ONE CHARLESTOWN

ENVIRONMENTAL NOTIFICATION FORM / EXPANDED PROJECT NOTIFICATION FORM

Submitted to
The Executive Office of Energy
and Environmental Affairs
MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Boston Redevelopment Authority
One City Hall, 9th Floor
Boston, MA 02201

Proponent
Bunker Hill GP Venture LLC
a joint venture between Corcoran
Jennison Associates and SunCal
150 Mount Vernon Street, Suite 500
Boston, MA 02125

Prepared by
vhb
99 High Street
Boston, MA 02110

In association with
Stantec/Urban Places Group
Stantec Architecture
DiMella Schaffer
Studio Luz
Dream Collaborative
Goulston & Storrs PC
Nitsch Engineering, Inc.
Ground Inc.
Deborah Myers Landscape Architecture
McPhail Associates LLC
VvS Architects & Consultants
R.W. Sullivan Engineering
Boston Environmental Corporation
R.C. May

September 15, 2016

CORCORAN JENNISON Associates

SunCal

September 15, 2016

Matthew Beaton, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 022114

Re: Environmental Notification Form, One Charlestown

Dear Secretary Beaton:

Bunker Hill GP Venture LLC is pleased to submit the enclosed Environmental Notification Form (ENF) for a new mixed income residential project known as *One Charlestown* (the "Project"). It will be located in the Charlestown neighborhood on an approximately 27.6-acre site bounded by Medford Street, Decatur Street, Vine Street, Bunker Hill Street, and Polk Street. The approximately 3.3 million gross square-foot Project will include approximately 3,200 new residential units, 1,100 of which will be replacement units for the existing public housing located on the site. The Project also includes civic and retail space, new off-street parking, open space, and a new connective street grid.

The Project is consistent with local and regional redevelopment goals for the area. It involves the redevelopment of an urban site that is not environmentally sensitive and is well served by public transportation. It will provide numerous public benefits, including provision of affordable and market rate housing in an accessible, desirable location; creation of a vibrant and safe walkable environment with new open spaces; and improvement of transportation access and connectivity, among others.

Please publish notice of availability of the ENF for public review in the September 21st edition of *The Environmental Monitor*. We request public comments by October 11t11 and a Certificate by October 21, 2016. We look forward to your review of this project. Please contact me at 617-822-7350 if you have any questions.

Sincerely,

Joseph J. Corcoran

Bunker Hill GP Venture LLC

CORCORAN JENNISON Associates

SunCal

September 15, 2016

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

Re: Expanded Project Notification Form
One Charlestown
Charlestown, Boston, MA

Dear Director Golden:

Bunker Hill GP Venture LLC is pleased to submit an Expanded Project Notification Form for a new mixed income residential project known as *One Charlestown* (the "Project") to be located in the Charlestown neighborhood on an approximately 27.6-acre site bounded by Medford Street, Decatur Street, Vine Street, Bunker Hill Street, and Polk Street.

The Project will include approximately 3,200 new residential units, 1,100 of which will be replacement units for the existing public housing located on the site. The Project also includes civic and retail space, new off-street parking, open space, and a new connective street grid. At approximately 3.3 million gross square feet, the Project is subject to Large Project Review under Article 80B of the City of Boston Zoning Code.

We look forward to working with you and your staff in your review of the Project. If you have any questions or would like any additional information, please do not hesitate to contact me at 617-822-7350.

Sincerely,

Joseph J. Corcoran
Bunker Hill GP Venture LLC

One Charlestown

Boston, Massachusetts

SUBMITTED TO **The Executive Office of Energy and Environmental Affairs**
MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

PROPONENT **Bunker Hill GP Venture LLC,** a joint venture between
Corcoran Jennison Associates and SunCal
150 Mount Vernon Street, Suite 500
Boston, MA 02125

PREPARED BY **VHB**
99 High Street, 10th Floor
Boston, MA 02110

In association with:

Stantec/Urban Places Group	Ground Inc.
Stantec Architecture	Deborah Myers Landscape Architecture
DiMella Schaffer	McPhail Associates LLC
Studio Luz	VvS Architects & Consultants
Dream Collaborative	R.W. Sullivan Engineering
Goulston & Storrs PC	Boston Environmental Corporation
Nitsch Engineering, Inc.	R.C. May

SEPTEMBER 15, 2016

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Commonwealth of Massachusetts

Executive Office of Energy and Environmental Affairs
Massachusetts Environmental Policy Act (MEPA) Office

Environmental Notification Form

For Office Use Only

EEA#: _____

MEPA Analyst: _____

The information requested on this form must be completed in order to submit a document electronically for review under the Massachusetts Environmental Policy Act, 301 CMR 11.00.

Project Name: **One Charlestown**		
Street Address: **Medford, Decatur, Vine, Bunker Hill, and Polk Streets**		
Municipality: **Boston**	Watershed: **Charles River**	
Universal Transverse Mercator Coordinates: **Zone 19T, 330597.6 E; 4693847.82 N**	Latitude: **42.378455** Longitude:**-71.057684**	
Estimated commencement date: **2018**	Estimated completion date: **2028**	
Project Type: **Mixed Use- Residential, Retail, Civic**	Status of project design: **Conceptual Design 100% complete**	
Proponent: **Bunker Hill GP Venture LLC**		
Street Address: **150 Mount Vernon Street, Suite 500**		
Municipality: **Boston**	State: **MA**	Zip Code: **02125**
Name of Contact Person: **Sarah Barnat**		
Firm/Agency: **Corcoran Jennison Associates**	Street Address: **150 Mount Vernon Street, Suite 500**	
Municipality: **Boston**	State: **MA**	Zip Code: **02125**
Phone: **617-822-7301**	Fax:	E-mail: **sbarnat@corcoranjennison.com**

Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)?
☒Yes ☐No

If this is an Expanded Environmental Notification Form (ENF) (see 301 CMR 11.05(7)) or a Notice of Project Change (NPC), are you requesting:

a Single EIR? (see 301 CMR 11.06(8)) ☐Yes ☐No
a Special Review Procedure? (see 301CMR 11.09) ☐Yes ☐No
a Waiver of mandatory EIR? (see 301 CMR 11.11) ☐Yes ☐No
a Phase I Waiver? (see 301 CMR 11.11) ☐Yes ☐No

(Note: Greenhouse Gas Emissions analysis must be included in the Expanded ENF.)

Which MEPA review threshold(s) does the project meet or exceed (see 301 CMR 11.03)?

- **(5)(b)4.a. New discharge or Expansion in discharge to a sewer system of 100,000 or more gpd of sewage, industrial waste water or untreated stormwater [ENF]**
- **(6)(a)6. Generation of 3,000 or more New adt on roadways providing access to a single location [EIR]**

- **(6)(a)7. Construction of 1,000 or more New parking spaces at a single location [EIR]**

Which State Agency Permits will the project require?

- **None**

Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres:

- **Massachusetts Department of Housing and Community Development: $TBD**

Summary of Project Size & Environmental Impacts	**Existing**	**Change**	**Total**
LAND			
Total site acreage	27.6		
New acres of land altered		0	
Acres of impervious area	20.1	3.2	23.3
Square feet of new bordering vegetated wetlands alteration		0	
Square feet of new other wetland alteration		0	
Acres of new non-water dependent use of tidelands or waterways		0.15	
STRUCTURES			
Gross square footage	848,500	2,451,500	3,300,000
Number of housing units	1,100	2,100	3,200
Maximum height (feet)	32	208	240
TRANSPORTATION			
Vehicle trips per day Unadjusted ITE Trips	7,648	14,347	21,995
Parking spaces *includes public streets and private ways	280 off-street 233 on-street* 513 total	1,800 off-street 87 on-street 1,887 total	2,080 off-street 320 on-street 2,400 total
WASTEWATER			
Water Use (Gallons per day)	271,403 gpd	391,113 gpd	662,516 gpd
Water withdrawal (GPD)	N/A	N/A	N/A
Wastewater generation/treatment (GPD)	246,730 gpd	355,557 gpd	602,287 gpd
Length of water mains (miles)	N/A	N/A	N/A
Length of sewer mains (miles)	N/A	N/A	N/A
Has this project been filed with MEPA before? ☐ Yes (EEA #_____) ☒No			
Has any project on this site been filed with MEPA before? ☐ Yes (EEA #_____) ☒No			

GENERAL PROJECT INFORMATION – all proponents must fill out this section

PROJECT DESCRIPTION:

Describe the existing conditions and land uses on the project site:

See Chapter 1, Section 1.1, *Site Context and Existing Conditions*, attached

Describe the proposed project and its programmatic and physical elements:

See Chapter 1, Section 1.2, *Project Description,* attached

NOTE: The project description should summarize both the project's direct and indirect impacts (including construction period impacts) in terms of their magnitude, geographic extent, duration and frequency, and reversibility, as applicable. It should also discuss the infrastructure requirements of the project and the capacity of the municipal and/or regional infrastructure to sustain these requirements into the future.

Describe the on-site project alternatives (and alternative off-site locations, if applicable), considered by the proponent, including at least one feasible alternative that is allowed under current zoning, and the reasons(s) that they were not selected as the preferred alternative:

No Build Alternative

In the No Build Alternative, the Site would remain as is and the existing 1940's era public housing development would continue to provide approximately 1,100 public substandard housing units and related uses in 42 buildings scattered across the Site. This would yield no increase in retail or civic space, no new public open space and no improved roadways that provide connection to the existing Charlestown street grid. The public housing development would continue to exist as an isolated community within the greater Charlestown neighborhood. Under the No Build Alternative, additional market rate apartments and condominiums would not be added to the community, and no positive benefits would be provided to the surrounding neighborhood or the City of Boston.

Build Alternative 1: Straight replacement of 1,100 units

Similar to the No Build Alternative, the straight replacement of the existing 1,100 units would not have any environmental impacts related to trip generation or water and wastewater usage. However, past experience of the project proponent – specifically in the Harbor Point community in Dorchester (a similar project successfully replacing public housing with mixed-income housing) – has demonstrated that there are significant benefits to subsidized tenants when they are integrated into a mixed income community. Straight unit replacement would not allow the introduction of market rate residential units, and therefore would fail to create a mixed-use community and to deliver the related benefits. The proposed project includes approximately 2,100 net new residential units (for a total of approximately 3,200 units), which represents approximately 4% of the Mayor's stated goal under the program "Housing a Changing City: Boston 2030" to deliver 53,000 new residential units to the City. These new units would not be delivered to the City's housing supply under the straight replacement approach.

Futhermore, when the Boston Housing Authority (BHA) in 2015 solicited proposals for the redevelopment of the Bunker Hill Apartments, it sought proposals that did not rely on public financing: "BHA is seeking proposals that maximize private financing and

financial structuring that does not rely on scarce, competitive affordable housing resources such as 9% low-income housing tax credits." As a part of the initial project evaluation, the straight replacement of 1,100 units was considered but, without the use of significant public financing, was found to financially infeasible.

Build Alternative 2: Build a reduced size project.

Reducing the number of units in the project would theoretically reduce the environmental impacts of the project related to trip generation, and water and wastewater usage. As discussed under Build Alternative 1, a mixed income residential project delivers substantial benefits to its affordable tenants through the complete integration of low income units across the entire site. Experience at Harbor Point shows that in order to achieve market rate rents, the ratio of affordable- to market-rate units cannot exceed 1:2. Any increase in this ratio will impact the ability of the project to realize market rate rents and would render the project infeasible from a financial standpoint without substantial public finance support.

Build Alternative 3: Build project in an alternate location.

The Project Site is a unique site which includes approximately 26.7 contiguous acres of publicly-owned land, and is situated in an urban environment with good access to public transportation. Vacant publicly owned sites of this size and within similar proximity to urban services and public transportation are virtually non-existent. If a privately-owned site were to be identified that fit the same criteria, the cost of acquisition would render the project infeasible from an economic standpoint. Conversely, a site that might be feasible to develop from an economic standpoint is likely to be distant from existing transportation infrastructure, and would result in increased rates of trip generation. Additionally, development outside of an urban area would likely be less dense than the proposed project (with a floor area ratio of 4.0), and would result in less efficient land and energy use.

NOTE*: The purpose of the alternatives analysis is to consider what effect changing the parameters and/or siting of a project, or components thereof, will have on the environment, keeping in mind that the objective of the MEPA review process is to avoid or minimize damage to the environment to the greatest extent feasible. Examples of alternative projects include alternative site locations, alternative site uses, and alternative site configurations.*

Summarize the mitigation measures proposed to offset the impacts of the preferred alternative:

See Chapter 5, Section 5.10, *Transportation Demand Management*, attached.

If the project is proposed to be constructed in phases, please describe each phase:

See Chapter 1, Section 1.2.3, *Schedule/Potential Phasing,* attached.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN:

Is the project within or adjacent to an Area of Critical Environmental Concern?

☐ Yes (Specify_____)

☒ No

if yes, does the ACEC have an approved Resource Management Plan? ___ Yes ___ No;
If yes, describe how the project complies with this plan.

_____

Will there be stormwater runoff or discharge to the designated ACEC? ___ Yes ___ No;
If yes, describe and assess the potential impacts of such stormwater runoff/discharge to the designated ACEC.

_____

RARE SPECIES:
Does the project site include Estimated and/or Priority Habitat of State-Listed Rare Species? (see http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/priority_habitat_home.htm)
☐Yes (Specify_____) ☒No

HISTORICAL /ARCHAEOLOGICAL RESOURCES:
Does the project site include any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth?
☐Yes (Specify_____) ☒No
If yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources? ☐Yes (Specify_____) ☐No

WATER RESOURCES:
Is there an Outstanding Resource Water (ORW) on or within a half-mile radius of the project site? ___Yes **X** No; if yes, identify the ORW and its location. _____

(NOTE: Outstanding Resource Waters include Class A public water supplies, their tributaries, and bordering wetlands; active and inactive reservoirs approved by MassDEP; certain waters within Areas of Critical Environmental Concern, and certified vernal pools. Outstanding resource waters are listed in the Surface Water Quality Standards, 314 CMR 4.00.)

Are there any impaired water bodies on or within a half-mile radius of the project site? **X** Yes ___No; if yes, identify the water body and pollutant(s) causing the impairment:

Charles River: Combined Biota/Habitat Bioassessments (Streams); Temperature, Water;Sediment Screening Value (Exceedence); Salinity; PCB(s) in Fish Tissue; Oil and Grease; Escherichia Coli (E. Coli); Dissolved Oxygen Saturation; Dissolved Oxygen; DDT.

Is the project within a medium or high stress basin, as established by the Massachusetts Water Resources Commission? **X** Yes ___No

STORMWATER MANAGEMENT:

Generally describe the project's stormwater impacts and measures that the project will take to comply with the standards found in MassDEP's Stormwater Management Regulations:

See Chapter 7, Section 7.3.3, *Compliance with MassDEP Standards*, attached.

MASSACHUSETTS CONTINGENCY PLAN:
Has the project site been, or is it currently being, regulated under M.G.L.c.21E or the Massachusetts Contingenc Plan? Yes ___ No **X** ; if yes, please describe the current status of the site (including Release Tracking Numbe (RTN), cleanup phase, and Response Action Outcome classification):_____

Is there an Activity and Use Limitation (AUL) on any portion of the project site? Yes ___ No **X** ; if yes, describe which portion of the site and how the project will be consistent with the AUL: _____.

Are you aware of any Reportable Conditions at the property that have not yet been assigned an RTN? Yes ___ No **X** ; if yes, please describe:_____

SOLID AND HAZARDOUS WASTE:

If the project will generate solid waste during demolition or construction, describe alternatives considered for re-use, recycling, and disposal of, e.g., asphalt, brick, concrete, gypsum, metal, wood:

Due to the presence of Asbestos on site, almost all of the brick and some of the concrete will be disposed of as Asbestos Containing Materials (ACM).

With respect to the demolished non ACM containing concrete, it will likely be trucked offsite to a crushing facility for re-use due to the lack of space available to set-up an on-site crushing operation and to store the crushed material. Asphalt paving will be sent to an offsite recycling facility to be crushed and reused.

During construction, wood, metals, gypsum, cardboard and plastic will be segregated and sent to recycling facilities.

All wood walls will be panelized offsite and all floor joists and roof trusses will be prefabricated so that very little wood waste is generated.

All construction debris will be sent to a solid waste sorting facility for separation of any recyclable materials. Overall the project is expected to divert at least 75%, and as much as 90%, of construction debris from landfills.

(NOTE: Asphalt pavement, brick, concrete and metal are banned from disposal at Massachusetts landfills and waste combustion facilities and wood is banned from disposal at Massachusetts landfills. See 310 CMR 19.017 for the complete list of banned materials.)

Will your project disturb asbestos containing materials? Yes **X** No ___ ;
if yes, please consult state asbestos requirements at http://mass.gov/MassDEP/air/asbhom01.htm

Describe anti-idling and other measures to limit emissions from construction equipment:

The project will enforce anti-idling measures consistent with MGL Chapter 90 Section 16A. In addition, all diesel construction machinery will be fitted with oxidation catalysts to reduce emissions.

DESIGNATED WILD AND SCENIC RIVER:

Is this project site located wholly or partially within a defined river corridor of a federally designated Wild and Scenic River or a state designated Scenic River? Yes ___ No **X** ;
if yes, specify name of river and designation:

If yes, does the project have the potential to impact any of the "outstandingly remarkable" resources of a federally Wild and Scenic River or the stated purpose of a state designated Scenic River? Yes ___ No ___ ; if yes, specify name of river and designation: _____;
if yes, will the project will result in any impacts to any of the designated "outstandingly remarkable" resources of the Wild and Scenic River or the stated purposes of a Scenic River.
Yes ___ No ___ ;
if yes,describe the potential impacts to one or more of the "outstandingly remarkable" resources or stated purposes and mitigation measures proposed.

ATTACHMENTS:

1. List of all attachments to this document.

2. U.S.G.S. map (good quality color copy, 8-½ x 11 inches or larger, at a scale of 1:24,000) indicating the project location and boundaries.

    - **See Figure 1.1, *USGS Site Locus Map***

3. Plan, at an appropriate scale, of existing conditions on the project site and its immediate environs, showing all known structures, roadways and parking lots, railroad rights-of-way, wetlands and water bodies, wooded areas, farmland, steep slopes, public open spaces, and major utilities.

    - **See Figure 1.2, *Existing Conditions Plan***

4. Plan, at an appropriate scale, depicting environmental constraints on or adjacent to the project site such as Priority and/or Estimated Habitat of state-listed rare species, Areas of Critical Environmental Concern, Chapter 91 jurisdictional areas, Article 97 lands, wetland resource area delineations, water supply protection areas, and historic resources and/or districts.

    - **See Figure 6.1, *Environmental Constraints***

5. Plan, at an appropriate scale, of proposed conditions upon completion of project (if construction of the project is proposed to be phased, there should be a site plan showing conditions upon the completion of each phase).

    - **See Figures 1.5, *Proposed Conditions Plan*, 1.6, *Proposed Ground Floor Use Plan, and* 1.7, *Phasing Plan.***

6. List of all agencies and persons to whom the proponent circulated the ENF, in accordance with 301 CMR 11.16(2).

    - **See Appendix F, *MEPA ENF Distribution List***

7. List of municipal and federal permits and reviews required by the project, as applicable.

    - **See Chapter 1, Section 1.5, *Regulatory Context***

LAND SECTION – all proponents must fill out this section

I. Thresholds / Permits

A. Does the project meet or exceed any review thresholds related to **land** (see 301 CMR 11.03(1)
___ Yes **X** No; if yes, specify each threshold:

II. Impacts and Permits

A. Describe, in acres, the current and proposed character of the project site, as follows:

	Existing	Change	Total
Footprint of buildings	7.1	4.0	11.1
Internal roadways	3.1	2.0	5.1
Parking and other paved areas	2.9	1.6	4.5
Other altered areas	14.5	-7.6	6.9
Undeveloped areas	0	0	0
Total: Project Site Acreage	27.6	0	27.6

B. Has any part of the project site been in active agricultural use in the last five years?
___ Yes **X** No; if yes, how many acres of land in agricultural use (with prime state or locally important agricultural soils) will be converted to nonagricultural use?

C. Is any part of the project site currently or proposed to be in active forestry use?
___ Yes **X** No; if yes, please describe current and proposed forestry activities and indicate whether any part of the site is the subject of a forest management plan approved by the Department of Conservation and Recreation:

D. Does any part of the project involve conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97? ___ Yes **X** No; if yes, describe:

E. Is any part of the project site currently subject to a conservation restriction, preservation restriction, agricultural preservation restriction or watershed preservation restriction? ___ Yes **X** No; if yes, does the project involve the release or modification of such restriction? ___ Yes ___ No; if yes, describe:

F. Does the project require approval of a new urban redevelopment project or a fundamental change in an existing urban redevelopment project under M.G.L.c.121A? ___ Yes **X** No; if yes, describe:

G. Does the project require approval of a new urban renewal plan or a major modification of an existing urban renewal plan under M.G.L.c.121B? Yes ___ No **X**; if yes, describe:

III. Consistency

A. Identify the current municipal comprehensive land use plan:
Imagine Boston: 2030 (2017)
Housing A Changing City (2014)
Charlestown Neighborhood District

B. Describe the project's consistency with that plan with regard to:
1) economic development _____
2) adequacy of infrastructure _____
3) open space impacts _____
4) compatibility with adjacent land uses_____

See Chapter 1, Section 1.6, *Consistency with Applicable Plans & Policies*, attached.

C. Identify the current Regional Policy Plan of the applicable Regional Planning Agency (RPA):

Metropolitan Area Planning Council (MAPC), MetroFuture: Making a Greater Boston Region (2008)

D. Describe the project's consistency with that plan with regard to:
1) economic development _____
2) adequacy of infrastructure _____
3) open space impacts _____

See Chapter 1, Section 1.6, *Consistency with Applicable Plans & Policies*, attached.

RARE SPECIES SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **rare species or habitat** (see 301 CMR 11.03(2))? ___ Yes **X** No; if yes, specify, in quantitative terms:

(NOTE: If you are uncertain, it is recommended that you consult with the Natural Heritage and Endangered Species Program (NHESP) prior to submitting the ENF.)

B. Does the project require any state permits related to **rare species or habitat**? ___ Yes **X** No

C. Does the project site fall within mapped rare species habitat (Priority or Estimated Habitat?) in the current Massachusetts Natural Heritage Atlas (attach relevant page)? ___ Yes **X** No.

D. If you answered "No" to all questions A, B and C, proceed to the **Wetlands, Waterways, and Tidelands Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Rare Species section below.

II. Impacts and Permits

A. Does the project site fall within Priority or Estimated Habitat in the current Massachusetts Natural Heritage Atlas (attach relevant page)? ___ Yes ___ No. If yes,

1. Have you consulted with the Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program (NHESP)? ___Yes ___No; if yes, have you received a determination as to whether the project will result in the "take" of a rare species? ___ Yes ___ No; if yes, attach the letter of determination to this submission.

2. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? ___ Yes ___ No; if yes, provide a summary of proposed measures to minimize and mitigate rare species impacts

3. Which rare species are known to occur within the Priority or Estimated Habitat?

4. Has the site been surveyed for rare species in accordance with the Massachusetts Endangered Species Act? ___ Yes ___ No

4. If your project is within Estimated Habitat, have you filed a Notice of Intent or received an Order of Conditions for this project? ___ Yes ___ No; if yes, did you send a copy of the Notice of Intent to the Natural Heritage and Endangered Species Program, in accordance with the Wetlands Protection Act regulations? ___ Yes ___ No

B. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? ___ Yes ___ No; if yes, provide a summary of proposed measures to minimize and mitigate impacts to significant habitat:

WETLANDS, WATERWAYS, AND TIDELANDS SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wetlands, waterways, and tidelands** (see 301 CMR 11.03(3))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits (or a local Order of Conditions) related to **wetlands, waterways, or tidelands**? **X** Yes ___ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Water Supply Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wetlands, Waterways, and Tidelands Section below.

II. Wetlands Impacts and Permits

A. Does the project require a new or amended Order of Conditions under the Wetlands Protection Act (M.G.L. c.131A)? ___ Yes **X** No; if yes, has a Notice of Intent been filed? ___ Yes ___ No; if yes, list the date and MassDEP file number: _____; if yes, has a local Order of Conditions been issued? ___ Yes ___ No; Was the Order of Conditions appealed? ___ Yes ___ No. Will the project require a Variance from the Wetlands regulations? ___ Yes ___ No.

B. Describe any proposed permanent or temporary impacts to wetland resource areas located on the project site: **None**

C. Estimate the extent and type of impact that the project will have on wetland resources, and indicate whether the impacts are temporary or permanent: **None**

Coastal Wetlands	Area (square feet) or Length (linear feet)	Temporary or Permanent Impact?
Land Under the Ocean	_____	_____
Designated Port Areas	_____	_____
Coastal Beaches	_____	_____
Coastal Dunes	_____	_____
Barrier Beaches	_____	_____
Coastal Banks	_____	_____
Rocky Intertidal Shores	_____	_____
Salt Marshes	_____	_____
Land Under Salt Ponds	_____	_____
Land Containing Shellfish	_____	_____
Fish Runs	_____	_____
Land Subject to Coastal Storm Flowage	_____	_____
Inland Wetlands		
Bank (lf)	_____	_____
Bordering Vegetated Wetlands	_____	_____
Isolated Vegetated Wetlands	_____	_____
Land under Water	_____	_____
Isolated Land Subject to Flooding	_____	_____
Borderi ng Land Subject to Flooding	_____	_____
Riverfront Area	_____	_____

D. Is any part of the project:

1. proposed as a **limited project**? ___ Yes _X_ No; if yes, what is the area (in sf)?____
2. the construction or alteration of a **dam**? ___ Yes _X_ No; if yes, describe:
3. fill or structure in a **velocity zone** or **regulatory floodway**? ___ Yes _X_ No

4. dredging or disposal of dredged material? ___ Yes _X_ No; if yes, describe the volume of dredged material and the proposed disposal site:
5. a discharge to an **Outstanding Resource Water (ORW)** or an **Area of Critical Environmental Concern (ACEC)**? ___ Yes _X_ No
6. subject to a wetlands restriction order? ___ Yes _X_ No; if yes, identify the area (in sf):
7. located in buffer zones? ___Yes _X_No; if yes, how much (in sf) _____

E. Will the project:
1. be subject to a local wetlands ordinance or bylaw? ___ Yes _X_ No
2. alter any federally-protected wetlands not regulated under state law? ___ Yes _X_ No; if yes, what is the area (sf)?

III. Waterways and Tidelands Impacts and Permits

A. Does the project site contain waterways or tidelands (including filled former tidelands) that are subject to the Waterways Act, M.G.L.c.91? **X** Yes ___ No; if yes, is there a current Chapter 91 License or Permit affecting the project site? ___ Yes **X** No; if yes, list the date and license or permit number and provide a copy of the historic map used to determine extent of filled tidelands:

The land appears to have been filled between 1852 and 1868, prior to the issuance of waterways licenses.

B. Does the project require a new or modified license or permit under M.G.L.c.91? ___ Yes **X** No; if yes, how many acres of the project site subject to M.G.L.c.91 will be for non-water-dependent use? Current ___ Change ___ Total ___
If yes, how many square feet of solid fill or pile-supported structures (in sf)?

C. For non-water-dependent use projects, indicate the following:
Area of filled tidelands on the site: **Approximately 6,600 sf (0.15 acres)**
Area of filled tidelands covered by buildings: **800 +/- SF (existing)** .
For portions of site on filled tidelands, list ground floor uses and area of each use:
Residential, Civic
Does the project include new non-water-dependent uses located over flowed tidelands? Yes ___ No **X**

Height of building on filled tidelands: Existing: < 35 feet; Proposed: 45' feet (civic), 70 feet (residential)

Also show the following on a site plan: Mean High Water, Mean Low Water, Water-dependent Use Zone, location of uses within buildings on tidelands, and interior and exterior areas and facilities dedicated for public use, and historic high and historic low water marks.

The project, located on Landlocked Filled Tidelands, is located greater than 400 feet from existing mean high water; does not include a water dependent use zone; and is exempt from licensing as landlocked tidelands.

D. Is the project located on landlocked tidelands? **X** Yes ___ No; if yes, describe the project's impact on the public's right to access, use and enjoy jurisdictional tidelands and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:

See Chapter 6, Section 6.5.1, *Public Benefit Determination,* attached.

E. Is the project located in an area where low groundwater levels have been identified by a municipality or by a state or federal agency as a threat to building foundations? ___Yes **X** No; if yes, describe the project's impact on groundwater levels and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:

F. Is the project non-water-dependent **and** located on landlocked tidelands **or** waterways or tidelands subject to the Waterways Act **and** subject to a mandatory EIR? **X** Yes ___ No; *(NOTE: If yes, then the project will be subject to Public Benefit Review and Determination.)*

G. Does the project include dredging? ___ Yes **X** No; if yes, answer the following questions:

What type of dredging? Improvement ___ Maintenance ___ Both ____

What is the proposed dredge volume, in cubic yards (cys) _____

What is the proposed dredge footprint ____length (ft) ___width (ft)____depth (ft);

Will dredging impact the following resource areas?

Intertidal Yes__ No__; if yes, ___ sq ft

Outstanding Resource Waters Yes__ No__; if yes, ___ sq ft

Other resource area (i.e. shellfish beds, eel grass beds) Yes__ No__; if yes __ sq ft

If yes to any of the above, have you evaluated appropriate and practicable steps to: 1) avoidance; 2) if avoidance is not possible, minimization; 3) if either avoidance or minimize is not possible, mitigation?

If no to any of the above, what information or documentation was used to support this determination?

Provide a comprehensive analysis of practicable alternatives for improvement dredging in accordance with 314 CMR 9.07(1)(b). Physical and chemical data of the sediment shall be included in the comprehensive analysis.

Sediment Characterization

Existing gradation analysis results? __Yes ___No: if yes, provide results.

Existing chemical results for parameters listed in 314 CMR 9.07(2)(b)6? ___Yes ____No; if yes, provide results.

Do you have sufficient information to evaluate feasibility of the following management options for dredged sediment? If yes, check the appropriate option.

Beach Nourishment ___

Unconfined Ocean Disposal ___

Confined Disposal:

Confined Aquatic Disposal (CAD) ___

Confined Disposal Facility (CDF) ___

Landfill Reuse in accordance with COMM-97-001 ___

Shoreline Placement ___

Upland Material Reuse____

In-State landfill disposal____

Out-of-state landfill disposal ____

(NOTE: This information is required for a 401 Water Quality Certification.)

IV. Consistency:

A. Does the project have effects on the coastal resources or uses, and/or is the project located within the Coastal Zone? **X** Yes ___ No; if yes, describe these effects and the projects consistency with the policies of the Office of Coastal Zone Management:

See Chapter 1, Section 1.5.3, *Coastal Zone Management Policies*, attached.

B. Is the project located within an area subject to a Municipal Harbor Plan? ___ Yes **X** No; if yes, identify the Municipal Harbor Plan and describe the project's consistency with that plan:

WATER SUPPLY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **water supply** (see 301 CMR 11.03(4))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **water supply**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Wastewater Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Water Supply Section below.

II. Impacts and Permits

A. Describe, in gallons per day (gpd), the volume and source of water use for existing and proposed activities at the project site:

	Existing	Change	Total
Municipal or regional water supply	_____	_____	_____
Withdrawal from groundwater	_____	_____	_____
Withdrawal from surface water	_____	_____	_____
Interbasin transfer	_____	_____	_____

(NOTE: Interbasin Transfer approval will be required if the basin and community where the proposed water supply source is located is different from the basin and community where the wastewater from the source will be discharged.)

B. If the source is a municipal or regional supply, has the municipality or region indicated that there is adequate capacity in the system to accommodate the project? ___ Yes ___ No

C. If the project involves a new or expanded withdrawal from a groundwater or surface water source, has a pumping test been conducted? ___ Yes ___ No; if yes, attach a map of the drilling sites and a summary of the alternatives considered and the results. _____

D. What is the currently permitted withdrawal at the proposed water supply source (in gallons per day)? _____Will the project require an increase in that withdrawal? ___Yes ___No; if yes, then how much of an increase (gpd)? _____

E. Does the project site currently contain a water supply well, a drinking water treatment facility, water main, or other water supply facility, or will the project involve construction of a new facility? ___ Yes ___No. If yes, describe existing and proposed water supply facilities at the project site:

	Permitted Flow	Existing Avg Daily Flow	Project Flow	Total
Capacity of water supply well(s) (gpd)	_____	_____	_____	_____
Capacity of water treatment plant (gpd)	_____	_____	_____	_____

F. If the project involves a new interbasin transfer of water, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or proposed?

G. Does the project involve:

1. new water service by the Massachusetts Water Resources Authority or other agency of the Commonwealth to a municipality or water district? ___ Yes ___ No
2. a Watershed Protection Act variance? ___ Yes ___ No; if yes, how many acres of alteration?
3. a non-bridged stream crossing 1,000 or less feet upstream of a public surface drinking water supply for purpose of forest harvesting activities? ___ Yes ___ No

III. Consistency

Describe the project's consistency with water conservation plans or other plans to enhance water resources, quality, facilities and services:

WASTEWATER SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wastewater** (see 301 CMR 11.03(5))? **X** Yes ___ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **wastewater**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Transportation -- Traffic Generation Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wastewater Section below.

II. Impacts and Permits

A. Describe the volume (in gallons per day) and type of disposal of wastewater generation for existing and proposed activities at the project site (calculate according to 310 CMR 15.00 for septic systems or 314 CMR 7.00 for sewer systems):

	Existing	Change	Total
Discharge of sanitary wastewater	**246,730 gpd**	**355,557 gpd**	**602,287 gpd**
Discharge of industrial wastewater	_____	_____	_____
TOTAL	_____	_____	_____

	Existing	Change	Total
Discharge to groundwater	_____	_____	_____
Discharge to outstanding resource water	_____	_____	_____
Discharge to surface water	_____	_____	_____
Discharge to municipal or regional wastewater facility	**246,730 gpd**	**355,557 gpd**	**602,287 gpd**
TOTAL	**246,730 gpd**	**355,557 gpd**	**602,287 gpd**

B. Is the existing collection system at or near its capacity? ___ Yes **X** No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

C. Is the existing wastewater disposal facility at or near its permitted capacity? ___ Yes **X** No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

D. Does the project site currently contain a wastewater treatment facility, sewer main, or other wastewater disposal facility, or will the project involve construction of a new facility? ___ Yes **X** No; if yes, describe as follows:

	Permitted	Existing Avg Daily Flow	Project Flow	Total
Wastewater treatment plant capacity (in gallons per day)	_____	_____	_____	_____

E. If the project requires an interbasin transfer of wastewater, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or new?

(NOTE: Interbasin Transfer approval may be needed if the basin and community where wastewater will be discharged is different from the basin and community where the source of water supply is located.)

F. Does the project involve new sewer service by the Massachusetts Water Resources Authority (MWRA) or other Agency of the Commonwealth to a municipality or sewer district? ___ Yes **X** No

G. Is there an existing facility, or is a new facility proposed at the project site for the storage, treatment, processing, combustion or disposal of sewage sludge, sludge ash, grit, screenings, wastewater reuse (gray water) or other sewage residual materials? ___ Yes **X** No; if yes, what is the capacity (tons per day):

	Existing	Change	Total
Storage	_____	_____	_____
Treatment	_____	_____	_____
Processing	_____	_____	_____
Combustion	_____	_____	_____
Disposal	_____	_____	_____

H. Describe the water conservation measures to be undertaken by the project, and other wastewater mitigation, such as infiltration and inflow removal.

Efforts will be made to reduce water consumption. Aeration fixtures and appliances will be chosen for water conservation qualities. In public areas, sensor operated facets and toilets will be installed. New water services will be installed in accordance with the latest local, state, and federal codes and standards. Backflow preventers will be installed at both the domestic and fire protection service connections. New meters will be installed with Meter Transmitter Units (MTU's) as part of the BWSC's Automatic Meter Reading (AMR) system.

III. Consistency

A. Describe measures that the proponent will take to comply with applicable state, regional, and local plans and policies related to wastewater management:

All improvements and connections to BWSC infrastructure will be reviewed as part of the BWSC's site plan review process for the Proposed Project. This process includes a comprehensive design review of the proposed service connections, an assessment of project demands and system capacity, and the establishment of service accounts. The Proponent will coordinate with BWSC to reach an agreement regarding the 4:1 Inflow and Infiltration mitigation.

B. If the project requires a sewer extension permit, is that extension included in a comprehensive wastewater management plan? ___ Yes ___ No; if yes, indicate the EEA number for the plan and whether the project site is within a sewer service area recommended or approved in that plan:

N/A

TRANSPORTATION SECTION (TRAFFIC GENERATION)

I. Thresholds / Permit

A. Will the project meet or exceed any review thresholds related to **traffic generation** (see 301 CMR 11.03(6))? **X** Yes ___ No; if yes, specify, in quantitative terms:

See Chapter 5, *Transportation and Parking*, attached.

B. Does the project require any state permits related to **state-controlled roadways**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Roadways and Other Transportation Facilities Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Traffic Generation Section below.

II. Traffic Impacts and Permits

A. Describe existing and proposed vehicular traffic generated by activities at the project site:

	Existing	Change	Total
Number of parking spaces	**280**	**1,800**	**2,080**
Number of vehicle trips per day	**7,648**	**14,347**	**21,995**
ITE Land Use Code(s):	**LUC 220**	**LUC 220 - Apartment** **LUC 230 - Condominiums** **LUC 252 – Senior Housing** **LUC 820 – Shopping Center**	

B. What is the estimated average daily traffic on roadways serving the site?

Roadway	Existing	Change	Total
1. Medford Street	**5,877**	**TBD**	**TBD**
2. Bunker Hill Street	**6,733**	**TBD**	**TBD**
3. Chelsea Street	**10,177**	**TBD**	**TBD**

C. If applicable, describe proposed mitigation measures on state-controlled roadways that the project proponent will implement: **N/A**

C. How will the project implement and/or promote the use of transit, pedestrian and bicycle facilities and services to provide access to and from the project site?

See Chapter 5, Section 1.10, *Transportation Demand Management,* attached.

C. Is there a Transportation Management Association (TMA) that provides transportation demand management (TDM) services in the area of the project site? ____ Yes **X** No; if yes, describe if and how will the project will participate in the TMA:

D. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation facilities? **X** Yes ____ No; if yes, generally describe:

The Project Site is located approximately 1.0 miles from the MBTA's Orange Line Sullivan Square station, and approximate 0.6 miles from the Community College station. It is located approximately 0.5 miles from MBTA Ferry service and private water taxi service located within the Charlestown Navy Yard. The Site is located approximately 2.0 miles from Logan International Airport.

E. If the project will penetrate approach airspace of a nearby airport, has the proponent filed a Massachusetts Aeronautics Commission Airspace Review Form (780 CMR 111.7) and a Notice of Proposed Construction or Alteration with the Federal Aviation Administration (FAA) (CFR Title 14 Part 77.13, forms 7460-1 and 7460-2)?

The Project will not exceed the Massport Composite Surface, the MGL Ch. 92, Section 35 Airport Surface (20:1) or the FAA approach surface (50:1).

III. Consistency

Describe measures that the proponent will take to comply with municipal, regional, state, and federal plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services:

The Project is consistent with Federal, Massachusetts and City of Boston plans and policies to reduce vehicle trip generation and promote alternative modes of transportation through the design of a walkable, mixed-use development emphasizing access to transit and accommodations for bicycles. The supporting roadway network will be designed based on Complete Streets principles.

TRANSPORTATION SECTION (ROADWAYS AND OTHER TRANSPORTATION FACILITIES)

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **roadways or other transportation facilities** (see 301 CMR 11.03(6))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **roadways or other transportation facilities**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Energy Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Roadways Section below.

II. Transportation Facility Impacts

A. Describe existing and proposed transportation facilities in the immediate vicinity of the project site:

B. Will the project involve any

1. Alteration of bank or terrain (in linear feet)? _____
2. Cutting of living public shade trees (number)? _____
3. Elimination of stone wall (in linear feet)? _____

III. Consistency -- Describe the project's consistency with other federal, state, regional, and local plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services, including consistency with the applicable regional transportation plan and the Transportation Improvements Plan (TIP), the State Bicycle Plan, and the State Pedestrian Plan:

ENERGY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **energy** (see 301 CMR 11.03(7))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **energy**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Air Quality Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Energy Section below.

II. Impacts and Permits

A. Describe existing and proposed energy generation and transmission facilities at the project site:

	Existing	Change	Total
Capacity of electric generating facility (megawatts)	_____	_____	_____
Length of fuel line (in miles)	_____	_____	_____
Length of transmission lines (in miles)	_____	_____	_____
Capacity of transmission lines (in kilovolts)	_____	_____	_____

B. If the project involves construction or expansion of an electric generating facility, what are:

1. the facility's current and proposed fuel source(s)?
2. the facility's current and proposed cooling source(s)?

C. If the project involves construction of an electrical transmission line, will it be located on a new, unused, or abandoned right of way? ___Yes ___No; if yes, please describe:

D. Describe the project's other impacts on energy facilities and services:

III. Consistency

Describe the project's consistency with state, municipal, regional, and federal plans and policies for enhancing energy facilities and services:

AIR QUALITY SECTION

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **air quality** (see 301 CMR 11.03(8))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **air quality**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Solid and Hazardous Waste Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Air Quality Section below.

II. Impacts and Permits

A. Does the project involve construction or modification of a major stationary source (see 310 CMR 7.00, Appendix A)? ___ Yes ___ No; if yes, describe existing and proposed emissions (in tons per day) of:

	Existing	Change	Total
Particulate matter	_____	_____	_____
Carbon monoxide	_____	_____	_____
Sulfur dioxide	_____	_____	_____
Volatile organic compounds	_____	_____	_____
Oxides of nitrogen	_____	_____	_____
Lead	_____	_____	_____
Any hazardous air pollutant	_____	_____	_____
Carbon dioxide	_____	_____	_____

B. Describe the project's other impacts on air resources and air quality, including noise impacts:

III. Consistency

A. Describe the project's consistency with the State Implementation Plan:

B. Describe measures that the proponent will take to comply with other federal, state, regional, and local plans and policies related to air resources and air quality:

SOLID AND HAZARDOUS WASTE SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **solid or hazardous waste** (see 301 CMR 11.03(9))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **solid and hazardous waste**? __Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Historical and Archaeological Resources Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Solid and Hazardous Waste Section below.

II. Impacts and Permits

A. Is there any current or proposed facility at the project site for the storage, treatment, processing, combustion or disposal of solid waste? ___ Yes ___ No; if yes, what is the volume (in tons per day) of the capacity:

	Existing	Change	Total
Storage	_____	_____	_____
Treatment, processing	_____	_____	_____
Combustion	_____	_____	_____
Disposal	_____	_____	_____

B. Is there any current or proposed facility at the project site for the storage, recycling, treatment or disposal of hazardous waste? ___ Yes ___ No; if yes, what is the volume (in tons or gallons per day) of the capacity:

	Existing	Change	Total
Storage	_____	_____	_____
Recycling	_____	_____	_____
Treatment	_____	_____	_____
Disposal	_____	_____	_____

C. If the project will generate solid waste (for example, during demolition or construction), describe alternatives considered for re-use, recycling, and disposal:

D. If the project involves demolition, do any buildings to be demolished contain asbestos?
___ Yes ___ No

E. Describe the project's other solid and hazardous waste impacts (including indirect impacts):

III. Consistency

Describe measures that the proponent will take to comply with the State Solid Waste Master Plan:

HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION

I. Thresholds / Impacts

A. Have you consulted with the Massachusetts Historical Commission? ___ Yes **X** No; if yes, attach correspondence. For project sites involving lands under water, have you consulted with the Massachusetts Board of Underwater Archaeological Resources? ____Yes ____ No; if yes, attach correspondence

B. Is any part of the project site a historic structure, or a structure within a historic district, in either case listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ___ Yes **X** No; if yes, does the project involve the demolition of all or any exterior part of such historic structure? ___ Yes ___ No; if yes, please describe:

C. Is any part of the project site an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ___ Yes **X** No; if yes, does the project involve the destruction of all or any part of such archaeological site? ___ Yes ___ No; if yes, please describe:

D. If you answered "No" to all parts of both questions A, B and C, proceed to the **Attachments and Certifications** Sections. If you answered "Yes" to any part of either question A or question B, fill out the remainder of the Historical and Archaeological Resources Section below.

II. Impacts

Describe and assess the project's impacts, direct and indirect, on listed or inventoried historical and archaeological resources:

III. Consistency

Describe measures that the proponent will take to comply with federal, state, regional, and local plans and policies related to preserving historical and archaeological resources:

CERTIFICATIONS:

1. The Public Notice of Environmental Review has been/will be published in the following newspapers in accordance with 301 CMR 11.15(1):

   (Name) **Boston Herald** (Date) **September 15, 2016**

2. This form has been circulated to Agencies and Persons in accordance with 301 CMR 11.16(2).

Signatures:

Date Signature of Responsible Officer or Proponent	8/1/16 Date Signature of person preparing ENF (if different from above)
Joseph Corcoran	Stephanie Kruel
Name (print or type)	Name (print or type)
Corcoran Jennison Associates	VHB
Firm/Agency	Firm/Agency
150 Mount Vernon Street, Suite 500	99 High Street, 10th Floor
Street	Street
Boston, MA 02125	Boston, MA 02110
Municipality/State/Zip	Municipality/State/Zip
617-755-8289	617-607-2972
Phone	Phone

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General Information and Project Description

Bunker Hill GP Venture LLC (the "Proponent"), a joint venture of the Corcoran SunCal team, is submitting this combined Environmental Notification Form (ENF)/Expanded Project Notification Form (EPNF) to the Massachusetts Environmental Policy Act Office ("MEPA") and the Boston Redevelopment Authority (the "BRA"). This will initiate the first step of the three step MEPA review and the City of Boston's Article 80B Large Project Review processes required for construction of "One Charlestown," a proposed mixed income residential development within the area currently occupied by the Bunker Hill Public Housing development in Boston's Charlestown neighborhood (the "Project").

This chapter provides an overview of the existing site conditions and describes the Project and its public benefits. It also identifies the anticipated required permits and approvals and describes how the Project is consistent with applicable plans and policies.

1.1 Site Context and Existing Conditions

Founded in 1629 and annexed by Boston in 1874, Charlestown is Boston's oldest neighborhood. Situated just across the harbor and to the north of Downtown, Charlestown is home to the Bunker Hill Monument and historic Charlestown Navy Yard. Today Charlestown is an attractive residential neighborhood composed of brick and wood row houses and public housing. In recent years, waterfront condominiums and apartments have been added to the housing mix. Charlestown is a very diverse neighborhood, with approximately 18,000 residents, approximately 76% of whom identify as white; 10% as black or African American; eight percent as Asian; and two percent as mixed race. Approximately 11% are Hispanic/Latino.[1]

The Project Site, an approximately 27.6–acre area of land (the "Site"), is bounded by Medford Street, Decatur Street, Vine Street, Bunker Hill Street, and Polk Street, and is the current home

[1] According to the 2014 American Community Survey (ACS).

of the Bunker Hill Public Housing development owned and operated by the Boston Housing Authority (the "BHA") (see Figure 1.1). Charlestown is the BHA's (and New England's) largest housing community for low- and moderate-income individuals and families. It offers 1,100 federally subsidized one-, two-, three-, four- and five-bedroom units in 42 three-story walk-up buildings, as well as a management office at 55 Bunker Hill Street. The brick and concrete structures were constructed in 1941, along with grass courtyards, playgrounds, basketball courts, and off-street parking areas (see Figures 1.2 and 1.3). Nearly six percent of current residents are 65 years or older, and nearly 42% are children under the age of 18. Residents identify as Hispanic (42%), Black (35%), White (13%), Asian (9%), and American Indian (0.5%). The average household size is 2.46 people. The average tenancy at this location is 7.5 years.

The area surrounding the Site boasts many community and educational facilities, services, open space and recreation areas, and transportation facilities (see Figure 1.4). Within a half-mile radius there are four public schools, Bunker Hill Community College, the Bunker Hill Mall, retail and restaurant establishments, the Massachusetts General Charlestown HealthCare Center, the Kennedy Center, and police and fire services. Nearby open space and recreation opportunities include the Bunker Hill Monument, Barry Playground, Thomas M. Menino Park, Doherty Playground and Clougherty Pool, the Charlestown Community Center, Charlestown High School Athletic fields, the Mel Stillman Tennis Center, the Harborwalk, Courageous Sailing Center, the Little Mystic Channel and boat ramp, Charlestown Sprouts Community Garden, and the Boston National Historic Park, home of the USS Constitution Museum. The Project Site is accessible via the #93 and #92 Massachusetts Bay Transportation Authority (MBTA) buses, the Orange Line's Sullivan Square and Community College Stations, and the MBTA F4 ferry.

1.2 Project Description

One Charlestown consists of the redevelopment of the existing Charlestown Public Housing development, comprised of 1,100 units of public housing in the Charlestown neighborhood of Boston (Figures 1.5 and 1.6). An in-depth public involvement process resulted in a design that includes new buildings and well-lit, tree-lined streets that restore connections to the surrounding neighborhood. The Project will include 3,200 units of new mixed-income housing within a 13-block reconfiguration of the Site. Affordable housing will be preserved for 1,100 households and all current residents will have the right to return to the new development. The remaining 2,100 units will attract new residents and support revitalization of the neighborhood. In addition, approximately 90,000 sf of civic and retail space will be included in the project.

Built in 1941, the apartments today are geographically isolated and physically degraded. The redevelopment will provide new buildings designed to respect history, incorporate contemporary style, and reflect Charlestown's character. New neighborhood-serving retail along Bunker Hill Street and two new parks will provide amenities for all of Charlestown. A new street grid will connect existing and new north-south streets across Bunker Hill Street to

create walkable connections between the center of the new development and the rest of the neighborhood. Instead of acting as a barrier that divides, Bunker Hill Street will become a seam that unites the community.

Charlestown has a rich history that will be layered into the landscape design and cultural programming of One Charlestown. The design will connect landmarks like the Bunker Hill Monument and the Charlestown Navy Yard, and the landscape will interpret many aspects of Charlestown's history. A new plaza will be introduced that reflects the history of the Site and a new common area will be created for gathering with neighbors from all over Charlestown.

The Project will complement Charlestown's fine-grained urban fabric with architecture that blends style with sensitivity to history. Multiple architects will collaborate on each new block of buildings in order to create a range of styles that reflects Charlestown's unique character.

One Charlestown will create friendly neighborhood streets lined by buildings with front doors, stoops, and porches that open directly to the street, connecting neighbors and bringing life to the sidewalk outside of homes. New streets will follow the best practices found in Boston's Complete Streets guide and strengthen connections to the Navy Yard and Bunker Hill Street. Taller buildings will be appropriately located toward taller features like the Tobin Bridge, or set back from main streets.

All units in the redevelopment will meet the same high standard of design, regardless of their designation as market-rate or affordable. As envisioned by current residents of the Charlestown Public Housing development during visioning sessions, amenities such as common lobbies, lounges, mail rooms, outdoor terraces, and fitness rooms, will be available to all residents. Underground parking garages, capped with landscaped roofs that function as courtyards, will replace surface parking lots. There will be street parking along the new streets as well.

The proposed open space network and pedestrian public realm will strengthen the connections to the existing street network of Charlestown, and create a series of publicly-accessible amenities and destinations.

Safety and security are important to existing and future residents. To that end, the Site will be designed to activate sidewalks, prioritize pedestrians, and foster social interaction among diverse residents and neighbors. In addition, buildings and publicly-accessible open space will incorporate safety and security measures such as building key-cards, lighting and signage, security cameras, and private security staff. Secure off-street parking will be also be available.

1.2.1 Development Program

The Project includes the proposed development program presented in Table 1.1.

TABLE 1.1 PROPOSED DEVELOPMENT PROGRAM[1]

Site Area	27.6 acres
Building Area	3.3 million gfa
Floor Area Ratio (FAR)[2]	4.0
Height	6 – 21 stories
Residential Space	3.2 million sf
Residential Units	3,200 units
Public Housing Replacement Units	1,100 units
Net New Units	2,100 units
Residential Units by Bedroom Type	
Studio	350 units
1 Bedroom	1,200 units
2 Bedroom	1,200 units
3 Bedroom	400 units
4 Bedroom	50 units
Residential Units by Tenure	
Affordable Rental	750 units
Senior Affordable Rental	350 units
Market Rate Rental	1,500 units
Market Rate Condominium	600 units
Retail/Civic Space	100,000 sf
Parking Ratio	0.75 spaces/unit (~2,400 spaces)
Spaces Off-Street	0.65 spaces/unit (~2,080 spaces)
Spaces On-Street, within Site	0.10 spaces/unit (~320 spaces)
Bicycle Parking	
Secured/Covered	Space for 3,200 bicycles
Outdoor	Space for 640 bicycles
Open Space[3]	7.5 acres

Notes: gfa = gross floor area; sf = square feet

[1] All numbers are approximate.

[2] FAR as shown is based on the aggregate area of proposed parcels in the final condition, excluding cross streets. If based on the contiguouspublic rights-of-way, which yields a site area of the Site including cross streets, the FAR would be 2.75.

[3] Open Space includes publicly-accessible open space, courtyards, green furnishing zone, and frontage zone.

1.2.2 Project Background and Funding

The Corcoran SunCal team responded to the BHA's Request for Proposals issued in June 2015, and was selected as the Site developer by the BHA on October 1, 2016. The Corcoran SunCal team received high points from the selection committee for its demonstrated model because of its strong resident partnerships and robust resident services, items which are a priority for existing residents at the Site.

The BHA selected the Corcoran SunCal team recognizing that the addition of market rate units to create a mixed-income development would generate needed income to help sustain the

affordable units over the long term. The creation of new market rate and workforce housing also furthers Mayor Martin Walsh's goal of creating 53,000 new units of housing in Boston by 2030.

Public engagement for the One Charlestown effort began in late 2015 with the formation of a resident working group. Group members identified themselves as representatives of the Charlestown Public Housing development and as people particularly interested in the planning process for the Site.

1.2.3 Schedule/Potential Phasing

The existing buildings will be demolished and the Project will be built over an approximately ten year period beginning in 2018. Because the existing public housing units are currently over 97% occupied, the care and speed at which relocation of current residents occurs will influence the construction schedule, as will market conditions and financing availability.

The Project is currently divided into three major phases. The Project will be constructed on a rolling basis, beginning with Phase 1, which includes Buildings A through E. Phase 2 includes buildings H through M, and Phase 3 includes buildings F, N, and O. Figure 1.7 depicts the proposed phases of development.

1.3 Summary of Public Benefits

The Project will result in a number of public benefits related to quality of life, housing opportunities, walkability, open space, historic awareness, sustainability, transportation options, accessibility, and economic development. It will:

- End the Site's physical, social, and economic isolation from the larger Charlestown neighborhood;
- Meet the BHA's fundamental goal of offering residents a more livable, healthier, and more sustainable community within a truly mixed-income neighborhood that responds to the needs and aspirations of all its residents;
- Provide one-for-one replacement of 100% of the current public housing units;
- Make full relocation services available for all eligible residents;
- Provide affordable rental housing for households with incomes up to 60% of the Area Median Income (AMI); workforce rental housing for households with incomes up to 80% of AMI; and owner-occupied housing for households with incomes up to 100% AMI;
- Provide additional market rate rental and home ownership opportunities;
- Employ urban design, architecture, and landscape architecture that will be directly informed by and designed with sensitivity to the surrounding historic context;
- Support locally focused retail space to activate the streetscape and encourage greater integration with the rest of the neighborhood;
- Create a vibrant and safe walkable environment;
- Introduce 7.5 acres of new open space;

- Reflect Charlestown's character and tell its story through design and programming;
- Construct sustainable, Leadership in Energy and Environmental Design (LEED®) certifiable buildings;
- Improve the transportation grid by reconnecting streets;
- Improve public transit by adding bus shelters;
- Add convenient, secure off-street parking;
- Increase accessibility and the number of new accessible units; and
- Create employment opportunities, both during construction and following completion of the Project.

1.4 Regulatory Context

This section lists the anticipated permits and approvals as well as the local planning and regulatory controls applicable to the Project.

1.4.1 Local Planning and Regulatory Controls

Article 80

The Project is subject to land use controls contained in the City of Boston Zoning Code (the "Code"). Under Article 80B of the Code, Large Project Review is required by the BRA for any new construction equal to or greater than 50,000 square feet of gross floor area. The Project exceeds this threshold and is therefore subject to Large Project Review. The Proponent commenced Large Project Review under Article 80 of the Code with the filing of a Letter of Intent with the BRA on August 16, 2016, that indicated the Proponent's intent to file an EPNF in connection with the Project. A copy of this letter is provided in Appendix A, *Letter of Intent*.

Article 28

Under Article 28 of the Code, the Boston Civic Design Commission ("BCDC") reviews the conceptual design of projects that affect the public realm with a gross floor area in excess of 100,000 square feet. Accordingly, the Project will be reviewed by BCDC prior to final approval by the BRA Board. The Proponent anticipates preparing detailed Site-wide design guidelines to support BCDC review of the full redevelopment program.

Article 37

Article 37 of the Code requires that proposed projects subject to Large Project Review meet standards for certification under the United States Green Building Council Leadership in Energy and Environmental Design (LEED) program. A LEED Checklist and a Climate Change Preparedness and Resiliency Checklist will be submitted to the Interagency Green Building Committee as part of Large Project Review. Additional details are provided in Chapter 3, *Sustainability and Green Building*.

Article 85

Article 85 of the Code requires that existing structures that were constructed 50 or more years ago must undergo review by the Boston Landmarks Commission prior to demolition and may be subject to a demolition delay. The Massachusetts Historical Commission ("MHC"), in consultation with the City of Boston Department of Neighborhood Development, determined the property is not listed in the National Register of Historic Places and does not appear to meet the criteria of eligibility for listing in the National Register.[2] Demolition of the Bunker Hill Public Housing development will not have any direct impacts on historic resources. The Proponent will submit an application to the Boston Landmarks Commission for review and approval prior to commencement of any demolition.

Zoning

The Project Site is currently zoned as a Multifamily Residential Subdistrict ("MFR") within the Charlestown Neighborhood District (Article 62 of the Code).[3] Multi-family dwellings and elderly housing are allowed as of right, community center use is conditional and retail use is prohibited. The maximum allowed floor area ratio (FAR) and building height are 1.0 and 3 stories/35 feet, respectively. Parking and loading requirements will be determined through Large Project Review. Certain applicable use and dimensional requirements will be met by right and others will require zoning relief. The Proponent proposes to achieve zoning relief by way of a Regulatory Agreement with the BRA providing use and dimensional requirements consistent with the Project, including a map amendment to establish the Property as a "U" Subdistrict and a minor modification to the existing Charlestown Urban Renewal Plan. Use and dimensional requirements are further described in Table1.2 below, based on currently available information and subject to refinement as part of design finalization.

[2] Massachusetts Historical Commission letter to City of Boston Department of Neighborhood Development, February 12, 2016. MHC #RC.55944.

[3] A small portion of the Site at the corner of Decatur Street and Vine Street (approx. 250 s.f. at the end of a narrow projection of the subject parcel) is within the Recreation Open Space Subdistrict, which designates land for active or passive recreational uses. This portion of the Site will be accessory open space.

TABLE 1.2 ZONING SUMMARY

Item		Code Requirement	Anticipated for Project	Relief
Use[1]	Multi-family, Townhouse or Elderly Housing	Allowed, provided units are not in basement (i.e., not in a story that is 35% below grade)	Approx. 3,200 units	No
	Community Center	Conditional on a ground floor or in a basement with a separate entrance if available to public (otherwise prohibited)	Approx. 45,000 sf civic space	Yes
	General or Local Retail Business	Prohibited	45,600 s.f.	Yes
Maximum Height		3 stories 35'	6 – 21 stories Up to 240 ft not including roof structures	Yes
Maximum Floor Area Ratio (FAR)[2]		1.0	4.0[2]	Yes
Minimum Lot Area per Dwelling Unit		4,000 sf for first 3 units and 1,500 sf for each additional unit for Multi-family or Elderly	Less than min. required	Yes
Minimum Lot Width		40' for Multi-family or Elderly	Greater than min. required	No
Minimum Frontage		40' for Multi-family or Elderly	Greater than min. required	No
Minimum Useable Open Space per Dwelling Unit		400 sf	Less than min required	Yes
Minimum Front Yard		20'	Less than min required	Yes
Minimum Side Yard		10' except Min. Front Yard along every public way	N/A	No
Minimum Rear Yard		30' except Min. Front Yard along every public way	N/A	No
Maximum Rear Yard Occupancy by Accessory Buildings		25%	Less than max. allowed	No

[1] Open space and accessory parking are additional proposed uses that are allowed and do not require relief. The off-street parking and loading requirements are to be determined through the Large Project Review process.
[2] FAR as shown is based on the aggregate area of proposed parcels in the final condition, excluding cross streets, which yields a site area of approximately 18.9 acres.

1.4.2 Massachusetts Environmental Policy Act

Review under the Massachusetts Environmental Policy Act (MEPA) is required for projects that receive state financial assistance and exceed established review thresholds. The Proponent anticipates state financial assistance in support of affordable housing, triggering full-scope MEPA jurisdiction. The Project exceeds an ENF review threshold for wastewater discharge and mandatory EIR review thresholds related to trip generation and parking construction as follows:

- (5)(b)4.a. New discharge or Expansion in discharge to a sewer system of 100,000 or more gpd of sewage, industrial waste water or untreated stormwater.

- 301 CMR 11.03 (6)(a)6. Generation of 3,000 or more new adjusted daily trips (adt) on roadways providing access to a single location.
- 301 CMR 11.03 (6)(a)7. Construction of 1,000 or more new parking spaces at a single location.

Accordingly, MEPA will review an Environmental Notification Form (ENF) and an EIR concurrently with BRA Large Project Review.

1.4.3 National Environmental Policy Act

Submission of an Environmental Impact Statement (EIS) to the U.S. Department of Housing and Urban Development (HUD) to allow review under the National Environmental Policy Act (NEPA) is required for projects that would result in the construction or installation of 2,500 or more housing units. If exceeding such threshold is the sole reason for the EIS, then an Environmental Assessment (EA) instead of an EIS may be prepared to enable a potential Finding of No Significant Impact determination.

The sole reason for NEPA review of the Project is the construction or installation of 2,500 or more housing units. Accordingly, NEPA review of an EA is applicable and will precede or run concurrently with BRA Large Project Review.

1.4.4 Anticipated Permits/Approvals

Table 1.3 below presents a preliminary list of anticipated reviews and approvals of the Project by governmental agencies based on currently available information. It is possible that some of the listed reviews and approvals will not be required, or that additional reviews or approvals that will be required are not listed below.

TABLE 1.3 ANTICIPATED PROJECT PERMITS AND APPROVALS

Agency/Department	Permit/Approval/Action
Federal	
U.S. Department of Housing and Urban Development	Disposition Approval
Environmental Protection Agency	Environmental Assessment Review National Pollution Discharge Elimination System Construction/Stormwater General Permit
Federal Aviation Administration	Height Restriction Notice or Determination of No Hazard
State	
Executive Office of Energy and Environmental Affairs	MEPA Review
Massachusetts Department of Environmental Protection	Public Benefit Determination (Chapter 91) Notification Prior to Construction or Demolition
Massachusetts Office of Coastal Zone Management	Federal Consistency Review
State Historic Preservation Office	Section 106 Review
Massachusetts Historic Commission	State Register Review

City	
Boston Redevelopment Authority	Article 80B Large Project Review "U" Subdistrict Approval Urban Renewal Plan Minor Modification
Boston Civic Design Commission	Article 28 Design Review
Interagency Green Building Committee	Article 37 Green Buildings Compliance Review
Boston Zoning Commission	"U" Subdistrict Approval
Boston Landmarks Commission	Article 85 Demolition Delay Review
Parks and Recreation Commission	Approval of Demolition within 100 feet of Park
Boston Transportation Department	Transportation Access Management Plan Construction Management Plan
Boston Water and Sewer Commission	Site Plan Approval, Water/Sewer Connection Permits, Construction Dewatering Permit
Public Improvement Commission	Discontinuance, Line and Grade/Layout Plan and Specific Repair Plan Approvals
Boston Committee on Licenses	Flammable Storage License/Garage Permit
Inspectional Services Department	Building Permits Certificates of Occupancy

1.5 Consistency with Applicable Plans and Policies

The Project is consistent with municipal and regional plans, as well as Coastal Zone Management policies and the Chapter 91 program, as described below.

1.5.1 Municipal Plans

Imagine Boston: 2030

Boston is in the process of drafting its first comprehensive plan in 50 years. *Imagine Boston 2030* will create a framework to preserve and enhance Boston, while embracing growth as a means to address challenges and make the city stronger and more inclusive. The plan is expected to be completed in Spring 2017. The Project, which proposes increased density, has established goals that will complement Imagine Boston 2030, including providing quality of life in accessible neighborhoods; driving inclusive economic growth; promoting a healthy environment and adapting to climate change; and investing in infrastructure, open space and culture.

Housing A Changing City

On October 9, 2014, Mayor Martin J. Walsh released *Housing a Changing City: Boston 2030*, which outlines the administration's plan to produce 53,000 new units of housing. Of those units, 44,000 are needed for workforce housing, and 5,000 are needed for senior housing. Preserving affordable housing is one of the cornerstones of that plan; providing green and sustainable housing, which includes accommodating and encouraging growth in the city to help lower the region's carbon footprint, is another. The Project will help the City to meet these goals by providing approximately 350 senior housing units (seven percent of the total need) and 78 workforce housing units (see below); replacing all 1,100 existing public housing

units on a one-to-one basis; and redeveloping an existing developed urban site with a LEED certifiable project.

The condominium project will adhere to the Mayor's Inclusionary Development program and offer 15% of the market rate units (or 13% of the total homeownership units) as income restricted apartments to middle income families. Of the anticipated 600 condominium units to be created on-site, 78 will be workforce housing units. Of these workforce housing units, half (39 units) will be available to households earning up to 80% AMI and the other half (39 units) will be available to households earning up to 100% AMI.

Charlestown Neighborhood District

The Site is within the Charlestown Neighborhood District, described in Article 62 of the Code, and is subject to Multifamily Residential (MFR) subdistrict zoning, which encourages low to medium density multifamily areas with a variety of housing types, including multifamily dwellings.[4] The Project includes a variety of building types, including low-rise and high-rise multifamily dwellings, consistent with the applicable zoning.

1.5.2 Regional Plan

MetroFuture: Making a Greater Boston Region (MetroFuture) is a comprehensive regional plan for the Boston metropolitan area, prepared by the Metropolitan Area Planning Council (MAPC). The plan provides a complete set of implementation strategies, recommendations, and action steps for regional growth and development. MetroFuture focuses on six key elements for growth and development in the region. Each of these is supported by more specific sub-goals and objectives. The Project is consistent with many of these, and directly meets the following goals:

- *Sustainable Growth: Most new growth will occur through reuse of previously developed land and buildings*. The Project will redevelop an existing public housing site to create the opportunity for additional residents to make Charlestown their home.
- *Housing Choices: Low-income households will be able to find affordable, adequate, conveniently located housing…and they will be able to avoid displacement. The region's seniors will have more housing choices and opportunities to downsize while staying in their own community*. The Project will replace the 1,100 existing public housing units with an equal number of new units. All eligible public housing tenants now living at the Bunker Hill Public Housing development will be rehoused, and they will be encouraged to return to the redeveloped property. The Project will also create approximately 350 new senior housing units.
- *Energy, Air, Water and Wildlife: The region will use progressively less energy for electricity, heating, cooling and transportation*. The Project's location will allow residents to take advantage of transportation options that offer alternatives to driving, including walking, bicycling, and MBTA bus. The Project Site will be designed to high standards of energy

▼

[4] See footnote 3.

efficiency. Passive stormwater management strategies and other green infrastructure will be integrated into the Project design.

1.5.3 Coastal Zone Management Policies

This section provides an assessment of the Project relative to the Massachusetts Coastal Zone, established pursuant to the Federal Coastal Zone Management (CZM) Act of 1972 and administered by the Massachusetts Office of Coastal Zone Management (MCZM) under M.G.L. Chapter 21A, Sections 2 and 4A and the 301 CMR 20.00 (as revised). The northern edge of the Project along the south side of Medford Street is within the Massachusetts Coastal Zone. Therefore the Project must be consistent with the applicable regulatory policies established by CZM under the federally approved Massachusetts Coastal Program. Given the federal review that is part of the applicable National Pollution Discharge Elimination System (NPDES) General Permit process, CZM may determine that no further review is required.

Table 1.4 lists the CZM policies that are applicable to the Project and assesses the consistency of the Project with those policies.

TABLE 1.4 PROJECT CONSISTENCY WITH CZM POLICIES

CZM Policy Number	CZM Policy Description	Project Consistency
Protected Areas Policy #3	Minimize adverse effect to historic properties and districts.	Project planning includes ongoing coordination with MHC.
Energy Policy #2	Encourage energy conservation and use of renewable sources.	Project will incorporate energy conservation measures and includes assessment of renewable energy potential.
Growth Management Policy #1	Encourage sustainable development that is consistent with state, regional, and local plans and supports the quality and character of the community.	Project will incorporate sustainable design elements, and is consistent with regional, state, and local plans. It will enhance the quality and character of the community through both private and public space improvements.
Growth Management Policy #3	Encourage revitalization and enhancement of existing development in the coastal zone.	Project redevelops existing parcels and revitalizes the area with additional housing, retail, civic space, and open space, and improves the street grid to promote improved access.

1.5.4 Massachusetts Public Waterfront Act (Chapter 91)

Approximately 6,600 square feet (0.15 acres) of the Site is located within filled former tidelands. These tidelands are located greater than 250 feet from mean high water and landward of the first public way, meeting the statutory and regulatory criteria for Landlocked Tidelands, which are exempt from licensing under Chapter 91. However, a Public Benefit Determination under the provisions of Chapter 91, Section 18(B)(ii) and 301 CMR 13.00 is required for projects partially located in landlocked tidelands that also are required to file an

EIR as part of the MEPA review process. As noted previously, the Project triggers mandatory EIR review and accordingly will require a Public Benefit Determination to be issued by the Massachusetts Department of Environmental Protection subsequent to the MEPA review process. Section 6.5, *Wetlands and Waterways* of this document provides additional information.

1.6 Agency Coordination and Community Outreach

Since 2015, the Project team has been meeting with residents, neighborhood groups, community leaders, business owners, elected officials, City of Boston officials, and other stakeholders to seek input and feedback as they developed the redevelopment plan.

1.6.1 City/State Coordination and Meetings

The Corcoran SunCal team has held bi-weekly meetings with the Boston Housing Authority starting in October 2015 and continuing throughout the pre-development process. Members of the team have met with City Councilor Salvatore LaMattina, State Representative Dan Ryan, State Senator Sal DiDomenico and U.S. Senator Michael Capuano.

The Corcoran/SunCal team has also met with members of the BRA staff to consult on the planning, development and design of the project prior to the EPNF submission. Additionally, the team has met with MEPA staff for a pre-filing briefing prior to submission of the ENF. Following is a list of City and State coordination meetings that have taken place to date.

- 11/23/15 Introduction of project to BRA Planning and Development Review Staff
- 1/13/16 BRA Planning Staff
- 1/20/16 Massachusetts Architectural Access Board, Executive Director
- 3/30/16 BRA Design Staff
- 4/27/16 BRA Design Staff
- 5/13/16 BRA Pre-Filing Meeting with Planning and Development Review Staff
- 6/06/16 BRA Environment Department Staff
- 6/08/16 BRA Transportation Department Staff
- 6/29/16 BRA Legal Department Staff
- 8/04/16 MEPA Pre-Filing Meeting

1.6.2 Community Outreach

As soon as the Corcoran SunCal team was selected to work together with the BHA as the Project team, an intensive outreach process was initiated to quickly engage the residents and surrounding community. The Project team began the outreach process with the existing residents, as they are the most directly impacted by the Project. A resident working group participated in a series of formation sessions and workshops to gather input, address concerns, express aspirations, determine priorities, and provide feedback.

Resident Working Group Workshop Timeline

DECEMBER 2015		JANUARY 2016			MARCH 2016	
THURSDAY DECEMBER 3	TUESDAY DECEMBER 8	WEDNESDAY JANUARY 13	WEDNESDAY JANUARY 20	SATURDAY JANUARY 30	TUESDAY MARCH 16	WEDNESDAY MARCH 16
RESIDENT WORKING GROUP MEETING #1	*RESIDENT WORKING GROUP MEETING #2*	*RESIDENT WORKING GROUP MEETING #3*	*RESIDENT WORKING GROUP MEETING #4*	*RESIDENT CHARRETTE*	*CHARRETTE FEED-BACK REPORT*	*COMMUNITY OPEN HOUSE*
Kick off the process	**Listening Session: Learning from you**	**What We Heard: Confirming what we've learned from you**	**Plan for Resident Charrette**	**Charrette—collaborative design workshop**	**Report-back from Charrette**	**Residents share planning progress with the community**
		Resident focus group meetings begin				
					Charlestown-wide engagement →	

Several meetings and workshops have been held to engage the community.

A resident working group participated in a series of information sessions and workshops.

This initial resident engagement process culminated in a collaborative charrette event on June 30, 2016, where progress was shared and residents had the opportunity to provide input

through hands-on activities regarding how the buildings, open spaces, unit interiors, and mobility networks would be organized and designed.

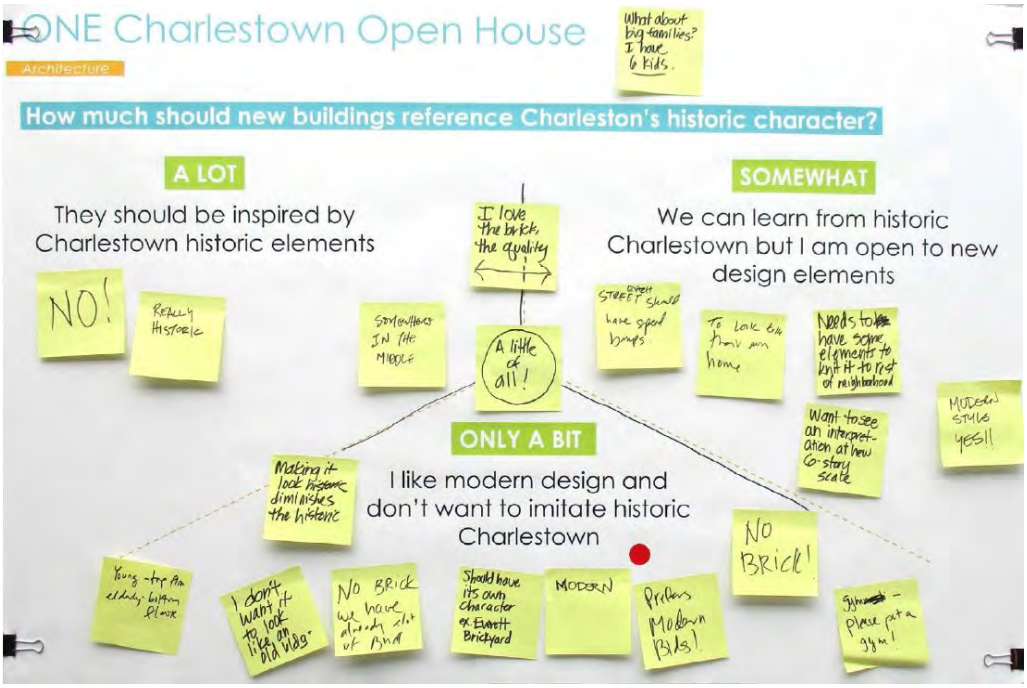
With the resident engagement process fully underway, the Project team began reaching out to the broader Charlestown community through stakeholder interviews and focus groups. The Project team met with leaders of the historic preservation and design communities, and established a preservation working group for the Project. The group has been meeting on an ongoing basis to help shape how the historical and cultural story of Charlestown is told through landscape and architectural design.

During an open house event on March 16, 2016, open to both residents and the wider community, the Project team shared the progress achieved during the resident process and then conducted an informal salon where residents and members of the broader public alike could review project information, goals, analysis, and preliminary design with several interactive activities to gather feedback and ideas.

On August 31, 2016, the Proponent hosted an open forum for all Charlestown residents to preview this ENF/EPNF submission. The audience of over 350 residents was overwhelmingly in support of the plan and is anxious to begin the relocation conversation.

The resident and community engagement processes described above remain ongoing as the Project team continues to develop designs, address concerns, and build stakeholder support for the Project.

For a more detailed report of the engagement process as introduced above, visit the Project website at: http://www.onecharlestown.com/



An example of an exercise used to shape the relationship between new buildings and Charlestown's historic character.

The March 2016 Open House was attended by both residents and the wider community.

1.7 Development Team

The Proponent is a joint venture of affiliates of Corcoran Jennison Associates, with a principal place of business in Boston, Massachusetts, and SunCal, with a principal place of business in Irvine, California (Table 1.5).

TABLE 1.5 DEVELOPMENT TEAM

Proponent	Bunker Hill GP Venture LLC c/o Corcoran Jennison Associates 150 Mt Vernon Street Boston, MA 02125 617-822-7354 *Contact:* Joseph J. Corcoran, President Sarah Barnat, Project Director Sun Cal 680 5th Avenue, 20th Floor New York, NY 10019 212-554-2976 *Contact:* Frank Cappello, Principal
Master Planner	Stantec/Urban Places Group 226 Causeway Street, 6th Floor Boston, MA 02114-2155 *Contact:* David Dixon
Lead Architect	Stantec Architecture 311 Summer Street Boston, MA 02210 617-234-3212 *Contact:* B.K. Boley, AIA, LEED AP David Lunny, AIA, LEED AP
Architects	DiMella Schaffer 281 Summer Street Boston, MA 02210 *Contact*: Frank Valdes, AIA

TABLE 1.5 DEVELOPMENT TEAM

Architects (continued…)	Studio Luz 21c Wormwood Street Boston, MA 02210 *Contact*: Hansy Better Barraza, AIA, LEED AP Dream Collaborative 236 Huntington Avenue, Suite 303 Boston, MA 02115 *Contact*: Gregory Minott, AIA, LEED AP
Landscape Architects	Ground 6 Carlton Street Somerville, MA 02143 617-718-0889 *Contact:* Shauna Gillies-Smith, MAUD, March, ASLA Deborah Myers Landscape Architecture LLC 60 Glen Road Suite 108 Brookline, MA 02445 617-922-6741 *Contact:* Deborah Myers
Legal Counsel	Goulston & Storrs 400 Atlantic Avenue Boston, MA 02110-3333 617-574-6587 *Contact:* Matthew J. Kiefer
Permitting & Transportation	VHB 99 High Street, 10th Floor Boston, MA 02210 617-728-7777 *Contact:* Elizabeth Grob David Black
Site Civil Engineer	Nitsch Engineering 2 Center Plaza #430 Boston, MA 02108 617-338-0063 *Contact:* John M. Schmid, P.E.
Structural Engineer	Odeh Engineers 1223 Mineral Spring Avenue North Providence, RI 02904 *Contact*: David Odeh, P.E.
Mechanical/Electric/Plumbing Engineer	R.W. Sullivan Engineering The Schrafft Center 529 Main Street, Suite 203 Boston, MA 02129-1107 617-523-8227 *Contact:* Dorian A. Alba, PE, LEED AP
Sustainability Consultant	VvS Architects & Consultants 617-898-8995 *Contact:* Agnes Vorbrodt

TABLE 1.5 DEVELOPMENT TEAM

Geotechnical/Geoenvironmental Engineer	McPhail Associates, LLC 2269 Massachusetts Ave Cambridge, MA 02140 617-868-1420 *Contact:* Joe Lombardo, L.S.P.
Environmental Consultant	Boston Environmental Corporation 203 Spark Street Brockton, MA 02302 508-897-8062 *Contact:* T. Michael Toomey, Executive Vice President
Code Consultant	Arup 955 Massachusetts Avenue Cambridge, MA 02139 *Contact*: Mike DiMascio
Construction Manager	R.C. May Associates, Inc. 268 Main Street Suite 31 B Medfield, MA 02052 *Contact:* Andrew Bonfatti MWB Construction Advisors 118 Oxford St. Cambridge, MA 02140 *Contact:* Matthew Bagedonow

1.8 Project Financing

In total, project costs are estimated to be over $1 billion for the creation of the 3,200-unit program. The Corcoran SunCal team is a well-capitalized development group and they have successfully arranged for more than $7 million in pre-development capital for the programming, design and entitlement efforts of the One Charlestown project. The majority of the project will be traditionally financed with a combination of private equity and debt. The Corcoran SunCal team is working with the Real Estate Private Funds Group at UBS to help select and structure the optimal investment partner for the significant financing of the construction project.

Additionally, the Corcoran SunCal team anticipates securing a construction loan, for potentially up to 65% of total costs, for each phase of the project. Lastly, they have engaged best-in-class consultants to help identify and structure municipal financing opportunities, (including but not limited to district improvements funds (DIF), and four percent Low Income Housing Tax Credits (LIHTCs).

1.9 Legal Information

Information regarding site ownership, pending actions, tax history, and easements is provided below.

1.9.1 Site Ownership

The Site is currently owned by the BHA. The Proponent or its affiliates will enter into one or more long-term ground lease(s) with the BHA to construct and manage the housing units and amenities under such ground lease(s).

1.9.2 Legal Judgments or Actions Pending Concerning the Proposed Project

The Proponent is not aware of any legal judgements in effect or legal actions pending that are adverse to the Project.

1.9.3 History of Tax Arrears on Property Owned in Boston by the Proponent

The Proponent is not in tax arrears on any property owned within the City of Boston.

1.9.4 Easements

Subject to confirmation by a full title search currently underway, the Proponent is not aware of any utility or other easements on or through the Site that would impair its redevelopment.

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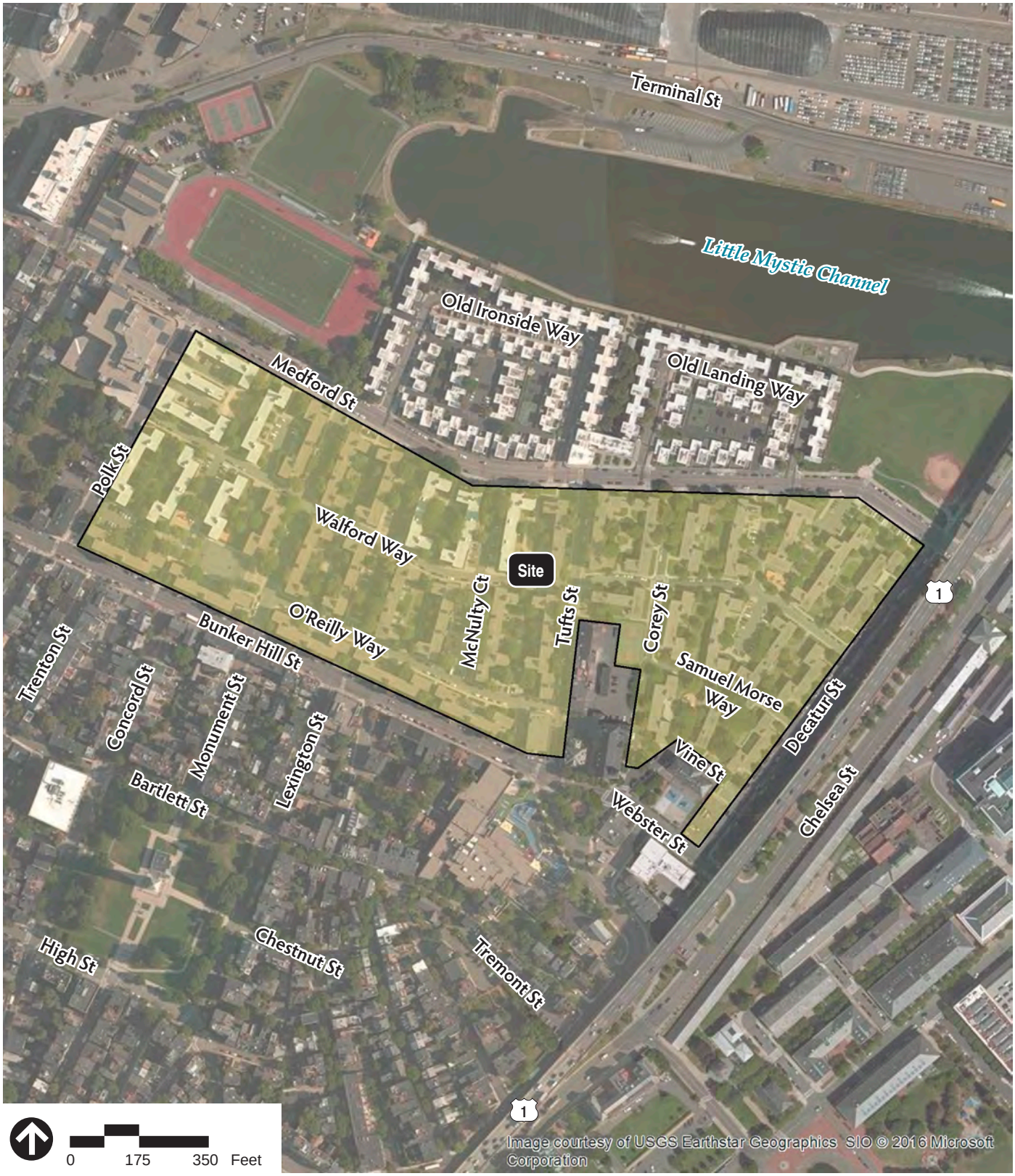
Source: 2001 MassGIS USGS

Figure 1.1

USGS Site Locus Map

One Charlestown
Charlestown, MA



Source: ArcGIS Online Bing Aerial

Figure 1.2

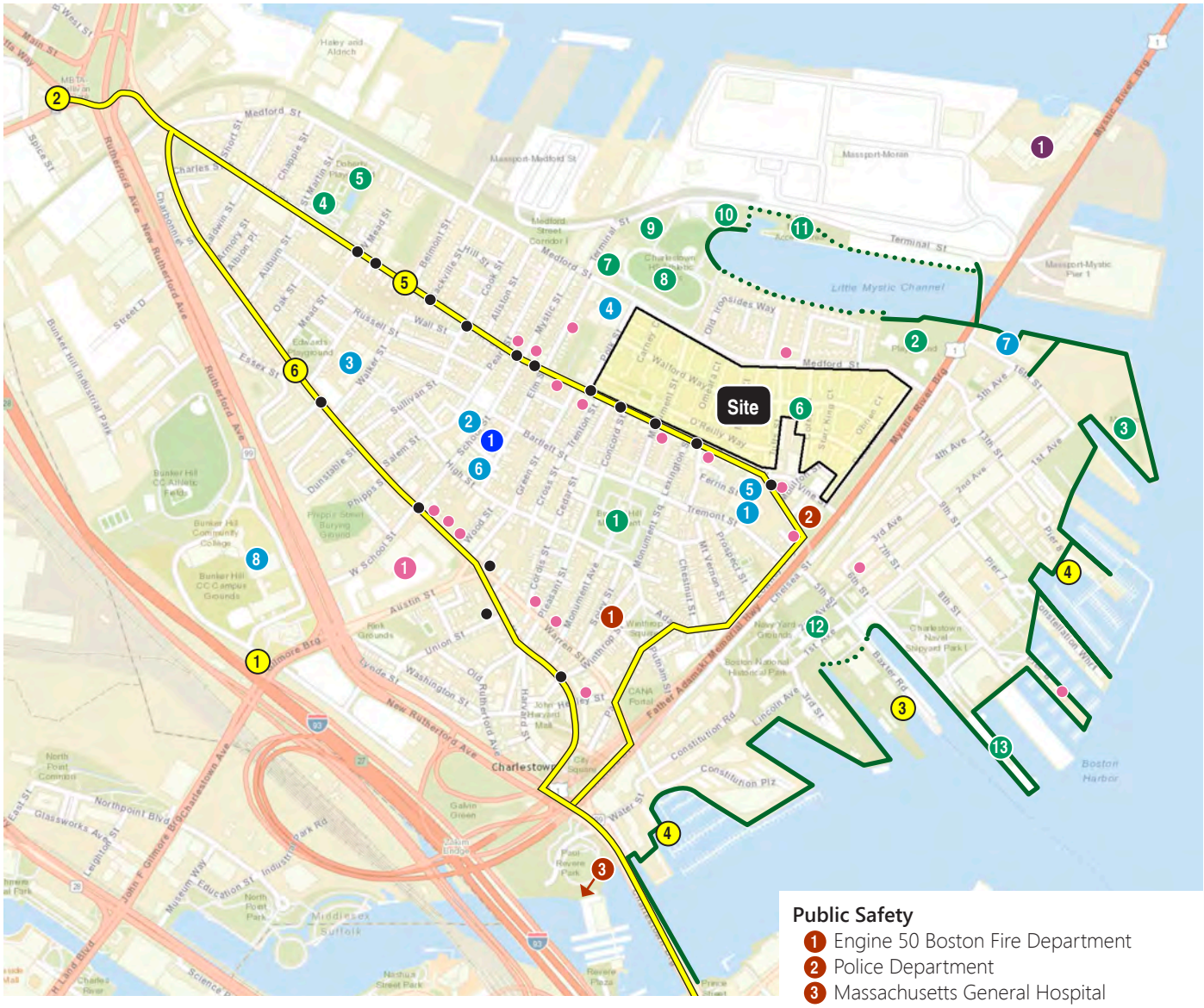
Existing Conditions Plan

One Charlestown
Charlestown, MA

Source: Corcoran Jennison Associates

Figure 1.3
Existing Site Photos

One Charlestown
Charlestown, MA



Transportation
- 1 Community College T Station
- 2 Sullivan Square T Station
- 3 MBTA F4 Ferry
- 4 Water Taxi Landings
- 5 #93 MBTA Bus
- 6 #92 MBTA Bus
- ● Bus Stop

Solid Waste
- 1 Recycling Facility

0 550 1100 Feet

Educational Facilities
- 1 Harvard-Kent Elementary School
- 2 Warren-Prescott School
- 3 Clarence R. Edwards Middle School
- 4 Charlestown High School
- 5 The Kennedy Center
- 6 Charlestown Boys and Girls Club
- 7 "e" inc. Environmental Learning Center
- 8 Bunker Hill Community College

Commercial Facilities
- 8 Bunker Hill Mall
- ● Local retail stores, restaurants and services

Healthcare
- 1 Mass General: Charlestown HealthCare Center

Public Safety
- 1 Engine 50 Boston Fire Department
- 2 Police Department
- 3 Massachusetts General Hospital

Open Space, Recreation & Cultural Facilities
- 1 Bunker Hill Monument
- 2 Barry Playground.
- 3 Thomas M. Menino Park
- 4 Doherty Playground
- 5 Clougherty Pool
- 6 The Corey Street Courts
- 7 Charlestown Community Center
- 8 Charlestown High School Athletic Fields
- 9 Mel Stillman Tennis Center
- 10 Charlestown Sprouts Community Garden
- 11 Little Mystic Boat Ramp
- 12 Boston National Historical Park/ USS Constitution Museum
- 13 Courageous Sailing Center Harborwalk

Source: ESRI World Street Map

Stantec vhb

Figure 1.4

Project Site Context

One Charlestown
Charlestown, MA

CORCORAN JENNISON Companies DM LA ground SunCal

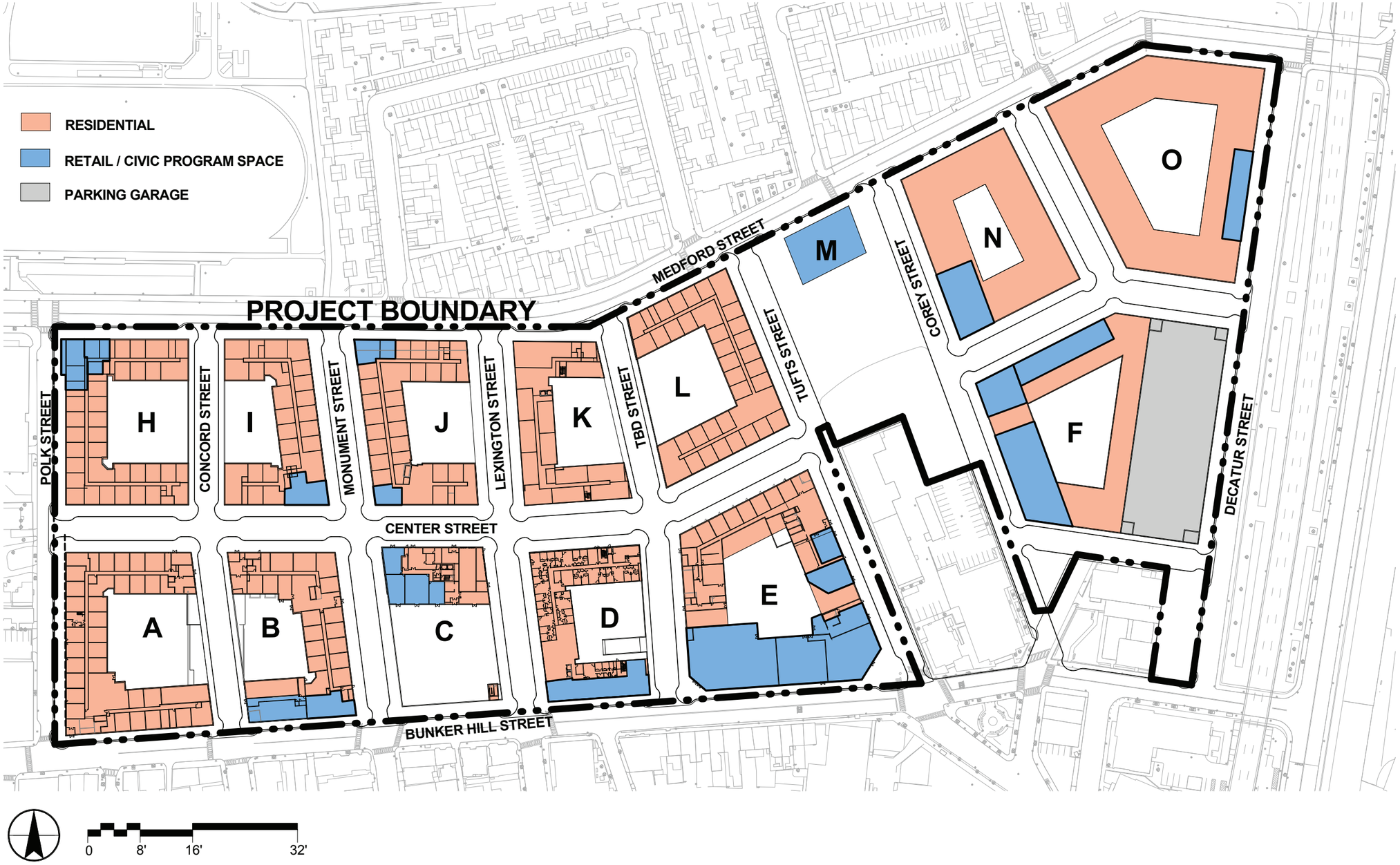
Source: ground

Stantec vhb

Figure 1.5
Proposed Site Plan

One Charlestown
Charlestown, MA

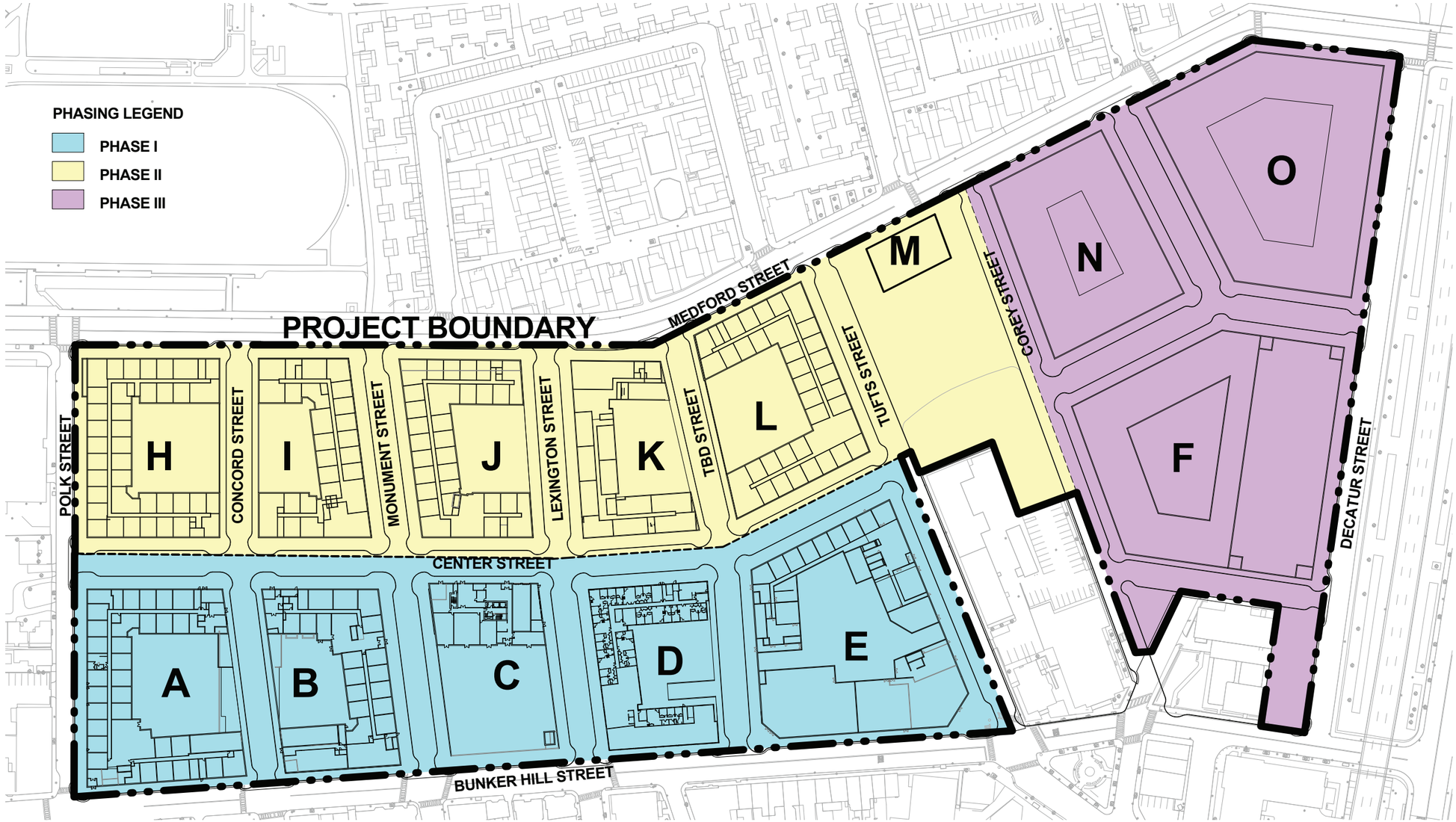
CORCORAN JENNISON Companies DM LA
ground SunCal



Source Info: Stantec

Figure 1.6
Proposed Ground Floor Use Plan

One Charlestown
Charlestown, MA



Source Info: Stantec

CORCORAN JENNISON Associates | SunCal | ground | Nitsch Engineering | AVA Architects & Consultants | DM LA | DiMella Shaffer | RWS

Stantec | vhb

Figure 1.7
Phasing Plan

One Charlestown
Charlestown, MA

2

Urban Design

This chapter describes the existing urban context of the Project Site, and discusses the planning principles and design goals for the Project. Urban design characteristics, such as height and massing, and public realm improvements, including proposed landscaping, are also described. Supporting graphics include site plans, street sections, building elevations, and view perspectives.

2.1 Key Findings and Benefits

The key findings and benefits of the Project related to urban design are listed below.

- The Project's urban design, architecture, and landscape architecture will be directly informed by and designed with sensitivity to the surrounding historic context;
- Both existing residents and members of the surrounding Charlestown community have played and will continue to play key roles shaping the Project's master plan, architecture, programming, and other key features;
- The Project's planning principles and design goals fundamentally focus on building community among the existing and future resident population and the surrounding Charlestown community by knitting the neighborhood back together, creating a vibrant and safe walkable environment, introducing new public spaces and amenities, reflecting Charlestown's character and telling its story through design and programming, and other related strategies;
- The Project concentrates height away from historic resources and employs multiple architects to design each block face to reflect Charlestown's fine-grained, diverse urban fabric;
- The Project's architectural details such as exterior materials, windows, and doors are influenced by the patterns, colors, and textures found throughout the surrounding historic neighborhood;
- The Project includes two signature public open spaces that each invite resident and community interaction as well as visitor exploration; and,
- Streetscapes will be designed to establish neighborhood identity and coherence; invite individual, community, and retail expression; create connection with the historic context; and introduce sustainable green infrastructure.

2.2 Neighborhood Context

The Project Site context varies dramatically from west to east and from south to north. Most notably, the Project abuts historic Charlestown on the south along Bunker Hill Street and the west along Polk Street. The existing development is poorly connected to the adjacent neighborhood both in terms of the street grid and urban form. The existing disjointed street network discourages passage between the two neighborhoods, and the spacious, orthogonally-oriented modernist site plan and unadorned buildings contrast with Charlestown's vernacular of intimate streets, fine-grained urban street grid, and diversity of historic architecture. Historically, Bunker Hill Street has functioned as a barrier between the public housing community and the rest of the Charlestown neighborhood.

To the north, the Project abuts two city parks and the CharlesNEWtown Cooperative assisted living housing development along Medford Street. Beyond, the Mystic River approaches Boston Harbor.

The Tobin Bridge defines the Project's immediate east edge. Further east, the Navy Yard includes many historic assets and cultural amenities that are closely tied to the rest of Charlestown's history but physically separated by the bridge, the Navy Yard's fence line, and the Ropewalk building.

Much of the Project's planning, architecture, and landscape design inspiration has been directly informed by a detailed analysis of, and strong desire to reflect, the Project Site's rich physical and historical context. This was informed by the Project team's direct research, as well as close collaboration with the preservation working group described in Section 1.6*, Agency Coordination and Community Outreach,* of this document.

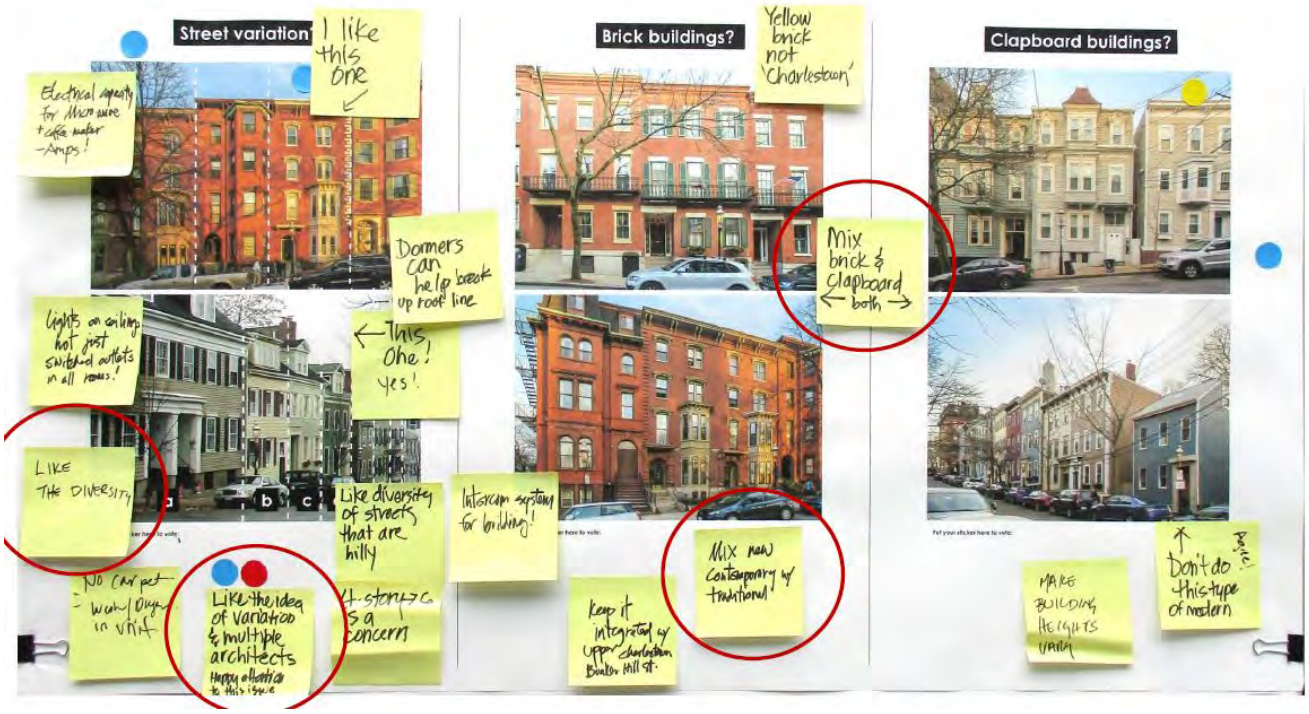
The Project is being designed so that new buildings respect the predominant characteristics of the neighborhood's existing buildings, including forms, proportional relationships, colors, and materials. The Project team analyzed and documented the many attributes that contribute to Charlestown's unique character that could inspire One Charlestown:

- Brick and clapboard row houses with projecting bay windows along neighborhood streets;
- Buildings of brick, wood, stone, and concrete at key corners and focal points;
- More formal architecture of masonry construction framing key public spaces, such as the Monument park, and more diverse and informal architecture of brick and wood lining side streets; and
- Distinctive detailing of windows, railings, stoops, and gates.

The analysis of Charlestown's predominant characteristics led the design team to formulate a set of guidelines that operate at the master plan, neighborhood block, and building façade scales. The guidelines are illustrated with examples from the Phase I design process, showing how the work of several architects can alternate along the streets, corners are given special

consideration, and projecting bays, modern materials, balconies and roof decks provide contemporary interpretations of historical Charlestown vernacular elements.

The community values the neighborhood's traditional character but is open to modern interpretations of traditional features in the new development. As part of the March 2016 public open house with both residents and the broader community, the Project team received feedback on what aspects of the neighborhood's architectural vernacular were most important to them and how the Project team might consider reflecting or reimagining them.



During workshops, community members provided feedback on important aspects of the neighborhood's architectural vernacular.

2.3 Planning Principles and Design Goals

The Project has been shaped by the following planning principles and design goals:

- **Knit the neighborhood back together.** Create a seam along Bunker Hill Street with active retail and connect the development to the surrounding urban fabric by restoring the historic street grid across the Site.
- **Tell Charlestown's story.** Layer the Site's rich history into landscape architecture and cultural programming.
- **Reflect Charlestown's character with architecture.** Complement fine-grained urban fabric with historic sensitivity and employ multiple architects to design each block's façade.
- **Create a safe, walkable, inviting neighborhood.** Activate sidewalks, prioritize pedestrians, and foster social interaction among diverse residents and neighbors.

- **Design affordable and market-rate units to be the same.** Hold all units to the same standard of design and finish regardless of affordable or market rate designation, effectively rendering all units interchangeable between affordable and market rate.
- **Put front doors on the street.** Create neighborhood streets with front doors, stoops and porches that open to the street wherever possible.
- **Respect Charlestown context with building heights.** Focus taller buildings toward taller features like the Tobin Bridge.
- **Build two new publicly accessible open spaces, each with unique character and role.** Introduce a square for reflecting on history and a common for gathering with neighbors.
- **Replace surface parking with green space.** Hide cars in safe underground garages and cap with green courtyards.

One of the Project's planning principles is to knit the neighborhood back together.

2.4 Design Concept and Development

To illustrate the design concept, the following sections detail the Project's height, massing, character and exterior materials.

2.4.1 Height and Massing

Thirteen new residential blocks will be created by extending the existing street grid across Bunker Hill Street to Medford Street. The Project's design distributes height to achieve the densities necessary to drive the Project's financial fundamentals while respecting the Charlestown context across Bunker Hill Street. As illustrated in the figures and diagrams

throughout this submission, the current design proposes that all of the buildings between Polk Street and Tufts Street will be six stories and up to 70 feet tall to reflect the generally three-to six-story context across Bunker Hill Street (Figure 2.1). The exception is Building C, which is anticipated to be a 10-story building, providing a visible focus at the center of the new neighborhood along Bunker Hill Street and a reference to the axis created by the Bunker Hill Monument. In response to recent community comments on the consistent height of buildings along Bunker Hill Street, the design team is exploring additional options that vary the height of the buildings along Bunker Hill Street and redistributes the density to adjacent parcels within the Project area to maintain the overall program.

Taller buildings are concentrated near the Tobin Bridge where the context is less sensitive and the bridge itself establishes a tall precedent. Between Corey and Decatur Streets and adjacent to the Tobin Bridge, the height of the buildings increases, ranging from 21 stories at Building F to 20 stories for Building 0. Building M, located at the northern end of the public park bounded by Tufts and Corey Street will be a 2-story building, containing community meeting space and a wellness center.

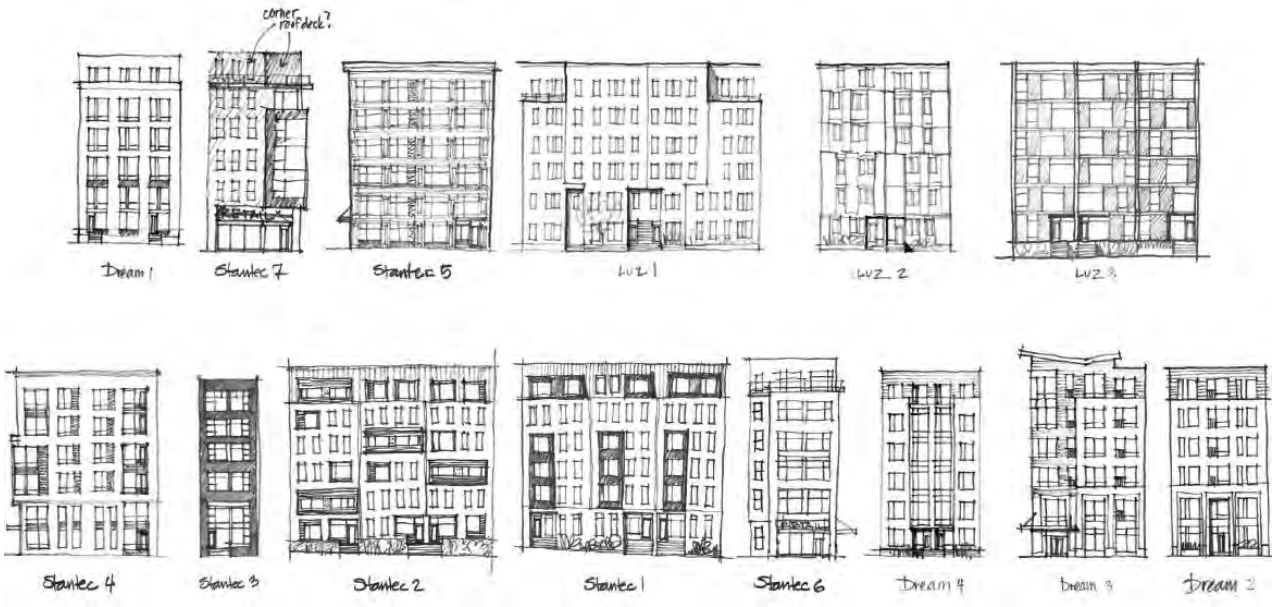
2.4.2 Character and Exterior Materials

Informed by the Project team's analysis of existing physical and historical contexts and the Proponent's strong desire to create a project that complements rather than contrasts with the rest of Charlestown, the Project team is developing a design guidelines package engineered to avoid the appearance of singular buildings along each block edge. They are structured to reflect Charlestown's fine-grained pattern of diversely designed and tightly knit historic buildings by creating a pattern of architectural diversity along the face of each block. This is accomplished by utilizing several different architects' designs across each façade to uniquely interpret and translate the Charlestown vernacular through a contemporary lens.

To structure and coordinate this multi-architect design process, the Project team has divided each building's elevation into façade segments dimensioned to reflect the typical width and pattern found elsewhere in Charlestown and then spread design responsibility for these segments across the architecture team.

Each architect followed a fundamental set of compositional guidelines but otherwise applied creative interpretations of the traditional Charlestown architecture to create a variety of façade segments. The Project team then assembled these façade segments along each block face to create locally resonant but contemporarily distinctive and diverse elevations.

The Project team is also establishing door and window formats as well as exterior material palettes that are informed by Charlestown's vernacular architecture, but also include opportunities for contemporary expression. Draft Project renderings and elevations are included in Figures 2.2a-f and 2.3a-i.



Each architect created a variety of façade segments.

2.5 Public Realm

The Project's public realm is defined by two key components, its signature open spaces and its streetscape design, described below.

2.5.1 Open Space

The approach to open space for the One Charlestown Project is a layered one, encompassing streets (described in Section 2.5.2, *Streetscapes*), private residential courtyards, and publicly accessible open spaces (Figure 2.4). The Project will provide a total of approximately 7.5 acres (325,500 sf) of open space.

Courtyards

Over four acres of residential courtyards will be designed as the outdoor amenity spaces for the residences and will be constructed above subsurface parking structures. The "U" shaped courtyards on Concord Street, Lexington Street, and the unnamed street to the east are designed to be visually open to the street, but for the use of the One Charlestown residents only, and will include a variety of outdoor programs. With the exception of Building "H" at the southwest corner of Concord and Medford streets the courtyards are within a few feet, higher or lower, than the adjacent streets. The relationship of the courtyards to the street dynamically changes along its length due to the sloping grade of the north-south streets and the consistent height of the courtyards. In the case of Building "H" the raised courtyard edge provides an opportunity for a decorative art or landscape opportunity within this area.

Publicly Accessible Open Spaces

There will be two publicly accessible open spaces in the development. One, approximately 29,500 sf (0.68 acres), will be located along Bunker Hill Street between Monument and Lexington streets. The other, approximately 1.2 acres (52,000 sf), will be bordered by Medford, Tufts, and Corey streets. While each open space area will be designed to provide for multiple uses, the character and programs of each will differ.

The smaller of the two open spaces located along Monument Street, is directly below the National Park Service's Bunker Hill Monument and is envisioned as a connection point from the Bunker Hill Monument to the One Charlestown development. This publicly accessible open space will incorporate a reference to the historic Battle of Bunker Hill and be designed for passive recreation, with the potential of café seating. The open space will be designed with high quality materials and may include a water feature and/ or public art. To further the connection to the monument, the section of Monument Street adjacent to the open space may have special paving so that on special occasions, the street can be closed and the activity of the open space can expand across the street.

The publicly accessible open space between Tufts and Corey streets is located primarily on the northern side of Walford Way, with a smaller portion of the open space parcel on the southern side. This open space will be the larger of the two and is envisioned as an opportunity for active play in addition to passive recreation. The specific programs for the open space will be developed through discussion with current Charlestown residents as well as with the Boston Parks Department. With the open space site bordering two sides of Walford Way, there may be an opportunity to raise the street surface elevation between Corey and Tufts streets, such that programming can be more directly spatially connected.

2.5.2 Streetscapes

In addition to Open Space improvements throughout the Charlestown Redevelopment, the public realm includes streetscapes designed to be consistent with Boston's Complete Streets Guidelines for streets of similar scale. They will provide comfortable pedestrian passage; offer privacy for the adjacent residential units; establish neighborhood identity and coherence; invite individual, community, and retail expression; create connection with the historic context; and introduce sustainable green infrastructure.

The proposed streetscapes are categorized by sidewalk typologies developed in response to street types, sidewalk widths, adjacent building uses, entrance types, and any significant contextual conditions (Figures 2.5a-g). A given typology remains consistent along multi-block stretches—intended to create a sense of continuity, ease of movement, optimal accessibility, and visibility along extended stretches.

In accordance with the Boston Complete Streets Guidelines, each sidewalk type is clearly organized into three zones: Green/Furnishings Zone, Pedestrian Zone, and Frontage Zone (from curb to building façade, respectively).

Source: Boston Complete Streets Design Guidelines, 2013.

- The **Green/Furnishing Zone** inside the curb is the location for all public street furnishings including lights, signs, street trees, bike racks, and street trees. Approximately 0.28 acres (12,000 sf) of open space is provided in this zone.
- The **Pedestrian Zone** is defined for unobstructed pedestrian traffic.
- The **Frontage Zone** is the location for the placement of relatively private gardens, terraces, furnishings, lighting, porches or awnings, stoops, and other distinctively Charlestown architectural elements defining building entrance and ownership. Approximately 1.14 acres (49,600 sf) of open space is provided in this zone.

Paving and planting designs, materials, and species are all selected to reference or otherwise respond to, but not mimic, the surrounding historic context, and to be responsive to microclimatic conditions. Green infrastructure will be composed of street trees, stormwater management plantings, and gardens. Plantings will include native and non-invasive naturalizing or adapted species for New England. Benefits to the public realm environment include climate mitigation (shade and shelter), wildlife habitat, and seasonal expression.

Building façades of the mixed use development include street-facing private residential units, retail, and lobby entrances. Along primarily residential blocks, shared (duplex) private stoops and protected garden terraces will define ownership. At residential combined stoops, continuous covered "porches" may be furnished and will give access to private entries with a degree of separation from the public walkway. Where direct entry is precluded due to grade-to-floor elevation differential, gardens will provide green continuity and reduce the expanse of impervious pavement adjacent to street-facing residences. At retail and lobby entries, pedestrian flow is prioritized, while any available frontage zone may be adopted for outdoor café or lobby furnishings, entry gardens, or other identity elements.

The spaces at the interface of the sidewalk and the courtyards along Concord Street, Lexington Street, and the new parallel street to the east provide interesting moments in the street experience and offer the potential for special landscape treatments such as sitting areas, special paving or planting, feature lighting, or public art. At loading and garage access points, clear vehicular access will be provided, eliminating vertical elements that may conflict with visibility. Consideration may be given to measures that will protect pedestrian movement at these points. At street intersections, bump-outs will help provide traffic calming and shorter pedestrian crossing.

2.5.3 Pedestrian Circulation

The proposed open space network and pedestrian public realm is intended to strengthen the connections to the existing street network of Charlestown and create a series of public amenities and destinations. Special attention has been placed on creating neighborhood linkages to the National Park Service trail on Monument Street, as well as to Vine Street and Medford Street, which pass under the Tobin Bridge and connect to the Navy Yard. The proposed publicly accessible open spaces will have access points along two or three public streets, and will allow cross-block movement through the spaces themselves.

2.6 Accessibility

The streetscape and sidewalk design will meet the requirements of the Massachusetts Architectural Access Board (MAAB) as well as those of the Americans with Disabilities Act (ADA). In keeping with the recommendations of the Boston Complete Streets design guidelines, a minimum five-foot clear pedestrian zone width will be consistent though the Charlestown Streets. In areas where the frontage zone for building entrances transition is not desired or required, the pedestrian zone will be increased to as much as eight feet for retail and lobby conditions. Straight curb ramps are proposed at all pedestrian crossings to allow for a smooth transition for people with disabilities, shopping carts, and families with strollers. The running slope of the proposed sidewalks is does not exceed five percent and the slope of the majority of the streets is less than three percent.

Every residential unit is accessible from interior corridors off building lobbies, and many street-facing ground level units will enjoy exterior, private entry doors. These entries will vary in relationship to the grade and will be reached through private shared (duplex) stoops, or combined covered walkways or porches. These porches will be level with first floor elevations and fully accessible to grade at one end. They will become elevated in relation to change in grade along the length of a block and offer additional steps down to provide more direct access to each unit. Topographic constraints and limited Frontage Zone depth will determine which units may accommodate private exterior doors. Additional information can be found in the Accessibility Checklist in Appendix B, *BRA Checklists*.

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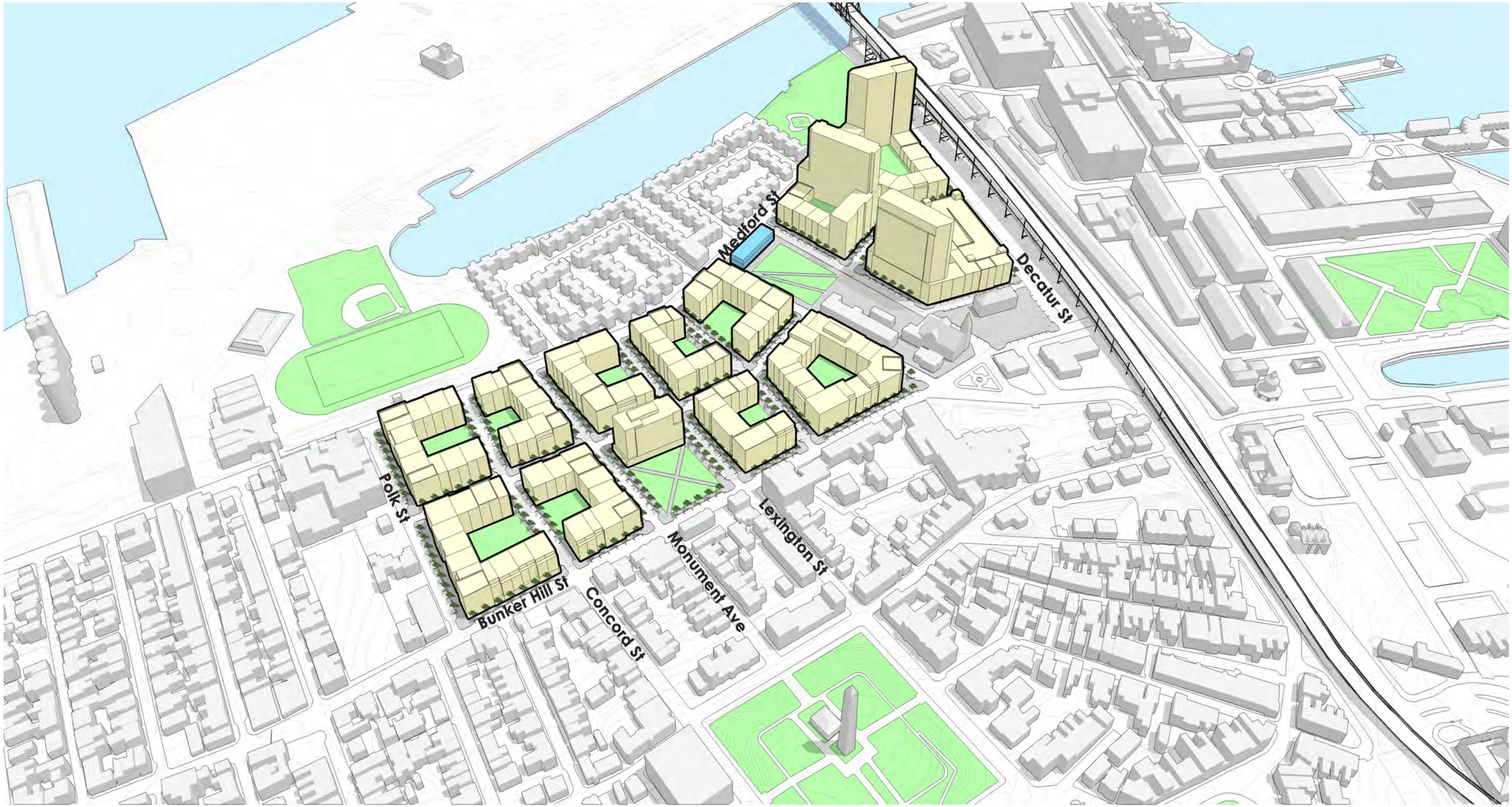

Source: Stantec

Figure 2.1
Project Massing

One Charlestown
Charlestown, MA

Source: Stantec

Figure 2.2a
Project Rendering

One Charlestown
Charlestown, MA

Source: Stantec

Figure 2.2b
Project Rendering

One Charlestown
Charlestown, MA

Source: Stantec

Figure 2.2c
Project Rendering

One Charlestown
Charlestown, MA

Source: Stantec

Figure 2.2d
Project Rendering

One Charlestown
Charlestown, MA

Source: Stantec

Figure 2.2e
Project Rendering

One Charlestown
Charlestown, MA

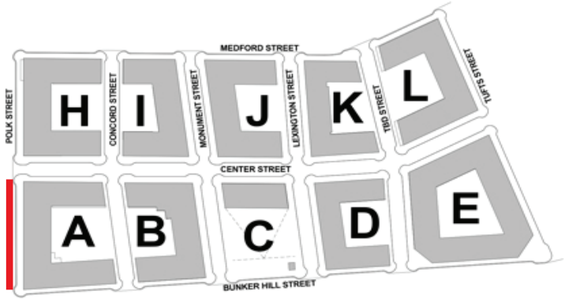

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Figure 2.3a
Project Elevation

One Charlestown
Charlestown, MA

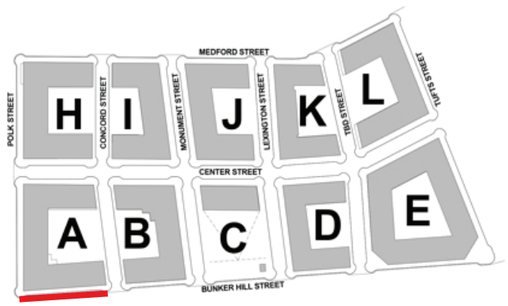

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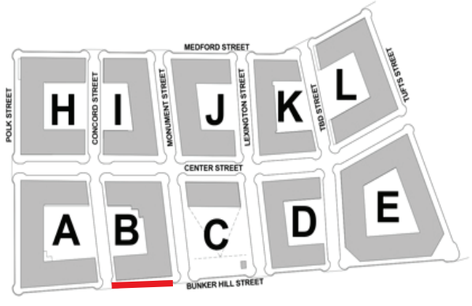
Figure 2.3b
Project Elevation

One Charlestown
Charlestown, MA



Source: Stantec

Figure 2.3c
Project Elevation

One Charlestown
Charlestown, MA

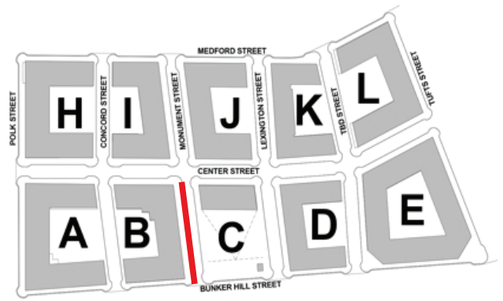


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Figure 2.3d
Project Elevation

One Charlestown
Charlestown, MA

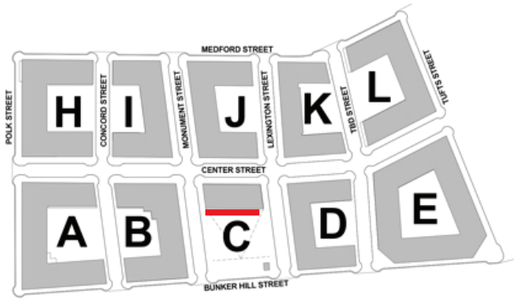

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Figure 2.3e
Project Elevation

One Charlestown
Charlestown, MA

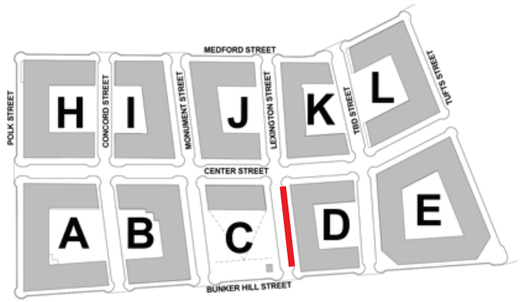

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Figure 2.3f
Project Elevation

One Charlestown
Charlestown, MA

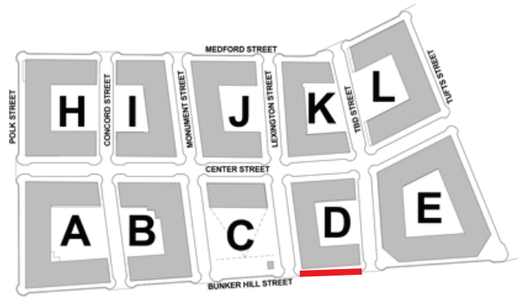

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Figure 2.3g
Project Elevation

One Charlestown
Charlestown, MA

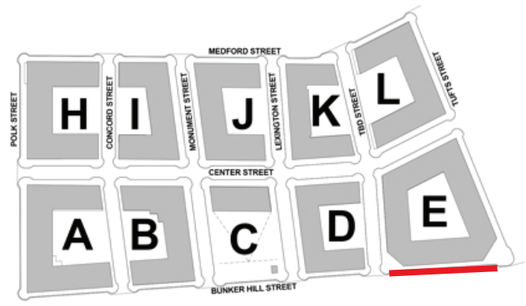

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Figure 2.3h
Project Elevation

One Charlestown
Charlestown, MA

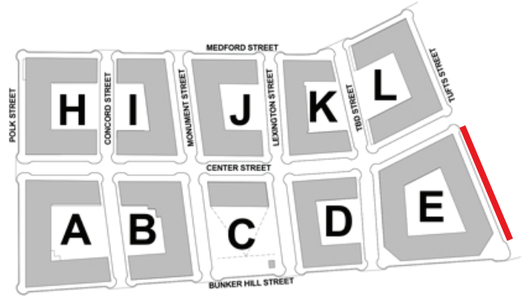

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Figure 2.3i
Project Elevation

One Charlestown
Charlestown, MA

Source: Stantec

Figure 2.4
Open Space Diagram

One Charlestown
Charlestown, MA

Sidewalk Typology Names	Sidewalk Width	Primary Building Façade Type	Sidewalk Zones			Street Names
			Green & Furnishings Zone	Pedestrian Zone	Frontage Zone	
S-CTR	18'	Porches	4'	5'	9'	Center Street
S-NOSO	17'	Varies	5'	5'	7'	N/S Streets: Polk, Lexington, Tufts, Corey, T Street, Decatur
S-MONU	17'/19'	Stoops	5'	5'	7' E, 9' W	Monument Street
S-COURT	9'	Courtyards	4'	5'	0'	Streets adjacent to courtards: Concord, TBD Street
S-BH	12'	Retail	4'	8'	0'	Bunker Hill Street
S-MED	15'	Varies	8'	7'	0'	Medford Street

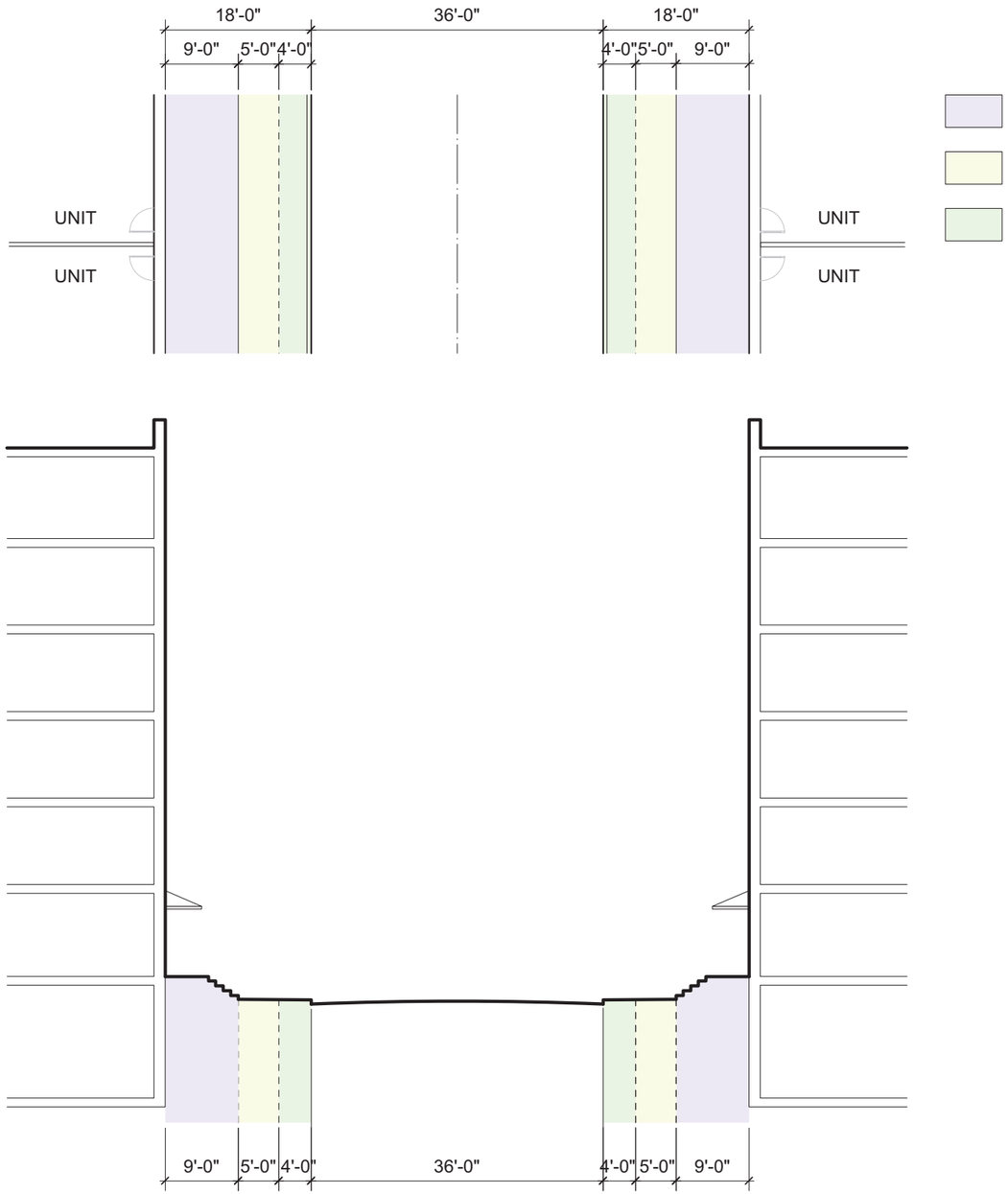
Source: ground

Stantec vhb

Figure 2.5a
Streetscape Typologies

One Charlestown
Charlestown, MA

CORCORAN JENNISON Companies DMLA ground SunCal



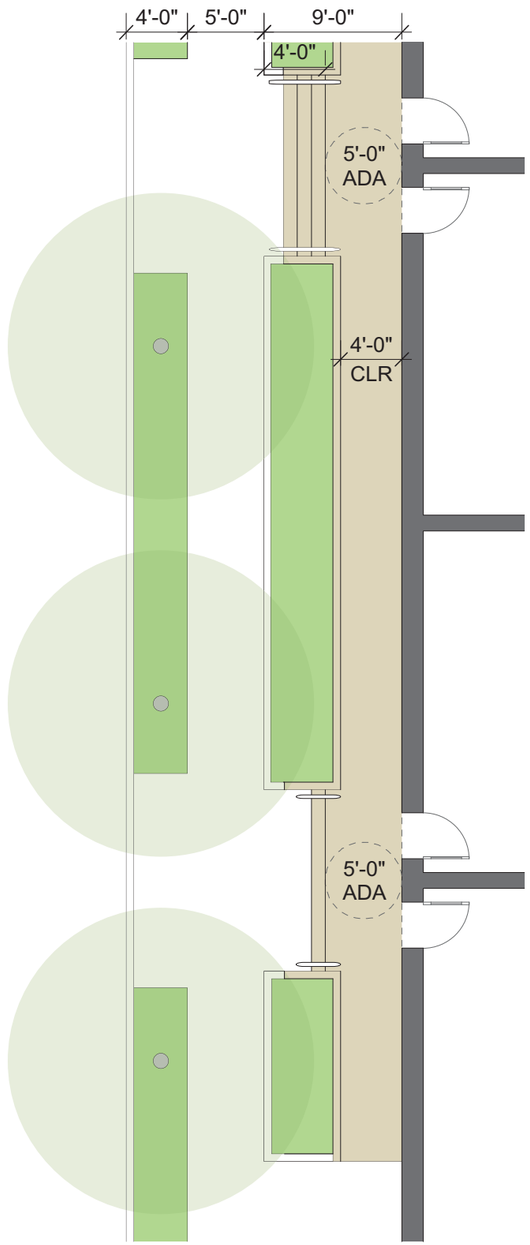


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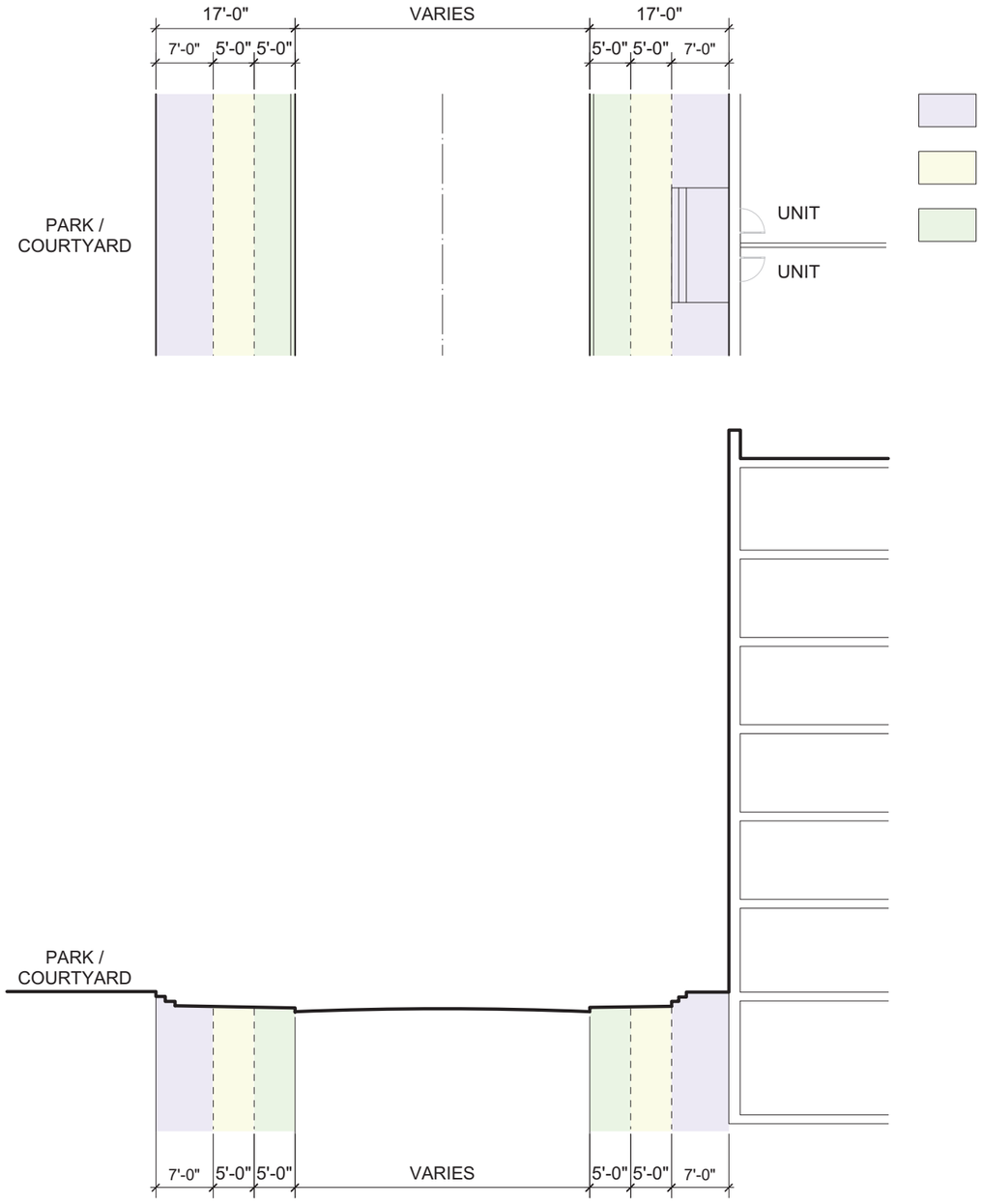
Figure 2.5b
Streetscape Typologies

One Charlestown
Charlestown, MA



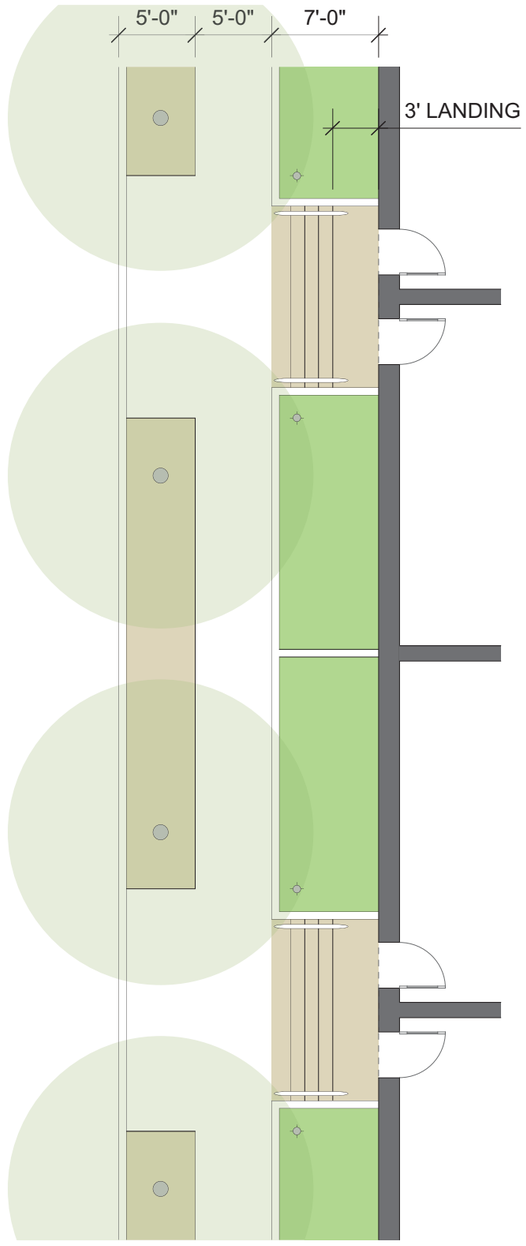


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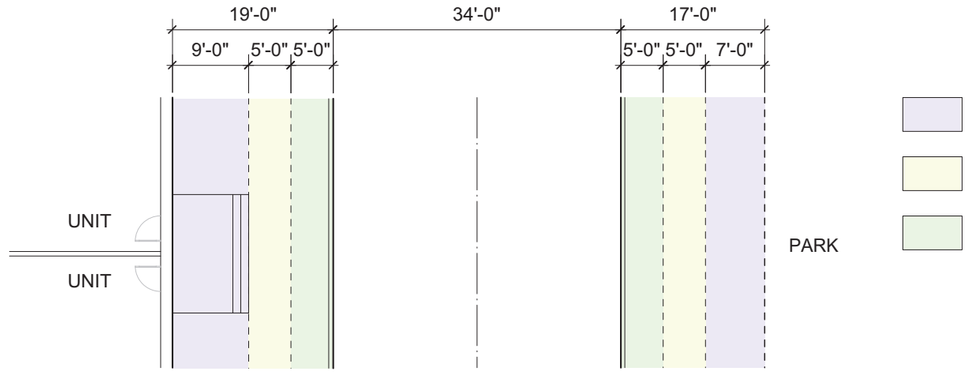
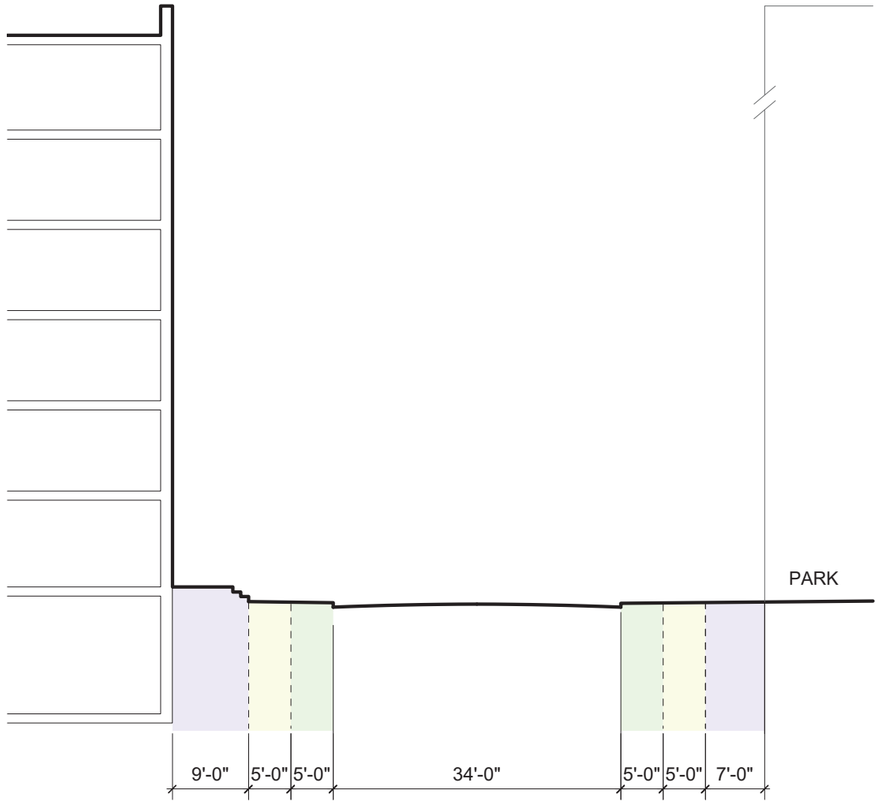
Figure 2.5c
Streetscape Typologies

One Charlestown
Charlestown, MA





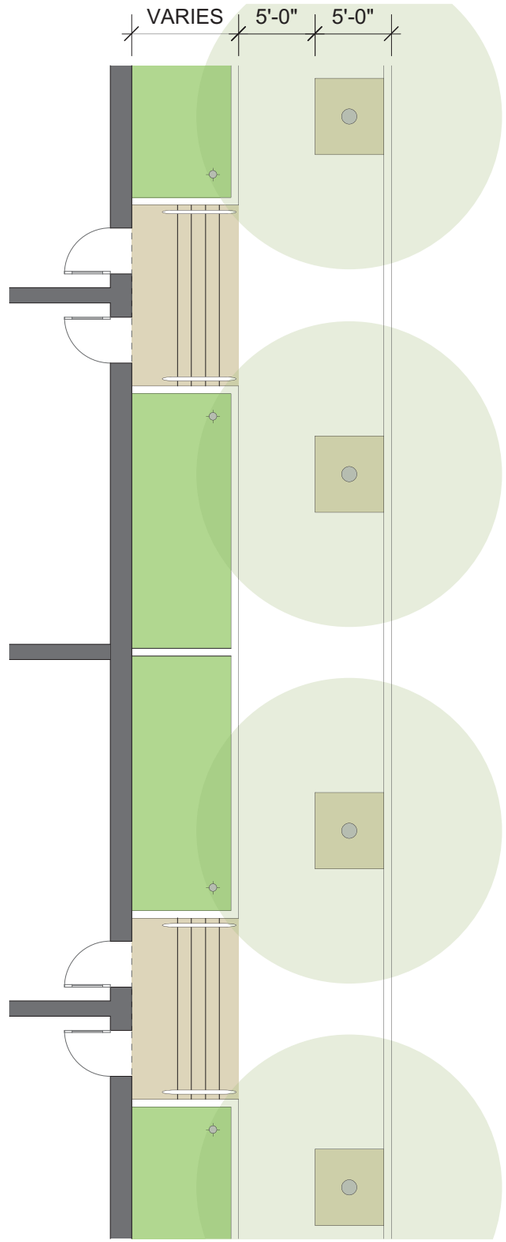


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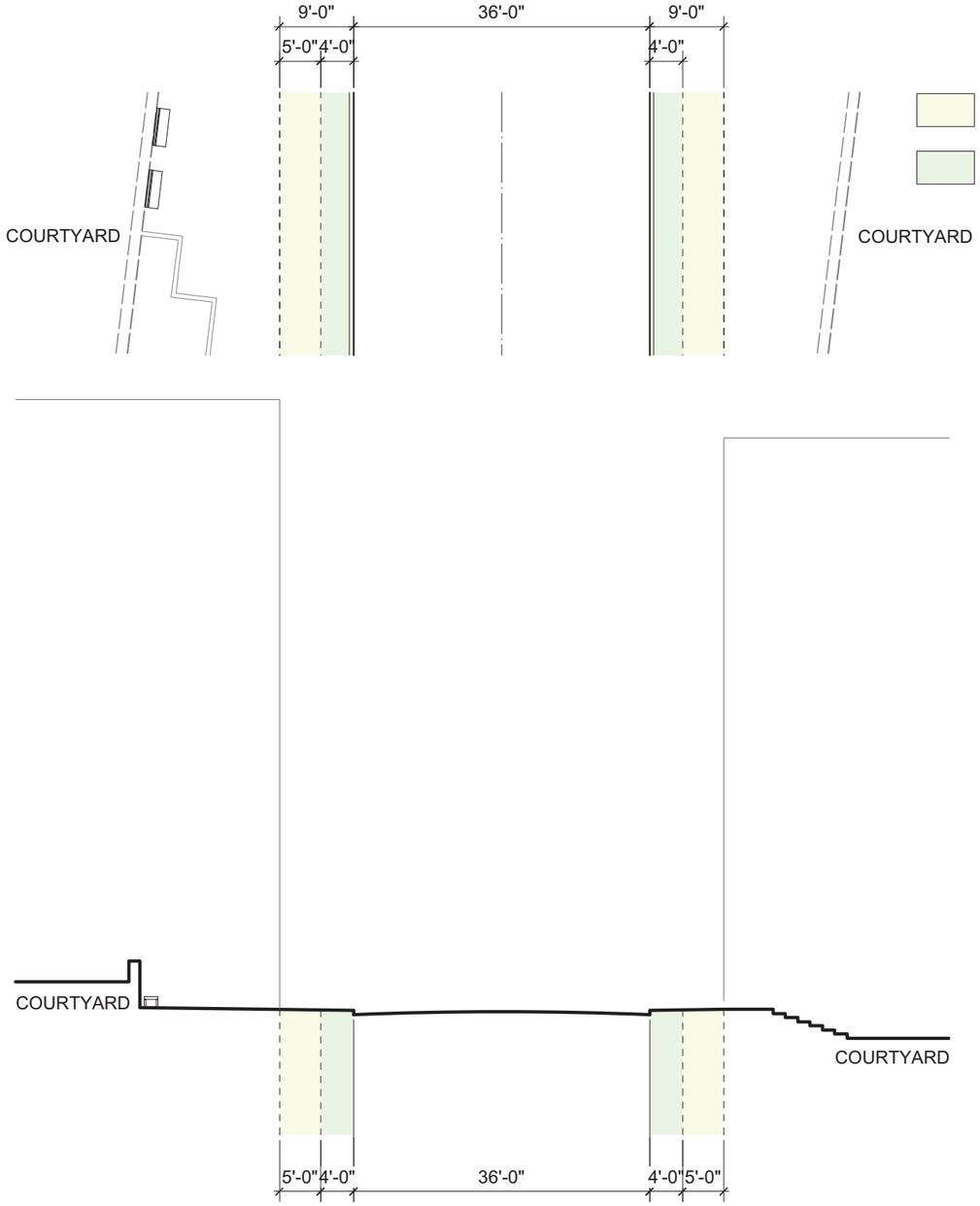
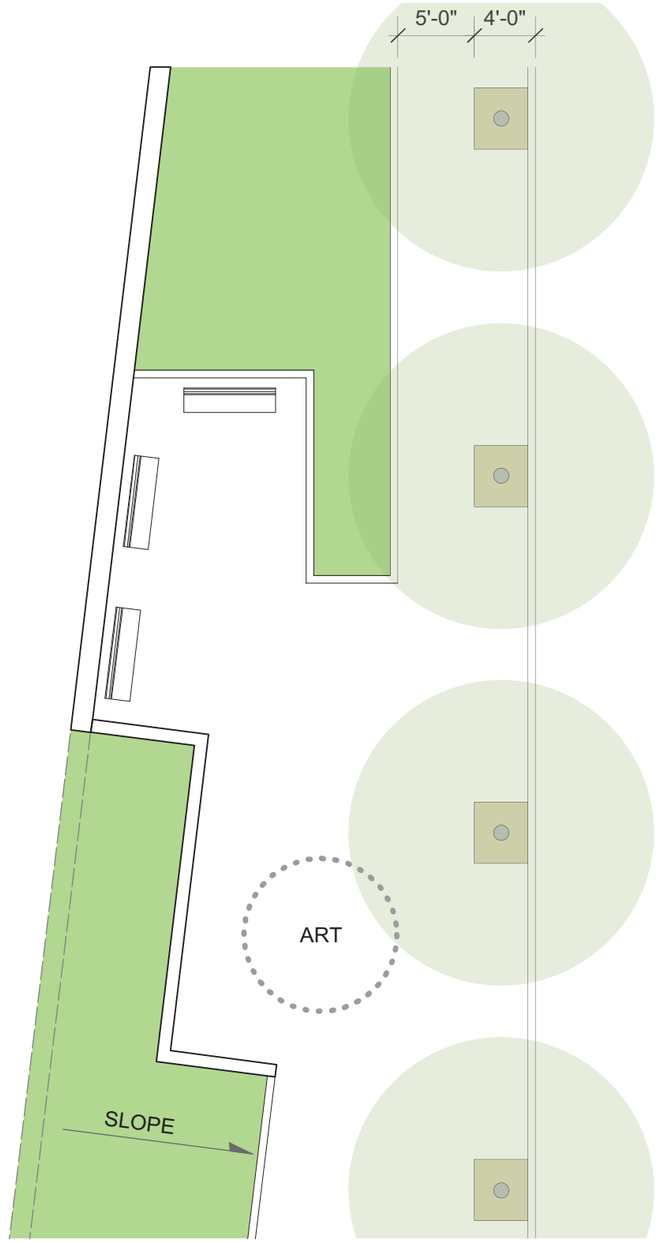
Figure 2.5d
Streetscape Typologies

One Charlestown
Charlestown, MA

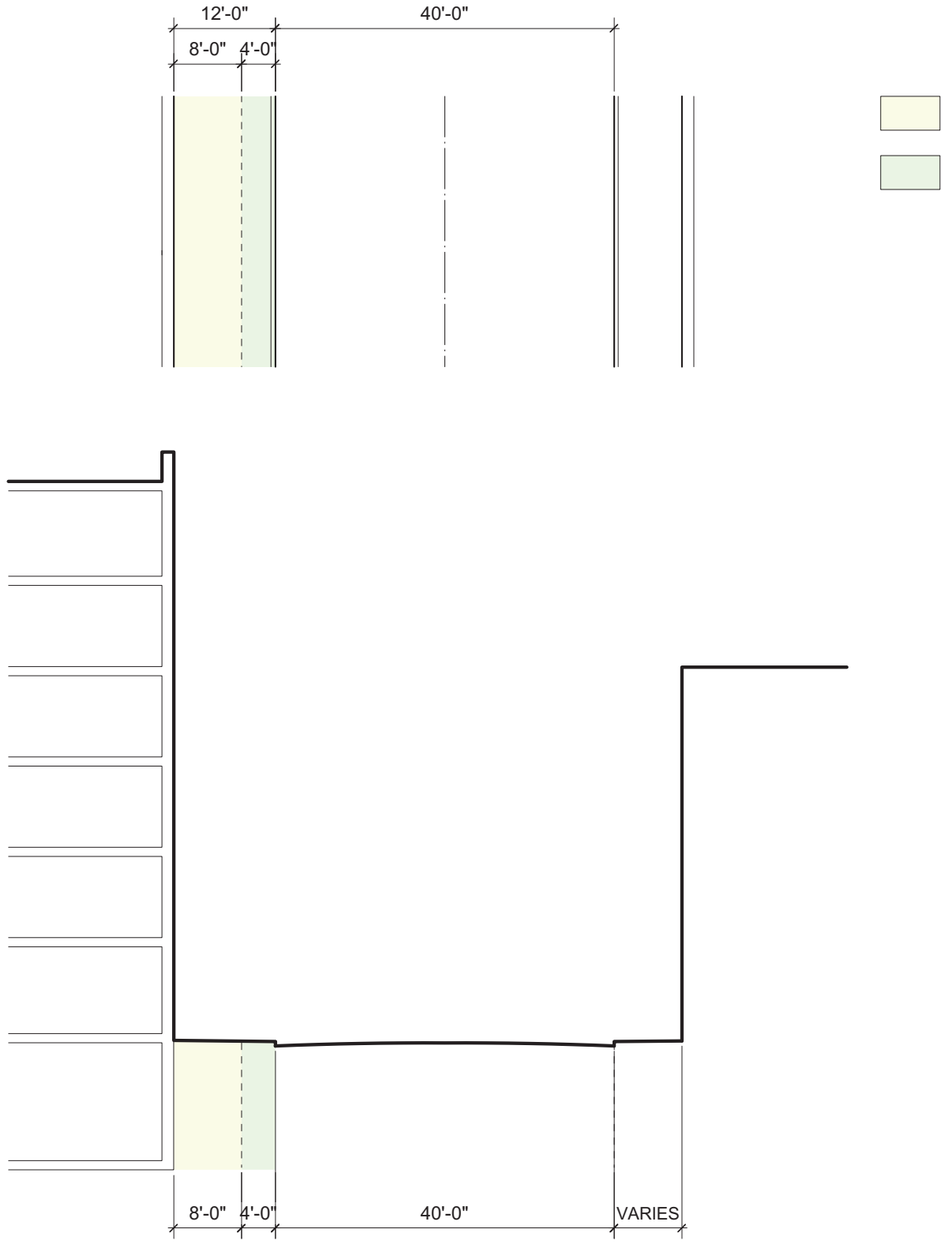


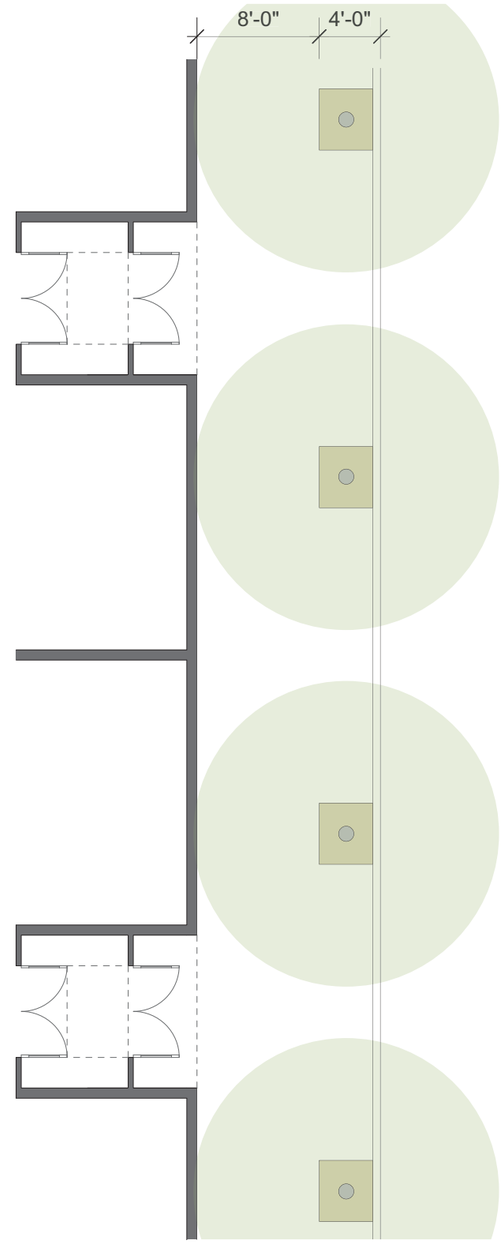


Source: ground

Figure 2.5e
Streetscape Typologies

One Charlestown
Charlestown, MA

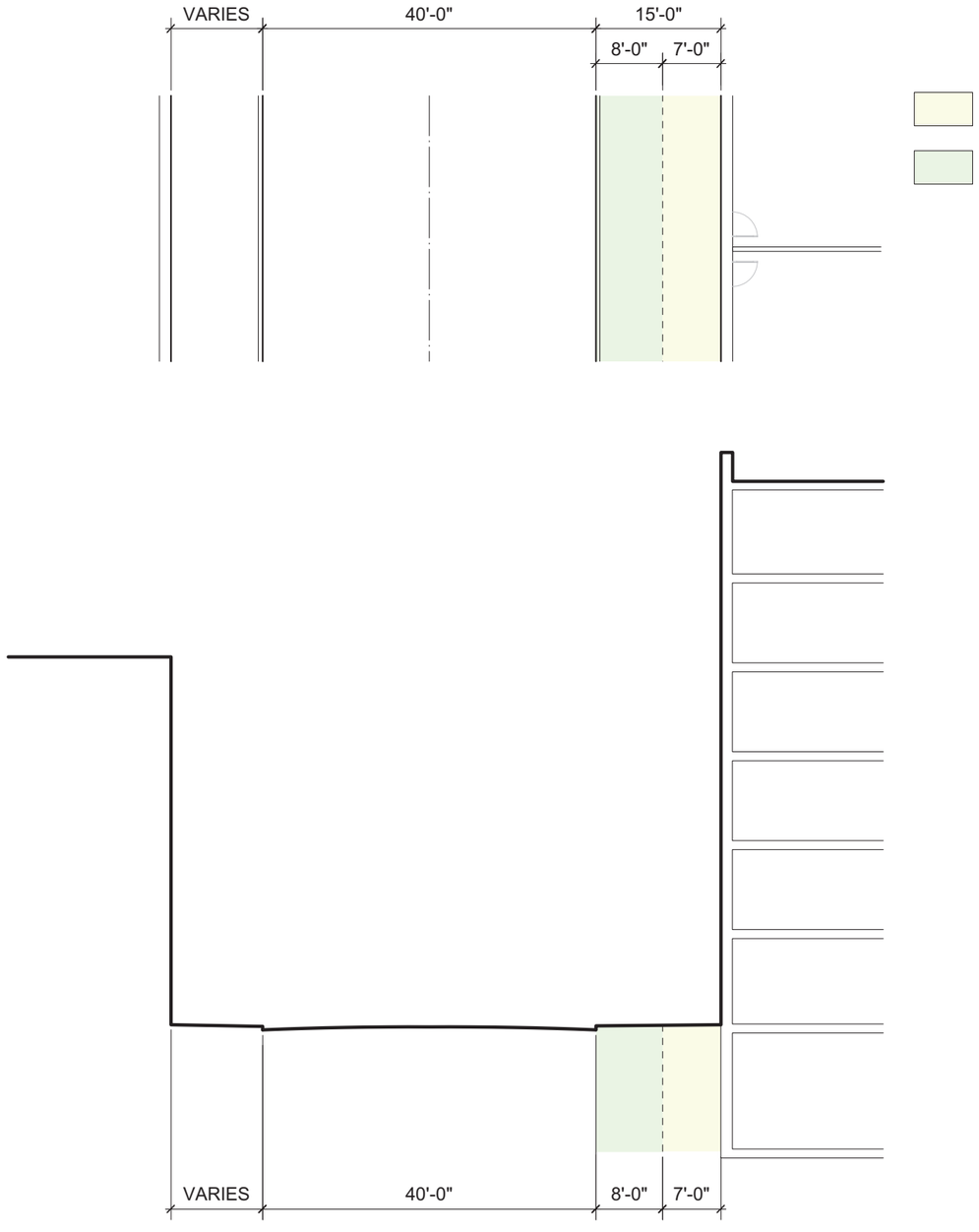


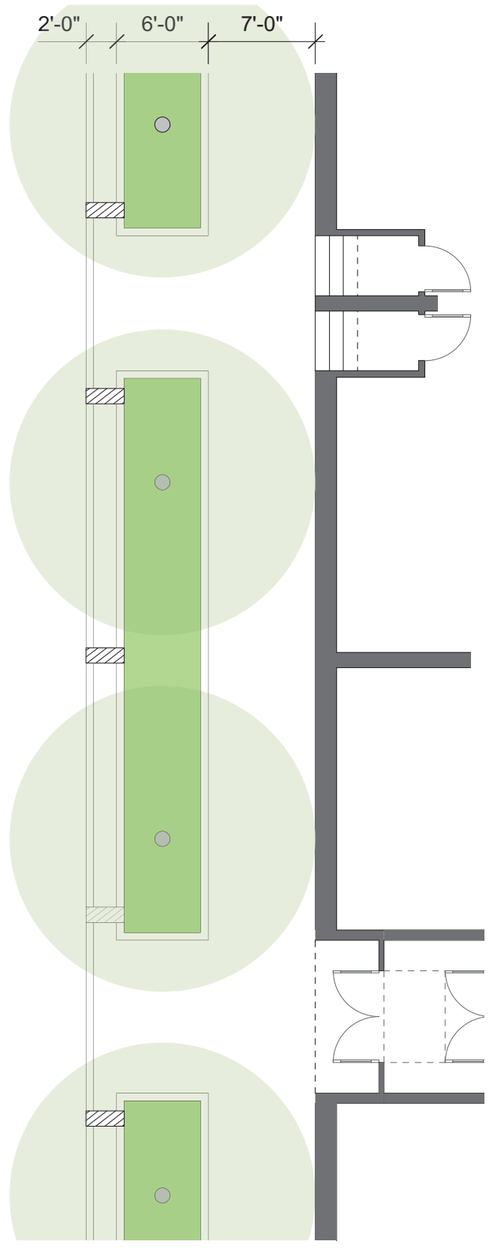


Source: ground

Figure 2.5f
Streetscape Typologies

One Charlestown
Charlestown, MA





Source: ground

Stantec vhb

Figure 2.5g
Streetscape Typologies

One Charlestown
Charlestown, MA

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Sustainability and Green Building

This chapter provides preliminary information regarding the Project's sustainability, green building, and climate resiliency strategies. It identifies the proposed U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) rating system and outcome, describes building-specific strategies for each LEED category and how key credits will be achieved. It also discusses a framework for considering present and future climate conditions in the Project's design.

3.1 Key Findings and Benefits

The key findings and benefits of the Project related to sustainability, green building, and climate change adaptation are listed below.

- The Project as a whole will be designed to be LEED-ND 2009 Gold certifiable;
- Three individual buildings will be designed to be LEED-NC 2009 Gold certifiable;
- Three representative building types were used for preliminary energy modeling;
- Proposed energy and water efficiency savings will be above the baseline requirements of the Massachusetts Stretch Energy Code and LEED requirements;
- Key energy savings features will include more efficient building materials (walls and windows), high-efficiency heating, ventilation, and air conditioning (HVAC) systems, high-efficiency condensing boilers, high-efficiency domestic hot water heaters, direct expansion plants that exceed base energy code efficiency, water-source heat pumps, and energy recovery from exhaust; and
- The Project will include building resilience and mitigation strategies to help protect both building occupants and property under future climate conditions and weather events.

3.2 Sustainability Approach

The built environment has a profound impact on our natural environment, economy, health, and productivity. Recognizing that building sustainably can maximize a Project's economic and

environmental performance, the One Charlestown Project will implement a number of sustainability strategies as described below. A sustainability goal for the Project is to exceed the requirements of Article 80 and Article 37 by achieving, as requested by the BHA, LEED Gold certifiable status. The Project will also implement a number of strategies outlined in Enterprise's *2015 Green Communities Criteria*, also as requested by the BHA.

The Project team's approach has been to develop a master plan for the entire Site while also designing each individual building (see Figure 1.5, *Proposed Site Plan*). The Project team elected to pursue LEED for Neighborhood Development 2009 (LEED-ND) certifiable status for the Project Site as a whole. LEED-ND was created to inspire and help create better, more sustainable, well-connected neighborhoods by looking beyond the scale of buildings to consider entire communities. The LEED-ND rating system includes a prerequisite (mandatory requirement) to construct a single building to LEED for New Construction 2009 (LEED-NC) standards. The Project consists of three representative building types following the building functions: a rental apartment building (Building A), condominium (Building C), and a senior housing rental apartment building (Building D). Since each building type uses different building HVAC systems, the Project includes a certifiability analysis of all three building types under the LEED-NC 2009 rating system. Detailed descriptions of each representative building type are included in Section 3.3.1, *Preliminary Energy Model*, below.

3.2.1 LEED-ND 2009: Site

The LEED-ND rating system is designed primarily for the planning and development of new green neighborhoods, whether infill sites or new developments proximate to diverse uses or adjacent to connected and previously developed land. It places emphasis on the site selection, design, and construction elements that bring buildings and infrastructure together into a neighborhood and relate the neighborhood to its landscape as well as its local and regional context. This section describes how the Project addresses the four categories into which LEED-ND credits are organized. Figure 3.1a depicts a draft of the LEED-ND checklist.

Smart Location and Linkage

The Project is located on the site of an existing housing development, with existing water and wastewater infrastructure, thereby meeting the LEED-prerequisite for selecting a "Smart Location," as well as that of an infill site. Based on an analysis of environmentally sensitive areas, the Site is not located in close proximity to wetlands, is not sensitive or agricultural land, and is not located within a floodplain. The Project is located in close proximity to multiple employment centers neighboring the Site.

The Site is served by public transportation along Bunker Hill Street (MBTA #93 Bus). However, additional service along Medford Street would be required in order to meet the LEED requirement that all Site residents have access to transit within a walking distance of 0.25 miles. Shelters for newly-created bus stops will be provided as part of the Project.

The Project will provide covered and secure bicycle parking. The Proponent will host bicycle and car sharing programs on the Site. Parking will be limited to meet the minimum zoning requirement for off-street parking. Off-street parking will be located below the buildings to reduce the amount of surface parking, thereby reducing the heat island effect.

Neighborhood Pattern and Design

The Project strongly emphasizes creating a compact and sustainable development. The street grid will be re-established to increase connectivity. Streets will be designed to be walkable to increase the feeling of community, limit dependence on single-occupancy vehicles, and increase the health of the residents. Sidewalks will be provided along all blocks – 12 feet wide at retail locations and five feet wide on residential streets. Streets will be lined with trees where feasible to provide shade and a connection to nature. On-street parking will help calm traffic and provide increased convenience for residents, visitors, and business patrons.

All buildings will have street entrances, and ground floor uses may include retail and/or civic uses. Residents and visitors will have easy access to local neighborhood retail outlets and centers, and civic, educational and public spaces. The Site is also close to open space and recreational areas, including playgrounds, playing fields, boating facilities, walking paths, and bicycle facilities.

Community diversity will be encouraged by providing varying housing types available for sale and rent to households with mixed income levels.

The Project was designed in concert with the local community. As described in Chapter 1, *General Information and Project Description,* the Proponent organized information sessions and workshops, welcoming input from the public to prepare the best feasible design for the newly redeveloped community.

Green Infrastructure and Buildings

The Project will include three types of buildings, with each prototype designed to be LEED-NC 2009 Gold certifiable. The new buildings will be designed to be at least 20% more efficient than the LEED 2009 energy baseline (ASHRAE 90.1-2007), and 35% more efficient than the Energy Policy Act (EPAct)/LEED water baseline (see Table 3.1 for a breakdown of efficiency by building type).

The landscaping will be designed with native and adapted vegetation to ensure site-wide water use savings. The buildings will be designed to reduce the heat island effect and increase the comfort of the residents and pedestrians by locating all off-street parking below the buildings; providing vegetated patio areas; and installing roofing membranes with a Solar Reflective Index (SRI)[1] of at least 78 on all buildings. The Project team intends to select

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[1] The Solar Reflectance Index (SRI) is a measure of the roof's ability to reject solar heat, as shown by a small temperature rise. It is defined so that a standard black roof (reflectance 0.05, emittance 0.90) is 0 and a standard white roof (reflectance 0.80, emittance 0.90) is 100.

regional materials with high recycled content, where feasible, for both buildings and infrastructure. At least 75% of the construction and demolition waste will be recycled. Exterior lighting will be designed to conserve energy and prevent light pollution, while also providing on-site safety.

Innovation in Design and Regional Priority

The Project may implement a number of Innovation in Design strategies, including an Occupant Education Campaign, an Organic Landscaping Management Plan, and/or a Building Exterior and Hardscape Management Plan. It may also target points for Exemplary Performance and Regional Priority credits.

3.2.2 LEED-NC 2009: Buildings

The LEED 2009 Green Building Rating System for New Construction and Major Renovations (LEED-NC) is a set of performance standards for certifying the design and construction of commercial or institutional buildings and high-rise residential buildings of all sizes. The intent is to promote healthful, durable, affordable, and environmentally sound practices in building design and construction. This section describes how the Project addresses the seven categories into which LEED-NC credits are organized. Figures 3.1b through 3.1d depict drafts of the LEED-NC checklists.

Sustainable Sites

The Project is located on the site of an existing housing development. Three building types will be designed to reach LEED-NC 2009 certifiable status. Construction will meet state and local environmental regulations. An Erosion and Sedimentation Control Plan will be implemented, monitored, and documented.

The Site is located in an urban area surrounded by residential buildings, and near basic services, including schools, police and fire stations, grocery stores, a library, medical offices, shopping areas, and cultural facilities. All buildings on the Site are within a walking distance of 0.25 miles from existing bus stops along Bunker Hill Street.

Another important goal of the Project is to minimize parking and maximize alternative and more sustainable transit opportunities for residents and visitors. Along with easy access to public transportation, the Project may include bicycle and car sharing facilities. The Project will provide resident parking per the zoning minimum (and LEED guidelines), all of which will be in underground garages. Preferred parking spaces will be reserved for low-emitting and fuel-efficient vehicles, as well as carpooling.

The Project will meet the Massachusetts Stormwater Standards, as well as stormwater standards required by the City of Boston. As detailed in Chapter 7, *Infrastructure*, a variety of stormwater recharge and infiltration approaches are being considered.

The sidewalks and plazas will be light-colored to reduce the heat island effect. Street trees will provide shade and a pleasant experience for pedestrians and cyclists. The buildings will be designed to reduce the heat island effect by providing landscaped areas and installing cool roofs on all buildings. Exterior lighting will be designed to conserve energy and prevent light pollution, while also providing on-site safety.

Water Efficiency

The development will feature a number of open and vegetated areas. Vegetation will be drought resistant and native. While some areas will feature lawns, potable water demand will be reduced by using sustainable practices such as proper species selection, drip irrigation and/or moisture sensors.

The buildings will be designed with the goal of being at least 35% more efficient than the EPAct/LEED water baseline (see Table 3.1). Water efficient toilets will be specified, and plumbing fixtures, including kitchen and bathroom faucets and showers, will be specified as low flow. Any installed appliances will also be water-saving.

Energy Efficiency

The Project will implement commissioning activities, including verification of systems submittals, equipment testing, and reporting back to the owner. The design will be highly energy efficient, featuring superior building envelopes with high performance glazing, high wall and roof R-values, reduced infiltration, efficient building heating and cooling systems, energy saving domestic hot water solutions and reduced lighting power density. Energy Star rated and/or energy efficient appliances are being considered. The Proponent intends to consult with local utility programs on available energy-saving opportunities. The new buildings will designed to be at least 20% more efficient than the LEED 2009 energy baseline (ASHRAE 90.1-2007) by cost and at least 22% by energy use intensity (EUI) (see Table 3.1).

Building heating, ventilation, air conditioning, and refrigeration (HVAC&R) systems will be free from chlorofluorocarbons. The building will share energy and water data with the USGBC upon request.

TABLE 3.1 PROPOSED ENERGY AND WATER EFFICIENCY SAVINGS

Modeled Building	Stretch Energy Code[1]	Proposed Energy Savings[2]	EPAct/LEED Required Water Savings	Proposed Water Savings
Building A – Low Rise Rental Apartments	20%	22.5%	20%	35%
Building C – High Rise Condominiums	20%	31.3%	20%	35%
Building D – Low Rise Senior Apartments	20%	22.7%	20%	35%

[1] The Stretch Energy Code is the International Energy Conservation Code (IECC) 2009 with Massachusetts Amendments (780 CMR 115.AA)
[2] Savings over LEED 2009 energy baseline by EUI

Materials and Resources

Sustainable resource management is one of the top priorities for this Project. At least 75% of demolition and construction waste will be recycled, with the potential for a higher landfill diversion rate due to the extensive expected demolition. The material selection will focus on regional materials with high recycled content, including steel, concrete, fenestration and glazing, and building finishes. As the design progresses, the available solutions will be analyzed to fulfill the USGBC's requirements for recycled content and regional materials (MRc4 and MRc5).

The Project will also include dedicated areas in each building to collect single-stream recycling items (including glass, plastic, metal/cans, paper, and cardboard), consistent with City of Boston requirements. Additional waste management options may be considered, including composting and battery/bulb recycling.

Indoor Environmental Quality

The Project will emphasize the selection of systems and material solutions that will provide superior indoor air quality for building occupants. To promote sustainability and energy efficiency, the Project will be naturally ventilated while also meeting the comfort requirements of ASHRAE 62.1-2007 standards, which specify minimum ventilation rates and other measures intended to provide indoor air quality that is acceptable to human occupants and that minimizes adverse health effects. Regularly occupied spaces will feature operable windows and bathrooms will include exhaust fans. Residential units will feature air conditioning.

The finishes selection will include only zero and low volatile organic compound (VOC) products, including paints, coatings, adhesives, and sealants. Flooring materials, including hardwood, laminate, and carpet, will be non/low-emitting and tested or certified to the appropriate LEED-accepted standards. Finish cabinetry and millwork will not contain added urea formaldehyde.

The Project's construction contractors will be required to implement an Indoor Air Quality Management Plan, including strategies such as protection of absorptive materials from moisture, appropriate storage of materials, good practices for construction scheduling, verification of selected finish materials, prevention of moisture/condensation and mold, elimination of dust from construction activities, and proper handling of any required HVAC equipment/ductwork. Proposed materials and finishes will be presented for verification and acceptance to the sustainability consultant to ensure compliance with LEED-requirements. Upon the completion of construction, air quality testing may be conducted. Smoking will be prohibited during construction, and will be limited to specific areas post occupancy. To minimize and control the entry of pollutants into buildings and subsequent cross-contamination of regularly occupied areas, the buildings will feature walk off mats, local exhaust systems and self-closing doors where required. The buildings will feature operable windows designed for increased ventilation, thermal comfort, daylighting, and views. The design will allow for in-unit controllability of lighting and temperature, allowing building occupants to make adjustments to suit their needs.

Innovation in Design and Regional Priority

The Project may implement a number of Innovation in Design strategies including an Occupant Education Campaign, Integrative Design, elimination of mercury-containing lighting, and green cleaning. Numerous Exemplary Performance and Regional Priority credits are currently being researched and considered.

3.2.3 2015 Enterprise Green Communities

As requested by HUD, the Project has been designed to meet many of the requirements of the 2015 Enterprise Green Communities (EGC) program where they align with the LEED 2009 requirements.

Integrative Design

The Project team worked with the community to perform an early stage design analysis as part of a goal setting exercise. Energy modeling was performed early in the design phase. A water usage analysis was performed, resulting in a performance goal. The Project is expected to be at least 20% more energy efficient than the LEED 2009 energy baseline (ASHRAE 90.1-2007) by cost and at least 22% by EUI, and 35% more water efficient than the LEED 2009 baseline.

The project will be implementing a number of the strategies listed in the EGC Criteria Checklist, many of which are also LEED requirements. The selection of materials and solutions will focus on healthy, non-emitting materials, which will increase indoor environmental quality and the wellbeing of the occupants. The Project will be LEED-ND Gold certifiable, and will meet the City of Boston requirements for sustainable buildings.

Location + Neighborhood Fabric

In order to achieve LEED-ND 2009 Gold certifiable status, the Project will implement a number of urban design measures that are also aligned with the EGC program. The Project Site is a previously developed infill site, and is well connected with the neighborhood. The development will be compact and will have access to local services and public transportation. The Project will provide approximately 7.5 acres of open space for use by the building occupants and the local community.

Site Improvements

The landscaping plan includes native species that will not require extensive maintenance nor irrigation. The irrigation need will be further reduced by employing drip irrigation. The Project will meet City requirements for stormwater management. It will address the heat island effect by placing parking below grade, choosing light-colored surfaces for sidewalks and pathways, and installing high albedo roofs.

Water Conservation

Water-conserving and WaterSense[2] plumbing fixtures will be installed in the units and common areas. The buildings will be designed with the goal of being at least 35% more efficient than LEED baseline requirements.

Energy Efficiency

The new buildings will be designed to be at least 22% more efficient than the Massachusetts Stretch Energy Code. The Project may include some Energy Star rated appliances, and lighting fixtures will use LED technology.

Materials

The VOC standards of the EGC program are more stringent than those of LEED 2009, and the Project will comply with the LEED 2009 standards only. The adhesives and sealants will meet the LEED baseline requirements, which are similar to those of the EGC program. The Project will include certified or non-emitting green flooring as required by LEED-NC 2009. Wood and particle board products will be free of added urea formaldehyde. The Project will use mold-resistant products where feasible. Project roofing will be high albedo to reduce the heat island effect. At least 75% of the demolition and construction waste will be recycled. Recycling storage will be adequately sized and available for the building occupants, allowing for single stream recycle of paper, cardboard, metal, plastic and glass.

Healthy Living Environment

The Project will meet the healthy living ventilation requirements listed in ASHRAE 62.1-2007. The parking garages will be located under the buildings in compliance with the LEED-NC program. The Project will promote physical activity through building design, and staircases will be available for both regular and emergency use.

Operations, Maintenance, and Resident Engagement

The contractor will be required to prepare a building manual and to train building operations staff on how to operate and maintain building systems.

3.3 Energy Conservation Approach

In compliance with Article 37, the design team has conducted a preliminary energy model, performed a clean and renewable energy analysis, and has begun research into energy efficiency assistance opportunities, as described below.

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[2] WaterSense is an EPA Partnership Program that uses labels to make help consumers find and select water efficient products that are backed by independent certification.

3.3.1 Preliminary Energy Model

The computer-based Trane Trace 700 was used to estimate the amount of overall energy that will be consumed by the proposed residential buildings from their projected electricity and gas usages based on assumptions for the Project's building elements. The model is based on an example scenario that reflects building uses, location, orientation, massing, and principal envelope systems similar to those proposed for the Project. The model also includes the proposed total annual energy usage with a breakout of primary uses, peak energy loads, energy use intensity, energy sources, and costs. Key energy savings features include more efficient building materials (walls and windows), high-efficiency HVAC systems, high-efficiency condensing boilers, high-efficiency domestic hot water heaters, direct expansion plants that exceed base energy code efficiency, water-source heat pumps, and energy recovery from exhaust. The model compares the proposed buildings against baseline buildings based on standards outlined in ASHRAE 90.1-2007, which is included in Appendix C, *Energy Analysis Supporting Documentation*.

Building A

Building A is an approximately 216,000 gsf mixed-income, low-rise apartment building. Dwelling units are served by split systems with hot water heating coils connected to individual high-efficiency hot water heaters and direct expansion cooling while the corridors are served by energy recovery units with furnace fired heating and direct expansion cooling. This results in an annual energy use of approximately three million kilowatt hours (kWh) of electricity and 45,000 therms of natural gas, which results in an energy use intensity of 58.3 thousand British thermal units (kBtu) per square foot per year. The annual cost of electricity would be approximately $481,000, and the annual cost of natural gas would be approximately $50,000, when assuming a cost of $0.16 per kWh and $1.10 per therm.

Building C

Building C is an approximately 98,000 gsf high rise condominium. Dwelling units are served by water-source heat pumps, while its units are also served by energy recovery units with furnace fired heating and direct expansion cooling. The overall proposed annual energy use is approximately 692,000 kWh of electricity and 28,000 therms of natural gas, resulting in an energy use intensity (EUI) of 40.6 kBtu per square foot per year. The annual cost of electricity would be approximately $111,000, and the annual cost of natural gas would be approximately $31,000.

Building D

Building D is an approximately 138,000 gsf low-rise apartment building for seniors. Dwelling units are served by split systems with hot water heating coils connected to a central hot water boiler plant and direct expansion cooling condensing units, while the corridors are served by energy recovery units with furnace fired heating and direct expansion cooling. Building D has an annual energy use of approximately 1,900,000 kWh of electricity and 37,000 therms of natural

gas, resulting in an EUI of 58.9 kBtu per square foot per year. The annual cost of electricity would be approximately $303,000, and the annual cost of natural gas would be approximately $40,000.

3.3.2 Clean and Renewable Energy Analysis

An analysis for the potential to utilize combined heat and power (CHP),[3] solar photovoltaic (PV), and thermal systems is just beginning. There is potential for the use of CHP for the condominium buildings and the senior buildings, which will have centralized boiler plants for domestic and heating hot water, and therefore could take advantage of the constant hot water supply. The mixed income apartments have individual heating and cooling systems, and therefore CHP is not viable. The Proponent intends to discuss the possibility of incorporating PV with a potential provider in the near future.

3.3.3 Energy Efficiency Assistance

The Proponent has met with Eversource to begin the process of developing site electrical utility infrastructure. During the Summer/Fall of 2016, the Proponent will engage Eversource to review rebates, efficiency grants, and other credits that may be used in the Project.

3.4 Climate Change Preparedness and Resiliency

This section discusses the approach to preparing for anticipated changes in climate, in accordance with Appendix 7 of Article 80 of the Code. The required Climate Change Resiliency and Preparedness Checklist has been completed for the Project and is provided in Appendix B*, BRA Checklists,* of this ENF/EPNF.

As detailed in the *Massachusetts Climate Change Adaptation Report*,[4] the Commonwealth's climate is already changing and will continue to do so over the course of this century. Therefore it is important to plan for conditions that will exist throughout the lifetime of a project, which for new residential construction is generally 60 years according to the BRA. Since the Project's build year is 2026, an appropriate planning year would be 2086.

Since various sources project data for different years, the Project analyzes five time periods that encompass a range of dates. The timeframes include "Baseline" (1961-1990 for temperature data; 1961-2016 for precipitation data; 1992-2014 for sea level and storm surge data); "Near-Term" (2020-2035); "Mid-Century" (2035-2070); "Late-Century" (2070-2090), and "End-of-Century" (2090-2100).

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[3] Cogeneration or combined heat and power (CHP) is the use of a heat engine or power station to generate electricity and useful heat at the same time

[4] Executive Office of Energy and Environmental Affairs (EOEEA) and the Adaptation Advisory Committee, September 2011. Massachusetts Climate Change Adaptation Report. Boston, MA.

For this assessment, emissions scenarios at the higher end of the spectrum were chosen for analysis for three reasons. According to Parris *et al.*,[5] "coastal management decisions based solely on a most probable or likely outcome can lead to vulnerable assets resulting from inaction or maladaptation." Second, a project designed to be able to adapt to larger climate changes projected under higher-emissions scenarios can also be adapted to smaller climate changes projected by lower-emissions scenarios. Third, the current actual trajectory of emissions (1990 to present) corresponds to a relatively high emissions scenario.

3.4.1 Temperature

Projections

The City of Boston's *Climate Change and Sea Level Rise Projections for Boston: The Boston Research Advisory Group Report*[6] indicates that by the end of the century, under the Intergovernmental Panel on Climate Change's (IPCC) high emissions scenario, the Boston region would experience a 5 to 10 degree increase in average ambient temperature, with several more days of extreme heat during the summer months. Days with temperatures greater than 95 degrees are predicted to increase from 1 to 2 days annually (current conditions) to between approximately 6 and 66 days annually (2100 conditions). Winter temperatures are expected to increase by approximately 5 to 14 degrees (Table 3.2).

TABLE 3.2 CONSOLIDATED TEMPERATURE PROJECTIONS FOR THE BOSTON REGION:[1] TEMPERATURE

Parameter	Baseline (1961-2010)	Near-Term (2030)	Mid-Century (2050)	End-of-Century (2100)
Average Annual Temperature (°F)[a]	46°	--	50° to 51°	51° to 56°
Average Summer Temperature (°F)[b]	68.9°	69.7° to 72.5°	70.7° to 75.8°	73.4° to 84.2°
Over 95°F (days/yr)[b]	1.3	1.5 to 5.6	2 to 17.8	6.4 to 66.4
Average Winter Temperature (°F)[b]	28.1°	30° to 32.9°	30.1° to 35.5°	33.7° to 42°

Source: City of Boston, 2016; [a] Cash *et al.*, 2011; [b] Houser *et al.*, 2015
[1]High emissions scenario

Impacts and Adaptation

The impact of increased heat on energy-related systems, and any potential adaptation measures to future conditions, are described in the BRA checklist, and will be further explored as the Project progresses.

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[5] Parris, A., P. Bromirski, V. Burkett, D. Cayan, M. Culver, J. Hall, R. Horton, K. Knuuti, R. Moss, J. Obeysekera, A. Sallenger, and J. Weiss. 2012. *Global Sea Level Rise Scenarios for the US National Climate Assessment*. NOAA Tech Memo OAR CPO-1. 37 pp.
[6] City of Boston. *Climate Change and Sea Level Rise Projections for Boston: The Boston Research Advisory Group Report. June, 2016. Boston, MA.*

3.4.2 Precipitation

Projections

By Late/End-of-Century, annual precipitation is expected to increase by 7 to 14%, with a slight decrease in the summer, a time when river flows are already low. Winter precipitation, mostly in the form of rain, is expected to increase by 12 to 30%. According to the Boston Water and Sewer Commission's (BWSC) *Wastewater and Storm Drainage System Facilities Plan*,[7] annual precipitation may actually increase by between four and seven inches by 2100. While heavier-than-normal snowfalls have occurred during some recent snow seasons, historically the frequency of low-extreme snowfall years has been increasing, while the frequency of high-extreme snowfall years has been decreasing.[8] This trend is expected to continue, and the number of snow events during the snow season is predicted to decrease from five each month on average to one to three each month on average.[9]

More specific projected rainfall data for the Boston Metro Area can be found in the BWSC's *Wastewater and Storm Drainage System Facilities Plan*, which analyzed climate change scenarios related to increased precipitation, river flooding, sea level rise (SLR), and storm surge. In particular, it describes how recent trends in regional rainfall data (from Taunton to Newburyport) indicate that average annual rainfall and daily maximum rainfalls are increasing in volume, and provides corresponding design standards. For example, the 10-year, 24-hour design storm is forecasted to increase to as much as 6.65 inches with a peak hourly intensity of 2.11 inches per hour by the year 2100 with climate change (Table 3.3).

TABLE 3.3 PROJECTED CHANGES IN MASSACHUSETTS' CLIMATE:[1] PRECIPITATION

Parameter	Baseline Conditions (1961-1990)	Mid-Century Conditions (2035-2064)	Late/End-of-Century Conditions (2070-2100)
Average Annual Precipitation[a]	41"	43.1" to 44.3"	43.9" to 46.7"
Average Winter Precipitation[a]	8"	8.5" to 9.3"	8.96" to 10.4"
Average Summer Precipitation[a]	11"	10.9" to 10.7"	10.9" to 11.0"
Average Snow Days (number of days/month)[b]	5 days	3 days	1 to 2 days
10-year, 24-hour Design Storm Peak Hourly Intensity, Precautionary scenario (inches/hour)[c]	1.64"	1.78" to 1.91"	2.11"

Sources: [a] Frumhoff *et al.*, 2007 & Hayhoe *et al.*, 2006; [b] Hayhoe *et al.*, 2006; [c] BWSC, 2015.
Notes: 1- Adapted from Cash *et al.*, 2011.

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[7] Boston Water and Sewer Commission, 2015. *Wastewater and Storm Drainage System Facilities Plan.* Boston, MA.
[8] Kunkel K. E.; Palecki M.A.; Ensor L.; Easterling D.; Hubbard K.G., Robinson D., and Redmond K., 2009. Trends in Twentieth-Century U.S. Extreme Snowfall Seasons. *Journal of Climate,* 22, 6204-6216.
[9] Hayhoe, K.; Wake C.P.; Huntington T.G.; Luo L.; Schwartz M.D.; Sheffield J.; Wood E.; Anderson B.; Bradbury J.; Degaetano A.; Troy T.J., and Wolfe D., 2006. Past and Future Changes in Climate and Hydrological Indicators in the U.S. Northeast. *Climate Dynamics,* 28, 381-407.

Impacts and Adaptation

The proposed stormwater system adapts practices today that will allow for the unimpeded collection, recharge, and discharge of stormwater from the Project area in anticipation of future increases in storm intensity and frequency. The Project will be designed to collect and recharge the first 0.5 inch of rainfall from the privately owned and maintained impervious areas. This action in itself significantly reduces the rate and volume of stormwater runoff that enters the BWSC storm water system. The planned closed drainage system will also be sized to comply with design guidance provided in the Boston Water and Sewer Commission's 2015 *Wastewater and Storm Drainage System Facilities Plan*. It will be sized for the 10-year, 24 hour design storm consisting of 5.2 inches of rainfall, rather than the 4.80 inches of rainfall as has been standard practice.[10] A peak hourly intensity of 1.65 inches per hour will be used for analysis and design purposes.

The 0.5 inch stormwater recharge component also extends the capacity of the closed drainage system to accommodate 5.7-inches of water, which falls within the estimated range of the projected 10-year, 24 hour rainfall through 2100 (5.55 inches to 6.65 inches).

3.4.3 Sea Level Rise and Storms

Projections

According to FEMA Flood Insurance Rate Map (FIRM) panel FM250250018J (March, 2016), the Project Site is outside of the current 1% annual chance flood plain, and is therefore not currently subject to coastal flooding. However, as sea level rises the Site will become more vulnerable to flooding.

CZM's report entitled *Sea Level Rise: Understanding and Applying Trends and Future Scenarios for Analysis and Planning*[11] cites many resources available to support analysis and planning for sea level rise (SLR), including the U.S. Army Corps of Engineers (USACE). USACE and the National Oceanographic and Atmospheric Administration (NOAA) have created a joint Sea-Level Change Curve Calculator[12] that provides projections for SLR calibrated to local tide gauges under four different SLR scenarios. Projections are based in part on USACE's 2014 publication titled *Procedures to Evaluate Sea Level Change: Impacts, Responses, and Adaptation*.[13] In addition to USACE and NOAA projections, this analysis considers projections included in the City of Boston's *Climate Change and Sea Level Rise Projections for Boston: The Boston Research Advisory Group Report,*[14] which presents the probabilities of different amounts of sea level rise based on the following three greenhouse gas emissions scenarios:

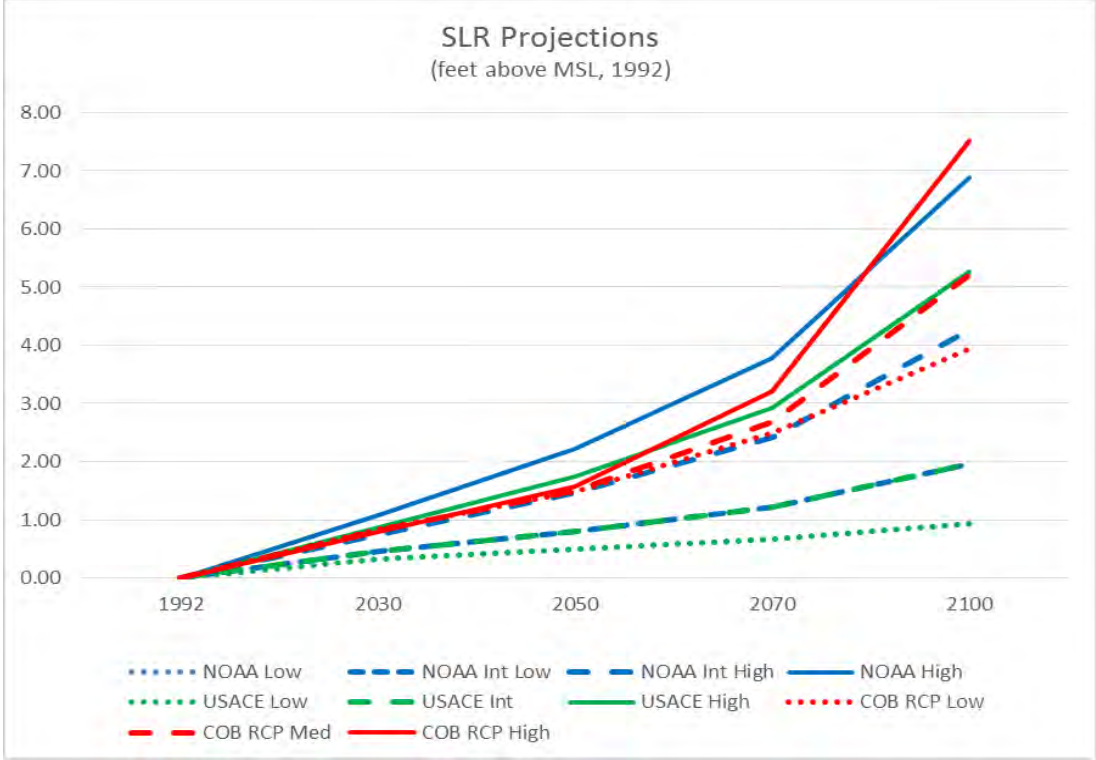
▼

[10] per Tech Paper 40 (1961).
[11] Massachusetts Office of Coastal Zone Management. December 2013. Sea Level Rise: Understanding and Applying Trends and Future Scenarios for Analysis and Planning. Boston, MA.
[12] USACE. 2014. Sea-Level Change Curve Calculator. http://corpsclimate.us/ccaceslcurves.cfm. Accessed July 14, 2016.
[13] US Army Corps of Engineers, 2014. ETL 1100-2-1, Procedures to Evaluate Sea Level Change: Impacts, Responses, and Adaptation. Department of the Army, Washington, D.C.
[14] City of Boston, 2016.

- **Low:** Major Emissions Reductions - CO_2 emissions stay the same as they are today and then decline after 2020.
- **Medium:** Moderate Emissions Reductions - CO_2 emissions increase slightly, then begin declining after 2040.
- **High:** Business as Usual- CO_2 emissions continue to increase, tripling by 2100.

CZM's report notes that SLR scenarios based on historic observations and ocean warming effects-only (as the USACE Low/NOAA Low and USACE Intermediate/NOAA Intermediate Low scenarios are, respectively) may considerably underestimate actual SLR, especially for plans or projects with time horizons beyond 25 years. As shown in the graphic below, these USACE and NOAA scenarios project SLR elevations that are generally lower than the lowest City of Boston (COB) projection (which is predicated on major emissions reductions), and are therefore less likely to transpire. For these reasons, the lower elevation scenarios were eliminated from further consideration for this Project.

Table 3.4 provides information on projected mean higher high water (MHHW) elevations (1992 baseline = 4.77' NAVD88) under USACE, NOAA, and COB SLR scenarios at the Boston Tide Gage in Fort Point Channel, which is the tide gage that is nearest to the Project Site.



Various sources project that Boston Harbor will experience between 1.0 and 7.4 feet of sea level rise by 2100.

TABLE 3.4 PROJECTED MEAN HIGHER HIGH WATER AT THE BOSTON TIDE GAGE (FEET ABOVE NAVD88)

Projection	Baseline (1992)	Near-Term (2030)	Mid-Century (2050)	Late-Century (2080)	End-of-Century (2100)
USACE High[a]	4.77′	5.63′	6.52′	8.40′	10.03′
NOAA Int High[a]	4.77′	5.51′	6.23′	7.74′	9.03′
NOAA High[a]	4.77′	5.84′	6.99′	9.49′	11.66′
COB Low[b]	4.77′	5.60′	6.25′	--	8.71′
COB Medium[b]	4.77′	5.59′	6.28′	--	9.99′
COB High[b]	4.77′	5.56′	6.35′	--	12.28′

Sources: [a] USACE/NOAA Sea-Level Change Curve Calculator (version 2015.46); [b] City of Boston, 2016.

According to the City of Boston's *Climate Change and Sea Level Rise Projections for Boston: The Boston Research Advisory Group Report,*[15] by 2050 the annual probability of a flood reaching the elevation of today's 100 year flood will be between 8.7 and 14 percent. By 2100 that flood elevation will be reached 75 to 230 times per year. Finally, climate models project more intense and longer-lasting tropical storms, with related increases in wind, rain, and storm surges, although not necessarily an increase in the number of these storms that make landfall. Increasing hurricane intensity coupled with sea-level rise leads to rising storm surge levels and increasing damage from hurricanes.[16]

Another source of information about climate change-induced flooding is the Boston Harbor Flood Risk Model (BH-FRM), which depicts the risk of future flooding using a computerized mathematical technique. Coastal storms are simulated along with projected sea level rise (up to 1.64 feet by 2030, and up to 3.94 feet by 2070), resulting in a range of possible outcomes and the probabilities that they will occur.

Impacts and Adaptation

According to the BH-FRM described above, the Project Site will not be subject to flooding during the 1% annual chance flood until about 2070 (Figure 3.2a), at which time flooding of between 0.5 and 2.0 feet could occur on portions of the Site (Figure 3.2b), based on its current topography. Areas of the Project that may be subject to future flooding will be designed with the ability to incorporate flood resilient adaptation measures in the future.

▼

[15] City of Boston, 2016.

[16] Karl T.R.; Melillo J.M., and Peterson, T.C. (eds.), 2009. Global Climate Change Impacts in the United States. U.S. Global Change Research Program. Cambridge, MA.

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LEED 2009 For Neighborhood Development

Project Checklist

One Charlestown

Prepared by VvS | Architects & Consultants

Smart Location and Linkage — Possible Points: 27

Y	?	N			
Y			Prereq 1	Smart Location	Req
Y			Prereq 2	Imperiled Species and Ecological Communities	Req
Y			Prereq 3	Wetland and Water Body Conservation	Req
Y			Prereq 4	Agricultural Land Conservation	Req
Y			Prereq 5	Floodplain Avoidance	Req
5	1	4	Credit 1	Preferred Locations	10
		2	Credit 2	Brownfield Redevelopment	2
1	1	5	Credit 3	Locations with Reduced Automobile Dependence	7
1			Credit 4	Bicycle Network and Storage	1
3			Credit 5	Housing and Jobs Proximity	3
1			Credit 6	Steep Slope Protection	1
	1		Credit 7	Site Design for Habitat or Wetland and Water Body Conservation	1
	1		Credit 8	Restoration of Habitat or Wetlands and Water Bodies	1
	1		Credit 9	Long-Term Conservation Management of Habitat or Wetlands and Water Bodies	1

Neighborhood Pattern and Design — Possible Points: 44

Y			Prereq 1	Walkable Streets	Req
Y			Prereq 2	Compact Development	Req
Y			Prereq 3	Connected and Open Community	Req
11		1	Credit 1	Walkable Streets	12
6			Credit 2	Compact Development	6
1	2	1	Credit 3	Mixed-Use Neighborhood Centers	4
	4	3	Credit 4	Mixed-Income Diverse Communities	7
1			Credit 5	Reduced Parking Footprint	1
	2		Credit 6	Street Network	2
1			Credit 7	Transit Facilities	1
1	1		Credit 8	Transportation Demand Management	2
1			Credit 9	Access to Civic and Public Spaces	1
1			Credit 10	Access to Recreation Facilities	1
		1	Credit 11	Visitability and Universal Design	1
2			Credit 12	Community Outreach and Involvement	2
		1	Credit 13	Local Food Production	1
2			Credit 14	Tree-Lined and Shaded Streets	2
1			Credit 15	Neighborhood Schools	1

Green Infrastructure and Buildings — Possible Points: 29

Y	?	N			
Y			Prereq 1	Certified Green Buiding	Req
Y			Prereq 2	Minimum Building Energy Efficiency	Req
Y			Prereq 3	Minimum Building Water Efficiency	Req
Y			Prereq 4	Construction Activity Pollution Prevention	Req
5			Credit 1	Certified Green Buildings	5
1	1		Credit 2	Building Energy Efficiency	2
		1	Credit 3	Building Water Efficiency	1
1			Credit 4	Water-Efficient Landscaping	1
		1	Credit 5	Existing Building Use	1
		1	Credit 6	Historic Resource Preservation and Adaptive Reuse	1
	1		Credit 7	Minimized Site Disturbance in Design and Construction	1
		4	Credit 8	Stormwater Management	4
1			Credit 9	Heat Island Reduction	1
		1	Credit 10	Solar Orientation	1
		3	Credit 11	On-Site Renewable Energy Sources	3
		2	Credit 12	District Heating and Cooling	2
		1	Credit 13	Infrastructure Energy Efficiency	1
		2	Credit 14	Wastewater Management	2
1			Credit 15	Recycled Content in Infrastructure	1
1			Credit 16	Solid Waste Management Infrastructure	1
1			Credit 17	Light Pollution Reduction	1

Innovation and Design Process — Possible Points: 6

1			Credit 1.1	Innovation in Design:Exemplary performance - NPDc2	1
1			Credit 1.2	Innovation in Design: Occupant education campaign	1
1			Credit 1.3	Innovation in Design: Exemplary performance - GIBc1	1
1			Credit 1.4	Innovation in Design: Organic Landscape Management Plan	1
1			Credit 1.5	Innovation in Design: Buliding Exterior and Hardscape Management Pla	1
1			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

1			Credit 1.1	Regional Priority: GIBc2: Building energy efficiency	1
1			Credit 1.2	Regional Priority: NPDc4:Mixed-income diverse communities	1
1			Credit 1.3	Regional Priority: NPDc8: Transportation demand management	1
1			Credit 1.4	Regional Priority: NPDc9: Access to civic and public space	1

60	16	34	**Total**	Possible Points: 110

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

Source: Stantec

Figure 3.1a

Preliminary LEED Scorecards

One Charlestown
Charlestown, MA

LEED 2009 for New Construction and Major Renovations

Project Checklist

One Charlestown Apartment Building

Prepared by: VvS | Architects & Consultants

Y	?	N			
21	**1**	**4**	**Sustainable Sites**	**Possible Points:**	**26**
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
		1	Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
3			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
		1	Credit 5.1	Site Development—Protect or Restore Habitat	1
1			Credit 5.2	Site Development—Maximize Open Space	1
		1	Credit 6.1	Stormwater Design—Quantity Control	1
		1	Credit 6.2	Stormwater Design—Quality Control	1
1			Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
	1		Credit 8	Light Pollution Reduction	1
5		**5**	**Water Efficiency**	**Possible Points:**	**10**
Y			Prereq 1	Water Use Reduction—20% Reduction	
2		2	Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
3		1	Credit 3	Water Use Reduction	2 to 4
10		**25**	**Energy and Atmosphere**	**Possible Points:**	**35**
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
5		14	Credit 1	Optimize Energy Performance	1 to 19
		7	Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
		2	Credit 4	Enhanced Refrigerant Management	2
1		2	Credit 5	Measurement and Verification	3
2			Credit 6	Green Power	2
6		**8**	**Materials and Resources**	**Possible Points:**	**14**
Y			Prereq 1	Storage and Collection of Recyclables	
		3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Y	?	N			
			Materials and Resources, Continued		
2			Credit 4	Recycled Content	1 to 2
2			Credit 5	Regional Materials	1 to 2
		1	Credit 6	Rapidly Renewable Materials	1
		1	Credit 7	Certified Wood	1
11	**2**	**2**	**Indoor Environmental Quality**	**Possible Points:**	**15**
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
	1		Credit 1	Outdoor Air Delivery Monitoring	1
		1	Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
		1	Credit 7.2	Thermal Comfort—Verification	1
	1		Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1
6			**Innovation and Design Process**	**Possible Points:**	**6**
1			Credit 1.1	Low Mercury Lighting	1
1			Credit 1.2	Occupant Education Campaign	1
1			Credit 1.3	Green Cleaning	1
1			Credit 1.4	Exemplary Performance TBD / Integrative process	1
1			Credit 1.5	SSpc14 Walkable Streets	1
1			Credit 2	LEED Accredited Professional	1
2		**2**	**Regional Priority Credits**	**Possible Points:**	**4**
		1	Credit 1.1	SSc3	1
		1	Credit 1.2	SSc6.1	1
1			Credit 1.3	SSc7.1	1
1			Credit 1.4	SSc7.2	1
61	**3**	**46**	**Total**	**Possible Points:**	**110**

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

Source: Stantec

Figure 3.1b

Preliminary LEED Scorecards

One Charlestown
Charlestown, MA

LEED 2009 for New Construction and Major Renovations

Project Checklist

One Charlestown Condominium Building

Prepared by: VvS | Architects & Consultants

Sustainable Sites — Possible Points: 26

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

Water Efficiency — Possible Points: 10

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

Energy and Atmosphere — Possible Points: 35

Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
10		13	Credit 1	Optimize Energy Performance	1 to 19
		7	Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
	2		Credit 4	Enhanced Refrigerant Management	2
1		2	Credit 5	Measurement and Verification	3
		2	Credit 6	Green Power	2

Materials and Resources — Possible Points: 14

Y			Prereq 1	Storage and Collection of Recyclables	
		3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
2			Credit 4	Recycled Content	1 to 2
2			Credit 5	Regional Materials	1 to 2
		1	Credit 6	Rapidly Renewable Materials	1
		1	Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 15

Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
	1		Credit 1	Outdoor Air Delivery Monitoring	1
		1	Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
	1		Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
		1	Credit 7.2	Thermal Comfort—Verification	1
	1		Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

1			Credit 1.1	Low Mercury Lighting	1
1			Credit 1.2	Occupant Education Campaign	1
1			Credit 1.3	Green Cleaning / Exemplary Performance	1
	1		Credit 1.4	Exemplary Performance TBD	1
1			Credit 1.5	Integrative process / SSpc14 Walkable Streets	1
1			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

		1	Credit 1.1	SSc3	1
		1	Credit 1.2	SSc6.1	1
1			Credit 1.3	SSc7.1	1
1			Credit 1.4	SSc7.2	1

Total — Possible Points: 110

62	7	45	Total

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

Source: Stantec

Figure 3.1c

Preliminary LEED Scorecards

One Charlestown
Charlestown, MA

LEED 2009 for New Construction and Major Renovations

Project Checklist

One Charlestown Elderly Housing Building

Prepared by: VvS | Architects & Consultants

Y	?	N			
21	**1**	**4**	**Sustainable Sites**	**Possible Points:**	**26**
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
		1	Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
3			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
		1	Credit 5.1	Site Development—Protect or Restore Habitat	1
1			Credit 5.2	Site Development—Maximize Open Space	1
		1	Credit 6.1	Stormwater Design—Quantity Control	1
		1	Credit 6.2	Stormwater Design—Quality Control	1
1			Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
	1		Credit 8	Light Pollution Reduction	1
5		**5**	**Water Efficiency**	**Possible Points:**	**10**
Y			Prereq 1	Water Use Reduction—20% Reduction	
2		2	Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
3		1	Credit 3	Water Use Reduction	2 to 4
10		**25**	**Energy and Atmosphere**	**Possible Points:**	**35**
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
5		14	Credit 1	Optimize Energy Performance	1 to 19
		7	Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
		2	Credit 4	Enhanced Refrigerant Management	2
1		2	Credit 5	Measurement and Verification	3
2			Credit 6	Green Power	2
6		**8**	**Materials and Resources**	**Possible Points:**	**14**
Y			Prereq 1	Storage and Collection of Recyclables	
		3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Y	?	N			
			Materials and Resources, Continued		
2			Credit 4	Recycled Content	1 to 2
2			Credit 5	Regional Materials	1 to 2
		1	Credit 6	Rapidly Renewable Materials	1
		1	Credit 7	Certified Wood	1
11	**2**	**2**	**Indoor Environmental Quality**	**Possible Points:**	**15**
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
	1		Credit 1	Outdoor Air Delivery Monitoring	1
		1	Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
		1	Credit 7.2	Thermal Comfort—Verification	1
	1		Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1
6			**Innovation and Design Process**	**Possible Points:**	**6**
1			Credit 1.1	Low Mercury Lighting	1
1			Credit 1.2	Occupant Education Campaign	1
1			Credit 1.3	Green Cleaning / Exemplary Performance	1
1			Credit 1.4	Integrative process / Innovation in Design TBD	1
1			Credit 1.5	SSpc14 Walkable Streets	1
1			Credit 2	LEED Accredited Professional	1
2		**2**	**Regional Priority Credits**	**Possible Points:**	**4**
		1	Credit 1.1	SSc3	1
		1	Credit 1.2	SSc6.1	1
1			Credit 1.3	SSc7.1	1
1			Credit 1.4	SSc7.2	1
61	**3**	**46**	**Total**	**Possible Points:**	**110**

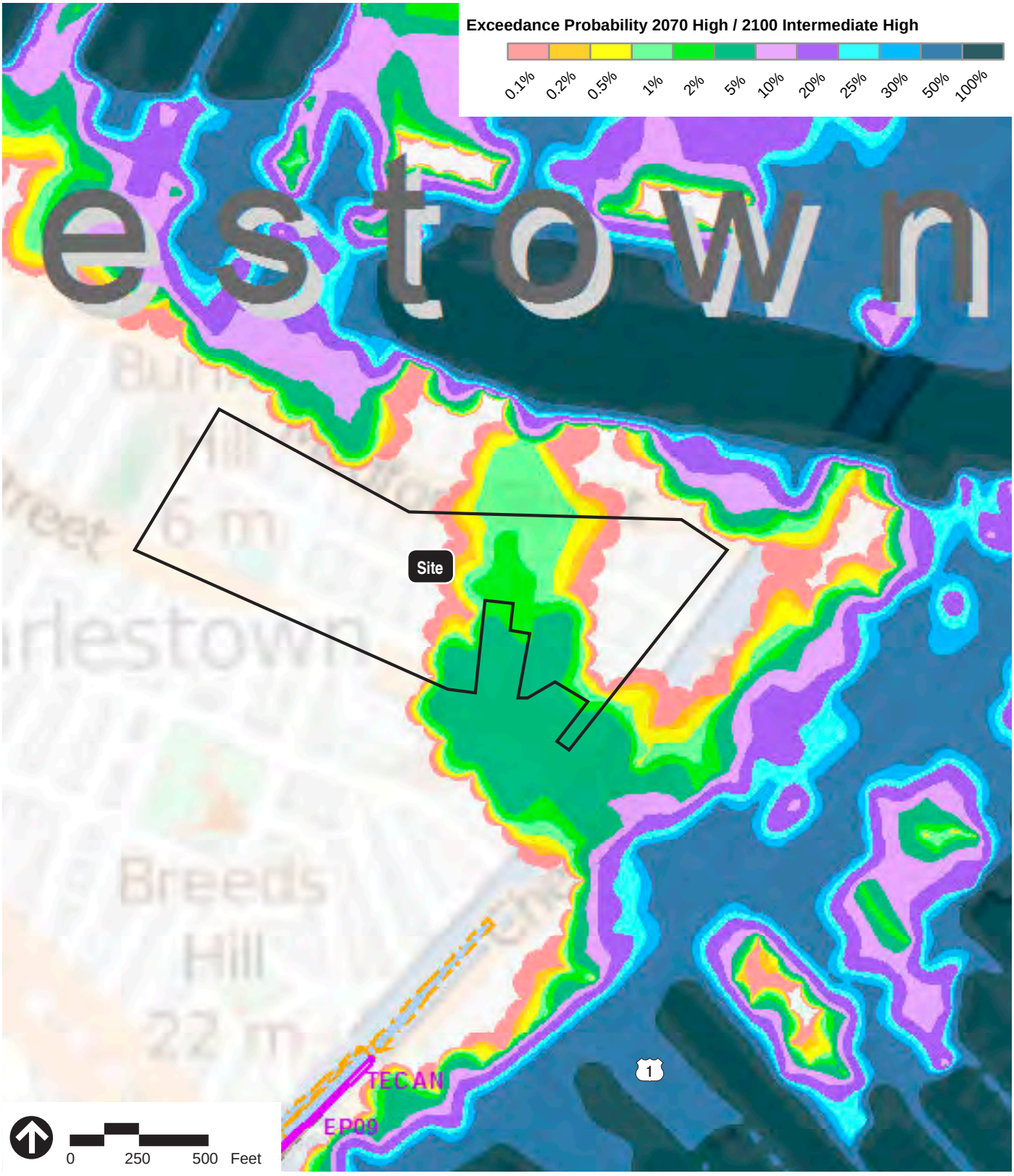
Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Source: Stantec

Figure 3.1d

Preliminary LEED Scorecards

One Charlestown
Charlestown, MA



Sources: MassDOT, Woods Hole Group, UMass Boston, MassGIS, and ESRI

Stantec vhb

Figure 3.2a

BH-FRM Coastal Flood Exceedance Probabilities
2070 High/2100 Intermediate High Scenarios

One Charlestown
Charlestown, MA

CORCORAN JENNISON Companies DMLA ground SunCal

Sources: MassDOT, Woods Hole Group, UMass Boston, MassGIS, and ESRI

Stantec vhb

Figure 3.2b

BH-FRM Coastal Flood Depths 1% CFEP 2070 High/2100 Intermediate High Scenarios

One Charlestown
Charlestown, MA

CORCORAN JENNISON Companies DMLA ground SunCal

4

Historic Resources

This chapter identifies properties located within and in the vicinity of the Project Site that are listed in the National and State Registers of Historic Places and/or are included in the Inventory of Historic and Archaeological Assets of the Commonwealth, and evaluates potential Project effects on those properties.

4.1 Key Findings and Benefits

The key findings and benefits of the Project related to sustainability, green building, and climate change adaptation are listed below.

- There are no historic resources within the Project Site;
- Within a one-quarter-mile radius of the Project Site are 13 properties and districts listed in the State and National Registers of Historic Places or included in the Inventory;
- The likelihood of encountering intact, significant archaeological features or deposits in the Project is low;
- The Massachusetts Historical Commission (MHC) has determined that neither the Site nor its structures are listed in the National Register of Historic Places and do not appear to meet the criteria of eligibility for listing in the National Register; and
- Demolition of the Bunker Hill Public Housing development will not have any direct impacts on historic resources.

4.2 Historic Context

Nancy S. Seasholes, in *Gaining Ground, A History of Landmaking in Boston,*[1] presents a detailed overview of landforming in Boston, including the Project Site loosely bounded by Breed's Hill,

[1] Nancy S. Seasholes. *Gaining Ground A History of Landmaking in Boston*, Cambridge, Massachusetts: The MIT Press, 2003.

Bunker Hill, and the Little Mystic Channel in today's Charlestown. Highlights of the area's development history are summarized below.

- The Native American presence in about 1620 was focused upslope in the vicinity of Bunker Hill Community College, though certainly camps were present along the tidally influenced shores.
- The 1630 Charlestown shoreline corresponds closely to Medford Street in the Project vicinity.
- The 1818 Plan of Charlestown illustrates the presence of Bunker Hill Street and Tufts Street, with the intervening area illustrated as undivided farm tracts. The plan coincides with the conditions reported during the Revolutionary War.
- By 1848, the Map of Charlestown indicates that the first street grid covering the Project area was delineated. At this point, the Almshouse existed to the west of the Project Site and the area contained both residential and commercial/industrial enterprises.
- Between ca. 1840 and 1940, the Project Site building stock continued to provide residential and commercial/industrial functions. The area became known as the "Point" neighborhood, home to cold water flats that housed Charlestown's first Irish Catholic population. North of Medford Street were the wharves and recently-filled land in the Mystic River improvement area created north of the Mystic River Channel, which hosted railroad lines and other industrial and transportation related structures.
- This area was cleared in 1939 to build what is now the Bunker Hill Housing Development, constructed in 1941. Designed by the locally prominent John M. Gray Co., the brick and concrete buildings originally housed U.S. World War II veterans and their families. Today the development incorporates 1,100 low-income housing units.

In summary, the Project landform underwent two major periods of development, ca. 1840 to 1940 and 1940 to present. Both affected the pre-contact and historic landforms and likely eradicated much of the evidence of prior occupations.

4.3 Historic Resources

A survey was undertaken to identify historic resources within and in the vicinity of the Project Site. There are no historic resources within the Project Site. Immediately adjacent to the southeast corner of the Project Site are two resources included in the Inventory of Historic and Archaeological Assets of the Commonwealth (Inventory), the Saint Catherine of Siena Roman Catholic Church Complex and the William Henry Kent Primary School building. Within a one-quarter-mile radius of the Project Site are 13 additional properties and districts listed in the State and National Registers of Historic Places or included in the Inventory. The names and addresses of the historic resources are listed in Table 4.3-1 and depicted in Figure 4.1. A description of the historic resources follows.

TABLE 4.3-1 HISTORIC RESOURCES IN THE VICINITY OF THE PROJECT SITE

No.	Resource Name	Location	MHC Inventory No.	Designation
A	Bunker Hill Monument	N/A	BOS.9053/ NR #66000138	NHL/NRDIS
B	Charlestown Navy Yard (Boston Naval Ship Yard)	N/A	BOS.ACQ/ NR #66000134	NHL/NRDIS
C	Monument Square Historic District	N/A	BOS.CM/ NR #87001128	NRDIS
1	1-8 Avon Place	1-8 Avon Place	BOS.CK	INV
2	3-15 Bolton Street	3-15 Bolton Street	BOS.AAV	INV
3	23-46 Green Street	23-46 Green Street	BOS.CF	INV
4	2-22 Hill Street – 1-5 Mystic Place	2-22 Hill Street - 1-5 Mystic Place	BOS.CE	INV
5	5-14 Lexington Avenue	5-14 Lexington Avenue	BOS.CQ	INV
6	7-58 Monument Avenue	7-58 Monument Avenue	BOS.AAX	INV
7	19-35 Russell Street	19-35 Russell Street	BOS.AAY	INV
8	Charlestown Valley – Town Hill		BOS.CD	INV
9	Saint Catherine of Siena Roman Catholic Church Complex	49 Vine Street	BOS.VK	INV
10	Saint Mary's Roman Catholic Church Complex	55 Warren Street	BOS.VL	INV
11	William Henry Kent Primary School	234 Moulton Street	BOS.4734	INV
12	Winthrop Square	N/A	BOS.CB	INV

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

4.3.1 Historic Resources within One-Quarter-Mile Radius of Project Site

See Figure 4.1 for a location map of historic resources within a one-quarter mile radius of the Project Site.

Bunker Hill Monument (BOS.CP / NR #66000138)

The Bunker Hill Monument is a 220-foot granite obelisk designed by Solomon Willard. Erected by the Bunker Hill Monument Association between 1825 and 1842, the monument marks the approximate center of the fort occupied by American forces in the Battle of Bunker Hill on July 17, 1775.

The Bunker Hill Monument, along with the Monument Square Historic District, Charlestown Navy Yard, and a handful of additional resources associated with the opening campaigns of

the Revolutionary War, were included in the discontiguous Boston National Historical Park in 1974. In 2015, the park was officially listed in the National Register of Historic Places.

Charlestown Navy Yard (BOS.ACQ / NR #66000134)

Established in 1800, the Charlestown Navy Yard played an important role in the birth, growth and continued effectiveness of the United States Navy. The Yard, consisting of industrial buildings, cranes, dry docks, slips, piers, residences, and military buildings, is situated along Charlestown's southeastern waterfront in Boston's inner harbor, and has served as the construction site for more than 200 warships throughout its 174-year history.

Monument Square Historic District (BOS.CM / NR #87001128)

The Monument Square Historic District, located on the site of the Battle of Bunker Hill, includes an important collection of 19th century rowhouses whose construction was planned as a high quality urban development by the Bunker Hill Monument Association. The 8.25-acre district encompasses the Bunker Hill Monument and 47 surrounding residential and commercial buildings.

1-8 Avon Place (BOS.CK)

The Avon Place area includes a row of six wooden, Greek Revival style residential rowhouses built ca. 1845 by Caleb Pratt and Rufus Mason. The two-bay, gable end buildings are considered among the oldest dwellings on the southwest slope of Bunker Hill.

3-15 Bolton Street (BOS.AAV)

The wood frame rowhouses along Bolton Place were constructed in 1861 to 1862 by locally prolific builders and painters David B. Weston and Rufus Mason. Although the rowhouses at 10 to 16 Bolton Street no longer exists, the remaining residential buildings are significant as modest, Greek Revival and Italianate style housing built in Charlestown between ca. 1850 and ca. 1860.

23-46 Green Street (BOS.CF)

The buildings at 23 to 46 Green Street represent a fairly distinct enclave of ca. 1840 two-family Greek Revival style wood frame houses. These buildings verify that wood remained the dominant building material until the mid-19th century; after ca. 1850, the majority of residential buildings in Charlestown were of masonry construction.

2-22 Hill Street – 1-5 Mystic Place (BOS.CE)

The houses at 2 to 22 Hill Street and 1 to 5 Mystic Place constitute an area of modestly-scaled Greek Revival residential architecture built between 1841 and 1855. The side-hall plan houses feature broad, gable-end three-bay façades, Doric pilasters, and heavy entrance entablatures.

5-14 Lexington Avenue (BOS.CQ)

The wood frame, clapboard houses at 5 to 14 Lexington Avenue are comprised of a modestly-scaled grouping of Greek Revival and Italianate style vernacular housing. Built in ca.

1840, the enclave represents the earliest phase of development around Breed's Hill by the Bunker Hill Monument Association.

7-58 Monument Avenue (BOS.AAX)

The buildings within the Monument Avenue area constitute a diverse assemblage of mid-to-late 19th century architecture. These primarily include Greek Revival and Italianate style brick and granite rowhouses, and the finest examples of wood frame, Queen Anne style multi-family housing in Charlestown.

19-35 Russell Street (BOS.AAY)

The residential buildings at 19 to 35 Russell Street exemplify a grouping of ca. 1855 to 1860 wood frame, Greek Revival and Italianate style rowhouses. The buildings represent the work of the mid-19th century Charlestown builders David B. Weston and Rufus Mason.

Charlestown Valley - Town Hill (BOS.CD)

The Charlestown Valley – Town Hill area was delineated in 1629 by local engineer Thomas Graves as the site of Boston's first settlement. The elliptical street plan forms a tightly defined neighborhood composed of residential and commercial buildings dating as early as 1780, when Charlestown was burned by the British during the Battle of Bunker Hill.

Saint Catherine of Siena Roman Catholic (RC) Church Complex (BOS.VK)

The Saint Catherine of Siena RC Church Complex was established in 1888 to serve the area of Charlestown nearest the Navy Yard. Designed by locally renowned architects Charles J. Bateman, Patrick Cain, and Charles Reggio Greco, the complex includes the church (1887 to 1894), rectory (ca. 1890), and school building (ca. 1910). The convent was demolished in 1997.

Saint Mary's Roman Catholic Church Complex (BOS.VL)

Saint Mary's Roman Catholic Church Complex, established in 1828, was the first parish within the present city limits of Boston that was set off from the Cathedral of the Holy Cross. The church is the second permanent church built for the parish, replacing the original 1829 structure that was demolished in 1901.

William Henry Kent Primary School (BOS.4734)

The T-shaped, red brick William Henry Kent Primary School is considered a significant and rare example of both Georgian and Gothic Revival style architecture. Built in 1894, the school was designed by Boston architect Edmund Marsh Wheelwright, and named in honor of the former mayor of Charlestown and President of the Mill Owners Insurance Company, William Henry Kent. Together with the Saint Catherine of Siena RC Church Complex, the buildings are the final remnants of Charlestown's late 19th century Hayes Square neighborhood.

Winthrop Square (BOS.CB)

Winthrop Square, named after the first governor of the Massachusetts Bay Colony John Winthrop, dates to the mid-17th century. Initially the Square functioned as a training ground

for colonial militia in the 1640s, and later housed a firehouse, munitions depot, and schoolhouse, before serving as Charlestown's park and community gathering space. In 1872 the Charlestown Soldiers' and Sailors' Monument was dedicated in the Square to the memory of the soldiers who fought in the Battle of Bunker Hill.

4.4 Archaeological Resources

Review of the Massachusetts Cultural Resource Information System (MACRIS) site file indicates there are no previously inventoried or State or National Register listed archaeological sites or districts within the Project Site or in immediate adjacent areas. Key findings from the archaeological background and literature review and soil data follow.

- The Project will be developed on fill soil classes as defined by the U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS).[2] The soil classes are 602 (Urban land, 0 to 15% slopes), 603 (Urban land, wet substratum, zero to three percent slopes), 627C (Newport-Urban land complex, three percent to 15% slopes), and 655 Udorthents, wet substratum. The parent materials for these classes are characterized as various fill and excavated materials. Actions associated in these soils apparently occurred in the historic period; geotechnical investigations are pending.
- The fill extends between three and 14 feet below existing ground surface (see McPhail, Section 6.7 ENF/EPNF).
- The latest building stage in the Project Site dates from the 1940s.[3] The residential housing constructed in that decade and into the 1950s followed mass urban redevelopment which removed much of the preceding building and structure stock. The depth of impact resulting from the redevelopment clearing and subsequent building is unknown.
- The Project will disturb to a depth of approximately 12 to 15 feet below ground surface (McPhail, Section 6.7 ENF/EPNF) which will be within the ground water levels that are thought to be five to eight feet below existing ground surface.

The Public Archaeology Laboratory, Inc. provides an overview of previous archaeological investigations on the Bunker Hill Monument.[4] The investigations, conducted between 1979 and 2006, included monitoring, test excavations, and ground-penetrating radar (GPR) assessment. Archaeological evidence supported use of Breed's Hill for both public and military purposes. The archaeological investigations identified evidence of one of the Revolutionary War-era forts and found evidence that Breed's Hill has been subject to re-contouring and fill in

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2 USDA NCRS. 2016. Custom Soil Resource Report for Norfolk and Suffolk counties, Massachusetts for 13403. Report downloaded from USDA NCRS Web Soil Survey 20160316.
3 Kristen Heitert. 2009. Archaeological Overview and Assessment Bunker Hill Monument Charlestown, Massachusetts. PAL Report No. 2141. Submitted to Northeast Region Archaeology Program, National Park Service, Lowell, MA.
4 Kristen Heitert. 2009. Archaeological Overview and Assessment Bunker Hill Monument Charlestown, Massachusetts, Chapter 4 – Evaluation of Previous Archaeological Work and Collections, pgs. 53- 82. PAL Report No. 2141. Submitted to Northeast Region Archaeology Program, National Park Service, Lowell, MA.

the post-battle era, identified throughout the monument setting.[5,6,7] There are no data in these reports suggesting that the fill episodes were pervasive over the monument grounds. Rather, they appear to represent the result of episodic events including monument facility construction, utility trenching, pedestrian paths, and at least in one case, military activities. With the possible exception of the latter activities, similar disruptions including building and structure construction, demolition, street location changes, and emplacement of utility lines affected the Project Site.

Based on the key findings of the archaeological background and literature review and soil data, the likelihood of encountering intact, significant archaeological features or deposits in the Project Site is evaluated as low because of prior disturbance to the Project's landform.

4.5 Potential Impacts to Historic Resources

Potential impacts related to demolition, urban design, visual, and geotechnical aspects of the project are described in the following sections.

4.5.1 Demolition of Historic Resources

The Project involves the demolition of the existing Bunker Hill Public Housing development. MHC, in consultation with the City of Boston Department of Neighborhood Development, determined the property is not listed in the National Register of Historic Places and does not appear to meet the criteria of eligibility for listing in the National Register.[8] Accordingly, demolition of the existing Bunker Hill Public Housing development will not have any direct impacts on historic resources.

4.5.2 Urban Design and Visual

The new buildings have been sited and are being designed to be responsive to and harmonious with the surrounding landscape in terms of height, scale, form, and materials.

The Proponent has undertaken a comprehensive resident and Charlestown community engagement process through stakeholder interviews and focus groups, as described in Chapter 2, *Urban Design*. The design team met with leaders of the Charlestown historic

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[5] Thomas Schley. 1991. Archaeological Monitoring of a Utility Trench: Bunker Hill Monument, Boston National Historical Park, Boston, Massachusetts. As reported in Kristen Heitert. 2009. Archaeological Overview and Assessment Bunker Hill Monument Charlestown, Massachusetts, Chapter 4 – Evaluation of Previous Archaeological Work and Collections, pgs. 61-64. PAL Report No. 2141. Submitted to Northeast Region Archaeology Program, National Park Service, Lowell, MA

[6] William A. Griswold. 1996. Trip Report on the Archaeological Test Excavations Conducted on July 9-11, 1996, at the Bunker Hill Monument Site, July 26, 1996. As reported in Kristen Heitert. 2009. Archaeological Overview and Assessment Bunker Hill Monument Charlestown, Massachusetts, Chapter 4 – Evaluation of Previous Archaeological Work and Collections, pgs. 64-70. PAL Report No. 2141. Submitted to Northeast Region Archaeology Program, National Park Service, Lowell, MA.

[7] Jennifer L. Bonner and Suzanne G. Cherau. 2005. Archaeological Intensive Testing Program, Bunker Hill Rehabilitation Package 106, Boston National Historical Park, Boston, Massachusetts. PAL Report No. 1687. As reported in Kristen Heitert. 2009. Archaeological Overview and Assessment Bunker Hill Monument Charlestown, Massachusetts, Chapter 4 – Evaluation of Previous Archaeological Work and Collections, pgs. 77-80. PAL Report No. 2141. Submitted to Northeast Region Archaeology Program, National Park Service, Lowell, MA

[8] Massachusetts Historical Commission letter to City of Boston Department of Neighborhood Development, February 12, 2016. MHC #RC.55944.

preservation community to understand their concerns and priorities, which resulted in the formation of a preservation working group. The group meets monthly to help shape how the cultural and historical story of Charlestown is reflected through landscape and architectural design of Project.

The Project team, in consultation with the community, has developed a comprehensive set of design goals, outlined in Chapter 2, *Urban Design*. The design goals take into consideration the Project's potential impact on the surrounding residential neighborhoods. The primary goals focused on the development being sensitive to its historic context include knitting the neighborhood back together; telling Charlestown's story; and reflecting Charlestown's architecture. Building materials will reflect the local vernacular of with opportunities for contemporary expression. Taller buildings will be sited toward taller features like the Tobin Bridge.

4.5.3 Geotechnical

The Site is in the immediate vicinity of Saint Catherine of Siena Roman Catholic Church Complex and the William Henry Kent Primary School. Vibration impacts during construction are anticipated to be minimal for nearby historic and non-historic structures. A geotechnical monitoring program will be implemented prior to and during construction, and will likely consist of settlement monitoring of adjacent buildings. The Project's geotechnical team will install settlement points on the surrounding buildings. The team will survey/monitor those points prior to, during, and post construction.

In addition, seismographs will record vibrations during sheet pile wall installation (excavation support wall) and foundation pile installation to monitor vibrations. An engineer's representative will be on site full time during foundation pile installation to monitor these activities in accordance with the Building Code requirements.

4.6 Regulatory Context

Regulations related to the reviews required by the Boston Landmarks Commission and the Massachusetts Historical Commission are described in the sections below.

4.6.1 Boston Landmarks Commission Article 85 Review

The proposed demolition of the existing buildings on the Site will be subject to review by the Boston Landmarks Commission (BLC) under Article 85, Demolition Delay, of the Code, as further described in Section 4.5.1, *Demolition of Historic Resources,* above. BLC also typically reviews any Historical Resources component of the Article 80 submissions, in an advisory capacity, as part of Large Project Review.

4.6.2 Massachusetts Historical Commission Review

The MHC has review authority over projects requiring state or federal funding, licensing, permitting, and/or approvals, in order to evaluate potential direct or indirect impacts to

properties listed in, or eligible for listing in, the National and State Registers of Historic Places, in compliance with State Register Review requirements (M.G. L. Chapter 9, Sections 27-27c, as amended by Chapter 254 of the Acts of 1988) and Section 106 of the National Historic Preservation Act of 1966. The filing of the ENF/EPNF will initiate the required MHC review concurrent with the MEPA review process.

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

Historic Properties Listed in the State and National Registers
- A Bunker Hill Monument (BOS.9053/NR #66000138)
- B Charlestown Navy Yard (BOS.ACQ/ NR #66000134)
- C Monument Square Historic District (BOS.CM/NR #87001128)

Properties Included in the Inventory of Historic and Archaeological Assets of the Commonwealth
1. 1-8 Avon Place (BOS.CK)
2. 3-15 Bolton Street (BOS.AAV)
3. 23-46 Green Street (BOS.CF)
4. 2-22 Hill Street - 1-5 Mystic Place (BOS.CE)
5. 5-14 Lexington Avenue (BOS.CQ)
6. 7-58 Monument Avenue (BOS.AAX)
7. 19-35 Russell Street (BOS.AAY)
8. Charlestown Valley-Town Hill (BOS.CD)
9. Saint Catherine of Siena Roman Catholic Church Complex (BOS.VK)
10. Saint Mary's Roman Catholic Church Complex (BOS.VL)
11. William Henry Kent Primary School (BOS.4734)
12. Winthrop Square (BOS.CB)

Source: ArcGIS Online Bing Aerial

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Figure 4.1

Historic Resources

One Charlestown
Charlestown, MA

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5 Transportation and Parking

This chapter provides an overview of the Project's transportation characteristics. The chapter also includes a proposed scope and study methodology to evaluate existing and future transportation conditions in the forthcoming Environmental Impact Report/Project Impact Report (EIR/PIR). The proposed scope and methodology will be subject to further discussion with the Boston Transportation Department (BTD) and the Massachusetts Department of Transportation (MassDOT).

The following sections briefly describe the area's transportation characteristics including the roadway network and existing public transportation services. It includes a forecast of the Project's expected travel characteristics and trip generation for the initial development phase and for the Project's full build out. The section identifies a proposed study area for the EIR/PIR analysis and includes an initial set of Travel Demand Management elements that will be considered as the Project proceeds.

5.1 Key Findings and Benefits

The key findings and benefits of the Project related to transportation and parking are listed below.

- The Charlestown neighborhood is served by a number of public transportation services, including MBTA Bus, Orange Line, Ferry, and Commuter Rail service, as well as private shuttle buses associated with local institutions.
- At full build, the Project is expected to generate approximately 7,024 net new daily vehicle trips, with approximately 412 and 529 net new vehicle trips being made in the morning and evening peak hours, respectively. This level of vehicle trip generation reflects the Project's location in an existing urban environment.
- An analysis of trip distribution and assignment, as well as bicycle and pedestrian conditions, will be presented in the EIR/PIR.

- As currently envisioned, at full build out the Project will provide approximately 2,400 parking spaces, approximately 320 of which will be public on-street parking spaces, to serve the site.
- The current residential parking ratio of 0.3 spaces per unit will be maintained for affordable units, and parking ratios of 0.8 and 1.0 will be provided for the market rate rental and condominium units, yielding an overall parking ratio of approximately 0.65 spaces per unit for the development.
- The retail space will not be "destination" retail, and is not expected to attract significant trips from beyond the neighborhood. The retail will be supported by on-street parking.
- Similarly, the community space will provide services supporting the neighborhood, and is not expected to attract trips from beyond the neighborhood.
- The Project will incorporate a robust program of TDM strategies to take full advantage of its multiple mobility options and its synergy with the surrounding vibrant mixed-use neighborhoods.

5.2 Project Overview

The Project comprises the rebuilding of an approximately 27.6-acre area in the city's Charlestown neighborhood to create a new mixed-income housing development of approximately 3,200 units. The Project involves establishing a new street grid to connect existing streets across Bunker Hill Street.

The Project will be constructed on a rolling basis in multiple phases over an approximately 10-year period (see Figure 1.7, Phasing Plan). Residents of existing units will be temporarily relocated to facilitate demolition of existing units and construction of new units. Therefore, each phase will involve the elimination and addition of residential units and supporting parking, yielding a net change in travel demand (trip generation) reflecting the mix of unit types for each phase. A primary intent of this section is to present preliminary estimates of Project trip generation, which will inform the scope of a comprehensive traffic impact analysis to be provided in the subsequent EIR/PIR. The EIR/PIR analysis will consider all modes of transportation, including transit, bicycle and pedestrians, as well as parking and Transportation Demand Management (TDM) strategies to be implemented as part of the Project.

5.3 Roadway Network

The Project Site is located proximate to the regional roadway system, which includes Interstate 93, Rutherford Avenue (Route 99), and U.S. Route 1 (including the Tobin Bridge crossing of the Mystic River). The Charlestown neighborhood has three regional roadway gateways: Travelers from the south enter through City Square; Sullivan Square serves as the

gateway to travelers from the north and west; and the Gilmore Bridge provides a direct connection between Charlestown and Cambridge.

The Charlestown neighborhood is served by a well-defined internal network of major streets. Main Street, Bunker Hill Street (which carries about 6,500 vehicles per day), Chelsea Street (which carries about 10,000 vehicles per day), and Medford Street (which carries about 5,500 vehicles per day) are all important city streets, and collectively they serve as the backbone of the neighborhood. From these four streets, access into the individual smaller communities is provided.

Medford Street and Bunker Hill Street directly abut the Site to the north and south, respectively. Several cross streets connect Medford Street and Bunker Hill Street, including Polk, Monument, Tufts, Corey and Decatur Streets. Walford Way, O'Reilly Way, and Samuel Morse Way provide important east-west connectivity within the internal Site roadway network.

5.4 Public Transportation

The Charlestown neighborhood is served by a number of public transportation services, as shown in Figure 5.2. These include the following:

- **MBTA Orange Line.** The Orange Line operates on six-minute headways during rush hour service, eight minute headways during midday, and ten-minute headways during evening and night service. The two closest two stations are Community College (approximately 0.5 miles) and Sullivan Square (approximately 0.9 miles).
- **MBTA Bus Routes.** Routes 89, 92, and 93 provide neighborhood connections to regionally important locations. Route 93 provides the most direct service to the Site, running along Bunker Hill Street with several local stops.
- **MBTA Commuter Ferry**. The Inner Harbor Ferry operating between the Charlestown Navy Yard and Long Wharf (run by Boston Harbor Cruises) connects Charlestown to Downtown Boston. Service runs from 6:30 AM until 8:25 PM on weekdays with boats departing every 15 minutes and from 10:00 AM until 6:25 PM on weekends with boats departing every half hour. This service runs year-round except during severe weather. The vessel capacities are 149 and 190 passengers, depending on the vessel, per U.S. Coast Guard Regulations.
- **MBTA Commuter Rail.** Connections to points north and west can be made at North Station, which is approximately 1.5 miles from the Site. Residents of One Charlestown can walk to the Community College Station and take the Orange Line one stop to North Station to make connections to the Fitchburg, Lowell, Haverhill, and Newburyport/ Rockport lines. Connections to the Worcester, Needham, Providence, and Fairmont Lines can be made at Back Bay, which is six stops further on the Orange Line. The service characteristics of MBTA transit services are summarized in Table 5.1.

- **Private Shuttle Bus Service.** Partners HealthCare provides a free shuttle service to its employees, patients, and visitors from the Charlestown Navy Yard to North Station and from Massachusetts General Hospital's (MGH) Main Campus to the Charlestown Health Center (73 High Street). Private shuttle service from the Navy Yard to North Station is provided on weekdays from 6:00 AM to 9:00 AM and from 3:00 PM to 6:00 PM and on weekends from 5:30 AM to 9:00 AM. The shuttle runs approximately every 10 minutes. Service from MGH-Main Campus to the Charlestown Health Center is provided on weekdays from 9:00 AM to 11:06 AM and from 1:00 PM to 4:00 PM with limited scheduled service. Bunker Hill Community College also offers shuttle services to several sites within its system.

TABLE 5.1 MBTA PUBLIC TRANSPORTATION SERVICE SUMMARY

Transit Service	Origin-Destination	Major Stops	Nearest Stop to Project Site	Peak Hour Headway (mins)	Hours of Service
MBTA Bus Route 89	Clarendon Hill or Davis Square – Sullivan Sq. Station	Teele Square Powder House Square Magoun Square Winter Hill	Along Bunker Hill Street (adjacent to Site)	9 - 10	Weekday: 4:33 AM – 1:32 AM Saturday: 4:33 AM – 1:29 AM Sunday: 5:15 AM – 1:11 AM
MBTA Bus Route 92	Assembly Square Mall – Downtown Boston	Sullivan Square City Square Haymarket Station	Main Street at Harvard Street	15	Weekday: 5:00 AM – 10:16 PM Saturday: 5:35 AM – 9:34 PM Sunday: No Service
MBTA Bus Route 93	Sullivan Square Station – Downtown Boston	Bunker Hill Monument City Square Charlestown Navy Yard Haymarket Station	Along Bunker Hill Street (adjacent to Site)	7 – 8	Weekday: 4:49 AM – 1:34 AM Saturday: 4:48 AM – 1:40 AM Sunday: 5:28 AM – 12:23 AM
MBTA Commuter Ferry	Boston Long Wharf – Charlestown Navy Yard	Long Wharf Charlestown Navy Yard	Charlestown Navy Yard	15	Weekday: 6:30 AM – 8:25 PM Weekend: 10:00 AM – 6:25 PM
MBTA Orange Line	Oak Grove – Forest Hills	North Station (Green Line) State Street (Blue Line) Downtown Crossing (Red Line) Back Bay (Commuter Rail)	Community College	6	Mon-Sat: 5:16 AM – 12:35 AM Sunday: 6:00 AM – 12:35 AM

Sources: MBTA Ridership and Service Statistics, Fourteenth Edition 2014 (Blue Book); Bus and Subway Schedules Effective June 25, 2016 - September 2, 2016; Ferry Schedule Effective November 4, 2015

5.5 Trip Generation

Presented below is a description of the travel forecasts for the Project at completion and for Phase 1 of the development (construction of buildings A through E). The methodology describes how the expected number of vehicle, pedestrian, and bike/walk trips that the Project will generate is calculated. The section begins with a description of a forecast of total daily and peak hour trips by vehicle. The Institute of Transportation Engineer (ITE) rates generally present forecasts for non-urban locations and assume that there is, at best, limited public transportation service available. To take into account the extensive public transportation service that is available in Boston, the analysis goes further to determine the likely travel modes and vehicle occupancy rates for people traveling to and from the Project. The expected number of automobile trips is calculated based on this analysis, and compared to the estimate of existing trips generated by existing uses on the Project site and therefore already on the transportation network today. This process results in an estimate of net new vehicle trips at full build.

5.5.1 ITE Trips - Unadjusted

As required for inclusion in the ENF, trip generation for the Project was based initially on the ITE trips rates without adjustment for local mode share and vehicle occupancy characteristics. The results of this analysis are presented in Table 5.2, which includes daily (24-hour) and peak hour (morning and evening) gross project trips, (i.e., project trips prior to deduction of trips associated with existing site land use which will be eliminated).

The retail and community space components of the Project are not expected to attract significant trips from beyond the neighborhood, and will comprise largely trips internal to the neighborhood. However, to present a conservative analysis, retail trip generation has been included in the analysis. The retail trips were adjusted based on ITE Trip Generation methodology to account for internal capture (shared trips) between the residential and retail uses.

The unadjusted trips are largely based upon non-urban data and do not represent the actual vehicle trips expected to be generated by the Project. The trips generated by the Project are more appropriately determined by applying mode share characteristics for this location in Charlestown, as described in Section 5.5.3, *Adjusted Project Trips*.

The morning and evening peak hours are the busiest continuous 1-hour during the weekday morning and evening commuter periods, respectively. The morning peak hour in the study area occurs between 8:00 and 9:00 AM. The evening peak hour in the study area occurs between 4:45 and 5:45 PM.

TABLE 5.2 GROSS UNADJUSTED ITE PROJECT TRIPS[1]

	Daily	AM	PM
Residential, 2,250 Apartments			
In	7,481	230	907
Out	7.481	918	488
Total	14,963	1,134	1,395
Residential, 350 Elderly Units			
In	602	24	47
Out	602	46	40
Total	1,204	70	87
Residential, 600 Condos			
In	1,743	45	209
Out	1,743	219	103
Total	3,486	264	312
Retail, 45,000 SF			
In	961	27	80
Out	961	16	87
Total	1,922	43	167
Total, Full Build			
In	10,787	325	1,243
Out	10,787	1,200	718
Total	21,574	1,525	1,961

Sources: ITE Trip Generation Handbook 9th Edition; Land Use Code (LUC) 220 – Apartment; LUC 230 – Residential Condominium/ Townhouse; LUC 252 – Senior Adult Housing– Attached; LUC 820 – Shopping Center

Notes: [1] Unadjusted ITE trips are total trips without adjustment for mode shares characteristic of urban situations. The trips presented are gross project trips prior to deduction of trips associated with existing site land use which will be eliminated.

5.5.2 Mode Share and Vehicle Occupancy

Mode shares for residential and retail use were established from U.S. Census data and the Boston Transportation Department's Mode Splits, respectively, for this location to determine travel characteristics for the Project. The mode shares and average vehicle occupancies for the Project are presented in Tables 5.3 and 5.4, respectively.

TABLE 5.3 MODE SHARES

Mode	Residential[1]	Retail[2]
Vehicle	47%	39%
Transit	35%	23%
Walk	10%	32%
Bike	2%	6%
Other	6%	0%

Source: [1] 2013 American Community Survey Data
[2] Boston Transportation Department Mode Splits for District 11

TABLE 5.4 VEHICLE OCCUPANCY RATES (VOR)

Land Use	National VOR	Local VOR
Residential	1.13	1.10
Retail	1.78	1.10

Source: National VOR based on 2009 NHTS
Local VOR based on 2013 American Community Survey Data

5.5.3 Adjusted Project Trips

To convert the unadjusted ITE Project trips to actual numbers of expected Project trips by mode, the local mode shares and vehicle occupancy ratios for each land use were applied to the unadjusted ITE trips.

As shown in Table 5.5, under full build, the Project is expected to generate approximately 10,716 (24-hour) gross vehicle trips, with approximately 743 and 975 gross vehicle trips being made in the morning and evening peak hours, respectively. This level of vehicle trip generation reflects the Project's location in an existing urban environment. Again, it is important to note that this gross level of trip generation for the entire Project, and does not account for the existing trip generation on the Project Site, which will be eliminated by the construction of the Project.

TABLE 5.5 ADJUSTED GROSS PROJECT TRIPS BY MODE

	Vehicle	Transit	Walk	Bike
Daily				
In	5,351	4,279	1,657	325
Out	5,351	4,279	1,657	325
Total	10,702	8,558	3,314	650
Morning Peak Hour				
In	147	129	49	10
Out	548	475	143	29
Total	695	604	192	39
Evening Peak Hour				
In	558	494	177	35
Out	315	286	121	23
Total	873	780	298	58

5.6 Net-New Vehicle Project Trips

Since the Site is currently occupied, it is necessary to calculate the number of existing trips generated by the Site to avoid double counting when forecasting future trips. The trips made to/from the Site already exist on the current roadway network. Table 5.6 below shows the current number of trips generated by the 1,150 residential units on the existing Site. These trips were calculated using the same methodology described above.

TABLE 5.6 EXISTING VEHICLE TRIPS GENERATED BY THE EXISTING USES ON THE SITE

Daily	
In	1,846
Out	1,846
Total	3,692
Morning Peak Hour	
In	57
Out	227
Total	284
Evening Peak Hour	
In	224
Out	120
Total	344

Table 5.7 presents the number of net new vehicle trips that the Project will generate, after subtracting the Site's existing trips.

TABLE 5.7 NET-NEW PROJECT GENERATED VEHICLE TRIPS

	Full Build	Existing	Net-New
Daily			
In	5,358	1,846	3,512
Out	5,358	1,846	3,512
Total	10,716	3,692	7,024
Morning Peak Hour			
In	147	56	91
Out	548	227	321
Total	695	283	412
Evening Peak Hour			
In	558	224	334
Out	315	120	195
Total	873	344	529

As shown in Table 5.7, the full build Project is expected to generate approximately 7,024 (24-hour) vehicle trips, with approximately 412 and 529 vehicle trips being made in the morning and evening peak hours, respectively. This level of vehicle trip generation reflects the Project's location in an existing urban environment.

5.7 Project Trip Distribution and Assignment

The transportation analysis included in the EIR/PIR will identify the expected travel routes for new trips, which will be assigned to the area's roadway corridors. Because the Site is so large and covers many individual city blocks, the expectation is that trips will be dispersed across a wide area, reducing the potential impact at any one location.

5.8 Proposed Study Area

The EIR/PIR transportation impact analyses will be performed based on a detailed scope of analysis to be coordinated with and approved in advance by BTD and MassDOT. Based on an initial evaluation of the expected increase in Project vehicle-trips and their potential effects on the area roadway network, a study area comprising approximately ten surface street intersections is proposed, as presented in Figure 5.3.

Traffic counts for the study area will be performed to establish existing conditions for the morning and evening peak hours. A future year forecast that considers background development and the effects of regional traffic growth will be conducted for 2019 (or other year as determined in consultation with BTD)for the full build out. A traffic operations analysis for each study intersection will be conducted for existing conditions, along with No-Build and

Build conditions analyses for each future year. If deficient conditions are discerned, measures to mitigate those conditions will be identified.

5.8.1 Pedestrian and Bicycle Conditions

In addition to analysis of vehicular traffic from the Project, the EIR/PIR will describe the existing and proposed pedestrian and bicycle environments. There Project will take advantage of the opportunity to improve pedestrian amenities by providing comfortable and thoughtfully designed sidewalks, ADA-accessible ramps at intersections, and safe crossing patterns. The development of the roadway network will also incorporate bicycle facilities into the design of the street system. The EIR/PIR will explore these issues in greater detail.

5.9 Parking

As currently envisioned, at full build out the Project will provide approximately 2,080 off-street parking spaces to serve the Site. A detailed parking analysis of off-and on-street parking by phase will be presented in the EIR/PIR. It is anticipated that the current parking ratio of 0.3 spaces per unit will be maintained for affordable units, and that parking ratios of approximately 0.75 and 1.0 will be provided for the market rate rental and condominium units, yielding an overall parking ratio of approximately 0.65 spaces per unit for the development. Figure 5.4 includes the proposed off-street parking plan.

5.10 Transportation Demand Management

The Project will incorporate a robust program of TDM strategies to take full advantage of multiple mobility options and its synergy with the surrounding vibrant mixed-use neighborhoods. The goal will be to develop a broad set of healthy alternatives for residents of the Site so they will not be highly dependent on their personal vehicles. As the Project planning moves forward, actions that will promote these alternatives will be identified.

An important opportunity exists to provide improved bus service to the Site. As the density of the development increases, demand for improved and expanded bus service will increase as well. The Proponent will work closely with the City and the MBTA to develop an operational plan for meeting these needs.

As noted above, the Site will be designed with generous and attractive sidewalks, ADA-compliant ramps and improved pedestrian crossings to encourage people to walk to their destinations. Bike accommodations are being carefully considered in the design of the development's street system.

An important component of the TDM plan will be the incorporation of appropriate bicycle accommodations throughout the Site, including secure bike parking for residents of the

Project. The proponent will follow BTD guidelines to encourage the use of bicycles. The proponent will also incorporate car sharing services within the development.

There is increasing attention on the water transportation options available to people traveling between Charlestown and downtown. The City Council has expressed interest in exploring an expansion of the current ferry service to extend beyond one destination in Downtown (Long Wharf). An analysis of service improvements to East Boston and the Seaport District may soon be underway. Such improvements would significantly improve mobility opportunities for residents of the Charlestown neighborhood.

The EIR/PIR will outline the Project's expected commitments to each of these traffic-reducing measures in greater detail.

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Sources: ESRI Street Map Base

Stantec vhb

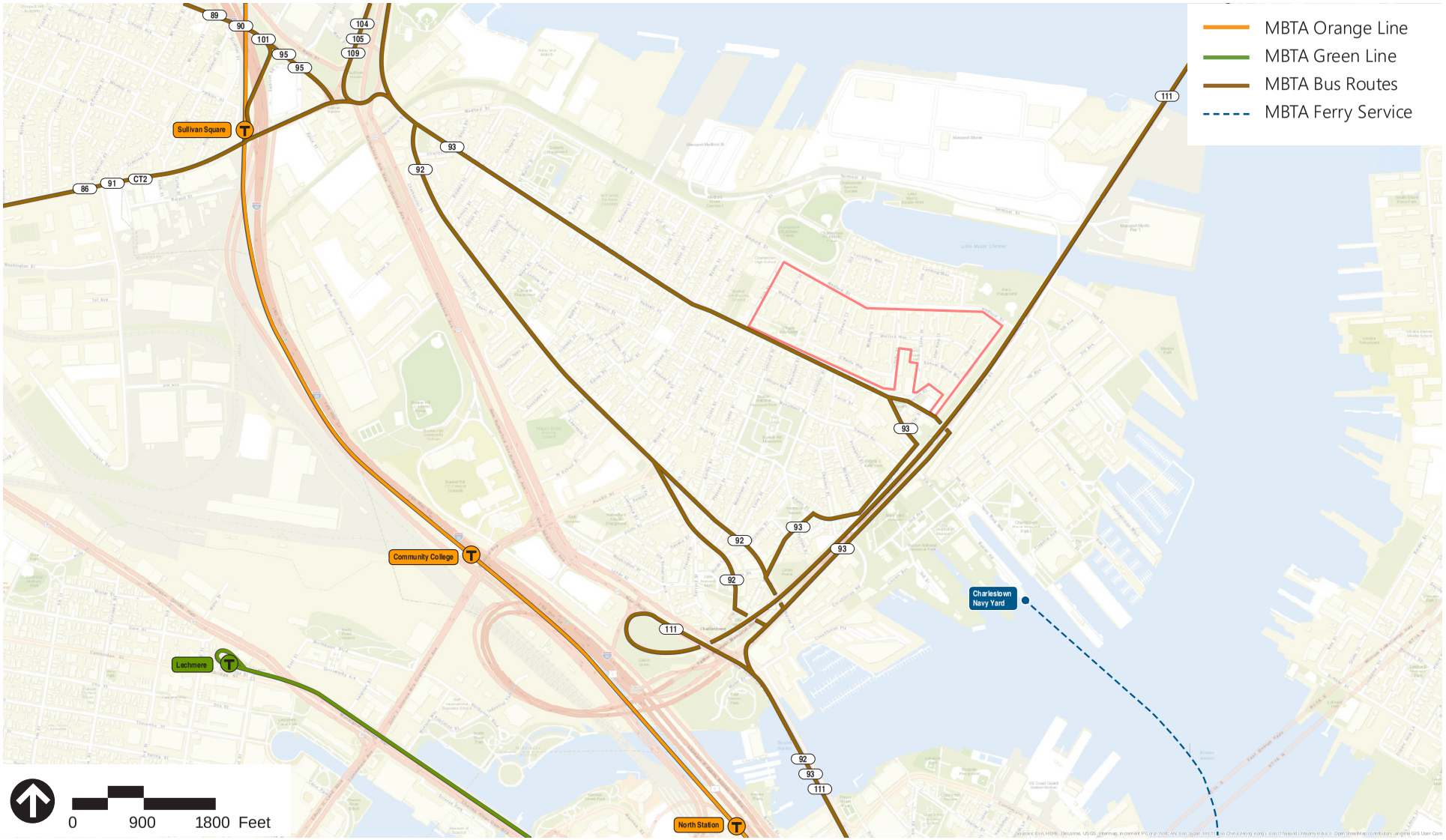
Figure 5.1

Site Location Map

CORCORAN JENNISON Companies DMLA

ground SunCal

One Charlestown
Charlestown, MA

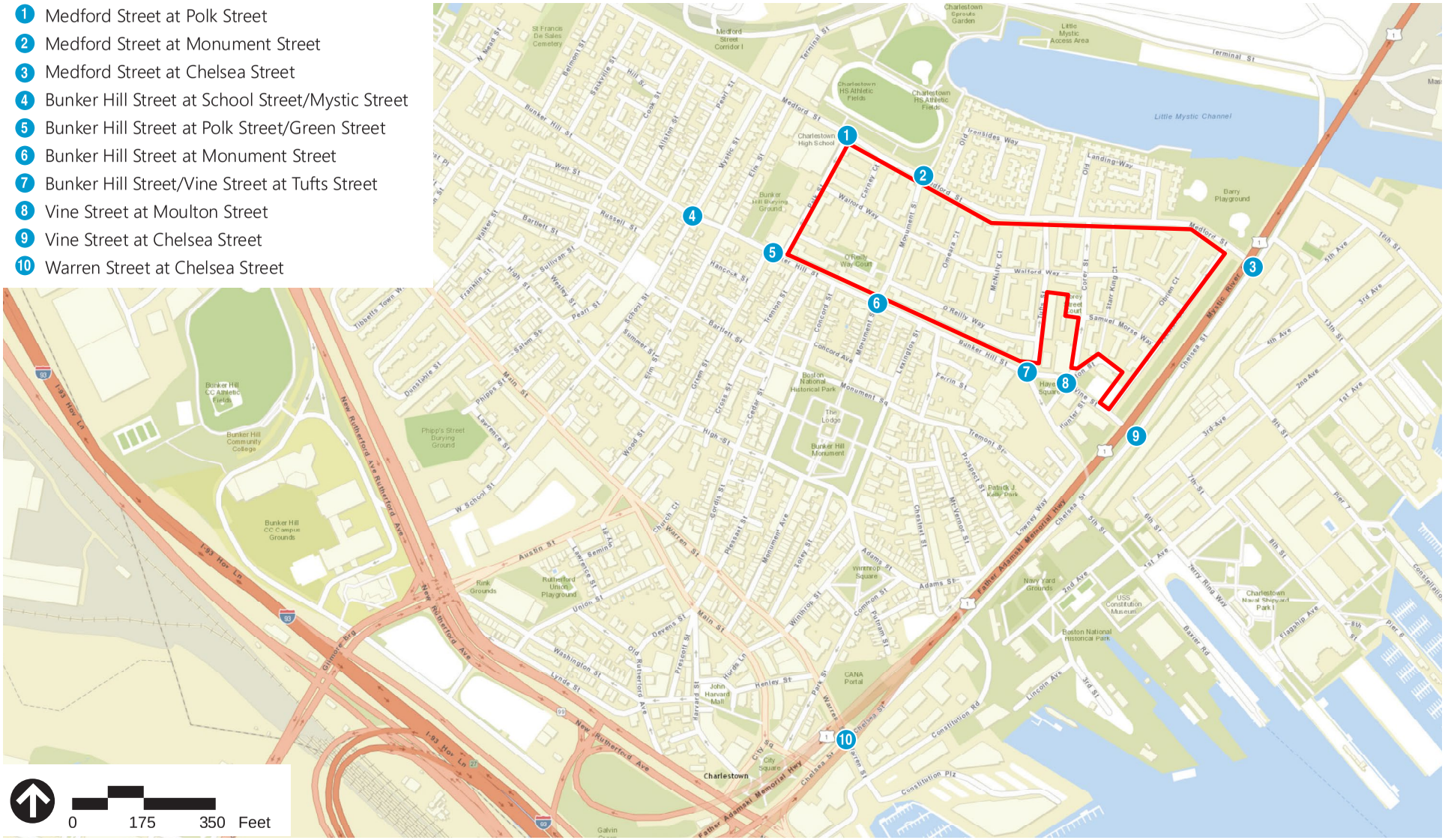


Sources: ESRI Street Map Base

Figure 5.2
Public Transportation

One Charlestown
Charlestown, MA

1. Medford Street at Polk Street
2. Medford Street at Monument Street
3. Medford Street at Chelsea Street
4. Bunker Hill Street at School Street/Mystic Street
5. Bunker Hill Street at Polk Street/Green Street
6. Bunker Hill Street at Monument Street
7. Bunker Hill Street/Vine Street at Tufts Street
8. Vine Street at Moulton Street
9. Vine Street at Chelsea Street
10. Warren Street at Chelsea Street



Sources: ESRI Street Map Base

Stantec vhb

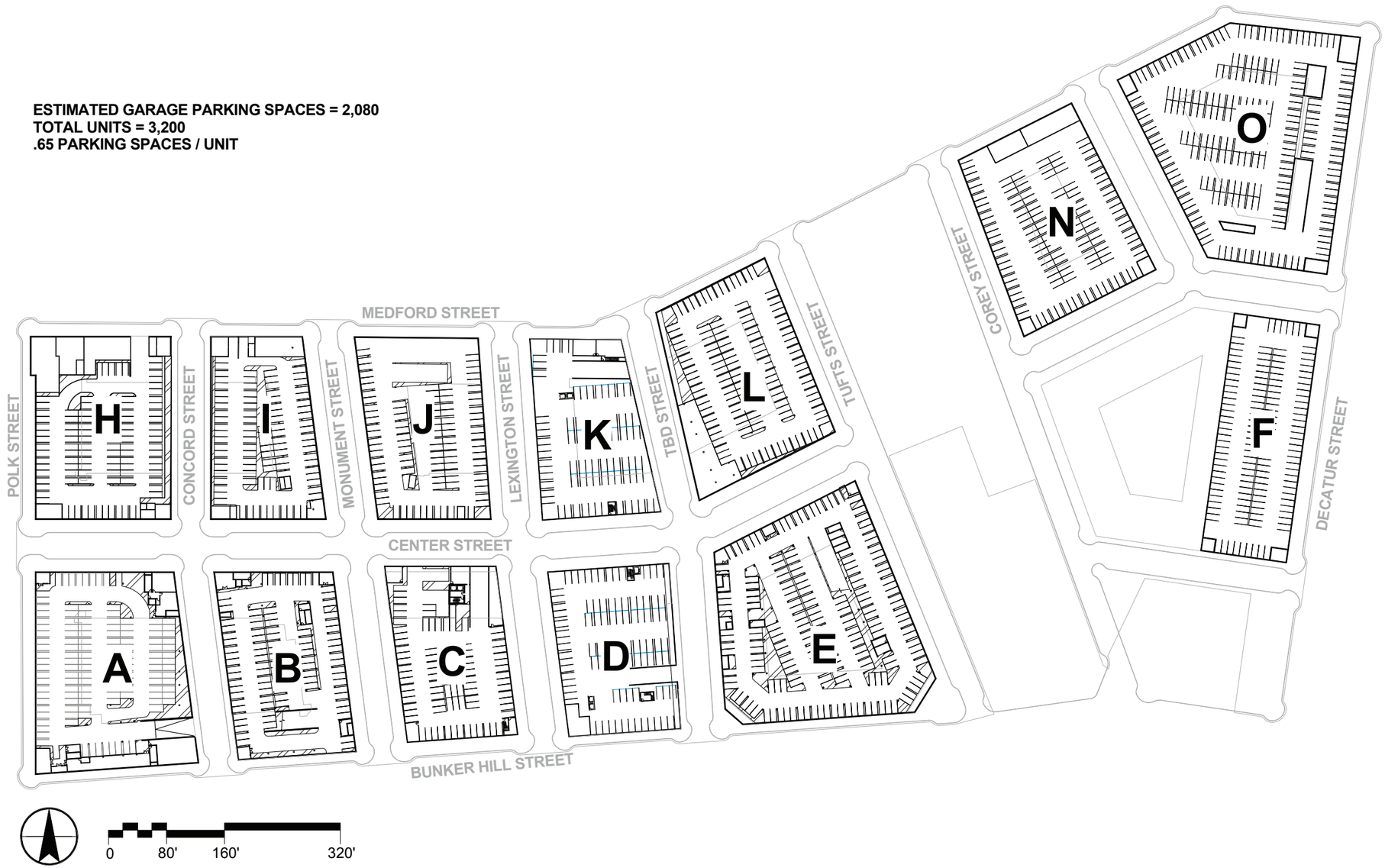
Figure 5.3

Study Area Intersections

One Charlestown
Charlestown, MA

CORCORAN JENNISON Companies DMLA ground SunCal

ESTIMATED GARAGE PARKING SPACES = 2,080
TOTAL UNITS = 3,200
.65 PARKING SPACES / UNIT



Source Info: Stantec

CORCORAN JENNISON Associates | SunCal | ground | Nitsch Engineering | WS | Architects & Consultants | DM LA | DiMella Shaffer | RWS

Stantec | vhb

Figure 5.4
Proposed Garage Parking Plan

One Charlestown
Charlestown, MA

6

Environmental Protection

This chapter presents information on the existing environmental conditions in the vicinity of the Project Site and the potential changes that may occur as a result of the Project. The Project will better utilize the Project Site and build on/complement adjacent uses while avoiding or minimizing potential adverse environmental impacts to the Project area to the greatest extent feasible. Studies to be conducted during the next phase of environmental review include Wind, Shadow, Daylight, and Solar Glare.

The sections that follow identify impacts that have been avoided, minimized and/or mitigated through design and/or management while addressing local, state, and federal requirements. Temporary construction-period impacts will be managed to minimize disruption to the surrounding neighborhood. Sustainability and climate resiliency have been addressed in Chapter 3, *Sustainability and Green Building*.

6.1 Key Findings and Benefits

The key findings and benefits of the Project related to environmental protection include:

- Based on an analysis of representative building types, greenhouse gas emissions from stationary sources (buildings) will be reduced by approximately 18.6% to 28.5% by designing to meet the requirements of the current Stretch Energy Code.
- The Project will not affect the water quality of nearby water bodies.
- The Project is not located in a Federal Emergency Management Agency Special Flood Hazard Area.
- As a non-water dependent use located on landlocked tidelands, the Project requires the Secretary of Energy and Environmental Affairs to issue a Public Benefit Determination under the provisions of Chapter 91.
- The noise analysis demonstrates that the Project will comply with City of Boston noise regulations, and existing noise conditions will be mitigated to comply with HUD regulations.
- While there have been three hazardous material releases on the Site, DEP has verified that there is a condition of No Significant Risk for current and future conditions. A Phase II

Environmental Site Assessment (ESA) has been proposed for the Project Site to gather more information.

- The Project Site is not located within the Groundwater Conservation Overlay District, and construction is not expected to have adverse short or long-term impacts on groundwater conditions.
- A Construction Management Plan will include detailed information about construction activities, specific construction mitigation measures, and construction materials access and staging area plans to minimize impact on the surrounding neighborhood.

6.2 Air Quality

The following section presents a summary of the parameters for a preliminary energy model that have been developed for the Project and the planned approach for quantification of mobile source emissions in later filings. The DPIR/DEIR will follow the guidelines set out for the City and MEPA processes for air quality and greenhouse gas ("GHG") assessments. The air quality analysis will include a mesoscale regional analysis (VOC and NOx), a mobile source GHG analysis, and a microscale (hotspot) air quality assessment. The regulations and requirements and anticipated related analysis are described in more detail below.

6.2.1 Introduction and Regulations

A preliminary energy assessment, consistent with Article 37, Green Building/Climate Change, [1] has been provided for a selection of representative building types (one rental building, one condominium building, and one senior building) within the Project. A full GHG assessment of all buildings will be prepared for future filings. The assessment will include estimated emissions of carbon dioxide (CO_2) from Project-related stationary CO_2 sources, such as fuel burning, and estimated building electrical/gas consumption, as required by the *MEPA Greenhouse Gas Emissions Policy and Protocol* (the "MEPA GHG Policy").[2] This future analysis will identify and describe the feasible measures to minimize stationary source GHG emissions for the Project. Compliance with the MEPA GHG Policy requires a commitment to energy reduction measures. A preliminary description of potential energy conservation measures for the representative buildings has been included. The Proponent will continue to evaluate and incorporate sustainable design, including energy conservation measures, throughout the design process in order to meet future requirements. The following presents a summary of the preliminary energy analysis conducted for the Project.

The purpose of the preliminary energy analysis is to:

- Outline energy conservation measures ("ECMs") assumed to be included in the design; and

[1] City of Boston Zoning Code Article 37, Green Building/Climate Change, Preparedness and Resiliency Review Procedures and Submittal Requirements, September 1, 2015.
[2] MEPA Greenhouse Gas Policy and Protocol, Executive Residential of Energy and Environmental Affairs, effective November 1, 2007 (revised version effective May 5, 2010).

- Evaluate the performance of the current design with regards to meeting the Stretch Energy Code.

MEPA Greenhouse Gas Policy and Protocol

The Executive Office of Energy and Environmental Affairs (EEA) has developed the MEPA Greenhouse Gas Emissions Policy and Protocol (the "MEPA GHG Policy"), which requires project proponents to identify and describe the feasible measures to minimize both mobile and stationary source GHG emissions generated by their proposed project(s). Mobile sources include vehicles traveling to and from a project while stationary sources include on-site boilers, heaters, and/or internal combustion engines (direct sources), as well as the consumption of energy in the form of fossil fuels (indirect sources). Greenhouse gases include several air pollutants, such as CO_2, methane, hydrofluorocarbons, and perfluorocarbons. The MEPA GHG Policy calls for the evaluation of CO_2 emissions for land development projects because CO_2 is the predominant man-made contributor to global warming. This evaluation makes use of the terms CO_2 and GHG interchangeably.

The MEPA GHG Policy states that all projects undergoing MEPA review requiring the submission of an Environmental Impact Report (EIR) must quantify the project's GHG emissions and identify measures to avoid, minimize, or mitigate such emissions. In addition to quantifying project-related GHG emissions, the MEPA GHG Policy requires proponents to quantify the effectiveness of proposed improvements in terms of energy savings, and therefore, potential emissions reductions. The goal of the MEPA GHG Policy is to identify and implement measures to minimize or reduce the total GHG emissions anticipated to be generated by that respective project.

Massachusetts Stretch Energy Code

As part of the Green Communities Act of 2008, Massachusetts developed an optional building code, known as the Stretch Energy Code, which gives cities and towns the ability to choose stronger energy performance in buildings than required in the State Building Code. The Stretch Energy Code increases the energy efficiency code requirements for new construction (both residential and commercial) and for major residential renovations or additions in municipalities that adopt it.

The current Stretch Energy Code requires the Project to achieve at least a 20% overall reduction in annual energy use compared to a baseline using requirements of ASHRAE 90.1-2007. For projects of this size and type, the Stretch Energy Code requires modeling of base and proposed cases based on the methodology as is defined in ASHRAE 90.1- Appendix G. On July 1, 2014, the IECC2009 and ASHRAE 90.1-2007 ceased to be a code option for non-stretch Code communities, and the IECC2012 and ASHRAE standard 90.1-2010 became the new/updated state-wide Base Energy Code. It is expected that an updated Stretch Energy Code, when enacted, will require additional energy reductions beyond these standards and that designated Green Communities, such as Boston, will automatically adopt any updates to the Stretch Energy Code.

Because the Project is in an early stage of design, assumptions about certain Project elements, such as interior fit-out and specific HVAC equipment efficiency ratings, have been made to calculate the estimated GHG emissions reduction associated with the Project.

6.2.2 Stationary Source Assessment Methodology

In addition to quantifying project-related GHG emissions, the MEPA GHG Policy also requires proponents to quantify the impact of proposed GHG reduction measures in terms of emissions and energy savings that would result from exceeding base code requirements. The Project has been designed to meet the requirements of the current Stretch Energy Code requirements for GHG emissions (compared to a base design compliant with ASHRAE 90.1-2007). The Project will be evaluated with and incorporate sustainable design, including energy conservation measures. To provide for energy efficiency and reduced stationary source GHG emissions, the Proponent has evaluated the following key planning and design criteria:

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

Direct stationary source CO_2 emissions include those emissions from a building itself, such as boilers, heaters, and internal combustion engines. Indirect stationary source CO_2 emissions are derived from the consumption of electricity, heat, or cooling from off-site sources, such as electrical utility or district heating and cooling systems. The direct and indirect stationary source CO_2 emissions from the proposed building sources are calculated using the computer-based Trane Trace 700 model[3] based on assumptions for the Project's building elements, such as (but not limited to) the specific type of use(s) and users of the buildings, building configuration and architecture type, building envelope (walls/windows), interior fit-out (where known), and HVAC system and equipment efficiency ratings.

The GHG mitigation measures can be divided into the buildings' construction materials, architecture, and the heating and cooling processes. The following presents the specific proposed building improvements (and their correlating energy modeling parameters for reference, where applicable) that are assumed to be included as part of the Project for the purpose of this analysis. Since the design and future users of the Project Components are conceptual, the specific proposed improvements may be subject to design modifications, as necessary, using the stationary source GHG emissions reductions goals established by this assessment to guide final building design.

Energy Model and Analysis Conditions

The Trane Trace 700 model is used to estimate the amount of annual energy consumption by simulating a year of building operations based on typical and user-generated yearly weather

▼

[3] Trane Trace 700. *Trane.* <http://www.trane.com/commercial/north-america/us/en/products-systems/design-and-analysis-tools/analysis-tools/trace-700.html>

inputs. The model estimates the buildings' electricity and gas usage based on building design and system assumptions following the energy modeling protocol outlined in Appendix G of ASHRAE 90.1-2007.[4] The amount of consumed energy is then converted into the amount of CO_2 emitted using the standardized conversion factors.[5] The stationary source assessment calculated CO_2 emissions for the following build conditions:

- **Build Condition with MA Building Code (the "Base Case").** The Project uses typical construction materials and building equipment/systems that meet the minimum requirements of the MA Building Code (8th Edition), or the base code. This baseline is established by the energy code as being defined by ASHRAE 90.1 – 2007.
- **Build Condition with Stretch Energy Code (the "Design Case").** The Project includes building design and system improvements in order to meet the current Stretch Energy Code (i.e., 20% improvement over ASHRAE 90.1-2007).

6.2.3 Stationary Source GHG Emissions Assessment

The Project includes the construction of multiple buildings with various uses, including residential, retail, civic and parking. The approach to and results of the building energy model for each representative building is presented below. The noteworthy improvements for the base building (or core and shell) of each representative building are also presented below. While these core and shell building design improvements are preliminary based on conceptual design, they will be mandated by the developer. Specific improvements may be subject to design modification as design progresses. Additional information can be found in Appendix C, Energy Model Supporting Documentation and Appendix D, GHG Supporting Documentation.

Building A

Building A is a mixed-income, low-rise apartment building and is representative of other "rental" type residences at Buildings B, E, F2, H, I, J, L, N, and O2. Table 6.1 below provides a summary of the proposed building improvements assumed for this building. Key energy savings features include improved wall and roof assemblies, improved glazing properties, improved HVAC Systems resulting in improved cooling and heating efficiencies, and reduced lighting power densities.

▼

[4] American National Standards Institute/American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., ASHRAE 90.1-2007-Energy Standard for Buildings Except Low-Rise Residential Buildings, Appendix G, 2007.

[5] 726 lb CO2/MWh was used to convert electricity consumption into the amount of CO2 emissions (2014 ISO-New England Marginal Emissions Report). 117.08 lb CO2/Mbtu was used to convert gas consumption into the amount of CO2 emissions (The Energy Information Administration Documentation for Emissions for GHG).

TABLE 6.1 BUILDING A KEY MODEL ASSUMPTIONS

	Base Case[1]	Design Case
Building Envelope (Construction Assemblies)		
Walls	U-0.064	R-value: 25
Roof	R-value: 21	R-value: 30
Fenestration and Shading		
Windows and Glazing	U- 0.55 SHGC-0.459	U- 0.37 SHGC-0.38
HVAC (Air-side)		
HVAC System	PTAC- DX with hot water coil (Residential) Package Rooftop Air Conditioner with 50% Effective Heat Recovery (Corridors)	Split Systems-DX with hot water coil (Residential) Energy Recovery Unit—Gas Furnace/DX Cooling (Corridors)
Cooling Efficiency	9.3 EER (Residential) 11 EER (Corridor)	13.4 EER (Residential) 13.4 EER (Corridor)
Heating Efficiency	82% Efficient Boiler (Residential) 78% Efficient Furnace (Corridor)	95% Efficient Boiler (Residential) 80% Efficient Furnace (Corridor)
HVAC (Water-side)		
Domestic Hot Water	80% Efficient Boiler	95% Efficient Heater
Lights		
Interior Lighting	0.7 W/SF	0.5 W/SF

1 Base Case represents energy code as being defined by ASHRAE 90.1 – 2007.

The total estimated annual electricity use and natural gas consumption, and associated emissions for the building are presented in Table 6.2. Under the Base Case, the CO_2 emissions are estimated to be 1,669.1 tons per year. With the currently proposed building design and system improvements, the estimated energy use reduction for this type of residential building is 22.5%, which equates to a 21.3% reduction in stationary source CO_2 emissions when compared to the Base Case. The stationary source CO_2 emissions percent reduction for the residential buildings under the Design condition was quantified as follows:

$$355.4/\ 1{,}669.1 = 0.213 \times 100 = 21.3\%.$$

$$\textit{Reduction \%} = \frac{\textit{Emissions Reductions Due to Project Improvements (End Use Savings)}}{\textit{Project-Generated Emissions (Base Case Emissions)}}$$

This methodology is applied consistently to the remaining buildings to determine the percent reduction of stationary source emissions.

TABLE 6.2 BUILDING A STATIONARY SOURCE CO_2 EMISSIONS

	Energy Consumption			CO_2 Emissions		
	Electricity (kWh/yr)	**Natural Gas (MBtu/yr)**	**Total (MBtu/yr)**	**Electricity (tons/ yr)[1]**	**Natural Gas (tons/ yr)**	**Total (tons/ yr)**
Base Case[1]	3,559,934	6,438	18,585	1,292.3	376.9	1,669.1
Design Case	2,881,104	4,575	14,406	1,045.8	267.8	1,313.7
End-Use Savings	678,830	1,863	4,179	246.5	109.1	355.4
Percent Savings			**22.5%**			**21.3%**

tons/yr = short tons per year
1 Base Case represents energy code as being defined by ASHRAE 90.1 – 2007.

Building C

Building C is a high rise condominium and is representative of other "condo" type residences at Building F1. Table 6.3 below presents a summary of the improvements that were included in the energy model for the new residential building. Key energy savings features include improved wall and roof assemblies, improved glazing properties, and improved HVAC Systems resulting in improved cooling and heating efficiencies.

TABLE 6.3 BUILDING C KEY MODEL ASSUMPTIONS

	Base Case[1]	**Design Case**
Building Envelope (Construction Assemblies)		
Walls	U-0.064	R-values: 12, 18
Roof	R-value: 21	R-value: 20
Fenestration and Shading		
Windows and Glazing	U- 0.55 SHGC-0.459	U- 0.37 SHGC-0.38
HVAC (Air-side)		
HVAC System	PTAC- DX with hot water coil (Residential) Package Rooftop Air Conditioner with 50% Effective Heat Recovery (Corridors)	Water Source Heat Pumps (Residential) Energy Recovery Unit—Hot Gas/DX Cooling (Corridors)
Cooling Efficiency	9.3 EER (Residential) 11 EER (Corridor)	12.8 EER (Residential) 12.8 EER (Corridor)
Heating Efficiency	82% Efficient Boiler (Residential) 78% Efficient Furnace (Corridor)	92% Efficient Boiler (Residential) 90% Efficient Furnace (Corridor)
HVAC (Water-side)		
Domestic Hot Water	80% Efficient Boiler	92% Efficient Heater
Lights		
Interior Lighting	0.7 W/SF	0.5 W/SF

1 Base Case represents energy code as being defined by ASHRAE 90.1 – 2007.

The total estimated annual electricity use and natural gas consumption, and associated emissions for the residential building is presented in Table 6.4 below. Under the Base Case, the CO_2 emissions are estimated to be 578.3 tons per year. With the currently proposed building design and system improvements, the estimated energy use reduction for this type of building is approximately 31.3%, which equates to a 30.8% reduction (178.3 tons per year) in stationary source CO_2 emissions when compared to the Base Case.

TABLE 6.4 BUILDING C STATIONARY SOURCE CO_2 EMISSIONS

	Energy Consumption			CO_2 Emissions		
	Electricity (kWh/yr)	**Natural Gas (MBtu/yr)**	**Total (MBtu/yr)**	**Electricity (tons/ yr)[1]**	**Natural Gas (tons/ yr)**	**Total (tons/ yr)**
Base Case[1]	924,751	4,144	7,299	335.7	242.6	578.3
Design Case	651,538	2,792	5,015	236.5	163.5	400.0
End-Use Savings	273,213	1,352	2,284	99.2	79.1	178.3
Percent Savings			**31.3%**			**30.8%**

tons/yr = short tons per year
1 Base Case represents energy code as being defined by ASHRAE 90.1 – 2007.

Building D

Building D is a low-rise apartment building and is representative of senior housing at Building K. Table 6.5 below presents a summary of the improvements that were included in the energy model for Building D. Key energy savings features include improved wall and roof assemblies, improved glazing properties, and improved HVAC Systems resulting in improved cooling and heating efficiencies.

TABLE 6.5 BUILDING D KEY MODEL ASSUMPTIONS

	Base Case[1]	Design Case
Building Envelope (Construction Assemblies)		
Walls	U-0.064	R-value: 25
Roof	R-value: 21	R-value: 30
Fenestration and Shading		
Windows and Glazing	U- 0.55 SHGC-0.459	U- 0.37 SHGC-0.38
HVAC (Air-side)		
HVAC System	PTAC- DX with hot water coil (Residential) Package Rooftop Air Conditioner with 50% Effective Heat Recovery (Corridors)	Split Systems-DX with hot water coil (Residential) Energy Recovery Unit—Hot Gas/DX Cooling (Corridors)
Cooling Efficiency	9.3 EER (Residential) 11 EER (Corridor)	13.4 EER (Residential) 13.4 EER (Corridor)
Heating Efficiency	82% Efficient Boiler (Residential) 78% Efficient Furnace (Corridor)	92% Efficient Boiler (Residential) 80% Efficient Furnace (Corridor)
HVAC (Water-side)		
Domestic Hot Water	80% Efficient Boiler	92% Efficient Heater
Lights		
Interior Lighting	0.7 W/SF	0.5 W/SF

1 Base Case represents energy code as being defined by ASHRAE 90.1 – 2007.

The total estimated annual electricity use and natural gas consumption, and associated emissions for the residential building are presented in Table 6.6 below. Under the Base Case, the CO_2 emissions are estimated to be 1,122.5 tons per year. With the currently proposed building design and system improvements, the estimated energy use reduction for the new residential building is approximately 22.7%, which equates to a 21.8% (244.7 tons per year) reduction in stationary source CO_2 emissions when compared to the Base Case.

TABLE 6.6 BUILDING D STATIONARY SOURCE CO_2 EMISSIONS

	Energy Consumption			CO_2 Emissions		
	Electricity (kWh/yr)	**Natural Gas (MBtu/yr)**	**Total (MBtu/yr)**	**Electricity (tons/ yr)[1]**	**Natural Gas (tons/ yr)**	**Total (tons/ yr)**
Base Case[1]	2,274,550	5,071	12,832	825.7	296.9	1,122.5
Design Case	1,821,283	3,701	9,915	661.1	216.6	877.8
End-Use Savings	453,267	1,370	2,917	164.6	80.3	244.7
Percent Savings			**22.7%**			**21.8%**

tons/yr = short tons per year
1 Base Case represents energy code as being defined by ASHRAE 90.1 – 2007.

Energy Use Index

The Energy Use Index (EUI) is a tool used to provide a common basis of comparison for energy use for various building uses. It is the total amount of energy used at a project over a one-year period, divided by the square footage of that building, and represents the energy consumed by a building relative to its size. Based on Fannie Mae Industry Survey, the median EUI for multi-family housing is 78.8 kBtu/sf[6].

Table 6.7 below provides the EUI for each of the representative buildings under the Base and Design Cases. These EUI's are generally below the median presented above as the survey is based on slightly older buildings where the EUI included below represent more aggressive state building codes as well as aggressive mitigation measures to reduce the energy use and greenhouse emissions. Note that the Base Case EUIs are in line with the median value.

TABLE 6.7 ENERGY USE INDEX

	Energy Use Index (kBtu/sf-yr)	
Representative Building	**Base Case**	**Design Case**
Building A	73.3	56.8
Building C	57.7	39.7
Building D	74.5	57.6

6.2.4 Mobile Source Assessment (Microscale Study)

The objective of the microscale analysis is to determine if the proposed Project will interfere with the attainment or maintenance of the Massachusetts and/or National Ambient Air Quality Standards (NAAQS) established by the Federal Clean Air Act Amendments (CAAA). Massachusetts has developed a State Implementation Plan (SIP) to demonstrate compliance with the CAAA. The SIP contains project level criteria that require that an adequate air quality study be prepared in consultation with the air quality regulatory agencies and that the results of the study demonstrate that:

- Proposed projects will not result in new CO violations, and
- Proposed projects will not result in any existing CO violations being increased.

Either a qualitative or quantitative assessment of the air quality impacts of the Project will be conducted once the full extent of traffic impacts are determined. If any CO violations are predicted, mitigation measures will be developed and tested to meet the SIP and CAAA criteria.

▼

[6] "US Energy Use Intensity by Property Type" *Energy Star Portfolio Manager*. March 2016 <https://portfoliomanager.energystar.gov/pdf/reference/US%20National%20Median%20Table.pdf>

6.2.5 Greenhouse Gas Mobile Source Analysis

Consistent with the MEPA GHG Policy, the Project anticipates presenting a mobile source analysis in the DPIR/DEIR estimating the area-wide GHG emissions from vehicle traffic for a period of one year.

6.2.6 Air Quality Ozone Regional Analysis

The Massachusetts Department of Environmental Protection ("MassDEP") has established guidelines that define the modeling and review criteria for air quality studies prepared pursuant to review under MEPA. These guidelines require that mesoscale analyses be prepared for proposed development projects to determine the change in Project-related ozone precursor emissions. The MassDEP criteria require that proposed development projects include all reasonable and feasible emission reduction mitigation measures if the ozone emissions from the Build Condition are greater than the No-Build Condition. Massachusetts has incorporated this criterion into the SIP.

The predominant source of ozone precursor emissions anticipated are from Project-related traffic. Ozone is not directly emitted by motor vehicles, but is generated when VOC's and NOx emissions from motor vehicles, stationary sources and area sources react in the atmosphere with sunlight and heat. Project-related ozone impacts are determined by assessing the changes in VOC and NOx emissions of motor vehicles. An air quality study will be prepared for the DPIR/DEIR to demonstrate compliance with the SIP criteria. The air quality study will show the Project's change in daily (24-hour period) VOC and NOx emissions. The Project will incorporate reasonable and feasible mitigation measures to reduce VOCs and NOx emissions for the build condition.

6.3 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 be in compliance with local and state stormwater management policies, as described in Section 7.2.

6.4 Flood Hazard

The Project is not located in a Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (SFHA), as depicted in Figure 6.1.

6.5 Wetlands and Waterways

The Project Site does not contain any wetland resource areas or buffer zones subject to the Massachusetts Wetlands Protection Act. Figure 6.1 depicts the environmental constraints on the Site.

As described in Section 1.6.4, a portion of the Project Site (approximately 6,600 sf) is located within landlocked filled tidelands, exempt from licensing under the provisions of Chapter 91, Section 18(b) and 310 CMR 9.04(2). As a non-water dependent use, the Project requires the Secretary of Energy and Environmental Affairs to issue a Public Benefit Determination under the provisions of Chapter 91, Section 18(b)(ii) and 301 CMR 13.00. This section provides a summary of the Project's public benefits to assist the secretary in determining compliance with these requirements.

6.5.1 Public Benefit Determination

The regulations at 301 CMR 13.00 requires the Secretary to consider the following when making a Public Benefit Determination:

- Purpose and effect of the development;
- The impact on abutters and the surrounding community;
- Enhancement of the property;
- Benefits to the public trust rights in tidelands or other associated rights;
- Community activities on the development Site;
- Environmental protection and preservation;
- Public health and safety; and
- General welfare.

The following sections describe how the Project provides appropriate public benefits and is adequately protective of the Public Trust rights inherent in tidelands.

Purpose and effect of the development

The purpose of the Project is redevelop the Bunker Hill Apartments, an existing affordable housing development, into a mixed-use, mixed-income, mixed-ownership community that is connected to the Charlestown neighborhood.

The anticipated effects of the development include increased quality of life for residents; architecture and landscape architecture that is sensitive to the surrounding historic context; an activated streetscape; new public spaces and amenities; an improved transportation grid; and increased accessibility.

Impact on Abutters and Community

The Project will result in a substantial net benefit to the community by converting an aging, isolated public housing development into a vibrant mixed-income, mixed-ownership, mixed-use urban development that will be fully integrated into the surrounding community. A detailed analysis of the Project's benefits to the neighborhood is provided in Chapter 2, *Urban Design*.

The Project's planning principles and design goals fundamentally focus on building community among the existing and future resident population and the surrounding Charlestown community by knitting the neighborhood back together, creating a vibrant and safe walkable environment, introducing new public spaces and amenities, reflecting Charlestown's character and telling its story through design and programming, and other related strategies.

Direct impacts on the community will be realized through a comprehensive package of transportation improvements, to be designed in close consultation with the City of Boston Transportation Department, that will encourage alternatives to single occupancy vehicle use, and improve vehicular circulation and pedestrian safety.

Enhancement of the Property

The Project will enhance the property by providing improvements in the street network, streetscape, landscaping, appearance, functionality, and stormwater management system. The planned improvements will result in a neighborhood with a pedestrian scale and a welcoming, vibrant atmosphere. The Site will be visually attractive, safe, clean and well-kept, enhancing all of these elements when compared to the existing conditions.

Benefits to the Public Trust Rights in Tidelands or Other Associated Rights

The Project will add new civic space to the area containing filled tidelands, encouraging public use. It will also replace existing residential structures with new homes that will be better-oriented to the street. The traditional public trust rights in tidelands, the right to fish fowl and navigate, have long been precluded at the Site by the historic filling and development of Charlestown. However, the modern expression of these traditional public trust rights on filled land isolated from the existing water sheet will be realized by improving public access to and enjoyment of the Site.

Community Activities on the Site

The Project will result in a substantial net improvement to community activities at the Project Site by converting the prior public housing use to a mixed-use development with strong civic and open space components. The planned 3,200 residential units in multiple buildings will create a new vibrant community and encourage passive and active community use of the approximately 27.6 acre Site. The approximately 90,000 SF of civic and retail space will serve the on-site residences and the surrounding neighborhood, creating new opportunities for community use of the Site.

Environmental Protection/Preservation

The Proponent is committed to redeveloping the Project Site in accordance with all applicable local, state and federal environmental protection regulations. Table 1.2 in Chapter 1, *General Information and Project Description*, provides a list of the local, state and federal permits or approvals anticipated to be required.

This chapter examines the potential for the Project to result in environmental impacts to the Project area and includes detailed description of how the Project avoids, minimizes or mitigates potential impacts related to air quality, water quality, flood hazards, wetlands, noise, solid and hazardous waste, groundwater, and geotechnical conditions. Sustainability, green building, and climate change impacts are addressed in Chapter 3. Chapter 4, *Historic Resources,* describes the existing historic properties and districts in the vicinity of the Site and demonstrates that the Project will not result in any adverse effect on properties listed on the State and National Register of Historic Properties.

Public Health and Safety

The Project will promote public health and safety through implementing a site design which provides safe and accessible facilities. Improvements include additional open space, landscaping, accessible ramps and crosswalks, and appropriate lighting to provide a safe well-lit environment for residents, visitors, and patrons.

General Welfare

The Project will protect the general welfare by replacing the existing public housing development with a modern pedestrian scale mixed use neighborhood. The Project will comply with all applicable local, state and federal environmental protection standards and will be constructed in accordance with a Construction Management Plan subject to review and approval by the City of Boston Transportation Department.

Protection of Groundwater

The Project Site is not located in the Boston Groundwater Conservation Overlay District, and is therefore not subject City of Boston Zoning Code Article 32. Construction of the Project is not expected to have adverse short or long-term impacts on groundwater conditions.

6.6 Noise

The noise assessment evaluated the potential noise impacts associated with the Project's activities, including mechanical equipment and loading activities. This section discusses the fundamentals of noise, noise impact criteria, noise analysis methodology, and potential noise impacts. A noise monitoring program was developed for determining existing ambient conditions in the vicinity of the Project Site. The analysis demonstrates that the Project will comply with City of Boston noise regulations.

6.6.1 Fundamentals of Noise

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

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

Sound levels are most often measured on a logarithmic scale of decibels (dB). The decibel scale compresses the audible acoustic pressure levels, which can vary from the threshold of hearing (zero dB) to the threshold of pain (120 dB). Because sound levels are measured in dB, the addition of two sound levels is not linear. Adding two equal sound levels creates a 3 dB increase in the overall level. Research into the general relationships between sound level and human perception indicates that a 3 dB increase is a doubling of acoustic energy and is the threshold of perceptibility to the average person, and that a 10 dB increase is a tenfold increase in acoustic energy, but is perceived as a doubling in loudness to the average person.

The human ear does not perceive sound levels from each frequency as equally loud. To compensate for this phenomenon in perception, a frequency filter known as A-weighted [dB(A)] is used to evaluate environmental noise levels. Table 6.8 presents a list of common outdoor and indoor sound levels.

TABLE 6.8 COMMON OUTDOOR AND INDOOR SOUND LEVELS

Outdoor Sound Levels	Sound Pressure (μPa)*	Sound Level dB(A)**	Indoor Sound Levels
	6,324,555	110	Rock Band at 5 m
Jet Over Flight at 300 m		105	
	2,000,000	100	Inside New York Subway Train
Gas Lawn Mower at 1 m		95	
	632,456	90	Food Blender at 1 m
Diesel Truck at 15 m		85	

Outdoor Sound Levels	Sound Pressure (μPa)*	Sound Level dB(A)**	Indoor Sound Levels
Noisy Urban Area—Daytime	200,000	80	Garbage Disposal at 1 m
		75	Shouting at 1 m
Gas Lawn Mower at 30 m	63,246	70	Vacuum Cleaner at 3 m
Suburban Commercial Area		65	Normal Speech at 1 m
	20,000	60	
Quiet Urban Area—Daytime		55	Quiet Conversation at 1 m
	6,325	50	Dishwasher Next Room
Quiet Urban Area—Nighttime		45	
	2,000	40	Empty Theater or Library
Quiet Suburb—Nighttime		35	
	632	30	Quiet Bedroom at Night
Quiet Rural Area—Nighttime		25	Empty Concert Hall
Rustling Leaves	200	20	
		15	Broadcast and Recording Studios
	63	10	
		5	
Reference Pressure Level	20	0	Threshold of Hearing

Source: Highway Noise Fundamentals. Federal Highway Administration, September 1980.

* μPA – MicroPascals, which describe pressure. The pressure level is what sound level monitors measure.

** dB(A) – A-weighted decibels, which describe pressure logarithmically with respect to 20 μPa (the reference pressure level).

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

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

6.6.2 Methodology

The noise analysis evaluated the potential noise impacts associated with the Project's operations, which include mechanical equipment and loading/service activities. The noise analysis included measurements of existing ambient background sound levels and a qualitative evaluation of potential noise impacts associated with the proposed mechanical

equipment (e.g., HVAC units, cooling tower) and loading activities. The study area was evaluated and sensitive receptor locations in the vicinity of the Project were identified and examined. The Site layout and building design, as it relates to the loading area and management of deliveries at the Project Site were also considered. The analysis considered sound level reductions due to distance, proposed building design, and obstructions from surrounding structures.

Receptor Locations

The noise analysis included an evaluation of the study area to identify nearby sensitive receptor locations, which typically include areas of sleep and areas of outdoor activities. The noise analysis identified three nearby sensitive receptor locations in the vicinity of the Project. As shown in Figure 6.2, the receptor locations include the following:

- R1 – Residential units to south along Bunker Hill Street;
- R2 – Residential units to west along Polk Street; and
- R3 – The Cooperatives of CharlesNEWtown to north.

These receptor locations, selected based on land use considerations, represent the most sensitive locations in the vicinity of the Project Site. With Route 1 abutting the east side of the Project Site, no sensitive receptors were identified to the east.

6.6.3 City of Boston Noise Impact Criteria

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

Under Chapter 40 Section 21 of the General Laws of the Commonwealth of Massachusetts and Title 7 Section 50 of the City of Boston Code, the Air Pollution Control Commission of the City of Boston has adopted Regulations for the Control of Noise in the City of Boston. These regulations establish maximum allowable sound levels based upon the land use affected by the Project. Table 6.9 summarizes the allowable sound levels that should not be exceeded.

TABLE 6.9 CITY OF BOSTON NOISE STANDARDS BY ZONING DISTRICT, DB(A)

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

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

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

6.6.4 Existing Noise Conditions

A noise monitoring program was developed to establish existing ambient sound levels in vicinity of the Project Site. The existing sound levels were measured using a Type 1 sound analyzer (Larson Davis SoundExpert LxT). Measurements were conducted between May 18, 2016 and May 20, 2016 to capture sound levels representative of typical existing ambient conditions. The measurements during the daytime period was conducted between 2:00 PM to 5:00 PM. The nighttime period measurements were conducted between 1:00 AM to 3:00 AM. During the daytime period, the measured sound levels data were composed of noise from vehicles traveling on the surrounding roadways, such as Bunker Hill Street and Route 1. The nighttime period sound levels were generally associated with traffic on Route 1 and noise from the Wind Technology Testing Center located north of the Project Site. The existing measured sound level data are summarized in Table 6.10.

TABLE 6.10 EXISTING AMBIENT SOUND LEVELS, DB(A)

	City of Boston Residential District Noise Standard		Measured L90 Sound Levels	
Monitoring Location	**Daytime**	**Nighttime**	**Daytime**	**Nighttime**
M1 – Decatur Street	60	50	**72**	**55**
M2 – Bunker Hill Street	60	50	57	43
M3 – Polk Street	60	50	54	45
M4 – Medford Street	60	50	59	46

Source: VHB
Note: Refer to Figure 6.1 for monitoring locations.
Bold values exceed City of Boston noise standards.

The measured L90 sound levels range from approximately 54dB(A) to approximately 72 dB(A) during the daytime period and from approximately 43 dB(A) to approximately 55 dB(A) during the nighttime period. The result of the noise monitoring program indicates that the daytime sound levels within the study area are currently below the City of Boston's daytime standard of 60 dB(A) for a Residential District, with the exception of the area along Decatur Street (M1) which is experiencing sound levels of approximately 72 dB(A). The high existing sound levels are due to roadways noise from the elevated Route 1. The sound levels during the nighttime period also exceeds the City's nighttime standard of 50 dB(A) for residential uses along Decatur Street.

6.6.5 Future Noise Conditions

The noise analysis evaluated the potential noise impacts associated with the Project's proposed mechanical equipment and loading activities. The analysis determined the potential sound level impacts at the nearby sensitive receptor locations and the proposed residential uses.

Mechanical Equipment

Since the Project is in the early stages of the design process, the specific details related to the final selection of mechanical equipment are not confirmed at the time of this noise assessment. Based on preliminary design plans, the anticipated mechanical equipment associated with the Project may include the following:

- air handling units,
- cooling towers,
- air condensing units, and
- emergency generators.

The mechanical equipment will be located on the rooftops of the proposed buildings. During the design and selection process, the appropriate low-noise mechanical equipment will be selected, including potential noise mitigation measures, such as mechanical penthouse, acoustical enclosures, and/or acoustical silencers. The Project will incorporate noise attenuation measures necessary to comply with City of Boston's noise criteria at the sensitive receptor locations, including the proposed residential units. The design of the proposed residential units will incorporate building construction material with sufficient sound transmission class (STC) rating to meet the City's and HUD's noise standards.

The mechanical systems would be strategically located on the rooftop, utilizing the height of the buildings in providing noise attenuation. Additionally, some systems will be located within an acoustical penthouse. Noise attenuation could be achieved by the Project's building design as the heights of the proposed buildings range from 6-stories to 20-stories high, which is greater than the height of the surrounding sensitive receptors. The rooftops of the Project's buildings will serve as a barrier and break the direct line of exposure between the noise sources and nearby receptors. As such, the sound levels associated with the Project's mechanical equipment are expected to be negligible and to comply with the City's noise standards at the surrounding sensitive receptor locations.

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

Service and Loading Activities

Due to the nature of the Project, daily loading/service activities associated with the proposed residential uses are expected to consist of small delivery/service vehicles (such as FedEx/DHL vans).

Loading activities are expected to occur in designated loading areas at each proposed building. Loading for the apartments, which will predominantly be moving-related activities, will be accommodated at covered loading areas at each building. Building C will accommodate loading from the street. Deliveries associated with proposed retail uses may consist of single unit trucks. Retail spaces in Building E will be served by a covered loading area within the building. Other retail spaces around the site will receive loading from the street. Loading activities will be managed so that service and loading operations do not impact traffic on the adjacent roadways. Since loading activities will primarily be enclosed and will be managed, potential noise impacts to nearby sensitive receptor locations are expected to be negligible and to comply with the City's noise standards.

6.6.6 Conclusion of Noise Impact Assessment

The noise analysis determined that the sensitive receptor locations in the vicinity of the Project Site currently experience sound levels exceeding the City of Boston's nighttime noise criteria. With much of the proposed equipment located within a mechanical penthouse on the rooftop, the sound levels associated with the Project's mechanical equipment are expected to have no adverse noise impacts at nearby sensitive receptor locations. While potential noise impacts associated with the emergency generators are also expected to be negligible, a separate MassDEP permitting process will allow for further review of this equipment at a later date. The Project will be designed such that many of the loading areas will be enclosed within the proposed building structures, therefore containing noise associated with the loading activities. As a result of the preliminary design, the Project's operations will have no adverse noise impacts at nearby sensitive receptor locations, and will adhere to the City of Boston's and HUD's noise standards.

6.7 Solid and Hazardous Waste

A Phase I Environmental Site Assessment (ESA) report was completed for this Project in June, 2016. Historical records indicate that in the late 1800s the Site was occupied by a mixture of residential and commercial properties prior to its development in 1940/1941, at which point the existing buildings were constructed. The Sanborn Map dated 1900 indicates that a large gas holder, possibly associated with a nearby former coal and oil works facility, was present on the northeastern portion of the Site near the intersection of Medford Street and Decatur Street until few years prior to site development in 1940. Further, a Sanborn Map dated 1888 indicated that an asbestos rope and asbestos cement manufacturing facility was present on the northwestern portion of the Site near the intersection of Medford Street and Monument Street. The Phase I report also identified records of five 18,000-gallon capacity fuel oil underground storage tanks (USTs) at the Site, which were all removed in 1999.

The Project Site is listed as a release site with the MassDEP, with two documented releases associated with leaking USTs that were present at the Site, and a third release associated with a surficial release of 20 gallons of non-PCB containing mineral oil dielectric fluid (MODF) from

a pad-mounted transformer. Remedial response actions were completed for each of these releases, which included cleaning and removal of tanks and excavation and off-site reuse of contaminated soil. Class A-1 or A-2 Response Action Outcome (RAO) Statements were filed with MassDEP for each of these release locations. A Class A-1 or A-2 RAO document was issued confirming that a Permanent Solution was achieved, a Condition of No Significant Risk exists for current and future conditions, and that the implementation of an Activity and Use Limitation (AUL) was not required to maintain that condition.

A Phase II ESA has been proposed for the Project Site, the scope of which includes the completion of a subsurface exploration program consisting of borings, installation of groundwater monitoring wells, and soil and groundwater quality testing prior to construction. This will identify possible affects to the subsurface from historical site use and/or from off-site nearby MassDEP releases or uses, and will determine the options for on-site and/or off-site reuse, recycling, or disposal of excavated soil. Groundwater testing will be conducted to further assess potential impacts from the contaminants of concern at the Site and to facilitate filing of a temporary construction dewatering discharge permit application. Remedial activities that may be performed at the Project Site will be managed in compliance with the provisions of the Massachusetts Contingency Plan 310 CMR 40.0000 (MCP).

Excess excavated soil will require characterization to assess its disposition for off-site reuse, disposal, treatment or recycling in accordance with MassDEP policy and the MCP. The results of the soil pre-characterization program will be documented in a Soil Management Plan that will be provided to the Contractor for construction.

6.8 Groundwater

Available subsurface information indicates that the Site is covered by a surficial deposit of miscellaneous fill material extending to depths of approximately 3 to 14 feet below the existing ground surface. A natural marine deposit predominantly consisting of marine clay, which varies in consistency from hard to soft with depth, is located directly beneath the fill. A discontinuous sand layer is located within the upper portion of the marine deposit. Where penetrated, the marine clay was indicated to extend to depths of up to about 53 feet below ground surface, extending to a deposit of very dense glacial till overlying the bedrock surface. Groundwater is anticipated to be present at depths of approximately five to eight feet below the existing ground surface.

Excavation and construction of the single-level below-grade garage area in each building will extend to depths of roughly 12 to 15 feet below ground surface - about 4 to 10 feet below the anticipated groundwater level - and will require a temporary lateral earth support system. Dewatering during excavation for the new buildings, each of which will contain a full below-grade parking level, is anticipated to be accomplished through the use of localized sumping methods and off-site discharge of groundwater. The Project will obtain a temporary construction dewatering discharge permit through either the US EPA or MWRA in conjunction

with BWSC approval to discharge pumped groundwater to the City of Boston storm drain system or the MWRA combined sewer system. The Project Site is not located within the Groundwater Conservation Overlay District (GCOD) as outlined in Article 32 of the City of Boston Zoning Code. Construction of the Project is not expected to have adverse short or long-term impacts on groundwater conditions.

6.9 Geotechnical

Based on the proposed scope of development and the anticipated subsurface conditions, foundation design of the proposed structures will consist of spread footings bearing within the natural marine clay deposit. The parking garage slab will consist of slab-on-grade construction with a perimeter and underslab drainage system to provide hydrostatic pressure-relief. Construction of the proposed below-grade parking garage and building foundations will require an excavation of approximately 12 to 15 feet deep across the proposed building footprints. A lateral earth support system will be required to support the excavation adjacent to the existing public roadways. The lateral earth support system is anticipated to consist of steel soldier piles and wood lagging, or interlocking steel sheet piling that will act as a temporary groundwater cut-off (cofferdam) to facilitate construction dewatering.

6.10 Construction Impacts

This section discusses potential construction impacts from the construction of the Project.

6.10.1 Construction Management Plan

A Construction Management Plan, in compliance with the City of Boston's Construction Management Program, will be submitted to the Boston Transportation Department. The plan will include detailed information about construction activities, specific construction mitigation measures, and construction materials access and staging area plans to minimize impact on the surrounding neighborhood.

Construction methodologies that ensure public safety and protect nearby residents will be employed. Techniques such as barricades, walkways, and signage will be used. Construction management and scheduling will minimize impacts on the surrounding environment and will include plans for construction worker commuting, routing plans for trucking and deliveries, and control of noise and dust. Although the design of the proposed buildings are in process, the Proponent has begun to develop a plan for how traffic, parking, and construction staging will be managed during construction.

6.10.2 Construction Activity Schedule

The construction period for the Project is expected to last approximately 48 months, beginning in early 2018 and reaching completion by late-2020. Normal work hours will be from 7:00 AM to 6:00 PM, Monday through Friday, along with any approved exceptions.

6.10.3 Construction Traffic Impacts

Designated truck routes will be established to govern where construction trucks enter and exit the Project Site. The primary, regional construction truck access/egress routes will be from Bunker Hill Street via Chelsea Street or Sullivan Square. A detailed Construction Management Plan (CMP) will be developed and submitted under separate cover. The Proponent will work closely with the BTD in developing the CMP and will include more detail on construction phasing, number of trips, haul routes, and hours of operation.

Truck traffic will be heaviest during the excavation and concrete foundation work. During this period, it is expected that fewer than ten trucks, varying in size from small delivery trucks to 18-wheelers, will arrive and leave the Site each construction day. Thereafter, truck traffic will vary throughout the construction period, depending upon the activity.

6.10.4 Construction Worker Parking and Staging

The number of workers required for the construction of the Project will vary depending upon the stage of construction. Construction workers will typically arrive and depart prior to peak traffic conditions and the construction trips are not expected to substantially impact traffic conditions.

The general contractor will be responsible for educating all construction workers about public transit options and encouraging the use of high occupancy vehicles. All construction workers will be encouraged to utilize mass transit and ridesharing options to access the construction site and to minimize vehicle traffic and parking on the local streets. As part of the program to promote public transportation, the following will be implemented:

- Providing on-site secured space for workers' tool storage.
- Posting transit schedules and maps at the Project Site.
- Distributing informational brochures regarding public transportation.
- Notifying all subcontractors and suppliers of worker access/parking restrictions.

The Proponent will submit a Boston Residents Construction Employment Plan in accordance with the Boston Jobs Policy. The Plan will provide that the Proponent make good faith efforts to employ local trades people from the City of Boston. In this effort, the Proponent will meet with local agencies prior to the start of construction to establish a community outreach program.

6.10.5 Construction Air Quality

Short-term air quality impacts from fugitive dust may be expected in demolition and the removal of soil materials and during the early phases of the Site preparation activities. The construction contract for the Project will require the contractor to reduce potential emissions and minimize air quality impacts. Mitigation measures are expected to include the use of wetting agents where needed on a scheduled basis, covered trucks, minimizing exposed

construction debris stored on-site, monitoring construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized, locating aggregate storage piles away from areas having the greatest pedestrian activity when possible, and periodic cleaning of streets and sidewalks to reduce dust accumulations.

6.10.6 Construction Noise Impacts

Intermittent increases in noise levels will occur in the short term during the construction of the new buildings. Work will comply with the requirements of the City of Boston Noise Ordinance. Efforts will be made to minimize the noise impact of construction activities, including appropriate mufflers on all equipment such as air compressors and welding generators, maintenance of intake and exhaust mufflers, turning off idling equipment, replacing specific operations and techniques with less noisy ones, and scheduling equipment operations to synchronize the noisiest operations with times of highest ambient noise levels.

6.10.7 Sediment Control Measures

During demolition and construction, erosion and sediment control measures will be implemented to minimize the transport of Project Site soils to off-site areas and BWSC storm drain systems. The existing catch basins will be protected with filter fabric or silt sacks to remove sediment from runoff. These controls will be inspected and maintained throughout the construction phase until all areas of disturbance have been stabilized through the placement of pavement, structure, or vegetative cover.

Other sediment controls, which will be implemented as needed during construction, will include the following:

- Stacked hay bales and/or silt fence barriers will be installed at the base of stockpiled soils and at erosion-prone areas throughout the construction phase of the Project.
- Erosion controls will be maintained and replaced as necessary to ensure their effectiveness.
- Where necessary, temporary sedimentation basins will be constructed to prevent the transport of sediment off-site.
- Measures to control dust will be implemented during renovations— all debris will be properly contained on the Site.
- Erosion controls will be maintained and replaced as necessary until the installation of pavement and the establishment of stabilized vegetation at the Site.

6.10.8 Rodent Control

The contractor will file a rodent extermination certificate with the building permit application to the City. Rodent inspection, monitoring, and treatment will be carried out before, during, and at the completion of all construction work for the Project, in compliance with the City's requirements. Rodent extermination prior to commencing work will treat areas throughout the

Site, including building interiors. During the construction process, regular service visits will be made to maintain effective rodent control.

6.11 Rodent Control Post-Construction

Trash and solid waste removal will be handled by the building maintenance staff. The Proponent will maintain a service contract with a professional pest control firm to address rodent/pest control during the operational phase of the Project. In addition, no open top dumpsters will be allowed as an additional precaution to deter infestation.

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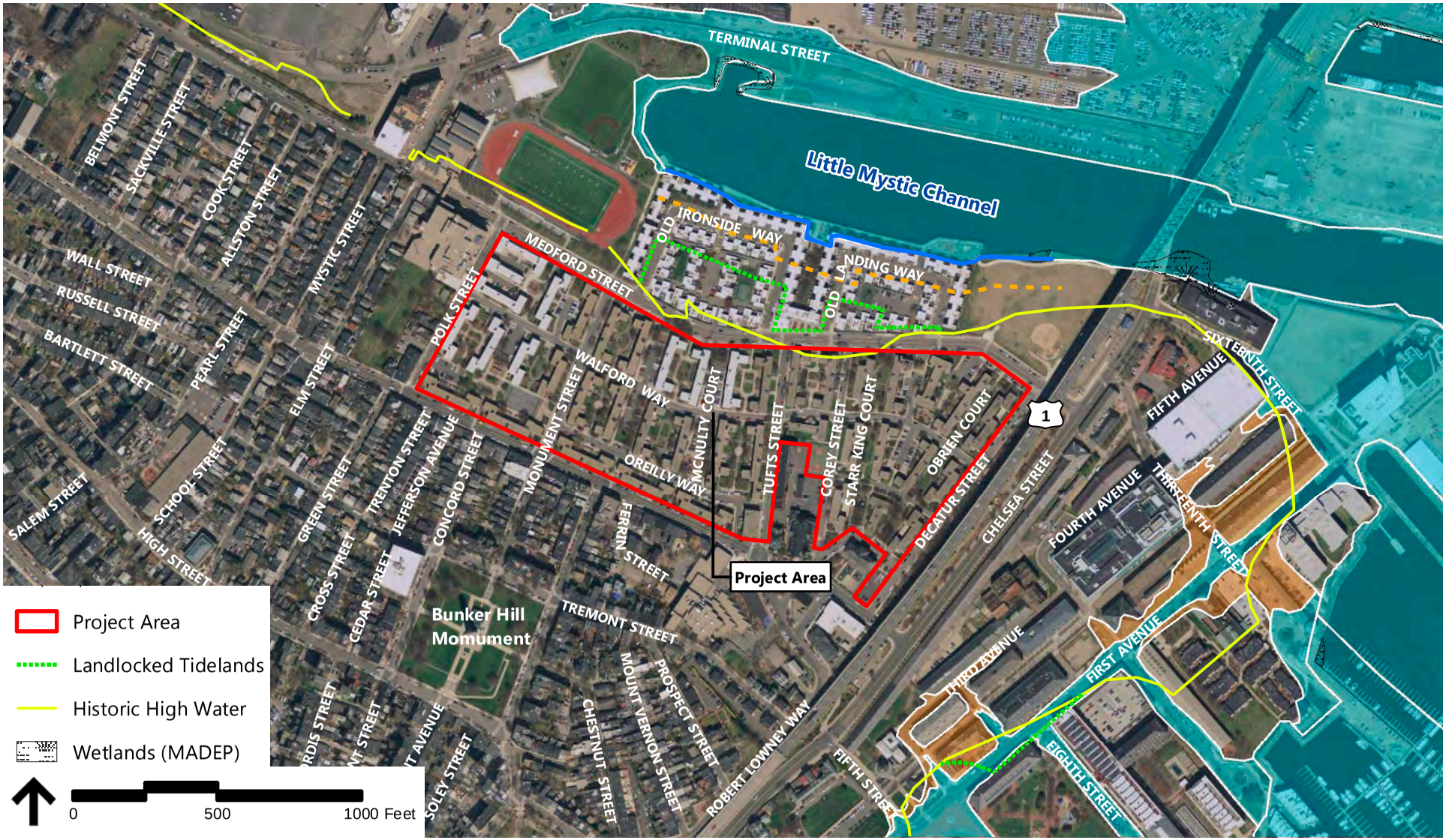


Sources: MassGIS, VHB, FEMA Panel 25025C0081J

1% Annual Chance Flood Hazard

0.2% Annual Chance Flood Hazard

Approximate Limit of Bank / Mean High Water

Approximate 100-foot Buffer Zone Off-set from the Bank

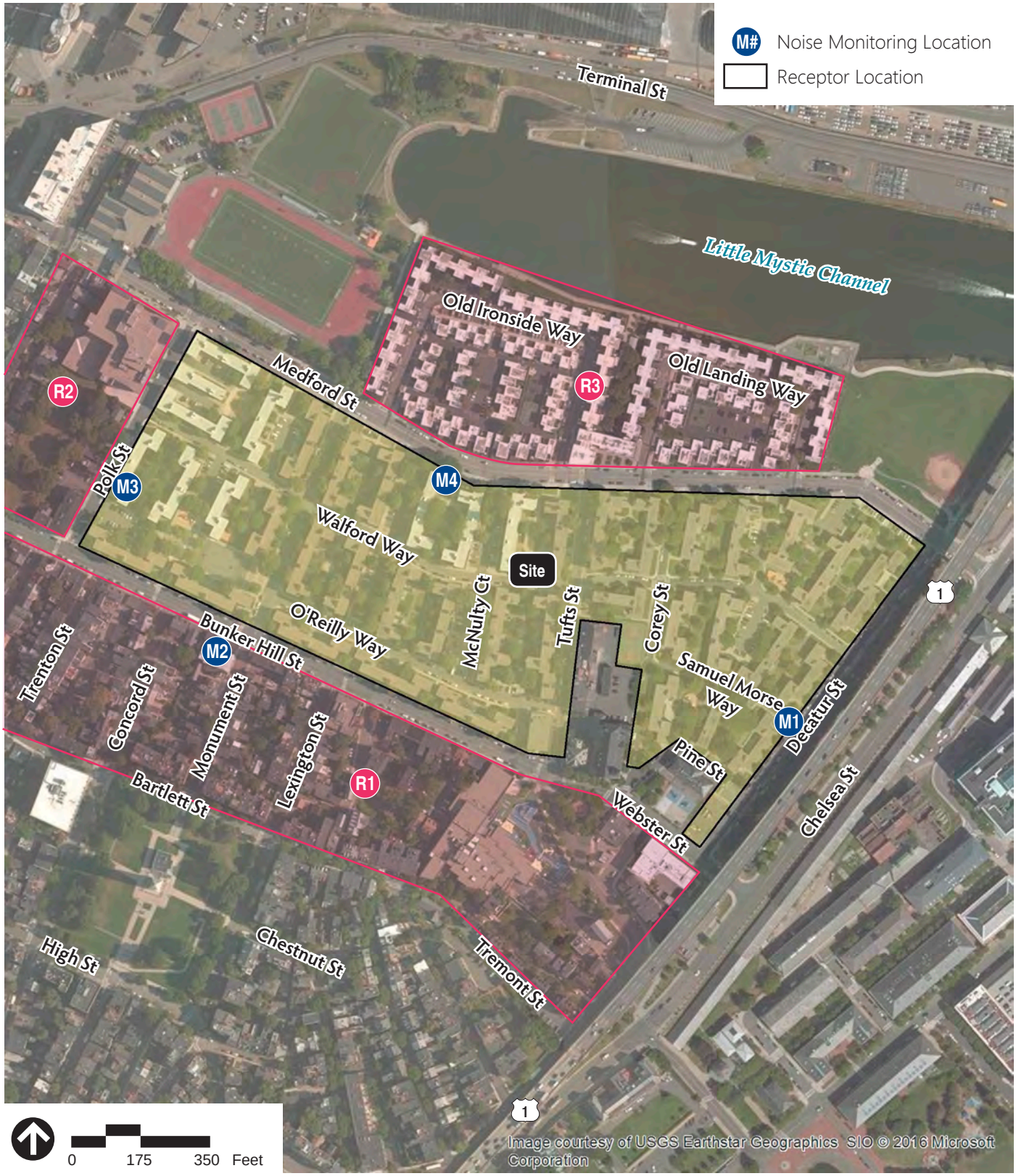
Stantec vhb

Figure 6.1

Environmental Constraints

One Charlestown
Charlestown, MA

CORCORAN JENNISON Companies DMLA ground SunCal



Source: ArcGIS Online Bing Aerial

Figure 6.2

Noise Monitoring and Receptor Locations

One Charlestown
Charlestown, MA

7

Infrastructure

This chapter describes the existing infrastructure systems surrounding the Project Site, the utility aspects of the Project, and utility impacts. The following utilities are discussed: wastewater, water, stormwater management, natural gas, electricity, and telecommunications.

The systems discussed in this chapter include those owned or managed by the Boston Water and Sewer Commission (BWSC) and private utility companies. There will be further coordination among these entities and with the project engineers and architects as the project design develops and during the construction process for the Project.

7.1 Key Findings and Benefits

The key findings and benefits of the Project related to infrastructure are listed below.

- Based on current knowledge, the existing city and utility infrastructure systems are expected to have adequate capacity to accept the increased demand associated with the development and operation of the Project.
- Construction of the Project will incorporate on-site stormwater management and treatment systems that are expected to improve water quality, reduce runoff volume, and maintain peak rates of runoff in comparison to existing conditions.
- The Project will not result in the introduction of any increased peak flows, pollutants, or sediments that would potentially impact the local drainage systems.
- The Project is estimated to generate approximately 355,557 gallons per day (net new) of sanitary sewage and will require approximately 391,113 gallons of water per day (net new).
- The Project Site is currently serviced by the BWSC for domestic and fire protection water and sanitary sewage conveyance.

7.2 Regulatory Context

A complete list of the state and local permits anticipated associated with Project-related infrastructure is included in Chapter 1, *General Information and Project Description*. The

following discusses the regulatory framework for stormwater management, utility connection reviews and standards.

- The Project is subject to the Massachusetts Stormwater Standards as a redevelopment.
- BWSC approval will be required for all water, sewer and stormwater systems.
- The Boston Fire Department will review the Project with respect to fire protection measures such as siamese connections, hydrants, and standpipes.
- Design of the site access, hydrant locations, and energy systems (gas and electric) will also be coordinated with the respective system owners.
- Where new utility connections are needed and existing connections are to be capped, the excavation will be authorized by the Boston Public Works Department (BPWD) through the street opening permit process, as required.

All improvements and connections to BWSC infrastructure will be reviewed by BWSC as part of the BWSC site plan review process. This process includes a comprehensive design review of the proposed service connections, assessment of system demands and capacity, and establishment of service accounts.

7.3 Stormwater Management

The existing site is comprised of 42 buildings, as well as concrete sidewalk, parking, roadways, parks, playgrounds, and pervious landscape areas. Existing stormwater is currently captured by existing closed drainage systems at each building and is directed to existing combined sewer mains and storm drain mains in the adjacent and interconnecting roadways. Stormwater in the roadways is captured by existing catch basins, which flow to the existing BWSC combined sewer mains or the existing BWSC storm drain mains in the streets surrounding the site (Medford Street, Decatur Street, Bunker Hill Street, and Monument Street).

7.3.1 Existing Drainage Conditions

There are existing BWSC storm drain and combined sewer mains in Medford Street, Decatur Street, Bunker Hill Street, Polk Street, Monument Street, Tufts Street, and Corey Street adjacent to and within the Project site. The existing mains ultimately flow to multiple outfalls into the Little Mystic Channel and Charles River. The existing combined sewer mains join the Charlestown Branch Sewer which ultimately flows to the MWRA Deer Island Wastewater Treatment Plant for treatment and disposal.

Medford Street

There are multiple existing BWSC storm drain mains in Medford Street which flow easterly. There is a 48-inch storm drain main which flows easterly before joining another 48-inch main near the intersection with Monument Street which flows northerly until an outfall into the Little Mystic Channel. The second 24-inch storm drain main flows easterly until it increases to a 30-

inch main, which then increases to a 36-inch main, and then increases to a 42-inch main which flows northerly until another outfall into the Little Mystic Channel.

Decatur Street

There is an existing 12-inch BWSC storm drain in Decatur Street southerly before increasing to an 18-inch main, which then joins a 60-inch drain main and ultimately outfalls into the Charles River.

Bunker Hill Street

There are multiple existing BWSC storm drains in Bunker Hill Street. There is a 24-inch storm drain main which flows northerly before joining a 24-inch storm drain main in Polk Street described below. There is also a 21-inch storm drain main which flows southerly until it increases to a 24-inch main, which then increases to 30-inch main, which then increases to a 36-inch main, which then increases to a 45-inch main, before ultimately connecting to the same aforementioned 60-inch drain main as Decatur Street and leading to the outfall into the Charles River.

Polk Street

There is an existing 24-inch BWSC storm drain main in Polk Street which flows northerly before joining a 30-inch storm drain main until it joins the aforementioned 48-inch storm drain in Medford Street which ultimately outfalls into the Little Mystic Channel.

Monument Street

There is both an existing BWSC storm drain main and an existing BWSC combined sewer main in Monument Street. There is a 12-inch BWSC storm drain main which increases to an 18-inch storm drain main, which then increases to a 24-inch storm drain main before joining the aforementioned 48-inch storm drain main coming off of Medford Street and flowing northerly to the outfall at Little Mystic Channel. There is also a 20-inch by 28-inch BWSC combined sewer main which flows northerly in Monument Street before joining a 24-inch by 30-inch BWSC sewer main in Medford Street. The 24-inch by 30-inch combined main flows easterly along Medford Street before joining a 19-inch by 26-inch MWRA main near the intersection of Medford Street and Chelsea Street which leads to the Charlestown Branch Sewer and ultimately flows to the MWRA Deer Island Waste Water Treatment Plant for treatment and disposal.

Tufts Street

There is an existing BWSC storm drain main in Tufts Street that flows in a northerly and southerly direction with each segment starting approximately in the middle of the street. The northerly segment is an 18-inch storm drain main which connects into the aforementioned 24-inch storm drain main in Medford Street, ultimately leading to an outfall in the Little Mystic Channel. The southerly segment is an 18-inch storm drain main which increases to a 20-inch storm drain main before connecting to the aforementioned 45-inch storm drain main in Bunker Hill Street which ultimately leads to the outfall in the Charles River.

Corey Street

There is an existing BWSC storm drain main in Corey Street that flows in a northerly and southerly direction with each segment starting near the intersection of Corey Street and Moulton Street. The northerly segment is a 12-inch main which connects into the aforementioned 36-inch storm drain main in Medford Street, ultimately leading to an outfall in the Little Mystic Channel. The southerly segment is a 12-inch storm drain main which connects into the aforementioned 45-inch storm drain main stemming from Bunker Hill Street and ultimately leading to the outfall into the Charles River.

The existing drainage system is illustrated in Figures 7.1a and 7.1b.

7.3.2 Proposed Drainage Conditions

The Project will likely maintain the existing percentage of impervious area at full buildout. However, sustainable practices will be implemented to meet or reduce the existing peak rate of stormwater discharge and volumes of stormwater runoff from the site and promote runoff recharge to the greatest extent possible.

The Project will strive to infiltrate one half-inch of stormwater from impervious areas to the ground to the greatest extent possible. Different approaches to stormwater recharge will be assessed, including:

- Collecting stormwater from the buildings' roofs and directing it to underground recharge systems sized to store one-inch of stormwater for the building roof areas;
- Providing public sidewalks with pervious pavers that allow stormwater infiltration;
- Constructing landscaped courtyards with vegetative features over the below grade garages; and
- Collecting stormwater from the surrounding paved roadways and walkways and directing it to various underground re charge systems sized to store one half-inch of stormwater for the impervious area.

It is anticipated that the stormwater recharge systems will work to passively infiltrate runoff into the ground with a gravity recharge system. The recharge systems will adequately capture Total Suspended Solids (TSS) and phosphorus prior to entering the BWSC stormwater system. The 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. The underground recharge systems will be designed with overflow connections to direct excess stormwater to existing BWSC infrastructure.

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.

The Project will strive to improve the water quality of the stormwater that is not contained on site and overflows to the existing BWSC system. If it is determined that groundwater recharge is not feasible, the Proponent will treat the stormwater runoff to adequately capture Total Suspended Solids (TSS) and phosphorus prior to discharging to the BWSC system.

7.3.3 Compliance with MassDEP Standards

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

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

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

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

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

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

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

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

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

- Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;
- Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and
- Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

Compliance: The proposed design will comply with this standard. Within the Project's limit of work, there will be mostly building roof and paved sidewalk and roadway areas. Runoff from paved private areas that would contribute unwanted sediments or pollutants to the existing storm drain system will be collected and conveyed through groundwater recharge systems before discharging into the BWSC system.

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

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

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

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

- **Standard #7:** A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3,

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

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

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

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

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

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

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

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

7.4 Sanitary Sewage

7.4.1 Existing Sewer System

There are existing BWSC sewer mains in Medford Street, Decatur Street, Bunker Hill Street, Polk Street, Monument Street, Tufts Street, and Corey Street adjacent to and within the Project site. The mains ultimately flow to the MWRA Deer Island Waste Water Treatment Plant for treatment and disposal.

Medford Street

There is a 24-inch by 30-inch BWSC sewer main in Medford Street which flows southerly before joining a 19-inch by 26-inch MWRA main near the intersection of Medford Street and Chelsea Street which leads to the Charlestown Branch Sewer and ultimately flows to the MWRA Deer Island Waste Water Treatment Plant for treatment and disposal.

Decatur Street

There is a 12-inch BWSC sewer main and a 20-inch BWSC sewer main in Decatur Street which flow southerly before joining a 36-inch BWSC sewer main in Vine street, it continues to flow

southerly and join a 48-inch by 51-inch BWSC sewer main which leads to the Charlestown Branch Sewer and ultimately flows to the MWRA Deer Island Waste Water Treatment Plant for treatment and disposal.

Bunker Hill Street

There are multiple BWSC sewer mains in Bunker Hill Street; a 20-inch, a 24-inch by 36-inch, a 29-inch by 39-inch, and a 15-inch that all flow southerly before increasing to the aforementioned 36-inch main in Vine Street, ultimately leading to the Charlestown Branch Sewer and flowing to Deer Island for treatment and disposal.

Polk Street

There is an 18-inch BWSC sewer main in Polk Street flowing northerly until it connects into the aforementioned 24-inch by 30-inch main in Medford Street, ultimately flowing to the Charlestown Branch Sewer and to Deer Island for treatment and disposal.

Monument Street

There is a 20-inch by 28-inch BWSC sewer main in Monument Street flowing northerly to the aforementioned 24-inch by 30-inch main in Medford Street, ultimately flowing to the Charlestown Branch Sewer and to Deer Island for treatment and disposal.

Tufts Street

There is a 12-inch BWSC sewer main flowing southerly in Tufts Street until it joins a 26-inch by 39-inch BWSC sewer main in Vine Street, ultimately connecting to the Charlestown Branch Sewer and flowing to Deer Island for treatment and disposal.

Corey Street

There is a 10-inch BWSC sewer main in Corey Street flowing southerly until it joins the aforementioned 26-inch by 39-inch main in Vine Street, ultimately connecting to the Charlestown Branch Sewer and flowing to Deer Island for treatment and disposal.

The existing sewer system is illustrated in Figures 7.1a and 7.1b.

7.4.2 Proposed Sewage Flow and Connection

The Project's sewage generation rates were estimated using 310 CMR 15.203 and the proposed building program. 310 CMR 15.203 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 site is comprised of 15 new buildings made up of both residential and retail space. The existing site is comprised of 42 buildings. Due to the limited information available for the existing buildings, all flows from the existing buildings were determined by calculating estimated usage based off housing unit

and bedroom counts provided by the Boston Housing Authority. Table 7.1 describes the increased sewage generation in gallons per day (gpd) due to the Project.

TABLE 7.1 PROPOSED AND EXISTING SEWER GENERATION

Program Type	Units	Generation Rate	Sewer Generation (GPD)
Proposed Building Sewer Flows			
Block A	363	110 gpd/bedroom	39,930
Block B	286	110 gpd/bedroom	28,160
Block E – Low Rise	467	110 gpd/bedroom	51,370
Block F – Low Rise	272	110 gpd/bedroom	29,920
Block H	325	110 gpd/bedroom	35,750
Block I	272	110 gpd/bedroom	29,920
Block J	296	110 gpd/bedroom	32,560
Block L	325	110 gpd/bedroom	35,750
Block N	814	110 gpd/bedroom	89,540
Block O	473	110 gpd/bedroom	52,030
Block C	163	110 gpd/bedroom	17,930
Block F.2	455	110 gpd/bedroom	50,050
Block O.2	488	110 gpd/bedroom	53,680
Block D	219	110 gpd/bedroom	24,090
Block K	210	110 gpd/bedroom	23,100
Pharmacy	12,000 SF	50 gpd/1,000 SF	600
Grocery	6,000 SF	97 gpd/1,000 SF	582
Bank	3,000 SF	50 gpd/1,000 SF	150
Florist	1,500 SF	50 gpd/1,000 SF	75
Dry Cleaner	1,000 SF	50 gpd/1,000 SF	50
Boutique	1,000 SF	50 gpd/1,000 SF	50
Clothing	4,000 SF	50 gpd/1,000 SF	50
Full-Serve Restaurant*	5,000 SF	Min. allowable (x2)	2,000
Café/bakery*	3,000 SF	Min. allowable (x2)	2,000
Sporting Goods	5,000 SF	50 gpd/1,000 SF	250
Quick Service (Dining)*	3,000 SF	Min. allowable (x2)	2,000
Day Care	10,000 SF	75 gpd/1,000 SF	750
TOTAL			602,287
Existing Building Sewer Flows			
One Bedroom Units	352	110 gpd/bedroom	38,720
Two Bedroom Units	425	110 gpd/bedroom	93,500
Three Bedroom Units	254	110 gpd/bedroom	83,820
Four Bedroom Units	66	110 gpd/bedroom	29,040
Five Bedroom Units	3	110 gpd/bedroom	1,650
TOTAL	-	-	246,730
NET NEW			**355,557**

*Due to limited specific building program information, minimum allowable design values were used
Source: Based on DEP 314 CMR 15.203 flow calculation factors

The Proponent will coordinate with the BWSC on the design and capacity of the proposed connections to the existing sewer system. The Project is expected to generate approximately 602,287 gpd in wastewater flows, or an increase of approximately 355,557 gpd compared to the existing condition.

New services in the new Project streets will connect to the existing BWSC sewer mains in Medford Street, Decatur Street, Bunker Hill Street, and Polk Street. Improvements and connections to BWSC infrastructure will be reviewed as part of the BWSC's Site Plan Review process for the Project. The process will include a comprehensive design review of the existing and proposed service connections, an assessment of Project demands and system capacity, and the establishment of service accounts.

The project will not trigger any permits directly from the Department of Environmental Protection for this increase in sewage flow.

7.4.3 Existing Sewage Capacity

The Project's impact on the existing BWSC systems in Medford Street, Decatur Street, Bunker Hill Street, Polk Street, Monument Street, Tufts Street, and Corey Street and potential building service connections were analyzed. Table 7.2 indicates the hydraulic capacity of the 24-inch by 30-inch sewer main in Medford Street; the 12-inch sewer main in Decatur Street; the 24-inch by 30-inch sewer main and 18-inch sewer main in Bunker Hill Street; the 18-inch sewer main in Polk Street; the 20-inch by 28-inch sewer main in Monument Street; the 12-inch sewer main in Tufts Street; and the 12-inch sewer main in Corey Street.

The minimum hydraulic capacity is:

- 11.76 million gallons per day (MGD) or 18.20 cubic feet per second (cfs) for the sewer system in Medford Street;
- 0.85 MGD or 1.31 cfs for the sewer system in Decatur Street;
- 31.41 MGD or 48.60 cfs for the sewer system in Bunker Hill Street;
- 5.93 MGD or 9.18 cfs for the sewer system in Polk Street;
- 11.49 MGD or 17.78 cfs for the sewer system in Monument Street;
- 0.65 MGD or 1.01 cfs for the sewer system in Tufts Street;
- 1.00 MGD or 1.55 cfs for the sewer system in Corey Street

TABLE 7.2 SEWER HYDRAULIC CAPACITY ANALYSIS

Manhole (BWSC Number)	Distance (ft)	Inv Elev (Up)	Inv Elev (Down)	Slope (%)	Dia/Size (in)	Manning's Number	Flow Capacity (cfs)	Flow Capacity (MGD)
Medford Street								
16 to 21	827	13.3	10.3	.4%	24 x 30	.013	18.20	11.76
21 to 29	859	10.3	6.2	.5%	24 x 30	.013	20.87	13.49
29 to 31	292	6.2	4.6	.5%	24 x 30	.013	22.36	14.45
						Minimum Flow Analyzed:	18.20	11.76
Decatur Street								
366 to 362	623	9.97	5.50	.7%	12	.013	1.31	.85
						Minimum Flow Analyzed:	1.31	.85
Bunker Hill Street								
150 to 291	228	29.2	23.3	2.6%	24 x 30	.013	48.60	31.41
291 to 309	448	21.8	13.16	1.9%	18	.013	52.52	33.95
						Minimum Flow Analyzed:	48.60	31.41
Polk Street								
146 to 16	639	29.0	13.90	2.4%	18	.013	9.18	5.93
						Minimum Flow Analyzed:	9.18	5.93
Monument Street								
394 to 18	593	16.8	12.70	.7%	20 x 28	.013	17.78	11.49
						Minimum Flow Analyzed:	17.78	11.49
Tufts Street								
402 to 339	374	8.60	7.00	.4%	12	.013	1.01	.65
						Minimum Flow Analyzed:	9.18	5.93
Corey Street								
415 to 360	173	7.85	6.10	1.0%	12	.013	1.55	1.00
						Minimum Flow Analyzed:	1.55	1.00

Notes: Manhole numbers are taken from a BWSC Sewer System GIS Map received on January 26, 2016.
Flow calculations are based on Manning's equation.

7.4.4 Potential Impacts

It is likely that the proposed Project will result in multiple connections to existing BWSC sewer mains in Medford Street, Decatur Street, Bunker Hill Street, Polk Street, Monument Street, Tufts Street, or Corey Street, thereby distributing the impacts distributing the impacts until these sewer mains join together and the sewage flows to Deer Island for treatment. Based on this assumption and an average increase in daily flow estimate for the Project of 355,557 gpd, no sewer capacity problems are expected within the proposed Project area.

All improvements and connections to BWSC infrastructure will be reviewed as part of the BWSC's site plan review process for the Proposed Project. This process includes a comprehensive design review of the proposed service connections, an assessment of project demands and system capacity, and the establishment of service accounts. The Proponent will coordinate with BWSC to reach an agreement regarding the requirement for 4:1 Inflow and Infiltration (I/I) mitigation.

7.5 Domestic Water and Fire Protection

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 Medford Street, Decatur Street, Bunker Hill Street, Polk Street, Monument Street, Tufts Street, and Corey Street adjacent to and within the Project Site.

7.5.1 Existing Water Supply System

Medford Street

There is a 24-inch northern low and a 12-inch northern low in Medford Street.

Decatur Street

There is a 6-inch northern low in Decatur Street.

Bunker Hill Street

There is an 8-inch northern low and a 12-inch northern low in Bunker Hill Street.

Polk Street

There is an 8-inch northern low in Medford Street.

Monument Street

There is a 12-inch northern low in Medford Street.

Tufts Street

There is an 8-inch northern low in Medford Street.

Corey Street

There is a 12-inch northern low in Medford Street.

The existing water system is illustrated in Figures 7.2a through 7.2c.

7.5.2 Proposed Water Demand and Connection

The Project's water demand for domestic services is based on the Project's estimated sewage generation, described in Section 7.4.2. A conservative factor of 1.1 (10%) is applied to the estimated average daily wastewater flows calculated with 310 CMR 15.203 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 approximately 662,516 gpd, or an increase in water demand of approximately 391,113 gpd compared to the existing condition. The

water for the Project will be supplied by the BWSC systems in Medford Street, Decatur Street, Bunker Hill Street, Polk Street, Monument Street, Tufts Street, and/or Corey Street.

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

New water services will be installed in accordance with the latest local, state, and federal codes and standards. Backflow preventers will be installed at fire protection service connections. New meters will be installed with Meter Transmitter Units (MTU's) as part of the BWSC's Automatic Meter Reading (AMR) system. Many units will be individually metered, which can result in a reduction in water use.

The domestic and fire protection water services for the Project will connect to the existing BWSC systems in Medford Street, Decatur Street, Bunker Hill Street, Polk Street, Monument Street, Tufts Street, and/or Corey Street. 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 the BWSC's Site Plan Review Process. This review will include sizing of domestic water and fire protection services, calculation of meter sizing, backflow prevention design, and location of hydrants and Siamese connections that conform to BWSC and Boston Fire Department requirements.

BWSC record flow test data containing actual flow and pressure for hydrants within the vicinity of the Project site was requested 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.

TABLE 7.3 EXISTING HYDRANT FLOW DATA

Flow Hydrant Number	Date of Test	Static Pressure (psi)	Residual Pressure (psi)	Total Flow (gpm)
H126				
28KH126	3/26/2013	67	64	1584

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

7.6 Other Utilities

There are existing natural gas, electrical, telephone and telecommunications utility lines throughout the adjacent and interconnecting streets within the Project site utilized by the

existing buildings. The 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.

7.6.1 Natural Gas Service

Natural gas service will be coordinated with the utility company. The proponent is currently estimating the load demands and will be reaching out to the provider in the near future.

7.6.2 Electrical Service

Electrical service will be coordinated with the utility company. The proponent is currently estimating the load demands and will be reaching out to the provider in the near future.

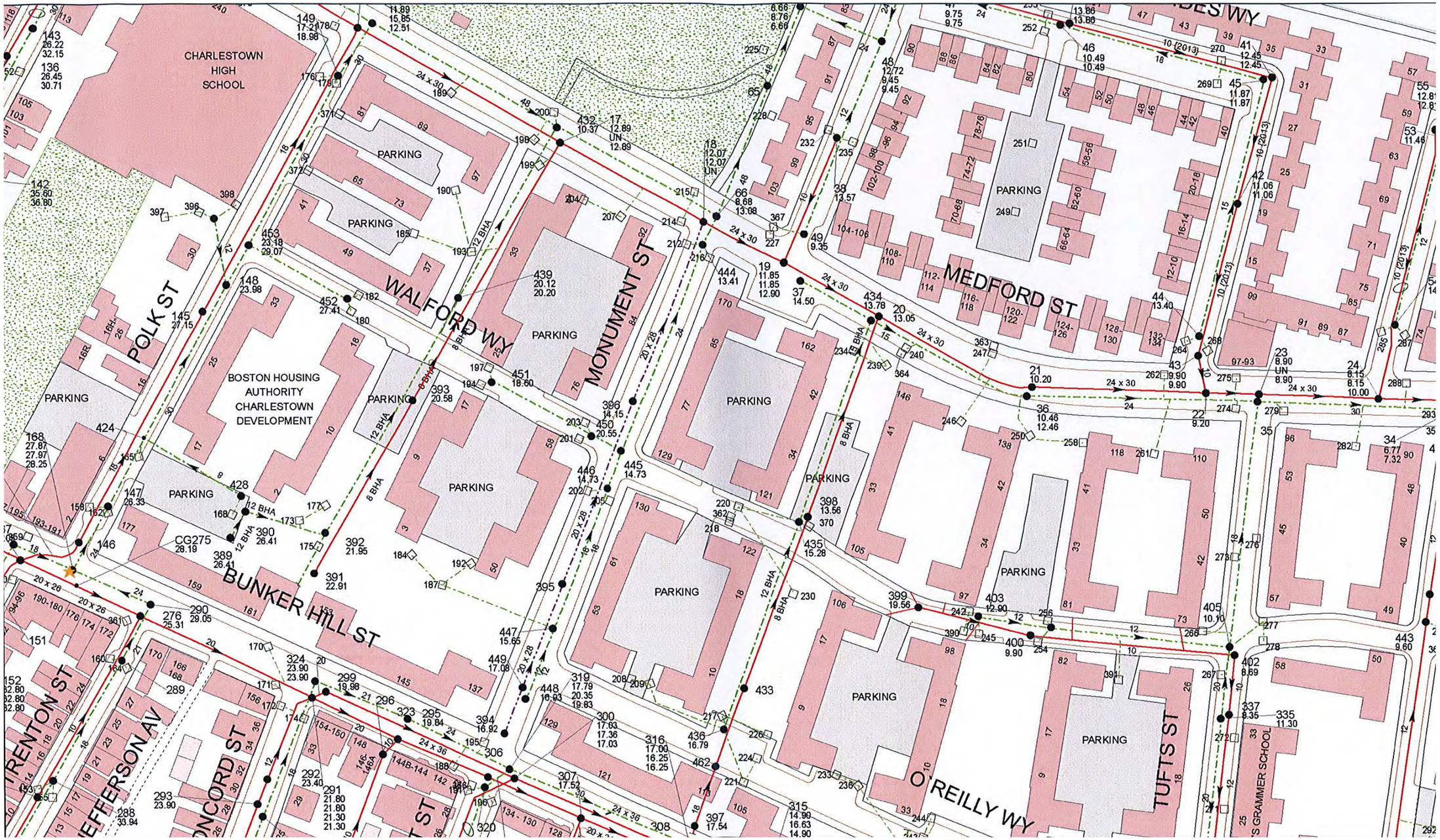
7.6.3 Telephone and Telecommunications

Telephone and telecommunications services will be provided. The proponent is currently estimating the load demands and will be reaching out to the provider in the near future.

7.6.4 Protection of Utilities

Existing public and private infrastructure located within nearby public right-of-way will be protected during Project construction. The installation of proposed utility connections within public way 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.



Source: Boston Water and Sewer Commission

Stantec vhb

Figure 7.1a

Existing Drainage and Sewer Conditions

CORCORAN JENNISON Companies DM LA ground SunCal

One Charlestown
Charlestown, MA

Source: Boston Water and Sewer Commission

Stantec vhb

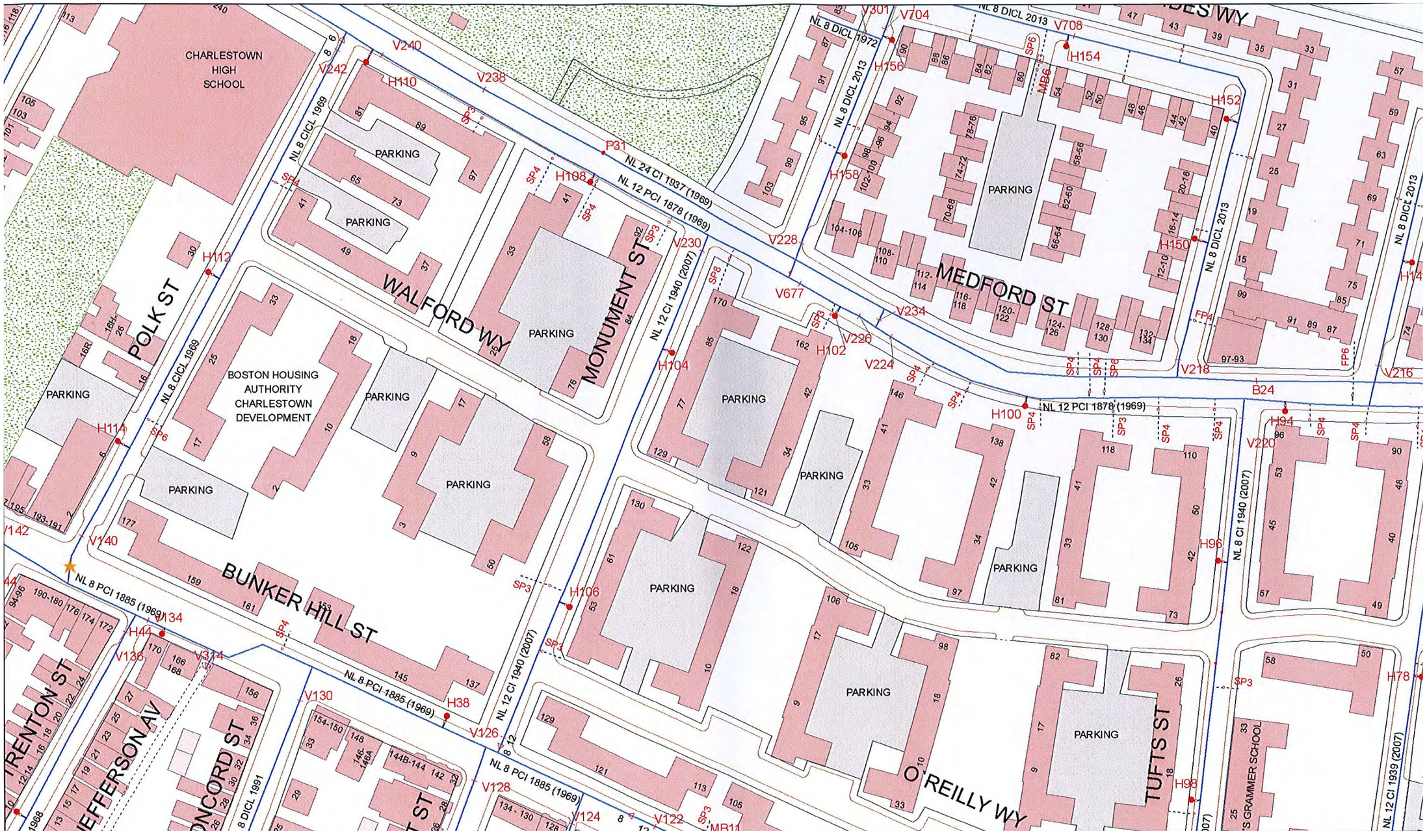
Figure 7.1b

Existing Drainage and Sewer Conditions

CORCORAN JENNISON Companies DM LA

ground SunCal

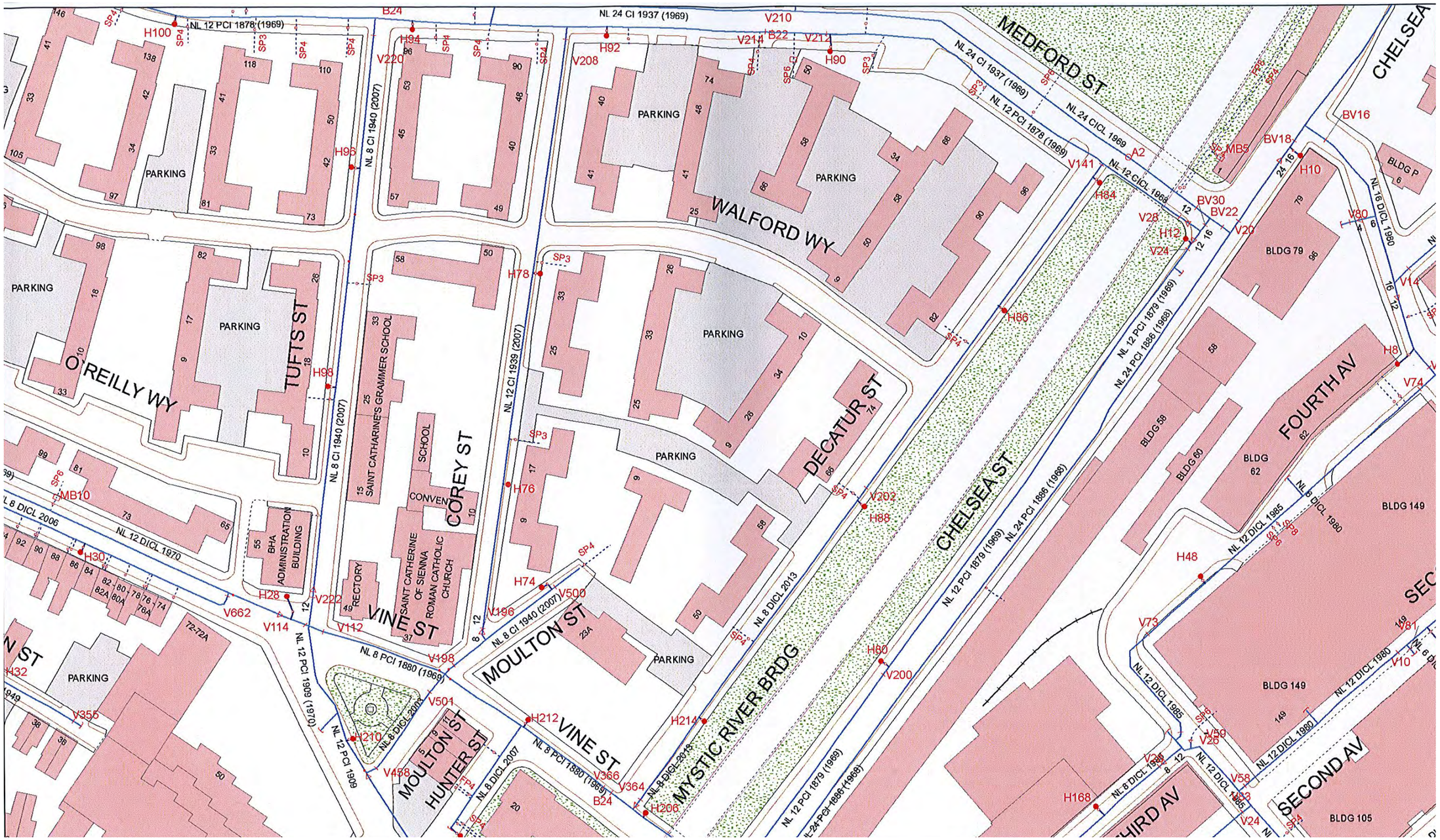
One Charlestown
Charlestown, MA



Source: Boston Water and Sewer Commission

Figure 7.2a
Existing Water Supply System

One Charlestown
Charlestown, MA



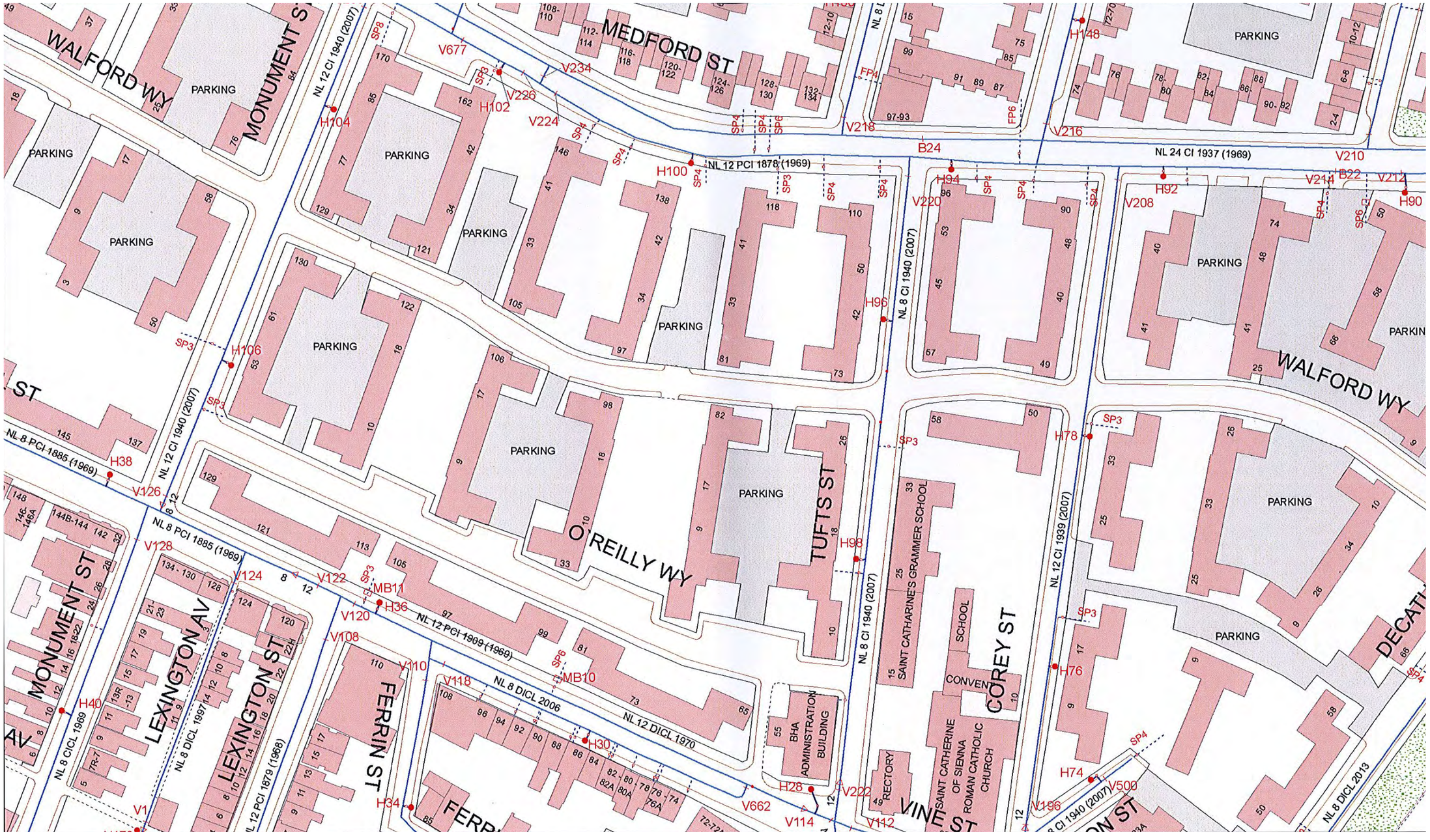
Source: Boston Water and Sewer Commission

Stantec vhb

Figure 7.2b
Existing Water Supply System

One Charlestown
Charlestown, MA

CORCORAN JENNISON Companies DMLA
ground SunCal



Source: Boston Water and Sewer Commission

Figure 7.2c
Existing Water Supply System

One Charlestown
Charlestown, MA

8

Project Certification

This expanded PNF has been submitted to the Massachusetts Environmental Policy Act Office and the Boston Redevelopment Authority, as required by 301 CMR 11.00and Article 80B of the Zoning Code, respectively, on the 15th of September, 2016.

Proponent
Bunker Hill GP Venture LLC

Joseph Corcoran
Chairman, Corcoran Jennison Companies

Preparer
VHB

Stephanie Kruel
Senior Environmental Planner

APPENDIX A: Letter of Intent

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goulston&storrs
counsellors at law

Matthew J. Kiefer, Esq.
mkiefer@goulstonstorrs.com
(617) 574-6587 Tel

August 16, 2016

Boston Redevelopment Authority
Boston City Hall
One City Hall Square, 9th Floor
Boston, MA 02201
Attn: Brian P. Golden, Director
Edward McGuire, Project Manager

Re: Letter of Intent to File an Expanded Project Notification Form for One Charlestown

Dear Mr. Golden and Mr. McGuire:

On behalf of Bunker Hill GP Venture LLC, a Delaware limited liability company, which is a joint venture between Corcoran Jennison Associates and SunCal, and in accordance with the Executive Order Relative to the Provision of Mitigation by Development Projects in Boston issued on October 10, 2000, as amended on April 3, 2001, this letter is written to notify you of our intent to submit an Expanded Project Notification Form under Article 80B of the Boston Zoning Code for One Charlestown (the "Project"), a proposed mixed-income residential redevelopment project further described below.

The Project location is the approximately 27.6-acre site of the existing Bunker Hill Public Housing development in the Charlestown neighborhood of Boston, currently operated as 1,100 units of public housing by the Boston Housing Authority. The proposed redevelopment program consists of the demolition of the existing 42 bunker-style buildings on the site, built in 1941, and the construction of (i) 1,100 new units of affordable housing in replacement of the existing public housing units, (ii) an additional approximately 2,100 market rate and workforce housing units, (iii) a neighborhood retail component, and (iv) public amenities that will include two new neighborhood parks. This new mixed-income community will provide 13 blocks of well-lit, tree-lined city streets with approximately 3,200 mixed-income housing units in a variety of apartment and duplex unit formats that will be fully integrated into the Charlestown neighborhood.

We anticipate submitting an Expanded Project Notification Form within the next thirty days, and we look forward to working with your staff, elected officials, community members, and the Impact Advisory Group that will review the Project. If you should have any questions or concerns, or need additional information regarding the Project at this time, please contact me at (617) 574-6587 or the Project Director, Sarah Barnat, at (617) 755-8289.

Sincerely,

BUNKER HILL GP VENTURE LLC,
By its Attorneys,
Goulston & Storrs PC

By: _____
Matthew J. Kiefer, Esq.

cc by email: Joseph J. Corcoran and Sarah Barnat c/o Corcoran Jennison Associates
Peter Johnson and Brett Sherman c/o SunCal
William McGonagle, Kathryn Bennet and Lawrence Dwyer c/o Boston Housing Authority

APPENDIX B: BRA Checklists

Accessibility Checklist

Climate Change Preparedness and Resiliency Checklist

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Accessibility Checklist

(to be added to the BRA Development Review Guidelines)

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

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

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

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

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

Accessibility Analysis Information Sources:

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

Article 80 | ACCESSIBILTY CHECKLIST

Project Information

Project Name:	**One Charlestown**
Project Address Primary:	**55 Bunker Hill Street**
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	**Sarah Barnat/Project Director/Corcoran Sun Cal/sbarnat@corcoranjennison.com/617-755-8289**

Owner / Developer:	**Bunker Hill Ventures LLC**
Architect:	**Stantec**
Engineer (building systems):	**RW Sullivan Engineering**
Sustainability / LEED:	**VvS Architects & Consultants**
Permitting:	**VHB**
Construction Management:	**MWB Construction Advisors**

Project Permitting and Phase

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

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

Building Classification and Description

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

Residential – One to Three Unit	**Residential - Multi-unit, Four +**	Institutional	Education
Commercial	Office	**Retail**	Assembly
Laboratory / Medical	Manufacturing / Industrial	Mercantile	Storage, Utility and Other

First Floor Uses (List): **Residential, Retail, Civic**

What is the Construction Type – select most appropriate type?

Wood Frame	Masonry	**Steel Frame**	**Concrete**

Describe the building?

Site Area:	***1,202,260 SF***	Building Area:	***3,300,000 GSF***
Building Height:	***Up to 240 Ft.***	Number of Stories:	***Up to 21 stories***
First Floor Elevation:	***Varies Elev.***	Are there below grade spaces:	***Yes*** / *No* ***1 Level Parking***

Assessment of Existing Infrastructure for Accessibility:

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

Provide a description of the development neighborhood and identifying characteristics.	Charlestown is Boston's oldest neighborhood, and is home to the Bunker Hill Monument and historical Charlestown Navy Yard. Today Charlestown is an attractive residential neighborhood composed of brick and wood row houses and public housing. In recent years, waterfront condominiums and apartments have been added to the housing mix.
List the surrounding ADA compliant MBTA transit lines and the proximity to the development site: Commuter rail, subway, bus, etc.	The Site is accessible via the #93 MBTA bus, which connects Downtown Boston (including the Haymarket and State Street Orange Line stations) to Sullivan Square via Bunker Hill Street. The Community College Orange Line station is approximately 0.6 miles south of the Site, and the Sullivan Square Orange Line station is approximately 0.9 miles west of the Site. The MBTA F4 Ferry provides scheduled service between the Charlestown Navy Yard and Long Wharf.
List the surrounding institutions: hospitals, public housing and	Health care is available at the nearby Mass General: Charlestown HealthCare Center. Emergency medical services are available at Massachusetts General

elderly and disabled housing developments, educational facilities, etc.	Hospital, located approximately 1.6 miles from the Project Site. The adjacent Kennedy Center provides a community resource center, services for senior citizens, and more.The Project site will continue to provide 1,100 public housing units. It will also provide a building dedicated to senior living with 353 units. The following education facilities are located within one-half mile of the project site: Harvard-Kent Elementary School, Warren-Prescott School; Clarence R. Edwards Middle School, Charlestown High School. The Kennedy Center, which is adjacent to the Site, provides early childhood education, adult education, and job-readiness programs. The nearby Charlestown Boys and Girls Club provides recreational and educational programs for children aged 6-18. “e” inc. environmental learning center offers programs for school-aged children.
Is the proposed development on a priority accessible route to a key public use facility? List the surrounding: government buildings, libraries, community centers and recreational facilities and other related facilities.	The adjacent Kennedy Center provides a community resource center, services for senior citizens, and more. The Corey Street Courts (basketball) are located adjacent to the Project Site. To the north of the site, directly across Medford Street, are the Charlestown Community Center, the Charlestown High School Athletic Fields (running track, football field, soccer field, baseball diamond), the Mel Stillman Tennis Center, and Barry Playground (baseball diamond). The Charlestown Sprouts Community Garden is located between Terminal Street and the Little Mystic Channel. The Little Mystic Boat Ramp is located on the north site of Little Mystic Cannel, and is accessible via a public walkway that borders the channel, portions of which are part of the Harborwalk. To the east of the site, additional portions of the Harborwalk can be accessed from the Spaulding Rehabilitation Hospital, which is approximately 0.3 miles from the Project Site. Thomas M. Menino Park is approximately 0.3 miles from the Project Site, and the Courageous Sailing Center is approximately 0.5 miles away. Approximately 0.4 miles to the west of the site is Doherty Playground (play structures, basketball courts) and the Clougherty Pool, a public outdoor swimming facility.

Surrounding Site Conditions – Existing:

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

Are there sidewalks and pedestrian ramps existing at the development site?	Yes.
If yes above, list the existing sidewalk and pedestrian ramp materials and physical condition at the development site.	Sidewalks and ramps are generally poured-in-place concrete.
Are the sidewalks and pedestrian ramps existing-to-remain? **If yes,** have the sidewalks and pedestrian	No, all sidewalks and curb ramps will be replaced throughout the project site.

ramps been verified as compliant? If yes, please provide surveyors report.	
Is the development site within a historic district? If yes, please identify.	No.

Surrounding Site Conditions – Proposed

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

Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? See: www.bostoncompletestreets.org	Yes.
If yes above, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, Boulevard.	Multiple. See EPNF Section 2.5, Public Realm.
What is the total width of the proposed sidewalk? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone.	Multiple. See EPNF Section 2.5, Public Realm.
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?	Multiple. See EPNF Section 2.5, Public Realm.
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with	TBD

the City of Boston Public Improvement Commission?	
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way?	Yes.
If yes above, what are the proposed dimensions of the sidewalk café or furnishings and what will the right-of-way clearance be?	TBD

Proposed Accessible Parking:

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

What is the total number of parking spaces provided at the development site parking lot or garage?	Approximately 2,080 parking spaces will be provided.
What is the total number of accessible spaces provided at the development site?	TBD
Will any on street accessible parking spaces be required? If yes, has the proponent contacted the Commission for Persons with Disabilities and City of Boston Transportation Department regarding this need?	We have not reviewed the project with the Commission for Persons with Disabilities yet.
Where is accessible visitor parking located?	TBD
Has a drop-off area been identified? If yes, will it be accessible?	TBD
Include a diagram of the accessible routes to and from the accessible	TBD

parking lot/garage and drop-off areas to the development entry locations. Please include route distances.	

Circulation and Accessible Routes:

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

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

Provide a diagram of the accessible route connections through the site.	TBD
Describe accessibility at each entryway: Flush Condition, Stairs, Ramp Elevator.	Varies.
Are the accessible entrance and the standard entrance integrated?	TBD
If no above, what is the reason?	
Will there be a roof deck or outdoor courtyard space? If yes, include diagram of the accessible route.	Yes. Accessible route TBD.
Has an accessible routes way-finding and signage package been developed? If yes, please describe.	Not yet.

Accessible Units: (If applicable)

In order to facilitate access to housing opportunities this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing choice.

What is the total number of proposed units for the development?	3,200 units
How many units are for sale; how many are for rent? What is the market value vs. affordable breakdown?	2,250 units for rent; 600 units for sale; 350 units for seniors. 1,100 public housing replacement units.

Article 80 | ACCESSIBILTY CHECKLIST

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

Thank you for completing the Accessibility Checklist!

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

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

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:	**One Charlestown**
Project Address Primary:	**55 Bunker Hill Street**
Project Address Additional:	
Project Contact (name / Title / Company / email / phone):	**Sarah Barnat – Project Director** **Corcoran Jennison Associates, sbarnat@corcoranjennison.com, 617-755-8289**

A.2 - Team Description

Owner / Developer:	**Bunker Hill Ventures LLC**
Architect:	**Stantec**
Engineer (building systems):	**RW Sullivan Engineering**
Sustainability / LEED:	**VvS Architects & Consultants**
Permitting:	**VHB**
Construction Management:	**MWB Construction Advisors**
Climate Change Expert:	**VHB**

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, Commercial, Civic**
List the First Floor Uses:	**Residential, Commercial, Civic**

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

Wood Frame	Masonry	Steel Frame	Concrete

Describe the building?

Site Area:	***1,202,260 SF***	Building Area:	***3,300,000 SF***
Building Height:	***Up to 240 ft***	Number of Stories:	***Up to 21 stories***
First Floor Elevation (reference Boston City Base):	***Varies Elev.***	Are there below grade spaces/levels, if yes how many:	***Yes / 1 Level Parking***

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:	**Neighborhood Development**	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*
	Yes		***No***

A.6 - Building Energy

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

Electric:	***14,741/29,281*** *(kW)*	Heating:	***163*** *(MMBtu/hr)*
What is the planned building Energy Use Intensity:	***15.7*** *(kbut/SF or kWh/SF)*	Cooling:	***7,055*** *((Tons/hr)*

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

Electric:	***N/A*** *(kW)*	Heating:	***N/A*** *(MMBtu/hr)*
		Cooling:	***N/A*** *(Tons/hr)*

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

Electrical Generation:	***4,300*** *(kW)*		Fuel Source:	*Natural Gas*
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?

7/87.6 Deg.

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

87.6 Deg.	*2.9 Days*	*3 Events / yr.*

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

TBD Days	*TBD 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?

The Project will utilize BWSC's Precautionary Scenario for the planning year 2060.	**6.03" 10-year, 24-hour Design Storm Volume**	**1.91" 10-year, 24-hour Design Storm Peak Hourly Intensity**

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?

TBD Peak Wind	*TBD Hours*	*TBD 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:	*Avg. 23.6%*
How is performance determined:	**Energy Modeling**

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 = 30*	Walls / Curtain Wall Assembly:	*R = 25*
Foundation:	*R = 10*	Basement / Slab:	*R =0*
Windows:	*R = 2.7 / U =.37*	Doors:	*R = 5 / U =TBD*

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

On-site clean energy / CHP system(s) – TBD	Building-wide power dimming	Thermal energy storage systems	Ground source heat pump
On-site Solar PV TBD	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?

	TBD *Yes / No*	If yes, for how long:	*Days*
If Yes, is building "Islandable?			
If Yes, describe strategies:	**The project is reviewing strategies for shelter and place and extended cooling.**		

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:	Ground water recharge system			

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

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

C - Sea-Level Rise and Storms

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

C.1 - Location Description and Classification:

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

Yes	The BH-FRM shows that a portion of the site is susceptible to flooding during the 0.1% to 5% annual chance floods under the 2070 High/2100 Intermediate High SLR scenarios (3.2 ft of SLR relative to 2013).

Describe site conditions?

Site Elevation – Low/High Points:	***Boston City Base 17.0/38.0 Ft.***
Building Proximity to Water:	***400 Ft.***

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

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

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

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

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

400 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:	***5.22 Ft.***	Frequency of storms:	***1% annual chance*** 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:	***TBD*** Boston City Base Elev.(Ft.)	First Floor Elevation:	***TBD*** 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:	**Such barriers are not necessary at this time. However, their necessity will be reconsidered in the future as conditions change.**		

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

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:

TBD

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:	***TBD***			

Thank you for completing the Boston Climate Change Resilience and Preparedness Checklist!
For questions or comments about this checklist or Climate Change Resiliency and Preparedness best practices, please contact: John.Dalzell.BRA@cityofboston.gov

APPENDIX C: Energy Analysis Supporting Documentation

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R.W. Sullivan Engineering
HVAC . Electrical . Plumbing . FP . Code

Charlestown Building A
Stantec
Energy Model Inputs & Results
Date: 7/29/2016

Input Summary	Base Case (ASHRAE 90.1-2007 App. G)	Proposed Case
Roof Assembly	R-21	R-30
Wall Assembly	U-0.064	R-25
Windows & Glazing	U-0.55 SHGC-0.459	U-0.37 SHGC-0.38
Temperature Setpoints	Cooling: 75°F Heating: 72°F	Cooling: 75°F Heating: 72°F
Residential HVAC System	PTAC - DX with hot water coil	Split Systems - DX with hot water coil
Residential Cooling Efficiency	9.3 EER	13.4 EER
Residential Heating Efficiency	82% eff Boiler	95% eff Boiler
Corridor HVAC System	Packaged Rooftop Air Conditioner with 50% Effective Heat Recovery	Energy Recovery Unit (Gas Furnace/DX Cooling)
Corridor Cooling Efficiency	11 EER	13.4 EER
Corridor Heating Efficiency	78% eff Furnace	80% Eff Furnace
Domestic Hot Water	80% eff Boiler	95% eff Heater
Lighting LPD Residential & Garage (Building Area Method)	0.7 W/sf	0.5 W/sf
Ventilation Fans (Bathoom & Kitchen)	Standard Efficiency	Exhaust Connected to Energy Recovery Unit
Whole Building Energy Model Results		
Building Energy Energy Use Intensity (Btu/sf)	73,264	56,791
Total Energy Cost	$640,402	$511,303
	% Savings Over Baseline (EUI)	**22.5%**
	% Savings Over Baseline (Cost)	**20.2%**

Notes:

(1) Utility rates assumed to be $0.16 per KWH (electric) and $1.10 per therm (gas) for both cases

(2) Wall and roof insulation values are "equivalent" R-values and include inside and outside film effects

(3) Window U-value and SHGC are for fenestration total assembly

(4) The energy model summarized in this report shall be used for comparison purposes only. Neither the proposed building performance nor the baseline building performance are predictions of actual energy consumption or costs for the proposed design after construction. Actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by the ASHRAE 90.1 App. G procedure, changes in the energy rates between design of the building and occupancy, and the precision of the calculation tool.

R.W. Sullivan Engineering
HVAC . Electrical . Plumbing . FP . Code

Charlestown Building C
Stantec
Energy Model Inputs & Results
Date: 7/1/2016

Input Summary	Base Case (ASHRAE 90.1-2007 App. G)	Proposed Case
Roof Assembly	R-21	R-20
Wall Assembly	U-0.064	R-12 Metal Panels, R-18 Precast Walls
Windows & Glazing	U-0.55 SHGC-0.459	U-0.37 SHGC-0.38
Temperature Setpoints	Cooling: 75°F Heating: 72°F	Cooling: 75°F Heating: 72°F
Residential HVAC System	PTAC - DX with hot water coil	Water-source heat pumps
Residential Cooling Efficiency	9.3 EER	12.8 EER
Residential Heating Efficiency	82% eff Boiler	92% eff Boiler
Corridor HVAC System	Packaged Rooftop Air Conditioner with 50% Effective Heat Recovery	Energy Recovery Unit (Hot Gas/DX Cooling)
Corridor Cooling Efficiency	11 EER	12.8 EER
Corridor Heating Efficiency	78% eff Furnace	90% Eff Furnace
Domestic Hot Water	80% eff Boiler	92% eff Heater
Lighting LPD Residential & Garage (Building Area Method)	0.7 W/sf	0.5 W/sf
Ventilation Fans (Bathoom & Kitchen)	Standard Efficiency	Exhaust Connected to Energy Recovery Unit
Whole Building Energy Model Results		
Building Energy Energy Use Intensity (Btu/sf)	57,738	39,674
Total Energy Cost	$193,541	$134,962
	% Savings Over Baseline (EUI)	**31.3%**
	% Savings Over Baseline (Cost)	**30.3%**

Notes:

(1) Utility rates assumed to be $0.16 per KWH (electric) and $1.10 per therm (gas) for both cases

(2) Wall and roof insulation values are "equivalent" R-values and include inside and outside film effects

(3) Window U-value and SHGC are for fenestration total assembly

(4) The energy model summarized in this report shall be used for comparison purposes only. Neither the proposed building performance nor the baseline building performance are predictions of actual energy consumption or costs for the proposed design after construction. Actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by the ASHRAE 90.1 App. G procedure, changes in the energy rates between design of the building and occupancy, and the precision of the calculation tool.

R.W. Sullivan Engineering
HVAC . Electrical . Plumbing . FP . Code

Charlestown Building D
Stantec
Energy Model Inputs & Results
Date: 7/29/2016

Input Summary	Base Case (ASHRAE 90.1-2007 App. G)	Proposed Case
Roof Assembly	R-21	R-30
Wall Assembly	U-0.064	R-25
Windows & Glazing	U-0.55 Shading Coefficient-0.459	U-0.37 Shading Coefficient-0.38
Temperature Setpoints	Cooling: 75°F Heating: 72°F	Cooling: 75°F Heating: 72°F
Residential HVAC System	PTAC - DX with hot water coil	Split Systems - DX with hot water coil
Residential Cooling Efficiency	9.3 EER	13.4 EER
Residential Heating Efficiency	82% eff Boiler	92% eff Boiler
Corridor HVAC System	Packaged Rooftop Air Conditioner with 50% Effective Heat Recovery	Energy Recovery Unit (Hot Gas/DX Cooling)
Corridor Cooling Efficiency	11 EER	13.4 EER
Corridor Heating Efficiency	78% eff Furnace	80% Eff Furnace
Domestic Hot Water	80% eff Boiler	92% eff Heater
Lighting LPD Residential & Garage (Building Area Method)	0.7 W/sf	0.5 W/sf
Ventilation Fans (Bathoom & Kitchen)	Standard Efficiency	Exhaust Connected to Energy Recovery Unit
Whole Building Energy Model Results		
Building Energy Energy Use Intensity (Btu/sf)	74,497	57,560
Total Energy Cost	$419,714	$332,111
	% Savings Over Baseline (EUI)	**22.7%**
	% Savings Over Baseline (Cost)	**20.9%**

Notes:

(1) Utility rates assumed to be $0.16 per KWH (electric) and $1.10 per therm (gas) for both cases

(2) Wall and roof insulation values are "equivalent" R-values and include inside and outside film effects

(3) Window U-value and SHGC are for fenestration total assembly

(4) The energy model summarized in this report shall be used for comparison purposes only. Neither the proposed building performance nor the baseline building performance are predictions of actual energy consumption or costs for the proposed design after construction. Actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by the ASHRAE 90.1 App. G procedure, changes in the energy rates between design of the building and occupancy, and the precision of the calculation tool.

APPENDIX D: Greenhouse Gas Analysis Supporting Documentation

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Stationary Source Greenhouse Gas Emissions Estimate

Job number: 13403.00
Project: Bunker Hill Housing

Building A

ENERGY CONSUMPTION

Scenario	Total Electricity (kwh)	Total Nat Gas (therms)	Total Electricity (kwh)	Total Gas (MBtu)	Total Energy (MBtu)
BASELINE	3,559,934	64,375	3,559,934	6,438	18,585
DESIGN	2,881,104	45,751	2,881,104	4,575	14,406
END-USE SAVINGS	678,830	18,624	678,830	1,862	4,179
PERCENT SAVINGS					22.5%

GREENHOUSE GAS EMISSIONS

Scenario	Total Electricity (tons/yr)	Total Nat Gas (tons/yr)	Total Electricity (tons/yr)	Total Gas (tons/yr)	Total Energy (tons/yr)
BASELINE	1,292.3	376.9	1,292.3	376.9	1,669.1
DESIGN	1,045.8	267.8	1,045.8	267.8	1,313.7
END-USE SAVINGS	246.4	109.0	246.4	109.0	355.4
PERCENT SAVINGS					21.3%

Building C

ENERGY CONSUMPTION

Scenario	Total Electricity (kwh)	Total Nat Gas (therms)	Total Electricity (kwh)	Total Gas (MBtu)	Total Energy (MBtu)
BASELINE	924,751	41,437	924,751	4,144	7,299
DESIGN	651,538	27,923	651,538	2,792	5,015
END-USE SAVINGS	273,213	13,514	273,213	1,351	2,284
PERCENT SAVINGS					31.3%

GREENHOUSE GAS EMISSIONS

Scenario	Total Electricity (tons/yr)	Total Nat Gas (tons/yr)	Total Electricity (tons/yr)	Total Gas (tons/yr)	Total Energy (tons/yr)
BASELINE	335.7	242.6	335.7	242.6	578.3
DESIGN	236.5	163.5	236.5	163.5	400.0
END-USE SAVINGS	99.2	79.1	99.2	79.1	178.3
PERCENT SAVINGS					30.8%

Building D

ENERGY CONSUMPTION

Scenario	Total Electricity (kwh)	Total Nat Gas (therms)	Total Electricity (kwh)	Total Gas (MBtu)	Total Energy (MBtu)
BASELINE	2,274,550	50,714	2,274,550	5,071	12,832
DESIGN	1,821,283	37,005	1,821,283	3,701	9,915
END-USE SAVINGS	453,267	13,709	453,267	1,371	2,918
PERCENT SAVINGS					22.7%

GREENHOUSE GAS EMISSIONS

Scenario	Total Electricity (tons/yr)	Total Nat Gas (tons/yr)	Total Electricity (tons/yr)	Total Gas (tons/yr)	Total Energy (tons/yr)
BASELINE	825.7	296.9	825.7	296.9	1,122.5
DESIGN	661.1	216.6	661.1	216.6	877.8
END-USE SAVINGS	164.5	80.3	164.5	80.3	244.8
PERCENT SAVINGS					21.8%

CONVERSION TABLE

CONVERT	MULTIPLY BY
KWH TO MWH	0.001
MWH TO LBS[2]	726
THERMS TO MBTU	0.1
LBS TO SHORT TONS	0.0005
MBTU to KWH	293.071
MBTU to LBS[3]	117.08

2 mwh to lbs of CO2 conversion factor from 2014 ISO New England Electric Generator Air Emissions Report
3 Mbtu to lbs of CO2 conversion factor from the EIA

APPENDIX E: MEPA ENF Distribution List

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Distribution List

Secretary Matthew A. Beaton.
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Department of Environmental Protection
Commissioner's Office
One Winter Street
Boston, MA 02108

DEP/Northeast Regional Office
Attn: MEPA Coordinator
205B Lowell Street
Wilmington, MA 01887

Massachusetts Department of Transportation
Public/Private Development Unit
10 Park Plaza
Boston, MA 02116

MassDOT District #6
Attn: MEPA Coordinator
185 Kneeland Street
Boston, MA 02111

Massachusetts Historical Commission
The MA Archives Building
220 Morrissey Boulevard
Boston, MA 02125

Massachusetts Office of Coastal Zone Management
Attn: Project Review Coordinator
251 Causeway Street, Suite 800
Boston, MA 02114

Massachusetts Department of Energy Resources
Attn: MEPA Coordinator
100 Cambridge Street, 10th floor
Boston, MA 02114

Metropolitan Area Planning Council
60 Temple Place/6th floor
Boston, MA 02111

Massachusetts Water Resource Authority
Attn: MEPA Coordinator
100 First Avenue
Charlestown Navy Yard
Boston, MA 02129

State Representative Daniel J. Ryan
State House: Room 146
Boston, MA 02133

State Senator Sal DiDomenico
State House: Room 208
Boston, MA 02133

Mayor Martin J. Walsh
1 City Hall Square, Suite 500
Boston, MA 02201-2013

City Council President Michelle Wu
1 City Hall Square, Suite 550
Boston, MA 02201-2043

Salvatore LaMattina
Boston City Councilor, District 1
1 City Hall Square, Suite 550
Boston, MA 02201-2043

Boston Conservation Commission
1 City Hall Square, Room 709
Boston, MA 02201

Boston Redevelopment Authority
1 City Hall Square, 9th Floor
Boston, MA 02201

Boston Housing Authority
52 Chauncy Street
Boston, MA 02111

Boston Transportation Department
200 I-93 Frontage Road
Boston, MA 02118

James Quealy, Senior Compliance Officer
Department of Neighborhood Development
City of Boston
26 Court Street
Boston, MA 02108