known as the B.U. Theatre. When Boston University sold the Project site, the Huntington Theatre Company lost its long-standing subsidy from B.U. To ensure the long-term stability of this cultural institution, the Proponent will donate fee simple ownership of the Theatre property to the company. Construction at the rest of the Project site will strengthen and highlight the Theatre's presence on the Avenue of the Arts, and lower-level space for use by the theatre company will span across the site.

Providing Inclusionary Affordable Housing

The Project is subject to the Mayor's Executive Order regarding inclusionary affordable housing, as most recently amended by an Executive Order dated December 9, 2015, as well as the BPDA's Inclusionary Development Policy (IDP). The Proponent is exploring providing affordable units on and off-site, and/or paying an in-lieu fee.

Active Lower-Level Uses

The Project will improve the Avenue of the Arts. First and second floor uses will be visible from the street and open to the public. The largest such use will be up to 14,000 square feet of new lobby, reception, and entertainment space for use by the Theatre during its 150-200 annual performances. Approximately 7,500 sf of restaurant/retail uses will further activate Huntington Avenue, in place of current college and university uses.

Welcoming Streetscape

As the glass façade invites public connection, so too will the floor space open up the sidewalk and become a signature space on the avenue. With embedded markings and design patterns to create the feel of on being onstage, along with glowing elements at night, the streetscape can come alive for pedestrians and offer a unique welcome to the Theatre.

Striking Architecture

The Project's engaging façade and elements will anchor the visual terminus of the Avenue of the Arts. With its visual reach extending as far as the top of the Green Monster at Fenway Park, as well as far along Massachusetts and Huntington avenues in both directions, the architecture will provide a strong identity for both the Project and the avenues. The active mixed uses, the frequent flow of pedestrians, residents, customers in and out, around and passing the Project, fulfills the intent of enhancing the vitality of the City.

Transit-Oriented Development

The Project is consistent with the City of Boston's smart-growth and transit-oriented development principles. Within one half block of the MBTA's Symphony (Green Line) subway station, and two blocks of the MBTA's Massachusetts Avenue (Orange Line and Silver Line) subway station, the Project supports the objectives of smart growth; specifically, new developments at existing nodes of excellent transit routes.

Sustainable Design

Energy conservation and other sustainable design measures are integral to the proposed Project. The Project will employ energy and water efficient features for mechanical, electrical, architectural, and structural systems, assemblies, and materials, where feasible. Sustainable design elements relating to building energy management systems, lighting, recycling, conservation measures, local building materials, and clean construction vehicles will be included, to the greatest extent practicable. The Proponent is committed to building a LEED-certifiable project with a target of the Silver level, incorporating sustainable design features into the Project to preserve and protect the environment.

Increasing Employment

The Project will create approximately 300 to 400 construction-period jobs and approximately 40 permanent jobs once it is occupied. The Project will not affect existing operations at the B.U. Theatre, where existing jobs will continue.

Increasing Property Tax Revenues

The Proponent anticipates that the Project will generate over $2.0 million in net additional tax revenues at the Project site for the City of Boston, based on the Project's estimated hard construction cost of $125 million and current property tax rates. An M.G.L. Chapter 121A designation for the Project would form a special partnership between the State, the BPDA and the Proponent that results in a negotiated alternative tax payment in lieu of real and personal property taxes.

1.5 Regulatory Controls and Permits

1.5.1 Fenway Neighborhood District

Based on Boston Zoning Map 1Q (Fenway Neighborhood District) appended to the Boston Zoning Code[1], the site is located within the Huntington Avenue Institutional Subdistrict (IS) of the Fenway Neighborhood District (Section 66-19), the Groundwater Conservation Overlay District (Article 32), and the Restricted Parking Overlay District. (Section 3-1A(c).) Where conflicts between Article 66 and the rest of the Boston Zoning Code exist, the provisions of Article 66 must govern. (Section 66-3.)

Use Regulations

The Project will result in a new mixed-use building including up to 426 dwelling units, which constitutes multi-family dwelling use (Section 2A-1), up to 7,500 square feet of retail/services/restaurant uses, and up to 14,000 sf of theatre use, as well as enclosed, underground parking for approximately 114 cars accessory to the multi-family dwelling use. All the proposed uses are permitted by right at the site. (Section 66-20, citing Table B.)

Dimensional Requirements

The maximum floor area ratio (FAR) permitted by right within the Huntington IS Subdistrict, and south of Huntington Avenue, is 8.0. (Section 66-21, citing Table D.) Based on the Project's approximately 442,000 sf of gross floor area ("GFA") -- 36,000 sf at the B.U. Theatre plus 405,000 sf at the new building -- and the site's total lot area of approximately 34,173 square feet, the Project will result in an FAR of approximately 12.9.

The maximum building height permitted by right within the Huntington IS Subdistrict, and south of Huntington Avenue, is 90 feet (Section 66-21, citing Table D). The new building will have a building height of approximately 362 feet.

The minimum usable open space per dwelling unit by right throughout the Huntington IS Subdistrict is 75 sf per dwelling unit. (Section 66-21, citing Table D.) The new project will include approximately 3,700 sf of usable open, in the form of a front setback, and a rooftop deck, serving the up to 426 dwelling units at the Project.

The M.G.L. Chapter 121A process is available to development projects, such as this Project, that serve a public purpose or generate economic advancement in areas that are blighted and minimally marketable for private investment. The BPDA may approve deviations from the dimensional requirements of the Boston Code through Chapter 121A, provided, as here, that they will not substantially derogate from the intent and purposes of the Code.

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[1] All references in this Section 1.4 to "Articles," "Sections," Maps refer to the Boston Zoning Code, unless indicated otherwise

Off-Street Parking

As noted above, the site is located within a Restricted Parking Overlay District, within which off-street parking facilities accessory or ancillary to any use other than residential uses requires a conditional use permit from the Boston Board of Appeal. (Section 3-1A(c).) The 114-space garage beneath the new building will be accessory to residential use, and so a conditional use permit is not required. Normally, 0.75 parking spaces are required per dwelling unit in the Huntington IS Subdistrict. (Section 66-42, citing Table F.) Parking for the Project will be determined through the Chapter 121A process. Proposed projects subject to Large Project Review with Transportation Access Plans that include a Parking Management Element, as is expected here, must assess the need for alternative parking options, including car sharing, bicycle parking, and carpool/vanpool parking, to minimize the number of accessory spaces, promoting a more sustainable pattern of development and efficient use of land, and promoting good design. (Section 66-42, citing Table F, n1.)

Off-Street Loading

In the Fenway Neighborhood District, the provision and design of off-street loading facilities for the use of any structure or land that is subject to Large Project Review must be determined through such review. (Section 66-42, citing Table G.)

1.5.2 BCDC Schematic Design Review (Article 28)

The Boston Civic Design Commission (BCDC) must review any project exceeding 100,000 sf of gross floor area, or any project determined by BCDC to be of "special urban design significance." (Section 28-5.) As noted above, the Project would have a GFA exceeding 100,000 sf, and so it requires schematic design review by BCDC. Section 66-37.2 establishes general design guidelines for the Fenway Neighborhood District. The Proponent looks forward to working with the BCDC regarding the design of the Project.

1.5.3 Barrier-Free Access (Article 30)

The purposes of Article 30 of the Boston Zoning Code (Barrier-Free Access) are to ensure that physically handicapped persons have full access to buildings open to the public; to afford such persons the educational, employment, and recreational opportunities necessary to all citizens; and to preserve and increase the supply of living space accessible to physically handicapped persons. (Section 30-1.) Because the Project includes multifamily residential use of twelve or more dwelling units, it is subject to the provisions Article 30. (Section 30-3.) The Project is designed to comply fully.

1.5.4 Groundwater Conservation Overlay District (Article 32)

As noted above, the site is also located within Groundwater Conservation Overlay District (GCOD). The purposes of the Groundwater Conservation Overlay District are: to prevent the deterioration of and, where necessary, promote the restoration of, groundwater levels in the city of Boston; to protect and enhance the city's historic neighborhoods and structures, and otherwise conserve the value of its land and buildings; to reduce surface water runoff and water pollution; and to maintain public safety. (Section 32-1.) Due to the Project's location within a Groundwater Conservation Overlay District, and the scope of the Project, a storm water infiltration system for the Project would normally be approved by conditional use permit by the Boston Board of Appeal. (Sections 32-4 and 32-5.) The Project is designed to comply fully system requirements, and approval is expected through the Chapter 121A process.

1.5.5 Green Buildings (Article 37)

The purposes of Article 37 (Green Buildings) are: to ensure that major building projects are planned, designed, constructed, and managed to minimize adverse environmental impacts; to conserve natural resources; to promote sustainable development; and to enhance the quality of life in Boston. (Section 37-1.) The Project is subject to the requirements of Article 37 because it is subject to Large Project Review (Section 80B). (Section 37-3.) The Project will comply. As noted above, the Proponent is committed to building a LEED-certifiable project with a target of the Silver level, incorporating sustainable design features into the Project to preserve and protect the environment.

1.5.6 Demolition Delay (Article 85)

Any proposal to demolish a substantial portion of a "significant building" is subject to a delay of up to 90 days imposed by the Boston Landmarks Commission. (Article 85.) The Commission will determine that a building is "significant" if it: (i) is listed or recommended for listing on the National Register of Historic Places; (ii) is the subject of a petition as a Boston Landmark; (iii) meets certain criteria for historic or architectural significance; (iv) has an important association with historical persons or events or with the broader history of Boston; or (v) is one whose loss would have a significant negative impact on the historic or architectural integrity or urban design character of the neighborhood. (Section 85-5.3.) The Project entails demolition of the existing building at 258 Huntington Avenue (1915) which, although it is not a Boston Landmark, is listed on the State Register of Historic Places, thus triggering the demolition-delay procedure.

1.5.7 Inclusionary Affordable Housing

The Project is subject to the Mayor's Executive Order regarding inclusionary affordable housing, as most recently amended by an Executive Order dated December 9, 2015, as well as the BPDA's Inclusionary Development Policy. The Proponent is exploring means of compliance, including providing affordable units on and off-site and/or paying an in-lieu fee.

1.5.8 Boston Water and Sewer Commission

The Boston Water and Sewer Commission (BWSC) approval of the Project is required due to the proposed improvements. The Project will be reviewed and approved by the BWSC through the BWSC's Site Plan Approval process. Once the Project is approved, the Contractor will coordinate obtaining and executing the General Service Application (GSA) with the BWSC for the proposed improvements.

1.6 Legal Information

1.6.1 Legal Judgments Adverse to the Proposed Project

The Proponent is not aware of any legal judgments in effect or legal actions pending that would prevent the Proponent from undertaking the Project.

1.6.2 History of Tax Arrears on Property

No property owned in the City of Boston by the Proponent is in tax arrears to the City of Boston.

1.6.3 Site Control/ Public Easements

The Proponent holds fee simple title to the entire site under that certain Quitclaim Deed recorded on May 2, 2016, at the Suffolk Registry of Deeds, in Book 56064, at Page 39. The northerly edge of the site is burdened by a highway easement measuring approximately 240-feet long by four-feet deep (Suffolk Registry of Deeds, Book 8942, Page 320, Sheet 15-24, 25), an area which is improved and used as part of the public sidewalk for Huntington Avenue. A site survey is provided in Appendix B.

1.7 Anticipated Permits

Table 1-2 presents a preliminary list of permits and approvals from governmental agencies that are expected to be required for the Project, based on currently available information. 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 Anticipated Permits and Approvals

Agency	Permit, Review or Approval
State Agencies	
Massachusetts Department of Transportation	Highway Access Permit (if necessary)
Massachusetts Water Resources Authority	Construction Dewatering Permit
Department of Environmental Protection, Division of Air Quality Control	Notification prior to construction
City Agencies	
Boston Civic Design Commission	Schematic Design Review
Boston Committee on Licenses/Public Safety Commission	Parking Garage Permit Flammable Storage License (parking garage)
Boston Fire Department	Approval of Fire Safety Equipment
Boston Inspectional Services Department	Building and Occupancy Permits
Boston Planning & Development Agency	Large Project Review (Section 80B) Chapter 121A Approval, including approval of storm water infiltration, and deviations for maximum FAR, maximum building height, minimum usable open space, and accessory residential parking Cooperation Agreement Boston Residents Construction Employment Plan Affordable Housing Agreement and Restriction
Boston Public Improvement Commission	Vertical Discontinuance (cornices and lighting) Grant of Location (utility equipment) Projection License (canopy) Specific Repairs (sidewalk) License, Maintenance, and Indemnification Agreement
Boston Transportation Department	Transportation Access Plan Agreement Construction Management Plan Street and Sidewalk Occupant Permits
Boston Water and Sewer Commission	Water and Sewer Connection Permits General Service Application Site Plan Review Infiltration and Inflow (I&I) Fee

1.8 Public Participation

As part of its planning efforts, the Proponent has contacted nearby residents and representatives of numerous neighborhood groups, elected officials, and public agencies. The formal community outreach process begins with the filing of this PNF.

The Proponent will continue to engage the community to ensure public input on the Project. The Proponent looks forward to working with the BPDA and city agencies, local officials, neighbors, and others as the design and review processes move forward.

1.9 Schedule

It is anticipated that construction will commence in the fourth quarter of 2018. Once begun, construction is expected to last approximately 26 months.

Chapter 2.0

Transportation

2.0 TRANSPORTATION COMPONENT

2.1 Introduction

Howard Stein Hudson (HSH) has conducted an evaluation of the transportation impacts of the proposed Project. This transportation study adheres to the Boston Transportation Department (BTD) *Transportation Access Plan Guidelines* and Boston Planning and Development Agency Article 80 Large Project Review process. This study includes an evaluation of the existing conditions, future conditions with and without the Project, projected parking demand, loading operations, transit services, and pedestrian and bicycle activity. The Project will have minimal impact on the study area intersections and the pedestrian and public transportation facilities in the area.

2.1.1 Project Description

The Project, located in Boston's Fenway-Kenmore neighborhood, is bounded on the northwest by Huntington Avenue; on the northeast by Public Alley 820; on the southeast by Public Alley 821; and to the southwest by Public Alley 822. The Project will include the construction of a new mixed-use building consisting of the following components:

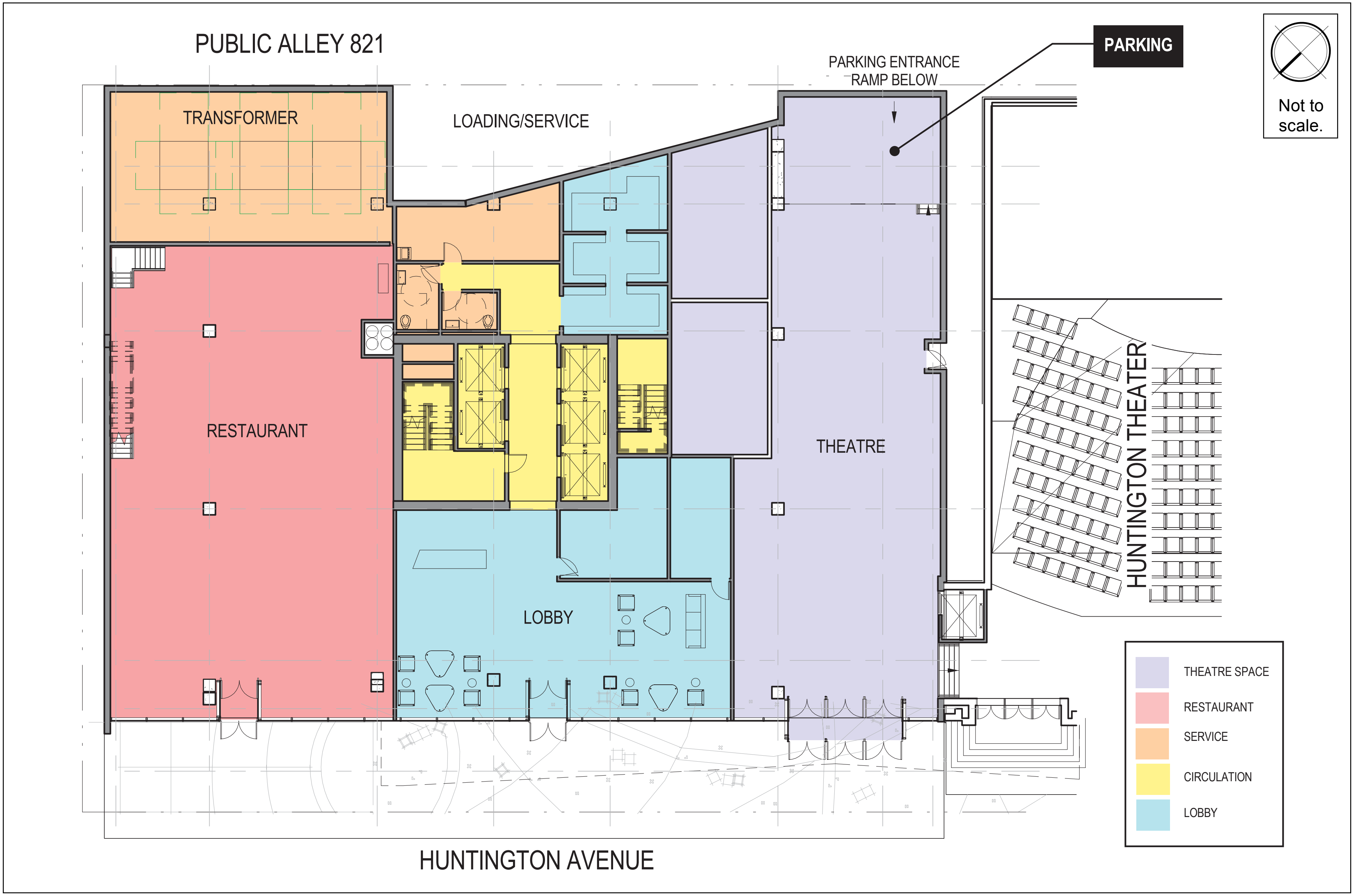
Residential Tower – Located at 254-260 Huntington Avenue, a residential tower consisting of 426 residential units and approximately 7,500 square feet of ground-floor restaurant/retail space will be constructed.

Theatre Expansion – Located on the first and second floor of the new building at 254-260 Huntington Avenue will be approximately 14,000 sf of auxiliary space for the Boston University Theatre at 260-264 Huntington Avenue, including the theater's main entrance and lobby, patron services such as the box office, the bar, and restrooms. There will also be a function room for special events.

Theatre Building – Located at 260-264 Huntington Avenue, is the existing Boston University Theatre which will remain as currently used, and will therefore not have any new traffic impacts associated with it.

Vehicular access to the proposed on-site parking will be provided off of Public Alley 821. The parking will be provided in a below-grade garage that will accommodate up to 114 vehicles in four levels of below grade. The Project will also include on-site, secure, and covered storage for up to 426 bicycles (one per unit). An on-site loading dock will be provided for move-in/move-out activity and deliveries and will be accessed from Public Alley No. 821. The Proponent will work with the BTD and BPDA to refine the design of the site access points for the Project.

A preliminary site plan is shown in Figure 2-1. Table 2-1 shows the proposed land uses.



252-264 Huntington Avenue Boston, Massachusetts

Figure 2-1

Preliminary Site Plan

Table 2-1 Proposed Project Land Uses

Land Use	Proposed Project
B.U. Theatre Expansion	14,000 sf
Residential Tower	426 units
Retail/Restaurant	7,500 sf

2.1.2 Study Methodology

This transportation study and its supporting analyses were conducted in accordance with BTD guidelines, and are described below.

The Existing (2017) Condition analysis includes an inventory of the existing transportation conditions such as traffic characteristics, parking, curb usage, transit, pedestrian circulation, bicycle facilities, loading, and site conditions. Existing counts for vehicles, bicycles, and pedestrians were collected at the study area intersections. A traffic data collection effort forms the basis for the transportation analysis conducted as part of this evaluation.

The future transportation conditions analyses evaluate potential transportation impacts associated with the Project. The long-term transportation impacts are evaluated for the year 2024, based on a seven-year horizon from the year of the filing of this traffic study.

The No-Build (2024) Condition analysis includes general background traffic growth, traffic growth associated with specific developments (not including this Project), and transportation improvements that are planned in the vicinity of the Project site.

The Build (2024) Condition analysis includes a net increase in traffic volume due to the addition of Project-generated trip estimates to the traffic volumes developed as part of the No-Build (2024) Condition analysis. The transportation study identifies expected roadway, parking, transit, pedestrian, and bicycle accommodations, as well as loading capabilities and deficiencies.

The final part of the transportation study identifies measures to mitigate Project-related impacts and to address any traffic, pedestrian, bicycle, transit, safety, or construction related issues that are necessary to accommodate the Project.

An evaluation of short-term traffic impacts associated with construction activities is also provided.

2.1.3 Study Area

The transportation study area is generally bounded by Public Alley 820 to the northeast, Huntington Avenue to the northwest, Alley 822 to the southwest, and Alley 821 to the southeast. The study area, shown in Figure 2-2 includes the following six intersections:

252-264 Huntington Avenue   Boston, Massachusetts

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Figure 2-2
Study Area Intersections

- Huntington Avenue/Massachusetts Avenue (signalized);
- Massachusetts Avenue/Saint Botolph Street (signalized);
- Huntington Avenue/Gainsborough Street (signalized);
- Saint Botolph Street/Alley 823/ Public Alley 820 (unsignalized);
- Saint Botolph Street/Gainsborough Street (unsignalized); and
- Huntington Avenue/Public Alley 820 (unsignalized)

2.2 Existing (2017) Condition

This section includes descriptions of existing study area roadway geometries, intersection traffic control, peak-hour vehicular and pedestrian volumes, average daily traffic volumes, transit availability, parking, curb usage, and loading conditions.

2.2.1 Existing Roadway Conditions

This section includes descriptions of the adjacent and nearby roadways that serve the Project site.

Huntington Avenue is a two-way, four lane roadway divided by the MBTA E branch of the Green Line. Huntington Avenue is located adjacent to the northwest of the Project site and generally runs in an east-west direction between the Jamaicaway in Mission Hill to the west and Dartmouth Street in Back Bay to the east. Huntington Avenue is classified as an urban primary arterial under BTD jurisdiction. On-street parking and sidewalks are provided along both sides of the roadway. The through traffic on Huntington Avenue travels underneath Massachusetts Avenue, with additional at-grade lanes for local access and to travel to/from Massachusetts Avenue.

Massachusetts Avenue is a two-way, four lane roadway located to the northeast of the Project site and generally runs in a north-south direction between Columbia Road to the south and the Cambridge City line to the north, where it continues through Cambridge, Arlington, and Lexington. Massachusetts Avenue is classified as an urban primary arterial under BTD jurisdiction. Sidewalks are provided along both sides of the roadway. On-street parking is not provided in the vicinity of the Project site. Painted bicycle lanes are also provided along both sides of Massachusetts Avenue in the vicinity of the Project site.

Gainsborough Street is a two-way, two lane roadway located to the southwest of the Project site. Gainsborough Street generally runs in a northwest-southeast direction between the MBTA Orange Line tracks to the southeast and Hemenway Street to the northwest. Gainsborough Street is classified as a local roadway under BTD jurisdiction. On-street parking and sidewalks are provided along both sides of the roadway.

Saint Botolph Street is a two-way, two lane roadway located to the southeast of the Project site. Saint Botolph Street generally runs in an east-west direction between Northeastern University to the west and Copley Place to the east. Saint Botolph Street is classified as a local roadway under BTD jurisdiction. On-street parking and sidewalks are provided along both sides of the roadway.

Public Alleys 820, 821, and 822 are a series of single-lane roadways that provide access to the Project site and adjacent properties. The Public Alleys operate with two-way travel, but can only accommodate a single vehicle due to the narrow width of the roadways. The Public Alleys primarily serve back of house uses for the adjacent buildings such as trash/recycling pick-up, and loading/service operations.

2.2.2 Existing Intersection Conditions

The existing study area intersections are described below. Intersection characteristics such as traffic control, lane usage, pedestrian facilities, pavement markings, and adjacent land use are described.

Huntington Avenue/Massachusetts Avenue is a six-legged intersection with four approaches located north of the Project site. The Huntington Avenue eastbound approach consists of a shared left-turn/through lane and a shared through/right-turn lane. The Huntington Avenue westbound approach consists of a shared left-turn/through lane and a right-turn only lane. The Massachusetts Avenue northbound approach consists of a left-turn only lane, a through lane, a through/right-turn lane, and a bicycle lane. The Massachusetts Avenue southbound approach consists of a through lane, a through/right-turn lane, and a bicycle lane. On-street parking is prohibited along the Massachusetts Avenue approaches to the intersection. Crosswalks, wheelchair ramps, and pedestrian signal equipment are provided across all approaches of the intersection.

Massachusetts Avenue/Saint Botolph Street is a four-legged intersection with four approaches located east of the Project site. The St. Botolph Street eastbound and westbound approaches both consist of a single travel lane. The Massachusetts Avenue northbound and southbound approaches both consist of a left-turn only lane, a through lane, and a through/right-turn lane. Residential permit parking is provided along all approaches to the intersection. Crosswalks, wheelchair ramps, and pedestrian signal equipment are provided across all approaches of the intersection.

Huntington Avenue/Gainsborough Street is a four-legged intersection with three approaches located southwest of the Project site. The Huntington Avenue eastbound and westbound approaches both consist of a left-turn only lane, a through lane, and a through/right-turn lane. The Gainsborough Street northbound approach consists of a single travel lane. North of

Huntington Avenue, Gainsborough Street is one-way departing the intersection in the northbound direction. On-street metered parking is provided along the approaches of the intersection. Crosswalks, wheelchair ramps, and pedestrian signal equipment are provided across all approaches to the intersection.

Saint Botolph Street/Alley 823/Public Alley 820 is a four-legged intersection with four approaches located east of the Project site. All four approaches consist of a single travel lane. On-street resident permit parking is provided along the St. Botolph Street westbound approach. A crosswalk is provided across the St. Botolph Street eastbound approach. Wheelchair ramps are provided across the Alley 823 northbound approach and Public Alley 820 southbound approach. The alleys accommodate two-way travel, but the widths only allow for a single vehicle to pass in one direction.

Saint Botolph Street/Gainsborough Street is a four-legged intersection with four approaches located southwest of the Project site. All four approaches consist of a single travel lane. On-street metered parking is provided along the east side of the Gainsborough Street northbound approach. Crosswalks and pedestrian signal equipment are provided across all approaches to the intersection.

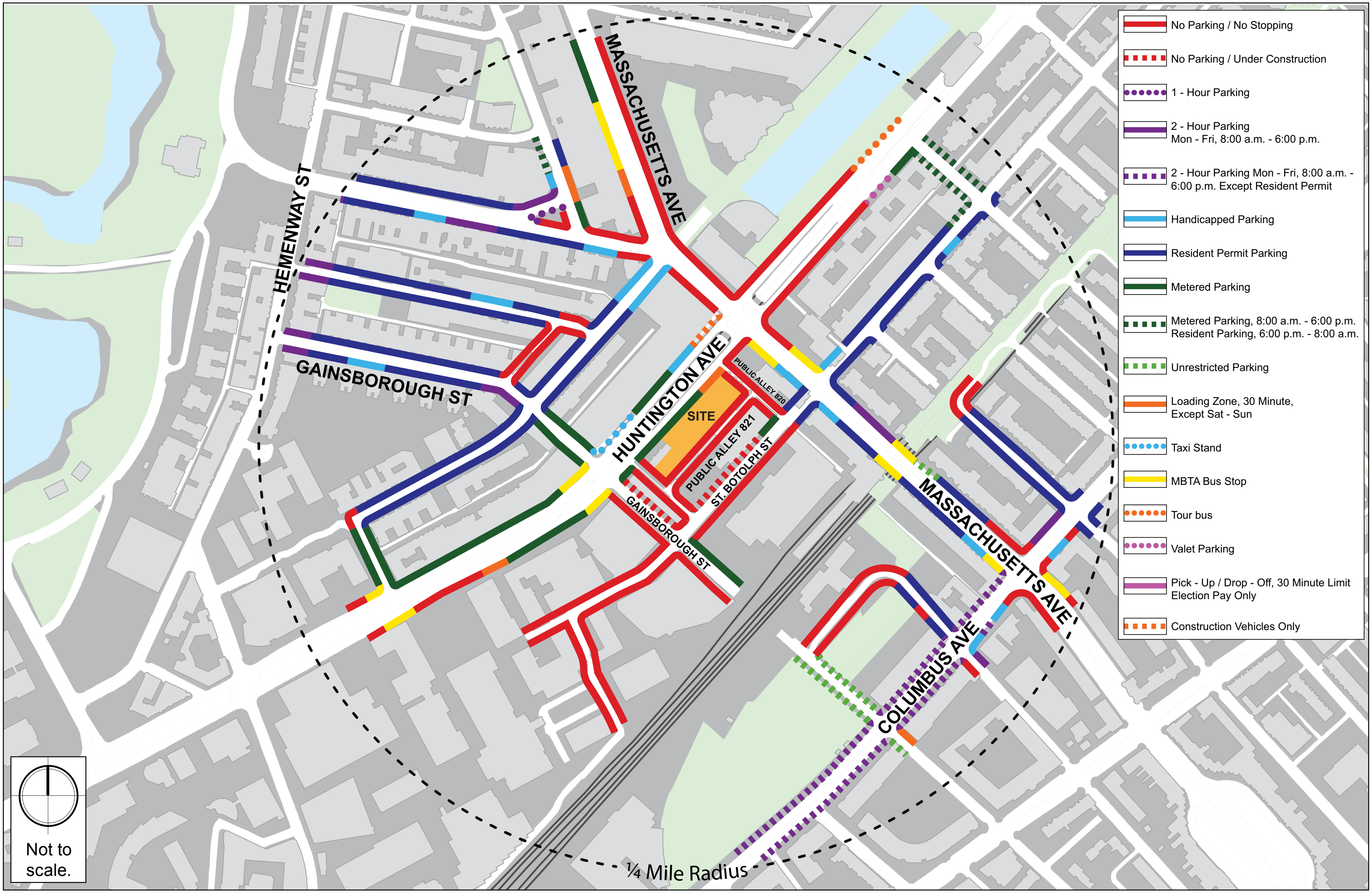
Huntington Avenue/Public Alley 820 is a three-legged intersection with two approaches located northeast of the Project site. The Huntington Avenue eastbound approach consists of a through lane and a through/right-turn lane. Public Alley 820 northbound approach consists of a single travel lane. On-street parking is prohibited along all approaches to the intersection. Public Alley 820 accommodates two-way travel, but the width only allows for a single vehicle to pass in one direction.

St. Botolph Street/Public Alley 822 is a three-legged intersection with three approaches located northeast of the Project site. The St. Botolph Street eastbound and southbound approaches consist of single travel lanes. The Public Alley 822 approach consists of a single travel lane that accommodates two-way travel, but only allows for a single vehicle to pass in one direction.

St. Botolph Street/Public Alley 823 is a three-legged intersection with three approaches located northeast of the Project site. The St. Botolph Street eastbound and southbound approaches consist of single travel lanes. The Public Alley 823 approach consists of a single travel lane that accommodates two-way travel, but only allows for a single vehicle to pass in one direction.

2.2.3 Existing Parking and Curb Use

The curb use within a quarter mile of the Project site, or about a five minute walk, is generally restricted to metered parking, commercial parking, and resident parking. Some additional curb uses include MBTA bus stops, two-hour parking, and handicapped spaces. Figure 2-3 shows the on-street parking within a quarter mile of the Project site.



252-264 Huntington Avenue   Boston, Massachusetts

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Figure 2-3

Existing Curb Use

2.2.4 Car Sharing Services

Car-sharing services provide easy access to vehicular transportation for urban residents and employees who do not own a car. Two companies, Zipcar and Enterprise, provide car-sharing services in the Boston area offering short-term rental service for members. Vehicles are rented on an hourly basis and all vehicle costs (gas, maintenance, insurance, and parking) are included in the rental fee. Vehicles are checked out for a specific time period and returned to their designated location.

The nearby Zipcar car share services provide an important transportation option by reducing the need to rent or own a vehicle. Figure 2-4 shows the nearby car sharing locations, with a total of six Zipcar locations.

2.2.5 Existing Pedestrian Conditions

In the vicinity of the Project site, the sidewalks and pedestrian facilities are generally in good condition. Most sidewalks are at least ten feet in width with street trees and/or landscaping. The sidewalks maintain a clear zone for pedestrians to walk without obstructions. Potential pedestrian obstructions such as street lights, trees, and parking meters are located along the curb. The sidewalks are typically concrete, with some portions made of brick.

To determine the amount of pedestrian activity within the study area, pedestrian counts were conducted concurrent with the vehicular Turning Movement Counts (TMCs) at the study area intersections and are presented in Figure 2-5. The heaviest pedestrian volumes occur along Massachusetts Avenue and Huntington Avenue. All study area intersections experience moderate to high levels of pedestrian activity, indicating the walkable nature of the Project site.

2.2.6 Existing Bicycle Conditions

In recent years, bicycle use has increased dramatically throughout the City of Boston. The Project site is conveniently located near several bicycle facilities. Southwest Corridor Park is an off-street path between Forest Hills Station in Jamaica Plain and Back Bay Station. The City of Boston's "Bike Routes of Boston" map indicates that the Southwest Corridor Park is designated as beginner routes, suitable for all types of bicyclists including new cyclists, cyclists with limited on-road experience, and/or children. Columbus Avenue and Saint Botolph Street are designated as intermediate routes, suitable for riders with some on-road experience. Massachusetts Avenue and Huntington Avenue are designated as advanced routes suitable for traffic-confident cyclists; however, a protected bicycle lane was recently installed along Massachusetts Avenue.

Bicycle counts were conducted concurrent with the vehicular TMCs and are presented in Figure 2-6. As shown in the figure, bicycle activity is heaviest along Massachusetts Avenue. Further, the bicycle counts were conducted in 2016, prior to the installation of the bicycle lane that was recently installed.

252-264 Huntington Avenue Boston, Massachusetts

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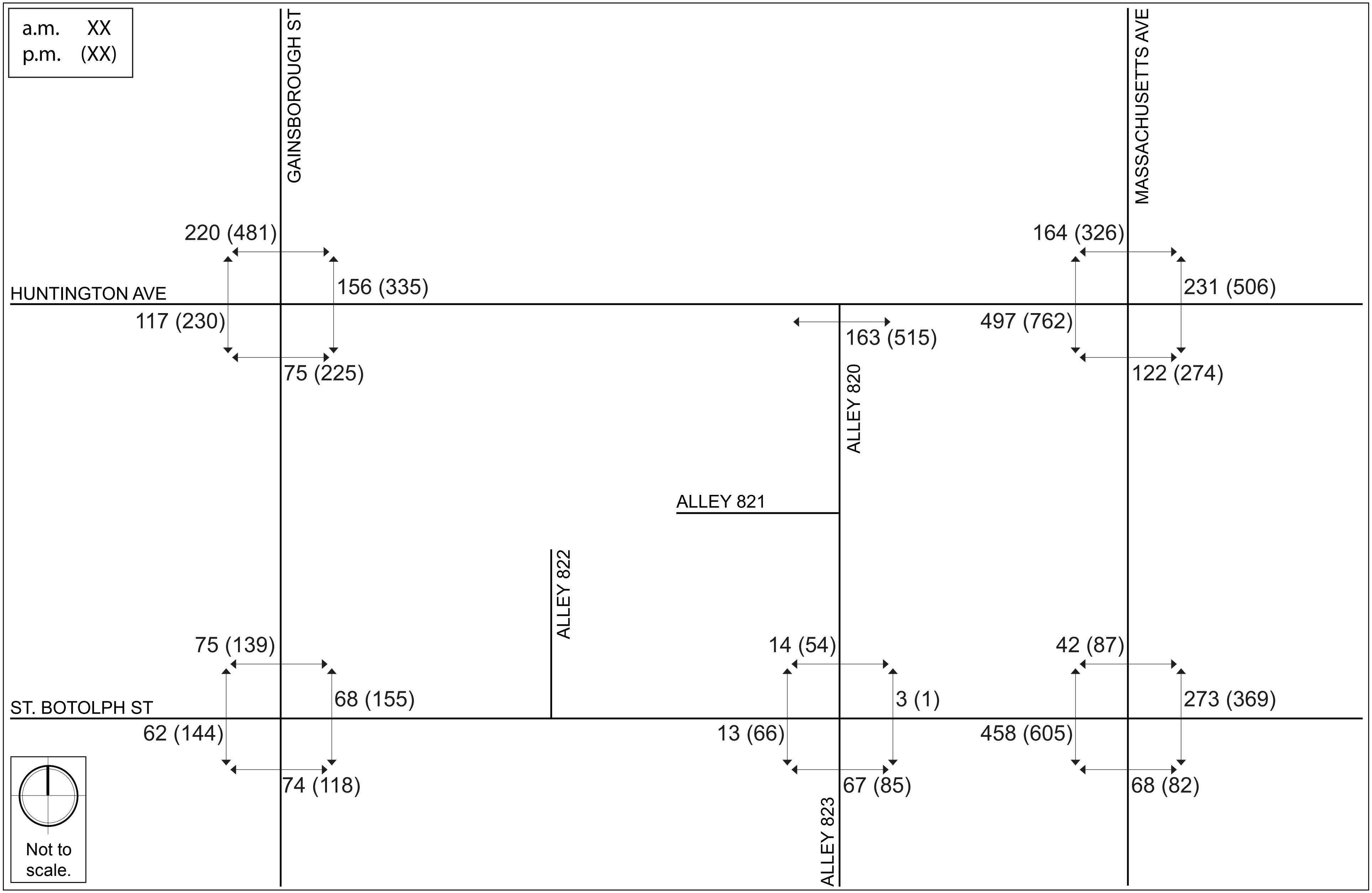
Figure 2-4
Car Sharing Services



252-264 Huntington Avenue Boston, Massachusetts

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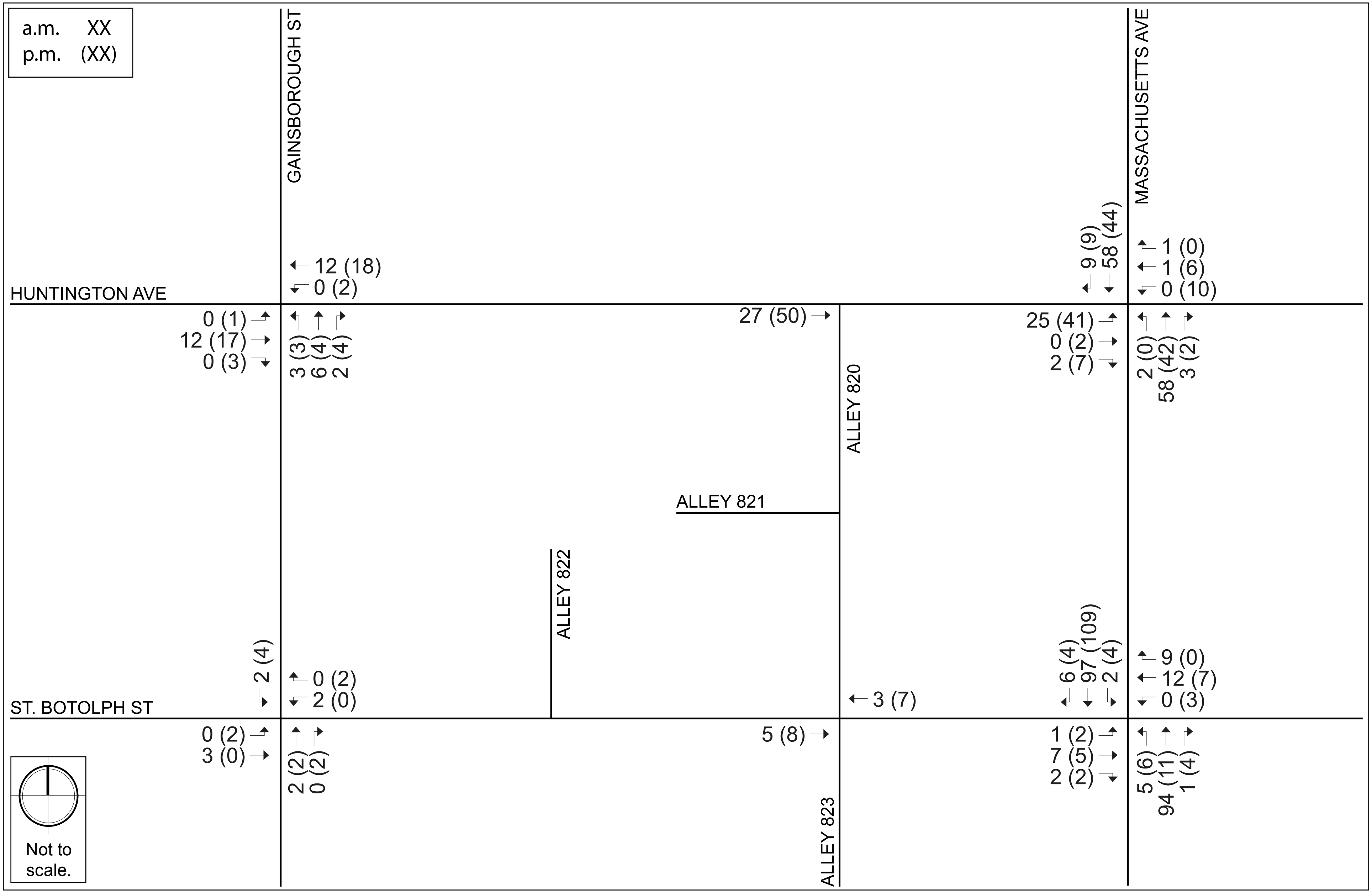
Figure 2-5

Existing (2017) Condition Pedestrian Volumes, Weekday a.m. and p.m. Peak Hour



252-264 Huntington Avenue   Boston, Massachusetts

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Figure 2-6

Existing (2017) Condition Bicycle Volumes, Weekday a.m. and p.m. Peak Hour

2.2.6.1 Bicycle Sharing Services

Hubway, launched in July 2011, is a bicycle sharing system with more than 180 stations and 1,600 bicycles available throughout Boston, Brookline, Cambridge, and Somerville. Hubway stations are installed in April and removed in November of each year. As shown in Figure 2-7, three Hubway stations are located within one quarter-mile of the Project site.

2.2.7 Existing Public Transportation

The Project is located near several public transportation facilities. Symphony Station of the MBTA E Branch of the Green Line is located at the Huntington Avenue/Massachusetts Avenue intersection, fewer than 300 feet from the Project, and Massachusetts Avenue Station of the MBTAs Orange Line is located fewer than 1,000 feet away. The MBTA Route 39 bus travels adjacent to the Project site along Huntington Avenue and the nearest stop is approximately 500 feet away. The MBTA Route 1 bus travels along Massachusetts Avenue and is located approximately 300 feet away from the Project site. The local MBTA public transportation services are listed in Table 2-2 and mapped in Figure 2-8.

Table 2-2 Public Transportation Services

Transit Service	Description	Rush-hour Headway (in minutes)*
	Rapid Transit Routes	
Green Line	E Line: Lechmere – Riverside	6
Orange Line	Forest Hills–Oak Grove	6
	Local Bus Routes	
CT1	Central Square Cambridge – BU Medical Campus/BMC	20
1	Harvard/Holyoke Street – Dudley Station	10
39	Forest Hills Station – Back Bay Station	6
43	Ruggles Station – Park & Tremont Streets	20

* Headway is the time between trains.

2.2.8 Existing Traffic Data

Traffic volume data was collected in the study area intersections on Friday, April 29, 2016. Automatic Traffic Recorders (ATRs) were utilized to collect daily traffic volumes and Turning Movement Counts were conducted during the weekday a.m. and weekday p.m. peak periods (7:00 – 9:00 a.m. and 4:00 – 6:00 p.m., respectively) at the study area intersections. The TMCs included traffic classification including car, heavy vehicle, pedestrian, and bicycle movements. The detailed traffic counts are provided in Appendix C.

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Figure 2-7
Hubway Stations

252-264 Huntington Avenue **Boston, Massachusetts**

Figure 2-8
Public Transportation

2.2.8.1 Seasonal Adjustment

In order to account for seasonal variation in traffic volumes throughout the year, data provided by MassDOT were reviewed. The most recent (2011) MassDOT Weekday Seasonal Factors were used to determine the need for seasonal adjustments to the April TMCs. The seasonal adjustment factor for roadways similar to the study area (Group 6) during the month of April is 0.92. This indicates that average month traffic volumes are approximately eight percent less than the traffic volumes that were collected. The traffic counts were not adjusted downward to reflect average month conditions in order to provide a conservatively high analysis consistent with the peak season traffic volumes.

2.2.9 Existing (2017) Traffic Volumes

Existing traffic volumes were collected to develop the 2017 Existing Condition vehicular traffic volumes. A 0.5% yearly growth rate was applied to the 2016 traffic data to reflect projected traffic counts in 2017. Since the traffic counts were conducted in 2016, the intersection of Massachusetts Avenue/Huntington Avenue has been reconfigured. Previously, left-turns along the Massachusetts Avenue northbound approach were prohibited. The current and reconfigured intersection provides an exclusive left-turn lane along the Massachusetts Avenue northbound approach. To account for this change, a portion of the left-turns along Massachusetts Avenue northbound were reassigned from St. Botolph Street to Huntington Avenue. The 2017 Existing Condition weekday a.m. Peak Hour and weekday p.m. Peak Hour traffic volumes are shown in Figure 2-9 and Figure 2-10, respectively.

2.2.10 Traffic Operations Analysis

Trafficware's Synchro (version 9) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2000 Highway Capacity Manual (HCM).

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. Table 2-3 displays the intersection LOS criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. LOS D or better is typically considered acceptable in an urban area. However, LOS E or F is often typical for a stop controlled minor street that intersects a major roadway.

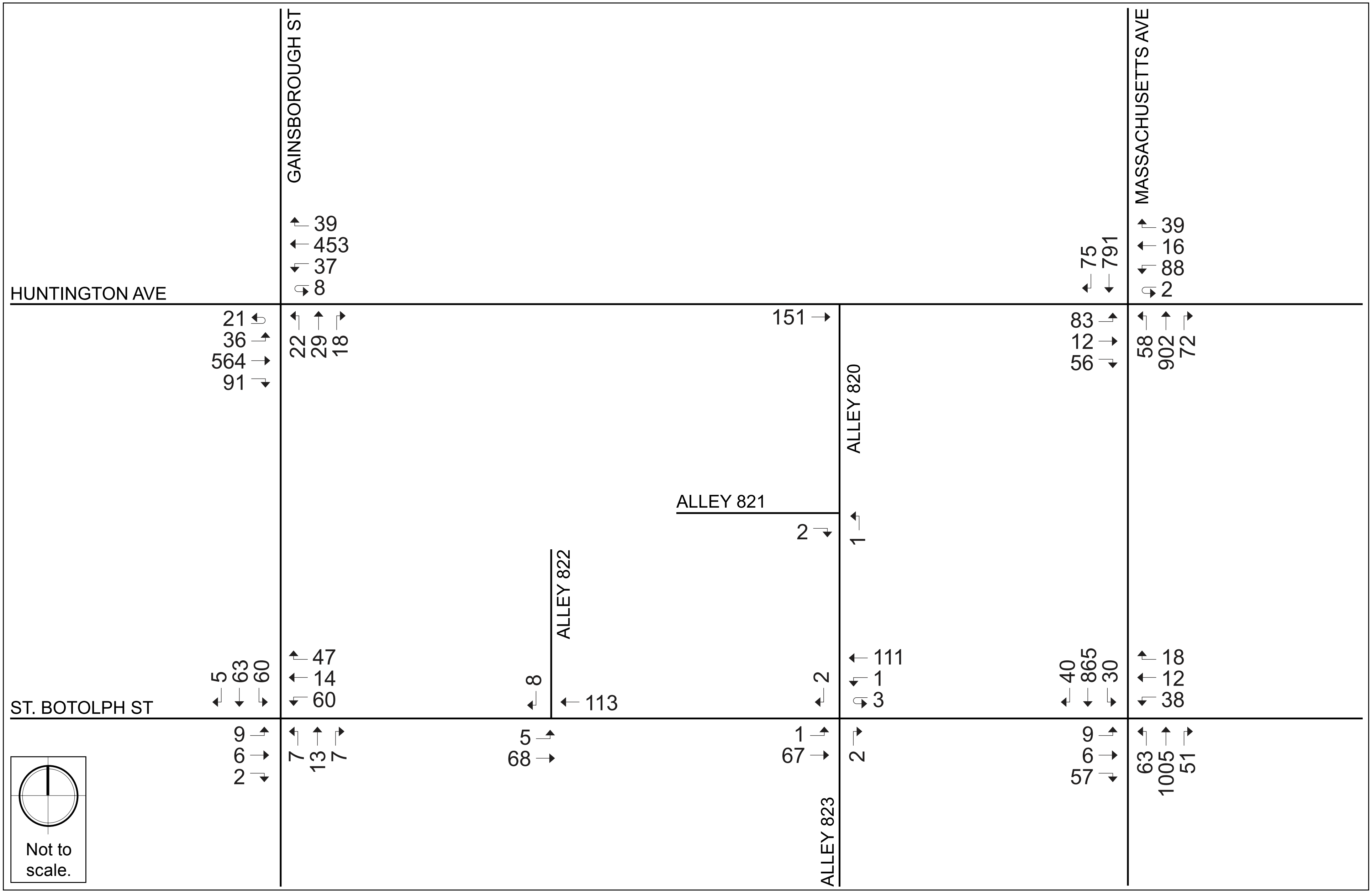

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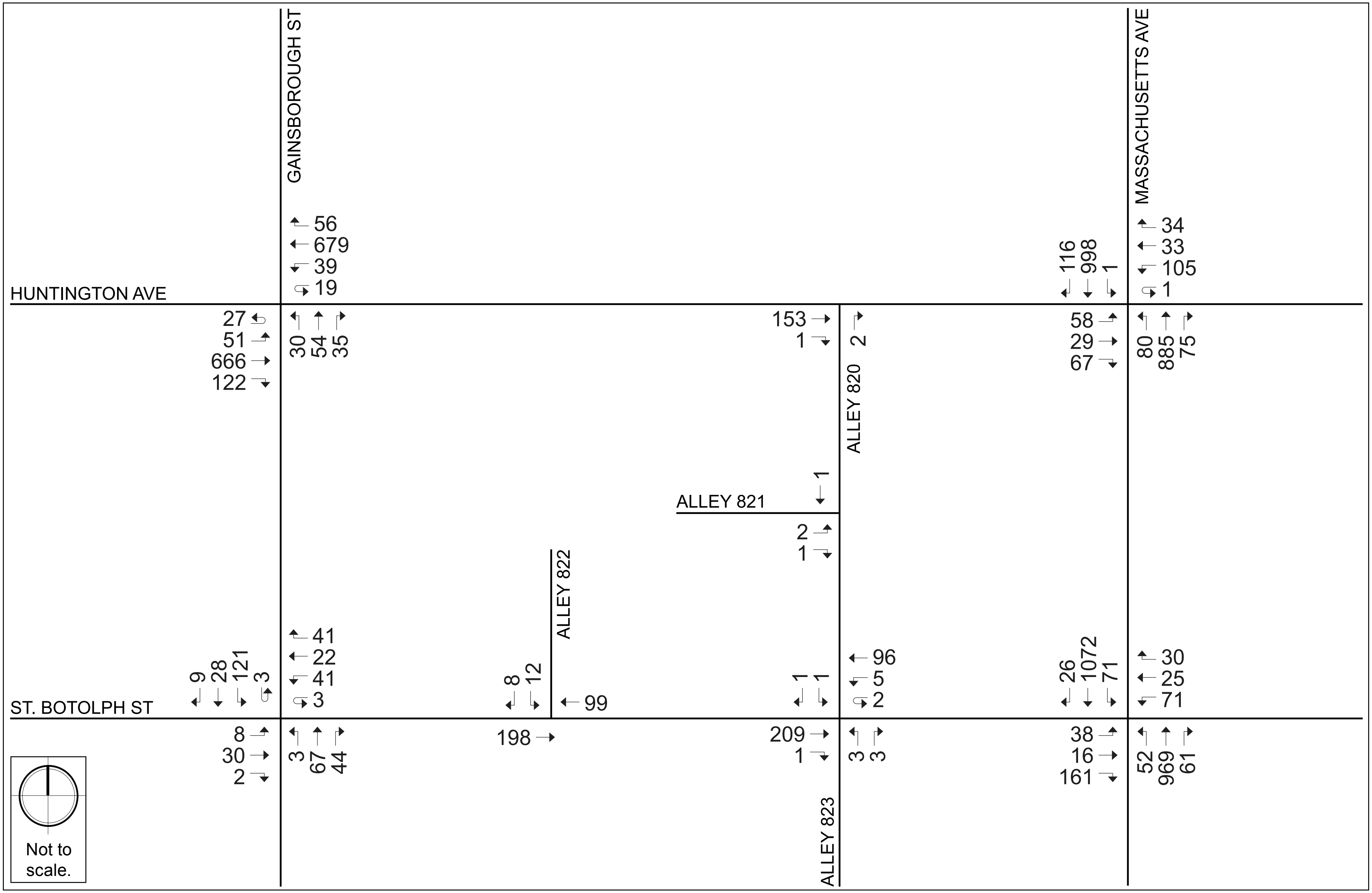
Figure 2-9

Existing (2017) Condition Traffic Volumes, Weekday a.m. Peak Hour



252-264 Huntington Avenue   Boston, Massachusetts

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Figure 2-10

Existing (2017) Condition Traffic Volumes, Weekday p.m. Peak Hour

Table 2-3 Vehicle Level of Service Criteria

Level of Service	Average Stopped Delay (sec/veh) Signalized Intersection	Unsignalized Intersection
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Source: 2000 Highway Capacity Manual, Transportation Research Board.

In addition to delay and LOS, the operational capacity and vehicular queues are calculated and used to further quantify traffic operations at intersections. The following describes these other calculated measures.

The volume-to-capacity (v/c) ratio is a measure of congestion at an intersection approach. A v/c ratio below one indicates that the intersection approach has adequate capacity to process the arriving traffic volumes over the course of an hour. A v/c ratio of one or greater indicates that the traffic volume on the intersection approach exceeds capacity.

The 50th percentile queue length, measured in feet, represents the maximum queue length during a cycle of the traffic signal with typical (or median) entering traffic volumes.

The 95th percentile queue length, measured in feet, represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during five percent of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only five percent of the time and would typically not occur during off-peak hours. Since volumes fluctuate throughout the hour, the 95th percentile queue represents what can be considered a "worst case" scenario. Queues at the intersection are generally below the 95th percentile queue throughout the course of the peak hour. It is also unlikely that the 95th percentile queues for each approach to the intersection will occur simultaneously.

Table 2-4 and Table 2-5 summarize the Existing (2017) Condition capacity analysis for the study area intersection during the weekday a.m. Peak Hour and the weekday p.m. Peak Hour. The detailed analysis sheets are provided in Appendix C.

Table 2-4 Existing (2017) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Massachusetts Avenue/Huntington Avenue	**E**	**79.5**	-	-	-
Huntington Ave EB left/thru | thru/right	E	58.5	0.60	74	100
Huntington Ave WB left/thru| thru/right	D	52.8	0.45	58	94
Massachusetts Ave NB left	E	56.3	0.48	45	m86
Massachusetts Ave NB thru | thru/right	F	91.5	1.05	~436	#601
Massachusetts Ave SB thru | thru/right	E	76.9	1.03	~391	#565
Massachusetts Avenue/Saint Botolph Street	**B**	**10.4**	-	-	-
St. Botolph St EB left	D	43.1	0.08	8	m23
St. Botolph St EB thru/right	D	49.4	0.38	56	90
St. Botolph St WB left	D	46.3	0.26	34	59
St. Botolph St WB thru/right	D	42.9	0.15	26	48
Massachusetts Ave NB left	A	5.5	0.21	11	23
Massachusetts Ave NB thru| thru/right	B	10.6	0.53	217	273
Massachusetts Ave SB left	A	1.0	0.11	2	m2
Massachusetts Ave SB thru| thru/right	A	3.1	0.49	37	m37
Gainsborough Street/ Huntington Avenue	**B**	**12.1**	-	-	-
Huntington Ave EB left	B	12.9	0.18	19	43
Huntington Ave EB thru| thru/right	B	14.0	0.45	131	176
Huntington Ave WB left	A	6.9	0.13	10	23
Huntington Ave WB thru| thru/right	A	7.8	0.29	68	95
Gainsborough St NB left/thru/right	C	26.5	0.25	32	69
Unsignalized Intersections					
Saint Botolph Street/ Alley 823/ Alley 820	-	-	-	-	-
St. Botolph St EB left/thru/right	A	0.1	0.00	-	0
St. Botolph St WB left/thru/right	A	0.1	0.00	-	0
Alley 823 NB left/thru/right	A	9.3	0.00	-	0
Alley 820 SB left/thru/right	A	9.2	0.00	-	0
Saint Botolph Street/ Gainsborough Street	-	-	-	-	-
St. Botolph St EB left/thru/right	A	7.6	0.039	-	2.5
St. Botolph St WB left/thru/right	A	9.1	0.033	-	2.5
Gainsborough St NB left/thru/right	A	8.2	0.177	-	15
Gainsborough St SB left/thru/right	A	8.8	0.195	-	17.5

Table 2-4 Existing (2017) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized Intersections					
Huntington Avenue/Alley 820	-	-	-	-	-
Huntington Ave EB thru| thru/right	A	0.0	0.07	-	0
Alley 820 NB right	A	0.0	0.00	-	0
Alley 820/Alley 821	-	-	-	-	-
Alley 821 EB left/right	A	8.3	0.00	-	0
Alley 820 NB left/thru	A	7.2	0.00	-	0
Alley 820 SB thru/right	A	0.0	0.00	-	0
Saint Botolph Street/ Alley 822	-	-	-	-	-
St. Botolph St EB left/thru	A	0.5	0.00	-	0
St. Botolph St WB thru/right	A	0.0	0.07	-	0
Alley 822 SB left/right	A	8.9	0.01	-	1

~ 50th percentile volume exceeds capacity. Queue is maximum after two cycles.
\# 95th percentile volume exceeds capacity.
m = Queue is metered from upstream signal.
Grey shading indicates LOS E or F.

Table 2-5 Existing (2017) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Massachusetts Avenue/Huntington Avenue	**F**	**159.3**	**-**	**-**	**-**
Huntington Ave EB left/thru | thru/right	E	58.1	0.59	75	101
Huntington Ave WB left/thru| thru/right	D	52.7	0.47	68	106
Massachusetts Ave NB left	F	82.3	0.65	55	m98
Massachusetts Ave NB thru | thru/right	F	120.1	1.06	~480	#629
Massachusetts Ave SB thru | thru/right	F	224.4	1.41	~721	#800

Table 2-5 Existing (2017) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Massachusetts Avenue/Saint Botolph Street	**E**	**64.6**	**-**	**-**	**-**
St. Botolph St EB left	D	53.6	0.26	37	55
St. Botolph St EB thru/right	F	90.2	0.96	210	211
St. Botolph St WB left	F	146.1	1.05	~100	#119
St. Botolph St WB thru/right	D	52.9	0.28	59	70
Massachusetts Ave NB left	A	8.2	0.26	13	25
Massachusetts Ave NB thru| thru/right	D	44.7	0.64	290	338
Massachusetts Ave SB left	A	6.4	0.31	21	m16
Massachusetts Ave SB thru| thru/right	E	77.8	0.65	511	m391
Gainsborough Street/ Huntington Avenue	**B**	**10.2**	-	-	-
Huntington Ave EB left	B	11.6	0.28	20	58
Huntington Ave EB thru| thru/right	A	9.9	0.47	123	201
Huntington Ave WB left	A	4.9	0.18	8	23
Huntington Ave WB thru| thru/right	A	5.1	0.37	76	131
Gainsborough St NB left/thru/right	D	48.0	0.64	65	117
Unsignalized Intersections					
Saint Botolph Street/ Alley 823/ Alley 820	**-**	**-**	**-**	**-**	**-**
St. Botolph St EB left/thru/right	A	0.0	0.00	-	0
St. Botolph St WB left/thru/right	A	0.5	0.01	-	1
Alley 823 NB left/thru/right	B	14.5	0.04	-	3
Alley 820 SB left/thru/right	B	12.5	0.01	-	1
Saint Botolph Street/ Gainsborough Street	-	-	-	-	-
St. Botolph St EB left/thru/right	A	8.5	0.173	-	15
St. Botolph St WB left/thru/right	A	9.5	0.138	-	12.5
Gainsborough St NB left/thru/right	A	8.9	0.204	-	20
Gainsborough St SB left/thru/right	A	9.5	0.263	-	25
Huntington Avenue/Alley 820	-	-	-	-	-
Huntington Ave EB thru| thru/right	A	0.0	0.07	-	0
Alley 820 NB right	A	8.8	0.00	-	0

Table 2-5 Existing (2017) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized Intersections					
Alley 820/Alley 821	-	-	-	-	-
Alley 821 EB left/right	A	8.5	0.00	-	0
Alley 820 NB left/thru	A	0.0	0.00	-	0
Alley 820 SB thru/right	A	0.0	0.00	-	0
Saint Botolph Street/ Alley 822	-	-	-	-	-
St. Botolph St EB left/thru	A	0.0	0.00	-	0
St. Botolph St WB thru/right	A	0.0	0.06	-	0
Alley 822 SB left/right	A	9.9	0.03	-	2

~ 50th percentile volume exceeds capacity. Queue is maximum after two cycles.
\# 95th percentile volume exceeds capacity.
m = Queue is metered from upstream signal.
Grey shading indicates LOS E or F.

As shown in Table 2-4 and Table 2-5, the following movements were shown to operate near or at capacity:

The signalized intersection of **Massachusetts Avenue/ Huntington Avenue** currently operates at LOS E during the a.m. peak hour and at LOS F during the p.m. peak hour under the Existing Condition. The Huntington Avenue eastbound approach operates at LOS E during both the a.m. and p.m. peak hours. The Massachusetts Avenue northbound left lane and the Massachusetts southbound approach operate at LOS E during the a.m. peak hour and LOS F during the p.m. peak hour. The Massachusetts Avenue northbound through lane and through/right-turn lane operates at LOS F during both the a.m. and p.m. peak hours. The longest queues at the intersection occur in the Massachusetts Avenue northbound through lane and through/right-turn lane during the a.m. peak hour and the Massachusetts Avenue southbound approach during the p.m. peak hour.

The signalized intersection of **Massachusetts Avenue/Saint Botolph Street** operates at LOS B during the a.m. peak hour and LOS E during the p.m. peak hour. The St. Botolph Street eastbound and westbound approaches have movements that operate at LOS F during the p.m. peak hour. The Massachusetts Avenue southbound through lane and through/right lane operates at LOS E during the p.m. peak hour. The longest queues at the intersection occur in the Massachusetts Avenue northbound through lane and through right lane during the a.m. peak hour and in the Massachusetts Avenue southbound through lane and through right lane during the p.m. peak hour.

2.3 No-Build (2024) Condition

The No-Build (2024) Condition reflects a future scenario that incorporates anticipated traffic volume changes associated with background traffic growth independent of any specific project, traffic associated with other planned specific developments, and planned infrastructure improvements that will affect travel patterns throughout the study area. The No-Build (2024) Condition does not include the Project-generated trips. These infrastructure improvements include roadway, public transportation, pedestrian and bicycle improvements.

2.3.1 Background Traffic Growth

Future traffic volume changes are based on two factors: an annual growth rate, and growth associated with specific developments near the Project.

The first part of the methodology accounts for general background traffic growth that may be affected by changes in demographics, automobile usage, and automobile ownership. Based on a review of recent and historic traffic data collected for nearby projects and to account for any additional unforeseen traffic growth, a half percent per year annual traffic growth rate applies to traffic volumes in the vicinity of the Project site.

The second part of the methodology identifies any specific planned developments that are expected to affect traffic patterns throughout the study area within the future analysis time horizon.

2.3.2 Specific Development Traffic Growth

Traffic volumes associated with the larger or closer known development projects can affect traffic patterns throughout the study area within the future analysis time horizon. Nearby development projects were identified in the vicinity of the Project and are shown in Figure 2-11. Traffic volumes associated with the following projects were directly incorporated into the future conditions traffic volumes:

Northeastern University-Interdisciplinary Science and Engineering Center (ISEC): This project includes approximately 197,000 gross square feet (gsf) of research and office space for new faculty, interdisciplinary research clusters/ collaborative space, specialized teaching labs, classrooms, and student space. This project is constructed.

1 Dalton Street (Belvidere/Dalton East): This project will consist of a 215 room hotel, 174 residential condominium units, and ancillary retail. This project is currently under construction.

Traffic volumes for all other nearby development projects, listed in Table 2-6, are expected to have minimal impact on the study area and are assumed to be included in the general background traffic growth.

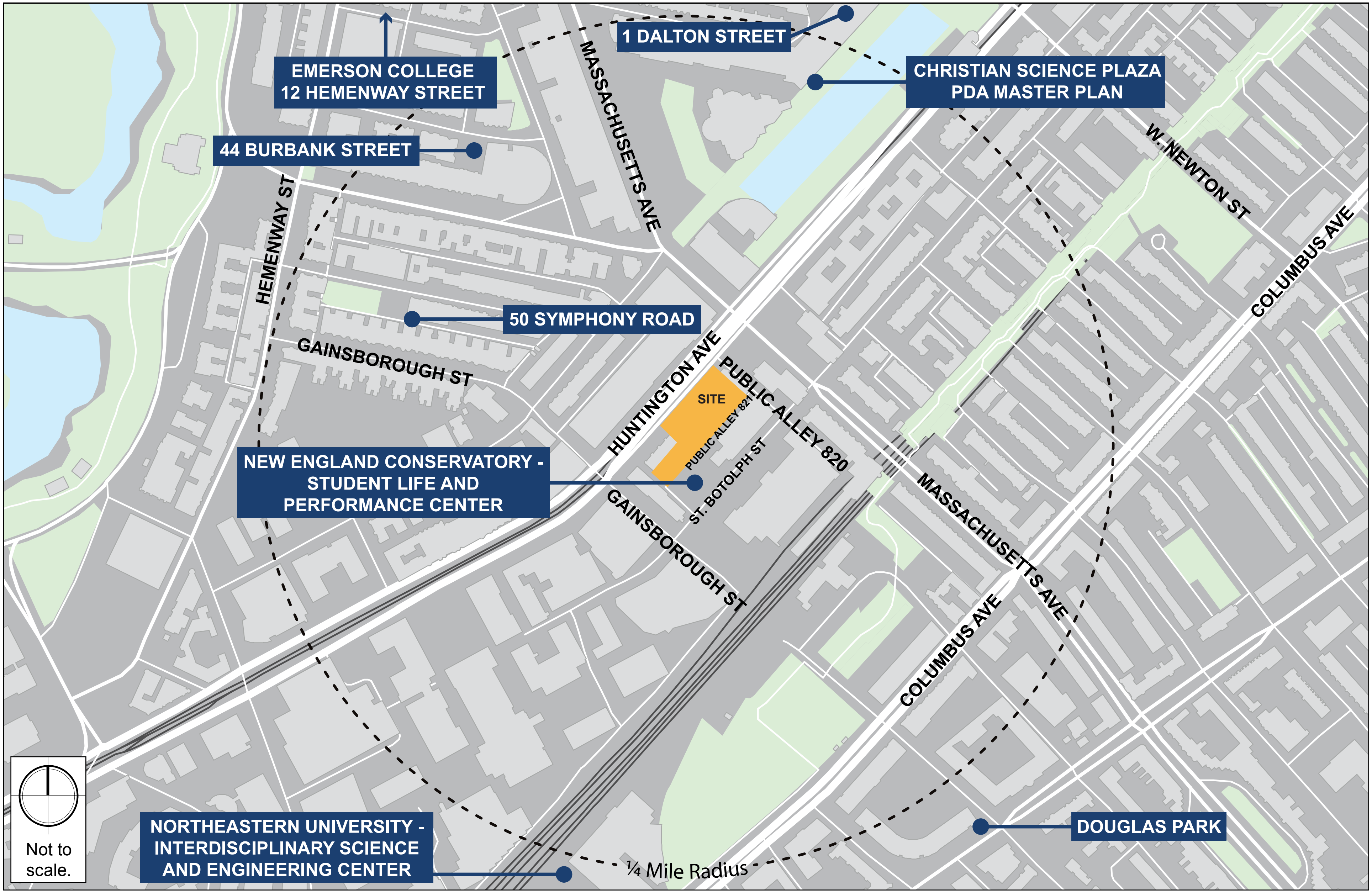

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Figure 2-11
Background Projects

Table 2-6 Other Development Projects in the Project Vicinity

Project	Program Description	Status
Emerson College: 12 Hemenway Street	Project consists of temporarily leasing the site for 115 students	Board Approved
44 Burbank Street	Project consists of 34 homeownership units, 34 rental units	Construction Complete
50 Symphony Road	Proposal calls for the construction of 20 residential condominium units and 11 off-street parking spaces.	Board Approved
New England Conservatory (NEC) -Student Life and Performance Center	Proposal calls for the construction of a new 135,000 sf Residence Hall and Student Life Center and the construction of a 65,000 sf Academic and Administration building.	Under Construction
Douglass Park	Proposal calls for five stories and 44 rental units	Board Approved

2.3.3 Proposed Infrastructure Improvements

A review of planned improvements to roadway, transit, bicycle, and pedestrian facilities was conducted to determine if there are any nearby improvement projects in the vicinity of the study area. The following two roadway projects have been identified:

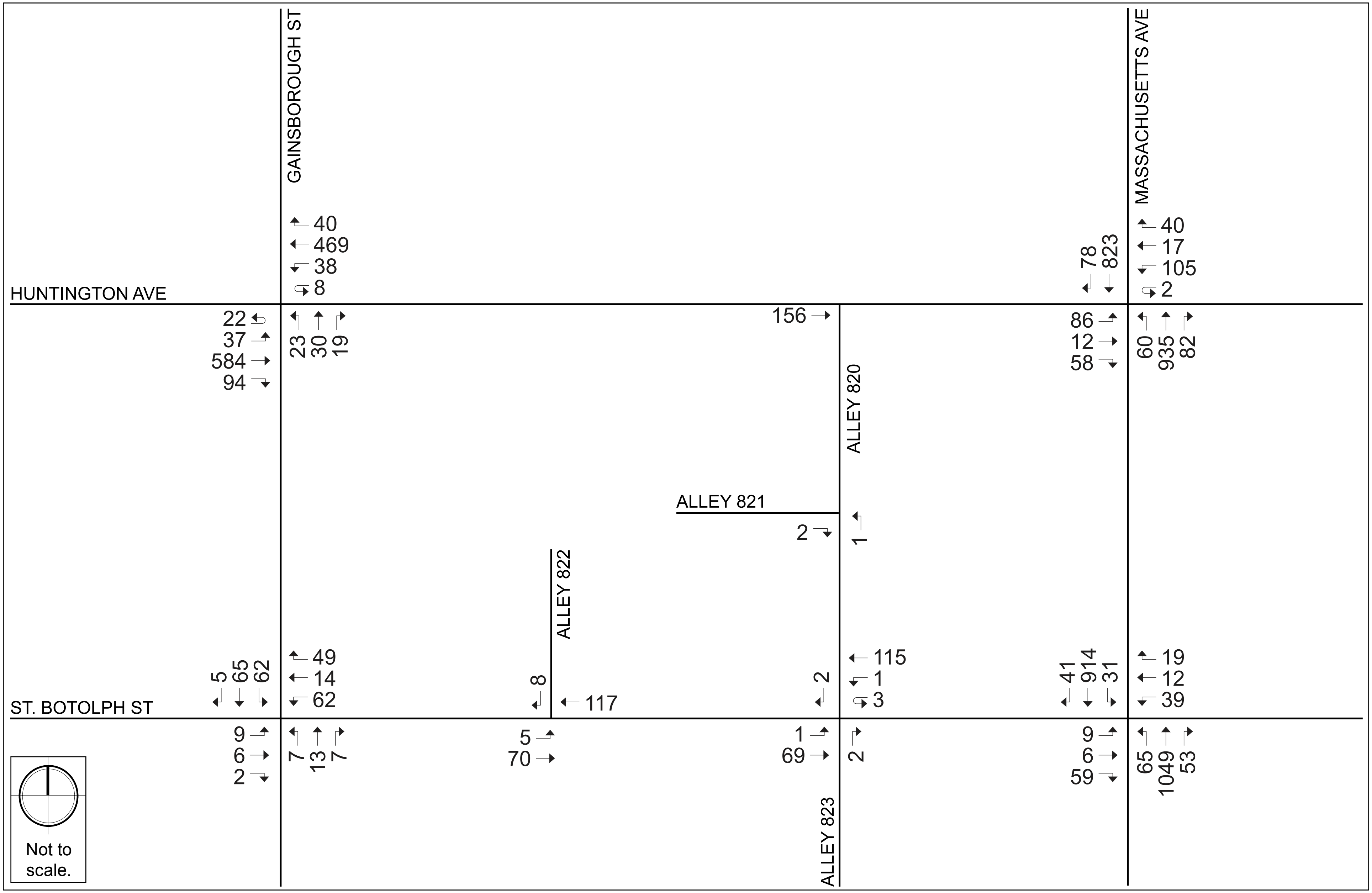
Gainsborough Street and St. Botolph Street Improvements: As part of the New England Conservatory project, Gainsborough Street and St. Botolph Street will be upgraded with enhanced pedestrian accommodations. This project is currently under construction, concurrently with the development of the new NEC building.

Vision Zero Project: As part of the City of Boston's Vision Zero project, the traffic signal at the intersection of Massachusetts Avenue and St. Botolph Street will be upgraded to provide leading pedestrian intervals and an optimal traffic signal timing and phasing plan.

These two projects were incorporated into the future conditions analyses.

2.3.4 No-Build (2024) Condition Traffic Volumes

The one-half percent per year annual growth rate was applied to the Existing (2017) Condition traffic volumes, then the traffic volumes associated with the background development projects listed above were added to develop the No-Build (2024) Condition traffic volumes. The No-Build (2024) weekday a.m. Peak Hour and weekday p.m. Peak Hour traffic volumes are shown on Figure 2-12 and Figure 2-13, respectively.



252-264 Huntington Avenue   Boston, Massachusetts

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Figure 2-12

No Build (2024) Condition Traffic Volumes, Weekday a.m. Peak Hour

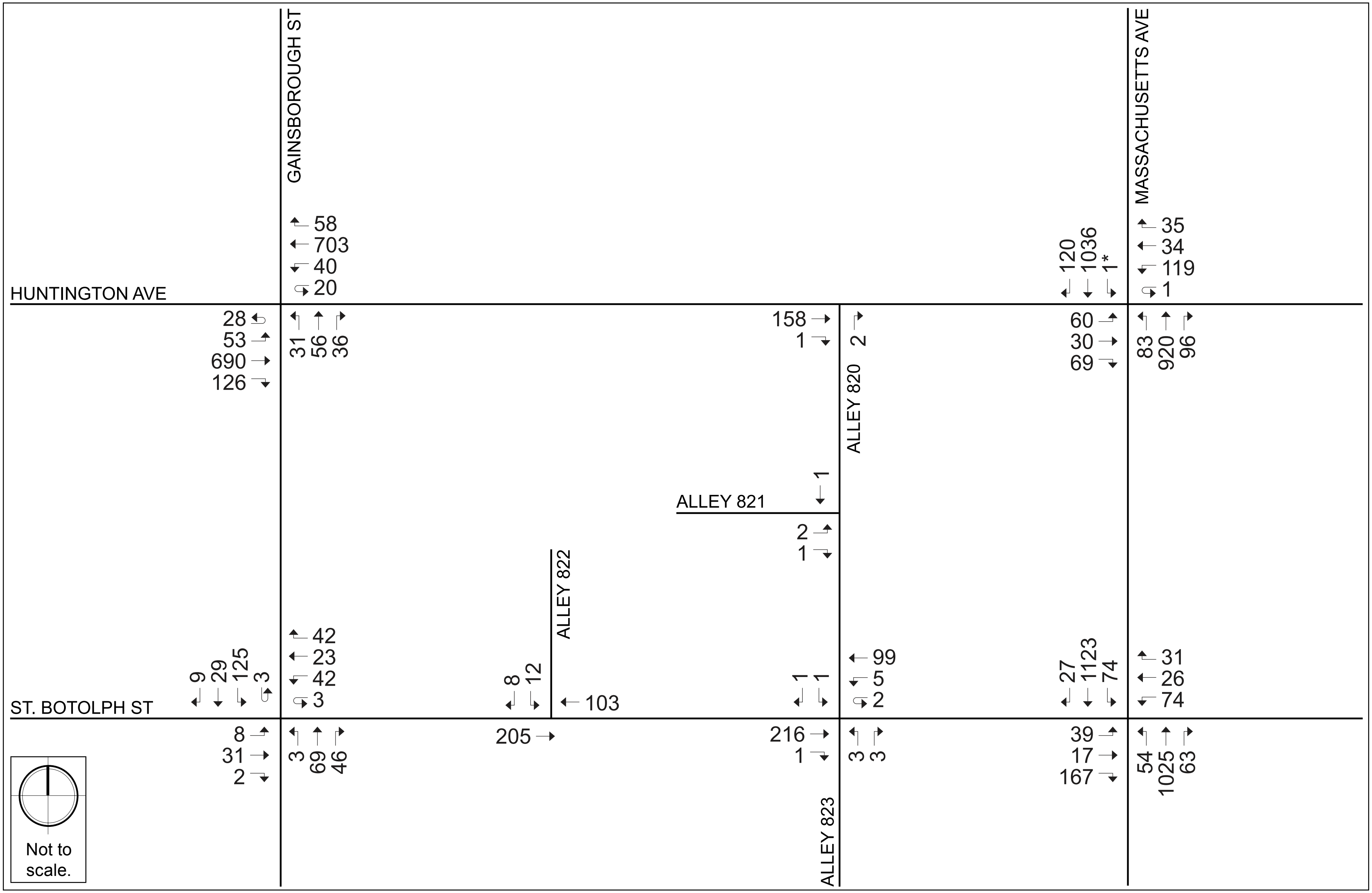

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Figure 2-13

No Build (2024) Condition Traffic Volumes, Weekday p.m. Peak Hour

2.3.5 No-Build (2024) Condition Traffic Operations Analysis

The No-Build (2024) Condition capacity analysis uses the same methodology as the Existing (2017) Condition capacity analysis. Table 2-7 and Table 2-8 present the No-Build (2024) Condition capacity analysis for the a.m. and p.m. peak hours, respectively. The shaded cells in the tables indicate a worsening in LOS to LOS E or F between the Existing (2017) Condition and the No-Build (2024) Condition. The detailed analysis sheets are provided in Appendix C.

Table 2-7 No-Build (2024) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Massachusetts Avenue/Huntington Avenue	**F**	**88.3**	-	-	-
Huntington Ave EB left/thru | thru/right	E	56.7	0.54	65	103
Huntington Ave WB left/thru| thru/right	E	55.8	0.50	66	104
Massachusetts Ave NB left	D	41.6	0.31	36	m39
Massachusetts Ave NB thru | thru/right	F	89.5	0.77	446	523
Massachusetts Ave SB thru | thru/right	F	101.0	1.09	~448	#598
Massachusetts Avenue/Saint Botolph Street	**E**	**55.7**	-	-	-
St. Botolph St EB left	D	44.7	0.07	7	m23
St. Botolph St EB thru/right	D	50.0	0.34	49	m96
St. Botolph St WB left	D	46.5	0.21	28	64
St. Botolph St WB thru/right	D	44.3	0.13	23	54
Massachusetts Ave NB left/ thru| thru/right	E	72.0	0.82	345	457
Massachusetts Ave SB left	C	21.4	0.19	15	m17
Massachusetts Ave SB thru| thru/right	D	38.7	0.54	287	m263
Gainsborough Street/ Huntington Avenue	**B**	**11.7**	-	-	-
Huntington Ave EB left	B	12.9	0.18	19	44
Huntington Ave EB thru| thru/right	B	13.4	0.44	135	181
Huntington Ave WB left	A	6.9	0.13	10	23
Huntington Ave WB thru| thru/right	A	7.8	0.29	70	96
Gainsborough St NB left/thru/right	C	26.3	0.24	31	71
Unsignalized Intersections					
Saint Botolph Street/ Alley 823/ Alley 820	-	-	-	-	-
St. Botolph St EB left/thru/right	A	0.1	0.00	-	0
St. Botolph St WB left/thru/right	A	0.1	0.00	-	0
Alley 823 NB left/thru/right	A	9.4	0.00	-	0
Alley 820 SB left/thru/right	A	9.3	0.00	-	0

Table 2-7 No-Build (2024) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized Intersections					
Saint Botolph Street/ Gainsborough Street	-	-	-	-	-
St. Botolph St EB left/thru/right	A	7.6	0.039	-	2.5
St. Botolph St WB left/thru/right	A	9.1	0.033	-	2.5
Gainsborough St NB left/thru/right	A	8.3	0.183	-	17.5
Gainsborough St SB left/thru/right	A	8.8	0.202	-	20
Huntington Avenue/Alley 820	-	-	-	-	-
Huntington Ave EB thru| thru/right	A	0.0	0.07	-	0
Alley 820 NB right	A	0.0	0.00	-	0
Alley 820/Alley 821	-	-	-	-	-
Alley 821 EB left/right	A	8.3	0.00	-	0
Alley 820 NB left/thru	A	7.2	0.00	-	0
Alley 820 SB thru/right	A	0.0	0.00	-	0
Saint Botolph Street/ Alley 822	-	-	-	-	-
St. Botolph St EB left/thru	A	0.5	0.00	-	0
St. Botolph St WB thru/right	A	0.0	0.07	-	0
Alley 822 SB left/right	A	8.9	0.01	-	1

~ 50th percentile volume exceeds capacity. Queue is maximum after two cycles.
# 95th percentile volume exceeds capacity.
m = Queue is metered from upstream signal.
Grey shading indicates decrease to LOS E or F from Existing Conditions.

Table 2-8 No-Build (2024) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Massachusetts Avenue/Huntington Avenue	**F**	**115.3**	**-**	**-**	**-**
Huntington Ave EB left/thru | thru/right	E	56.3	0.53	67	105
Huntington Ave WB left/thru| thru/right	D	53.5	0.51	75	114
Massachusetts Ave NB left	C	22.8	0.45	21	m17
Massachusetts Ave NB thru | thru/right	D	35.8	0.79	322	m294
Massachusetts Ave SB thru | thru/right	F	207.9	1.37	~675	#830

Table 2-8 No-Build (2024) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Massachusetts Avenue/Huntington Avenue	**F**	**115.3**	**-**	**-**	**-**
Huntington Ave EB left/thru | thru/right	E	56.3	0.53	67	105
Huntington Ave WB left/thru| thru/right	D	53.5	0.51	75	114
Massachusetts Ave NB left	C	22.8	0.45	21	m17
Massachusetts Ave NB thru | thru/right	D	35.8	0.79	322	m294
Massachusetts Ave SB thru | thru/right	F	207.9	1.37	~675	#830
Massachusetts Avenue/Saint Botolph Street	**D**	**40.0**	**-**	**-**	**-**
St. Botolph St EB left	D	39.5	0.17	27	56
St. Botolph St EB thru/right	E	55.2	0.67	146	216
St. Botolph St WB left	D	51.4	0.48	56	103
St. Botolph St WB thru/right	D	39.7	0.19	40	75
Massachusetts Ave NB left/thru| thru/right	E	67.6	0.92	412	#658
Massachusetts Ave SB left	B	12.9	0.51	6	m6
Massachusetts Ave SB left/thru| thru/right	B	11.3	0.68	84	m41
Gainsborough Street/ Huntington Avenue	**B**	**12.9**	-	-	-
Huntington Ave EB left	B	11.8	0.28	22	61
Huntington Ave EB thru| thru/right	A	9.8	0.47	131	214
Huntington Ave WB left	F	82.2	0.69	41	#112
Huntington Ave WB thru| thru/right	A	5.2	0.37	76	136
Gainsborough St NB left/thru/right	D	48.4	0.65	68	122
Unsignalized Intersections					
Saint Botolph Street/ Alley 823/ Alley 820	**-**	**-**	**-**	**-**	**-**
St. Botolph St EB left/thru/right	A	0.0	0.00	-	0
St. Botolph St WB left/thru/right	A	0.5	0.01	-	1
Alley 823 NB left/thru/right	B	14.7	0.04	-	3
Alley 820 SB left/thru/right	B	12.7	0.01	-	1
Saint Botolph Street/ Gainsborough Street	-	-	-	-	-
St. Botolph St EB left/thru/right	A	8.6	0.179	-	15
St. Botolph St WB left/thru/right	A	9.6	0.142	-	12.5
Gainsborough St NB left/thru/right	A	9	0.213	-	20
Gainsborough St SB left/thru/right	A	9.7	0.272	-	27.5

Table 2-8 No-Build (2024) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized Intersections					
Huntington Avenue/Alley 820	-	-	-	-	-
Huntington Ave EB thru| thru/right	A	0.0	0.08	-	0
Alley 820 NB right	A	8.8	0.00	-	0
Alley 820/Alley 821	-	-	-	-	-
Alley 821 EB left/right	A	8.5	0.00	-	0
Alley 820 NB left/thru	A	0.0	0.00	-	0
Alley 820 SB thru/right	A	0.0	0.00	-	0
Saint Botolph Street/ Alley 822	-	-	-	-	-
St. Botolph St EB left/thru	A	0.0	0.00	-	0
St. Botolph St WB thru/right	A	0.0	0.07	-	0
Alley 822 SB left/right	A	9.9	0.03	-	2

~ 50th percentile volume exceeds capacity. Queue is maximum after two cycles.
# 95th percentile volume exceeds capacity.
m = Queue is metered from upstream signal.
Grey shading indicates decrease to LOS E or F from Existing Conditions.

As shown in Table 2-7 and Table 2-8, the majority of intersections and approaches operate at the same LOS as the Existing (2017) Condition.

The signalized intersection of **Massachusetts Avenue/Huntington Avenue** will decrease from LOS E to LOS F during the a.m. peak hour under the No-Build Condition. The Huntington Avenue westbound approach decreases from LOS D to LOS E during the a.m. peak hour. The Massachusetts Avenue southbound approach decreases from LOS E to LOS F during the a.m. peak hour. The longest queues continue to occur in the Massachusetts Avenue northbound through lane and through/right-turn lane in the a.m. peak hour and the Massachusetts Avenue southbound approach during the p.m. peak hour.

The signalized intersection of **Massachusetts Avenue/Saint Botolph Street** worsens from LOS B to LOS E during the a.m. peak hour and improves from LOS E to LOS D during the p.m. peak hour. The Massachusetts northbound approach decreases from LOS B to LOS E during the a.m. peak hour and LOS D to LOS E during the p.m. peak hour. The longest queues continue to occur in the Massachusetts Avenue northbound approach during both the a.m. and p.m. peak hours. The analysis of this intersection incorporates the traffic signal timing and phasing proposed as part of the Vision Zero project. It is expected that the signal timings will be adjusted as needed to provide the most optimal operations once the design is implemented.

2.4 Build (2024) Condition

As previously summarized, the Project will include the construction of a new mixed-use building. The Project will consist of approximately 426 residential units, approximately 7,500 square feet of ground floor restaurant/retail space and approximately 14,000 sf of auxiliary space for the B.U. Theatre. Vehicular access to the garage will be provided via a new curb cut along Public Alley 821.

2.4.1 Vehicle Site Access and Circulation

Vehicular access to the proposed on-site parking will be via Public Alley 821. This public alley can be accessed from Huntington Avenue eastbound and Saint Botolph Street. Pedestrian access to the residential lobby and the retail space will be located along Huntington Avenue.

The garage will be below-grade with a capacity of up to 114 vehicles and will consist of four below-grade levels for parking. A loading dock large enough to accommodate an SU-36 vehicle (36-foot long box truck) will be located along Public Alley 821, adjacent to the garage. The parking and loading locations are previously shown in Figure 2-1.

2.4.2 Parking

As previously mentioned, the Project will contain 114 parking spaces in a below-grade garage. This results in a parking ratio of approximately 0.27 parking spaces per dwelling unit. Due to the convenient location of the Project site, it is not expected that many of the future residents will own or need personal vehicles.

2.4.3 Loading and Service Accommodations

Loading and service operations will occur at an on-site loading dock located off of Public Alley 821. Residential move-in/move-out activity will take place within the designated loading area on-site. Truck trip estimates for the residential element of the Project are based on data provided in the Truck Trip Generation Rates by Land Use in the Central Artery/Tunnel Project Study Area (CTPS) report[1]. Deliveries to the Project site will likely be SU-36 trucks and smaller delivery vehicles. Residential units primarily generate delivery trips related to small packages and prepared food. Based on the CTPS report, the Project is expected to generate two light truck trips per day to the site.

1 Truck Trip Generation Rates by Land Use in the Central Artery/Tunnel Project Study Area; Central Transportation Planning Staff; September 1993.

2.4.4 Bicycle Accommodations

BTD has established guidelines requiring projects subject to Transportation Access Plan Agreements to provide secure bicycle parking for residents and short-term bicycle racks for visitors. Based on BTD guidelines, the Project will supply a minimum of 426 secure bicycle parking/storage spaces on-site.

2.4.5 Trip Generation Methodology

Trip generation is a complex, multi-step process that produces an estimate of vehicle, transit, and walk/bicycle trips associated with a proposed development or land use change. Following standard industry practice, and as required by the BTD, trip generation in this study is derived from the Institute of Transportation Engineers' (ITE) Trip Generation (9th edition, 2012). The ITE rates produce vehicle trip estimates, which are converted to person trips based on vehicle occupancy rates (VOR). Using appropriate travel mode share information for this specific Project study area, the total person trips are then allocated to vehicle, transit, and walk/bicycle trips.

Trip generation estimates are based on average trip rates for the following ITE land use codes (LUC) associated with the Project:

Land Use Code 220—Residential Apartment. This land use code is defined as dwelling units located within the same building with at least three other dwelling units. Trip generation estimates are based on ITE's average rate per dwelling unit.

Land Use Code 820—Shopping Center. This land use code is defined as a commercial establishment that is planned, developed, owned, and managed as a unit. Trip generation estimates are based on ITE's average rate per 1,000 square feet.

The 14,000 sf of auxiliary space for the Boston University Theatre, including the theater's main entrance and lobby, patron services such as the box office, the bar, and restrooms as well as the function room for special events is not considered in the trip generation calculations. The Project will not increase the seating capacity of the theater building itself. Thus, operations of the theatre with the increased auxiliary space are expected to be similar to the current operations and will not result in an increase of vehicular trips to/from the site.

The BTD provides vehicle, transit, and walking mode split rates for different areas of Boston. Mode share splits from the area in which the Project is located were obtained from BTD and are consistent with traffic studies conducted for nearby projects, and applied to the trip generation estimates. The expected mode share splits for the Project are shown in Table 2-9.

The unadjusted vehicular trips were converted to person trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA)[2]. The person trips were then distributed to different modes according to the splits shown in Table 2-9. The trip generation for the Project by mode is shown in Table 2-10, with the detailed trip generation information provided in Appendix C.

Table 2-9 Travel Mode Shares

Land Use		Walk Trips	Transit Trips	Auto Trips	Vehicle Occupancy Rate (VOR)
Daily					
Apartment	In	57%	19%	24%	1.13
	Out	57%	19%	24%	1.13
Retail	In	55%	16%	29%	1.78
	Out	55%	16%	29%	1.78
a.m. Peak Hour					
Apartment	In	59%	22%	19%	1.13
	Out	64%	15%	21%	1.13
Retail	In	57%	19%	24%	1.78
	Out	61%	13%	26%	1.78
p.m. Peak Hour					
Apartment	In	64%	15%	21%	1.13
	Out	59%	22%	19%	1.13
Retail	In	61%	13%	26%	1.78
	Out	57%	19%	24%	1.78

Source: Boston Transportation Department

a 2009 National Household Travel Survey.

b Based on rates published by the Boston Transportation Department for Area 8 – Harbor Point.

2.4.6 Project Trip Generation

The mode share percentages shown in Table 2-9 were applied to the number of person trips to develop walk/bicycle, transit, and vehicle trip generation estimates. The trip generation for the Project by mode is shown in Table 2-10. The detailed trip generation information is provided in Appendix C.

2 Summary of Travel Trends: 2009 National Household Travel Survey; FHWA; Washington, DC; June 2011.

Table 2-10 Trip Generation Summary

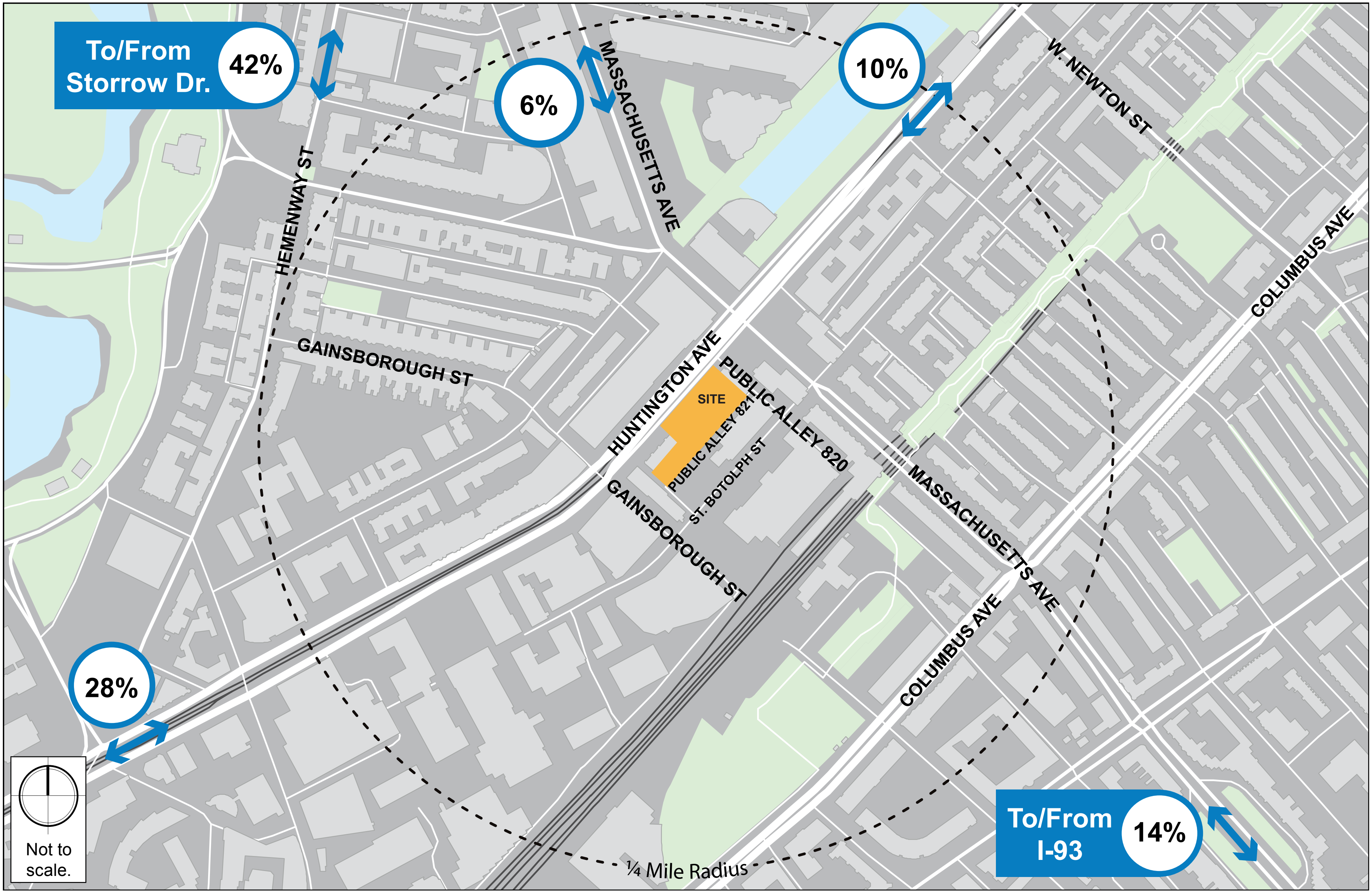
Land Use		Walk/Bike/Other Trips	Transit Trips	Auto Trips
Daily				
Apartment[a]	In	912	304	340
	Out	912	304	340
Retail[b]	In	156	46	47
	Out	156	46	47
Total Daily Trips		***2,136***	***700***	***774***
a.m. Peak Hour				
Apartment[a]	In	29	11	8
	Out	126	30	36
Retail[b]	In	4	1	1
	Out	3	1	1
Total a.m. Peak Hour Trips		***162***	***43***	***46***
p.m. Peak Hour				
Apartment[a]	In	124	29	36
	Out	61	23	18
Retail[b]	In	14	3	3
	Out	14	5	3
Total p.m. Peak Hour Trips		***213***	***60***	***60***

Source: Boston Transportation Department

a Based on ITE LUC 220 – 426 Apartment units, average rate.

b Based on ITE LUC 820 –7,500 square feet (sf), average rate

As shown in Table 2-10, the Project is expected to generate 2,136 new walk/bicycle trips on a daily basis, with 162 new trips during the a.m. peak hour and 213 new trips during the p.m. peak hour. The Project is expected to generate 700 new transit trips on a daily basis, with 43 new trips during the a.m. peak hour and 60 new trips during the p.m. peak hour. The Project is expected to generate 774 new vehicular trips on a daily basis, with 46 new vehicular trips during the a.m. peak hour and 60 new trips during the p.m. peak hour. Based on this trip generation analysis, the Project is expected to have a minimal impact upon traffic operations within the vicinity of the site.



252-264 Huntington Avenue Boston, Massachusetts

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Figure 2-14
Vehicle Trip Distribution

2.4.7 *Trip Distribution*

The vehicular trip distribution is based on BTD guidelines, using origin-destination characteristics for the area that encompasses the Project site. The vehicle trip distribution is shown in Figure 2-14.

2.4.8 *Build (2024) Traffic Volumes*

The vehicle trips were distributed through the study area. The Project-generated trips for the weekday a.m. Peak Hour and weekday p.m. Peak Hour are shown in Figure 2-15 and Figure 2-16, respectively. The trip assignments were added to the No-Build (2024) Condition vehicular traffic volumes to develop the Build (2024) Condition vehicular traffic volumes. The Build (2024) weekday a.m. Peak Hour and weekday p.m. Peak Hour traffic volumes are shown on Figure 2-17 and Figure 2-18, respectively.

2.4.9 *Build (2024) Condition Traffic Operations Analysis*

The Build (2024) Condition capacity analysis uses the same methodology as the Existing (2017) Condition capacity analysis and the No-Build (2024) Condition capacity analysis. Table 2-11 and Table 2-12 present the Build (2024) Condition capacity analysis for the weekday a.m. Peak Hour and weekday p.m. Peak Hour, respectively. The shaded cells in the tables indicate a worsening of LOS to an LOS of E or F between the No-Build (2024) Condition and the Build (2024) Condition. The detailed analysis sheets are provided in Appendix C.

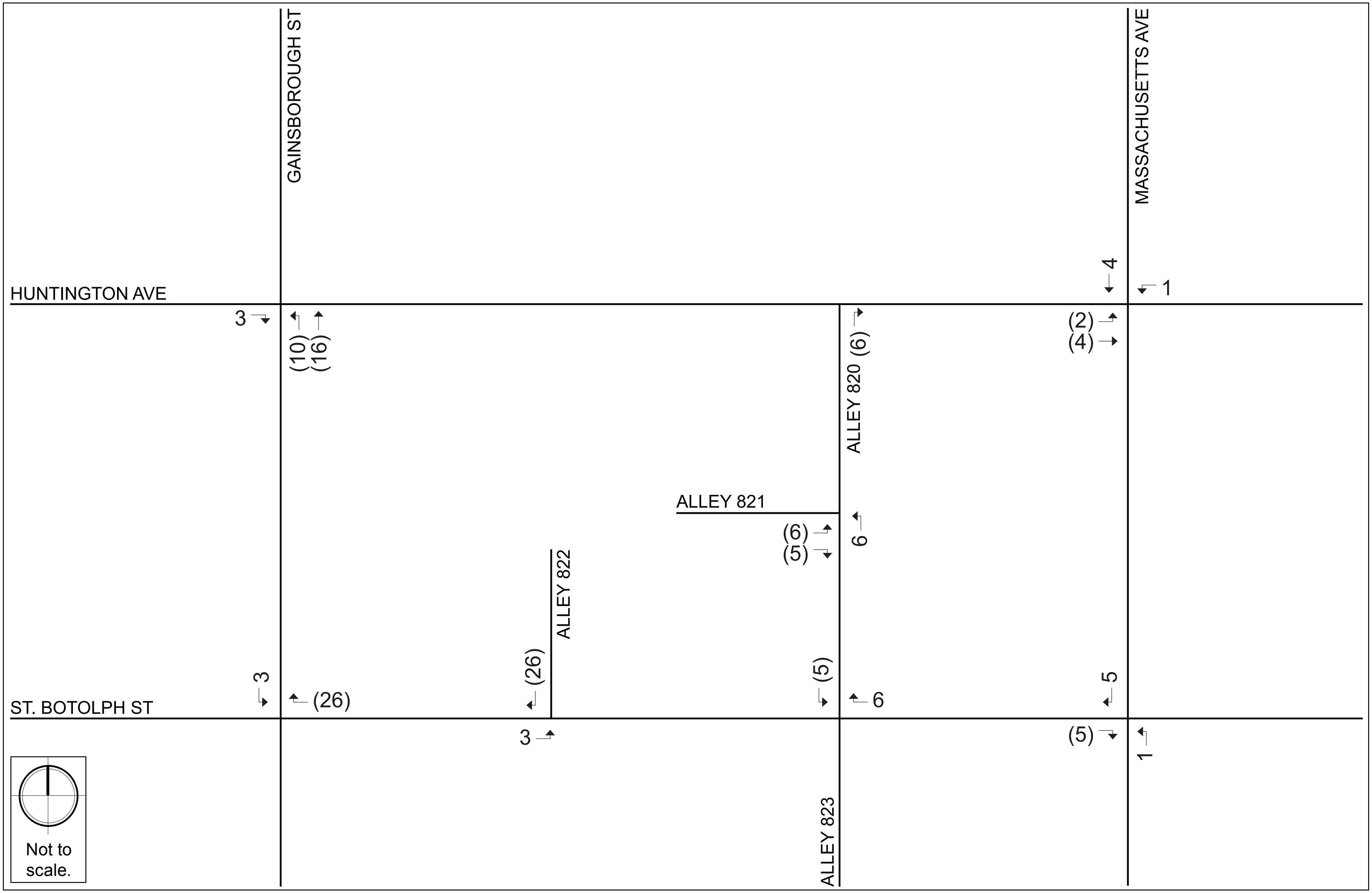

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Figure 2-15

Project Generated Vehicle Trips, Weekday a.m. Peak Hour

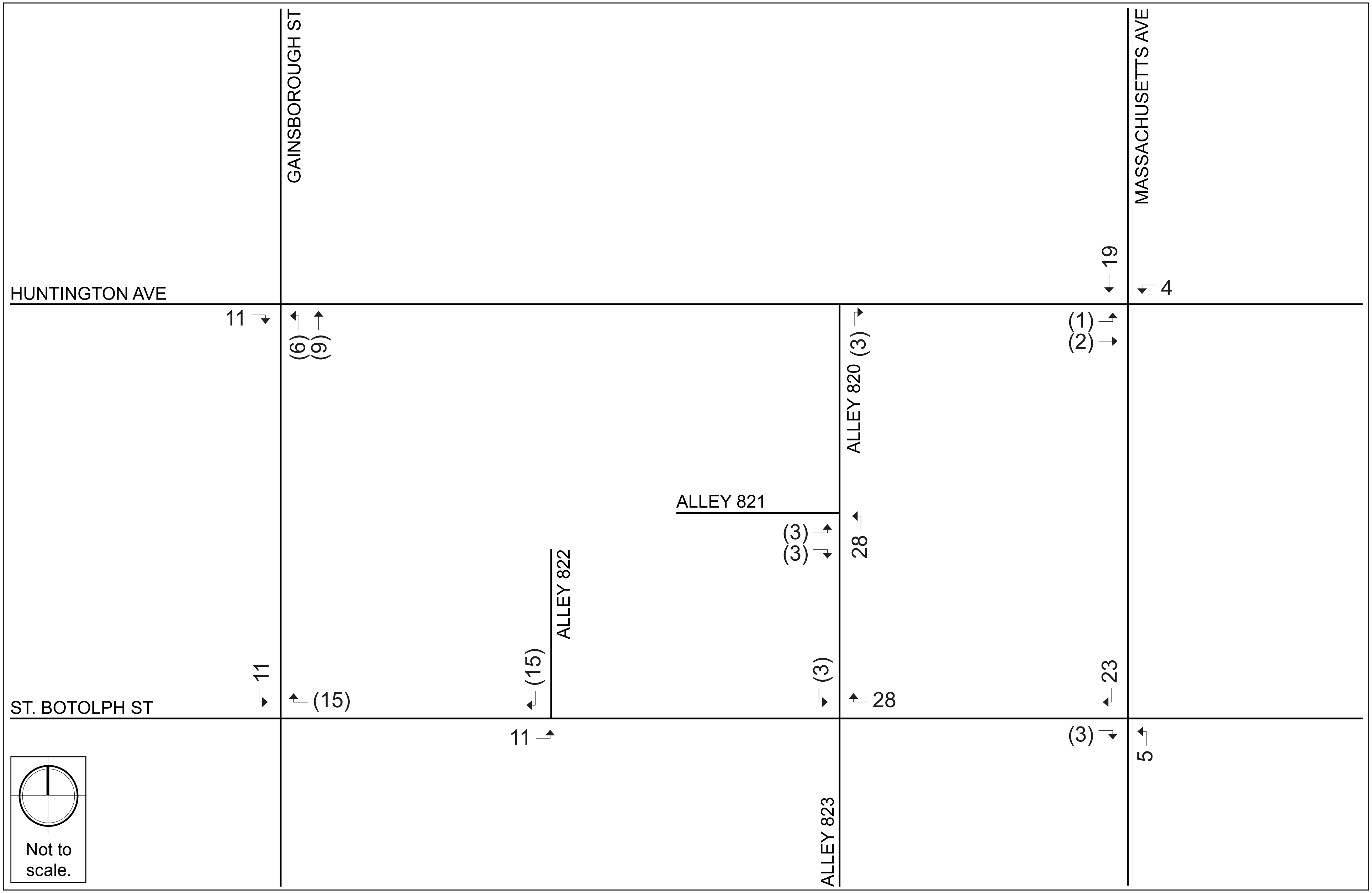

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Figure 2-16
Project Generated Vehicle Trips, Weekday p.m. Peak Hour

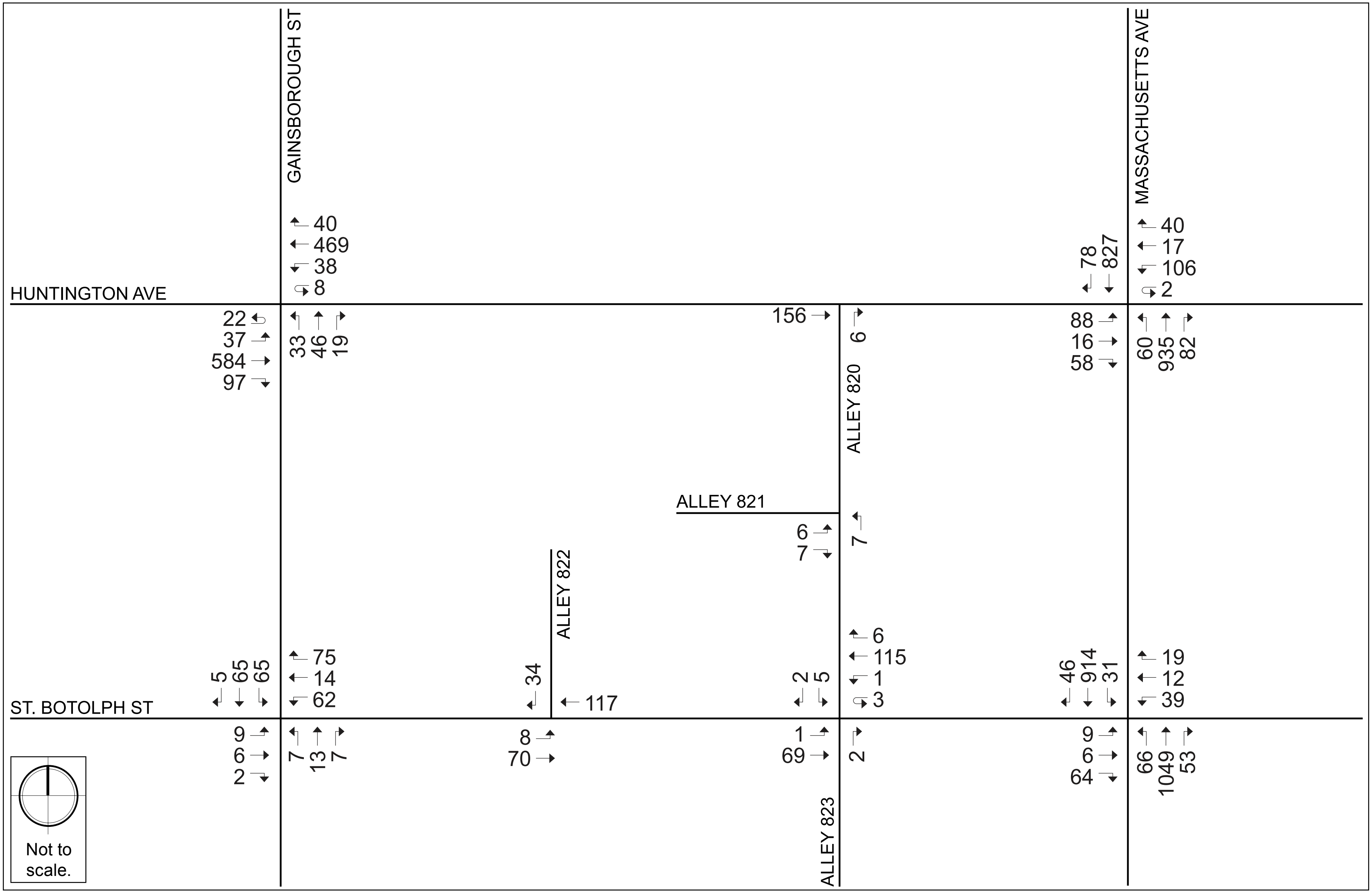

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Figure 2-17
Build (2024) Condition Traffic Volumes, Weekday a.m. Peak Hour

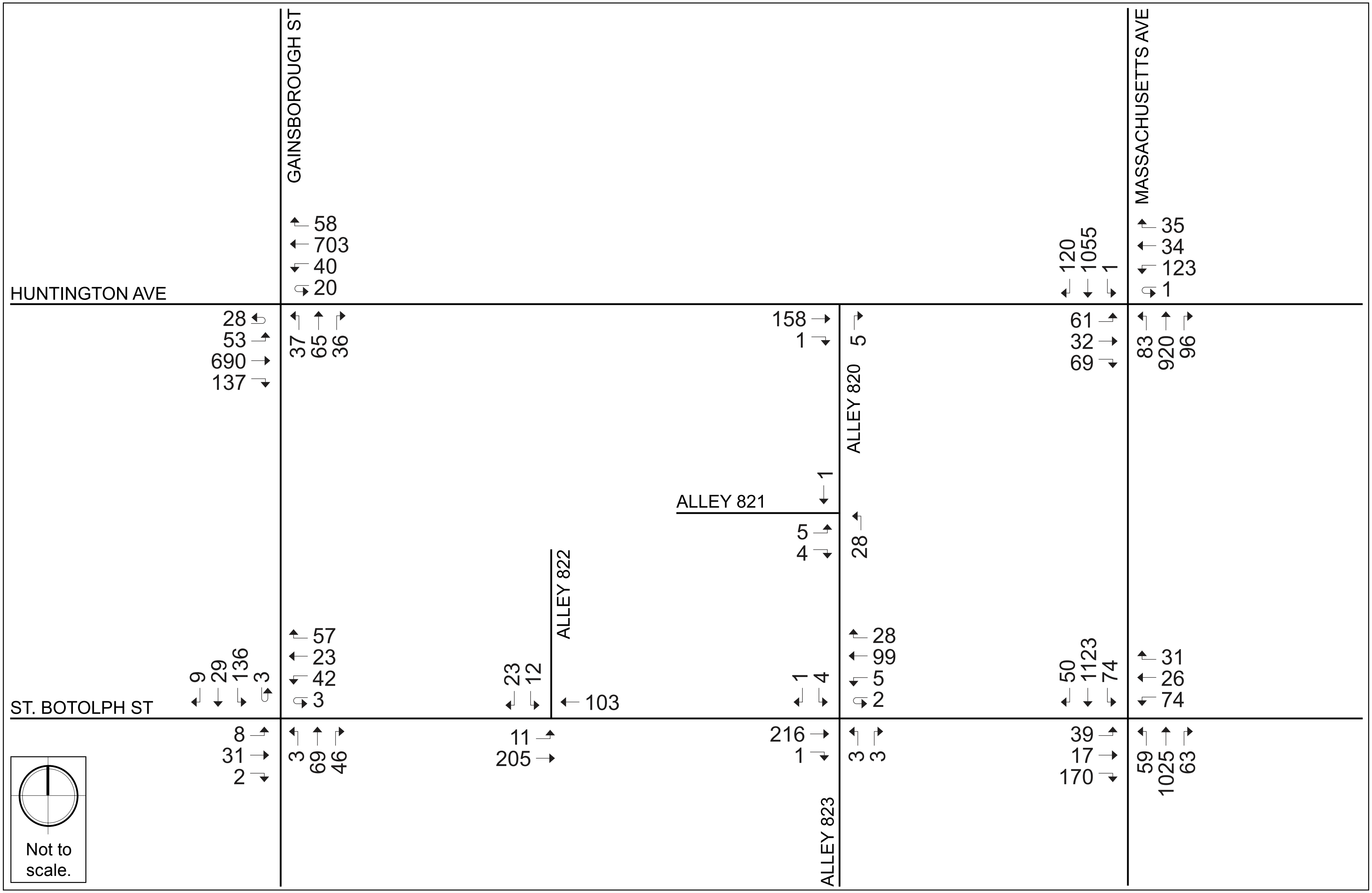

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Figure 2-18

Build (2024) Condition Traffic Volumes, Weekday p.m. Peak Hour

Table 2-11 Build (2024) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Massachusetts Avenue/Huntington Avenue	**F**	**88.1**	**-**	**-**	**-**
Huntington Ave EB left/thru | thru/right	E	57.5	0.56	68	106
Huntington Ave WB left/thru| thru/right	E	55.9	0.51	66	104
Massachusetts Ave NB left	D	41.5	0.31	36	m39
Massachusetts Ave NB thru | thru/right	F	89.3	0.77	446	523
Massachusetts Ave SB thru | thru/right	F	100.9	1.10	~452	#603
Massachusetts Avenue/Saint Botolph Street	**E**	**57.2**	**-**	**-**	**-**
St. Botolph St EB left	D	44.7	0.07	7	m23
St. Botolph St EB left/thru/right	D	50.7	0.37	54	m102
St. Botolph St WB left	D	46.6	0.21	29	64
St. Botolph St WB left/thru/right	D	44.3	0.13	23	54
Massachusetts Ave NB left/thru| thru/right	E	72.3	0.82	348	463
Massachusetts Ave SB left	C	21.5	0.19	15	m17
Massachusetts Ave SB thru| thru/right	D	41.4	0.55	289	m265
Gainsborough Street/ Huntington Avenue	**B**	**12.4**	-	-	-
Huntington Ave EB left	B	12.9	0.18	19	44
Huntington Ave EB thru| thru/right	B	13.4	0.44	135	181
Huntington Ave WB left	A	6.9	0.14	10	23
Huntington Ave WB thru| thru/right	A	7.8	0.29	70	96
Gainsborough St NB left/thru/right	C	30.9	0.32	50	99
Unsignalized Intersections					
Saint Botolph Street/ Alley 823/ Alley 820	**-**	**-**	**-**	**-**	**-**
St. Botolph St EB left/thru/right	A	0.1	0.00	-	0
St. Botolph St WB left/thru/right	A	0.1	0.00	-	0
Alley 823 NB left/thru/right	A	9.4	0.00	-	0
Alley 820 SB left/thru/right	B	10.4	0.02	-	2
Saint Botolph Street/ Gainsborough Street	-	-	-	-	-
St. Botolph St EB left/thru/right	A	7.7	0.04	-	2.5
St. Botolph St WB left/thru/right	A	9.2	0.033	-	2.5
Gainsborough St NB left/thru/right	A	8.4	0.218	-	20
Gainsborough St SB left/thru/right	A	9	0.21	-	20

Table 2-11 Build (2024) Condition Capacity Analysis Summary, Weekday a.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Unsignalized Intersections					
Huntington Avenue/Alley 820	-	-	-	-	-
Huntington Ave EB thru| thru/right	A	0.0	0.07	-	0
Alley 820 NB right	A	8.9	0.03	-	2
Alley 820/Alley 821	-	-	-	-	-
Alley 821 EB left/right	A	8.5	0.01	-	1
Alley 820 NB left/thru	A	7.2	0.00	-	0
Alley 820 SB thru/right	A	0.0	0.00	-	0
Saint Botolph Street/ Alley 822	-	-	-	-	-
St. Botolph St EB left/thru	A	0.8	0.01	-	0
St. Botolph St WB thru/right	A	0.0	0.07	-	0
Alley 822 SB left/right	A	9.1	0.04	-	3

~ 50th percentile volume exceeds capacity. Queue is maximum after two cycles.
# 95th percentile volume exceeds capacity.
m = Queue is metered from upstream signal.

Table 2-12 Build (2024) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Massachusetts Avenue/Huntington Avenue	**F**	**121.7**	**-**	**-**	**-**
Huntington Ave EB left/thru | thru/right	E	56.5	0.54	68	106
Huntington Ave WB left/thru| thru/right	D	53.7	0.52	76	116
Massachusetts Ave NB left	C	21.8	0.45	20	m16
Massachusetts Ave NB thru | thru/right	D	40.7	0.79	292	m259
Massachusetts Ave SB thru | thru/right	F	216.7	1.39	~692	#848
Massachusetts Avenue/Saint Botolph Street	**D**	**50.9**	**-**	**-**	**-**
St. Botolph St EB left	D	39.4	0.17	27	56
St. Botolph St EB thru/right	E	55.4	0.68	148	218
St. Botolph St WB left	D	51.5	0.48	56	103
St. Botolph St WB thru/right	D	39.5	0.19	40	75
Massachusetts Ave NB left/thru| thru/right	F	83.0	0.96	437	#685
Massachusetts Ave SB left	B	13.6	0.52	6	m6
Massachusetts Ave SB thru| thru/right	B	13.3	0.70	101	m42

Table 2-12 Build (2024) Condition Capacity Analysis Summary, Weekday p.m. Peak Hour (Continued)

Intersection/Approach	LOS	Delay (s)	V/C Ratio	50th Percentile Queue (ft)	95th Percentile Queue (ft)
Signalized Intersections					
Gainsborough Street/ Huntington Avenue	**B**	**13.8**	-	-	-
Huntington Ave EB left	B	12.6	0.29	23	64
Huntington Ave EB thru| thru/right	B	10.6	0.49	140	228
Huntington Ave WB left	F	82.2	0.69	41	#112
Huntington Ave WB thru| thru/right	A	5.7	0.37	81	144
Gainsborough St NB left/thru/right	D	50.2	0.68	79	134
Unsignalized Intersections					
Saint Botolph Street/ Alley 823/ Alley 820	**-**	**-**	**-**	**-**	**-**
St. Botolph St EB left/thru/right	A	0.0	0.00	-	0
St. Botolph St WB left/thru/right	A	0.4	0.01	-	1
Alley 823 NB left/thru/right	B	15.0	0.04	-	3
Alley 820 SB left/thru/right	B	14.5	0.03	-	2
Saint Botolph Street/ Gainsborough Street	-	-	-	-	-
St. Botolph St EB left/thru/right	A	8.7	0.182	-	17.5
St. Botolph St WB left/thru/right	A	9.7	0.144	-	12.5
Gainsborough St NB left/thru/right	A	9.2	0.241	-	22.5
Gainsborough St SB left/thru/right	A	10	0.295	-	30
Huntington Avenue/Alley 820	-	-	-	-	-
Huntington Ave EB thru| thru/right	A	0.0	0.08	-	0
Alley 820 NB right	A	8.9	0.01	-	1
Alley 820/Alley 821	-	-	-	-	-
Alley 821 EB left/right	A	8.7	0.01	-	1
Alley 820 NB left/thru	A	7.3	0.02	-	1
Alley 820 SB thru/right	A	0.0	0.00	-	0
Saint Botolph Street/ Alley 822	-	-	-	-	-
St. Botolph St EB left/thru	A	0.4	0.01	-	1
St. Botolph St WB thru/right	A	0.0	0.07	-	0
Alley 822 SB left/right	A	9.7	0.05	-	4

~ 50th percentile volume exceeds capacity. Queue is maximum after two cycles.
# 95th percentile volume exceeds capacity.
m = Queue is metered from upstream signal.
Grey shading indicates decrease to LOS E or F from Existing Conditions.

As shown in Table 2-11 and Table 2-12, the intersections continue to operate the same as the No-Build (2024) Condition during the Build (2024) Condition. The Project is expected to have minimal impact on the surrounding transportation network. The Project will take advantage of transit and walk/bicycle opportunities to limit the number of vehicular trips generated.

2.5 Transportation Demand Management

The Proponent is committed to implementing Transportation Demand Management (TDM) measures to minimize automobile usage and Project traffic impacts. The TDM program supports the City's efforts to reduce dependency on the automobile by encouraging travelers to use alternatives to driving alone, especially during peak periods. The Proponent is prepared to take advantage of the Project site's convenient Huntington Avenue location and transit access in marketing the development to future residential and commercial tenants.

To maintain a sustainable development over time, the Proponent will encourage the use of public transportation, ridesharing, bicycling, and walking through implementation of the demand management measures described below.

The primary alternative transportation modes to be encouraged will be public transportation, ridesharing, bicycling, and walking. The TDM measures for the Project may include, but are not limited, to the following:

- The Proponent will provide orientation packets to new residents containing information on the available transportation choices, including transit routes and schedules;
- The Proponent will designate a transportation coordinator to manage loading and service activities and provide alternative transportation materials to residents and building tenants;
- The transportation coordinator will also provide an annual (or more frequent) newsletter or bulletin summarizing transit, ridesharing, bicycling, and other travel options. The Project will have a web site that will include transportation-related information for patrons, workers, and visitors;
- The building will provide parking ratios consistent with BTD's goals;
- Posting information about public transportation and car-sharing options;
- Providing transit, bike, and pedestrian access information on the Project website;
- Encouraging future commercial tenants to provide on-site and on-line sale of MBTA passes for employees through the building management office;

- Encouraging future commercial tenants to subsidize on-site full-time employees' purchase of monthly transit passes; and

- Providing information on bus and subway routes and schedules to residents and commercial employees.

2.6 Transportation Mitigation Measures

The Proponent will continue to work with the City of Boston to create a Project that efficiently serves vehicle trips, improves the pedestrian environment, and encourages transit and bicycle use. To the extent feasible, the Proponent will bring all abutting sidewalks and pedestrian ramps to the City of Boston standards in accordance with the Boston Complete Streets design guidelines[3]. This will include the reconstruction and widening of the sidewalks where possible, the installation of new, accessible ramps, improvements to street lighting where necessary, planting of street trees, and providing bicycle storage racks surrounding the site, where appropriate.

The Proponent is responsible for preparation of the Transportation Access Plan Agreement (TAPA), a formal legal agreement between the Proponent and the BTD. The TAPA formalizes the findings of the transportation study, mitigation commitments, elements of access and physical design, travel demand management measures, and any other responsibilities that are agreed to by both the Proponent and the BTD. Because the TAPA must incorporate the results of the technical analysis, it must be executed after these other processes have been completed. The proposed measures listed above and any additional transportation improvements to be undertaken as part of this Project will be defined and documented in the TAPA.

The Proponent will also produce a Construction Management Plan (CMP) for review and approval by BTD. The CMP will detail the schedule, staging, parking, delivery, and other associated impacts of the construction of the Project.

2.7 Evaluation of Short-term Construction Impacts

Details of the overall construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes will be addressed in detail in a Construction Management Plan to be filed with BTD in accordance with the City's transportation maintenance plan requirements.

To minimize transportation impacts during the construction period, the following measures will be considered for the Construction Management Plan:

---

3 The sidewalk along the Project's Huntington Street frontage is controlled by MassDOT.

- Limited construction worker parking on-site;
- Encouragement of worker carpooling;
- Consideration of a subsidy for MBTA passes for full-time employees; and
- Providing secure spaces on-site for workers' supplies and tools so they do not have to be brought to the site each day.

The Construction Management Plan to be executed with the City prior to commencement of construction will document all committed measures.

Chapter 3.0

Environmental Review Component

3.0 ENVIRONMENTAL REVIEW COMPONENT

3.1 Wind

3.1.1 Introduction

A pedestrian wind study was conducted for the Project by Rowan Williams Davies & Irwin Inc. (RWDI) to assess the effect of the Project on local conditions in pedestrian areas around the site and provide recommendations for minimizing adverse effects, where necessary.

The study involved wind simulations on a 1:300 scale model of the proposed building and surroundings. These simulations were then conducted in RWDI's boundary-layer wind tunnel at Guelph, Ontario, for the purpose of quantifying local wind speed conditions and comparing to appropriate criteria for gauging wind comfort in pedestrian areas. The criteria recommended by the BPDA were used in this study. The following sections describe the methods and presents the results of the wind tunnel simulations.

The results of the wind analysis show that with appropriate mitigation, the effective gust criterion will be met at all locations annually.

3.1.2 Overview

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

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

3.1.3 Methodology

3.1.3.1 Test Configurations

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

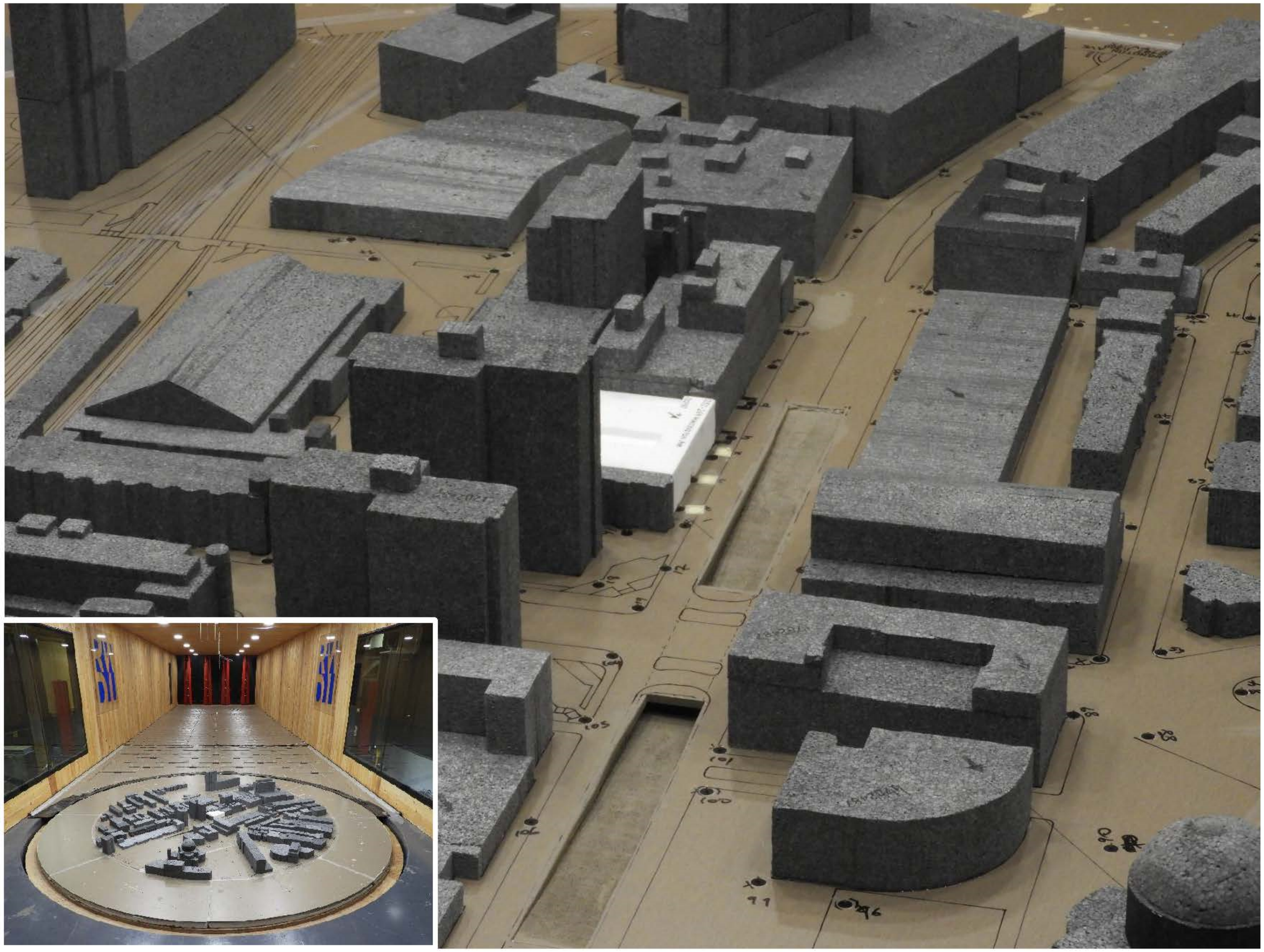
- No Build: includes the existing site and all existing surrounding and BPDA approved buildings;
- Build: includes the Project and all existing and BPDA approved surroundings; and,
- Build + Mitigation: includes the Project with a proposed porous wind screen to reduce wind speeds, and all existing and BPDA approved surroundings.

As shown in Figures 3.1-1 through 3.1-3, the wind tunnel model included the Project and all relevant surrounding buildings and topography within a 1,200-foot radius of the study site. The mean speed profile and turbulence of the natural wind approaching the modelled area were also simulated in RWDI's boundary layer wind tunnel. The scale model was equipped with 124 specially designed wind speed sensors that were connected to the wind tunnel's data acquisition system to record the mean and fluctuating components of wind speed at a full scale height of five feet above grade in pedestrian areas throughout the study site. Wind speeds were measured for 36 wind directions, in 10 degree increments, starting from true north. The measurements at each sensor location were recorded in the form of ratios of local mean and gust speeds to the reference wind speed in the free stream above the model.

3.1.3.2 Meteorological Data

The results were then combined with long term meteorological data, recorded during the years 1991 to 2016 at Boston's Logan International Airport, in order to predict full scale wind conditions. The analysis was performed separately for each of the four seasons and for the entire year.

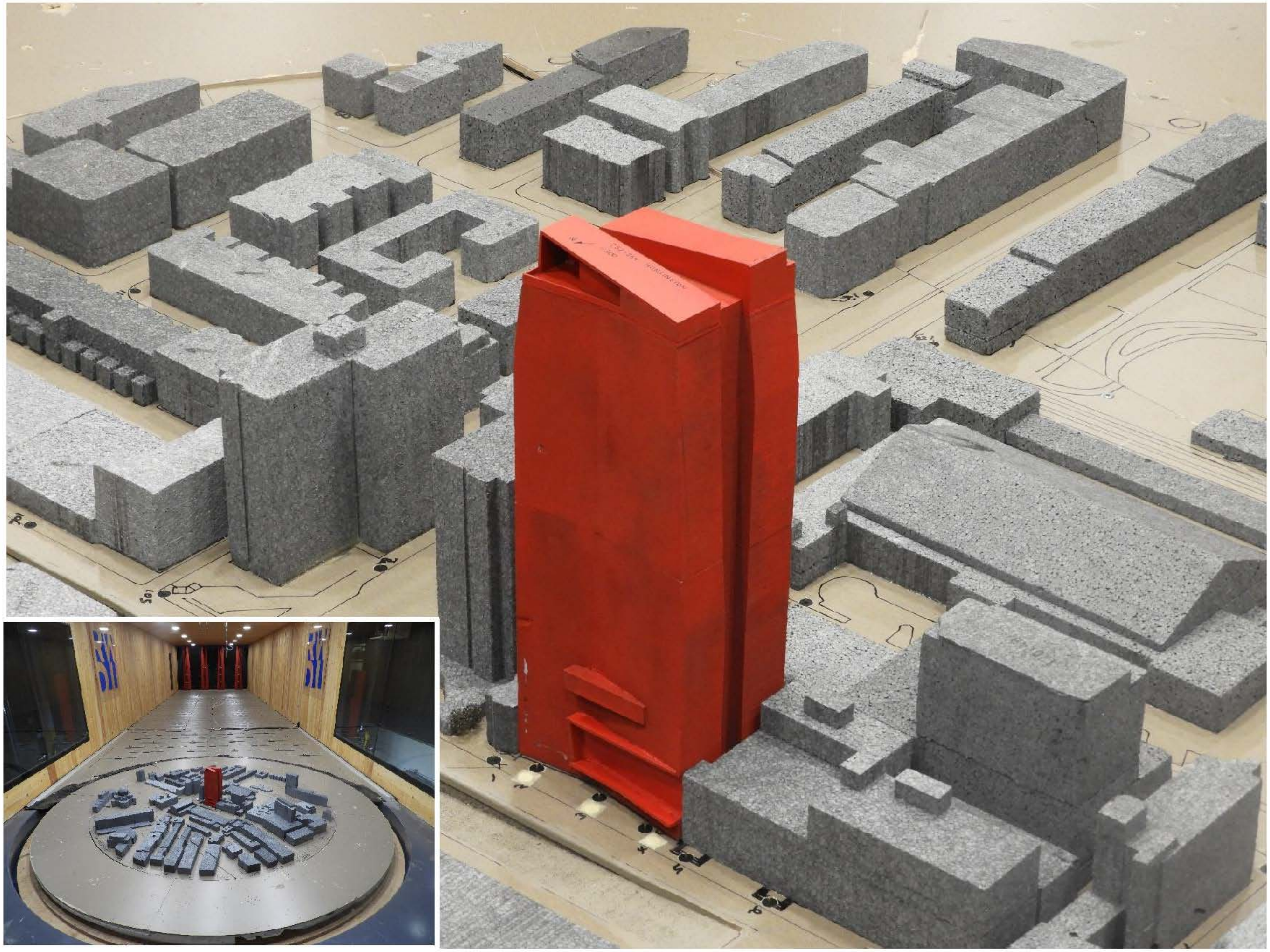
Figures 3.1-4 through 3.1-6 present "wind roses", summarizing the seasonal and annual wind climates in the Boston area, based on the data from Logan Airport. The first wind rose in Figure 3.1-4, for example, summarizes the spring (March, April, and May) wind data. Although the prevailing wind directions change throughout the year from season to season, winds from the easterly, southwesterly and west-northwesterly directions tend to be the most frequent throughout the year. Strong winds (speeds greater than 20 mph, shown by the red bands in the wind rose diagrams) are most frequent during the winter (12.8% of the time). Strong winter winds are most frequently from the southwest and west through northwest. On an annual basis (Figure 3.1-6) the most common wind directions are those



252-264 Huntington Avenue   Boston, Massachusetts

Figure 3.1-1

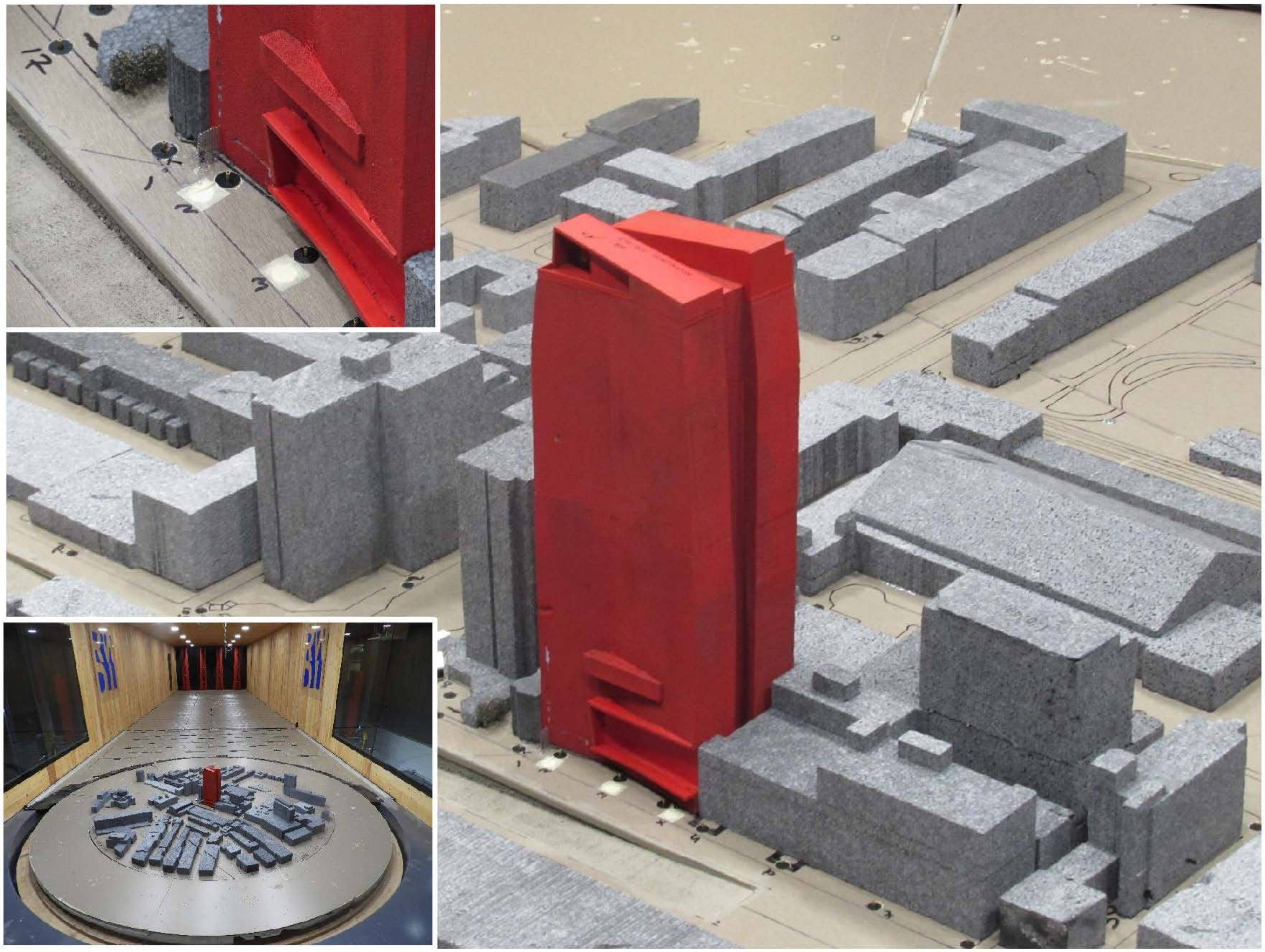
Wind Tunnel Study Model – No Build



252-264 Huntington Avenue Boston, Massachusetts

Figure 3.1-2

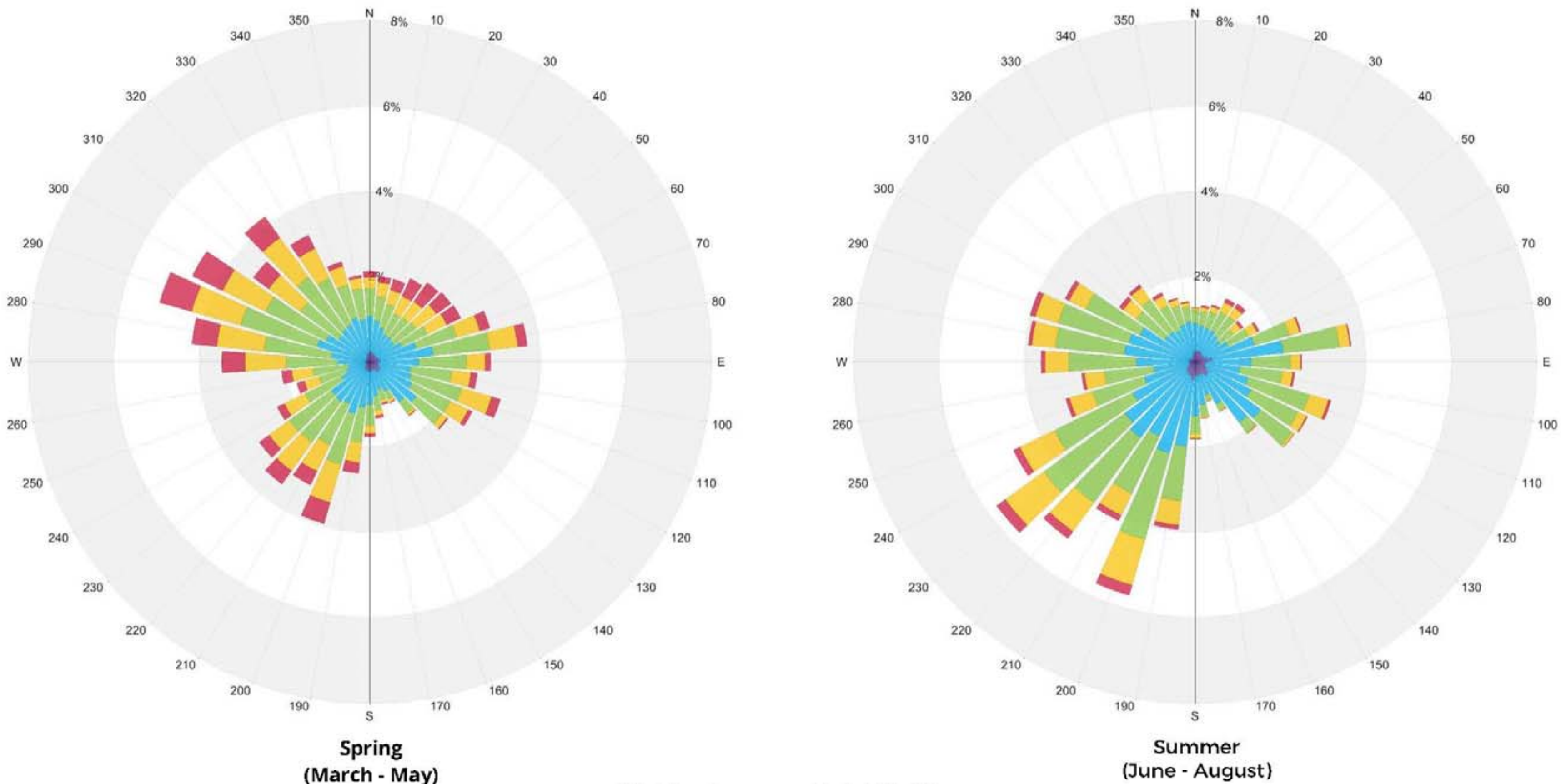
Wind Tunnel Study Model – Build



252-264 Huntington Avenue   Boston, Massachusetts

Figure 3.1-3

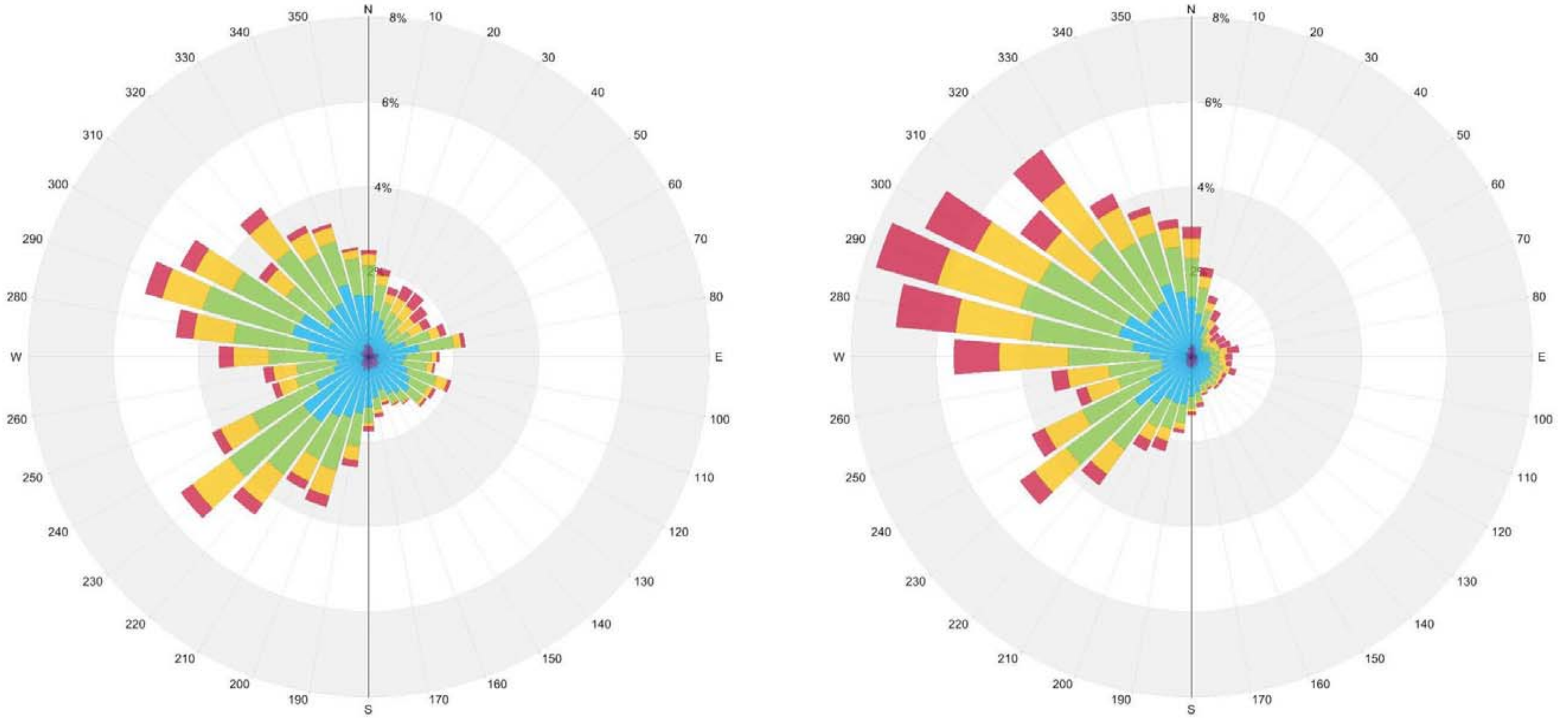
Wind Tunnel Study Model – Build + Mitigation



Wind Speed (mph)	Probability (%) Spring	Probability (%) Summer
Calm	2.4	2.7
1-5	6.4	8.9
6-10	28.5	38.1
11-15	32.9	35.1
16-20	19.7	12.6
>20	10.2	2.7

Figure 3.1-4

Directional Distribution (%) of Winds (Blowing From) Boston Logan International Airport (1991-2016)



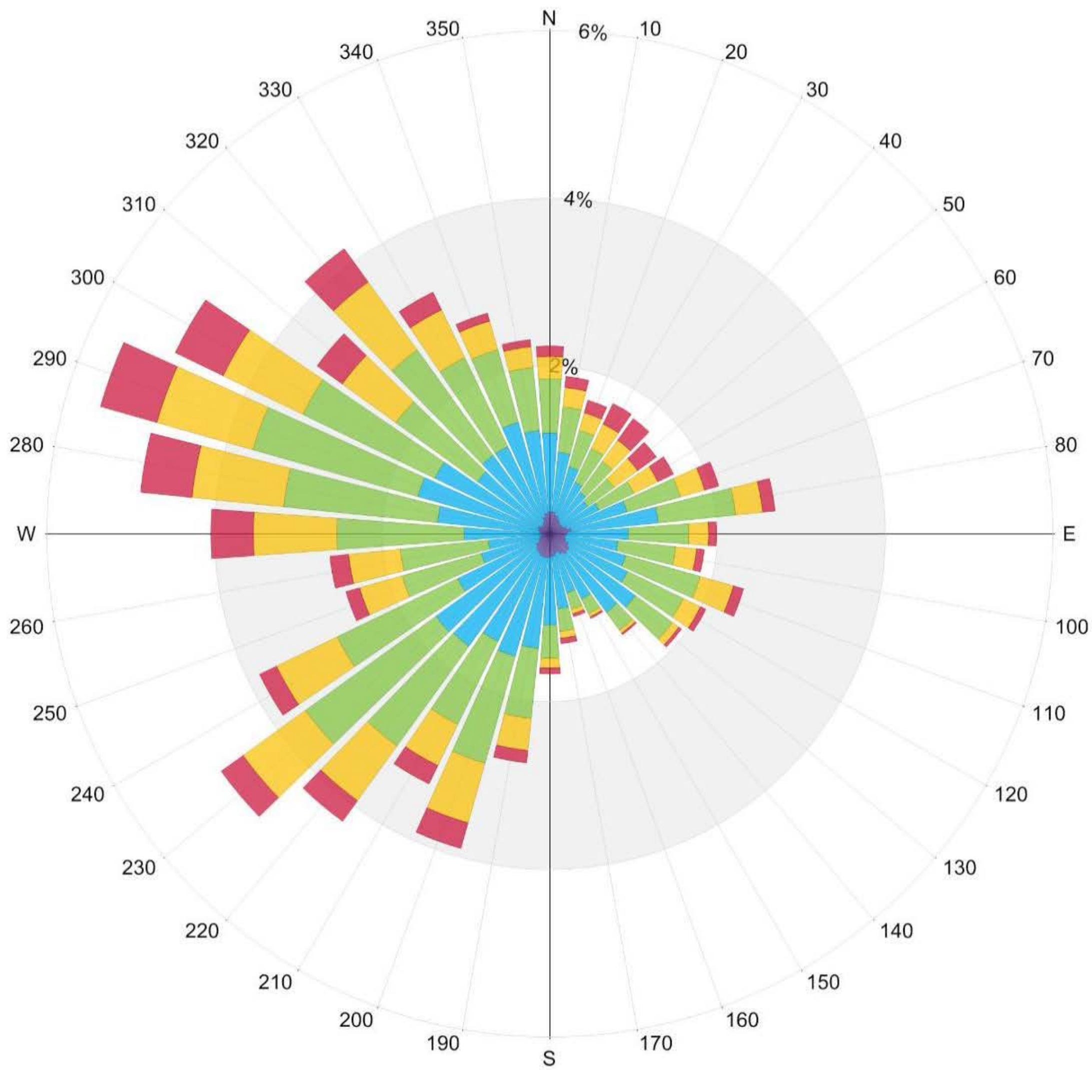
Fall
(September - November)

Winter
(December - February)

Wind Speed (mph)	Probability (%) Fall	Probability (%) Winter
Calm	2.9	2.3
1-5	8.0	6.2
6-10	34.3	27.6
11-15	32.8	31.0
16-20	15.3	20.1
>20	6.7	12.8

Figure 3.1-5

Directional Distribution (%) of Winds (Blowing From) Boston Logan International Airport (1991-2016)



Wind Speed (mph)	Probability (%)
Calm	2.6
1-5	7.4
6-10	32.1
11-15	33.0
16-20	16.9
>20	8.1

Annual Winds

Figure 3.1-6

Directional Distribution (%) of Winds (Blowing From) Boston Logan International Airport (1991-2016)

between south-southwest and northwest. Winds from the east and east-southeast are also relatively common. In the case of strong winds, winds from the southwesterly and west-northwesterly direction are most common, with winds from the north-easterly directions also being relatively frequent.

This study involved state of the art measurement and analysis techniques to predict wind conditions at the study site. Nevertheless, some uncertainty remains in predicting wind comfort. For example, the sensation of comfort among individuals can be quite variable. Variations in age, individual health, clothing, and other human factors can change a particular response of an individual. The comfort limits used in this report represent an average for the total population. Also, unforeseen changes in the Project area, such as the construction or removal of buildings, can affect the conditions experienced at the site. Finally, the prediction of wind speeds is necessarily a statistical procedure. The wind speeds reported are for the frequency of occurrence stated in Section 3.1.4. Higher wind speeds will occur but on a less frequent basis.

3.1.4 BPDA Wind Criteria

The BPDA has adopted two standards for assessing the relative wind comfort of pedestrians. First, the BPDA wind design guidance criterion states that an effective gust velocity (hourly mean wind speed +1.5 times the root mean square wind speed) of 31 mph should not be exceeded more than one percent of the time. The second set of criteria used by the BPDA to determine the acceptability of specific locations is based on the work of Melbourne[1]. This set of criteria is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing, or walking. The criteria are expressed in terms of benchmarks for the one-hour mean wind speed exceeded 1% of the time (i.e., the 99-percentile mean wind speed). They are presented in Table 3.1-1.

Table 3.1-1 Boston Planning and Development Agency Mean Wind Criteria*

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

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

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

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

3.1.5 Predicted Wind Conditions

Figures 3.1-7 through 3.1-12 graphically depict the mean and gust wind conditions at each wind measurement location based on the annual winds only. Appendix D presents the mean and effective gust wind speeds for each season, as well as those on an annual basis. Typically, the summer and fall winds tend to be more comfortable than the annual winds, while the winter and spring winds are less comfortable than the annual winds. The following summary of pedestrian wind comfort is based on the annual winds for each configuration tested, except where noted below in the text.

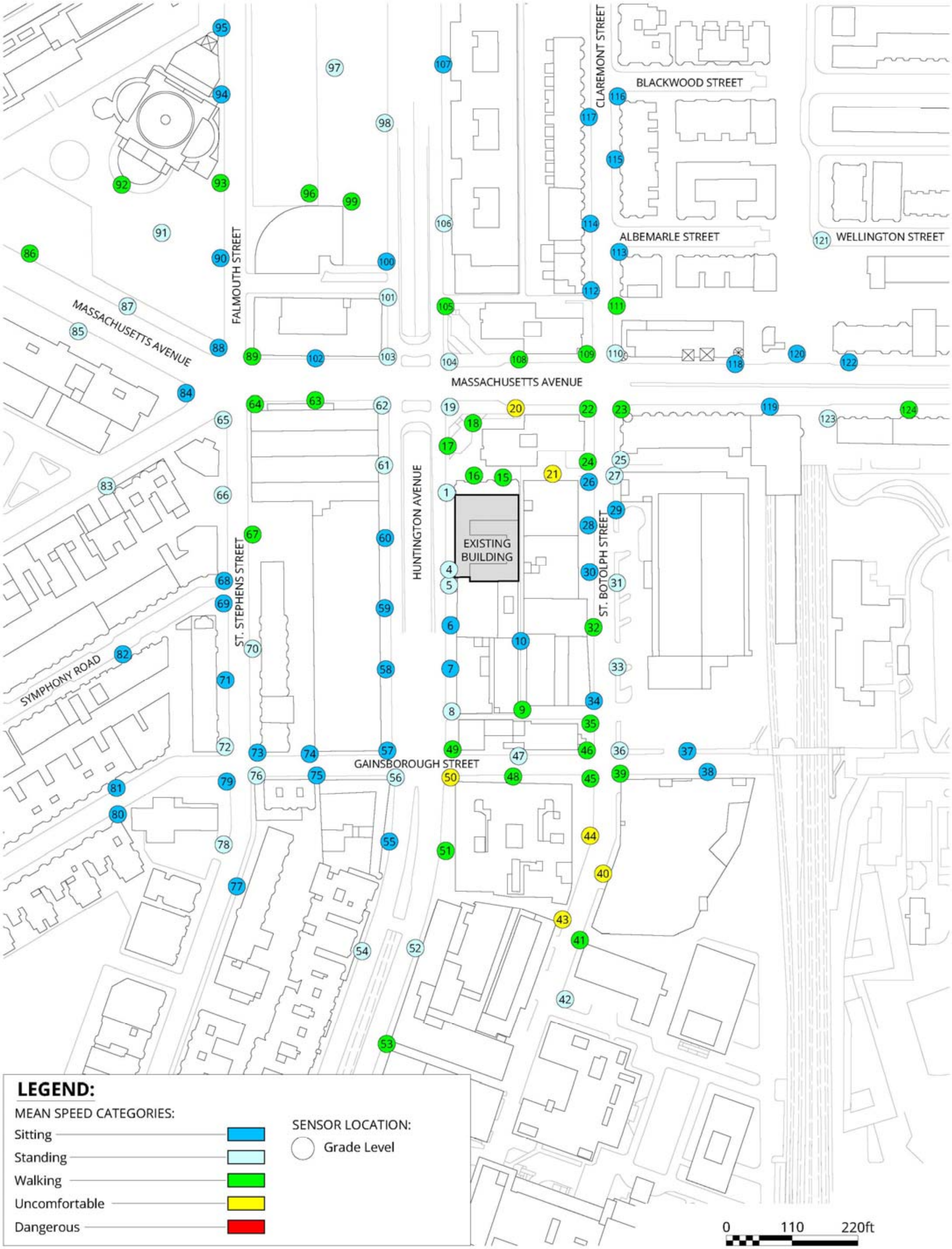
3.1.5.1 No Build

In the No Build configuration, appropriate wind comfort conditions exist at most locations on and around the Project site on an annual basis (Figure 3.1-7). Uncomfortable wind conditions exist at localized on and offsite locations such as Public Alley 820 to the northeast of the Project site, a localized area along Massachusetts Avenue and along Gainsborough Street, as well as a few locations along St. Botolph Street to the south of the site annually (Locations 20, 21, 40, 43 ,44 and 50).

For the No Build configuration, the effective gust speed criterion is met at all locations annually (Figure 3.1-10). While marginal exceedances of the effective gust speed criterion exist at a localized location along Massachusetts Avenue and the southeast corner of Gainsborough and Huntington Avenue (Location 20 and 50 in Appendix D).

3.1.5.2 Build

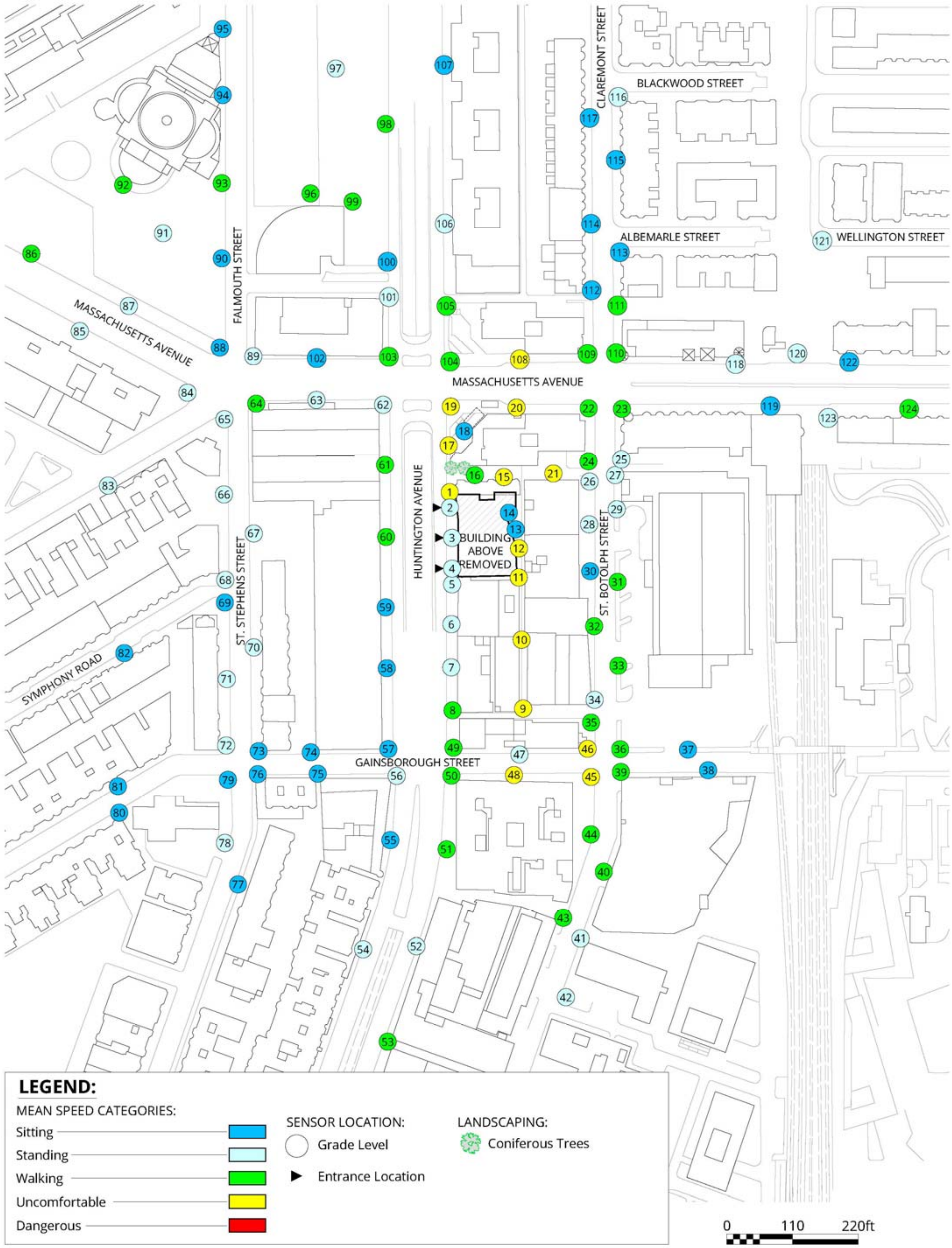
With the addition of the Project to the site, increased wind speeds are generally expected at areas close to the Project, while conditions at the off-site locations are expected to remain similar to the No Build configuration. Wind conditions at the main entrances to the Project are expected to be comfortable for standing annually, which is appropriate for the intended use (Locations 2, 3 and 4 in Figure 3.1-8). New uncomfortable wind conditions are expected at several locations along Massachusetts Avenue, Huntington Avenue, Gainsborough Street, Public Alley 820, and Public Alley 821 on an annual basis (Locations 1, 9 through 12, 15, 17, 19, 45, 46, 48 and 108). Wind conditions at several locations along St. Botolph Street and Gainsborough Street are expected to improve on an annual basis from uncomfortable to comfortable for walking (Locations 40, 43, 44, and 50).



252-264 Huntington Avenue Boston, Massachusetts

Figure 3.1-7

Pedestrian Wind Conditions – Mean Speed – No-Build



252-264 Huntington Avenue **Boston, Massachusetts**

Figure 3.1-8

Pedestrian Wind Conditions – Mean Speed – Build

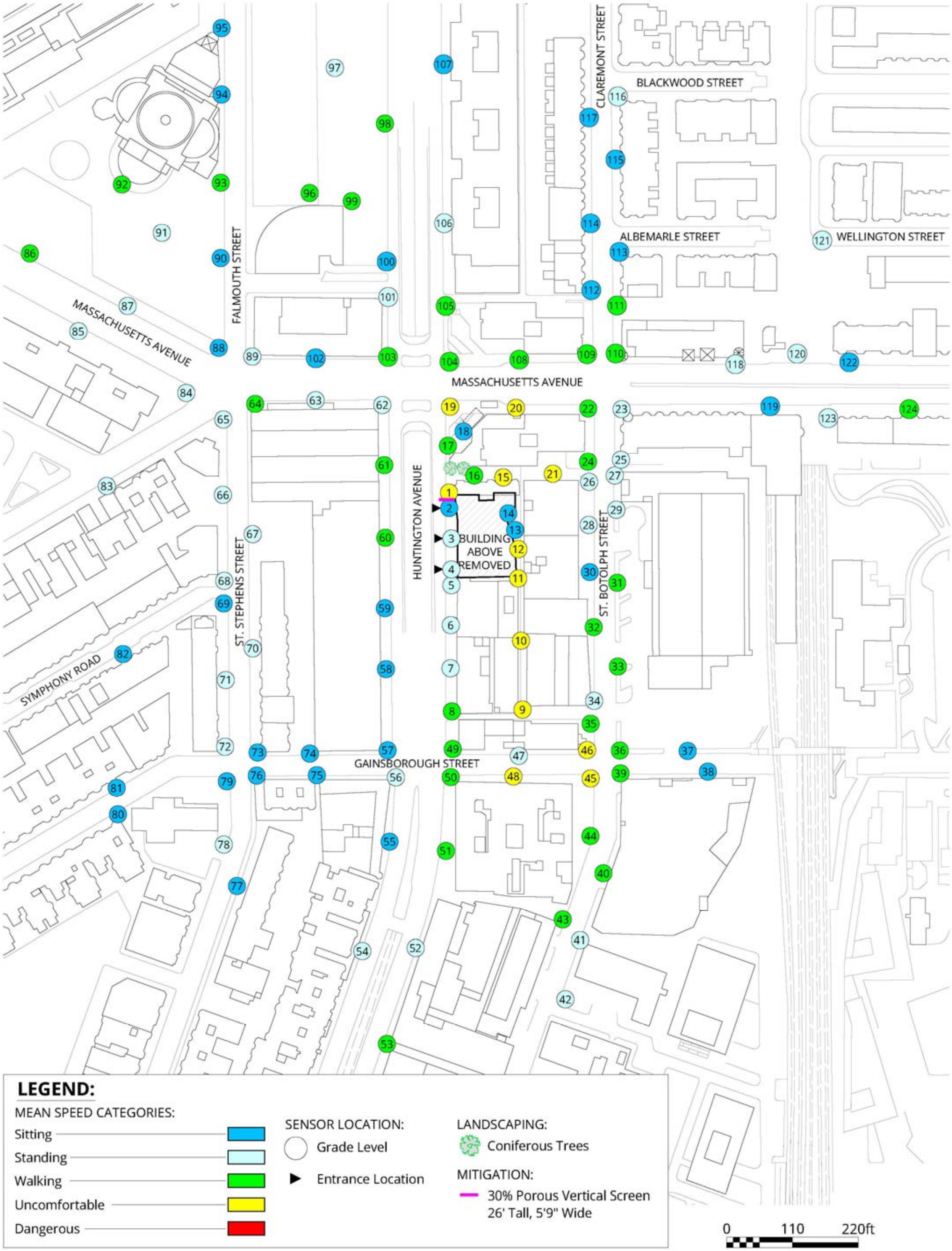


Figure 3.1-9

Pedestrian Wind Conditions – Mean Speed – Build + Mitigation

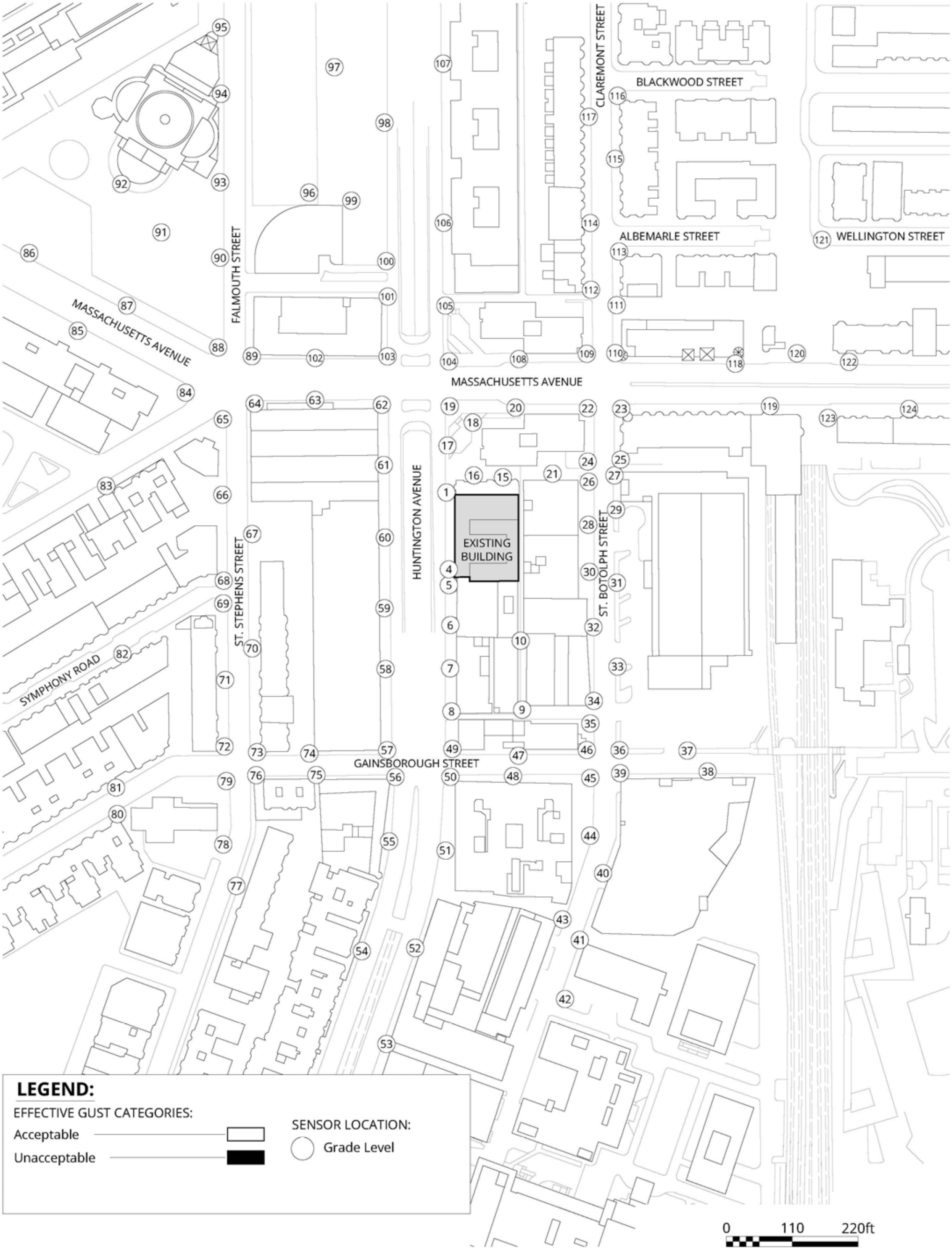
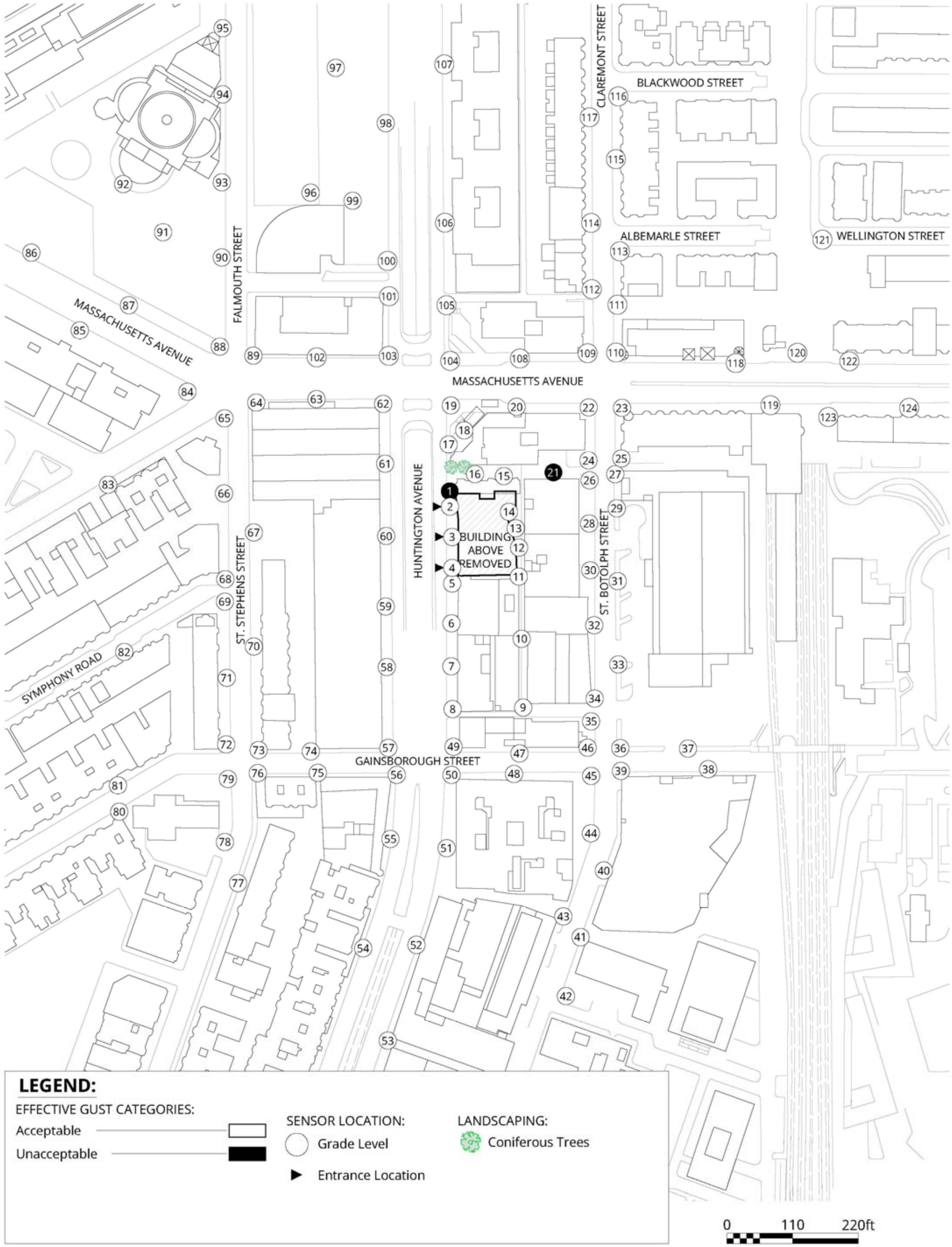


Figure 3.1-10

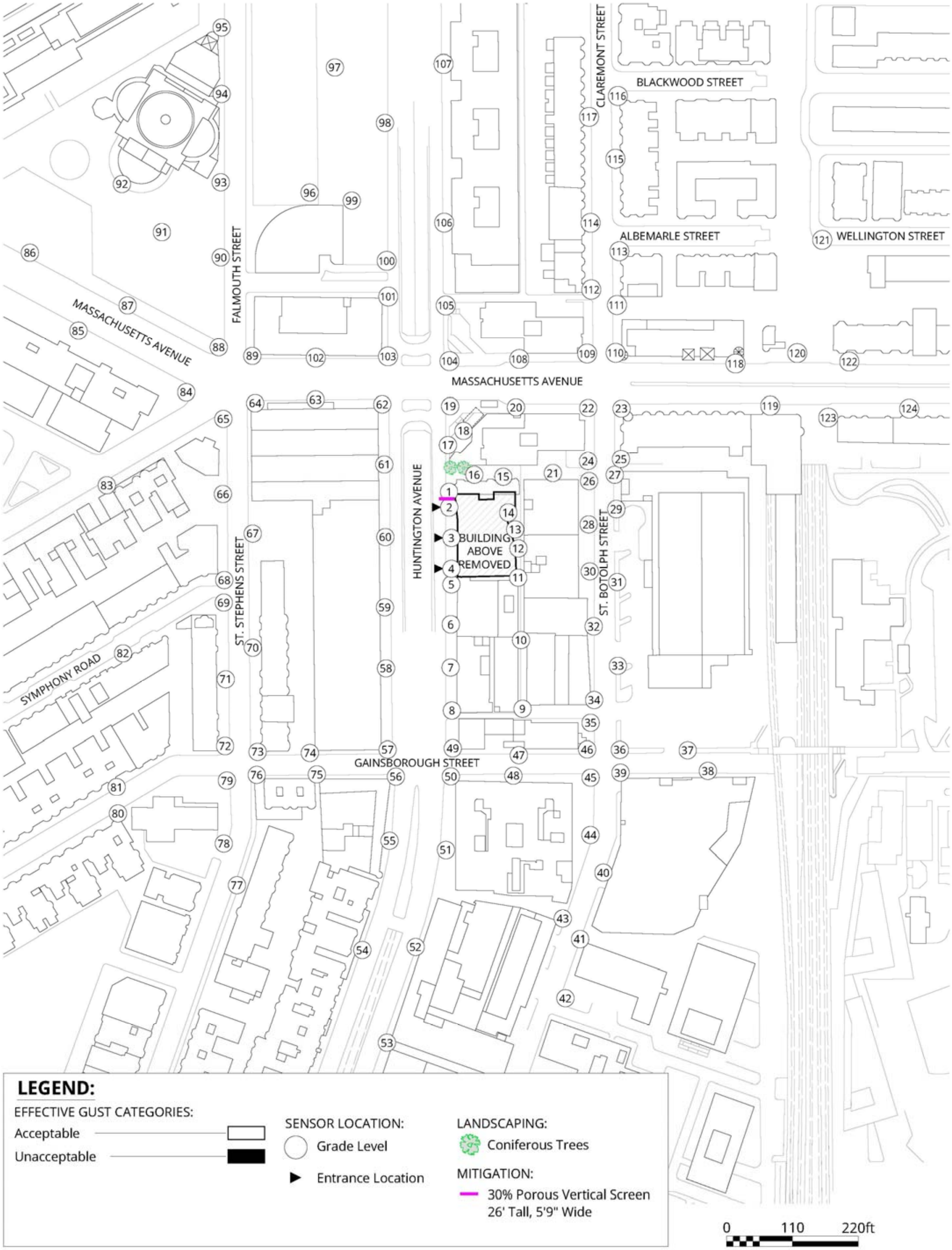
Pedestrian Wind Conditions – Effective Gust Speed – No-Build



252-264 Huntington Avenue Boston, Massachusetts

Figure 3.1-11

Pedestrian Wind Conditions – Effective Gust Speed – Build



252-264 Huntington Avenue Boston, Massachusetts

Figure 3.1-12

Pedestrian Wind Conditions – Effective Gust Speed – Build + Mitigation

Winds at two locations along Huntington Avenue and along the alleyway to the north of the Project site are predicted to exceed the effective gust speed criterion during the winter and on an annual basis (Locations 1 and 21 in Figure 3.1-11). Marginal exceedances of the effective gust speed criterion are also expected at Locations 11, 15, 17, 19 and 20, and 22 during the winter (Appendix D).

3.1.5.3 Build with Mitigation

To improve the mean and effective gust wind speeds at the northwest corner of the Project, selected mitigation options were evaluated in RWDI's boundary layer wind tunnel facility. The tested mitigation options were selected based on consultations with the design team. Based on the result of the tests and subsequent analysis, the addition of a 30% porous wind screen (29″ tall and 5′9″ wide) to the northwest corner of the Project site was found to be most effective at improving the wind conditions at the northwest corner of the site. With the addition of the proposed porous wind screen, the mean wind speeds on and around the site are generally expected to improve at several locations compared to the Build configuration, eliminating uncomfortable wind conditions at Locations 17 and 108 (Figure 3.1-9). The effective gust speed criterion is also predicted to improve compared to the Build configuration, and will be met at all locations annually (Figure 3.1-12), while marginal exceedances are expected at Locations 1, 11, 20 and 21 during the winter (Appendix D).

3.1.6 Conclusion

The wind analysis shows that with the addition of the Project to the site, increased wind speeds are generally expected at areas close to the Project, while conditions at the off-site locations are expected to remain similar to the No Build configuration. However, the addition of a 30% porous wind screen to the northwest corner of the Project site will improve conditions compared to the Build configuration. Under both the No Build and the Build with Mitigation configurations, the effective gust criterion was met annually at all locations.

3.2 Shadow

3.2.1 Introduction and Methodology

As typically required by the BPDA, 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. 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, 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 shadow from the Project are provided in Figures 3.2-1 to 3.2-14 at the end of this section.

3.2.2 Vernal Equinox (March 21)

At 9:00 a.m. during the vernal equinox, new shadow from the Project will be cast to the northwest onto and across Huntington Avenue and its sidewalks, and onto Symphony Road and its northern sidewalk. No new shadow will be cast onto nearby bus stops or public open spaces.

At 12:00 p.m., new shadow from the Project will be cast to the north onto and across Huntington Avenue and its sidewalks, and onto the Huntington Avenue at Massachusetts Avenue bus stop. No new shadow will be cast onto nearby public open spaces.

At 3:00 p.m., new shadow from the Project will be cast to the northeast onto Massachusetts Avenue and its sidewalks. No new shadow will be cast onto nearby bus stops or public open spaces.

3.2.3 Summer Solstice (June 21)

At 9:00 a.m. during the summer solstice, new shadow from the Project will be cast to the west onto and across Huntington Avenue and its sidewalks. No new shadow will be cast onto nearby bus stops or public open spaces.

At 12:00 p.m., new shadow from the Project will be cast to the northwest onto Huntington Avenue and its sidewalks. No new shadow will be cast onto nearby bus stops or public open spaces.

At 3:00 p.m., new shadow from the Project will be cast to the northeast. No new shadow will be cast onto nearby streets, sidewalks, bus stops, or public open spaces.

At 6:00 p.m., new shadow from the Project will be cast to the east onto Massachusetts Avenue and its northern sidewalk, and onto a small portion of the Southwest Corridor Path. No new shadow will be cast onto nearby bus stops.

3.2.4 Autumnal Equinox (September 21)

At 9:00 a.m., new shadow from the Project will be cast to the northwest onto Huntington Avenue and its sidewalks, and onto Symphony Road and its northern sidewalk. No new shadow will be cast onto nearby bus stops or public open spaces.

At 12:00 p.m., new shadow from the Project will be cast to the north onto Huntington Avenue and its sidewalks, a small portion of Massachusetts Avenue and its southern sidewalk, and onto the Huntington Avenue at Massachusetts Avenue bus stop. No new shadow will be cast onto nearby public open spaces.

At 3:00 p.m., new shadow from the Project will be cast to the northeast onto Massachusetts Avenue and its sidewalks. No new shadow will be cast onto nearby bus stops or public open spaces.

At 6:00 p.m., most of the area will be under existing shadow. No new shadow will be cast onto nearby streets, sidewalks, bus stops, or public open spaces.

3.2.5 Winter Solstice (December 21)

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

At 9:00 a.m., new shadow from the Project will be cast to the northwest onto Edgerly Road and its western sidewalk, and onto New Edgerly Road and its sidewalks. No new shadow will be cast onto nearby bus stops or public open spaces.

At 12:00 p.m., new shadow will be cast to the north onto Huntington Avenue and its sidewalks, Massachusetts Avenue and its sidewalks, and onto the Huntington Avenue at Massachusetts Avenue bus stop. New shadow will be cast onto a small portion of the Christian Science Plaza.

At 3:00 p.m., much of the area is under existing shadow. No new shadow will be cast onto nearby streets, sidewalks, bus stops, or public open spaces.

3.2.6 Conclusions

The shadow impact analysis looked at net new shadow created by the Project during fourteen time periods. During twelve of the time periods studied, the Project will not cast new shadow on public open spaces. The Project will cast new shadow on the Southwest Corridor Path during one time period (June 21 at 6:00 p.m.) and on the Christian Science Plaza during one time period (December 21 at 12:00 p.m.). New shadow will not be cast onto any bus stops during 11 of the time periods studied. The Huntington Avenue at Massachusetts Avenue bus stop will receive new shadow during only three of the time periods studied (March 21, September 21, and December 21 at 12:00 p.m.).

3.3 Daylight Analysis

3.3.1 Introduction

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

Since the Project site currently consists of several low-rise buildings, the proposed Project will increase daylight obstruction from the existing condition; however, the resulting conditions will be within the range of the daylight obstruction values of the context points in the area and lower than in other urban areas.

3.3.2 Methodology

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

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

The analysis compares three conditions: Existing Conditions; Proposed Conditions; and the context of the area.

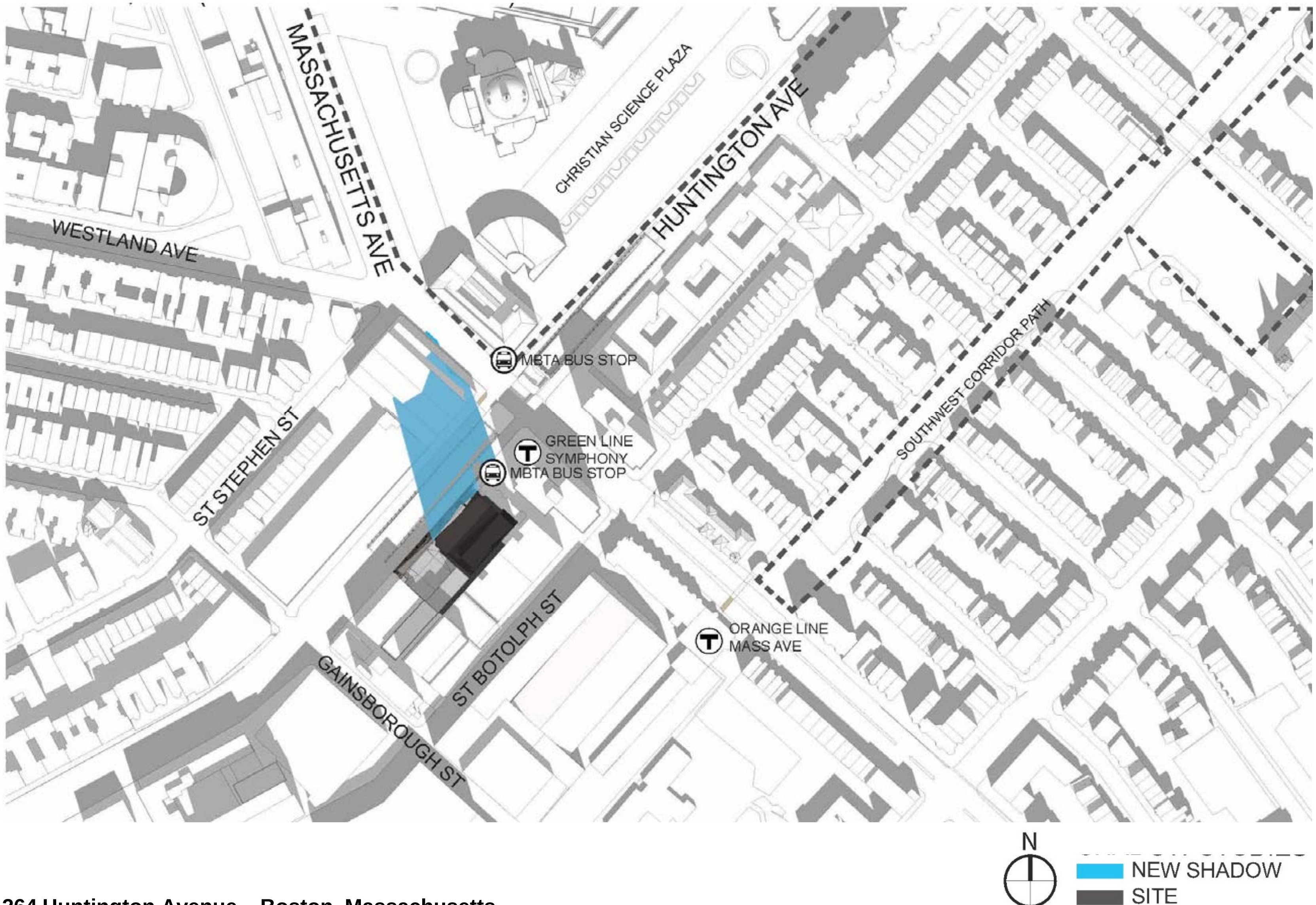
---

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

252-264 Huntington Avenue Boston, Massachusetts

Figure 3.2-1

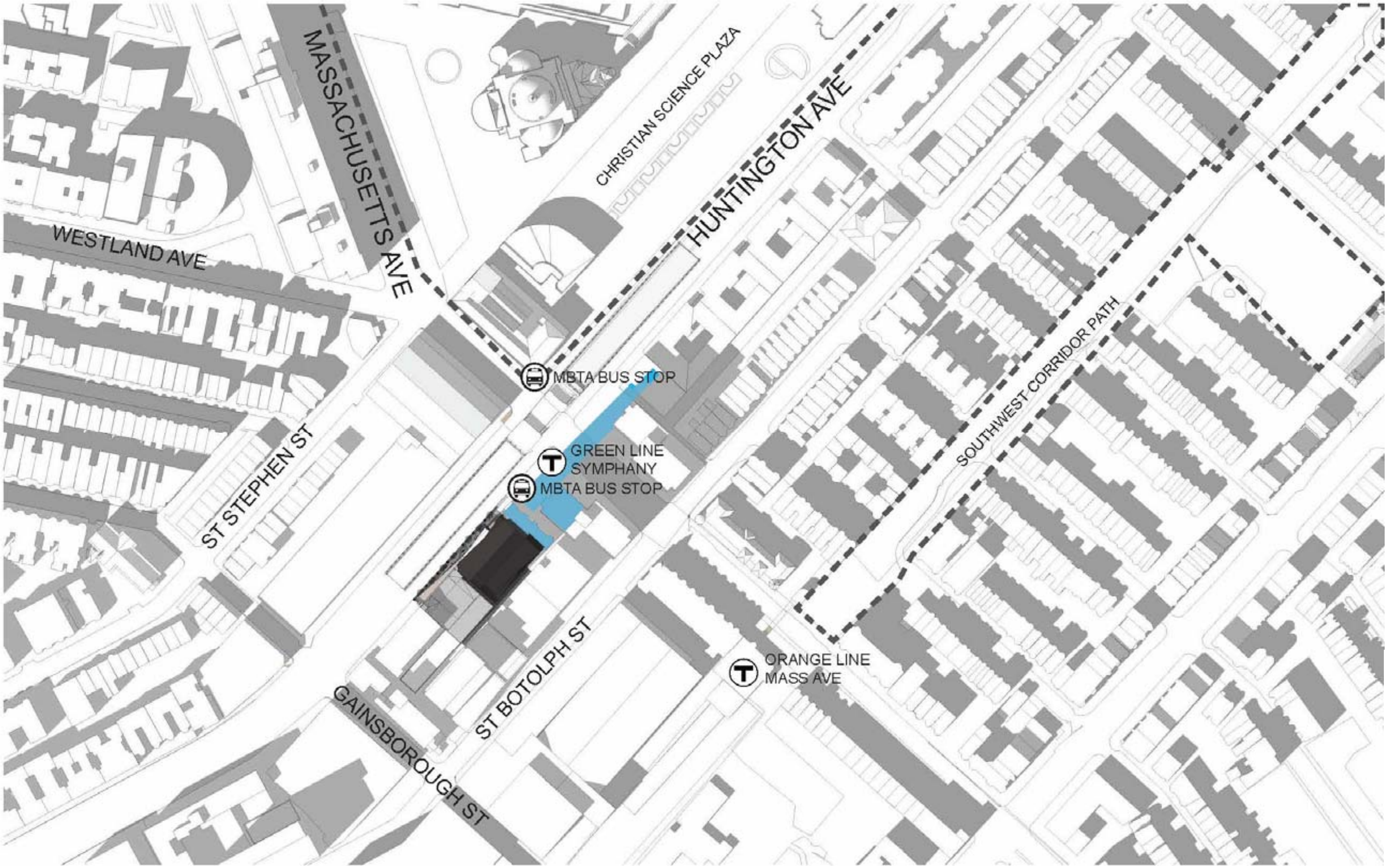
Shadow Study: March 21, 9:00 a.m.



252-264 Huntington Avenue Boston, Massachusetts

Figure 3.2-2

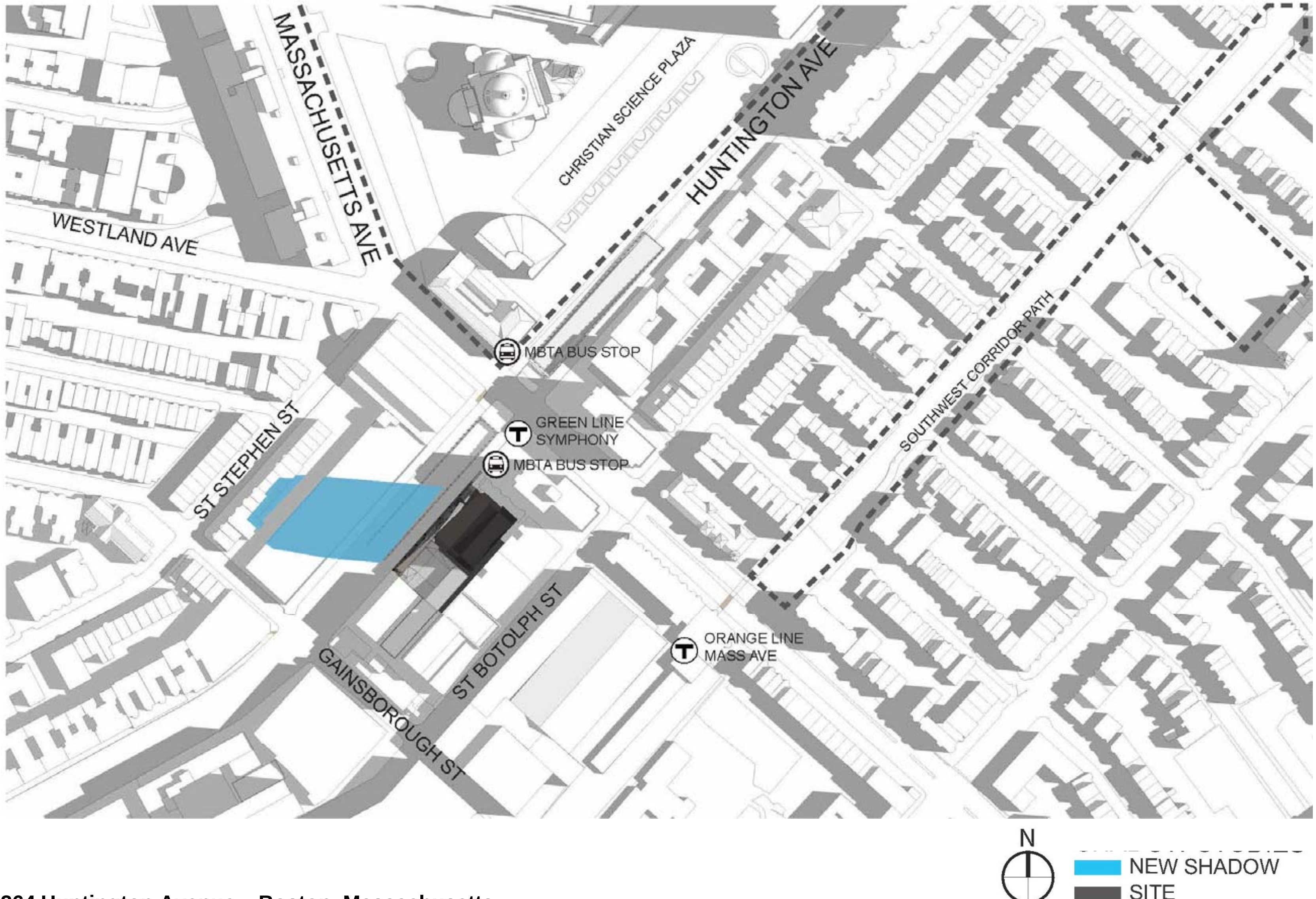
Shadow Study: March 21, 12:00 p.m.



252-264 Huntington Avenue   Boston, Massachusetts

Figure 3.2-3

Shadow Study: March 21, 3:00 p.m.



252-264 Huntington Avenue   Boston, Massachusetts

Figure 3.2-4

Shadow Study: June 21, 9:00 a.m.

252-264 Huntington Avenue Boston, Massachusetts

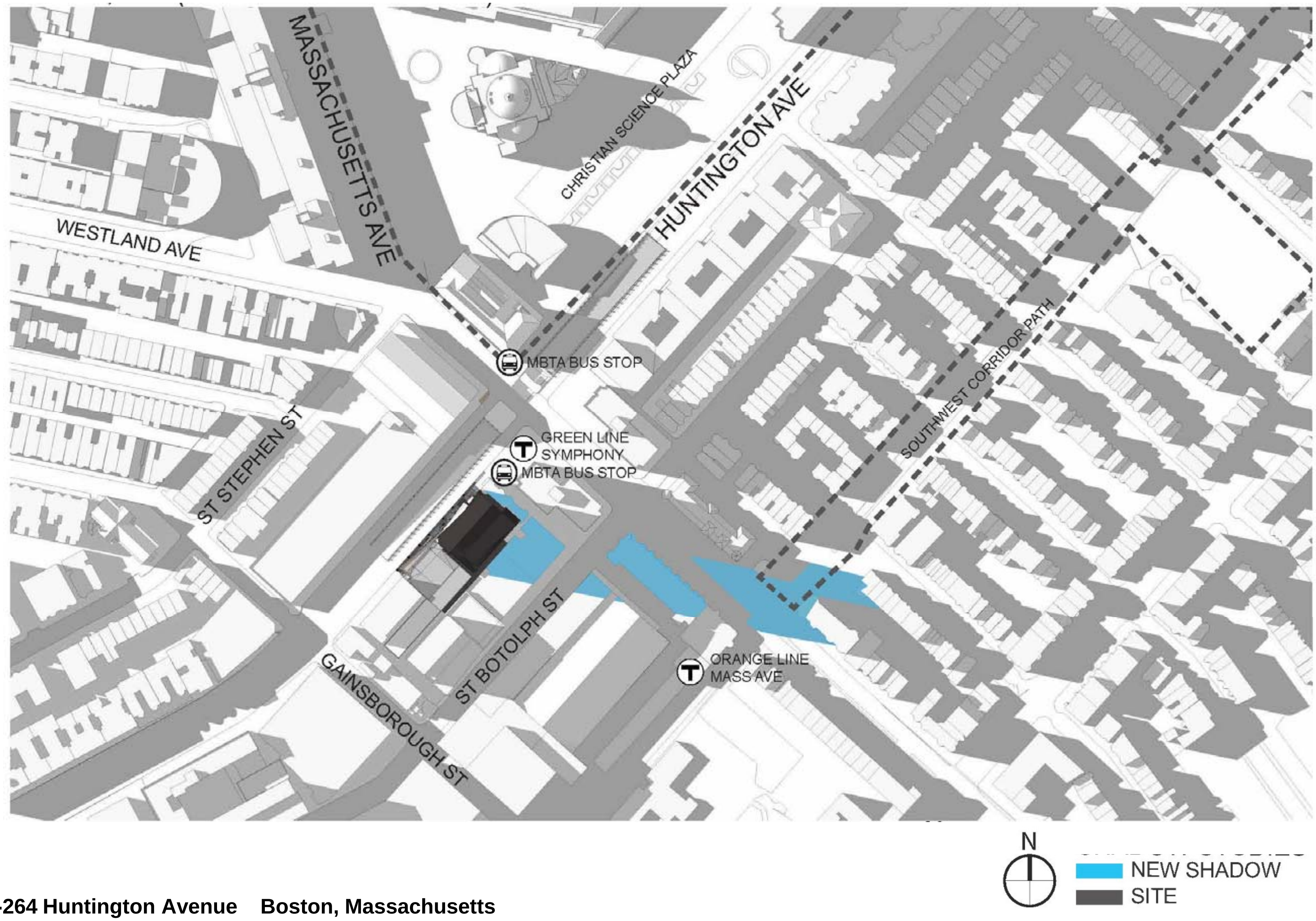
Figure 3.2-5

Shadow Study: June 21, 12:00 p.m.

252-264 Huntington Avenue Boston, Massachusetts

Figure 3.2-6

Shadow Study: June 21, 3:00 p.m.



252-264 Huntington Avenue Boston, Massachusetts

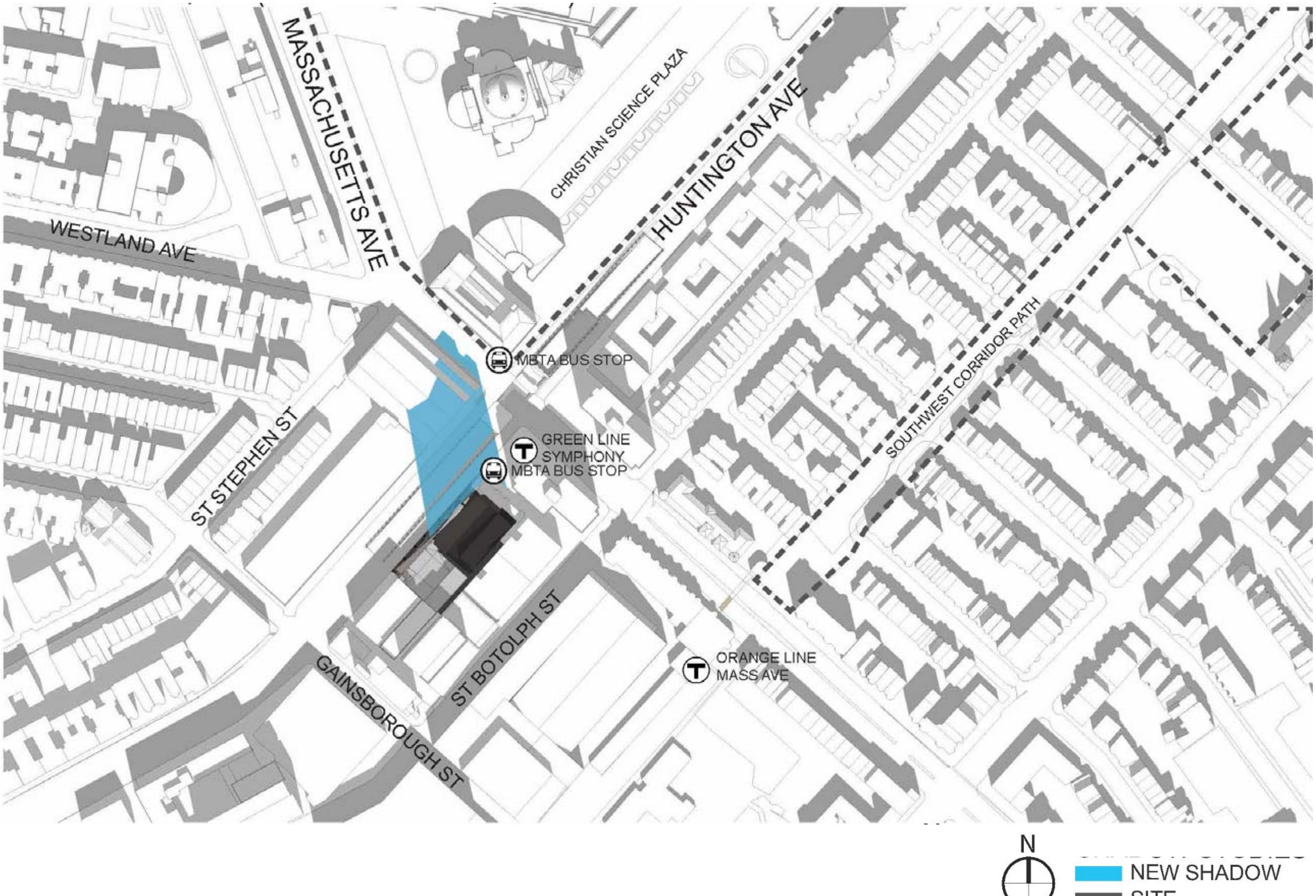
Figure 3.2-7

Shadow Study: June 21, 6:00 p.m.

252-264 Huntington Avenue   Boston, Massachusetts

Figure 3.2-8

Shadow Study: September 21, 9:00 a.m.

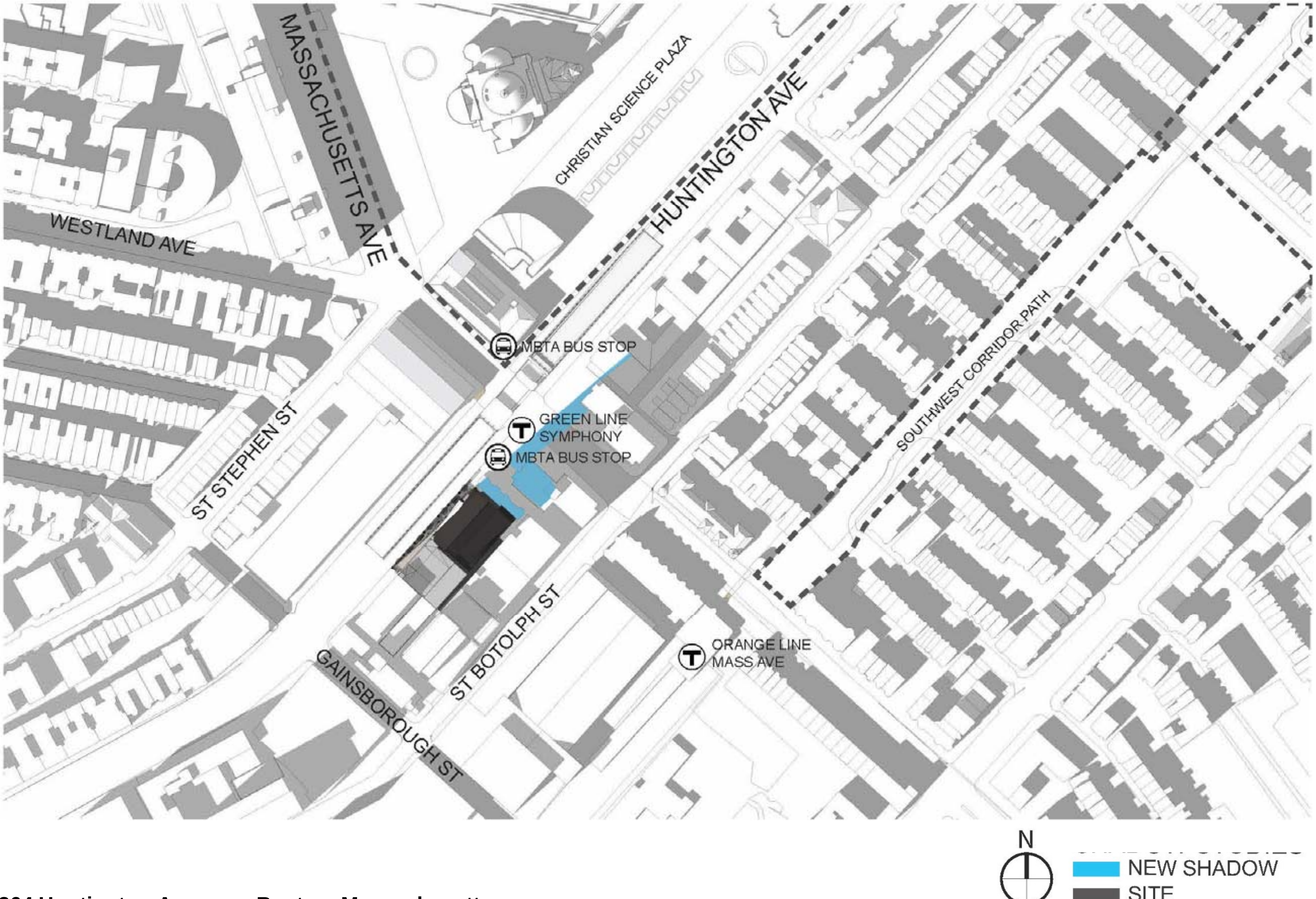


252-264 Huntington Avenue Boston, Massachusetts

Stantec

Figure 3.2-9

Shadow Study: September 21, 12:00 p.m.



252-264 Huntington Avenue Boston, Massachusetts

Figure 3.2-10

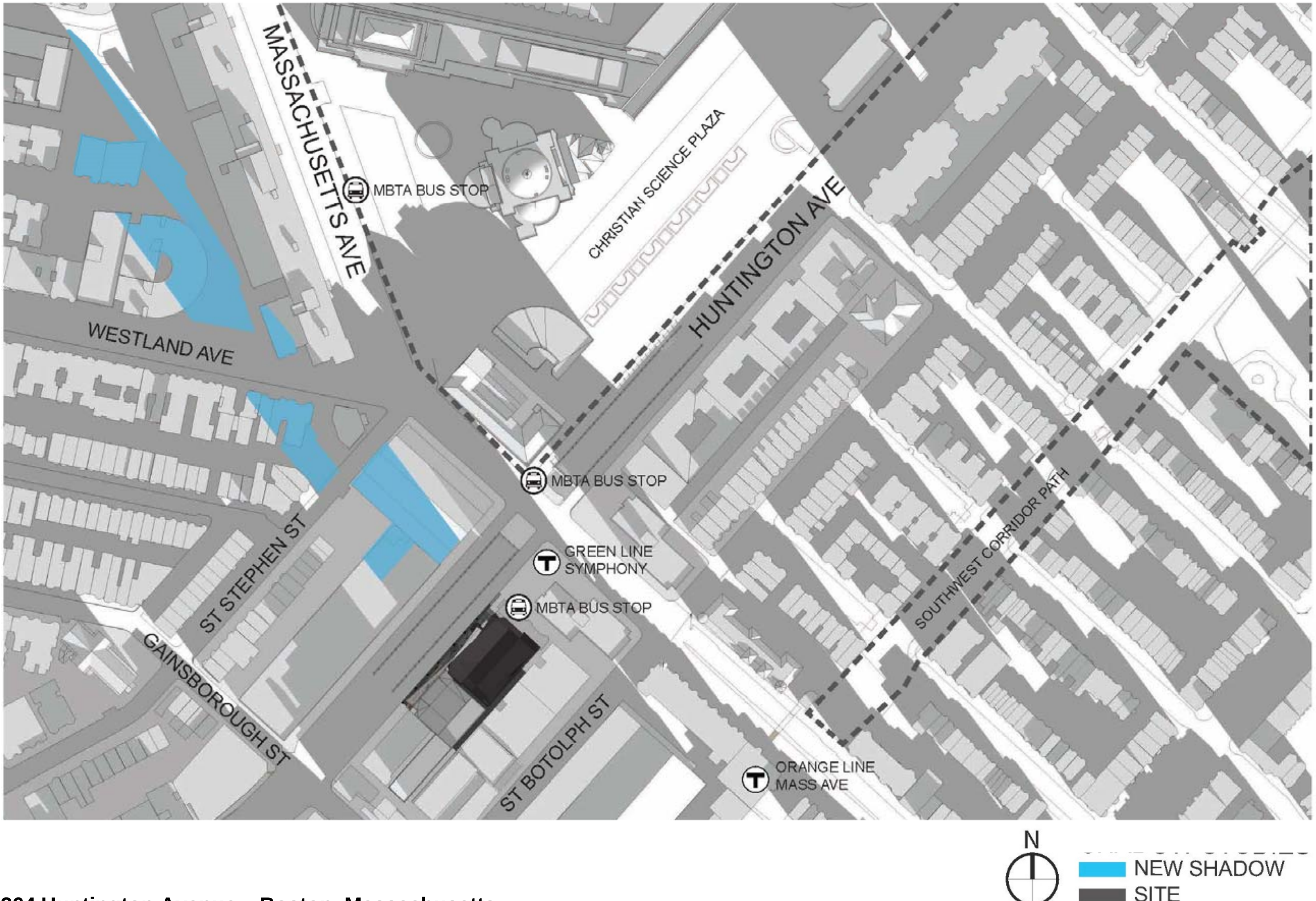
Shadow Study: September 21, 3:00 p.m.

252-264 Huntington Avenue Boston, Massachusetts

Stantec

Figure 3.2-11

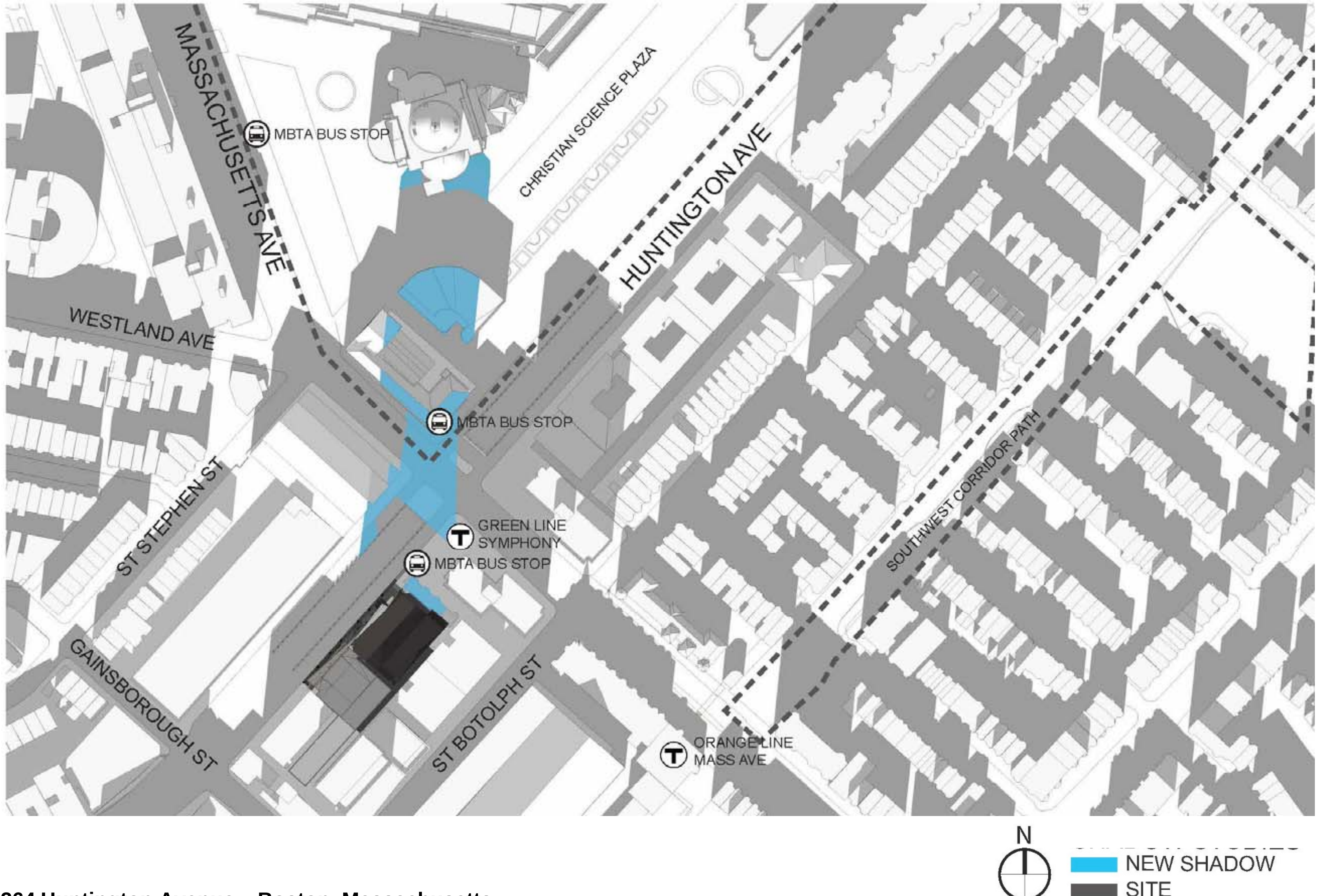
Shadow Study: September 21, 6:00 p.m.



252-264 Huntington Avenue   Boston, Massachusetts

Figure 3.2-12

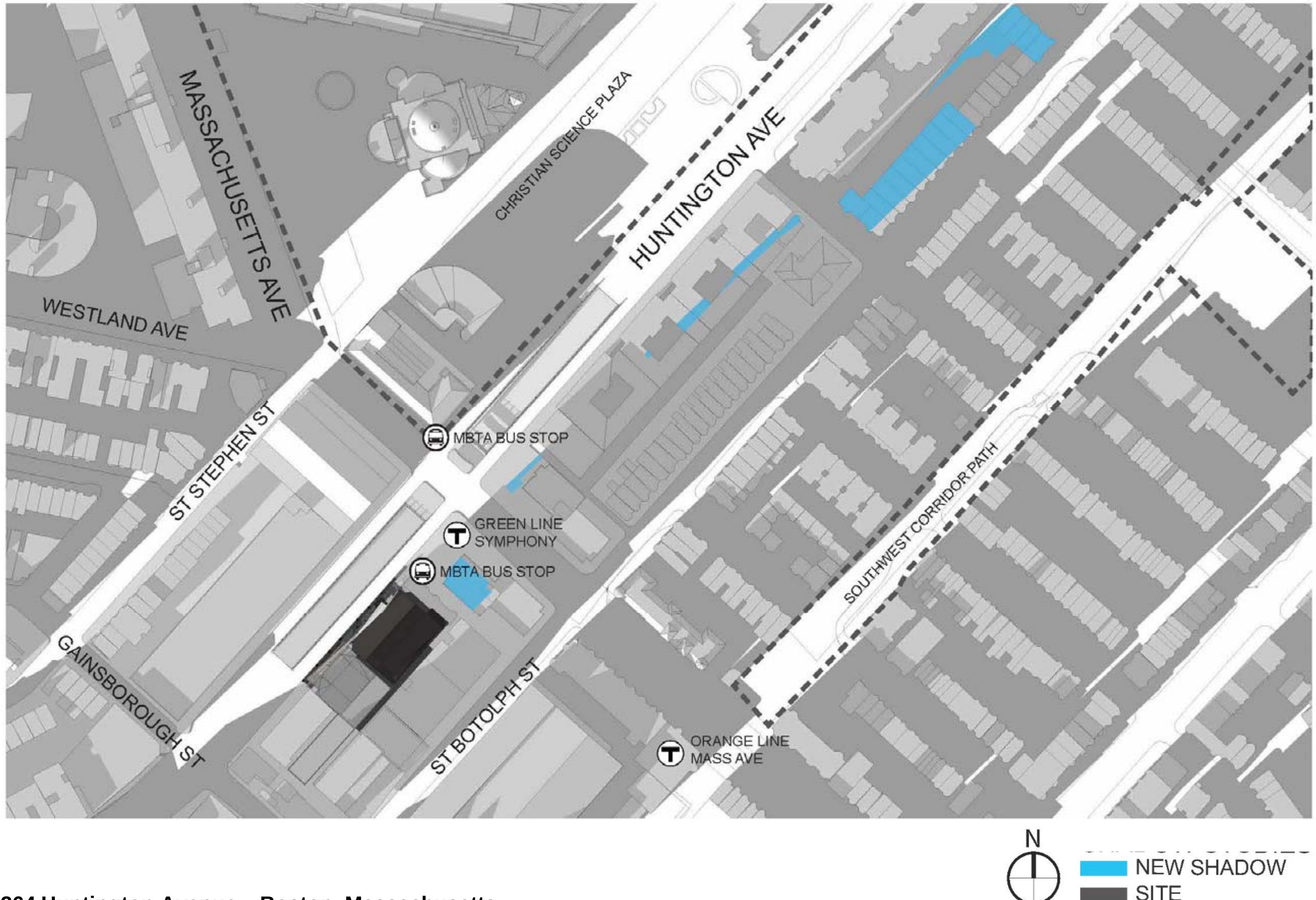
Shadow Study: December 21, 9:00 a.m.



252-264 Huntington Avenue Boston, Massachusetts

Figure 3.2-13

Shadow Study: December 21, 12:00 p.m.



252-264 Huntington Avenue Boston, Massachusetts

Stantec

Figure 3.2-14

Shadow Study: December 21, 3:00 p.m.

One viewpoint was chosen to evaluate the daylight obstruction for the Existing and Proposed Conditions. Four area context points were considered to provide a basis of comparison to existing conditions in the surrounding area. The viewpoint and area context viewpoints were taken in the following locations and are shown on Figure 3.3-1.

- **Viewpoint 1:** View from the center of Huntington Avenue facing southeast toward the Project site.
- **Area Context Viewpoint AC1:** View from Huntington Avenue facing southeast toward 290 Huntington Avenue.
- **Area Context Viewpoint AC2:** View from Huntington Avenue facing northwest toward 295 Huntington Avenue.
- **Area Context Viewpoint AC3:** View from Massachusetts Avenue facing southwest toward 333 Symphony Plaza West.
- **Area Context Viewpoint AC4:** View from Huntington Avenue facing northwest toward 177 Huntington Avenue.

3.3.3 Results

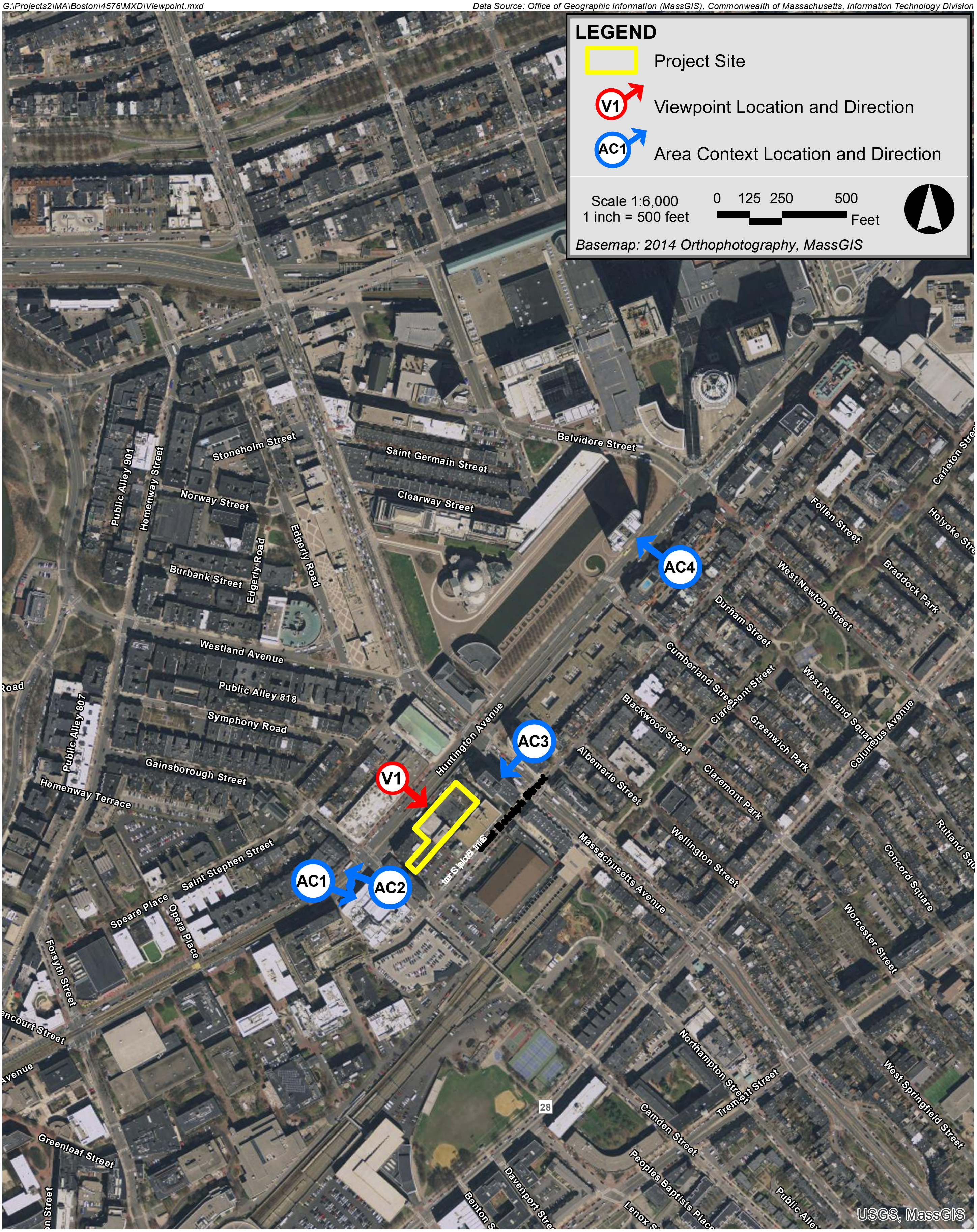
The results for each viewpoint are described in Table 3.3-1. Figures 3.3-2 and 3.3-3 illustrate the BRADA results for each analysis.

Table 3.3-1 Daylight Analysis Results

Viewpoint Locations		Existing Conditions	Proposed Conditions
Viewpoint 1	View from the center of Huntington Avenue facing southeast toward the Project site	31.8%	49.0%
Area Context Points			
AC1	View from Huntington Avenue facing southeast toward 290 Huntington Avenue	50.4%	N/A
AC2	View from Huntington Avenue facing northwest toward 295 Huntington Avenue	49.4%	N/A
AC3	View from Massachusetts Avenue facing southwest toward 333 Symphony Plaza West	63.4%	N/A
AC4	View from Huntington Avenue facing northwest toward 177 Huntington Avenue	77.0%	N/A

G:\Projects2\MA\Boston\4576\MXD\Viewpoint.mxd

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

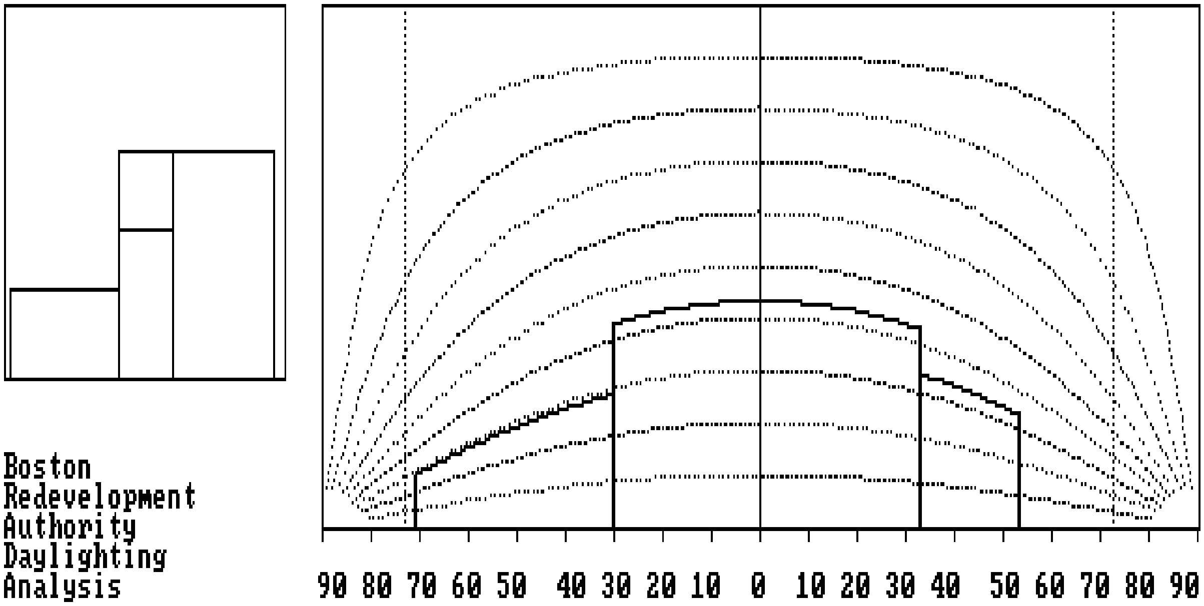


Huntington Theater **Boston, Massachusetts**

Epsilon
ASSOCIATES INC.

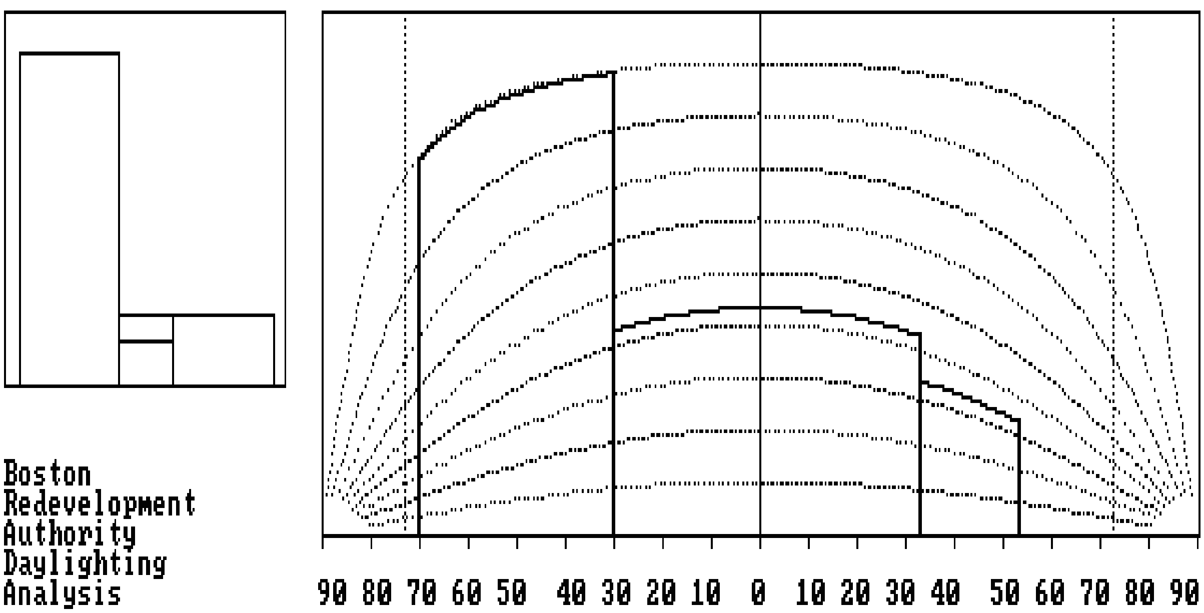
Figure 3.3-1
Viewpoint Map

Existing Conditions: View from the center of Huntington Avenue facing southeast toward the Project site



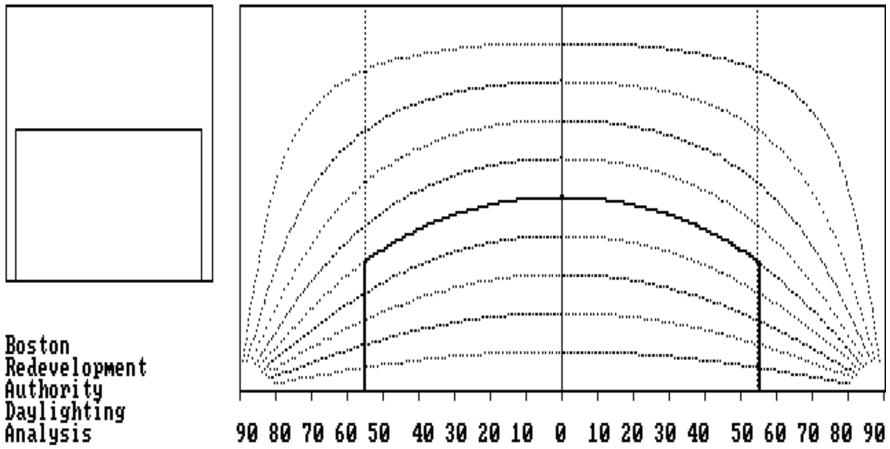
Obstruction of daylight by the building is 31.8 %

Proposed Conditions: View from the center of Huntington Avenue facing southeast toward the Project site



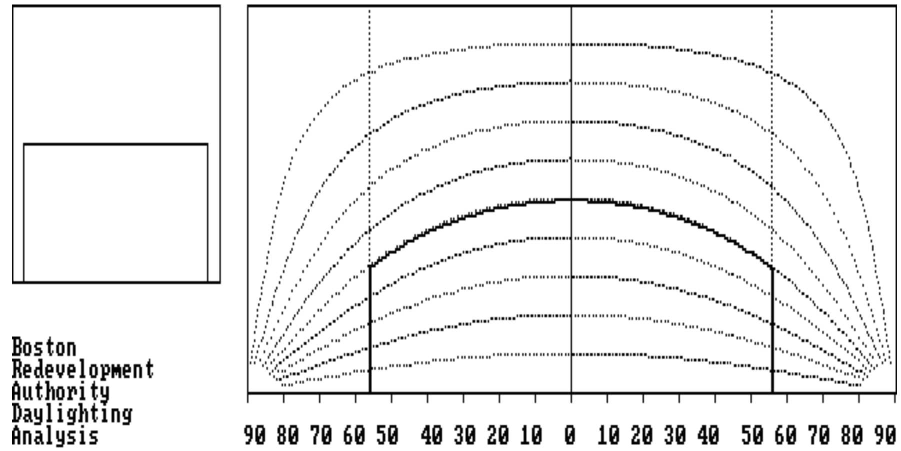
Obstruction of daylight by the building is 49.0 %

Figure 3.3-2
Existing and Proposed Conditions



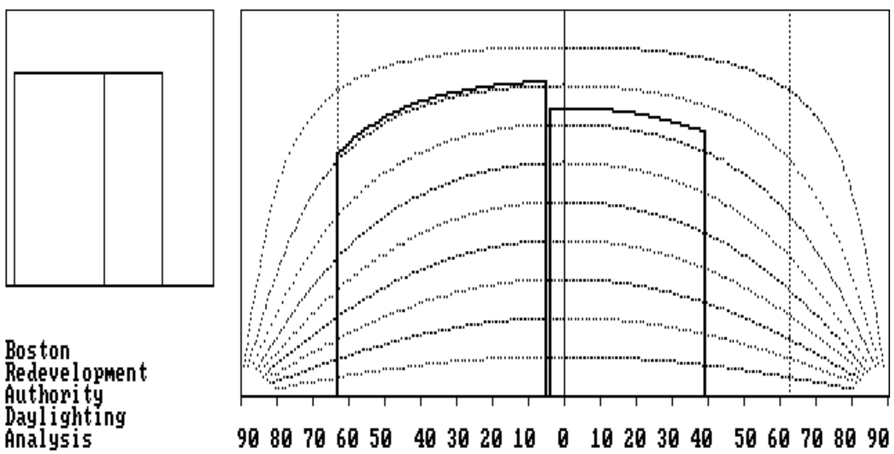
Obstruction of daylight by the building is 50.4 %

Area Context Viewpoint AC1: View from Huntington Avenue facing southeast toward 290 Huntington Avenue



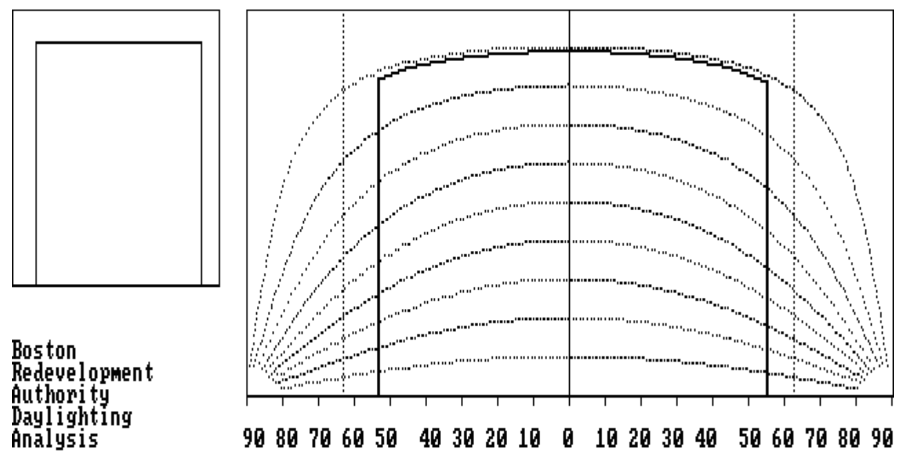
Obstruction of daylight by the building is 49.4 %

Area Context Viewpoint AC2: View from Huntington Avenue facing northwest toward 295 Huntington Avenue



Obstruction of daylight by the building is 63.4 %

Area Context Viewpoint AC3: View from Massachusetts Avenue facing southwest toward 333 Symphony Plaza West



Obstruction of daylight by the building is 77.0 %

Area Context Viewpoint AC4: View from Huntington Avenue facing northwest toward 177 Huntington Avenue

Huntington Avenue – Viewpoint 1

Huntington Avenue runs along the northwestern edge of the Project site. Viewpoint 1 was taken from the center of Huntington Avenue facing southeast toward the Project site. Since the Project site currently contains low scale, two- to four-story buildings, the existing daylight obstruction is 31.8%. The development of the Project will increase the daylight obstruction to 49.0%. While this is an increase over existing conditions, the obstruction value is consistent with or less than the daylight obstruction value of other buildings in the area, including the Area Context buildings.

Area Context Viewpoints

The Project site is located in an area with a mix of institutional, commercial, and residential buildings with a diverse range in heights. To provide a larger context for comparison of daylight conditions, obstruction values were calculated for the four Area Context Viewpoints described above and shown on Figure 3.3-1. The daylight obstruction values ranged from 49.4% for AC2 to 77.0% for AC4. Daylight obstruction values for the Project are consistent with or less than the Area Context values.

3.3.4 Conclusions

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

3.4 Solar Glare

It is not anticipated that the Project will include the use of reflective glass or other reflective materials on the building facades that would result in adverse impacts from reflected solar glare from the Project.

3.5 Air Quality Analysis

3.5.1 Introduction

The BPDA requires that proposed projects evaluate the air quality in the local area, and assess any adverse air quality impacts attributable to a project.

The Project does not generate enough traffic to require a mesoscale vehicle emissions quantification analysis under City standards. However, the Project creates new trips through local intersections operating at LOS D or worse. Therefore, a microscale analysis of carbon monoxide has been completed to provide information on the Project's impact to air quality from mobile sources.

Any new stationary sources, such as emergency, diesel-powered electricity generators, will be reviewed by the Massachusetts Department of Environmental Protection (MassDEP) during permitting under the Environmental Results Program, as required. It is expected that all stationary sources will be small, and any impacts from stationary sources would be minimal.

3.5.2 National Ambient Air Quality Standards and Background Concentrations

Background air quality concentrations and federal air quality standards were utilized to conduct the air quality impact analysis. Federal National Ambient Air Quality Standards (NAAQS) were developed by the U.S. Environmental Protection Agency (EPA) to protect the human health against adverse health effects with a margin of safety. The modeling methodologies were developed in accordance with the latest MassDEP modeling policies and Federal modeling guidelines.[3] The following sections outline the NAAQS standards and detail the sources of background air quality data.

3.5.2.1 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, EPA promulgated NAAQS for the following 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 3.5-1. Massachusetts Ambient Air Quality Standards (MAAQS) are typically identical to NAAQS (differences are highlighted in **bold** in Table 3.5-1).

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

The NAAQS also reflect various durations of exposure. The non-probabilistic, 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.

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[3] 40 CFR 51 Appendix W, Guideline on Air Quality Models, 70 FR 68228, Nov. 9, 2005

Table 3.5-1 National (NAAQS) and Massachusetts (MAAQS) Ambient Air Quality Standards

Pollutant	Averaging Period	NAAQS ($\mu g/m^3$) Primary	NAAQS ($\mu g/m^3$) Secondary	MAAQS ($\mu g/m^3$) Primary	MAAQS ($\mu g/m^3$) Secondary
NO_2	Annual (1)	100	Same	100	Same
	1-hour (2)	**188**	None	**None**	None
SO_2	Annual (1)(9)	80	None	80	None
	24-hour (3)(9)	365	None	365	None
	3-hour (3)	None	1300	None	1300
	1-hour (4)	**196**	None	**None**	None
PM-2.5	Annual (1)	**12**	**15**	**None**	**None**
	24-hour (5)	**35**	**Same**	**None**	**None**
PM-10	Annual (1)(6)	**None**	None	**50**	Same
	24-hour (3)(7)	150	Same	150	Same
CO	8-hour (3)	10,000	Same	10,000	Same
	1-hour (3)	40,000	Same	40,000	Same
Ozone	8-hour (8)	**147**	Same	**235**	Same
Pb	3-month (1)	1.5	Same	1.5	Same

(1) Not to be exceeded.
(2) 98th percentile of one-hour daily maximum concentrations, averaged over three years.
(3) Not to be exceeded more than once per year.
(4) 99th percentile of one-hour daily maximum concentrations, averaged over three years.
(5) 98th percentile, averaged over three years.
(6) EPA revoked the annual PM-10 NAAQS in 2006.
(7) Not to be exceeded more than once per year on average over three years.
(8) Annual fourth-highest daily maximum eight-hour concentration, averaged over three years.
(9) EPA revoked the annual and 24-hour SO_2 NAAQS in 2010. However, they remain in effect until one year after the area's initial attainment designation, unless designated as "nonattainment".

Source: http://www.epa.gov/ttn/naaqs/criteria.html and 310 CMR 6.04

3.5.2.2 Background Concentrations

To estimate background pollutant levels representative of the area, the most recent air quality monitor data reported by the MassDEP to EPA was obtained for 2013 to 2015. Data for the pollutant and averaging time combinations were obtained from the EPA's AirData website.

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

Background concentrations were determined from the closest available monitoring stations to the Project site. All pollutants are not monitored at every station, so data from multiple locations are necessary. The closest monitor is at Kenmore Square in Boston, roughly 0.75 miles northwest of the Project site. This site samples for all criteria pollutants except Ozone and Lead. The next closest monitor at Harrison Avenue, roughly 0.9 miles from the Project site samples for these two pollutants. A summary of the background air quality concentrations are presented in Table 3.5-2.

Table 3.5-2 Observed Ambient Air Quality Concentrations and Selected Background Levels

Pollutant	Averaging Time	2013	2014	2015	Background Concentration ($\mu g/m^3$)	NAAQS	Percent of NAAQS
SO_2 (1)(6)	1-Hour (5)	32.0	25.4	14.4	23.9	196.0	12%
	3-Hour	36.4	24.6	11.5	36.4	1300.0	3%
	24-Hour	15.7	13.1	7.6	15.7	365.0	4%
	Annual	2.7	2.5	1.4	2.7	80.0	3%
PM-10	24-Hour	50.0	53.0	30.0	53.0	150.0	35%
	Annual	19.3	15.0	14.9	19.3	50.0	39%
PM-2.5	24-Hour (5)	17.5	14.6	14.5	15.5	35.0	44%
	Annual (5)	8.0	6.1	6.5	6.8	12.0	57%
NO_2 (3)	1-Hour (5)	92.1	92.1	105.3	96.5	188.0	51%
	Annual	33.4	32.3	32.5	33.4	100.0	33%
CO (2)	1-Hour	1489.8	1489.8	458.4	1489.8	40000.0	4%
	8-Hour	1146.0	1260.6	343.8	1260.6	10000.0	13%
Ozone (4)	8-Hour	115.8	106.0	109.9	115.8	147.0	79%
Lead	Rolling 3-Month	0.007	0.014	0.016	0.016	0.15	10%

Notes:
From 2013-2015 EPA's AirData Website
(1) SO_2 reported ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 2.62 $\mu g/m^3$.
(2) CO reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 1146 $\mu g/m^3$.
(3) NO_2 reported in ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 1.88 $\mu g/m^3$.
(4) O_3 reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 1963 $\mu g/m^3$.
(5) Background level is the average concentration of the three years.
(6) The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.

Air quality in the vicinity of the Project site is generally good, with all local background concentrations found to be well below the NAAQS.

3.5.3 Methodology

The BPDA 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 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 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 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 (2017) and future year (2024) 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. The modeling methodology was developed in accordance with the latest MassDEP modeling policies and Federal modeling guidelines.[4]

Existing background values of CO at the nearest monitor location were obtained from MassDEP. CAL3QHC results were then added to background CO values of 1.3 ppm (one-hour) and 1.1 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).

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

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

3.5.3.1 Intersection Selection

Two signalized intersections included in the traffic study meet the above conditions described at the beginning of this section (see Chapter 2). The traffic volumes and LOS calculations provided in Chapter 2 form the basis of evaluating the traffic data versus the microscale thresholds. The intersections found to meet the criteria are:

- Massachusetts Avenue and Huntington Avenue; and
- Massachusetts Avenue and St. Botolph Street.

Microscale modeling was performed for the intersections using the aforementioned methodology. The 2017 Existing condition and the 2024 No-Build and Build conditions were each evaluated for both morning (a.m.) and afternoon (p.m.) peak.

3.5.3.2 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 (2017) and future year (2024) are provided by MassDEP.

All link types for the modeled intersections 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 25 mph is used for all free-flow traffic, consistent with the City of Boston speed limit. 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.[5]

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

3.5.3.3 Receptors & Meteorology Inputs

Sets of approximately 166 receptors were placed in the vicinity of the modeled intersections. Receptors extended approximately 300 feet on the sidewalks along the roadways approaching the intersections. The roadway links and receptor locations of the modeled intersections are presented in Figures 3.5-1 and 3.5-2.

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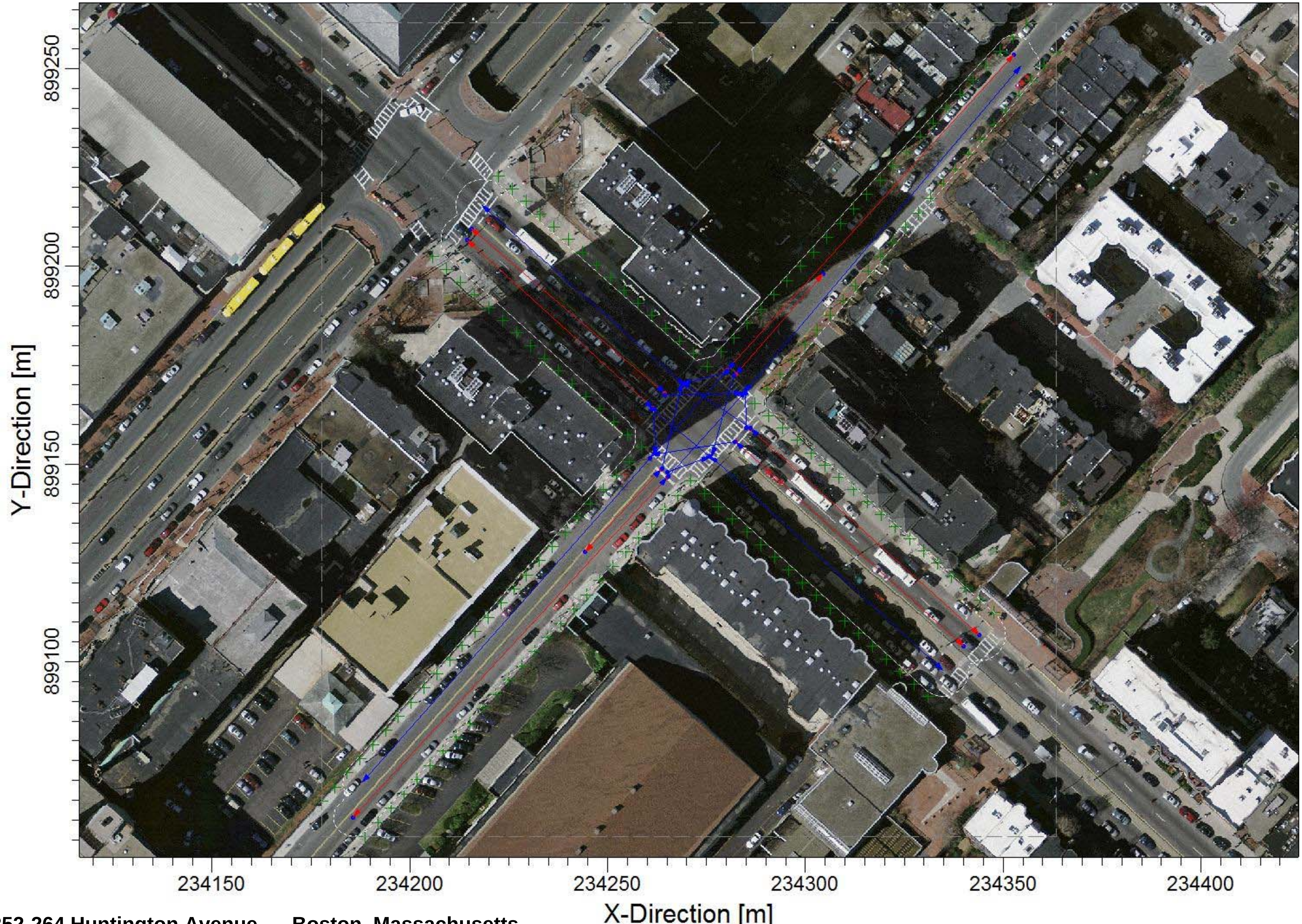
[5] U.S. EPA, 2010. Using MOVES in Project-Level Carbon Monoxide Analyses. EPA-420-B-10-041

252-264 Huntington Avenue Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 3.5-1

Link and Receptor Locations for CAL3QHC modeling of Intersection of Massachusetts Ave. and Huntington Ave



252-264 Huntington Avenue Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 3.5-2

Link and Receptor Locations for CAL3QHC modeling of Intersection of Massachusetts Ave. and St. Botolph St

For the CAL3QHC model, limited meteorological inputs are required. Following EPA guidance[6], a wind speed of one meter per second, stability class D (4), and a mixing height of 1,000 meters were 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.[7]

3.5.3.4 Impact Calculations (CAL3QHC)

The CAL3QHC model predicts one-hour concentrations using queue-links at signalized intersections, worst-case meteorological conditions, and traffic input data. The one-hour concentrations were scaled by a factor of 0.9 to estimate eight-hour concentrations. The CAL3QHC methodology was based on EPA CO modeling guidance. Signal timings were provided directly from the traffic modeling outputs.

For use in the microscale analysis, background concentrations of CO in ppm were required. The corresponding maximum background concentrations in ppm were 1.3 ppm (1,490 μg/m3) for one-hour and 1.1 ppm (1,261 μg/m3) for eight-hour CO.

3.5.4 Air Quality Results

The results of the maximum one-hour predicted CO concentrations from CAL3QHC are provided in Tables 3.5-3 through 3.5-5 for the 2017 and 2024 scenarios. Eight-hour average concentrations are calculated by multiplying the maximum one-hour concentrations by a factor of 0.9.[8]

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 (0.4 ppm) plus background (1.3 ppm) is 1.7 ppm. The highest eight-hour traffic-related concentration predicted in the area of the Project for the modeled conditions (0.4 ppm) plus background (1.1 ppm) is 1.5 ppm. Both maximum concentrations occur under Existing Conditions.

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

7 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.

8 U.S. EPA, AERSCREEN User's Guide; EPA-454/B-11-001, March 2011.

Under future No-Build and Build cases, the highest one-hour traffic-related concentration predicted in the area of the Project for the modeled conditions (0.2 ppm) plus background (1.3 ppm) is 1.5 ppm. The highest eight-hour traffic-related concentration predicted in the area of the Project for the modeled conditions (0.2 ppm) plus background (1.1 ppm) is 1.3 ppm.

All concentrations are well below the one-hour NAAQS of 35 ppm and the eight-hour NAAQS of 9 ppm.

Table 3.5-3 Summary of Microscale Modeling Analysis (Existing 2017)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Massachusetts Avenue and Huntington Avenue	AM	0.4	1.3	1.7	35
	PM	0.4	1.3	1.7	35
Massachusetts Avenue and St. Botolph Street	AM	0.4	1.3	1.7	35
	PM	0.4	1.3	1.7	35
8-Hour					
Massachusetts Avenue and Huntington Avenue	AM	0.4	1.1	1.5	9
	PM	0.4	1.1	1.5	9
Massachusetts Avenue and St. Botolph Street	AM	0.4	1.1	1.5	9
	PM	0.4	1.1	1.5	9

Notes: CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.9.

Table 3.5-4 Summary of Microscale Modeling Analysis (No-Build 2024)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Massachusetts Avenue and Huntington Avenue	AM	0.1	1.3	1.4	35
	PM	0.2	1.3	1.5	35
Massachusetts Avenue and St. Botolph Street	AM	0.2	1.3	1.5	35
	PM	0.2	1.3	1.5	35
8-Hour					
Massachusetts Avenue and Huntington Avenue	AM	0.1	1.1	1.2	9
	PM	0.2	1.1	1.3	9
Massachusetts Avenue and St. Botolph Street	AM	0.2	1.1	1.3	9
	PM	0.2	1.1	1.3	9

Notes: CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.9.

Table 3.5-5 Summary of Microscale Modeling Analysis (Build 2024)

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Massachusetts Avenue and Huntington Avenue	AM	0.1	1.3	1.4	35
	PM	0.2	1.3	1.5	35
Massachusetts Avenue and St. Botolph Street	AM	0.2	1.3	1.5	35
	PM	0.2	1.3	1.5	35
8-Hour					
Massachusetts Avenue and Huntington Avenue	AM	0.1	1.1	1.2	9
	PM	0.2	1.1	1.3	9
Massachusetts Avenue and St. Botolph Street	AM	0.2	1.1	1.3	9
	PM	0.2	1.1	1.3	9

Notes: CAL3QHC eight-hour impacts were conservatively obtained by multiplying one-hour impacts by a screening factor of 0.9.

3.5.5 Conclusions

Results of the microscale analysis 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.

3.6 Stormwater/Water Quality

Please refer to Section 7.3.

3.7 Flood Hazard Zones/ Wetlands

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the site located in the City of Boston - Community Panel Number 25025C0079J – effective March 16, 2016, indicates the FEMA Flood Zone Designations for the site area. The map shows that the Project is located in a Zone X, "Areas determined to be outside the 0.2% annual chance floodplain."

The site does not contain wetlands.

3.8 Geotechnical Impacts

3.8.1 Existing Site Conditions

The site is currently developed with two- to three-story buildings, and is generally bound: on the northwest by Huntington Avenue, on the northeast by a three-story, mixed-use building commonly known as 250 Huntington Avenue; on the southeast by Public Alley 821; and to the southwest by Public Alley 822. Surrounding site grades vary from about El. 11 to El. 18 Boston City Base Datum (BCB). Public Alley 820 at the northeasterly side of the site slopes down towards the east.

3.8.2 Subsurface Soil and Bedrock Conditions

Site and subsurface conditions at the Project site are based on available test boring data and geologic information for the area. The site is part of the Back Bay area of Boston and was originally wetland/below water. This area was filled in the 1800s to create reclaimed land for development. Subsurface conditions generally indicate the following sequence of subsurface units in order of increasing depth below ground surface:

Stratum/Subsurface Unit	Top of Stratum Elevation (BCB)	Estimated Thickness (ft)
Fill Soils	El. 18	20
Marine Deposits (Sand/Clay)	El. -2	100-110
Glacial Deposits	El. -110	10-20
Bedrock	El. -125	N/A

3.8.3 Groundwater

Groundwater levels are anticipated to exist at a depth of approximately 10 feet below the ground surface, corresponding to El. 8 BCB. Variations in groundwater levels are possible as groundwater levels are influenced by precipitation, local construction activities, and leakage into and out of utilities and other below-grade structures.

The Project site is located within the limits of the Groundwater Conservation Overlay District (GCOD) and accordingly, the Project will comply with the standards of Article 32 of the City of Boston Zoning Code. The Project will promote infiltration of stormwater into the ground by capturing within a suitably-designed system a volume of rainfall equivalent to no less than 1-inch across the impervious portion of the site. The Project will result in no negative impact on groundwater levels within the lot in question, subject to the terms of any (i) dewatering permit or (ii) cooperation agreement entered into by the Proponent and the BPDA, to the extent that such agreement provides standards for groundwater protection during construction. Section 7.3.4 includes more detailed information.

3.8.4 Proposed Foundation Construction

Development of the Project site will require excavation to depths of approximately 15 to 30 feet for construction of foundations and below grade basement. The Project is anticipated to be supported on either a shallow mat foundation bearing on the natural, inorganic Marine Deposits or on deep foundations bearing in dense glacial soils or bedrock. Temporary earth support walls will be needed to excavate the basement level and construct below grade foundations. The type and design of both the temporary earth support system and foundation system will provide for adequate support of the structures and utilities and be compatible with the subsurface conditions.

3.8.5 Monitoring Program

Due to the Project location, nature of the proposed construction, and proximity to surrounding buildings, a monitoring program will be developed and implemented prior to the start of construction. Prior to implementation of the monitoring program, performance criteria will be established to protect adjacent structures and will be included in the contract documents. Construction activities will be required to comply the established criteria based on the data collected from the monitoring. The monitoring program is anticipated to include the following items as a minimum consistent with local practice and the proposed construction: (1) Preconstruction Condition Surveys of interior and exterior portions of adjacent structures, (2) Vibration Monitoring, (3) Groundwater Level monitoring, and (4) Movement Monitoring of adjacent buildings.

3.9 Solid and Hazardous Waste

3.9.1 Hazardous Waste

An evaluation of the site will be completed to identify and recognize environmental conditions associated with site history, existing observable conditions, current site uses, and current and former uses of adjoining properties. This work will be conducted as part of a Phase I Environmental Site Assessment (Phase I ESA) using methods consistent with ASTM E1527-05.

Characterization of the environmental soil and groundwater quality at the Project site has not been conducted to date. Chemical testing of soil and groundwater to be generated as a result of construction activity will be conducted at the appropriate stage of the design process to further evaluate site environmental conditions. Management of soil and groundwater will be in accordance with applicable local, state, and federal laws and regulations.

3.9.2 Operation Solid and Hazardous Waste Generation

The Project will generate solid waste typical of residential and restaurant/retail 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 will generate approximately 443 tons of solid waste per year.

3.9.3 Recycling

A dedicated recyclables storage and collection program will facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills. The recycling program will be fully developed in accordance with LEED standards as described in Chapter 4.

3.10 Noise Impacts

3.10.1 Introduction

A sound-level assessment was conducted which included a baseline sound monitoring program to measure existing sound levels in the vicinity of the Project, computer modeling to predict operational sound levels from proposed mechanical equipment, and a comparison of future Project sound levels to applicable City of Boston Zoning District Noise Standards.

This analysis, which is consistent with BPDA requirements for noise studies, indicates that with appropriate noise controls, predicted sound levels from the Project will comply with local noise regulations.

3.10.2 Noise Terminology

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

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

Another property of the decibel scale is that if one source of noise is 10 dB (or more) louder than another source, then the total combined sound level is simply that of the louder source (i.e., the quieter source contributes negligibly to the overall sound level). For example, a source of sound at 60 dB plus another source at 47 dB is 60 dB.

The sound level meter used to measure noise is a standardized instrument.[9] It contains "weighting networks" to adjust the frequency response of the instrument to approximate that of the human ear under various conditions. One network is the A-weighting network (there are also Z- and C-weighting networks), which most closely approximates how the human ear responds to sound as a function of frequency, and is the accepted scale used for community sound level measurements. Sounds are frequently reported as detected with the A-weighting network of the sound level meter in dBA. A-weighted sound levels emphasize middle frequencies (i.e., middle pitched—around 1,000 Hertz sounds), and de-emphasize lower and higher frequencies.

Because sounds in the environment vary with time, they are usually described with more than simply a single number. Two methods are used for describing variable sounds, exceedance levels and the equivalent level, both of which are derived from a large number of moment-to-moment, A-weighted sound-level measurements. Exceedance levels are values from the cumulative amplitude distribution of all of the sound levels observed during a measurement period. Exceedance levels are designated L_n, where n can have a value of 0 to 100 in terms of percentage. Several sound level metrics that are commonly reported in community noise studies are described below.

- L90 is the sound level in dBA exceeded 90 percent of the time during the measurement period. The L90 is close to the lowest sound level observed. It is essentially the same as the residual sound level, which is the sound level observed when there are no obvious nearby intermittent noise sources.

- L50 is the median sound level, the sound level in dBA exceeded 50 percent of the time during the measurement period.

- L10 is the sound level in dBA exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L10 is sometimes called the intrusive sound level because it is caused by occasional louder noises like those from passing motor vehicles.

- Lmax is the maximum instantaneous sound level observed over a given period.

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

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

In the design of noise controls, which do not function quite like the human ear, it is important to understand the frequency spectrum of the noise source of interest. The spectra of noises are usually stated in terms of octave-band sound pressure levels, in dB, with the frequency bands being those established by standard (American National Standards Institute [ANSI] S1.11, 1986). To facilitate the noise control design process, the estimates of noise levels in this analysis are also presented in terms of octave-band sound pressure levels. Octave-band measurements and modeling are used in assessing compliance with the City of Boston noise regulations.

3.10.3 Noise Regulations and Criteria

The City of Boston has both a noise ordinance and noise regulations. Chapter 16 §26 of the Boston Municipal Code sets the general standard for noise that is unreasonable or excessive: louder than 50 decibels between the hours of 11:00 p.m. and 7:00 a.m., or louder than 70 decibels at all other hours. The Boston Air Pollution Control Commission (BAPCC) has adopted regulations based on the city's ordinance - "Regulations for the Control of Noise in the City of Boston", which distinguish among residential, business, and industrial districts in the city. In particular, BAPCC Regulation 2 is applicable to the sounds from the Project and is considered in this noise study.

Table 3.10-1 below presents the "Zoning District Noise Standards" contained in Regulation 2.5 of the BAPCC "Regulations for the Control of Noise in the City of Boston," adopted December 17, 1976. These maximum allowable sound pressure levels apply at the property line of the receiving property. The "Residential Zoning District" limits apply to any lot located within a residential zoning district or to any residential use located in another zone except an Industrial Zoning District, according to Regulation 2.2. Similarly, per Regulation 2.3, business limits apply to any lot located within a business zoning district not in residential or institutional use.

Table 3.10-1 City Noise Standards, Maximum Allowable Sound Pressure Levels

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

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

3.10.4 Existing Conditions

A background noise level survey was conducted to characterize the existing "baseline" acoustical environment in the vicinity of the Project. Existing noise sources in the vicinity of the Project site include: vehicle and truck traffic along local streets, pedestrian foot traffic, wind, birds, nearby commuter rail trains, music, construction (daytime), rooftop and residential mechanical equipment, and the general city soundscape.

3.10.4.1 Noise Monitoring Methodology

Since noise impacts from the Project on the community will be highest when background noise levels are the lowest, the study was designed to measure community noise levels under conditions typical of a "quiet period" for the area. Daytime measurements were scheduled to avoid peak traffic conditions. Sound level measurements were made on Thursday, May 4, 2017 during the daytime (11:30 a.m. to 1:45 p.m.) and on Tuesday, May 9, 2017 and Wednesday, May 10, 2017 during nighttime hours (11:30 p.m. to 1:00 a.m.). All measurements were 20 minutes in duration.

Sound levels were measured at publicly accessible locations at a height of five feet (1.5 meters) above ground level, under low wind conditions, and with dry roadway surfaces. Wind speed measurements were made with a Davis Instruments TurboMeter electronic wind speed indicator, and temperature and humidity measurements were made using a

General Tools digital psychrometer. Unofficial observations about meteorology or land use in the community were made solely to characterize the existing sound levels in the area and to estimate the noise sensitivity at properties near the Project site.

3.10.4.2 Noise Monitoring Locations

The selection of the noise monitoring locations was based upon a review of zoning in the Project area. Four noise monitoring locations were selected as representative sites to obtain a sampling of the ambient baseline noise environment. These measurement locations are depicted on Figure 3.10-1 and described below.

- **Location 1** is located on the west side of Huntington Avenue, south of Symphony Hall and outside of the Cohen Wing. This location is representative of commercial receptors to the west of the Project.

- **Location 2** is located on the southern side of Gainsborough Street, outside of Jordan Hall and across from New England Conservatory dormitories. This location is representative of the closest residential receptors to the south of the Project.

- **Location 3** is located at the eastern side of St. Botolph Street, outside of the Matthews Arena and approximately 150 feet SE from 241 St. Botolph Street. This location is representative of the closest residential, commercial, and institutional receptors to the east of the Project.

- **Location 4** is located on the southern sidewalk of Massachusetts Avenue, outside of 333 Symphony Plaza West, and is representative of the closest residential, institutional, and commercial receptors to the north of the Project.

3.10.4.3 Noise Monitoring Equipment

A Larson Davis Model 831 sound level meter equipped with a PCB PRM831 preamplifier, a PCB 377B20 half-inch microphone, and manufacturer-provided windscreen was used to collect background sound pressure level data. This instrumentation meets the "Type 1 - Precision" requirements set forth in ANSI S1.4 for acoustical measuring devices. The measurement equipment was calibrated in the field before and after the surveys with a Larson Davis CAL200 acoustical calibrator which meets the standards of IEC 942 Class 1L and ANSI S1.40-1984. Statistical descriptors (e.g., L_{eq}, L_{90}, etc.) were measured for each 20-minute sampling period, with octave-band sound levels corresponding to the same data set processed for the broadband levels.

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

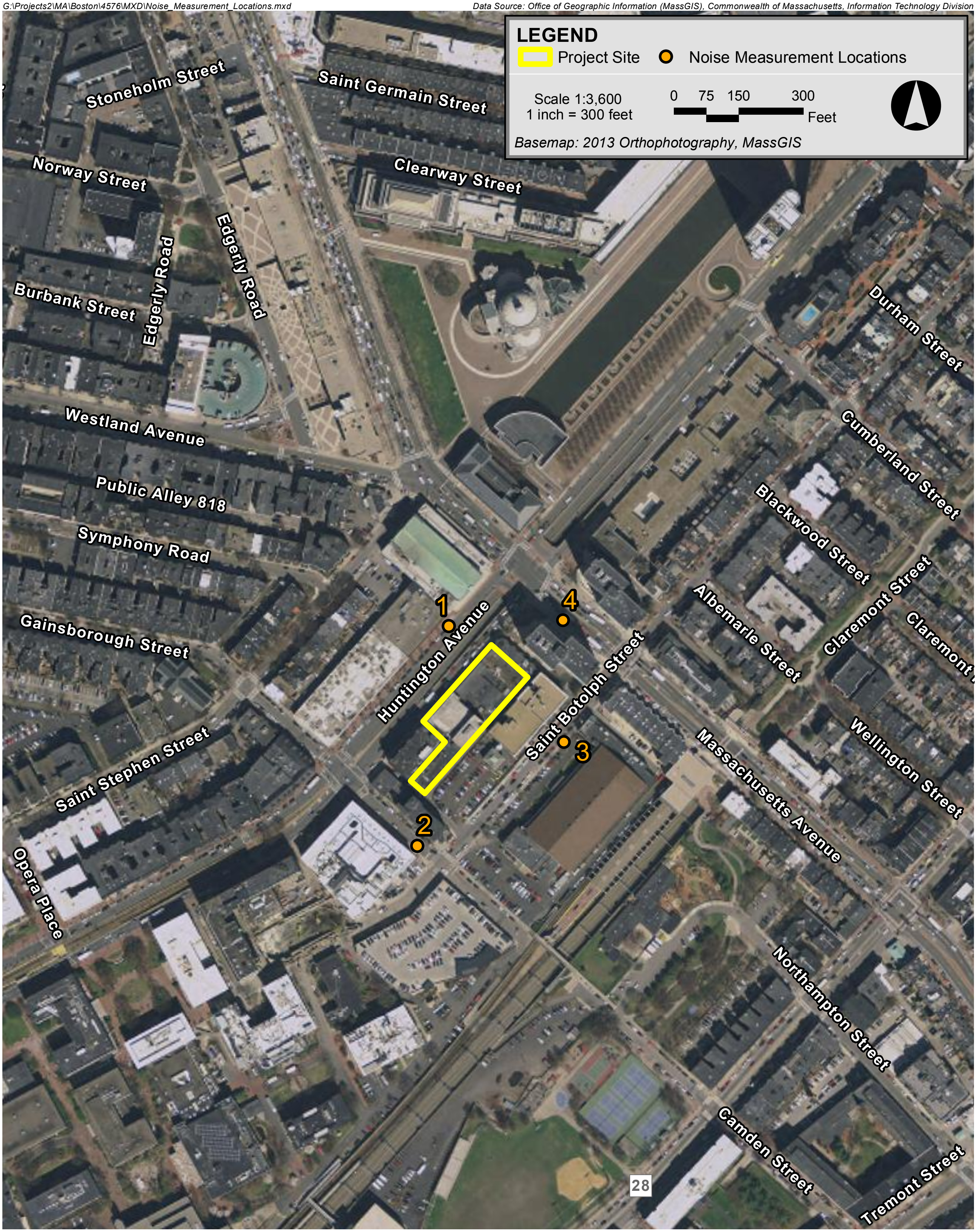

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Figure 3.10-1

Noise Measurement Locations

3.10.4.4 Measured Background Noise Levels

Baseline noise monitoring results are presented in Table 3.10-2 and summarized below:

- The daytime residual background (L_{90}) measurements ranged from 57 to 63 dBA;
- The nighttime residual background (L_{90}) measurements ranged from 48 to 53 dBA;
- The daytime equivalent level (L_{eq}) measurements ranged from 65 to 75 dBA;
- The nighttime equivalent level (Leq) measurements ranged from 54 to 68 dBA.

Table 3.10-2 Summary of Measured Background Noise Levels – May 4, 2017 (Daytime) & May 9 and 10, 2017 (Nighttime)

Location	Period	Start Time	LA_{eq}	LA_{max}	LA_{10}	LA_{50}	LA_{90}	L_{90} Sound Pressure Level by Octave-Band Center Frequency (Hz)								
								31.5	63	125	250	500	1000	2000	4000	8000
			dBA	dBA	dBA	dBA	dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
1	Day	11:50 AM	67	82	68	64	60	69	67	62	59	56	55	51	42	33
2	Day	12:31 PM	65	84	68	61	57	63	61	59	56	55	52	47	41	32
3	Day	12:58 PM	75	88	82	66	61	63	62	60	59	57	55	53	46	39
4	Day	1:25 PM	74	93	76	69	63	73	71	66	60	59	58	54	48	41
1	Night	11:26 PM	68	93	66	60	53	61	59	57	51	48	48	44	36	27
2	Night	11:54 PM	57	69	60	54	51	57	57	55	52	49	46	41	34	28
3	Night	12:23 AM	54	69	56	49	48	57	55	54	48	45	42	37	29	22
4	Night	12:48 AM	65	81	68	60	52	57	56	57	50	48	48	44	35	26

Note: Sound pressure levels are rounded to the nearest whole decibel.

Weather Conditions:

	Date	Temp	RH	Sky	Wind
Daytime	Thursday, May 04, 2017	67 °F	17%	Mostly sunny	NE @ 0-1 m/s
Nighttime	Wednesday, May 10, 2017	50 °F	62%	Overcast	E @ 0-1 m/s

Monitoring Equipment Used:

	Manufacturer	Model	S/N
Sound Level Meter	Larson Davis	LD831	1992
Microphone	Larson Davis	377B20	112340
Preamp	Larson Davis	PRM831	15258
Calibrator	Larson Davis	Cal200	7146 (Day), 2853 (Night)

3.10.5 Future Conditions

3.10.5.1 Overview of Potential Project Noise Sources

The primary sources of continuous sound exterior to the Project is anticipated to consist of ventilation, heating, cooling and emergency power sources. Most of the sources will be located on the rooftop. Garage ventilation fans and restaurant kitchen fans are expected to be located on the northern and eastern sides of the building, respectively.

Table 3.10-3 provides an anticipated list of the major sources of sound. Sound power levels used in the acoustical modeling of each piece of equipment are presented in Table 3.10-4. Sound power level data were provided by the respective manufacturer of each piece of equipment except for the emergency generator. The sound power levels for the emergency generator were calculated using the sound pressure levels at the reference distance provided by the manufacturer.

The Project includes noise control measures that are necessary to achieve compliance with the applicable noise regulations. As the design progresses, specifications for mechanical equipment may change; however, appropriate measures will be taken to ensure compliance with the City Noise Standards. The kitchen and garage ventilation fans will be attenuated through acoustical louvers. One of the rooftop energy recovery units (ERU) intake and exhaust will also be attenuated through acoustical louvers. The attenuation required for the ERU is minimal. The emergency generator is currently proposed to be supplied with an acoustical enclosure and exhaust silencer (F202 Quiet Site II Second Stage) supplied by the manufacturer. To further limit impacts from the standby generator, required periodic, routine testing will be conducted during daytime hours, when background sound levels are highest. A summary of the noise mitigation proposed for the Project is presented in Table 3.10-5.

Table 3.10-3 Modeled Noise Sources

Noise Source	Quantity	Approximate Location	Size/Capacity
Rooftop ERU Intake	1	Rooftop (370’)	35,000 CFM
Rooftop ERU Exhaust	1	Rooftop (370’)	35,000 CFM
Rooftop ERU Intake	1	Rooftop (370’)	30,000 CFM
Rooftop ERU Exhaust	1	Rooftop (370’)	30,000 CFM
Cooling Tower (2 cell)	1	Rooftop (370’)	550 Tons
Stair Pressurization Fans	2	Rooftop (370’)	20,000 CFM
Emergency Generator	1	Rooftop (370’)	900 kW
Kitchen Grease Exhaust Fan	1	Third level northern facade	6,000 CFM
Kitchen Grease Exhaust Makeup Air Fan	1	Third level northern facade	6,000 CFM
Garage Exhaust Fan	1	First level eastern facade	7,125 CFM
Garage Makeup Air Fan	1	First level eastern facade	7,125 CFM

Table 3.10-4 Modeled Sound Power Levels per Noise Source

Noise Source	Sound Power Level (dB) per Octave-Band Center Frequency (Hz)								
	31.5	63	125	250	500	1k	2k	4k	8k
Rooftop ERU Intake (35,000 CFM) (1)	87	89	84	90	102	91	91	89	86
Rooftop ERU Exhaust (35,000 CFM) (1)	95	97	90	89	95	92	89	83	74
Rooftop ERU Intake (30,000 CFM) (2)	87	89	82	90	101	89	89	87	84
Rooftop ERU Exhaust (30,000 CFM) (2)	94	96	89	89	95	89	87	81	71
Cooling Tower (2 cell) (3)	93	95	91	86	84	82	81	79	79
Stair Pressurization Fans (4)	94	96	101	94	91	89	86	81	74
Emergency Generator (5)	97	103	105	100	100	94	89	84	77
Kitchen Grease Exhaust Fan (6)	77	79	82	78	76	76	74	67	63
Kitchen Grease Exhaust Makeup Air Fan (6)	77	79	82	78	76	76	74	67	63
Garage Exhaust Fan (7)	88	90	89	90	83	80	76	73	69
Garage Makeup Air Fan (7)	88	90	89	90	83	80	76	73	69

Notes: Sound power levels (other than for emergency generator) do not include mitigation identified in Table 4.10-5. The 31.5 Hz data all estimated based on 63 Hz data.

1. Venmar CESEF:FWT 35,000 CFM ERU.
2. Venmar CESEF:FWT 30,000 CFM ERU
3. Evapco Model UT 212-4K28. Data are for both cells.
4. Greenheck USF-333-10-BI-200.
5. Cummins DQFAC with F202 Quiet Site II Second Stage mitigation. PWL developed based on vendor SPL at reference distance.
6. Greenheck CUBE-360XP-50.
7. Greenheck BSQ-240HP-50.

Table 3.10-5 Attenuation Values Applied to Mitigate Each Noise Source

Noise Source	Form of Mitigation	Sound Level (dB) per Octave-Band Center Frequency (Hz)								
		31.5	63	125	250	500	1k	2k	4k	8k
Rooftop ERU Intake (35,000 CFM)	Louver (1)	2	5	4	5	6	9	13	14	13
Rooftop ERU Exhaust (35,000 CFM)	Louver (1)	2	5	4	5	6	9	13	14	13
Garage Exhaust Fan	Louver (2)	6	11	15	17	24	31	31	26	24
Garage Makeup Air Fan	Louver (2)	6	11	15	17	24	31	31	26	24
Kitchen Grease Exhaust Fan	Louver (3)	4	6	12	15	21	24	27	25	20
Kitchen Grease Exhaust Makeup Air Fan	Louver (3)	4	6	12	15	21	24	27	25	20

Notes:

1. Assumed IAC Slimshield Model SL-4 Acoustical Louver.
2. Kinetics Model KCAC-2 Acoustical Louver.
3. IAC Noishield Model 2R Acoustical Louver.

3.10.5.2 Noise Modeling Methodology

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

3.10.5.3 Future Sound Levels - Nighttime

The analysis of sound levels assumed that all of the mechanical equipment without the emergency generator were operating simultaneously to simulate typical nighttime operating conditions at nearby receptors. Thirteen modeling locations were included in the analysis. Locations A through D are identical to measurement Locations 1 through 4, respectively. Nine additional modeling locations, E through M, were added to represent additional residential and institutional uses in the vicinity of the Project. Due to the height of the noise generating sources, higher sound levels were modeled further away from the Project site. These more distant areas were identified through review of the model noise contours, and discrete receptor points were added at areas where the highest sound levels were modeled. The modeling receptors are depicted in Figure 3.10-2. The predicted exterior Project-only sound levels range from 32 to 45 dBA at the receptors. The City of Boston Residential and Business limits have been applied to the appropriate modeling receptor locations. Predicted sound levels from Project-related equipment are within the broadband and octave-band nighttime limits under the City Noise Standards at the modeling locations. The evaluation is presented in Table 3.10-6.

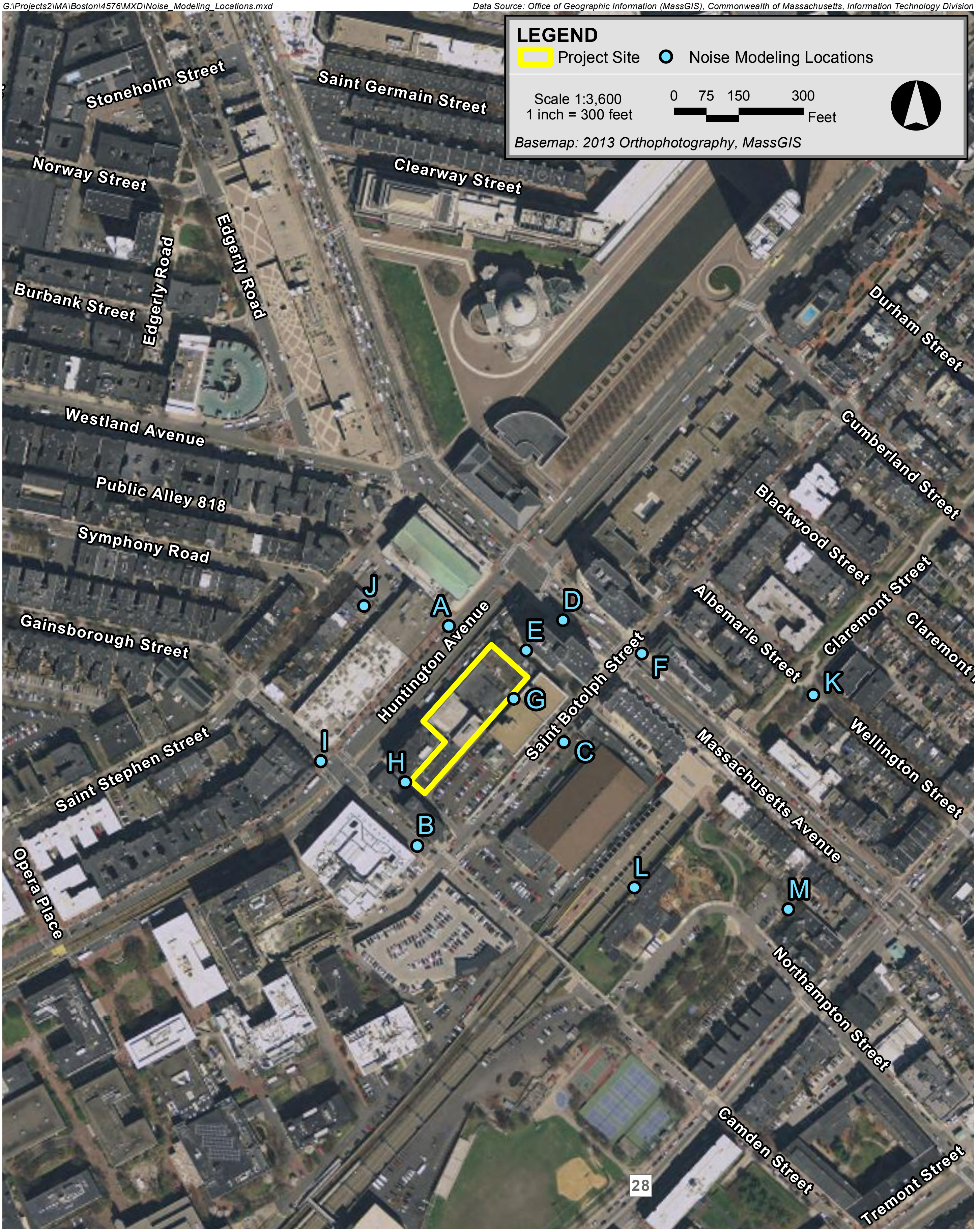

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Figure 3.10-2
Noise Modeling Locations

Table 3.10-6 Comparison of Future Predicted Project-Only Nighttime Sound Levels to the City of Boston Limits

Modeling Location ID	Zoning/ Land Use	Broadband (dBA)	Sound Level (dB) per Octave-Band Center Frequency (Hz)								
			31.5	63	125	250	500	1k	2k	4k	8k
A	Business	32	41	39	37	29	33	25	22	15	1
B	Institutional (Residential)	31	37	40	38	29	30	24	20	12	0
C	Institutional (Residential)	33	44	43	38	30	34	25	22	15	0
D	Institutional (Residential)	36	39	37	37	32	38	27	23	15	0
E	Business (Residential)	43	57	56	53	46	40	36	31	26	25
F	Commercial (Residential)	34	42	42	36	30	36	25	21	13	0
G	Institutional (Residential)	45	62	59	53	52	39	30	26	26	23
H	Institutional (Residential)	33	41	43	40	31	33	26	22	15	0
I	Residential	31	41	41	39	30	30	23	20	11	0
J	Residential	33	41	41	39	30	33	25	22	14	0
K	Residential	41	41	42	38	35	42	33	29	19	0
L	Institutional (Residential)	39	42	42	39	34	40	31	28	21	3
M	Residential	39	40	41	42	35	40	32	27	17	0
City of Boston Limits	**Residential Nighttime**	**50**	**68**	**67**	**61**	**52**	**46**	**40**	**33**	**28**	**26**
	Business	**65**	**79**	**78**	**73**	**68**	**62**	**56**	**51**	**47**	**44**

3.10.5.4 Future Sound Levels – Daytime

As noted above, the emergency generator will only operate during the day for brief, routine testing when the background sound levels are high, or during an interruption of power from the electrical grid. A second analysis combined noise from the Project's mechanical equipment and its emergency generator to reflect worst-case conditions. The sound levels were calculated at the same receptors as in the nighttime analysis, and then were evaluated against daytime limits. The predicted exterior Project-only daytime sound levels range from

32 to 46 dBA at any receptors. Adding operation of the emergency generator results in a less than 1 dBA increase to modeled nighttime levels. Predicted sound levels from Project-related equipment, including the emergency generator, are within the daytime broadband and octave-band limits under the City Noise Standards at each of the modeling locations, and in fact, would be in compliance with the nighttime noise level limits. The daytime evaluation is presented in Table 3.10-7.

Table 3.10-7 Comparison of Future Predicted Project-Only Daytime Sound Levels to the City of Boston Limits

Modeling Location ID	Zoning/ Land Use	Broadband (dBA)	Sound Level (dB) per Octave-Band Center Frequency (Hz)								
			31.5	63	125	250	500	1k	2k	4k	8k
A	Business	34	42	42	40	32	34	27	23	16	1
B	Institutional (Residential)	32	39	42	40	31	31	25	21	13	0
C	Institutional (Residential)	36	45	47	45	36	36	27	23	16	0
D	Institutional (Residential)	38	41	41	44	36	39	29	24	15	0
E	Business (Residential)	44	57	57	53	46	41	36	31	26	25
F	Commercial (Residential)	36	44	46	43	35	37	27	22	14	0
G	Institutional (Residential)	46	62	59	53	52	40	31	27	26	23
H	Institutional (Residential)	35	42	44	42	33	34	28	23	16	0
I	Residential	32	42	43	40	31	32	25	21	12	0
J	Residential	34	42	44	42	32	34	27	23	15	0
K	Residential	43	44	47	46	41	44	36	31	20	0
L	Institutional (Residential)	43	44	47	46	42	43	36	31	22	3
M	Residential	43	41	44	47	40	43	37	32	22	0
City of Boston Limits	**Residential Daytime**	**60**	**76**	**75**	**69**	**62**	**56**	**50**	**45**	**40**	**38**
	Business	**65**	**79**	**78**	**73**	**68**	**62**	**56**	**51**	**47**	**44**

3.10.6 Conclusions

Baseline noise levels were measured in the vicinity of the Project during the day and at night. At these and additional locations, future Project-only sound levels were calculated based on information provided by the manufacturer of the expected mechanical equipment. Project-only sound levels were compared to applicable limits.

Predicted mechanical equipment noise levels from the proposed Project at each receptor location, taking into account attenuation due to distance, structures, and noise control measures, will be at or below the octave-band requirements of the City Noise Standards. The predicted sound levels from Project-related equipment, as modeled, are expected to remain below 50 dBA at residences; therefore, within the nighttime residential zoning limits for the City of Boston at the nearest residential receptors. The results indicate that the Project can operate without significant impact on the existing acoustical environment.

At this time, the mechanical equipment and noise controls are being refined, and they are still conceptual in nature. During the final design phase of the Project, mechanical equipment and noise controls will be specified and designed to meet the applicable broadband limit and the corresponding octave-band limits of the City Noise Standards.

3.11 Construction Impacts

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 that 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 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

The Proponent anticipates that the Project will commence construction in in the fourth quarter of 2018 and last for approximately 26 months.

Typical construction hours will be from 7:00 am to 6:00 pm, Monday through Friday, with most shifts ordinarily ending at 3:30 pm. No substantial sound-generating activity will occur before 7:00 am. If longer hours, additional shifts, or Saturday work is required, the construction manager will place a work permit request to the Boston Air Pollution Control Commission and BTD in advance. Notification should occur during normal business hours, Monday through Friday. It is noted that some activities such as finishing activities could run beyond 6:00 pm to ensure the structural integrity of the finished product; certain components must be completed in a single pour, and placement of concrete cannot be interrupted.

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 Charles River" 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 300 to 400 construction jobs will be created over the length of construction. The Proponent will make reasonable good-faith efforts to have at least 51% of the total employee work hours be for Boston residents, at least 40% of total employee work hours be for minorities and at least 12% of the total employee work hours be for women. The Proponent will enter into a Boston Residents Construction Employment Plan agreement 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 include several measures to be strictly enforced with all contractors to reduce potential emissions and minimize impacts, pursuant to this Article 80 approval, such as:

- 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. Those solid waste materials that cannot be recycled 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 non-recyclable materials , which will be disposed of 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 MassDOT, MWRA, BWSC, Boston Public Works, Dig Safe, and the governing utility company requirements, as applicable. 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 for each phase of the Project, in compliance with the City's requirements.

3.11.14 Wildlife Habitat

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

Chapter 4.0

Sustainable Design and Climate Change Resiliency

4.0 SUSTAINABLE DESIGN AND CLIMATE CHANGE RESILIENCY

4.1 Sustainable Design

To measure the results of their sustainability initiatives and to comply with Article 37, the Proponent intends to use the framework of the Leadership in Energy and Environmental Design (LEED) rating system promulgated by the US Green Building Council (USGBC). The Project will use LEED for New Construction (LEED v4 for BD+C) as the rating system to demonstrate compliance with Article 37. The LEED rating system tracks the sustainable features of a project by achieving points in the following categories: Location and Transportation, Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Innovation and Design Process, and Regional Priority Credits.

A LEED checklist for the new building is included at the end of this section, and details the credits the Project anticipates achieving. The checklist will be updated regularly as the design develops and engineering assumptions are substantiated. At present, 53 points have been targeted. Additional credits, identified as "Maybe" on the checklist, will be evaluated as the design progresses.

The Proponent's approach to each of the credit categories is described below.

Integrative Process

Beginning in pre-design and continuing throughout the design phases, the Project team will identify and use opportunities to achieve synergies across disciplines and building systems. The analyses will inform the Proponent's Project requirements, basis of design, design documents, and construction documents.

Location and Transportation

The Project site is located in a developed area with existing infrastructure and many nearby basic services. The site is just a short walk from several Massachusetts Bay Transportation Authority (MBTA) stations, including Boylston Street Station with service on the Green Line, and Chinatown Station and Tufts Medical Center with service on the Orange Line. Secure bicycle storage for residents will be included in the building. All parking associated with the Project will be within the building, and 5% of parking spaces will be designated as preferred parking for green vehicles.

Sustainable Sites

To reduce pollution from construction activities, the construction manager will implement a project-specific, EPA-compliant Erosion and Sedimentation Control (ESC) plan. Soil erosion, waterway and stormwater system sedimentation, and airborne dust will be controlled during site preparation, demolition of existing conditions, and the construction of the new development.

A site survey will be completed to evaluate sustainable options and inform site design decisions. Highly reflective roof materials will be used to reduce the heat island effect.

Water Efficiency

To maximize water efficiency, the Project will include low-flow bathroom fixtures and faucets. Additionally, the Project anticipates minimizing the need for potable water to be used for irrigation through the careful selection of vegetation and mechanical methods to reduce water use.

Energy and Atmosphere

The Project will be constructed based on the building and energy codes in effect at the time of the building permit application. Energy reduction measures are expected to result in energy cost reductions of approximately 20% when compared to a baseline building performance as calculated using the rating method in Appendix G of ANSI/ASHREA/IESNA Standard 90.1-2007.

To reduce stratospheric ozone depletion, the buildings design team will select building heating, ventilating, air conditioning and refrigeration (HVAC&R) systems that use no chlorofluorocarbon (CFC) based refrigerants. Project engineers are expected to perform the calculations and implement protocols to verify compliance with the Enhanced Refrigerant Management credit.

To verify that the Project's energy-related systems are installed and calibrated to perform according to the owner's Project requirements, basis of design, and construction documents, the Project is expected to perform enhanced commissioning activities.

Materials and Resources

It is anticipated that a construction and demolition waste management plan will be developed to reduce construction and demolition waste disposed of in landfills and incineration facilities. The waste management plan will describe materials separation strategies and whether the materials will be sorted on-site. The waste management plan is anticipated to direct 75% of all waste and debris to be recycled.

The completed Project will provide dedicated areas for the collection and storage of recyclable materials for all building occupants. Collection and storage areas will be readily accessible and adequately sized based on the building square footage and usage. Materials collected for recycling will include: mixed paper, corrugated cardboard, glass, plastics, and metals.

Indoor Environmental Quality

The building mechanical systems will be designed to meet or exceed the requirements of ASHRAE Standard 62.1-2010 and/or applicable building codes. Any naturally ventilated spaces will comply with or exceed the applicable portions of ASHRAE 62.1. S will not be allowed within the common areas of the building nor within the apartments. Designated smoking areas outside of the building will be located at least 25 feet from doorways, operable windows, and outdoor air intakes.

Materials will be specified that meet the threshold level of compliance with emissions and content standards. HVAC systems and the building envelope will be designed to meet the requirements of ASHRAE Standard 55-2010 for thermal comfort. The Project has also been designed to maximize daylighting into the building.

Innovation in Design

In addition to the measures described above, the Project anticipates an additional four LEED points as a result of Innovation and exemplary performance.

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. It is anticipated that the Project will achieve two regional priority credits.

4.2 Climate Change Resiliency

4.2.1 Introduction

Climate change conditions considered by the Project team include higher maximum and mean temperatures, more frequent and longer extreme heat events, more frequent and longer droughts, more severe freezing rain and heavy rainfall events, and increased wind gusts.

The expected life of the Project is anticipated to be approximately 50 years. Therefore, the Proponent planned for climate-related conditions projected 50 years into the future. A copy of the completed Checklist is included in Appendix F. Given the preliminary level of design, the responses are also preliminary and may be updated as the Project design progresses.

4.2.2 Extreme Heat Events

The *Climate Ready Boston* report predicts that in Boston, there may be between 25 to 90 days with temperatures over 90 degrees by 2070, compared to an average of 11 days per year over 90 degrees between 1971 to 2000. The Project design will include measures to adapt to these conditions, including installing high performance HVAC equipment, a high-performance building envelope and including operable windows where possible.

4.2.3 Rain Events

As a result of climate change, the Northeast is expected to experience more frequent and intense storms. To mitigate this, the Proponent will take measures to minimize stormwater runoff and protect the Project's mechanical equipment, as necessary. The Project will be designed to reduce the existing peak rates and volumes of stormwater runoff from the site, and to promote runoff recharge to the greatest extent practicable.

4.2.4 Drought Conditions

Although more intense rain storms are predicted, extended periods of drought are also predicted due to climate change. Under the high emissions scenario, the occurrence of droughts lasting one to three months could go up by as much as 75% over existing conditions by the end of the century. To minimize the Project's susceptibility to drought conditions, the landscape design is anticipated to incorporate native and adaptive plant materials and high efficiency irrigation systems will be installed. Aeration fixtures and appliances will be chosen for water conservation qualities, conserving potable water supplies.

LEED v4 for BD+C: New Construction and Major Renovation

Project Checklist

Project Name: 252-264 Huntington Avenue
Date: 12/13/2016

Y	?	N			
1			Credit	Integrative Process	1

14	2	16	**Location and Transportation**		16
		16	Credit	LEED for Neighborhood Development Location	16
1			Credit	Sensitive Land Protection	1
	2		Credit	High Priority Site	2
5			Credit	Surrounding Density and Diverse Uses	5
5			Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

3	4	3	**Sustainable Sites**		10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
	2		Credit	Site Development - Protect or Restore Habitat	2
	1		Credit	Open Space	1
		3	Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
	1		Credit	Light Pollution Reduction	1

3	3	5	**Water Efficiency**		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
	2		Credit	Outdoor Water Use Reduction	2
2		4	Credit	Indoor Water Use Reduction	6
	1	1	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

13	4	16	**Energy and Atmosphere**		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
4	2		Credit	Enhanced Commissioning	6
8	1	9	Credit	Optimize Energy Performance	18
		1	Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
		3	Credit	Renewable Energy Production	3
1			Credit	Enhanced Refrigerant Management	1
	1	1	Credit	Green Power and Carbon Offsets	2

5	0	8	**Materials and Resources**		13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
		5	Credit	Building Life-Cycle Impact Reduction	5
1		1	Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
1		1	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1		1	Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

8	6	2	**Indoor Environmental Quality**		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
1		1	Credit	Enhanced Indoor Air Quality Strategies	2
2		1	Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
	2		Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
1	1		Credit	Interior Lighting	2
	3		Credit	Daylight	3
1			Credit	Quality Views	1
1			Credit	Acoustic Performance	1

4	0	0	**Innovation**		6
3			Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

2	2	0	**Regional Priority**		4
1			Credit	Regional Priority: Specific Credit	1
1			Credit	Regional Priority: Specific Credit	1
	1		Credit	Regional Priority: Specific Credit	1
	1		Credit	Regional Priority: Specific Credit	1

53	21	50	**TOTALS**	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 Site Context

The Project site spans the street addresses of 252-264 Huntington Avenue, and is generally bounded: on the northwest by Huntington Avenue, on the northeast by a three-story, mixed-use building commonly known as 250 Huntington Avenue; on the southeast by Public Alley 821; and to the southwest by Public Alley 822. At 264 Huntington Avenue, the site currently contains the B.U. Theatre and its four-story masonry annex, which will be retained, and 252 and 256 Huntington Avenue each have two-story, masonry buildings, with ancillary uses to the Theatre.

The Project site is at the beginning of the *Avenue of the Arts*, a unique corridor in the City of Boston that serves as a place for residents and visitors to engage in a wide range of cultural and academic opportunities. The area is home to many of Boston's greatest institutions dedicated to fine arts, architecture, music, theatre, and education, including the Boston Symphony Orchestra, New England Conservatory of Music, Northeastern University, the Wentworth Institute of Technology, Massachusetts College of Art and Design, and the Museum of Fine Arts, as well as the Huntington Theatre Company, located at the site itself.

5.2 Project Design

The Project façade is designed to serve as a complement to the B.U. Theatre, with the feel of the theatre brought out to the street edge. The Project will transform the site, with its currently inactive edges, by providing a new lobby and accessible entrance for the B.U. Theatre, new opportunities for retail/restaurant space, and approximately 426 new units of housing within a new tower adjacent to the theatre.

Landscape markers outside the entry to the building will re-create stage markings. These elements will glow at night and provide a venue for impromptu performance (see Figure 5-1). The first floor of the new building will include a new lobby and handicapped-accessible entrance into the theatre. The second floor, above the new theatre lobby, will provide break-out space for theatregoers during intermissions, and will include a large, outdoor balcony above the new Theatre lobby, distinguishing the new building to the east from the old Theatre façade. The preliminary design of the facade is comprised of glass curtainwall and metal panel rain-screen.

A smaller, residential lobby will also be located along Huntington Avenue, at the midpoint of the new building. It will include its own seating areas and leasing offices. To the left of the residential lobby entrance, there will be third entrance to a large retail/restaurant space.

252-264 Huntington Avenue   Boston, Massachusetts

Stantec

Figure 5-1
View from Huntington Avenue

All three entrances will connect visually to the streetscape through full-height, exterior storefront windows. Loading, trash, and other building services for the entire site will be located at an off-street loading area, accessed from Public Alley 821, at the rear of the site. Accessory parking will also be accessed from Public Alley 821.

The new building is part of a larger visual spine that runs along Huntington Avenue that begins with the Massachusetts College of Art tower and culminates with the towers of the Prudential Center. These towers serve as visual locus for activities along the Avenue of the Arts. The new building serves as a marker for the intersection of Massachusetts Avenue and Huntington Avenue and seeks to create a greater sense of place in this part of the urban fabric.

The design of the new building is inspired by Greek drama masks. These "masks" manifest themselves as large light and dark bands that wrap the façade. The elements shift and slide past one another to allow both masks to be seen from multiple vantage points (see Figures 5-2 and 5-3). This theatrical shifting will serve as an iconic focal point for the Avenue of the Arts, because of the site's location near the intersection of Massachusetts Avenue and Huntington Avenue. This location provides long-range views in the north/south and east/west directions, marking an "entrance" to the area.

The Project site is located within the area of the Avenue of the Arts Design Guidelines, and the Project design was informed by the Guidelines.

Active Ground Floor Uses

The Guidelines state that "Ground floors of new buildings, particularly those along Huntington Avenue, ... should be transparent, have operable doors to allow easy access and robust ground floor activity... Glass should be truly transparent... The finished floor elevation of ground floors should align with the sidewalk level." The Project will provide a variety of active ground floor uses, including approximately 7,500 sf of restaurant/retail space, and approximately 14,000 sf of theatre space including a new lobby and accessible entrance. First and second floor uses will be visible from the street and open to the public, and all entrances will connect visually to the streetscape through full-height, exterior storefront windows.

Institutional Expression

The Guidelines recommend that projects "provide for special moments of institutional expression". The Project will strengthen and highlight the B.U. Theatre's presence of the Avenue of the Arts. The Project façade is designed to serve as an extension of the B.U. Theatre, with theatre functions dominating the sidewalk and bringing the Theatre out to the street edge.

Streetwall Façade

The Guidelines state that "towers within the study area should be composed largely of glass with colorful, artful, innovative accents." The Project will create large glass facades along Huntington Avenue that are artfully captured with metal panel bands that help to delineate between the two larger "mask" gestures of the building form.

252-264 Huntington Avenue Boston, Massachusetts

Stantec

Figure 5-2
Aerial View facing Northeast

Figure 5-3
View facing Southeast

Chapter 6.0

Historic and Archaeological Resources

6. 0 HISTORIC AND ARCHAEOLOGICAL RESOURCES

This section identifies and describes the existing buildings on the Project site and the individual historic resources and districts near the Project site.

The Project site comprises three, contiguous parcels in a dense, urban block of Huntington Avenue, Boston's Avenue of the Arts. There are several State and National Register-listed properties and districts, and locally designated districts and landmarks, within the Project's vicinity.

6.1 Buildings on the Project Site

Built in 1925 as the Jewett Repertory Theater, the property at **264 Huntington Avenue** remains in theatrical use to this day. As designed by the firm of J. Williams Beal Sons of Boston, the building is English Baroque in style. Crowned by an entablature and parapet balustrade of limestone, the three-story façade is notable for its masonry coursing of clinker brick. Though popular in the 1920s, this material was more commonly employed in the Tudor Revival buildings of that period; its appearance in a classically derived composition provides a frisson of the unexpected suitable to a theater. The façade's sparse fenestration is also unusual. The paired entrances are set off from the broad, windowless central bay by colossal limestone pilasters in the Corinthian order and sheltered by semi-elliptical porches supported by colonettes. These projections were once linked by a balustraded podium spanning the elevation; this feature, analogous to the raised terrace of an English Georgian country house, has since been replaced with individual stoops. On the roof of each porch, paired French doors set within aediculated surrounds open to shallow balconies originally enclosed by wrought-iron railings. On the third floor, oculus windows set in richly carved cartouches are centered above the entries below.

The interior plan of the theater is unusual, incorporating extensive back-of-house facilities apparently designed to support the educational endeavors of the Jewett company, including an assembly hall which may have been intended for dance performances or one-act plays. Well-detailed staircases and basement-level lounges are also provided. The main house demonstrates a restrained Georgian style, with paneled walls supporting a coffered ceiling. The ornamental balcony railing connects the paired boxes flanking the proscenium, echoing the balustrade that once linked the entries of the Huntington Avenue façade.

Though modestly born, as the son of Norwell, Massachusetts, cobbler, John Williams Beal (1855-1919) went on to acquire a distinguished professional pedigree, working his way through M.I.T. to graduate with the Class of 1877, the first at M.I.T. to receive architectural degrees. He then left for Paris to study at the Ėcole des Beaux Arts and traveled throughout Europe for several years before moving to New York. There he found architectural employment first with Richard Morris Hunt and later with McKim, Mead and White. Returning to Boston in 1888, Beal opened his own practice in which he was eventually joined by his sons Horatio and John Woodbridge Beal.

Beal's other notable Boston works include Harriswood Crescent (1890), a distinguished row of half-timbered rowhouses on Harold Street in Roxbury, All Souls Unitarian Church (1888; now Charles Street A. M. E. Church) at 551 Warren Street, also in Roxbury. Beyond Boston, Beal was responsible for the Plymouth County Hospital and Jail, the Adams and Elks buildings in Quincy, and the Anglim Building in Brockton, an early concrete skyscraper. Following the successful completion of that project in 1906, local demand for the services of Beal & Sons was strong enough to warrant the opening of a satellite office in Brockton; this remained in business into the 1970s. One of Massachusetts' most prolific architects of his generation, Beal was the architect of more than 150 buildings included in the Inventory, demonstrating his proficiency in a wide variety of styles. The Jewett Theatre was clearly embraced and continued by the sons who followed their father in the architectural profession.

The Jewett Repertory Theater company was launched in 1915 by the Australian-born actor Henry Jewett and his actress wife Frances, who presented a season of Shakespeare at the (now demolished) Boston Opera House. Following eight years in residence at the Copley Theatre, the company was successful enough to build its own playhouse, selecting a Huntington Avenue site for its proximity to other cultural institutions and performing-arts venues. As a stage company, the Jewett Theater produced not only the classics but also newer works by such contemporary playwrights as J. M. Barrie, Somerset Maugham, Ferenc Molnar and A. A. Milne. Demonstrating an unusual commitment to public arts education for the time, the Jewetts also operated a theatrical school, offering courses in acting, playwriting, directing, theatre technology and management as well as dance and pantomime. Seeking to re-establish itself as a non-profit institution, the Jewett Repertory Company in 1925 petitioned the Commonwealth of Massachusetts for tax-exempt status. In accepting the petition, Attorney General Jay Benton concluded that the Jewett Repertory Theater qualified for the tax exemptions traditionally accorded literary, benevolent, charitable, and scientific institutions. With this legal opinion, Massachusetts became the first state in the Union to grant a theater tax-exempt status.

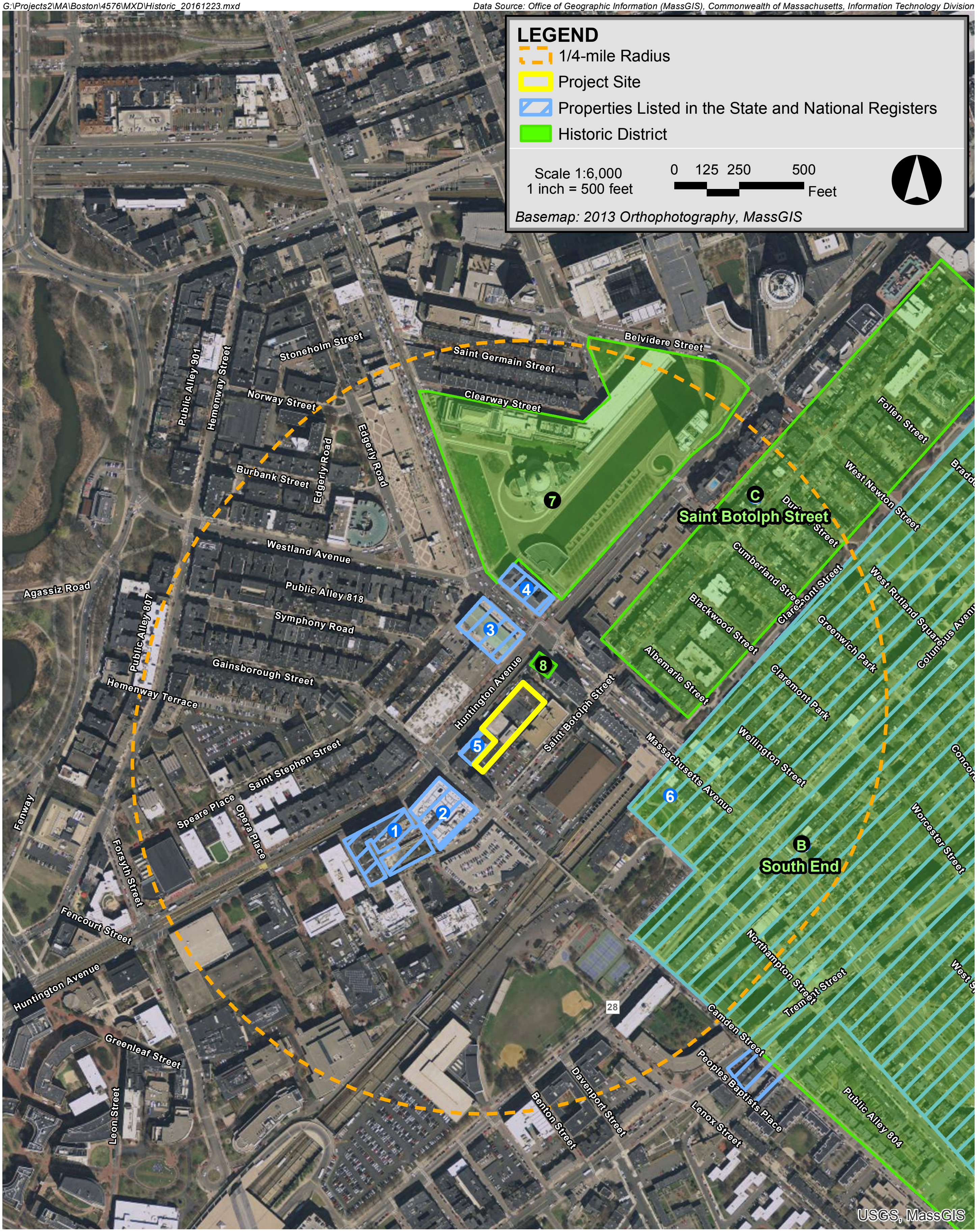
Despite achieving this favorable outcome, the company nonetheless struggled to compete with commercial theaters and talking pictures. Dealt the coup de grâce by the stock market crash of 1929, the theater building closed its doors the following year; Jewett himself died soon thereafter. The house was soon converted to a cinema and renamed the Esquire Theatre. Occasional live performances were sometimes given as well; Louis Calhern and Lillian Gish appeared on its stage in Life with Father in 1941. Acquired by Boston University in 1953, the playhouse has since been known as the Boston University Theatre. It remains today the centerpiece of that institution's theater arts program, which presents approximately seven student productions annually.

Immediately to the east of the theater is **256-258 Huntington Avenue**, whose demolition is proposed as part of the Project. This two-story property is included in the Inventory of Historic and Archaeological Assets of the Commonwealth (the Inventory), but no building permit has been located to establish its architect or year of construction. It appears from other surviving records to have been erected between 1912 and 1917. Its ground floor was operated from the late 1910s through the 1920s as a U.S. postal annex, and in the 1920s through the 1940s as a branch of the Child's chain of low-priced restaurants. The second floor was historically occupied by music teachers. More recently, the building has been operated as the Boston University Theatre Production Center, to be relocated at B.U.'s planned performing arts center on Commonwealth Avenue. Classical Revival in style, its symmetrical limestone façade is organized as an arcade whose second-floor lunettes are divided by spandrels decorated with shields enclosed by wreaths. The entablature is expressed as a series of heavy garlands centering a rectangular plaque reading "Old France." The significance of this inscription is, like the identity of the architect, unknown.

The third existing building at the Project site is not included in federal, state or local inventories. Now maintained as a rehearsal hall for the Boston University Theatre, 252-254 Huntington Avenue was built in 1923 to the designs of F. A. Norcross, architect of the Riviera at 270 Huntington Avenue (described below). Three stories in height, the building's 45-foot-wide painted stone façade is expressed as six elongated arched window openings above a ground-floor storefront; the latter has been filled with Texture 1-11. Originally intended to accommodate retail space at sidewalk level with light storage on the upper floors, the building was later operated as a public ballroom, nightclub and cinema before its acquisition by Boston University in the early 1980s.

6.2 Historic Resources in the Vicinity

As listed in Table 6-1 below, and as shown on Figure 6-1, numerous districts and individual resources included in the State and National Registers of Historic Places are within proximity to the Project site. Local historic districts near the Project site include the St. Botolph Area Architectural Conservation District and South End Landmark District; the latter is also a National Register district. In addition, the Project site is within a quarter-mile radius of the individually National Register-listed Riviera and Young Men's Christian Association buildings, Symphony Hall, Horticultural Hall, the New England Conservatory of Music/Jordan Hall, as well as the Christian Science Complex. Also within this radius, at the southwest corner of Massachusetts and Huntington Avenues, is one of a group of historic street clocks that has attained local landmark status. These resources are listed in the table below and described thereafter.



252-264 Huntington Avenue Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 6-1
Historic Resources

Table 6-1 State and National Register-Listed Properties near the Project Site

Historic Resource	Address	Designation
A. St. Botolph Area Architectural Conservation District	Bounded by Harcourt St., Southwest Corridor Park, alley east of Huntington Ave., alley north of Massachusetts Ave.	LHD
B. South End Landmark District	Bounded by Southwest Corridor Park, Camden St., Harrison Ave. & Tremont Sts.	LHD
1. Boston Young Men's Christian Assn.	312-320 Huntington Ave.	NR
2. New England Conservatory of Music / Jordan Hall	290 Huntington Ave.	NR, NHL, PR
3. Symphony Hall	301 Massachusetts Ave.	NR, NHL, PR
4. Horticultural Hall	300 Massachusetts Ave.	NR
5. The Riviera	270 Huntington Ave.	NR
6. South End Historic District	(*See* B, above)	NRDIS
7. Christian Science Center Complex	Massachusetts & Huntington Aves., Belvidere, Clearway & Dalton Sts.	LL
8. Street clock	333 Massachusetts Ave.	LL

Designation Legend

LHD	Local Historic District
LL	Local Landmark
NR	Individually listed in the National Register of Historic Places
NRDIS	National Register of Historic Places Historic District
NHL	National Historic Landmark
PR	Preservation Restriction

6.3 Archaeological Resources

The Project site comprises previously developed urban parcel. As described in Section 3.8, the site is part of the Back Bay area of Boston and was originally wetland/below water. This area was filled in the 19th century to create reclaimed land for development. Due to previous development activities and disturbances at the Project site, it is unlikely that it contains significant archaeological resources.

6.4 Potential Impacts to Historic Resources

6.4.1 Demolition of Existing Buildings

The proposed Project will require the demolition of the building at 256-258 Huntington Avenue. Although included in the Inventory, the building's architect has not been identified and its precise year of construction within the 1912-1917 period is unknown. The Boston Landmarks Commission (BLC) will be afforded the opportunity to review the proposed demolition through the Article 85 Demolition Delay review process.

6.4.2 Urban Design

The Project site comprises three contiguous parcels at 252, 258 and 264 Huntington Avenue, encompassing a total area of 34,173 square feet. The centerpiece of the Project is the historic Boston University Theatre at 264 Huntington, whose retention is enabled by the construction of a new mixed-use building on the two adjacent parcels.

The Project has been designed to enhance the historic theatre by incorporating a new accessible lobby at sidewalk level as well as a second-floor lounge and balcony for theatre patrons to enjoy during intermissions. At the same time, the new construction will introduce approximately 7,500 square feet of retail/restaurant space and approximately 426 new units of housing to the neighborhood.

Conceived to relate to both the theatre building and the larger context of cultural and educational institutions clustered along Boston's Avenue of the Arts, the Project has been designed with considerable sensitivity to these contextual conditions. The responsiveness of this approach is evident in the massing of the residential tower, whose offset volumes are intended to evoke the complementary masks of classical drama. The integration of the new construction and its historic neighbor is underscored by the alignment of the tower's four-story base with the cornice line of the theatre. Much as the tower's silhouette will enliven the skyline, its retail spaces and residential entries will animate the Huntington Avenue streetscape. The Project's active ground-floor expression will be particularly welcome at this location, whose proximity to the Massachusetts Avenue underpass has long hampered a more inviting pedestrian environment.

6.4.3 Visual Impacts to Historic Resources

The Project is located at 252-264 Huntington Avenue, along the Avenue of the Arts. Numerous historic districts and individual historic resources are within proximity to the Project site. These include the locally designated St. Botolph Area Architectural Conservation District and the South End Landmark District, as well as several individual NR listings.

Thirty-two stories or 362 feet in height, the proposed building will maintain a consistent street wall along Huntington Avenue, which will gain energy from the generously glazed retail storefronts and inviting residential entries. While taller than its immediately adjacent buildings, the Project will be consistent with similarly scaled buildings farther east on Huntington Avenue and with the towers of the Prudential Center complex to the north.

6.4.4 Shadow Impacts to Historic Resources

Shadow impacts to the historic resources will be almost entirely mitigated by the presence of other multistory buildings already casting shadows in the area. As illustrated in the shadow study diagrams (Figures 3.1-1 through 3.1-14), new shadow will be limited to two historic resources. Symphony Hall will be in partial shadow at noon on March 21 and September 21, and at 9:00 a.m. on December 21. The Christian Science Center Complex will experience partial shadow at noon on December 21. No net new shadow is anticipated to affect any other historic resources.

6.4.5 Wind Impacts to Historic Resources

The Project entails the construction of a new building which will result in localized changes in wind conditions. Within the surrounding area, wind conditions at pedestrian level will be substantially unchanged. Nearby historic resources at which wind conditions are anticipated to be comfortable for walking and standing include Symphony Hall and the Riviera. Wind conditions will be comfortable for walking at the New England Conservatory/Jordan Hall, while at the Young Men's Christian Association wind conditions will be comfortable for walking and sitting. At Horticultural Hall and the Christian Science Center Complex, wind conditions will be comfortable for walking, standing and sitting. Only at the street clock at the southwest corner of Huntington and Massachusetts avenues are wind conditions expected to be uncomfortable. There are no wind impacts to the St. Botolph and South End districts.

6.5 Consistency with Other Historic Reviews

6.5.1 Boston Landmarks Commission Article 80 Review

The submission of this PNF initiates review of the Project by the BLC, under the City's Article 80 process.

6.5.2 Boston Landmarks Commission Article 85 Review

The proposed demolition of 256-258 Huntington Avenue will be subject to review by the Boston Landmarks Commission under Article 85 of the Boston Zoning Code. An Article 85 application for the property will be submitted to the BLC at the appropriate time.

6.5.3 Massachusetts Historical Commission

The Massachusetts Historical Commission (MHC) has review authority over projects requiring state funding, licensing, permitting, and/or approvals that may have direct or indirect impacts to properties listed in the State Register of Historic Places. The Project will be seeking approval in accordance with M.G.L. c. 121A, which triggers MHC review under Chapter 9 of the Massachusetts General Law (MGL), Sections 27-27c, as amended by Chapter 254 of the Acts of 1988. MHC review of the Project will occur as part of the MEPA process; a copy of the ENF filed with the MEPA Office will be delivered to MHC.

Chapter 7.0

Infrastructure

7.0 INFRASTRUCTURE

This section of the PNF 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
- Storm Drainage
- Natural gas
- Electricity
- Telecommunications

7.1 Wastewater

7.1.1 Existing Sewer System

Existing Boston Water and Sewer Commission (BWSC) combined and dedicated sanitary sewer mains are located in Public Alley No. 820, Public Alley No. 821, and Gainsborough Street, near to the Project site.

Public Alley No. 820

There is a 12-inch BWSC sanitary sewer main in Public Alley No. 820 which flows southeasterly from sewer manhole 708 to sewer manhole 242 at the intersection of Public Alley No. 820 and Public Alley No. 821.

Public Alley No. 821

There is a 12-inch BWSC sanitary sewer main which flows southwesterly starting from the intersection of Public Alley No. 820 and Public Alley No. 821, across Public Alley No. 822 to connect to the 90″x92″ BWSC combined sewer main in Gainsborough Street.

Gainsborough Street

There is a 90″x92″ BWSC combined sewer main which flows southeasterly and ultimately flows to the Massachusetts Water Resources Authority (MWRA) Deer Island Waste Water Treatment Plant for treatment and disposal.

The existing sewer system is illustrated in Figure 7-1.

7.1.2 Proposed Wastewater Generation

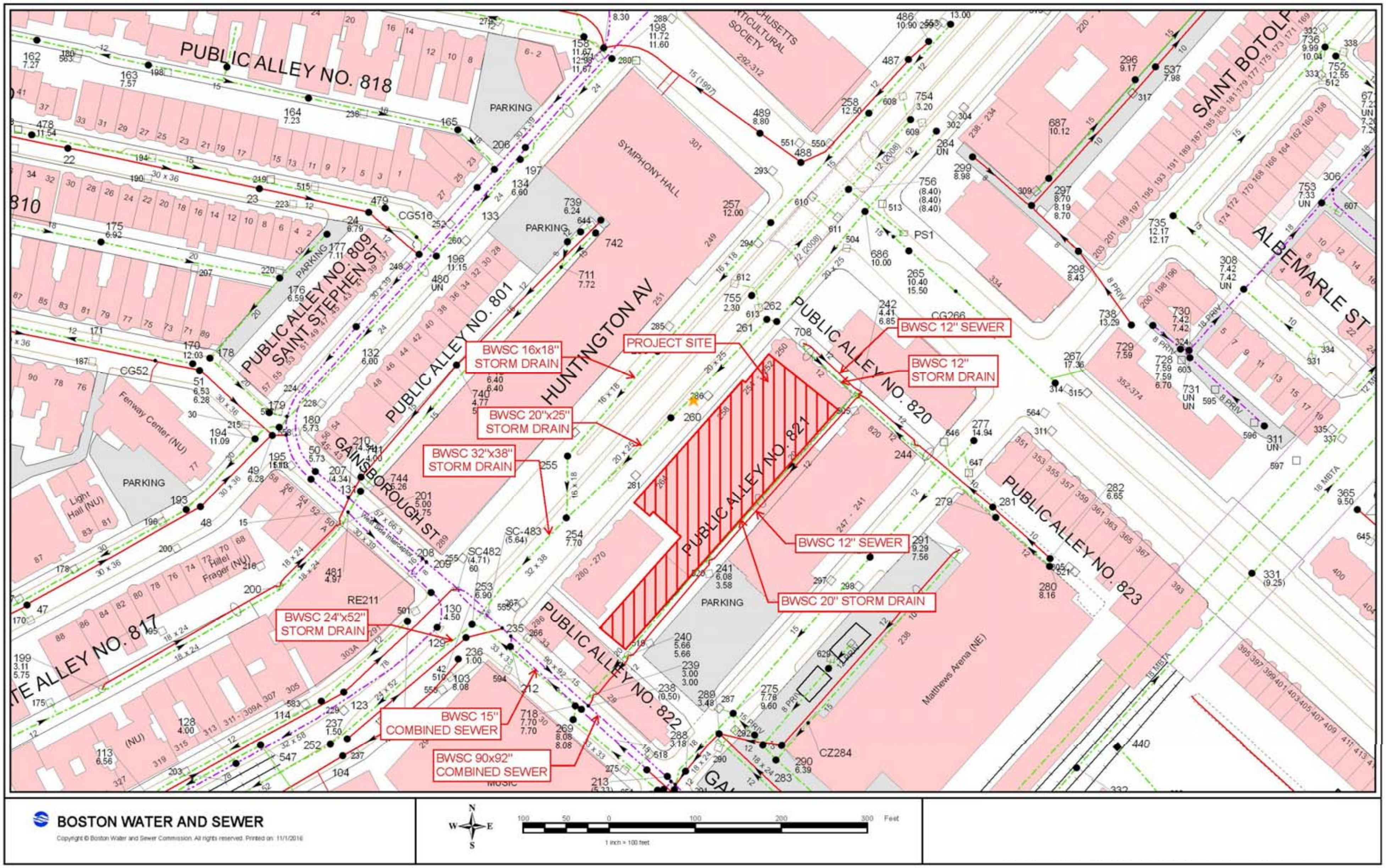
The Project's sewage generation rates were estimated using 310 CMR 15.0 for the proposed building program. 310 CMR 15.0 lists typical sewage generation values for the proposed building use, as shown in Table 7-1. Typical generation values are conservative values for estimating the sewage flows from new construction. The Project site will include approximately 426 units (or 550 bedrooms), with retail/restaurant space and a breakout area for the Boston University Theatre. The two existing office buildings to be demolished generate a combined sewage flow of approximately 2,251 gallons per day (gpd), as calculated in Table 7-1. The seating capacity of the Boston University Theatre will remain unchanged, and the new breakout space will only be used by the Theatre, therefore these uses will not result in a change in the existing sewage flow.

The Proponent will coordinate with the BWSC on the design and capacity of the proposed connections to the BWSC sewer system. The Project is expected to generate a net increase in wastewater flows of approximately 69,625 gallons per day.

New building sanitary sewer services required for the Project will connect to the existing sanitary sewer main in Public Alley No. 821. Properly sized grease trap(s) will be included in the Project to intercept the restaurant flows, as required by BWSC.

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 proposed service connections, an assessment of Project demands and BWSC system capacity, and the establishment of service accounts.

The Project will contribute to the Department of Environmental Protection's Infiltration and Inflow (I&I) Program as coordinated through BWSC. The contribution will be based on the final sewage flows increase from the Project and will be paid to the BWSC prior to having the Project's water account activated.



252-264 Huntington Avenue Boston, Massachusetts

Figure 7-1

Existing Sewer and Stormwater System

Table 7-1 Proposed Project Wastewater Generation

Use	Size/Unit	310 CMR Value (gpd/unit)	Total Flow (gpd)
Existing Building (Using average 310 CMR values) (to be demolished)			
Office (256 Huntington Avenue)	20,432 sf	75/1000 sf	1,532
Office (252 Huntington Avenue)	9,576 sf	75/1000 sf	718
Total Existing Sewer Flows (to be demolished)			**2,250**
Proposed Building (using average 310 CMR values)			
Residential Units	550 bedrooms	110/bedroom	60,500
Restaurant	325 Seats	35/seat	11,375
Total Proposed Sewer Flows			**71,875**
Increase in Sewer Flows			**69,625 gpd**

7.1.3 Sewage Capacity and Impacts

The Project's impact on the existing BWSC sewer system in Public Alley No. 821 was analyzed.

Table 7-2 indicates the hydraulic capacity of the existing 12-inch BWSC sewer main in Public Alley No. 821. The minimum hydraulic capacity of the 12-inch BWSC sewer main 1.13 million gallons per day (MGD) or 1.74 cubic feet per second (cfs).

Based on a total average daily sewage flow estimate for the Project of 71,875 gpd or 0.072 MGD, which is an increase of 69,625 gpd or 0.070 MGD from the existing site, and with a factor of safety estimate of 10 (total estimate = 0.070 MGD x 10 = 0.70 MGD), sewer capacity problems are not anticipated due to the proposed improvements.

Table 7-2 Sewer Hydraulic Capacity Analysis

Manhole (BWSC Number)	Distance (feet)	Invert Elevation (up)	Invert Elevation (down)	Slope (%)	Dia. (in)	Manning's Number	Flow Capacity (cfs)	Flow Capacity (MGD)
Public Alley No. 821								
242 to 241	300	4.41	3.58	0.27%	12	0.013	1.85	1.20
241 to 239	240	3.58	3.00	0.24%	12	0.013	1.74	1.13

Note:
1. Manhole numbers taken from BWSC Sewer system GIS Map 23K
2. Flow Calculations based on Manning's Equation

7.2 Water System

7.2.1 Existing Water Service

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 Huntington Avenue.

There is a 20-inch southern high water main and a 16-inch southern low water main in Huntington Avenue adjacent to the site. On the far north easterly side of Huntington Avenue there are a 12-inch and 8-inch southern low water mains. These mains are part of a looped system within the roads around the site.

The existing water system is illustrated in Figure 7-2.

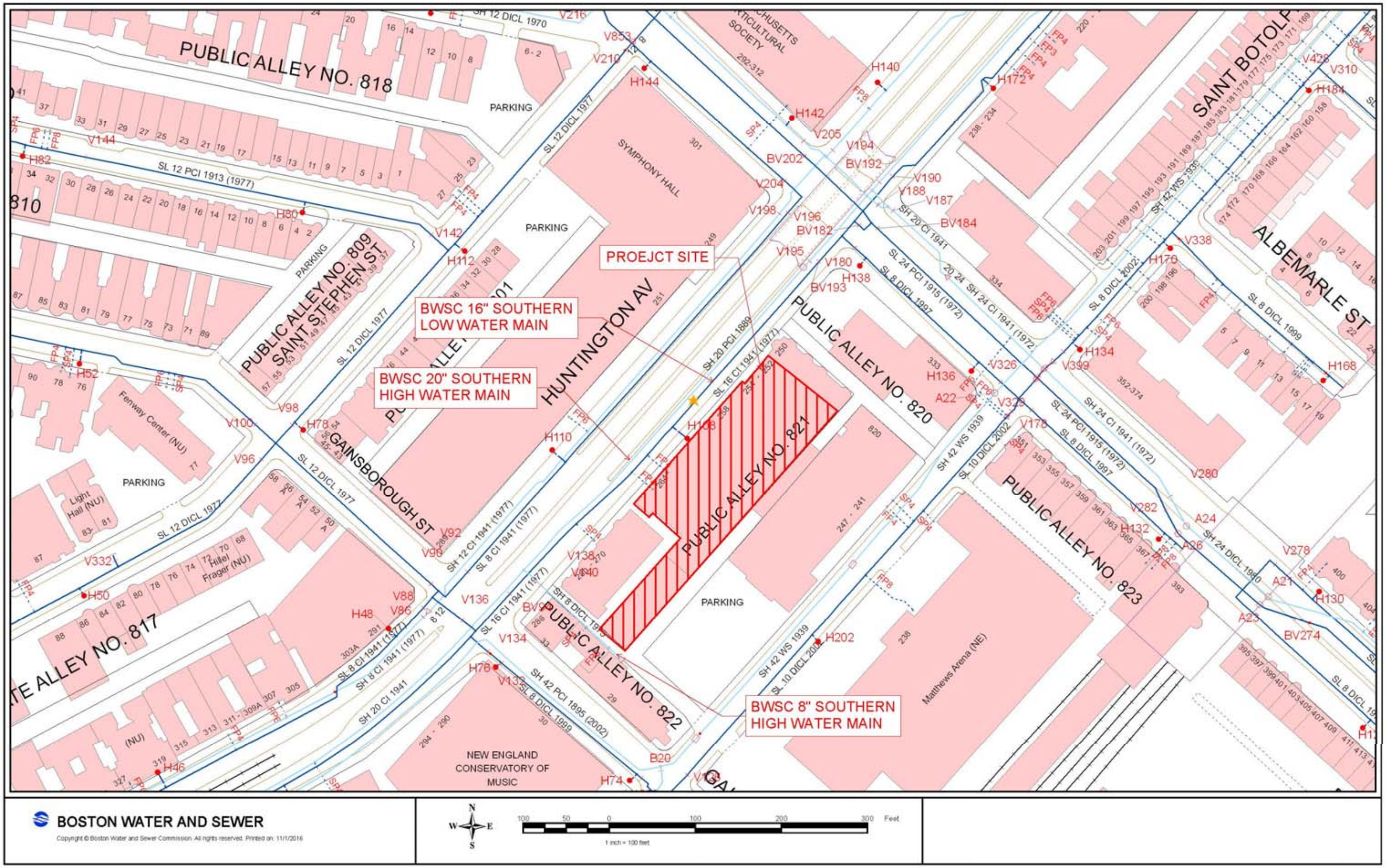
7.2.2 Anticipated Water Consumption

The Project's average daily water demand estimate for domestic services is based on the Project's estimated sewage generation, described previously. A conservative factor of 1.1 (10%) is applied to the estimated average daily wastewater flows calculated with 310 CMR 15.0 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 79,063 gallons per day or 10,569 cubic feet per day.

The State Building Code requires the use of water-conserving fixtures. Water conservation measures such as low-flow toilets and restricted-flow faucets will 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 Project.

7.2.3 Existing Water Capacity and Impacts

BWSC record flow-test data containing actual flow and pressure for hydrants within the vicinity of the Project site was requested from BWSC by the Proponent. Hydrant flow data was available for one hydrant near the Project site. The existing hydrant flow data is shown in Table 7-3.



252-264 Huntington Avenue Boston, Massachusetts

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Figure 7-2

Existing Water System

Table 7-3 Existing Hydrant Flow Data

Flow Hydrant Number	Date of Test	Static Pressure (psi)	Residual Pressure (psi)	Total Flow (gpm)
H20 (Huntington Avenue)	12/1/2015	76	72	2004

Note: Data provided by BWSC on November 4, 2016.

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

7.2.4 Proposed Connection

The building domestic and fire protection water services for the Project will connect to the existing BWSC water mains in Huntington Avenue.

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 fire department connections that conform to BWSC and Boston Fire Department requirements.

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 domestic water meters will be installed with Meter Transmitter Units (MTU's) as part of the BWSC's Automatic Meter Reading (AMR) system.

7.3 Storm Drainage System

7.3.1 Existing Storm Drainage System

There are existing BWSC storm drain mains in Public Alley No. 820, Public Alley No. 821, Huntington Avenue, Public Alley No. 822, and Gainsborough Street, near the Project site. The existing drainage follows the same path as the sanitary sewer from Public Alley No. 821 through Public Alley No. 822 to connect to a drain main in Gainsborough Street. The existing storm mains in Gainsborough Street and Huntington Avenue, that pertain to this site, ultimately flow to MWRA Deer Island Waste Water Treatment Plant for treatment and disposal.

Huntington Avenue

There is a 16x18-inch storm drain and a 20x25 inch storm drain that both flow south westerly and connect to become a 32x38-inch storm drain that continues to flow in the same direction to the intersection of Huntington Avenue and Gainsborough Street where it becomes a 24x52-inch storm drain and continues to flow southwesterly until it reaches Forsyth Street. There, it connects to a 99x126-inch combined sewer main that flows northwesterly in Forsyth street. This 99x126-inch combined sewer main ultimately flows to the MWRA Deer Island Waste Water Treatment Plant for treatment and disposal.

Public Alley No. 820

There is a 12-inch storm drain which flows southeasterly to the intersection of Public Alley No. 820 and Public Alley No. 821. There is also a 12-inch storm drain flowing northwesterly that meets the southwesterly flowing drain at the same intersection. These two drains then connect to a 20-inch storm drain that flows southwesterly in Public Alley No. 821.

Public Alley No. 821

There is a 20-inch storm drain coming from the manhole at the intersection of Public Alley No. 820 and Public Alley No. 821, that flows southwesterly, through Public Alley No. 822 and connects to a 15-inch combined sewer main in Gainsborough Street.

Gainsborough Street

There is a 15-inch combined sewer main that flows northwesterly where it connects to a 90x92-inch combined sewer main that flows south easterly in Gainsborough Street. This 90x92-inch storm drain ultimately flows to the MWRA Deer Island Waste Water Treatment Plant for treatment and disposal.

The existing BWSC storm drain system is illustrated in Figure 7-1.

7.3.2 Proposed Storm Drainage System

The existing site is covered by three buildings and is entirely impervious. The Project will meet or reduce the existing peak rates and volumes of runoff from the site and promote stormwater recharge to the greatest extent possible.

The Project will mitigate the stormwater volume equal to one-inch of stormwater runoff from impervious areas to the greatest extent possible. Different approaches to stormwater recharge management will be assessed during the design process. It is anticipated that the stormwater recharge systems will work passively to infiltrate runoff into the ground with a gravity recharge system or a combination of storage tanks in the building and pumps. Recharge wells will also be investigated in the private site along Huntington Avenue. 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.

7.3.3 Water Quality

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 comply with local and state stormwater management policies, as described below.

7.3.4 Groundwater Conservation Overlay District

The BPDA oversees proposed projects within the Groundwater Conservation Overlay District (GCOD) under Boston Zoning Code Article 32. The Project site is located within the GCOD. The purpose of the article is to prevent deterioration of and, where necessary, promote the restoration of groundwater levels in the city of Boston, to protect and enhance the City's historic neighborhoods and structures, reduce surface water runoff and water pollution, and maintain public safety.

The Project will comply with the standards of Article 32. The Project will promote infiltration of stormwater into the ground by capturing within a suitably-designed system a volume of rainfall equivalent to no less than one-inch across the impervious portion of the site. The Project will result in no negative impact on groundwater levels within the lot in question, subject to the terms of any (i) dewatering permit or (ii) cooperation agreement entered into by the Proponent and the BPDA, to the extent that such agreement provides standards for groundwater protection during construction.

The Proponent will work with the Groundwater Trust to ensure that the Project has no adverse impact on nearby groundwater levels.7.3.5 MassDEP Stormwater Management Policy Standards

In March 1997, MassDEP adopted a 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 Project will comply with this Standard. 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 Project will comply with this Standard to the maximum extent practicable. The existing discharge rate will be met or decreased as a result of the improvements associated with the Project to the maximum extent practicable.

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 Project will comply with this standard. Within the Project's limit of work, there will be mostly building roof and paved sidewalk. If applicable, 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 then 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 Project 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 Project 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 Project constitutes a "redevelopment project",and will meet this standard.

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 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 Project.

7.4 Other Utilities

There are existing natural gas mains, electrical, telephone, and other telecommunications utility lines in the area adjacent to the site. This existing infrastructure will be evaluated to determine if it is sufficient for the proposed Project, and any new infrastructure will be coordinated with the private utility providers to meet all Project needs.

7.4.1 Natural Gas Service

Natural gas service will be coordinated with the utility company. The gas will be utilized for heating of the building, production of domestic hot water, and possibly for cooking purposes.

7.4.2 Electrical Service

Electrical service will be coordinated with the utility company.

7.4.3 Telecommunications Service

Telephone and telecommunication services will be provided. Closets will be located on each level.

7.5 Utility Protection 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.

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 Architectural Access Board and the standards of the Americans with Disabilities Act. The Accessibility Checklist is included in Appendix G.

8.2 Massachusetts Environmental Policy Act (MEPA)

The Project is subject to review under the Massachusetts Environmental Policy Act (MEPA), which is codified at Sections 62 through 62I of MGL Chapter 30, and implemented under the "MEPA Regulations" at Section 11 of Chapter 301 of the Code of Massachusetts Regulations (CMR). MEPA and the MEPA Regulations apply to: (a) projects undertaken by a state agency; (b) those aspects of a project that are within the subject matter of any required state permit; (c) projects involving state financial assistance; and (d) those aspects of a project within the area of any real property acquired from a state agency. (301 CMR 11.01(2)(a).) MEPA review is triggered when one or more of the reasons set forth above apply, and when the proposed project exceeds one or more review thresholds set forth in the MEPA Regulations. (301 CMR 11.03.) For purposes of MEPA, a municipal redevelopment agency created or acting in accordance with M.G.L. c. 121A is defined as a "state agency." Here, the BPDA will act regarding the Project in accordance with M.G.L. c. 121A. Moreover, approval in accordance with M.G.L. c. 121A of a new urban redevelopment project triggers an Environmental Notification Form (ENF) and other MEPA Review if the secretary so requires, provided that the Project consists of 100 or more residential units or 50,000 or more sf of non-residential space, and the Project consists of approximately 426 residential units. Therefore, the Project appears to be subject to review under MEPA.

8.3 Massachusetts Historical Commission State Register Review

The Massachusetts Historical Commission (MHC) has review authority over projects requiring state funding, licensing, permitting, and/or approvals that may have direct or indirect impacts to properties listed in the State Register of Historic Places. The Project will be seeking approval in accordance with M.G.L. c. 121A, which triggers MHC review under Chapter 9 of the Massachusetts General Law (MGL), Sections 27-27c, as amended by Chapter 254 of the Acts of 1988. MHC review of the Project will occur as part of the MEPA process; a copy of the ENF filed with the MEPA Office will be delivered to MHC.

8.4 MassDOT

The northerly edge of the site is burdened by a highway easement measuring approximately 240-feet long by four feet deep, an area which is improved and used as part of the public sidewalk for Huntington Avenue. Pursuant to MGL c. 81, § 21, and 720 CMR 13.00, access to a highway within the jurisdiction of MassDOT generally requires MassDOT to issue a permit. As described above, the Project includes reconstruction the adjacent sidewalk with embedded markings and design patterns to create the feel of being onstage, along with glowing elements at night. Technically, these physical changes to a state highway may require obtaining an access permit from MassDOT, although highway traffic is unaffected.

8.5 Federal Aviation Administration

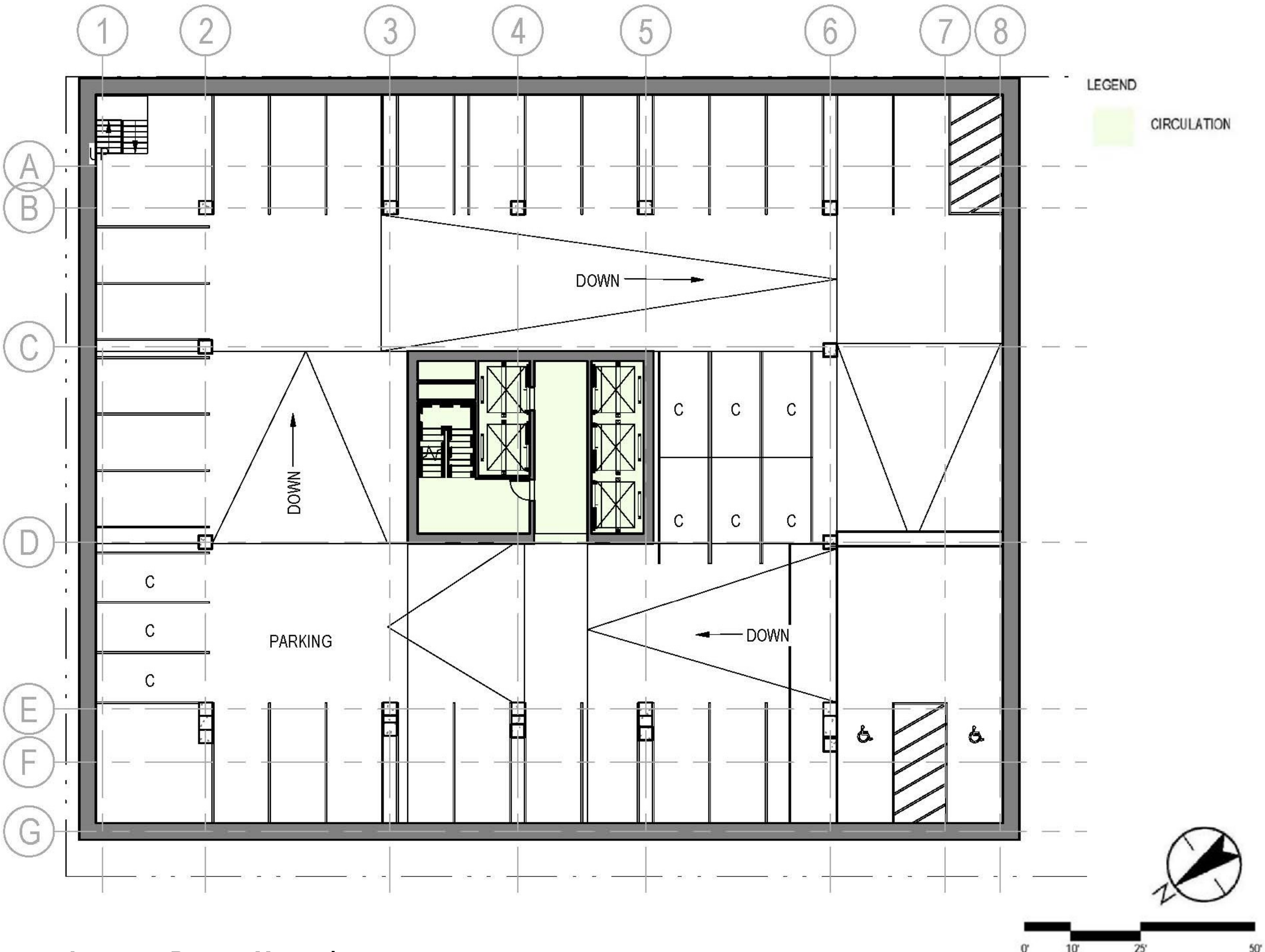
Generally, new construction to a height above ground level of 200 feet or more may require the proponent to file a Form 7460 with the Federal Aviation Administration (FAA), so that the FAA may determine that the project will not constitute a hazard to air navigation, and will not result in an inefficient utilization of airspace. (14 CFR 77.) There is no need to file notice with the FAA if the new construction will be shielded by existing structures of a permanent and substantial nature or by natural terrain or topographic features of equal or greater height, and will be located in the congested area of a city, town, or settlement where the shielded structure will not adversely affect safety in air navigation. (14 CFR 77.7(e).) Given the location of the Project, and its maximum building height of approximately 362 feet, measured to the top of the mechanical penthouse the Proponent intends to file an FAA Form 7460.

8.6 Other Permits and Approvals

Section 1.7 provides a list of agencies from which it is anticipated that permits and approvals for the Project will be sought.

Appendix A

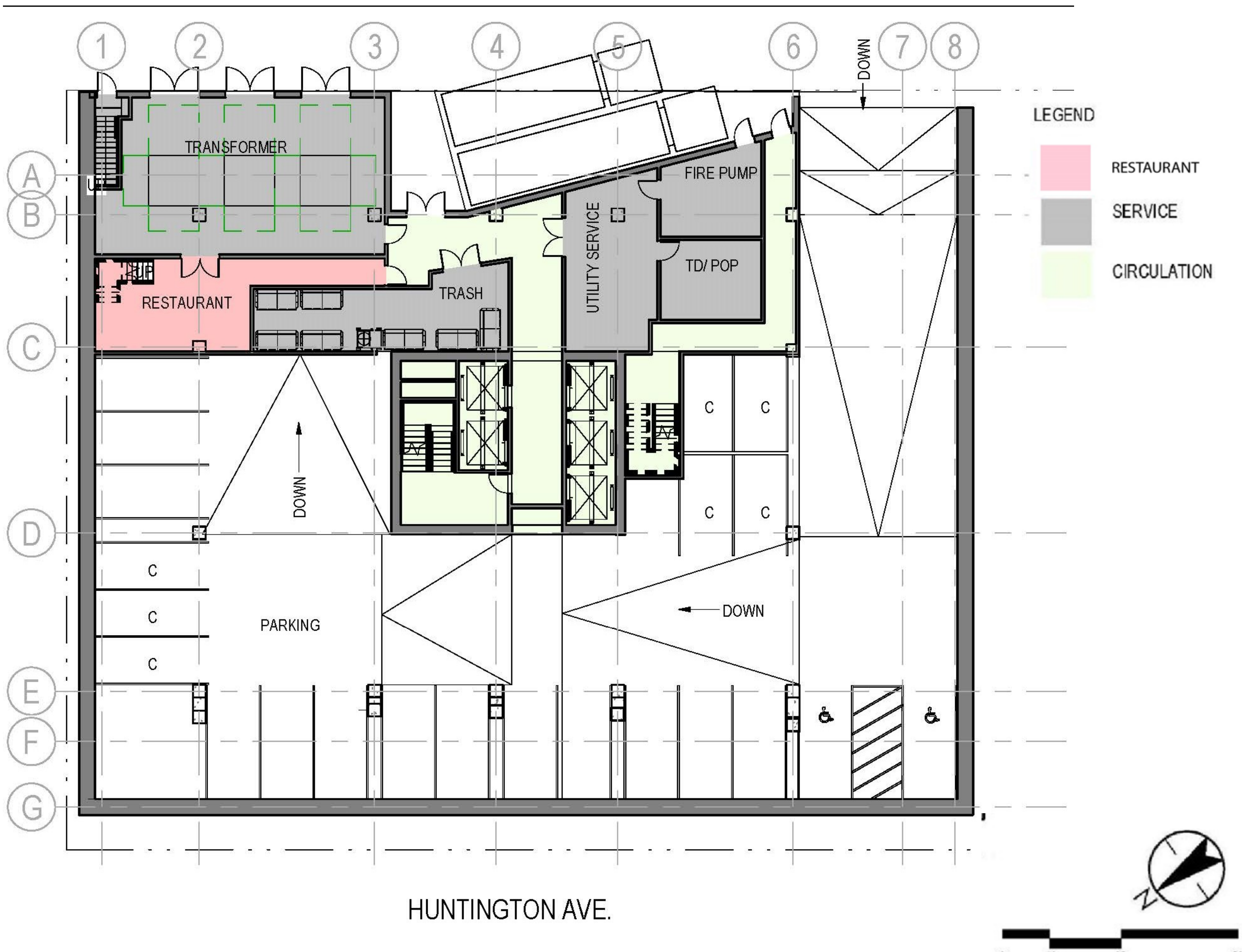
Floor Plans and Sections



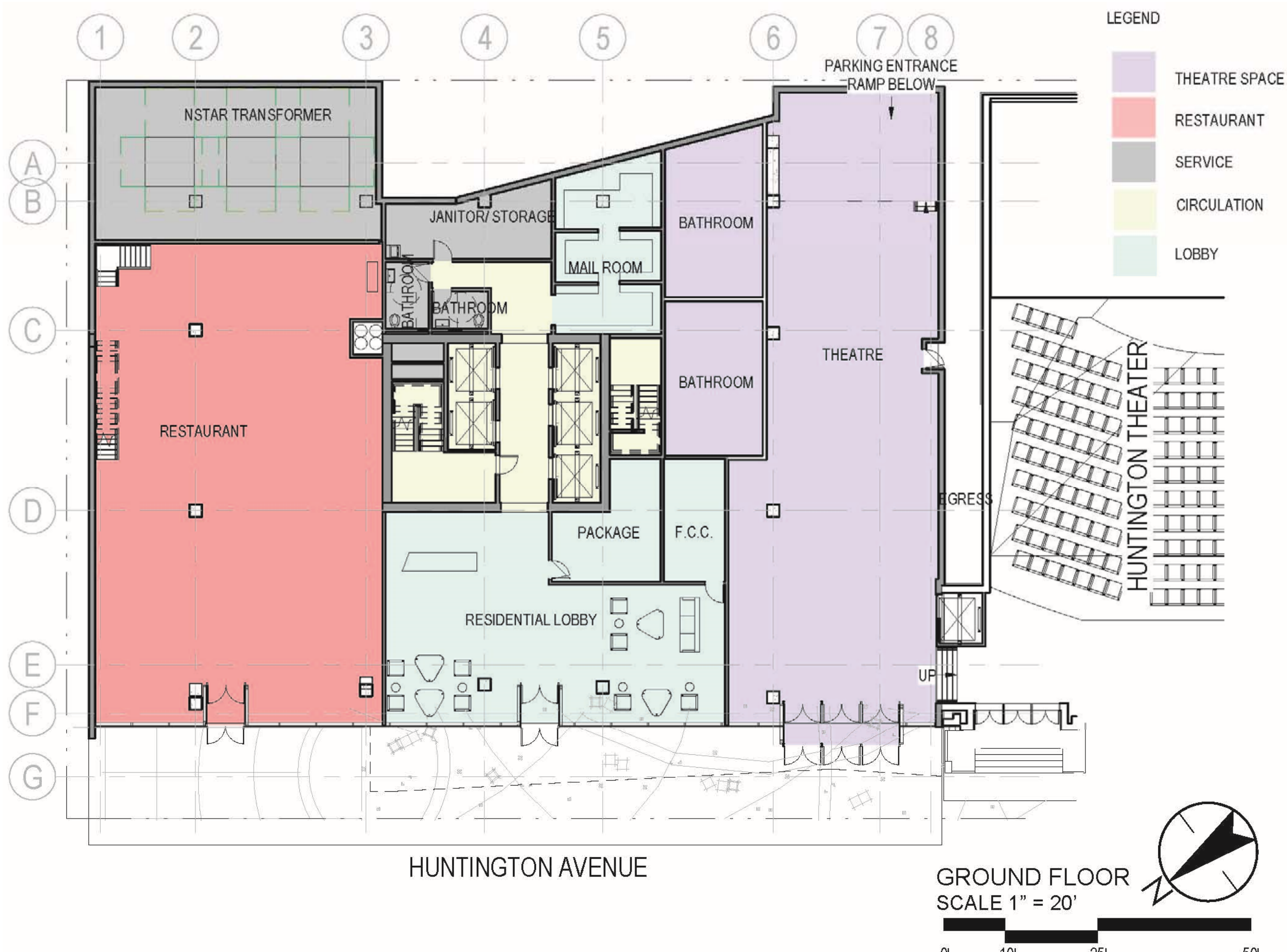
252-264 Huntington Avenue Boston, Massachusetts

Stantec

Parking Plan

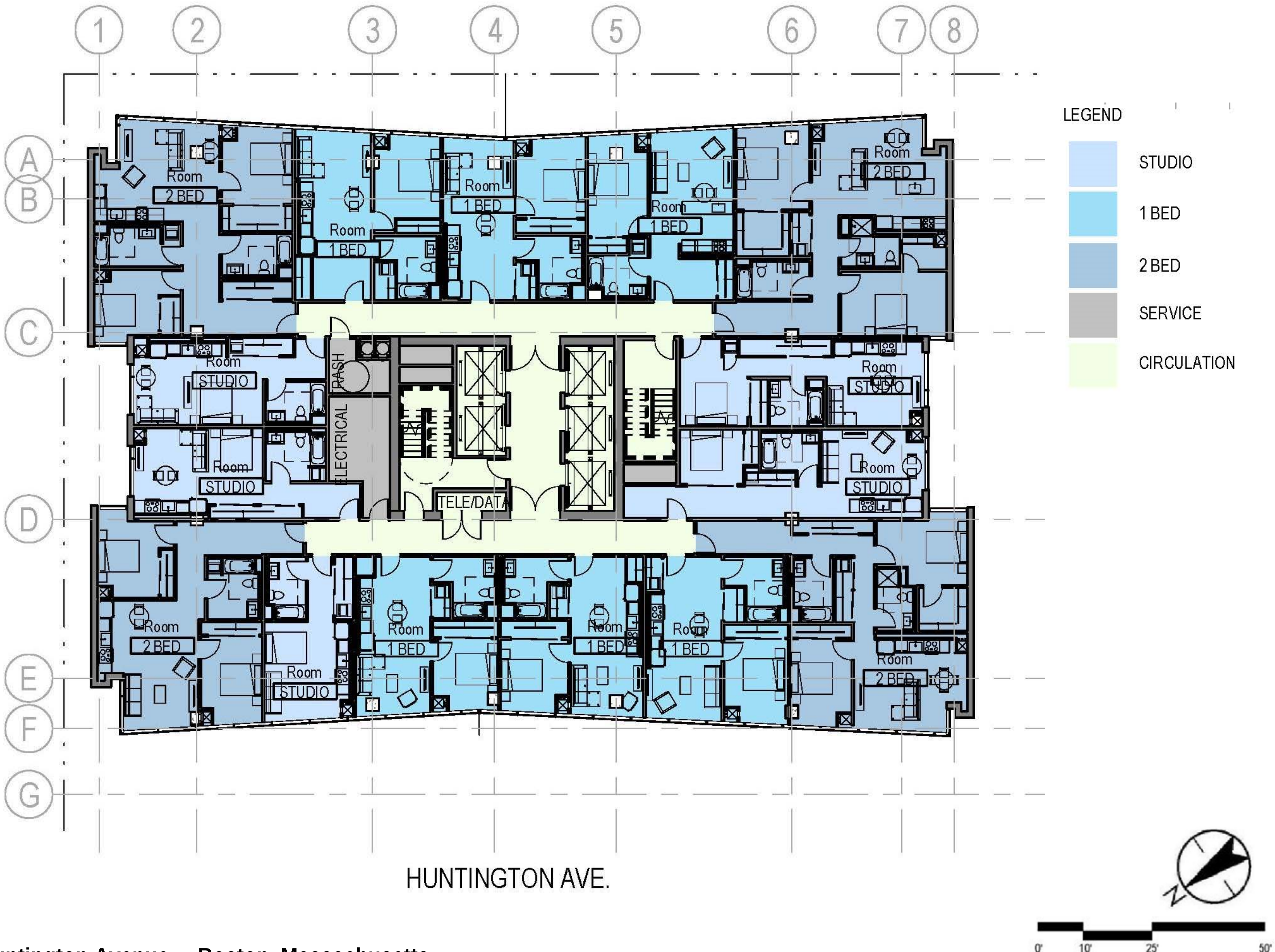


252-264 Huntington Avenue Boston, Massachusetts



252-264 Huntington Avenue Boston, Massachusetts

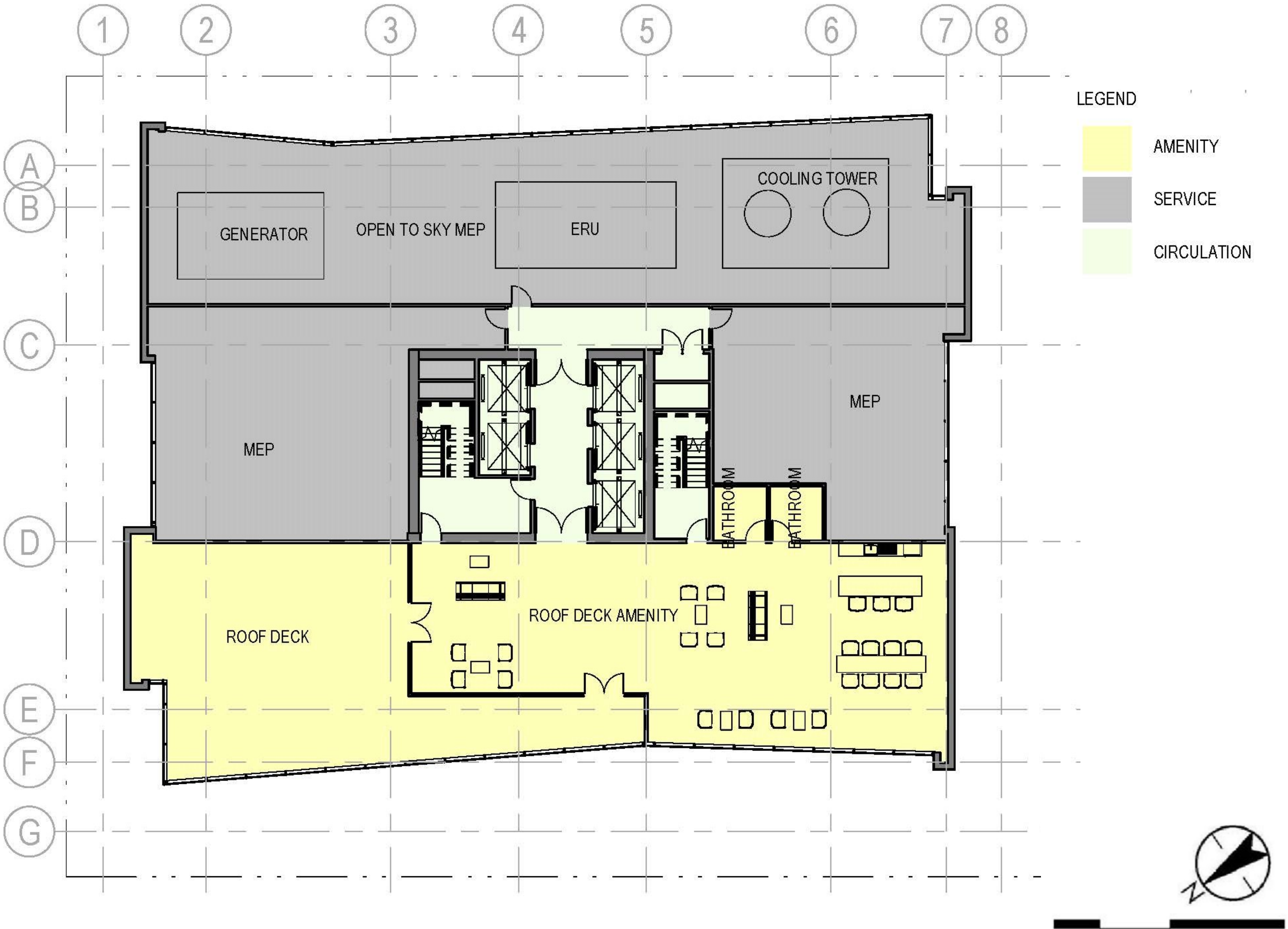
252-264 Huntington Avenue Boston, Massachusetts



252-264 Huntington Avenue Boston, Massachusetts

Stantec

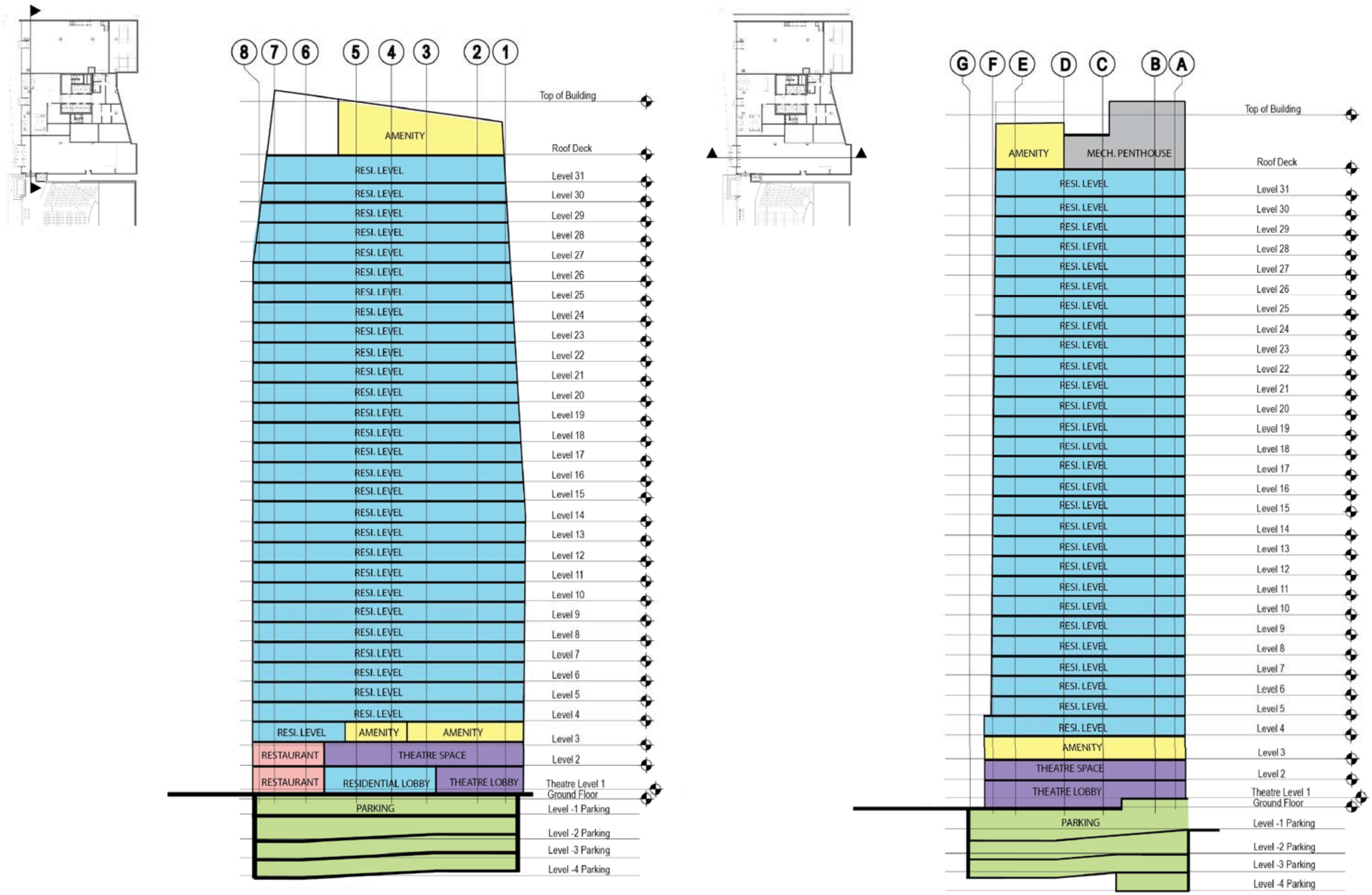
Typical Floor Plan



252-264 Huntington Avenue   Boston, Massachusetts

Stantec

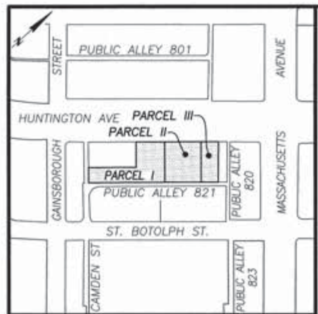
Roof Plan



252-264 Huntington Avenue   Boston, Massachusetts

Appendix B

Site Survey



LOCUS MAP NOT TO SCALE

LIST OF VISIBLE ENCROACHMENTS

HUNTINGTON AVENUE

1. CONC. WALL CROSSES INTO EASEMENT FOR HIGHWAY PURPOSES.

PUBLIC ALLEY No.821

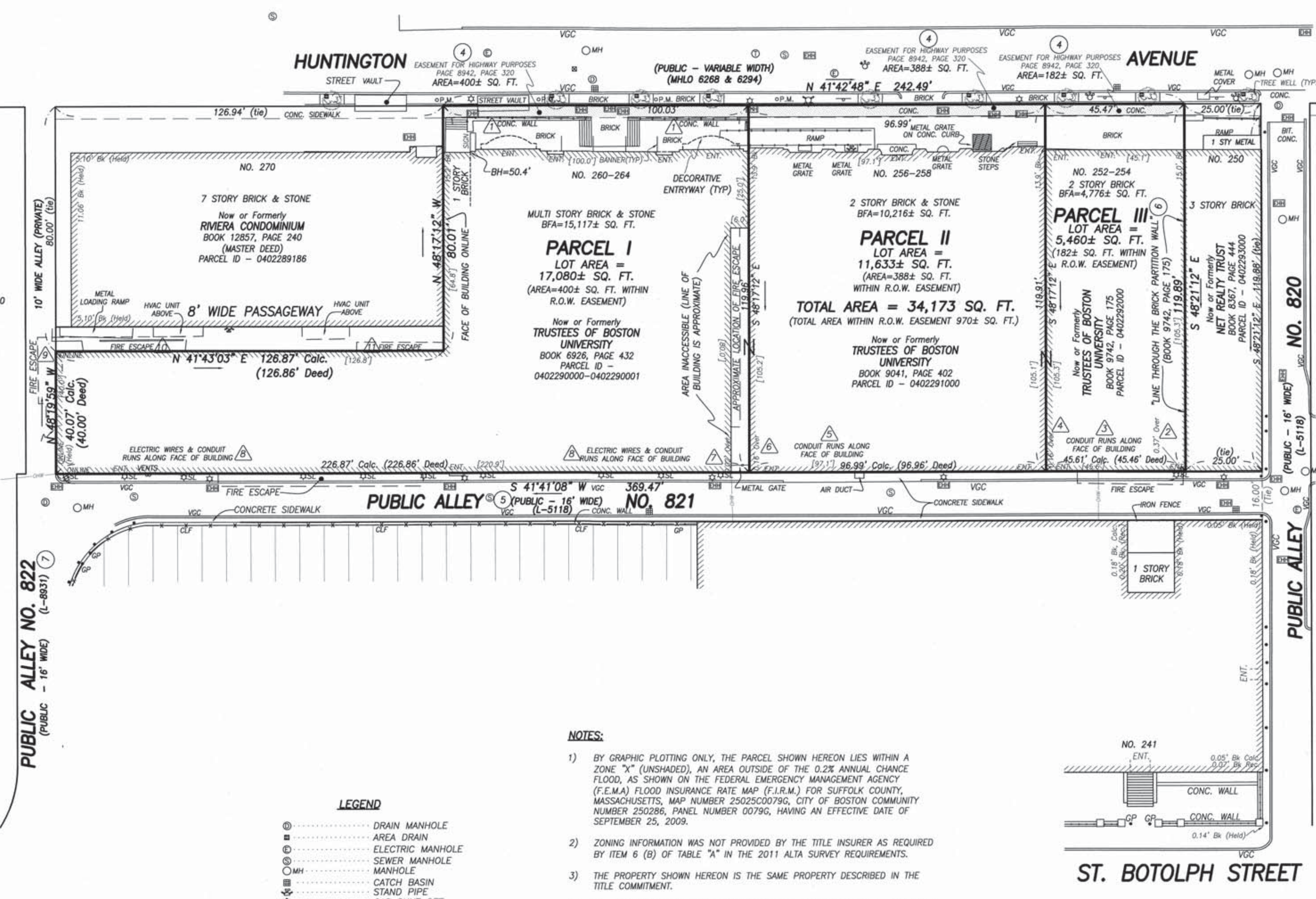
2. BUILDING CROSSES BOUNDARY.
3. CONDUIT CROSSES BOUNDARY.
4. BUILDING CROSSES BOUNDARY.
5. CONDUIT CROSSES BOUNDARY.
6. BUILDING CROSSES BOUNDARY.
7. BUILDING CROSSES BOUNDARY.
8. VENT CROSS BOUNDARY.

10' WIDE ALLEY

9. FIRE ESCAPE CROSSES BOUNDARY

8' WIDE ALLEY

10. FIRE ESCAPE CROSSES BOUNDARY
11. FIRE ESCAPE CROSSES BOUNDARY



REFERENCES

SUFFOLK COUNTY REGISTRY OF DEEDS
- BOOK 6926 PAGE 432
- BOOK 7302 PAGE 645
- BOOK 9041 PAGE 402
- BOOK 9742 PAGE 175

MASSACHUSETTS LAND COURT
- LCC 11998B

CITY OF BOSTON ENGINEERING DEPARTMENT
- FIELD BOOK 703 PAGES 66 & 67
- FIELD BOOK 960 PAGES 94–101

PLANS
- L–5118
- L–10591

MASSACHUSETTS HIGHWAY DEPARTMENT
- LAYOUT # 6268
- LAYOUT # 6294

BOUNDARY DESCRIPTIONS PER TITLE COMMITMENT FILE No. 53157, ISSUED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY, HAVING AN EFFECTIVE DATE OF JANUARY 4, 2016.

PARCEL I:

THE LAND IN BOSTON, SUFFOLK COUNTY, MASSACHUSETTS, WITH THE BUILDINGS THEREON SHOWN AS LOTS A AND B ON A PLAN ENTITLED "PLAN OF LAND IN BOSTON, MASS." DATED JULY 20, 1922, BY ASPINWALL AND LINCOLN, CIVIL ENGINEERS, RECORDED WITH SUFFOLK DEEDS, BOOK 4384, PAGE 151, TOGETHER BEING BOUNDED AND DESCRIBED AS FOLLOWS:

NORTHWESTERLY	BY HUNTINGTON AVENUE, ONE HUNDRED (100) FEET;
NORTHEASTERLY	BY LAND NOW OR FORMERLY OF THE HUNTINGTON INVESTING CO., BEING MARKED "BACK BAY POST OFFICE" ON SAID PLAN, ONE HUNDRED TWENTY (120) FEET;
SOUTHEASTERLY	BY A PASSAGEWAY MARKED "PUBLIC ALLEY NO. 821" ON SAID PLAN, TWO HUNDRED TWENTY-SIX AND 86/100 (226.86) FEET;
SOUTHWESTERLY	BY A TEN (10) FOOT PASSAGEWAY MARKED "PASSAGEWAY" ON SAID PLAN, FORTY (40) FEET;
NORTHWESTERLY	AGAIN BY A PASSAGEWAY EIGHT (8) FEET WIDE AS SHOWN ON SAID PLAN, ONE HUNDRED TWENTY-SIX AND 86/100 (126.86) FEET;
SOUTHWESTERLY	AGAIN IN PART BY SAID EIGHT (8) FOOT PASSAGEWAY AND IN PART BY LAND NOW OR FORMERLY OF SARAH E. HODSON MARKED "9133 9/10 SQ. FT." ON SAID PLAN, EIGHTY (80) FEET.

CONTAINING 17,074.4 SQUARE FEET OF LAND, MORE OR LESS.

THE PREMISES ARE CONVEYED TOGETHER WITH ALL RIGHT, TITLE AND INTEREST OF THE GRANTOR IN AND TO SAID PASSAGEWAYS, AND SUBJECT TO RIGHTS OF OTHERS THEREIN AND TO RESTRICTIONS OF RECORD SO FAR AS NOW IN FORCE AND APPLICABLE.

AND

PARCEL II:

A CERTAIN PARCEL OF LAND WITH THE BUILDINGS THEREON SITUATED AND NOW NUMBERED 256–258 INCLUSIVE ON HUNTINGTON AVENUE IN BOSTON, SUFFOLK COUNTY, MASSACHUSETTS, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHERLY CORNER OF SAID PARCEL AT THE SOUTHEASTERLY LINE OF HUNTINGTON AVENUE AT A POINT DISTANT ONE HUNDRED EIGHTY-THREE AND 71/100 FEET SOUTHWESTERLY FROM THE SOUTHERLY CORNER OF HUNTINGTON AVENUE AND MASSACHUSETTS AVENUE;

THENCE	RUNNING SOUTHEASTERLY AT RIGHT ANGLES TO SAID SOUTHEASTERLY LINE OF HUNTINGTON AVENUE ONE HUNDRED TWENTY FEET TO A PASSAGEWAY SIXTEEN FEET WIDE WHICH RUNS PARALLEL TO SAID HUNTINGTON AVENUE;
THENCE	TURNING AND RUNNING SOUTHWESTERLY BY SAID SIXTEEN-FOOT PASSAGEWAY NINETY-SIX AND 96/100 FEET;
THENCE	TURNING AT RIGHT ANGLES AND RUNNING NORTHWESTERLY ONE HUNDRED TWENTY FEET TO SAID HUNTINGTON AVENUE, THIS LINE BEING PARALLEL WITH THE NORTHEASTERLY BOUNDARY LINE OF THE GRANTED PREMISES AND NINETY-SIX AND 96/100 FEET DISTANT THEREFROM;
THENCE	TURNING AND RUNNING NORTHEASTERLY BY THE SOUTHEASTERLY LINE OF SAID HUNTINGTON AVENUE NINETY-SIX AND 96/100 FEET TO THE POINT OF BEGINNING.

TOGETHER WITH SO MUCH OF SAID PASSAGEWAY AS LIES NORTHWESTERLY OF ITS MIDDLE LINE AND BETWEEN THE SIDE LINES OF SAID LOT EXTENDED, SAID PASSAGEWAY TO BE MAINTAINED IN COMMON BY THE ABUTTERS THEREON AND THEIR HEIRS AND ASSIGNS AND TO BE USED BY THEM AND BY THE ABUTTERS ON CONNECTING PASSAGEWAYS FOR WAY, PROSPECT, DRAINAGE AND THE LIKE.

AND

PARCEL III:

A CERTAIN PARCEL OF LAND, WITH THE BUILDINGS THEREON, SITUATE AND NOW NUMBERED 252 TO 254 ON HUNTINGTON AVENUE, IN BOSTON, COUNTY OF SUFFOLK, MASSACHUSETTS, BOUNDED AND DESCRIBED AS FOLLOWS:

NORTHWESTERLY	ON HUNTINGTON AVENUE, FORTY-FIVE AND 46/100 (45.46) FEET;
NORTHEASTERLY	BY LAND NOW OR LATE OF MIRIAM HIRSH BY A LINE RUNNING IN PART THROUGH THE BRICK PARTITION WALL, ONE HUNDRED AND TWENTY (120) FEET;
SOUTHEASTERLY	BY A PASSAGEWAY SIXTEEN FEET WIDE (NOW KNOWN AS PUBLIC ALLEY NO. 821), FORTY-FIVE AND 46/100 (45.46) FEET; AND
SOUTHWESTERLY	BY LAND NOW OR LATE OF HUNTINGTON INVESTMENT COMPANY, ONE HUNDRED TWENTY (120) FEET.

CONTAINING 5,455 AND 1/10 SQUARE FEET OF LAND, BE ANY OR ALL OF SAID MEASUREMENTS OR CONTENTS MORE OR LESS, TOGETHER WITH THE FEE AND SOIL OF SAID PASSAGEWAY ADJOINING THE GRANTED PREMISES, TO THE MIDDLE THEREOF.

SAID PREMISES ARE CONVEYED SUBJECT TO A TAKING MADE BY THE DEPARTMENT OF PUBLIC WORKS OF THE COMMONWEALTH OF MASSACHUSETTS ACTING ON BEHALF OF THE CITY OF BOSTON UNDER AN ORDER DATED MARCH 23, 1977 RECORDED WITH SAID DEEDS IN BOOK 8942, PAGE 320.

EXCEPTIONS FROM COVERAGE SCHEDULE B – SECTION 2, LISTED IN TITLE COMMITMENT FILE No. 53157 ISSUED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY, HAVING AN EFFECTIVE DATE OF JANUARY 4, 2016.

3. RELEASE OF RIGHTS IN DISCONTINUED PORTION OF PUBLIC ALLEY NO. 821, AS SHOWN ON PLAN RECORDED WITH SAID REGISTRY OF DEEDS IN PLAN BOOK 7302, PLAN 145, BY GRANT TO NEW ENGLAND CONSERVATORY BY JUNIOR ACHIEVEMENT OF EASTERN MASSACHUSETTS DATED APRIL 25, 1958 AND RECORDED WITH SAID REGISTRY OF DEEDS IN BOOK 7321, PAGE 362; AND TRUSTEES OF BOSTON UNIVERSITY DATED APRIL 29, 1958 AND RECORDED WITH SAID REGISTRY OF DEEDS IN BOOK 7321, PAGE 364. (NOT LOCUS)
4. PUBLIC WAY EASEMENT TAKEN BY THE DEPARTMENT OF PUBLIC WORKS OF THE COMMONWEALTH OF MASSACHUSETTS TO WIDEN HUNTINGTON AVENUE, AS SHOWN ON PLAN RECORDED WITH SAID REGISTRY OF DEEDS AS SHEET 1 OF 4, LAYOUT NO. 6268, FEDERAL AID PROJECT NO. U–234 (13), DATED MARCH 23, 1977 AND RECORDED WITH SAID REGISTRY OF DEEDS IN BOOK 8942, PAGE 320. (AS SHOWN HEREON)
5. RIGHT TO USE THE PASSAGEWAY BY IMPLICATION AND AS SET FORTH IN DEED RECORDED WITH SAID REGISTRY OF DEEDS IN BOOK 6749, PAGE 235, IN COMMON WITH ALL PERSONS LAWFULLY ENTITLED THERETO. (AS SHOWN HEREON – NOT LOCUS)
6. COMMON LAW PARTY WALL RIGHTS AS IMPLIED BY DESCRIPTION IN DEED FROM JOSEPH M. ISENBERG AND GEORGE S. ISENBERG, AS TRUSTEES OF FERBUR REALTY TRUST TO TRUSTEES OF BOSTON UNIVERSITY RECORDED WITH SAID REGISTRY OF DEEDS IN BOOK 9742, PAGE 175, AND AS FURTHER DELINEATED ON THE 1938 BOSTON ATLAS AND THE NOVEMBER 2015 SURVEY BY FELDMAN LAND SURVEYORS. (AS SHOWN HEREON)
7. APPURTENANT RIGHT TO USE A PORTION OF PUBLIC ALLEY NO. 822, AS SHOWN ON PLAN RECORDED WITH SAID REGISTRY OF DEEDS IN PLAN BOOK 7302, PLAN 145, BY GRANT DATED MAY 1, 1958 AND RECORDED WITH SAID REGISTRY OF DEEDS IN BOOK 7321, PAGE 365. (AS SHOWN HEREON – NOT LOCUS)

LEGEND

Ⓓ	DRAIN MANHOLE
■	AREA DRAIN
Ⓔ	ELECTRIC MANHOLE
Ⓢ	SEWER MANHOLE
○MH	MANHOLE
▦	CATCH BASIN
	STAND PIPE
	GAS SHUT OFF
	WATER SHUT OFF
⊠	BOSTON WATER VALVE
	HYDRANT
☼	LIGHT POLE
☼SL	SECURITY LIGHT
	ELECTRIC HANDHOLE
	SIGN
∘PM	PARKING METER
•	BOLLARD
	DECIDUOUS TREE
TC	TOP OF CURB
BC	BOTTOM OF CURB
TW	TOP OF WALL
BW	BOTTOM OF WALL
TS	TOP OF STEP
BFA	BUILDING FOOTPRINT AREA
BS	BOTTOM OF STEP
BH	BUILDING HEIGHT
TH.	THRESHOLD ELEVATION
BIT.	BITUMINOUS
CONC.	CONCRETE
VGC	VERTICAL GRANITE CURB
LCC	LAND COURT CASE
REC.	RECORD
BK	BACK
OV	OVER
TYP.	TYPICAL
ENT.	ENTRANCE
MHLO	MASSACHUSETTS HIGHWAY LAYOUT
[X.X']	BUILDING DIMENSION
• GP	GATE POST
—o—o—o—	METAL RAILING
—x—x—x—	CHAIN LINK FENCE
—•—•—•—	WROUGHT IRON FENCE

NOTES:

1) BY GRAPHIC PLOTTING ONLY, THE PARCEL SHOWN HEREON LIES 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, MAP NUMBER 25025C0079G, CITY OF BOSTON COMMUNITY NUMBER 250286, PANEL NUMBER 0079G, HAVING AN EFFECTIVE DATE OF SEPTEMBER 25, 2009.

2) ZONING INFORMATION WAS NOT PROVIDED BY THE TITLE INSURER AS REQUIRED BY ITEM 6 (B) OF TABLE "A" IN THE 2011 ALTA SURVEY REQUIREMENTS.

3) THE PROPERTY SHOWN HEREON IS THE SAME PROPERTY DESCRIBED IN THE TITLE COMMITMENT.

4) BUILDING HEIGHT SHOWN HEREON IS CALCULATED FROM THE AVERAGE GRADE PLANE ALONG HUNTINGTON AVENUE TO 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.

5) NO PARKING WAS OBSERVED ON THE LOCUS PROPERTY.

6) NO PROPOSED CHANGES IN STREET RIGHT OF WAY LINES WERE UNCOVERED WHILE CONDUCTING THIS SURVEY.

TO: COMMONWEALTH LAND TITLE INSURANCE COMPANY;
STEWART TITLE GUARANTY COMPANY;
BANK OF NEW ENGLAND;

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS 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, 11(A), 13, 17, AND 21 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON NOVEMBER 27, 2015.

FOR FELDMAN LAND SURVEYORS

DAMIEN J. RAFFLE, PLS (MA# 49629)
djr@feldmansurveyors.com

4/22/2016
DATE

COMMONWEALTH OF MASSACHUSETTS
DAMIEN J. RAFFLE No.49629
REGISTERED PROFESSIONAL LAND SURVEYOR

ALTA/ACSM LAND TITLE SURVEY
252–264 HUNTINGTON AVENUE
BOSTON (ROXBURY), MASS.

FELDMAN LAND SURVEYORS
112 SHAWMUT AVENUE
BOSTON, MASS. 02118

NOVEMBER 27, 2015
PHONE: (617)357–9740
www.feldmansurveyors.com

FELDMAN
LAND SURVEYORS

20 0 10 20 40 80

SCALE: 1"=20'

RESEARCH PRF	FIELD CHIEF CB	PROJ MGR DJR	APPROVED DJR	SHEET NO. 1 OF 1
CALC PRF	CADD PRF/DCH	FIELD CHECKED NB	CRD FILE 14951	JOB NO. 14951

FILENAME: S:\PROJECTS\15000s\15011\DWG\15011–ALTA.dwg

Appendix C

Transportation

Transportation Appendix is Available Upon Request

Appendix D

Wind

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
1	A	Spring	14		Standing	23		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15		Standing	25		Acceptable
		Annual	14		Standing	23		Acceptable
	B	Spring	23	64%	Uncomfortable	32	39%	Unacceptable
		Summer	18	64%	Walking	25	47%	Acceptable
		Fall	22	69%	Uncomfortable	29	38%	Acceptable
		Winter	26	73%	Uncomfortable	35	40%	Unacceptable
		Annual	23	64%	Uncomfortable	32	39%	Unacceptable
	C	Spring	21	50%	Uncomfortable	29	26%	Acceptable
		Summer	16	45%	Walking	23	35%	Acceptable
		Fall	19	46%	Walking	27	29%	Acceptable
		Winter	23	53%	Uncomfortable	32	28%	Unacceptable
		Annual	21	50%	Uncomfortable	29	26%	Acceptable
2	A	Spring	N/A					
		Summer	N/A					
		Fall	N/A					
		Winter	N/A					
		Annual	N/A					
	B	Spring	15	N/A	Standing	22	N/A	Acceptable
		Summer	12	N/A	Sitting	17	N/A	Acceptable
		Fall	14	N/A	Standing	20	N/A	Acceptable
		Winter	16	N/A	Walking	24	N/A	Acceptable
		Annual	15	N/A	Standing	21	N/A	Acceptable
	C	Spring	12	N/A	Sitting	18	N/A	Acceptable
		Summer	9	N/A	Sitting	14	N/A	Acceptable
		Fall	11	N/A	Sitting	16	N/A	Acceptable
		Winter	13	N/A	Standing	19	N/A	Acceptable
		Annual	12	N/A	Sitting	18	N/A	Acceptable
3	A	Spring	N/A					
		Summer	N/A					
		Fall	N/A					
		Winter	N/A					
		Annual	N/A					
	B	Spring	13	N/A	Standing	19	N/A	Acceptable
		Summer	10	N/A	Sitting	15	N/A	Acceptable
		Fall	12	N/A	Sitting	18	N/A	Acceptable
		Winter	14	N/A	Standing	21	N/A	Acceptable
		Annual	13	N/A	Standing	19	N/A	Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	C	Spring	13	N/A	Standing	19	N/A	Acceptable
		Summer	10	N/A	Sitting	15	N/A	Acceptable
		Fall	12	N/A	Sitting	18	N/A	Acceptable
		Winter	14	N/A	Standing	21	N/A	Acceptable
		Annual	13	N/A	Standing	19	N/A	Acceptable
4	A	Spring	12		Sitting	21		Acceptable
		Summer	9		Sitting	16		Acceptable
		Fall	11		Sitting	19		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	12		Sitting	21		Acceptable
	B	Spring	14	17%	Standing	21		Acceptable
		Summer	11	22%	Sitting	16		Acceptable
		Fall	13	18%	Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	13		Standing	21		Acceptable
	C	Spring	14	17%	Standing	21		Acceptable
		Summer	11	22%	Sitting	16		Acceptable
		Fall	13	18%	Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	13		Standing	21		Acceptable
5	A	Spring	15		Standing	24		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	15		Standing	24		Acceptable
	B	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15	-12%	Standing	23	-12%	Acceptable
		Annual	14		Standing	21	-12%	Acceptable
	C	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15	-12%	Standing	23	-12%	Acceptable
		Annual	14		Standing	21	-12%	Acceptable
6	A	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	12		Sitting	20		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	B	Spring	16	23%	Walking	25	19%	Acceptable
		Summer	12	20%	Sitting	19	19%	Acceptable
		Fall	15	25%	Standing	23	21%	Acceptable
		Winter	17	21%	Walking	27	23%	Acceptable
		Annual	15	25%	Standing	24	20%	Acceptable
	C	Spring	16	23%	Walking	25	19%	Acceptable
		Summer	12	20%	Sitting	19	19%	Acceptable
		Fall	15	25%	Standing	23	21%	Acceptable
		Winter	17	21%	Walking	27	23%	Acceptable
		Annual	15	25%	Standing	24	20%	Acceptable
7	A	Spring	10		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	15	50%	Standing	24	41%	Acceptable
		Summer	11	22%	Sitting	18	38%	Acceptable
		Fall	14	40%	Standing	22	47%	Acceptable
		Winter	16	45%	Walking	25	39%	Acceptable
		Annual	14	40%	Standing	23	44%	Acceptable
	C	Spring	15	50%	Standing	24	41%	Acceptable
		Summer	11	22%	Sitting	18	38%	Acceptable
		Fall	14	40%	Standing	22	47%	Acceptable
		Winter	16	45%	Walking	25	39%	Acceptable
		Annual	14	40%	Standing	23	44%	Acceptable
8	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	16	14%	Walking	25	19%	Acceptable
		Summer	13	18%	Standing	19	12%	Acceptable
		Fall	15	15%	Standing	23	15%	Acceptable
		Winter	17	13%	Walking	26	13%	Acceptable
		Annual	16	14%	Walking	24	14%	Acceptable
	C	Spring	16	14%	Walking	25	19%	Acceptable
		Summer	13	18%	Standing	19	12%	Acceptable
		Fall	15	15%	Standing	23	15%	Acceptable
		Winter	17	13%	Walking	26	13%	Acceptable
		Annual	16	14%	Walking	24	14%	Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
9	A	Spring	19		Walking	25		Acceptable
		Summer	15		Standing	19		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	19		Walking	25		Acceptable
	B	Spring	20		Uncomfortable	27		Acceptable
		Summer	16		Walking	21	11%	Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	C	Spring	20		Uncomfortable	27		Acceptable
		Summer	16		Walking	21	11%	Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
10	A	Spring	12		Sitting	17		Acceptable
		Summer	10		Sitting	14		Acceptable
		Fall	11		Sitting	15		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	16		Acceptable
	B	Spring	22	83%	Uncomfortable	27	59%	Acceptable
		Summer	18	80%	Walking	22	57%	Acceptable
		Fall	18	64%	Walking	24	60%	Acceptable
		Winter	21	75%	Uncomfortable	27	50%	Acceptable
		Annual	20	82%	Uncomfortable	25	56%	Acceptable
	C	Spring	22	83%	Uncomfortable	27	59%	Acceptable
		Summer	18	80%	Walking	22	57%	Acceptable
		Fall	18	64%	Walking	24	60%	Acceptable
		Winter	21	75%	Uncomfortable	27	50%	Acceptable
		Annual	20	82%	Uncomfortable	25	56%	Acceptable
11	A	Spring	N/A					
		Summer	N/A					
		Fall	N/A					
		Winter	N/A					
		Annual	N/A					
	B	Spring	24	N/A	Uncomfortable	31	N/A	Acceptable
		Summer	22	N/A	Uncomfortable	28	N/A	Acceptable
		Fall	24	N/A	Uncomfortable	30	N/A	Acceptable
		Winter	26	N/A	Uncomfortable	33	N/A	Unacceptable
		Annual	24	N/A	Uncomfortable	30	N/A	Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	C	Spring	24	N/A	Uncomfortable	31	N/A	Acceptable
		Summer	22	N/A	Uncomfortable	28	N/A	Acceptable
		Fall	24	N/A	Uncomfortable	30	N/A	Acceptable
		Winter	26	N/A	Uncomfortable	33	N/A	Unacceptable
		Annual	24	N/A	Uncomfortable	30	N/A	Acceptable
12	A	Spring	N/A					
		Summer	N/A					
		Fall	N/A					
		Winter	N/A					
		Annual	N/A					
	B	Spring	21	N/A	Uncomfortable	28	N/A	Acceptable
		Summer	17	N/A	Walking	22	N/A	Acceptable
		Fall	20	N/A	Uncomfortable	26	N/A	Acceptable
		Winter	24	N/A	Uncomfortable	30	N/A	Acceptable
		Annual	21	N/A	Uncomfortable	27	N/A	Acceptable
	C	Spring	21	N/A	Uncomfortable	28	N/A	Acceptable
		Summer	17	N/A	Walking	22	N/A	Acceptable
		Fall	20	N/A	Uncomfortable	26	N/A	Acceptable
		Winter	24	N/A	Uncomfortable	30	N/A	Acceptable
		Annual	21	N/A	Uncomfortable	27	N/A	Acceptable
13	A	Spring	N/A					
		Summer	N/A					
		Fall	N/A					
		Winter	N/A					
		Annual	N/A					
	B	Spring	11	N/A	Sitting	17	N/A	Acceptable
		Summer	9	N/A	Sitting	14	N/A	Acceptable
		Fall	10	N/A	Sitting	16	N/A	Acceptable
		Winter	13	N/A	Standing	18	N/A	Acceptable
		Annual	11	N/A	Sitting	17	N/A	Acceptable
	C	Spring	11	N/A	Sitting	17	N/A	Acceptable
		Summer	9	N/A	Sitting	14	N/A	Acceptable
		Fall	10	N/A	Sitting	16	N/A	Acceptable
		Winter	13	N/A	Standing	18	N/A	Acceptable
		Annual	11	N/A	Sitting	17	N/A	Acceptable
14	A	Spring	N/A					
		Summer	N/A					
		Fall	N/A					
		Winter	N/A					
		Annual	N/A					

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	B	Spring	8	N/A	Sitting	12	N/A	Acceptable
		Summer	6	N/A	Sitting	10	N/A	Acceptable
		Fall	7	N/A	Sitting	11	N/A	Acceptable
		Winter	9	N/A	Sitting	14	N/A	Acceptable
		Annual	8	N/A	Sitting	12	N/A	Acceptable
	C	Spring	8	N/A	Sitting	12	N/A	Acceptable
		Summer	6	N/A	Sitting	10	N/A	Acceptable
		Fall	7	N/A	Sitting	11	N/A	Acceptable
		Winter	9	N/A	Sitting	14	N/A	Acceptable
		Annual	8	N/A	Sitting	12	N/A	Acceptable
15	A	Spring	19		Walking	25		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	24		Acceptable
	B	Spring	21	11%	Uncomfortable	29	16%	Acceptable
		Summer	17	21%	Walking	22	16%	Acceptable
		Fall	20	18%	Uncomfortable	27	17%	Acceptable
		Winter	23	21%	Uncomfortable	32	23%	Unacceptable
		Annual	21	17%	Uncomfortable	29	21%	Acceptable
	C	Spring	21	11%	Uncomfortable	28	12%	Acceptable
		Summer	16	14%	Walking	22	16%	Acceptable
		Fall	19	12%	Walking	26	13%	Acceptable
		Winter	22	16%	Uncomfortable	31	19%	Acceptable
		Annual	20	11%	Uncomfortable	28	17%	Acceptable
16	A	Spring	19		Walking	26		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	19		Walking	25		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	19		Walking	25		Acceptable
	B	Spring	19		Walking	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	25		Acceptable
	C	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	25		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
17	A	Spring	17		Walking	24		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	21	24%	Uncomfortable	29	21%	Acceptable
		Summer	17	21%	Walking	23	15%	Acceptable
		Fall	19	19%	Walking	27	17%	Acceptable
		Winter	23	28%	Uncomfortable	32	23%	Unacceptable
		Annual	21	31%	Uncomfortable	29	21%	Acceptable
	C	Spring	19	12%	Walking	27	13%	Acceptable
		Summer	16	14%	Walking	22		Acceptable
		Fall	18	13%	Walking	25		Acceptable
		Winter	21	17%	Uncomfortable	30	15%	Acceptable
		Annual	19	19%	Walking	27	13%	Acceptable
18	A	Spring	19		Walking	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	12	-37%	Sitting	19	-30%	Acceptable
		Summer	10	-33%	Sitting	15	-29%	Acceptable
		Fall	11	-39%	Sitting	17	-32%	Acceptable
		Winter	13	-38%	Standing	20	-31%	Acceptable
		Annual	12	-37%	Sitting	18	-31%	Acceptable
	C	Spring	13	-32%	Standing	19	-30%	Acceptable
		Summer	10	-33%	Sitting	16	-24%	Acceptable
		Fall	12	-33%	Sitting	17	-32%	Acceptable
		Winter	13	-38%	Standing	20	-31%	Acceptable
		Annual	12	-37%	Sitting	18	-31%	Acceptable
19	A	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	22	47%	Uncomfortable	29	26%	Acceptable
		Summer	17	42%	Walking	22	22%	Acceptable
		Fall	20	43%	Uncomfortable	27	29%	Acceptable
		Winter	24	41%	Uncomfortable	32	28%	Unacceptable
		Annual	22	47%	Uncomfortable	29	32%	Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed: Speed (mph)	Mean Wind Speed: % Change	Mean Wind Speed: Rating	Effective Gust Wind Speed: Speed (mph)	Effective Gust Wind Speed: % Change	Effective Gust Wind Speed: Rating
	C	Spring	21	40%	Uncomfortable	28	22%	Acceptable
		Summer	16	33%	Walking	22	22%	Acceptable
		Fall	19	36%	Walking	26	24%	Acceptable
		Winter	24	41%	Uncomfortable	31	24%	Acceptable
		Annual	21	40%	Uncomfortable	28	27%	Acceptable
20	A	Spring	21		Uncomfortable	30		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	19		Walking	28		Acceptable
		Winter	23		Uncomfortable	33		Unacceptable
		Annual	21		Uncomfortable	30		Acceptable
	B	Spring	22		Uncomfortable	31		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	21	11%	Uncomfortable	28		Acceptable
		Winter	25		Uncomfortable	34		Unacceptable
		Annual	22		Uncomfortable	31		Acceptable
	C	Spring	20		Uncomfortable	29		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	18		Walking	27		Acceptable
		Winter	23		Uncomfortable	33		Unacceptable
		Annual	20		Uncomfortable	29		Acceptable
21	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	24	20%	Uncomfortable	33	22%	Unacceptable
		Summer	18	20%	Walking	25	25%	Acceptable
		Fall	22	22%	Uncomfortable	30	20%	Acceptable
		Winter	26	18%	Uncomfortable	37	23%	Unacceptable
		Annual	23	15%	Uncomfortable	32	19%	Unacceptable
	C	Spring	23	15%	Uncomfortable	32	19%	Unacceptable
		Summer	17	13%	Walking	24	20%	Acceptable
		Fall	21	17%	Uncomfortable	29	16%	Acceptable
		Winter	25	14%	Uncomfortable	35	17%	Unacceptable
		Annual	22	10%	Uncomfortable	31	15%	Acceptable
22	A	Spring	17		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	B	Spring	20	18%	Uncomfortable	30	25%	Acceptable
		Summer	16	23%	Walking	23	21%	Acceptable
		Fall	19	19%	Walking	28	22%	Acceptable
		Winter	21	24%	Uncomfortable	32	23%	Unacceptable
		Annual	19	19%	Walking	29	21%	Acceptable
	C	Spring	19	12%	Walking	29	21%	Acceptable
		Summer	15	15%	Standing	23	21%	Acceptable
		Fall	18	13%	Walking	27	17%	Acceptable
		Winter	21	24%	Uncomfortable	31	19%	Acceptable
		Annual	19	19%	Walking	28	17%	Acceptable
23	A	Spring	16		Walking	24		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	14	-12%	Standing	22		Acceptable
		Summer	11	-27%	Sitting	16	-24%	Acceptable
		Fall	13	-19%	Standing	20	-13%	Acceptable
		Winter	15	-12%	Standing	23	-12%	Acceptable
		Annual	14	-12%	Standing	21	-12%	Acceptable
	C	Spring	14	-12%	Standing	22		Acceptable
		Summer	11	-27%	Sitting	16	-24%	Acceptable
		Fall	13	-19%	Standing	20	-13%	Acceptable
		Winter	15	-12%	Standing	23	-12%	Acceptable
		Annual	14	-12%	Standing	21	-12%	Acceptable
24	A	Spring	18		Walking	25		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	19		Walking	28	12%	Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	19		Walking	28	12%	Acceptable
		Annual	18		Walking	26		Acceptable
	C	Spring	19		Walking	27		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	18		Walking	28	12%	Acceptable
		Annual	17		Walking	26		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
25	A	Spring	14		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
	C	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
26	A	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	16	23%	Walking	24	20%	Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	15	25%	Standing	23	21%	Acceptable
		Winter	16	23%	Walking	25	19%	Acceptable
		Annual	15	25%	Standing	23	21%	Acceptable
	C	Spring	16	23%	Walking	24	20%	Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	15	25%	Standing	23	21%	Acceptable
		Winter	16	23%	Walking	25	19%	Acceptable
		Annual	15	25%	Standing	23	21%	Acceptable
27	A	Spring	14		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	C	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
28	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	11		Sitting	16		Acceptable
	B	Spring	14	27%	Standing	21	24%	Acceptable
		Summer	11	22%	Sitting	16	14%	Acceptable
		Fall	13	30%	Standing	20	25%	Acceptable
		Winter	15	36%	Standing	23	35%	Acceptable
		Annual	14	27%	Standing	20	25%	Acceptable
	C	Spring	14	27%	Standing	21	24%	Acceptable
		Summer	11	22%	Sitting	16	14%	Acceptable
		Fall	13	30%	Standing	20	25%	Acceptable
		Winter	15	36%	Standing	23	35%	Acceptable
		Annual	14	27%	Standing	20	25%	Acceptable
29	A	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	16	33%	Walking	24	33%	Acceptable
		Summer	12	33%	Sitting	18	29%	Acceptable
		Fall	15	36%	Standing	22	29%	Acceptable
		Winter	17	31%	Walking	25	25%	Acceptable
		Annual	15	25%	Standing	23	28%	Acceptable
	C	Spring	16	33%	Walking	24	33%	Acceptable
		Summer	12	33%	Sitting	18	29%	Acceptable
		Fall	15	36%	Standing	22	29%	Acceptable
		Winter	17	31%	Walking	25	25%	Acceptable
		Annual	15	25%	Standing	23	28%	Acceptable
30	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	B	Spring	13	18%	Standing	19	12%	Acceptable
		Summer	10	11%	Sitting	14		Acceptable
		Fall	12	20%	Sitting	18	12%	Acceptable
		Winter	14	27%	Standing	20	11%	Acceptable
		Annual	12		Sitting	19	12%	Acceptable
	C	Spring	13	18%	Standing	19	12%	Acceptable
		Summer	10	11%	Sitting	14		Acceptable
		Fall	12	20%	Sitting	18	12%	Acceptable
		Winter	14	27%	Standing	20	11%	Acceptable
		Annual	12		Sitting	19	12%	Acceptable
31	A	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	17	31%	Walking	26	30%	Acceptable
		Summer	13	18%	Standing	19	19%	Acceptable
		Fall	16	23%	Walking	24	26%	Acceptable
		Winter	19	36%	Walking	28	33%	Acceptable
		Annual	17	31%	Walking	25	25%	Acceptable
	C	Spring	17	31%	Walking	26	30%	Acceptable
		Summer	13	18%	Standing	19	19%	Acceptable
		Fall	16	23%	Walking	24	26%	Acceptable
		Winter	19	36%	Walking	28	33%	Acceptable
		Annual	17	31%	Walking	25	25%	Acceptable
32	A	Spring	16		Walking	19		Acceptable
		Summer	12		Sitting	14		Acceptable
		Fall	15		Standing	17		Acceptable
		Winter	17		Walking	20		Acceptable
		Annual	16		Walking	18		Acceptable
	B	Spring	17		Walking	20		Acceptable
		Summer	13		Standing	15		Acceptable
		Fall	16		Walking	18		Acceptable
		Winter	19	12%	Walking	22		Acceptable
		Annual	17		Walking	20	11%	Acceptable
	C	Spring	17		Walking	20		Acceptable
		Summer	13		Standing	15		Acceptable
		Fall	16		Walking	18		Acceptable
		Winter	19	12%	Walking	22		Acceptable
		Annual	17		Walking	20	11%	Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
33	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	14		Standing	22		Acceptable
	B	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	19	12%	Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	18	12%	Walking	26		Acceptable
		Annual	16	14%	Walking	23		Acceptable
	C	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	19	12%	Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	18	12%	Walking	26		Acceptable
		Annual	16	14%	Walking	23		Acceptable
34	A	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	14	17%	Standing	22	16%	Acceptable
		Summer	12	20%	Sitting	17		Acceptable
		Fall	12		Sitting	19	12%	Acceptable
		Winter	14	17%	Standing	22	16%	Acceptable
		Annual	13	18%	Standing	20	11%	Acceptable
	C	Spring	14	17%	Standing	22	16%	Acceptable
		Summer	12	20%	Sitting	17		Acceptable
		Fall	12		Sitting	19	12%	Acceptable
		Winter	14	17%	Standing	22	16%	Acceptable
		Annual	13	18%	Standing	20	11%	Acceptable
35	A	Spring	17		Walking	25		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	16		Walking	25		Acceptable
	B	Spring	19	12%	Walking	27		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	20	11%	Uncomfortable	29		Acceptable
		Annual	18	12%	Walking	26		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	C	Spring	19	12%	Walking	27		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	20	11%	Uncomfortable	29		Acceptable
		Annual	18	12%	Walking	26		Acceptable
36	A	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	16		Walking	24		Acceptable
	C	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	16		Walking	24		Acceptable
37	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	15		Acceptable
	C	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	15		Acceptable
38	A	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	12		Sitting	18		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	B	Spring	12		Sitting	20		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	19		Acceptable
	C	Spring	12		Sitting	20		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	19		Acceptable
39	A	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	17		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17		Walking	24		Acceptable
	C	Spring	17		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17		Walking	24		Acceptable
40	A	Spring	21		Uncomfortable	29		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	22		Uncomfortable	31		Acceptable
		Annual	20		Uncomfortable	28		Acceptable
	B	Spring	18	-14%	Walking	27		Acceptable
		Summer	14	-12%	Standing	20		Acceptable
		Fall	16	-16%	Walking	25		Acceptable
		Winter	18	-18%	Walking	28		Acceptable
		Annual	17	-15%	Walking	25	-11%	Acceptable
	C	Spring	18	-14%	Walking	27		Acceptable
		Summer	14	-12%	Standing	20		Acceptable
		Fall	16	-16%	Walking	25		Acceptable
		Winter	18	-18%	Walking	28		Acceptable
		Annual	17	-15%	Walking	25	-11%	Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
41	A	Spring	17		Walking	23		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	17		Walking	23		Acceptable
		Annual	16		Walking	22		Acceptable
	B	Spring	16		Walking	22		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	16		Walking	22		Acceptable
		Annual	15		Standing	21		Acceptable
	C	Spring	16		Walking	22		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	16		Walking	22		Acceptable
		Annual	15		Standing	21		Acceptable
42	A	Spring	16		Walking	25		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	15		Standing	24		Acceptable
	B	Spring	16		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	15		Standing	24		Acceptable
	C	Spring	16		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	16		Walking	25		Acceptable
		Annual	15		Standing	24		Acceptable
43	A	Spring	20		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	19		Walking	27		Acceptable
		Summer	16		Walking	21		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	18		Walking	26		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	C	Spring	19		Walking	27		Acceptable
		Summer	16		Walking	21		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	18		Walking	26		Acceptable
44	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	22		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	19		Walking	27		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		Walking	26		Acceptable
	C	Spring	19		Walking	27		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		Walking	26		Acceptable
45	A	Spring	19		Walking	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	21		Uncomfortable	30		Acceptable
		Annual	19		Walking	27		Acceptable
	B	Spring	20		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	C	Spring	20		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
46	A	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		Walking	25		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	B	Spring	20	11%	Uncomfortable	27		Acceptable
		Summer	16	14%	Walking	21		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20	11%	Uncomfortable	27		Acceptable
	C	Spring	20	11%	Uncomfortable	27		Acceptable
		Summer	16	14%	Walking	21		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20	11%	Uncomfortable	27		Acceptable
47	A	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	15		Standing	24		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	23		Acceptable
	C	Spring	15		Standing	24		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	23		Acceptable
48	A	Spring	17		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	17		Walking	23		Acceptable
	B	Spring	20	18%	Uncomfortable	27	12%	Acceptable
		Summer	16	23%	Walking	21	11%	Acceptable
		Fall	19	19%	Walking	25		Acceptable
		Winter	22	22%	Uncomfortable	29	16%	Acceptable
		Annual	20	18%	Uncomfortable	27	17%	Acceptable
	C	Spring	20	18%	Uncomfortable	27	12%	Acceptable
		Summer	16	23%	Walking	21	11%	Acceptable
		Fall	19	19%	Walking	25		Acceptable
		Winter	22	22%	Uncomfortable	29	16%	Acceptable
		Annual	20	18%	Uncomfortable	27	17%	Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
49	A	Spring	16		Walking	25		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	18		Walking	28		Acceptable
		Annual	16		Walking	25		Acceptable
	B	Spring	18	12%	Walking	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	19		Walking	29		Acceptable
		Annual	17		Walking	26		Acceptable
	C	Spring	18	12%	Walking	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	19		Walking	29		Acceptable
		Annual	17		Walking	26		Acceptable
50	A	Spring	20		Uncomfortable	29		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	22		Uncomfortable	32		Unacceptable
		Annual	20		Uncomfortable	29		Acceptable
	B	Spring	18		Walking	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	21		Uncomfortable	31		Acceptable
		Annual	18		Walking	27		Acceptable
	C	Spring	18		Walking	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	21		Uncomfortable	31		Acceptable
		Annual	18		Walking	27		Acceptable
51	A	Spring	19		Walking	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	21		Uncomfortable	30		Acceptable
		Annual	19		Walking	27		Acceptable
	B	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	26		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	C	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	26		Acceptable
52	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	14		Standing	22		Acceptable
	C	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	14		Standing	22		Acceptable
53	A	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	17		Walking	25		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
	C	Spring	17		Walking	25		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
54	A	Spring	15		Standing	22		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	20		Acceptable
		Winter	16		Walking	22		Acceptable
		Annual	15		Standing	21		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	B	Spring	15		Standing	21		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	14		Standing	20		Acceptable
	C	Spring	15		Standing	21		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	14		Standing	20		Acceptable
55	A	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	C	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
56	A	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
	C	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
57	A	Spring	10		Sitting	17		Acceptable
		Summer	7		Sitting	13		Acceptable
		Fall	9		Sitting	16		Acceptable
		Winter	10		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	10		Sitting	16		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16	-11%	Acceptable
		Annual	9		Sitting	15		Acceptable
	C	Spring	10		Sitting	16		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16	-11%	Acceptable
		Annual	9		Sitting	15		Acceptable
58	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	8	-11%	Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
	C	Spring	11		Sitting	17		Acceptable
		Summer	8	-11%	Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
59	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	12	20%	Sitting	18	12%	Acceptable
		Summer	9	12%	Sitting	14	17%	Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	C	Spring	12	20%	Sitting	18	12%	Acceptable
		Summer	9	12%	Sitting	14	17%	Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
60	A	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	17		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	19	46%	Walking	26	30%	Acceptable
		Summer	16	60%	Walking	21	40%	Acceptable
		Fall	16	33%	Walking	22	29%	Acceptable
		Winter	19	36%	Walking	26	30%	Acceptable
		Annual	18	50%	Walking	24	33%	Acceptable
	C	Spring	19	46%	Walking	26	30%	Acceptable
		Summer	16	60%	Walking	21	40%	Acceptable
		Fall	16	33%	Walking	22	29%	Acceptable
		Winter	19	36%	Walking	26	30%	Acceptable
		Annual	18	50%	Walking	24	33%	Acceptable
61	A	Spring	15		Standing	21		Acceptable
		Summer	12		Sitting	16		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	18	20%	Walking	24	14%	Acceptable
		Summer	14	17%	Standing	19	19%	Acceptable
		Fall	17	21%	Walking	23	15%	Acceptable
		Winter	19	27%	Walking	26	18%	Acceptable
		Annual	18	29%	Walking	24	20%	Acceptable
	C	Spring	18	20%	Walking	24	14%	Acceptable
		Summer	14	17%	Standing	19	19%	Acceptable
		Fall	17	21%	Walking	23	15%	Acceptable
		Winter	19	27%	Walking	26	18%	Acceptable
		Annual	18	29%	Walking	24	20%	Acceptable
62	A	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	22		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	B	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	C	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
63	A	Spring	17		Walking	27		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	18		Walking	28		Acceptable
		Annual	17		Walking	26		Acceptable
	B	Spring	16		Walking	25		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	14	-12%	Standing	22		Acceptable
		Winter	16	-11%	Walking	26		Acceptable
		Annual	15	-12%	Standing	24		Acceptable
	C	Spring	16		Walking	25		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	14	-12%	Standing	22		Acceptable
		Winter	16	-11%	Walking	26		Acceptable
		Annual	15	-12%	Standing	24		Acceptable
64	A	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	16		Walking	24		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	23		Acceptable
	C	Spring	16		Walking	24		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	23		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
65	A	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	C	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
66	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
	C	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
67	A	Spring	17		Walking	26		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	16		Walking	25		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15	-12%	Standing	23		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	C	Spring	16		Walking	25		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15	-12%	Standing	23		Acceptable
68	A	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	16	23%	Walking	22		Acceptable
		Summer	14	40%	Standing	19	27%	Acceptable
		Fall	14	27%	Standing	20	11%	Acceptable
		Winter	15	15%	Standing	22		Acceptable
		Annual	15	25%	Standing	21	17%	Acceptable
	C	Spring	16	23%	Walking	22		Acceptable
		Summer	14	40%	Standing	19	27%	Acceptable
		Fall	14	27%	Standing	20	11%	Acceptable
		Winter	15	15%	Standing	22		Acceptable
		Annual	15	25%	Standing	21	17%	Acceptable
69	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	13	18%	Standing	19	12%	Acceptable
		Summer	11	22%	Sitting	16	23%	Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19	12%	Acceptable
		Annual	12	20%	Sitting	18	12%	Acceptable
	C	Spring	13	18%	Standing	19	12%	Acceptable
		Summer	11	22%	Sitting	16	23%	Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19	12%	Acceptable
		Annual	12	20%	Sitting	18	12%	Acceptable
70	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	14		Standing	21		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	B	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	14	-12%	Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	C	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	14	-12%	Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
71	A	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	14	17%	Standing	21	11%	Acceptable
		Summer	12	20%	Sitting	18	29%	Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	13		Standing	20	11%	Acceptable
	C	Spring	14	17%	Standing	21	11%	Acceptable
		Summer	12	20%	Sitting	18	29%	Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	13		Standing	20	11%	Acceptable
72	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	13	-13%	Standing	20		Acceptable
		Summer	10	-17%	Sitting	16		Acceptable
		Fall	12	-14%	Sitting	19		Acceptable
		Winter	15	-12%	Standing	22		Acceptable
		Annual	13	-13%	Standing	20		Acceptable
	C	Spring	13	-13%	Standing	20		Acceptable
		Summer	10	-17%	Sitting	16		Acceptable
		Fall	12	-14%	Sitting	19		Acceptable
		Winter	15	-12%	Standing	22		Acceptable
		Annual	13	-13%	Standing	20		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed: Speed (mph)	Mean Wind Speed: % Change	Mean Wind Speed: Rating	Effective Gust Wind Speed: Speed (mph)	Effective Gust Wind Speed: % Change	Effective Gust Wind Speed: Rating
73	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	15		Acceptable
	B	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	C	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
74	A	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	10	-17%	Sitting	16	-11%	Acceptable
		Summer	8	-20%	Sitting	12	-20%	Acceptable
		Fall	9	-18%	Sitting	15	-12%	Acceptable
		Winter	11	-15%	Sitting	17	-15%	Acceptable
		Annual	10	-17%	Sitting	16	-11%	Acceptable
	C	Spring	10	-17%	Sitting	16	-11%	Acceptable
		Summer	8	-20%	Sitting	12	-20%	Acceptable
		Fall	9	-18%	Sitting	15	-12%	Acceptable
		Winter	11	-15%	Sitting	17	-15%	Acceptable
		Annual	10	-17%	Sitting	16	-11%	Acceptable
75	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	10		Sitting	16		Acceptable
		Summer	7	-12%	Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	9		Sitting	15		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed: Speed (mph)	Mean Wind Speed: % Change	Mean Wind Speed: Rating	Effective Gust Wind Speed: Speed (mph)	Effective Gust Wind Speed: % Change	Effective Gust Wind Speed: Rating
	C	Spring	10		Sitting	16		Acceptable
		Summer	7	-12%	Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	9		Sitting	15		Acceptable
76	A	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12	-14%	Sitting	19		Acceptable
		Annual	11	-15%	Sitting	18		Acceptable
	C	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12	-14%	Sitting	19		Acceptable
		Annual	11	-15%	Sitting	18		Acceptable
77	A	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	12		Sitting	17		Acceptable
		Summer	10		Sitting	14		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	C	Spring	12		Sitting	17		Acceptable
		Summer	10		Sitting	14		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
78	A	Spring	14		Standing	20		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed Speed (mph)	Mean Wind Speed % Change	Mean Wind Speed Rating	Effective Gust Wind Speed Speed (mph)	Effective Gust Wind Speed % Change	Effective Gust Wind Speed Rating
	B	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
	C	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
79	A	Spring	11		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
	C	Spring	11		Sitting	18		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
80	A	Spring	12		Sitting	19		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	C	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
81	A	Spring	12		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	11		Sitting	15		Acceptable
		Winter	13		Standing	18		Acceptable
		Annual	12		Sitting	16		Acceptable
	B	Spring	11		Sitting	16		Acceptable
		Summer	9		Sitting	12		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	12		Sitting	17		Acceptable
		Annual	11		Sitting	16		Acceptable
	C	Spring	11		Sitting	16		Acceptable
		Summer	9		Sitting	12		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	12		Sitting	17		Acceptable
		Annual	11		Sitting	16		Acceptable
82	A	Spring	9		Sitting	14		Acceptable
		Summer	8		Sitting	11		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	9		Sitting	14		Acceptable
	B	Spring	11	22%	Sitting	17	21%	Acceptable
		Summer	10	25%	Sitting	15	36%	Acceptable
		Fall	9	12%	Sitting	15	15%	Acceptable
		Winter	10	11%	Sitting	16		Acceptable
		Annual	10	11%	Sitting	16	14%	Acceptable
	C	Spring	11	22%	Sitting	17	21%	Acceptable
		Summer	10	25%	Sitting	15	36%	Acceptable
		Fall	9	12%	Sitting	15	15%	Acceptable
		Winter	10	11%	Sitting	16		Acceptable
		Annual	10	11%	Sitting	16	14%	Acceptable
83	A	Spring	15		Standing	23		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	14		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	21		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	C	Spring	15		Standing	22		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	21		Acceptable
84	A	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	14		Acceptable
		Fall	12		Sitting	17		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	17		Acceptable
	B	Spring	14		Standing	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	13		Standing	19	12%	Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	13		Standing	19	12%	Acceptable
	C	Spring	14		Standing	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	13		Standing	19	12%	Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	13		Standing	19	12%	Acceptable
85	A	Spring	14		Standing	21		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
	C	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
86	A	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	17		Walking	26		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	B	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	22		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	18		Walking	28		Acceptable
		Annual	17		Walking	25		Acceptable
	C	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	22		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	18		Walking	28		Acceptable
		Annual	17		Walking	25		Acceptable
87	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	14		Standing	21		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	14		Standing	20		Acceptable
	C	Spring	14		Standing	21		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	14		Standing	20		Acceptable
88	A	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	14		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	C	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
89	A	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	17		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	18		Walking	24		Acceptable
		Annual	16		Walking	22		Acceptable
	B	Spring	15		Standing	21		Acceptable
		Summer	12		Sitting	16		Acceptable
		Fall	13	-13%	Standing	19		Acceptable
		Winter	16	-11%	Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable
	C	Spring	15		Standing	21		Acceptable
		Summer	12		Sitting	16		Acceptable
		Fall	13	-13%	Standing	19		Acceptable
		Winter	16	-11%	Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable
90	A	Spring	13		Standing	19		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	12		Sitting	17		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	13		Standing	19		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	C	Spring	13		Standing	19		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
91	A	Spring	14		Standing	20		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	14		Standing	19		Acceptable
	B	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	13		Standing	18		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	C	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	13		Standing	18		Acceptable
		Winter	15		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
92	A	Spring	19		Walking	26		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	18		Walking	25		Acceptable
	B	Spring	18		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	24		Acceptable
	C	Spring	18		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	24		Acceptable
93	A	Spring	17		Walking	24		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	18		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
	C	Spring	18		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
94	A	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	11		Sitting	16		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	B	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
	C	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
95	A	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	C	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
96	A	Spring	19		Walking	26		Acceptable
		Summer	15		Standing	19		Acceptable
		Fall	18		Walking	23		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	19		Walking	25		Acceptable
	B	Spring	19		Walking	25		Acceptable
		Summer	15		Standing	19		Acceptable
		Fall	18		Walking	23		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	19		Walking	25		Acceptable
	C	Spring	19		Walking	25		Acceptable
		Summer	15		Standing	19		Acceptable
		Fall	18		Walking	23		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	19		Walking	25		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
97	A	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	14		Standing	20		Acceptable
	C	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	14		Standing	20		Acceptable
98	A	Spring	15		Standing	23		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	17		Walking	26		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	16		Walking	24		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
	C	Spring	16		Walking	24		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
99	A	Spring	18		Walking	27		Acceptable
		Summer	13		Standing	20		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	18		Walking	28		Acceptable
		Annual	17		Walking	26		Acceptable
	B	Spring	17		Walking	26		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	15		Standing	24		Acceptable
		Winter	17		Walking	27		Acceptable
		Annual	16		Walking	25		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	C	Spring	17		Walking	26		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	15		Standing	24		Acceptable
		Winter	17		Walking	27		Acceptable
		Annual	16		Walking	25		Acceptable
100	A	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	C	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
101	A	Spring	15		Standing	23		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22		Acceptable
	B	Spring	14		Standing	23		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	21		Acceptable
	C	Spring	14		Standing	23		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	21		Acceptable
102	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	B	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	9		Sitting	15		Acceptable
	C	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	9		Sitting	15		Acceptable
103	A	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	17		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16	14%	Walking	23		Acceptable
		Winter	18	12%	Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	C	Spring	17		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16	14%	Walking	23		Acceptable
		Winter	18	12%	Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
104	A	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
	B	Spring	18	29%	Walking	27	23%	Acceptable
		Summer	14	27%	Standing	20	18%	Acceptable
		Fall	17	31%	Walking	24	20%	Acceptable
		Winter	20	33%	Uncomfortable	29	26%	Acceptable
		Annual	18	29%	Walking	26	24%	Acceptable
	C	Spring	17	21%	Walking	26	18%	Acceptable
		Summer	13	18%	Standing	19	12%	Acceptable
		Fall	16	23%	Walking	24	20%	Acceptable
		Winter	19	27%	Walking	28	22%	Acceptable
		Annual	17	21%	Walking	26	24%	Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
105	A	Spring	18		Walking	26		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	18		Walking	26		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
	C	Spring	18		Walking	26		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	24		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
106	A	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	C	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
107	A	Spring	11		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	C	Spring	11		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
108	A	Spring	20		Uncomfortable	28		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	19		Walking	27		Acceptable
	B	Spring	20		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	22		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	C	Spring	19		Walking	27		Acceptable
		Summer	15	-12%	Standing	22		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
109	A	Spring	18		Walking	26		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	21		Uncomfortable	28		Acceptable
		Annual	18		Walking	26		Acceptable
	B	Spring	17		Walking	25		Acceptable
		Summer	13	-13%	Standing	19		Acceptable
		Fall	16	-11%	Walking	23		Acceptable
		Winter	18	-14%	Walking	27		Acceptable
		Annual	17		Walking	24		Acceptable
	C	Spring	16	-11%	Walking	24		Acceptable
		Summer	13	-13%	Standing	18		Acceptable
		Fall	15	-17%	Standing	22	-12%	Acceptable
		Winter	17	-19%	Walking	26		Acceptable
		Annual	16	-11%	Walking	23	-12%	Acceptable
110	A	Spring	17		Walking	25		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	23		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	B	Spring	17		Walking	25		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	24		Acceptable
	C	Spring	17		Walking	25		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	24		Acceptable
111	A	Spring	19		Walking	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	26		Acceptable
		Winter	21		Uncomfortable	30		Acceptable
		Annual	19		Walking	27		Acceptable
	B	Spring	19		Walking	28		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	26		Acceptable
		Winter	20		Uncomfortable	31		Acceptable
		Annual	18		Walking	28		Acceptable
	C	Spring	19		Walking	28		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	26		Acceptable
		Winter	20		Uncomfortable	31		Acceptable
		Annual	18		Walking	28		Acceptable
112	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	C	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
113	A	Spring	10		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	10		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
	C	Spring	10		Sitting	17		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	16		Acceptable
114	A	Spring	8		Sitting	13		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	7		Sitting	12		Acceptable
		Winter	8		Sitting	13		Acceptable
		Annual	7		Sitting	12		Acceptable
	B	Spring	7	-12%	Sitting	12		Acceptable
		Summer	6	-14%	Sitting	9	-18%	Acceptable
		Fall	7		Sitting	11		Acceptable
		Winter	7	-12%	Sitting	12		Acceptable
		Annual	7		Sitting	11		Acceptable
	C	Spring	7	-12%	Sitting	12		Acceptable
		Summer	6	-14%	Sitting	9	-18%	Acceptable
		Fall	7		Sitting	11		Acceptable
		Winter	7	-12%	Sitting	12		Acceptable
		Annual	7		Sitting	11		Acceptable
115	A	Spring	9		Sitting	15		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	9		Sitting	14		Acceptable
	B	Spring	10	11%	Sitting	15		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10	11%	Sitting	15		Acceptable
		Annual	9		Sitting	14		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	C	Spring	10	11%	Sitting	15		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10	11%	Sitting	15		Acceptable
		Annual	9		Sitting	14		Acceptable
116	A	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	13		Standing	20		Acceptable
		Summer	10	11%	Sitting	15		Acceptable
		Fall	12		Sitting	19	12%	Acceptable
		Winter	15	15%	Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	C	Spring	13		Standing	20		Acceptable
		Summer	10	11%	Sitting	15		Acceptable
		Fall	12		Sitting	19	12%	Acceptable
		Winter	15	15%	Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
117	A	Spring	11		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
	B	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
	C	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
118	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
	B	Spring	13	18%	Standing	20	11%	Acceptable
		Summer	10	11%	Sitting	15		Acceptable
		Fall	12		Sitting	19	12%	Acceptable
		Winter	14	17%	Standing	22	16%	Acceptable
		Annual	13	18%	Standing	20	18%	Acceptable
	C	Spring	13	18%	Standing	20	11%	Acceptable
		Summer	10	11%	Sitting	15		Acceptable
		Fall	12		Sitting	19	12%	Acceptable
		Winter	14	17%	Standing	22	16%	Acceptable
		Annual	13	18%	Standing	20	18%	Acceptable
119	A	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	12		Sitting	17		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	21	11%	Acceptable
		Annual	12		Sitting	19		Acceptable
	C	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	21	11%	Acceptable
		Annual	12		Sitting	19		Acceptable
120	A	Spring	12		Sitting	19		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	22	16%	Acceptable
		Annual	13		Standing	20	11%	Acceptable
	C	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	22	16%	Acceptable
		Annual	13		Standing	20	11%	Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed			Effective Gust Wind Speed		
			Speed (mph)	% Change	Rating	Speed (mph)	% Change	Rating
121	A	Spring	13		Standing	21		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
	C	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
122	A	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
	C	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	13		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
123	A	Spring	15		Standing	23		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable

Table 1: Mean Speed and Effective Gust Categories - Multiple Seasons

Location	Configuration	Season	Mean Wind Speed Speed (mph)	Mean Wind Speed % Change	Mean Wind Speed Rating	Effective Gust Wind Speed Speed (mph)	Effective Gust Wind Speed % Change	Effective Gust Wind Speed Rating
	C	Spring	15		Standing	22		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
124	A	Spring	16		Walking	23		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	16		Walking	22		Acceptable
	B	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	C	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable

Configurations		Mean Wind Criteria Speed (mph)		Effective Gust Criteria (mph)	
A	No Build	≤ 12	Comfortable for Sitting	≤ 31	Acceptable
B	Build	13 - 15	Comfortable for Standing	> 31	Unacceptable
C	Build + Mitigation	16 - 19	Comfortable for Walking		
		20 - 27	Uncomfortable for Walking		
		> 27	Dangerous Conditions		

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

Appendix E

Air Quality

APPENDIX E - AIR QUALITY

Introduction

This Air Quality Appendix provides modeling assumptions and backup for results presented in Section 3.5 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 2017 and 2024 for speed limits of idle, 10, 15, and 25 mph for use in the microscale analyses.

MOVES CO Emission Factor Summary

Carbon Monoxide Only

		2017	2024
Free Flow	25 mph	2.611	1.758
Right Turns	10 mph	4.058	2.693
Left Turns	15 mph	3.508	2.369
Queues	Idle	8.013	3.216

Notes: Winter CO emission factors are higher than Summer and are conservatively used
Urban Unrestricted Roadway type used

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 10, 15, and 25 mph were used for right turn, left turn, and free flow links, respectively.

252-264 Huntington Avenue
Background Concentrations

POLLUTANT	AVERAGING TIME	Form	2013	2014	2015	Units	ppm/ppb to $\mu g/m^3$ Conversion Factor	2013-2015 Background Concentration ($\mu g/m^3$)	Location
SO_2 (1)(5)	1-Hour (4)	99th %	12.2	9.7	5.5	ppb	2.62	23.9	Kenmore Sq., Boston
	3-Hour (6)	H2H	13.9	9.4	4.4	ppb	2.62	36.4	Kenmore Sq., Boston
	24-Hour	H2H	6	5	2.9	ppb	2.62	15.7	Kenmore Sq., Boston
	Annual	H	1.0	0.9	0.5	ppb	2.62	2.7	Kenmore Sq., Boston
PM-10	24-Hour	H2H	50	53	30	$\mu g/m^3$	1	53	Kenmore Sq., Boston
	Annual	H	19.3	15.0	14.9	$\mu g/m^3$	1	19.3	Kenmore Sq., Boston
PM-2.5	24-Hour (4)	98th %	17.5	14.6	14.5	$\mu g/m^3$	1	15.5	Kenmore Sq., Boston
	Annual (4)	H	8.0	6.1	6.5	$\mu g/m^3$	1	6.8	Kenmore Sq., Boston
NO_2 (3)	1-Hour (4)	98th %	49	49	56	ppb	1.88	96.5	Kenmore Sq., Boston
	Annual	H	17.8	17.2	17.3	ppb	1.88	33.4	Kenmore Sq., Boston
CO (2)	1-Hour	H2H	1.3	1.3	0.4	ppm	1146	1489.8	Kenmore Sq., Boston
	8-Hour	H2H	1.0	1.1	0.3	ppm	1146	1260.6	Kenmore Sq., Boston
Ozone	8-Hour	H4H	0.059	0.054	0.056	ppm	1963	115.8	Harrison Ave., Boston
Lead	Rolling 3-Month	H	0.007	0.014	0.016	$\mu g/m^3$	1	0.016	Harrison Ave., Boston

Notes:
From 2013-2015 EPA's AirData Website
[1] SO_2 reported ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 2.62 $\mu g/m^3$.
[2] CO reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 1146 $\mu g/m^3$.
[3] NO_2 reported in ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 1.88 $\mu g/m^3$.
[4] Background level is the average concentration of the three years.
[5] The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.

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

Appendix F

Climate Change Preparedness Checklist

Climate Change Preparedness and Resiliency Checklist for New Construction

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

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

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

Climate Change Analysis and Information Sources:

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

Checklist

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

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

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

A.1 - Project Information

Project Name:	252-264 Huntington Avenue
Project Address Primary:	252-264 Huntington Avenue
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	John Matteson, QMG Huntington, LLC, jmatteson44@gmail.com

A.2 - Team Description

Owner / Developer:	QMG Huntington, LLC
Architect:	Stantec Architecture
Engineer (building systems):	WSP Parsons Brinckerhoff
Sustainability / LEED:	Stantec Architecture
Permitting:	Epsilon Associates
Construction Management:	
Climate Change Expert:	

A.3 - Project Permitting and Phase

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

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

A.4 - Building Classification and Description

List the principal Building Uses:	Residential
List the First Floor Uses:	*Residential Lobby, theater space, restaurant/retail*

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

☐ Wood Frame	☐ Masonry	☑ Steel Frame	☐ Concrete

Describe the building?

Site Area:	*34,173 SF*	Building Area:	*405,000 SF*
Building Height:	*362 Ft.*	Number of Stories:	*32 Flrs.*
First Floor Elevation (reference Boston City Base):	*17.5 Elev.*	Are there below grade spaces/levels, if yes how many:	*Yes. Four 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*
	TBD		*TBD*

A.6 - Building Energy-

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

Electric:	*810 peak (kW)*	Heating:	*2.0 (MMBtu/hr)*
What is the planned building Energy Use Intensity:	*13.8 (kWh/SF)*	Cooling:	*3.5 (MMBtu/hr)*

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

Electric:	*750 (kW)*	Heating:	*0 (MMBtu/hr)*
		Cooling:	*0 (MMBtu/hr)*

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

Electrical Generation:	*900 (kW)*		Fuel Source:	*Diesel*
System Type and Number of Units:	☑ Combustion Engine	☐ Gas Turbine	☐ Combine Heat and Power	*(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?

130 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?

Roof:	*R = 25*	Walls / Curtain Wall Assembly:	*R = 18*
Foundation:	*R = 15*	Basement / Slab:	*R =10*
Windows:	*R = / U =0.34*	Doors:	*R = / U =0.7*

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? Life safety electrical equipment will be operational without utility power.

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: There will be a stormwater storage tank in the building along with a system to capture and infiltrate stormwater.

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?

	No

Describe site conditions?

Site Elevation – Low/High Points:	*17.5 Boston City Base Elev.(Ft.)*
Building Proximity to Water:	*1,600 Ft.*

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

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

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

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

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

	1,500 Ft.

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

C - Sea-Level Rise and Storms

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

C.2 - Analysis

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

Sea Level Rise:	*3 Ft.*	Frequency of storms:	*0.25 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 G

Accessibility Checklist

Article 80 – Accessibility Checklist

A requirement of the Boston Planning & Development Agency (BPDA)
Article 80 Development Review Process

The Mayor's Commission for Persons with Disabilities strives to reduce architectural, procedural, attitudinal, and communication barriers that affect persons with disabilities in the City of Boston. In 2009, a Disability Advisory Board was appointed by the Mayor to work alongside the Commission in creating universal access throughout the city's built environment. The Disability Advisory Board is made up of 13 volunteer Boston residents with disabilities who have been tasked with representing the accessibility needs of their neighborhoods and increasing inclusion of people with disabilities.

In conformance with this directive, the BDPA has instituted this Accessibility Checklist as a tool to encourage developers to begin thinking about access and inclusion at the beginning of development projects, and strive to go beyond meeting only minimum MAAB / ADAAG compliance requirements. Instead, our goal is for developers to create ideal design for accessibility which will ensure that the built environment provides equitable experiences for all people, regardless of their abilities. As such, any project subject to Boston Zoning Article 80 Small or Large Project Review, including Institutional Master Plan modifications and updates, must complete this Accessibility Checklist thoroughly to provide specific detail about accessibility and inclusion, including descriptions, diagrams, and data.

For more information on compliance requirements, advancing best practices, and learning about progressive approaches to expand accessibility throughout Boston's built environment. Proponents are highly encouraged to meet with Commission staff, prior to filing.

Accessibility Analysis Information Sources:

1. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
   http://www.ada.gov/2010ADAstandards_index.htm
2. Massachusetts Architectural Access Board 521 CMR
   http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/aab/aab-rules-and-regulations-pdf.html
3. Massachusetts State Building Code 780 CMR
   http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/csl/building-codebbrs.html
4. Massachusetts Office of Disability – Disabled Parking Regulations
   http://www.mass.gov/anf/docs/mod/hp-parking-regulations-summary-mod.pdf
5. MBTA Fixed Route Accessible Transit Stations
   http://www.mbta.com/riding_the_t/accessible_services/
6. City of Boston – Complete Street Guidelines
   http://bostoncompletestreets.org/
7. City of Boston – Mayor's Commission for Persons with Disabilities Advisory Board
   www.boston.gov/disability
8. City of Boston – Public Works Sidewalk Reconstruction Policy
   http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf
9. City of Boston – Public Improvement Commission Sidewalk Café Policy
   http://www.cityofboston.gov/images_documents/Sidewalk_cafes_tcm3-1845.pdf

Glossary of Terms:

1. *Accessible Route* – A continuous and unobstructed path of travel that meets or exceeds the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 20
2. *Accessible Group 2 Units* – Residential units with additional floor space that meet or exceed the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 9.4
3. *Accessible Guestrooms* – Guestrooms with additional floor space, that meet or exceed the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 8.4
4. *Inclusionary Development Policy (IDP)* – Program run by the BPDA that preserves access to affordable housing opportunities, in the City. For more information visit: http://www.bostonplans.org/housing/overview
5. *Public Improvement Commission (PIC)* – The regulatory body in charge of managing the public right of way. For more information visit: https://www.boston.gov/pic
6. *Visitability* – A place's ability to be accessed and visited by persons with disabilities that cause functional limitations; where architectural barriers do not inhibit access to entrances/doors and bathrooms.

1. Project Information: *If this is a multi-phased or multi-building project, fill out a separate Checklist for each phase/building.*			
Project Name:	252-264 Huntington Ave.		
Primary Project Address:	252-264 Huntington Ave.		
Total Number of Phases/Buildings:	One		
Primary Contact (Name / Title / Company / Email / Phone):	John Matteson, QMG Huntington, LLC, jmatteson44@gmail.com		
Owner / Developer:	QMG Huntington, LLC		
Architect:	Stantec Architecture		
Civil Engineer:	Nitsch Engineering		
Landscape Architect:			
Permitting:	Epsilon Associates, Inc.		
Construction Management:			
At what stage is the project at time of this questionnaire? Select below:			
	☑PNF / Expanded PNF Submitted	Draft / Final Project Impact Report Submitted	BPDA Board Approved
	BPDA Design Approved	Under Construction	Construction Completed:
Do you anticipate filing for any variances with the Massachusetts Architectural Access Board (MAAB)? *If yes,* identify and explain.	The Project will most likely be seeking variances for Section 43.3.2 and 45.4.5 to provide kitchen sink depths greater than 6.5", as well as a variance for Section MAAB S39.3.1/9.5.6 due to the amount of glass in the units, there will be a select number of outlets that will be floor mounted.		

2. Building Classification and Description: *This section identifies preliminary construction information about the project including size and uses.*			
What are the dimensions of the project?			
Site Area:	*34,173 SF*	Building Area:	*405,000 GSF*
Building Height:	*362 FT.*	Number of Stories:	*32 Flrs.*
First Floor Elevation:	17.5 BCB	Is there below grade space:	*Yes*

What is the Construction Type? (Select most appropriate type)				
	Wood Frame	Masonry	☑Steel Frame	Concrete
What are the principal building uses? (IBC definitions are below – select all appropriate that apply)				
	Residential – One - Three Unit	☑Residential - Multi-unit, Four +	Institutional	Educational
	Business	Mercantile	Factory	Hospitality
	Laboratory / Medical	Storage, Utility and Other		
List street-level uses of the building:	*Residential lobby, retail/restaurant, theater lobby and breakout including new accessible entrance for the theater.*			

3. Assessment of Existing Infrastructure for Accessibility: *This section explores the proximity to accessible transit lines and institutions, such as (but not limited to) hospitals, elderly & disabled housing, and general neighborhood resources. Identify how the area surrounding the development is accessible for people with mobility impairments and analyze the existing condition of the accessible routes through sidewalk and pedestrian ramp reports.*	
Provide a description of the neighborhood where this development is located and its identifying topographical characteristics:	The Project site is located within the portion of Huntington Avenue known as the Avenue of the Arts, a unique corridor in the City of Boston that serves as a place for residents and visitors to engage in a wide range of cultural and academic opportunities. The district is home to many of Boston's greatest institutions dedicated to fine arts, architecture, music, theater, and education. The topography in the area is generally consistent with minimal slopes.
List the surrounding accessible MBTA transit lines and their proximity to development site: commuter rail / subway stations, bus stops:	MBTA Green line nearby with accessible entrances at Prudential and Northeastern Ave, Orange Line at Massachusetts Ave. stop. MBTA Buses 1, 39, CT1, and 170 are all within one block of the site.
List the surrounding institutions: hospitals, public housing, elderly and disabled housing developments, educational facilities, others:	There are numerous institutions in the area surrounding the site, including: Symphony Hall, Christian Science Center, Horticultural Hall, New England Conservatory, Northeastern University, YMCA Boston.
List the surrounding government buildings: libraries, community centers, recreational facilities, and other related facilities:	The nearest recreational facility is the Matthews Arena.
4. Surrounding Site Conditions – Existing: *This section identifies current condition of the sidewalks and pedestrian ramps at the development site.*	

Is the development site within a historic district? *If yes,* identify which district:	The site is not within a historic district.
Are there sidewalks and pedestrian ramps existing at the development site? *If yes*, list the existing sidewalk and pedestrian ramp dimensions, slopes, materials, and physical condition at the development site:	Yes, existing sidewalks are concrete and in fair condition. [Starting at the street – 4'-2" wide tree planting strip followed by a 13'-10" sidewalk. There is also an existing ramp that sits within that sidewalk zone that is 6'-9" wide and has a slope of 1:12]
Are the sidewalks and pedestrian ramps existing-to-remain? *If yes,* have they been verified as ADA / MAAB compliant (with yellow composite detectable warning surfaces, cast in concrete)? *If yes,* provide description and photos:	No. The sidewalks and ramps will be reconstructed as part of the Project.
5. Surrounding Site Conditions – Proposed *This section identifies the proposed condition of the walkways and pedestrian ramps around the development site. Sidewalk width contributes to the degree of comfort 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. Wider sidewalks allow people to walk side by side and pass each other comfortably walking alone, walking in pairs, or using a wheelchair.*	
Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? *If yes*, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, or Boulevard.	The proposed sidewalks will be consistent with the Boston Complete Street Guidelines, and the Boulevard street type was applied.
What are the total dimensions and slopes of the proposed sidewalks? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone:	Frontage Zone: 2' Pedestrian Zone: 13' Greenscape Zone: 4'
List the proposed materials for each Zone. Will the proposed materials be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way?	The Greenscape Zone is on City of Boston Property, and includes streetlights, trees, and signage. The Pedestrian and Frontage zones are on private property, and will have a concrete surface
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? *If yes,* what	This has not yet been determined, but there may be furnishings programmed for either the restaurant space or for the Theater. Sidewalk seating may occupy 10' with 5' right-of-way clearance.

are the proposed dimensions of the sidewalk café or furnishings and what will the remaining right-of-way clearance be?	
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the Public Improvement Commission (PIC)?	
Will any portion of the Project be going through the PIC? *If yes,* identify PIC actions and provide details.	Yes, it is anticipated that the Project will be going through the PIC for a Vertical Discontinuance, Grant of Location, Projection License, Specific Repairs, and a License, Maintenance and Indemnification Agreement.
6. 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 – Disabled Parking Regulations*.	
What is the total number of parking spaces provided at the development site? Will these be in a parking lot or garage?	There will be approximately 114 spaces in a below-grade garage.
What is the total number of accessible spaces provided at the development site? How many of these are "Van Accessible" spaces with an 8 foot access aisle?	5 spaces. 2 of these spaces will be Van Accessible
Will any on-street accessible parking spaces be required? *If yes,* has the proponent contacted the Commission for Persons with Disabilities regarding this need?	No.
Where is the accessible visitor parking located?	There will be 5 accessible spaces in the building.
Has a drop-off area been identified? *If yes,* will it be accessible?	Yes and yes.
7. Circulation and Accessible Routes: *The primary objective in designing smooth and continuous paths of travel is to create universal access to entryways and common spaces, which accommodates persons of all abilities and allows for visitability with neighbors*.	

Describe accessibility at each entryway: Example: Flush Condition, Stairs, Ramp, Lift or Elevator:	All entry ways will provide a flush condition to the ground level uses and elevator access to all uses above or below the ground level.
Are the accessible entrances and standard entrance integrated? ***If yes,*** *describe.* ***If no,*** what is the reason?	Yes
If project is subject to Large Project Review/Institutional Master Plan, describe the accessible routes way-finding / signage package.	The way-finding package has not yet been developed.
8. Accessible Units (Group 2) and Guestrooms: (If applicable) *In order to facilitate access to housing and hospitality, this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing and hotel rooms.*	
What is the total number of proposed housing units or hotel rooms for the development?	Approximately 426 units.
If a residential development, how many units are for sale? How many are for rent? What is the breakdown of market value units vs. IDP (Inclusionary Development Policy) units?	All units are for rent and 13% of them will be set aside as Inclusionary Development Policy (IDP) Units
If a residential development, how many accessible Group 2 units are being proposed?	Five percent of the total unit count will be type 2A in accordance with MAAB.
If a residential development, how many accessible Group 2 units will also be IDP units? ***If none***, describe reason.	This has not yet been determined.
If a hospitality development, how many accessible units will feature a wheel-in shower? Will accessible equipment be provided as well? ***If yes,*** provide amount and location of equipment.	
Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs /	No.

thresholds at entry, step to balcony, others. ***If yes***, provide reason.	
Are there interior elevators, ramps or lifts located in the development for access around architectural barriers and/or to separate floors? ***If yes***, describe:	Yes, there will be elevators throughout the project to make every floor in the building accessible.
9. Community Impact: *Accessibility and inclusion extend past required compliance with building codes. Providing an overall scheme that allows full and equal participation of persons with disabilities makes the development an asset to the surrounding community.*	
Is this project providing any funding or improvements to the surrounding neighborhood? Examples: adding extra street trees, building or refurbishing a local park, or supporting other community-based initiatives?	
What inclusion elements does this development provide for persons with disabilities in common social and open spaces? Example: Indoor seating and TVs in common rooms; outdoor seating and barbeque grills in yard. Will all of these spaces and features provide accessibility?	It is expected that there will be indoor seating with TVs at common social spaces as well as community fitness space, and outdoor seating on the roof deck. These spaces will all be accessible.
Are any restrooms planned in common public spaces? ***If yes,*** will any be single-stall, ADA compliant and designated as "Family"/ "Companion" restrooms? ***If no***, explain why not.	Yes, there will be single-stall, ADA compliant restrooms at all common social spaces.
Has the proponent reviewed the proposed plan with the City of Boston Disability Commissioner or with their Architectural Access staff? ***If yes,*** did they approve? ***If no,*** what were their comments?	No, the Proponent has not yet presented the plan to the City of Boston Disability Commissioner.

Has the proponent presented the proposed plan to the Disability Advisory Board at one of their monthly meetings? Did the Advisory Board vote to support this project? *If no,* what recommendations did the Advisory Board give to make this project more accessible?	No, the Proponent has not yet presented the plan to the Disability Advisory Board.

10. Attachments

Include a list of all documents you are submitting with this Checklist. This may include drawings, diagrams, photos, or any other material that describes the accessible and inclusive elements of this project.

Provide a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations, including route distances.
Provide a diagram of the accessible route connections through the site, including distances.
Provide a diagram the accessible route to any roof decks or outdoor courtyard space? (if applicable)
Provide a plan and diagram of the accessible Group 2 units, including locations and route from accessible entry.
Provide any additional drawings, diagrams, photos, or any other material that describes the inclusive and accessible elements of this project. • • • •

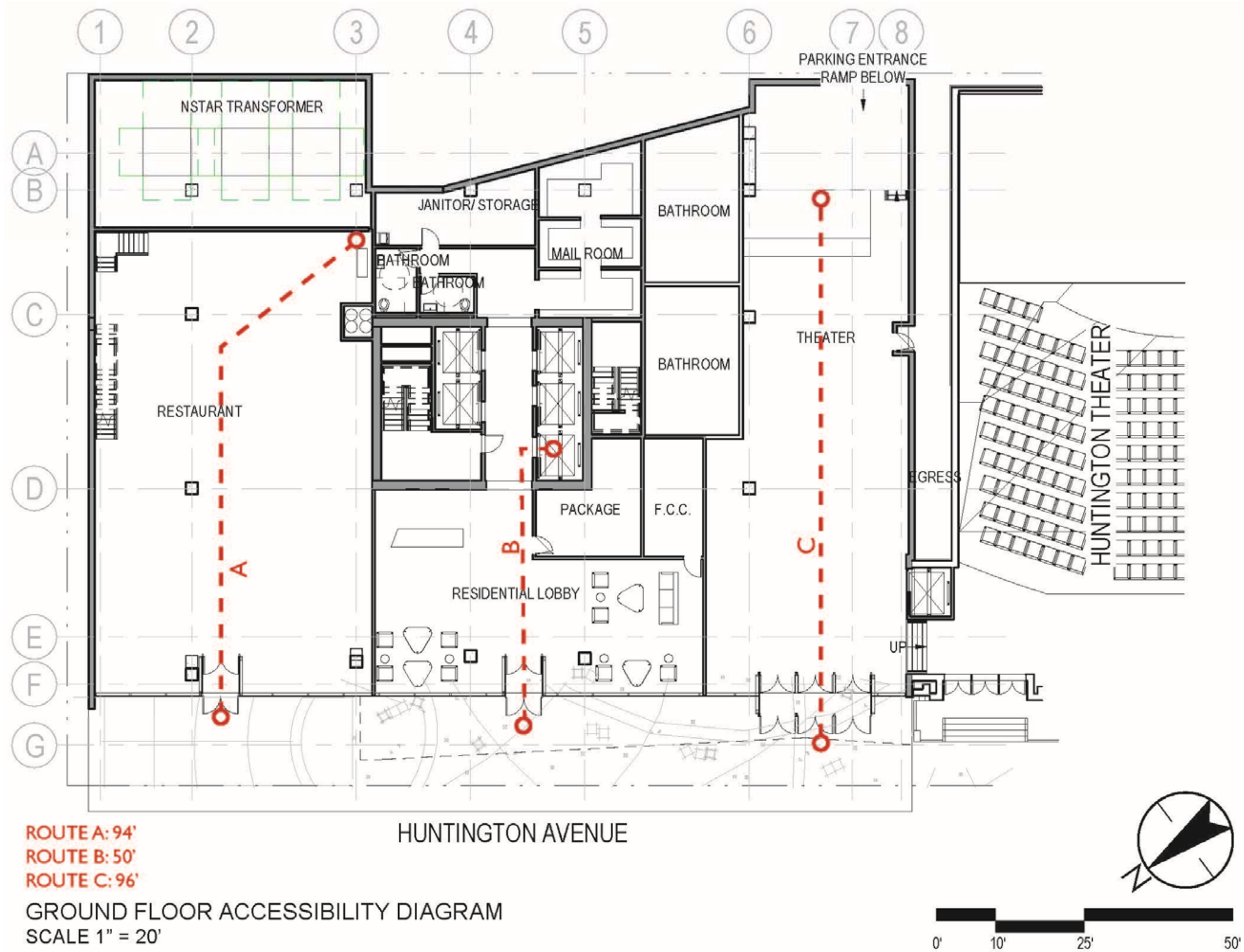
This completes the Article 80 Accessibility Checklist required for your project. Prior to and during the review process, Commission staff are able to provide technical assistance and design review, in order to help achieve ideal accessibility and to ensure that all buildings, sidewalks, parks, and open spaces are usable and welcoming to Boston's diverse residents and visitors, including those with physical, sensory, and other disabilities.

For questions or comments about this checklist, or for more information on best practices for improving accessibility and inclusion, visit www.boston.gov/disability, or our office:

The Mayor's Commission for Persons with Disabilities
1 City Hall Square, Room 967,
Boston MA 02201.

Architectural Access staff can be reached at:

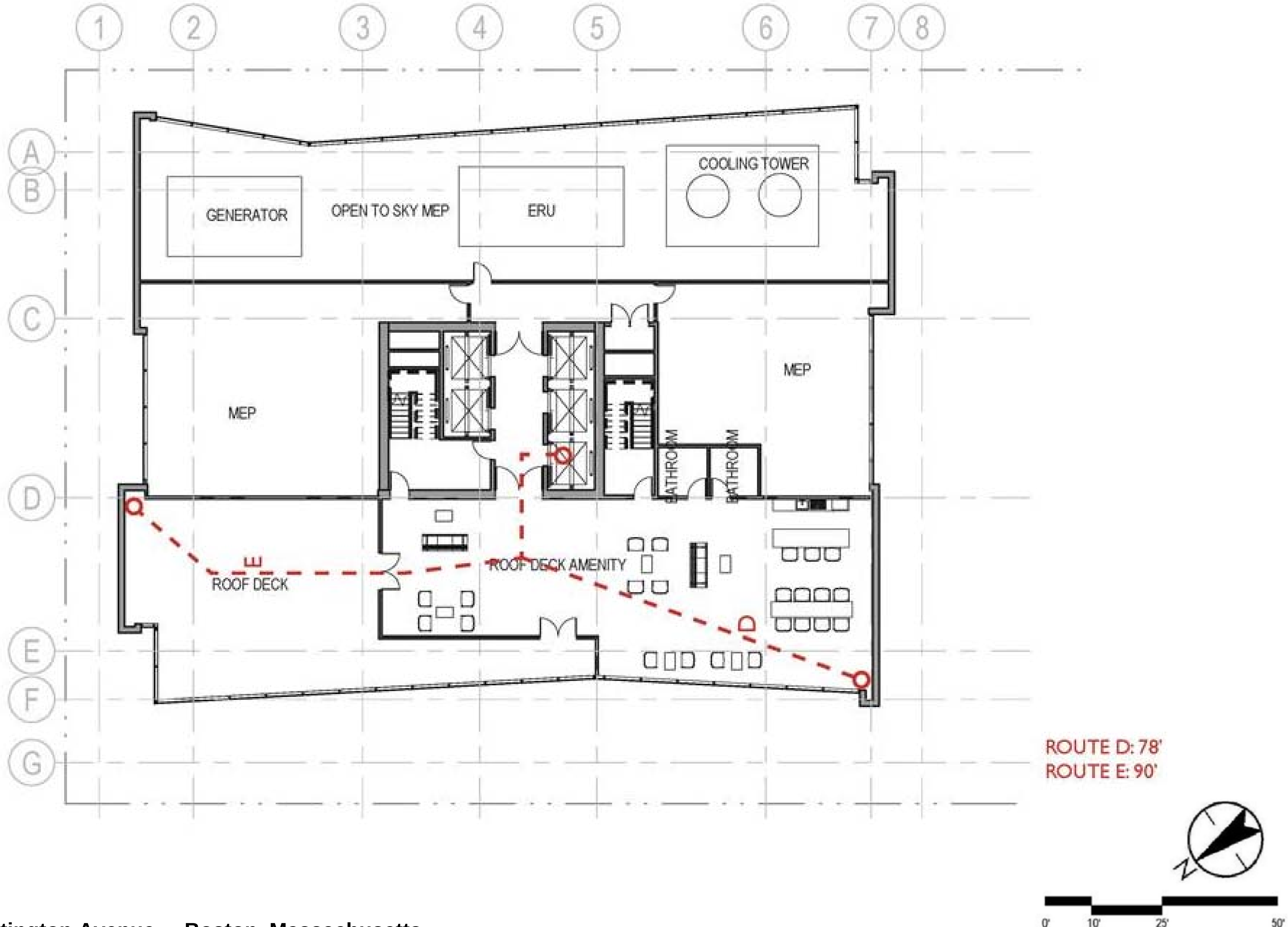
accessibility@boston.gov | patricia.mendez@boston.gov | sarah.leung@boston.gov | 617-635-3682



ROUTE A: 94'
ROUTE B: 50'
ROUTE C: 96'

GROUND FLOOR ACCESSIBILITY DIAGRAM
SCALE 1" = 20'

252-264 Huntington Avenue Boston, Massachusetts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