FORT POINT ASSOCIATES, INC.
33 Union Street, 3rd Floor . Boston, MA 02108

Boston University East Campus Student Services Center

100 Bay State Road
Boston, Massachusetts

Draft Project Impact Report

June 30, 2010

submitted to:

Boston Redevelopment Authority

submitted by:

Trustees of Boston University

prepared by:

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1.0 PROJECT SUMMARY

1.1 Introduction

This Draft Project Impact Report ("DPIR") is being submitted in accordance with Article 80B of the Boston Zoning Code. The purpose of this filing is to provide a comprehensive review of the proposed East Campus Student Services Center. This DPIR is being circulated and reviewed in concert with a proposed Institutional Master Plan amendment and renewal as described in Chapter 2.0.

1.2 Large Project Review– Boston University Student Services Center

Trustees of Boston University, (the "Project Proponent") is proposing to construct an approximately 99,600 square-foot ("s.f.") six-story student services center at 100 – 108 Bay State Road. (See Figure 1-1, Locus Plan). The proposed building will contain 64,000 square feet of student services related office space and 36,000 square feet of University dining facilities on an approximately 26,550 s.f. parcel of land on the Boston University campus in the Kenmore Square section of Boston. The proposed brick and masonry building will be 6 stories in height, with separate entrances for dining facilities and student services. A loading dock will be located on the rear alley (the "Project").

The Project is located within Boston University's Charles River Campus near Kenmore Square at the corner of Bay State Road and Deerfield Street ("Project Site"). The Project will replace an existing, surface parking lot and a small two-story building located at 108 Bay State Road that is currently located on the Project Site.

The Project will advance a strategic goal of the University by providing a location for undergraduate academic services and state-of-the-art dining facilities for East Campus students, faculty and staff within a 99,600 square foot structure. The Student Services Center will link complementary undergraduate academic services within a single facility at an East Campus location so that program synergies may be realized to the benefit of students.

Six academic service centers will be relocated to the new facility including: the *Writing Center* for the College of Arts and Sciences, a year-long specialized program designed to assist first-year students in the development of their writing skills; the *Academic Advising Center* and *Pre-Professional Advising Office*, two centers that provide curriculum guidance to students on course selection and related degree requirements, among other academic services; the *Office of Student Programs and Leadership,* an office that provides student enrichment programs and events that extend college life beyond the classroom; the *Educational Resource Center,* offering students peer tutoring services, language group discussions as well as writing and reading workshops that are designed to complement a student's classroom experience; and the

Office of Career Services, an office that draws upon the services of the offices noted above by providing advice to students on academic programs that support career goals and objectives.

The new dining facility will serve to anchor East Campus dining services much in the same manner as is currently found at the West and Center Campus dining facilities, respectively. The new dining facility at the Student Services Center will replace antiquated facilities that are now located at The Towers at 140 Bay State Road, Shelton Hall at 91 Bay State Road, and Myles Standish Hall at 610 Beacon Street and those spaces will be converted to student lounges, study rooms, snack bars or other student support space. The new 36,000 square foot dining facility will offer East Campus diners breakfast, lunch and dinner through a variety of culinary offerings including sauté', vegan, Latin, gluten-free, deli, international, grille, bakery and specialty pizzas depending upon the time of day. The new dining facility will allow the University to adhere to the same standards for excellence that it now enjoys as one of the nation's finest University dining programs.

1.3 Proposed Institutional Project

The need for the Boston University East Campus Student Services Center project was described in the "Boston University Charles River Campus Master Plan 2003 - 2010" ("Master Plan" or "IMP") but was not listed as a Proposed Institutional Project as the size and location of the facility had not been determined. Since the initial approval of the Master Plan, a more specific program and a proposed site location was developed as described above. Accordingly, the University is proposing to amend the Master Plan to list the Student Services Center as a Proposed Institutional Project.

1.4 Project Proponent

The East Campus Student Services Center will be developed by Trustees of Boston University. The project site is owned by Trustees of Boston University.

<u>Boston University</u>
Boston University is a major research university offering a broad range of undergraduate and graduate degree programs in approximately 250 areas of study at its 17 schools and colleges. Boston University is the fourth largest private university in the nation and is committed to upholding the highest standards in all of its programs. In order to achieve high academic standards, Boston University continually seeks to recruit world-class faculty and to develop high quality teaching, research and student residence facilities.

Over the first six years (2003 to 2009) of the current Boston University Charles River Campus Master Plan, the University completed $508 million of master planned buildings for on-campus graduate and undergraduate student housing, expanded athletic and recreational facilities and new academic buildings.

1.5 Public Review Process

The Proponent will meet with public agencies, neighborhood representatives, local organizations, and other interested parties, and will follow the requirements of Article 80B pertaining to the public review process. The University met with the Boston University Task Force on April 29, 2010 to present an initial overview of the project and anticipates additional meetings to review and discuss the DPIR. The Boston University Task Force is comprised of 15 representatives from areas surrounding the Charles River Campus. For 25 years, the Task Force has reviewed all Boston University master plans and development projects.

Members of the Boston University Task Force include:

- Pamela Beale (Chair)
- Paul Berkeley
- Paul Creighton
- James Hynes
- Yvette Lancaster
- Amy Mahler
- Archie Mazmanian
- Terri North
- Norman O'Grady
- Richard Ong
- Shlomo Pinkas
- Victor Themo
- Elizabeth Walsh
- Steven Wasserman
- Alan Weinberger

The University also met with the Boston Civic Design Commission on June 1, 2010 to review and discuss the project plans. The Commission voted unanimously to recommend the project to the Boston Redevelopment Authority.

As the project is located within the Bay State Road/Back Bay West Architectural Conservation District ("ACD"), the University met with the ACD Commission on June 8, 2010 to present the plans informally. A formal review will occur following the completion of the Article 80 process.

1.6 Public Benefits

Since its founding, Boston University has been committed to, and an integral part of, the growth and development of the City of Boston. The University continues to make a significant effort to integrate its goals and objectives with those of the City. The University is committed to maintaining and improving all property it acquires within Boston and seeks to serve the residents of the City by making educational programs of the highest quality available and accessible. Boston University is a proven leader in dedicating its financial resources directly for the benefit of the young people in the surrounding community.

Through direct and indirect spending of the University, its employees, students and their visitors, Boston University's economic impact on the Commonwealth of Massachusetts totaled nearly $3.9 billion in FY-2009 with $1.1 billion of that in the City of Boston. From an employment perspective, the University accounted for a total of 43,116 jobs in the Commonwealth and 14,877 in Boston, including 25,956 individuals that are directly employed by the University, and an additional 17,160 jobs that resulted from University spending.

Boston University provides direct payments and services to the City of Boston totaling $32.6 million, which includes real estate taxes, payments in lieu of taxes, linkage payments, scholarships, fees and permits, police services, rubbish removal and street cleaning, and donated use of athletic and recreation facilities.

The Project will provide substantial benefits to the City and its residents including:

- The replacement of the existing parking lot with a new student services center that is consistent with the architectural and historic context of the surrounding area;
- The implementation of sustainable design principles for the building that will minimize operational impacts and enhance pedestrian access; and
- The creation of new construction and permanent jobs in the City of Boston.

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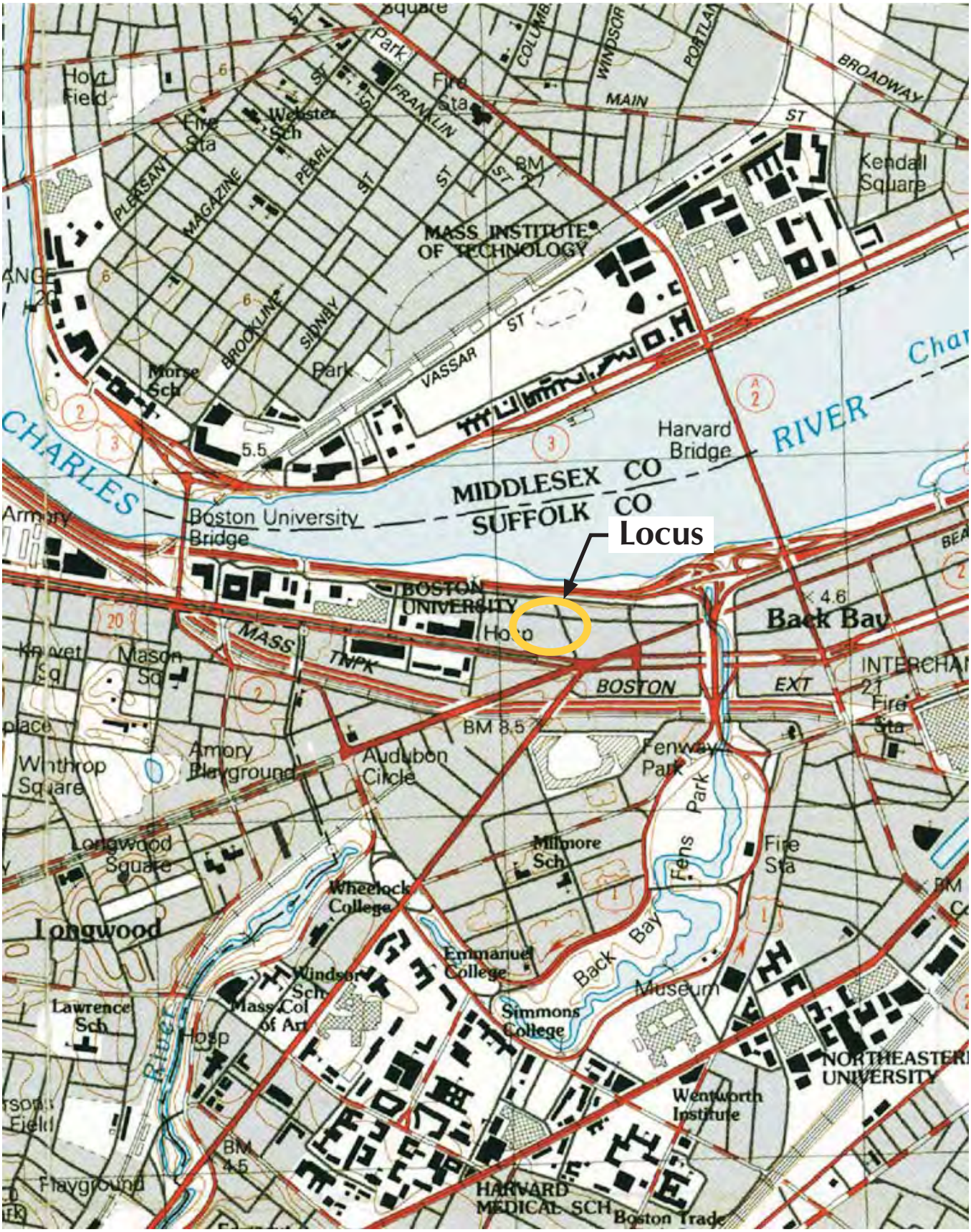

Boston University
BOSTON, MASSACHUSETTS

Figure 1-1
Locus Plan
source: USGS

2.0 RELATIONSHIP TO THE INSTITUTIONAL MASTER PLAN

2.1 Introduction

This section sets forth the University's Institutional Master Plan history, current status and need for an amendment and renewal.

2.2 Boston University Mission and Goals

Boston University is a major research university offering a broad range of undergraduate and graduate degree programs in approximately 250 areas of study at its 17 schools and colleges. Boston University is the fourth largest private university in the nation and is committed to upholding the highest standards in all of its programs. In order to achieve high academic standards, Boston University continually seeks to recruit world-class faculty and to develop high-quality teaching, research, and student residence facilities.

Boston University is committed to, and an integral part of, the growth and development of the City of Boston. The University continues to make a significant effort to integrate its planning and objectives with those of the City. The University is committed to maintaining its long standing commitment to improving all property it acquires within Boston and seeks to serve the residents of the City by making educational and health programs of the highest quality available and accessible. Boston University is a proven leader in dedicating its financial resources directly for the benefit of the young people of the City of Boston. The Boston Scholars Program, through which the University gives 20 to 25 four-year full-tuition scholarships to graduating seniors from Boston's public high schools, has awarded more than $129 million in scholarships since the program was created in 1973.

Beginning with freshmen enrolling in fall 2009, Boston University expanded opportunities for Boston public high school students through the new Boston High Community Service Award program. This new scholarship program created at the initiative of Mayor Menino and President Brown guarantees to meet the full demonstrated financial need of all graduates of Boston's public high schools who earn admission to the University without the need to use loans. Boston High Community Service Award full-need scholarships were awarded to 72 students who enrolled in the fall of 2009.

2.3 Boston University Enrollment and Housing

Full-time undergraduate enrollment at Boston University's Charles River Campus has increased over the past decade, from 14,459 to 15,386. (See **Error! Reference source not found.**). The number of students who wish to attend Boston University has increased dramatically over the same timeframe, allowing Boston University to be more selective regarding the students it

accepts. Looking over the next two years, enrollment is projected to be relatively stable. (See **Error! Reference source not found.**). The University's current goal is to enroll a freshman class of 4,100 each year. Approximately one half of the undergraduate students come from Massachusetts, New York, New Jersey and Connecticut. The other half come from every state in the union and over 100 countries throughout the world...

In response to concerns of the City and the surrounding neighborhoods, the University has been committed to increasing the amount of on-campus housing available to and occupied by undergraduate students. The University was challenged to create housing that would be attractive to upperclassmen that are most likely to reside off campus. The University has made great strides in increasing the availability and variety of on-campus housing options. With the construction of two new residential buildings at 10 Buick Street and 33 Harry Agganis Way and a number of other housing and dining improvement projects, including historically sensitive renovation of Bay State undergraduate residences, the University has increased the number of students housed on campus from 67% in 1994 to 76% in 2009. The University will continue to work toward increasing on-campus housing opportunities.

Table 2-1, Full Time Undergraduate Enrollment – Charles River Campus

FALL	ENROLLMENT	UNDERGRADUATE OCCUPANCY	STUDENTS NEEDING HOUSING	PERCENT HOUSED	FRESHMAN CLASS SIZE
2003	14,976	10,650	14,059	76%	3,961
2004	15,186	10,746	14,397	75%	4,352
2005	15,690	10,860	14,774	74%	4,209
2006	15,681	10,879	14,678	74%	4,124
2007	15,771	10,675	14,723	73%	4,163
2008	15,540	10,629	14,486	73%	4,131
2009	15,386	10,825	14,288	76%	4,130

Table 2-2, Projected Undergraduate Enrollment - Charles River Campus

FALL	ENROLLMENT	UNDERGRADUATE OCCUPANCY	STUDENTS NEEDING HOUSING	PERCENT HOUSED	FRESHMAN CLASS SIZE
2010	15,376	11,128	14,306	78%	4,100
2011	15,311	11,045	14,245	78%	4,100
2012	15,331	11,022	14,264	77%	4,100

The University provides information to the City of Boston in response to the University Accountability Ordinance regarding the number of students housed on-campus and off-campus

within the City of Boston. These figures are presented in **Error! Reference source not found.** below and differ somewhat from those in Table 2-1 as Table 2-3 includes only students residing within the City of Boston.

Table 2-3, Full Time Undergraduates Residing in Boston		
School Year	**Fall 2008**	**Fall 2009**
Residing in Boston On-campus	10,376	10,881
Residing in Boston Off-campus	2,119	1,713
Total	12,495	12,594

2.4 Status of Institutional Master Plan and Renewal

Boston University was the first university in the City of Boston to prepare an Institutional Master Plan. The first Master Plan was approved in 1986, followed by the second in 1997, and finally the third and most recent, in 2003. Over the past 25 years, the University has completed a host of important improvements to the campus outlined in the various Master Plans. Most prominent among these projects are the John Hancock Student Village with housing for more than 1,700 students, the Harry Agganis Arena, the Boston University Fitness and Recreation Center, the School of Management, the Center for Photonics Research, the Life Sciences and Engineering Building, the Residences at 580 Commonwealth Avenue for graduate student housing, and the Track and Tennis Center. In addition, the University has also partnered with the City and State in the redevelopment and revitalization of Kenmore Square and the beautification of Commonwealth Avenue between Deerfield Street and the BU Bridge.

The Master Plan development objectives of Boston University for the seven-year period beginning in 2003 through 2010 include the completion of existing projects, the improvement of the visual appearance and livability of the campus, and the addition of some new recreational, teaching, residential, and research facilities.

The current 2003-2010 IMP has expired. The University is currently in the process of gathering information related to the development of a new IMP. The University is committed to taking the time necessary to thoroughly evaluate the future needs of the Charles River Campus and to develop a creative and thoughtful plan to achieve the University's overall goals and objectives. The University is requesting a two year renewal of its current IMP in order to complete this process. The two year renewal period provides sufficient time to consider future needs and to work with the faculty, staff, and students, along with the surrounding community, to define the next steps for the University.

2.5 Master Plan Progress

The 2003-2010 IMP noted many needed programmatic and facility improvements to support the ongoing goals of the University. Many of these improvements have been accomplished over the course of the Master Plan, but some remain, and some new needs will likely be identified. As noted above, the University has made significant strides in constructing new facilities for a number of programs and for the provision of additional on-campus undergraduate and graduate student housing. Prominent among those remaining needs identified in the IMP is the need for a centrally located facility to consolidate student counseling and student academic advising offices that are currently scattered across campus. As the University has now identified such a location, an IMP Amendment is also being requested to add this project, including consolidated student dining facilities, to the list of Proposed Institutional Projects.

2.6 Proposed Institutional Project

The Boston University East Campus Student Services Center is being proposed in satisfaction of the identified need in the Master Plan for a facility that serves to consolidate a variety of student support services. At the same time, the University is seeking to improve the quality of dining services for three nearby dormitories by consolidating these services into a single location. The location for this facility is 100 Bay State Road, at the corner of Bay State Road and Deerfield Street and was identified in the 2003-2010 Master Plan as Potential Development Site R.

The Proposed Institutional Project is described below:

Boston University Student Services Center

- Location – 100-108 Bay State Road
- Site Size – Approximately 26,550 s.f.
- Existing Use – Small two story office building and surface parking lot
- Proposed Use – Student Dining Facility, Academic and Career Advising Center
- Proposed Height – Six stories, 90 feet
- Proposed Size – Approximately 99,600 s.f.
- Proposed FAR – 3.8
- Current zoning – H-4
- Proposed Project Cost - $50 million
- Estimated Construction Start – November 2010
- Estimated Completion Date – July 2012

2.7 Zoning Map Amendment

As part of the IMP amendment, the University is seeking a zoning map amendment to the existing Boston University Institutional Subdistrict. This zoning designation was established to support the Institutional Master Plan process, but currently exists only west of the Boston

University Bridge. None of the properties on the east, south or central campus are included in the current designation.

The proposed map amendment would extend the boundaries to cover the University's central, south and east campus areas, from the Boston University Bridge on the west to Raleigh Street on the east, and from the Charles River on the north to the Audubon Circle area on the south. Minor modifications to the west campus area are proposed to reflect changes in ownership since the original district designation and a clarification that the Student Village site is included. The zoning district boundaries would include only properties currently owned by Boston University and thus would not affect other property owners. The University's commercial properties in Kenmore Square are not included.

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3.0 PROJECT DESCRIPTION

3.1 Project Site and Surroundings

The Charles River Campus of Boston University comprises approximately 112 acres of land and 282 buildings, primarily located along Commonwealth Avenue, Beacon Street, and Bay State Road. The academic core of the University is located along both sides of Commonwealth Avenue, extending from the Metcalf Center for Science and Engineering to the Boston University Bridge.

The Project Site is situated in the East Campus, which is dominated by academic, administrative and student service functions. A half block from Kenmore Square, the Project Site has a street address of 20-22 Deerfield Street and 108 Bay State Road. The site is bordered by 549 Commonwealth Avenue (also known as 10 Deerfield Street), and 110 Bay State Road, all owned by Boston University. Across Deerfield Street are located 96 Bay State Road and 19 Deerfield Street, also owned by Boston University. Located across Bay State Road from the Project Site is the Ramakrishna Vedanta Society building at 58 Deerfield Street.

The 26,550 square foot Project Site consists of an open parking lot and the existing structure at 108 Bay State Road, both of which are owned by the University. (See Figure 3-1, Project Site, Figure 3-2, Aerial View and Figure 3-3 Existing Site Photographs).

3.2 Project Description

The program for the Student Services Center building consists of a student dining facility located at the basement, first floor, and second floor levels, and a University academic and career advising center on the third through sixth floor levels. The specific description of uses is as follows:

Student Dining Hall: The communal dining experience is a critical element of the Boston University student's overall experience. Boston University Dining Services strives to create an ambience that encourages students to make connections with their peers in a welcoming environment.

Today's student dining experience must offer a comfortable, warm gathering spot and an assortment of culinary offerings that offer a variety of ethnic, healthy, comfort and specialty menu items simultaneously. The service area needs to be a combination of several self-contained preparation and cooking stations where emphasis will be on fresh, high quality entrees being prepared to order in front of the guest.

This style of dining service cannot be developed in the current locations of Towers (1959), Shelton Hall (1923), and Myles Standish (1925) given the age and layout of each of the facilities.

To replace these antiquated facilities, this project proposes a 36,000 s.f. dining facility with 900 seats restricted to the Boston University community. As many as twelve different concept stations will be offered to the students. They include: sauté, vegan, Latin, gluten-free, deli, international, grill, bakery and pizza. Consistent with the operations of all residential dining halls on campus, the facility will be open for breakfast, lunch and dinner. A multi-function room will be developed in the lower level. This area will have a 25 seat coffee shop and a 150 seat multi-purpose room.

University Academic and Career Center: By bringing together the tutoring and career counseling services for undergraduates as the project proposes greater synergy will be realized to help students align their academic pursuits with their career goals. Further, because their space needs are similar, the design allows for shared use of the meeting rooms and seminar spaces: small tutoring rooms become interview rooms for recruiters; group tutoring rooms become employer information sessions. The *Educational Resource Center* is a program of peer tutoring that complements the student's classroom experiences. The tutors are undergraduate students recruited from various schools and colleges at Boston University. The program also includes Language Link: meeting rooms that are designed to afford students, faculty and staff the opportunity to enhance their foreign language skills in informal conversational groups led by native and accomplished speakers located on campus or from across the globe. The *Office of Career Services* program is designed to expand the student's vision of career opportunities and offer advice on the academic programs that could support that vision. In addition to providing career guidance, the facility would be the center for on-campus recruiting allowing for information sessions to small gatherings or personal interviews.

College of Arts and Science Academic Center: The project proposes to bring together four College programs that focus on the undergraduate student's academic life. The *Writing Center* provides the support spaces for the CAS Writing Program, a year-long sequence of seminars designed to help first year students develop or enhance their writing skills. The design will provide the offices for the faculty and staff of the Center as well as spaces for one-on-one consultations with students about their writing assignments. Several meeting rooms will also be included for group tutoring. The *Academic Advising Center* along with the *Pre-Professional Advising Office* guides the College's undergraduate student in planning his/her degree program. The team of advisors assists the student in the selection of courses as well as explaining academic policies and regulations. The *Office of Student Programs and Leadership* enriches college life beyond the classroom. The administrative staff offers programs and events that bring together faculty and students such as the Dean's Student Leadership Council and Class Day.

The project creates a unique consolidation of academic, educational and career counseling anchored by a contemporary dining facility further enhancing the undergraduate student experience.

The space currently serving the programs that will relocate to the proposed Student Services Center will be repurposed for other student related functions. The existing dining halls will be converted to student lounges, study rooms, snack bars or other student support space. The office spaces will be reassigned to other academic or administrative uses.

See Table 3-1 and Table 3-2 below for approximate project dimensions and the building unit mix.

Table 3-1, Approximate Project Dimensions	
Lot Area:	26,550 s.f.
Building Footprint Area:	20,666 s.f.
Development Program (Approx.):	
University Dining	35,700 s.f.
Student Services	4,700 s.f.
CAS Academic Center	26,400 s.f.
Academic Counseling	26,400 s.f.
Building Support Services	6,400 s.f.
Total:	99,600 s.f.
Floor Area Ratio (FAR):	3.8
Stories:	6 stories
Height:	90 feet

Table 3-2, Building Floor Areas	
Floor Level	**Gross Floor Area**
Basement	7,341 s.f.
First Floor Level	20,666 s.f.
Second Floor Level	18,827 s.f.
Third Floor Level	13,396 s.f.
Fourth Floor Level	12,987 s.f.
Fifth Floor Level	13,396 s.f.
Sixth Floor Level	12,987 s.f.
Total	**99,600** s.f.

3.3 Compliance with Boston Zoning Code

The Project Site is located within an H-4 zoning district established by Section 3-1A.c of the Boston Zoning Code (Code). A "college or university use" is a conditional use within the H-4 zoning district. However, as Boston University is requesting an Institutional Master Plan Amendment, the project will be proposed as a Proposed Institutional Project. The specific use and dimensional requirements for the Project would be as set forth in the Institutional Master Plan, which must be reviewed and approved by the BRA and the Boston Zoning Commission. The proposed FAR of 3.8 for the project is less than the existing H-4 zoning, which allows a FAR of 4.0. Boston University is proposing the Institutional Master Plan Amendment for this project in coordination with Article 80B Large Project Review process.

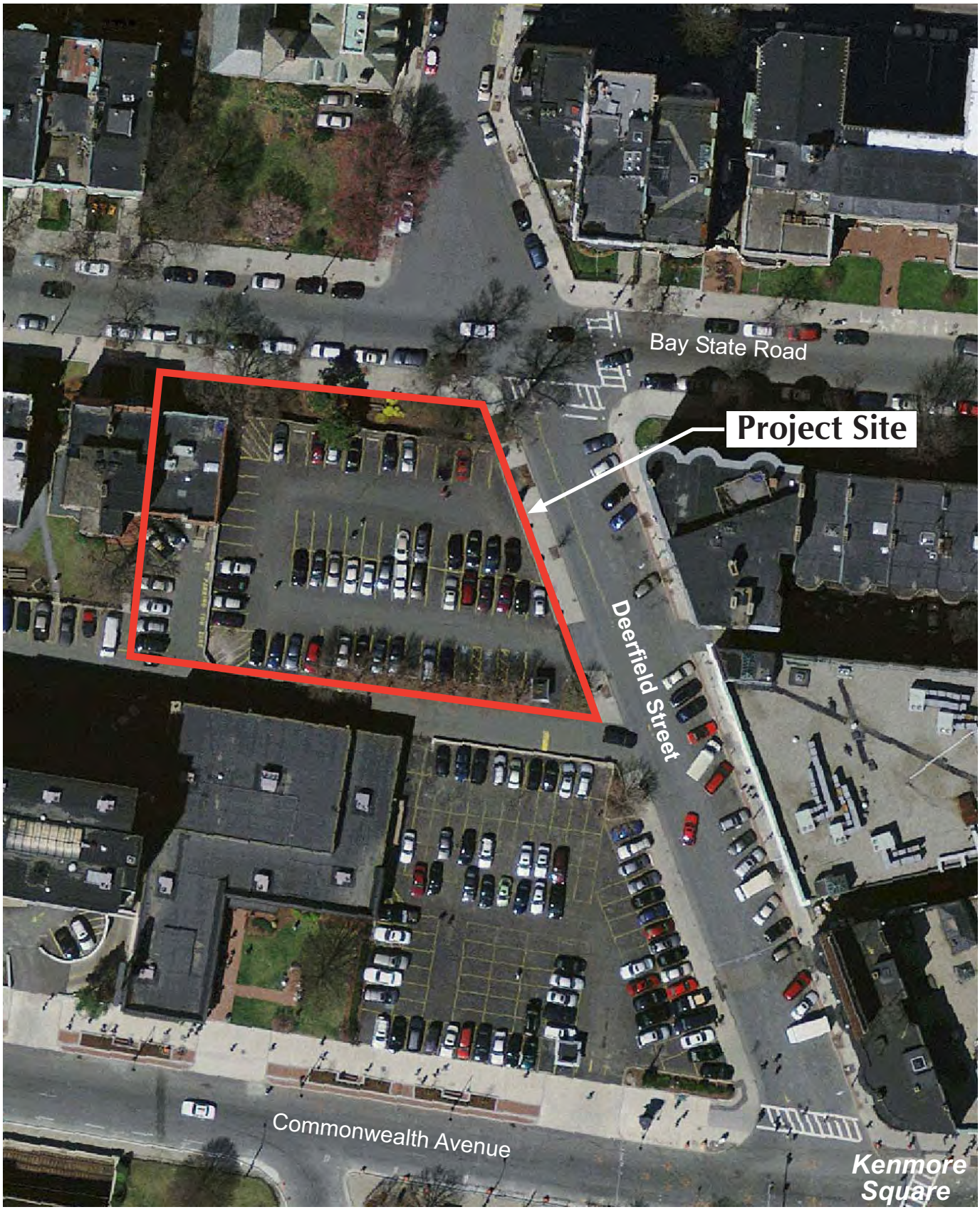
In addition, in accordance with Article 80B of the Code, the Project is subject to the requirements of Large Project Review because it exceeds 50,000 s.f. It is anticipated that the project will be subject schematic design review by the Boston Civic Design Commission under Article 28.

The project site is located within the Groundwater Conservation Overly District. The Project design will comply with the provisions of Article 32 of the Code to protect groundwater.

The Project is also subject to Article 37 Green Buildings of the Code. The Project will be designed and constructed to be LEED Certified, with a target level of LEED Gold.

Table 3-3, List of Potential Permits and Approvals[1]	
Agency Name	**Permit or Action**
State	
Massachusetts Department of Environmental Protection, Division of Water Pollution Control	Source Registration for Sewer Discharge
Massachusetts Department of Environmental Protection, Division of Air Quality Control	Notice of Commencement of Demolition and Construction; Notice of Asbestos Removal,
Local	
Boston Redevelopment Authority	Institutional Master Plan Renewal and Amendment Approval; Article 80 Review; Cooperation and other Article 80 Agreements
Boston Zoning Commission	Institutional Master Plan Renewal and Amendment Approval
Boston Civic Design Commission	Schematic Design Review
Bay State Road/Back Bay West Architectural Conservation District	Certificate of Appropriateness
Boston Transportation Department	Transportation Access Plan Agreement; Construction Management Plan
Boston Water and Sewer Commission	Site Plan Approval
Boston Department of Public Works	Curb Cut Permit; Street Opening Permit; Street/Sidewalk Occupancy Permit
Boston Public Improvements Commission	Specific Repair Plan/Maintenance Agreement
Boston Public Safety Commission Committee on Licenses	Permit for Storage of Flammables
Boston Fire Department	Flammable Storage Permit, Plan Review
Boston Department of Inspectional Services	Building Permits; Certificates of Occupancy; Other Construction Related Permits
Other local licenses as required	

[1] This is a preliminary list based on project information currently available. It is possible that not all of these permits or actions will be required, and that additional permits may be needed



Boston University
BOSTON, MASSACHUSETTS

Figure 3-1
Project Site
source: MassGIS, 2008

Boston University
BOSTON, MASSACHUSETTS

Figure 3-2
Aerial View
source: USGS

View Looking North Along Deerfield Street

View Looking South from Bay State Road

View Looking West from Deerfield Street

View Looking East along Bay State Road

Boston University
BOSTON, MASSACHUSETTS

Figure 3-3
Existing Site Photographs
source: Fort Point Associates

4.0 URBAN DESIGN COMPONENT

4.1 Building Design

The Boston University Student Services Center is located at the corner of Bay State Road and Deerfield Street, a site that bridges the private, residential nature of Bay State Road and the more public character of the Kenmore Square area. The design of the new building responds appropriately to both of these influences, simultaneously creating a buffer and a transition between the two neighborhoods. (See Figure 4-1, Site Context).

The northern edge of the site fronts on Bay State Road, whose streetscape is composed of a series of well-proportioned three to six story masonry buildings. The buildings maintain a strong street edge with a modest setback from the sidewalk. Architecturally, Bay State Road is a treasure of beautifully detailed, humanly-scaled buildings, arranged in row house fashion, a pattern which strongly reinforces the continuity of the street edge.

In contrast, the Deerfield Street edge of the site faces a series of taller, commercially-scaled buildings and uses. The southern edge of the site faces an alleyway and parking lot. The south-facing façade of the new building will be prominently visible from Commonwealth Avenue and Kenmore Square. (See Figure 4-2, Site Survey).

The building's program includes a mix of University Dining and Student Service related activities. Dining will be located on the first two floors and in the lower level. The upper four floors of the six-story building house offices for University Student Service functions. (See Figures 4-3 through 4-7).

Along Bay State Road, the two lower floors of the new building will extend to the line of the well established front yard setback along the rest of the street which is 20 feet from the sidewalk. The cornice of the second floor roof is set at approximately 40 feet above grade which matches the cornice height of the adjacent Bay State Road buildings, reinforcing the size, scale and continuity of the Bay State Road context. The lower, two-story portion of the building acts as a base for the four floors above, which are set back an additional 40 feet, on average, from Bay State Road. (See Figure 4-8, Building Section).

On Deerfield Street, except at the Bay State Road corner, the floors are built out to the sidewalk, and there is no upper-level setback. This reflects the pattern of the buildings across the street. Setbacks are minimized along the alley as well. At the western edge of the site, the lower portion of the building meets the adjacent building at 110 Bay State Road, reinforcing the continuity of the Bay State Road street edge. Above the Bay State Road cornice height the building sets back eight feet, primarily to allow windows on the upper four floors of the west façade.

Building Entrances

Each of the program elements, Dining and Student Services, has its own public face and very different schedules, patterns of use and security requirements. To support their unique character, two distinct entries have been provided. The main dining entrances are at the corner of Bay State Road and Deerfield Street and flank the Ellipse, a two-story high informal meeting space where students can gather and wait for friends before entering the dining area. Staff and visitors to the student services floors may enter at the Deerfield Street corner nearest Kenmore Square. This entry provides them direct access to the Student Services reception area on the first floor and to the main elevator lobby.

The materials and exterior detailing of the new building have been designed to respect and complement the existing architecture and urban design of Bay State Road and Deerfield Street. Particular attention has been paid to the Bay State Road façade, where the size, color, and detail of both the masonry wall and the windows and bays maintain and extend the traditional edge of the south side of the street. (See Figure 4-9, Perspective Looking South and Figure 4-10, Perspective Looking North).

On the Deerfield Street and south-facing façades and on the upper four floors of the building the masonry becomes lighter in both appearance and texture and the more traditionally-sized window openings are augmented with larger glass openings at the major public spaces within the building.

Building Massing

The building is composed as a two-story element that fills the site except for a 20 foot front yard setback on Bay State Road, and a four story element, set back an additional 40 feet from Bay State Road, on top of it. The site is approximately 26,550 square feet in area; the building footprint at ground level is approximately 20,650 square feet.

The program for the first two floors requires large, high-ceilinged spaces. The floor-to-floor heights of the first two floors are such that the cornice line of this lower element can align with the cornices of the adjacent three-story row houses.

The footprint of the four-story tower is approximately 14,000 square feet per floor, a size that accommodates the program well and allows the setback from Bay State Road described above. This four-story element is further divided into 2 two-story units, each of which is connected by 2 two-story high spaces, one on the north side of the building, and the other over the Student Services entrance at Deerfield. This subdivision is expressed in the curtain wall detailing at these two locations.

Ellipse

To help provide the East Campus Student Services Center with a unique identity on campus, the corner of Bay State Road and Deerfield Street is occupied by the Ellipse, a large (approx. 1,500 square feet) oval-shaped room just off the building's main entrance. This informal meeting space is intended, by its size, location and unique shape to be a place recognizable to everyone on campus, a part of their "mental streetscape."

Walls and Windows

The exterior walls are masonry, primarily brick, mixed with stone and/or cast stone on the lower two floors. Lower floor walls will have a have robust, rusticated appearance, with deep brick returns, in keeping with traditional, deep-profile façades of Bay State Road. The walls of the upper floors will be lighter in appearance, with minimal brick return at the windows.

Windows in the masonry walls will be tall, to maximize daylighting, and arranged in an irregular pattern to accommodate the varying requirements of the program and to add interest to the façade. The predominant wall/window system will be punctuated with curtain wall at locations of particular significance to interior life of building: at building entrances and at the 2-story high spaces at the southeast corner and along the north wall of the upper building element.

There will be two bay windows on the Bay State Road façade, in keeping with the character of the neighborhood that will afford views up and down the street from the second floor dining area.

Materials and Color

The materials, color and exterior detailing of the proposed building have been designed to respect and complement the existing architecture and urban design of Bay State Road and Deerfield Street. On the Bay State Road façade, the size, color, and detailing of the masonry wall and the windows and bays reflect the richness of the immediate context, while on the east, south and west and on the upper floors of the building the masonry wall is detailed to feel lighter in both appearance and texture. On the south side of the building, facing Kenmore square, an additional material, either stone or metal panel, will be introduced, to help differentiate the varying planes of the façade.

4.2 Site Design

Landscaping along Bay State Road will continue the well-established pattern of the existing context, a pattern which includes:

- Lawns, either grass or ground cover, edged in granite or concrete curbing
- Building entrances paved in brick
- Concrete sidewalks
- Street trees every 35 to 40 feet, located next to the curb

- Smaller ornamental trees in front yards

The character of Deerfield Street is more like Kenmore Square and Commonwealth Avenue, with a commercial rather than a residential character. Its surrounding buildings are taller and are built out to the sidewalk edge. The proposed landscape design along Deerfield Street is a wide sidewalk, flanked by street trees, extending from the Bay State Road corner to Commonwealth Avenue, and punctuated by a paved plaza at the Student Services entrance at the corner of Deerfield Street and the alley.

Bay State Road – Deerfield Street Intersection

The existing ramps at the northeast and northwest corners of this intersection are compliant by slope with current standards, although they do not have tactile strips. They should not require reconstruction. There is currently no crosswalk from the northwest corner to the southwest corner. Due to the configuration of the intersection, we do not recommend adding one.

The ramp at the southeast corner of the intersection has recently been reconstructed and complies with ADA guidelines. It is an apex ramp, while the ramp at the northeast corner is a perpendicular one. However, due to the angle of the intersection, converting the ramp at the southeast corner to a perpendicular ramp would result in a longer and less direct crossing. We do not recommend changing this corner to a perpendicular ramp.

The ramp at the southwest corner will be reconstructed as part of the project work. Constructing a perpendicular ramp at this location would require the removal or relocation of a catch basin curb inlet. For this reason, and since there is no crossing from this corner to the northwest corner, we recommend the reconstruction of an apex ramp, angled as much as possible to lead pedestrians toward the existing apex ramp at the southeast corner.

Deerfield Street – Commonwealth Avenue Intersection

The ramps at the intersection of Commonwealth Avenue and Deerfield Street are recently constructed and compliant with current standards. The sidewalk improvements along the western side of Deerfield Street proposed by this project will terminate at the line of the recent Commonwealth Avenue sidewalk improvements. The existing curb ramps will not be affected.

4.3 Building Mechanical Systems

The proposed Student Services Center at 100 Bay State Road will have associated chilled water and hot water production as part of the base building mechanical systems. The chilled water will be produced by electric driven centrifugal chillers. The heating and hot water needs of the building will be met by natural gas fired equipment. In order to meet the energy use goals of Boston University, all hot water producing equipment, boilers and hot water heaters, will be gas fired condensing type. By utilizing natural gas, the equipment being used can of the highest

efficiency available. All gas fired equipment will be located in the penthouse mechanical room, above all six occupied floors. The proposed discharge exhaust points are through the roof of the mechanical penthouse.

In addition to the hot water thermal needs of the building, an emergency generator will be installed within the building to handle all emergency and standby requirements. The proposed emergency generator is sized to be 350kW to handle these required loads, as well as some possible food service equipment in the event of a power failure. The generator will be installed on the first floor, adjacent to the loading dock. The generator will be installed to operate on diesel fuel. The fuel will be stored directly under the generator in a belly tank. The exhaust for the generator will run up to the penthouse mechanical room and exhaust through the roof.

4.4 Sustainable Design

4.4.1 Sustainable Design Principles

Boston University strives to adhere to sustainable design principles in any new construction or major renovations it undertakes. In order to succeed in this regard, an understanding of the underlying context, character and environment is critical in meeting this important goal. Achieving this objective rests on the following initiatives:

- Understanding and adopting the aesthetic continuities of campus and neighborhood
- Achieving technical excellence in building envelope by avoiding thermal by-passes especially at openings
- Preventing vapor migration that can result in mold
- Controlling moisture penetration that results in envelope failures, especially of ferrous materials
- Implementing sustainable design practices from the start of the design process and initial construction, to the operations of the building, with cost control during construction and operation, and performance of post-occupancy evaluations and lessons learned.

Sustainable strategies must be specific to a building use type. Different strategies are appropriate for Dining and Student Services. Each will be considered and evaluated separately, and integrated into a system that will work well for all parts of the building. The selection of the structural and HVAC systems are as important to the final design and appearance of the building as the campus context or the social dynamics of the building's inhabitants. Mechanical systems will be selected as early as possible in the design process so that the design team can fully integrate them into the overall building design.

4.4.2 Article 37 Green Buildings

Article 37 requires all projects over 50,000 square feet to meet LEED Certified Standards by either certifying the project or demonstrating the project is "certifiable." The Student Services Center will be a Registered LEED project. We anticipate achieving Gold Certification, which exceeds the requirements of Article 37. A LEED-AP consultant will be on the project team to guide the project through the LEED process.

4.4.3 LEED Scorecard

The Boston University East Campus Student Services Center will incorporate a broad range of sustainable design and energy conservation initiatives. The project team intends to pursue LEED Gold Certification, the LEED Scorecard has been completed and the project has been registered with the USGBC.

The following provides a point-by-point breakdown of the LEED points available, which points the project team intends to pursue, and how they intend to achieve them.

Sustainable Sites (26 points available, 18 points expected)

Prerequisite 1: Construction Activity Pollution Reduction

To meet this prerequisite the Civil Engineer will create and implement an erosion and sedimentation control plan for all construction activities.

Credit 1: Site Selection (1 point expected)

This credit is achieved because the site is not located on prime farmland, previously undeveloped land lower than 5 feet above the 100-yr flood plain, endangered species habitat, within 100 feet of wetlands, previously undeveloped land within 50 feet of a water body, or on public parkland.

Credit 2: Development Density & Community Connectivity (5 points expected)

The building is planned for a previously developed site within a ½-mile of a dense residential area and at least 10 basic services, with pedestrian access between the building and services.

Credit 3: Brownfield redevelopment (0 points expected)

At this point in time the site is presumed not to be a brownfield site; credit is not expected for brownfield redevelopment.

Credit 4.1: Alternative Transportation, Public Transportation Access (6 points expected)

The project is located within a ½-mile walking distance of two branches of the Green Line subway, and within a ¼-mile walking distance of several MBTA bus lines.

Credit 4.2: Alternative Transportation, Bicycle Storage and Changing Rooms (1 point expected)

Secure bicycle storage will be provided within 200 yards for 5% or more of all building users. Shower and changing facilities will be installed in the building for 0.5% of the full time equivalent (FTE) occupants.

Credit 4.3: Alternative Transportation, Low-Emitting and Fuel-Efficient Vehicles (0 points expected)

While the University may choose to provide preferred parking for low-emitting and fuel-efficient vehicles for 5% of the total vehicle parking capacity, campus wide, no final decision has been made. No credits are assumed at this time.

Credit 4.4: Alternative Transportation, Parking Capacity (2 points expected)\

This credit is met because no new parking will be provided as part of the project.

Credit 5.1: Site Development, Protect or Restore Habitat (0 points expected)

If possible, a minimum of 20% of the total site area (including the building footprint) will be planted with native or adaptive vegetation. Projects earning Sustainable Sites Credit 2: Development Density & Community Connectivity may include vegetated roof surface in this calculation if the plants are native or adapted, provide habitat, and promote biodiversity. No credit is assumed, pending more accurate calculations of total vegetated areas as the design develops.

Credit 5.2: Site Development, Maximize Open Space (0 points expected)

If possible, the development footprint will be reduced and/or vegetated open space will be provided within the project boundary such that the open space exceeds local zoning requirements by 25%. Projects earning Sustainable Sites Credit 2: Development Density & Community Connectivity may include vegetated roof surface (if the plants are native or adapted, provide habitat, and promote biodiversity) and pedestrian-oriented hardscape areas in this calculation. No credit is assumed pending more accurate calculations of total vegetated areas and pedestrian-oriented hardscape areas as the design develops.

Credit 6.1: Stormwater Design, Quantity Control (1 point expected)

If possible, the project will implement a new stormwater management system that results in a 25% decrease in the volume of stormwater runoff from the 2-year 24-hour design storm.

Credit 6.2: Stormwater Design, Quality Control (0 poinst expected)

If possible, the project will include a stormwater management plan that reduces impervious cover, promotes infiltration and captures and treats the stormwater runoff from 90% of the average annual rainfall using acceptable best management practices (BMPs), capable of removing 80% of total suspended solids (TSS) load. This credit is not being attempted due to the dense urban environment..

Credit 7.1: Heat Island, Non-roof (1 point expected)

For a minimum of 50% of the site hardscape, shading from tree canopy will be provided within 5 years, or hardscape materials with a solar reflectance index (SRI) of least 29 will be used, or a combination of these strategies will be employed.

Credit 7.2: Heat Island, Roof (1 point expected)

A combination of white roofing material with an SRI of at least 78 and a vegetated roof will be installed.

Credit 8: Light Pollution Reduction (0 points expected)

Lighting will be designed to reduce light pollution, but due to documentation requirements no credit is assumed.

Water Efficiency (10 points available, 6 points assumed)

Prerequisite 1: Water Use Reduction

To meet this prerequisite potable water use will be reduced by at least 20% over baseline through the installation of ultra-low-flow urinals, dual-flush toilets, low-flow shower heads, and electronic faucets.

Credit 1: Water Efficient Landscaping (2 points expected)

A permanent irrigation system will be installed. Use of potable water for landscape irrigation will be reduced by at least 50% over baseline through the use of a high-efficiency watering system.

Credit 2: Innovative Wastewater Technologies (0 points expected)

No credit is assumed.

Credit 3: Water Use Reduction (4 points expected)

Potable water use will be reduced by 40% over baseline through the installation of ultra-low-flow urinals, dual-flush toilets, low-flow shower heads, and electronic faucets.

Energy and Atmosphere (35 points available, 17 points expected)

Prerequisite 1: Fundamental Commissioning of Building Energy Systems

To meet this prerequisite a qualified Commissioning Agent will review the Owner's Project Requirements, Basis of Design, and construction documents, develop a commissioning plan, verify the installation and performance of systems to be commissioned, and complete a summary report. Systems to be commissioned include all HVAC, refrigeration, lighting and daylighting controls, and domestic hot water.

Prerequisite 2: Minimum Energy Performance

To meet this prerequisite a whole-building energy simulation will be implemented, and a minimum of 10% improvement in the proposed building performance rating, compared to the baseline building (based on ASHRAE 90.1-2007), will be demonstrated.

Prerequisite 3: Fundamental Refrigerant Management

Zero chlorofluorocarbon (CFC)-based refrigeration will be used in the building HVAC and Refrigeration systems.

Credit 1: Optimize Energy Performance (10 points expected, 15 points possible)

A minimum 12% improvement in the proposed building performance rating compared with the baseline building (based on ASHRAE 90.1-2007) will be demonstrated using a whole building energy simulation. Actual energy savings are unknown pending final building design and completion of the energy model. A 30-40% improvement (10-15 points) over baseline is anticipated. Energy-saving measures include high-efficiency chillers, VAV units with full-economizer capability and a passive reheat device, energy recovery wheel, a Building Automation System, a small cogeneration system, energy-efficient lighting, and daylight dimming and occupancy sensors.

Credit 2: On-Site Renewable Energy (0 points expected)

Wind or solar may be installed as an educational tool, but these renewable energy systems are unlikely to offset more than the required 1% of building energy costs, so no credit is assumed.

Credit 3: Enhanced Commissioning (2 points expected)

An independent qualified Commissioning Agent will be designated prior to start of construction document phase. The Commissioning Agent will report directly to the owner. In addition to the requirements of Energy & Atmosphere Prerequisite 1, the Commissioning Agent will review design documents prior to mid-construction document phase and back-check review comments in the subsequent design submission, review contractor submittals applicable to systems being commissioned, develop a systems manual, verify that the requirements for training operating personnel and building occupants have been completed, be involved in reviewing the operation of the building with O&M staff.

Credit 4: Enhanced Refrigerant Management (2 points expected)

Refrigerants for HVAC and Refrigeration equipment that minimize or eliminate the emission of compounds that contribute to ozone depletion and global climate change, based on the formula provided in the LEEDv3 Reference Guide will be selected by the MEP Consultant.

Credit 5: Measurement and Verification, Base Building (3 points expected)

A Measurement & Verification (M&V) Plan will be developed and implemented. The M&V period will cover at least 1 year of post-construction occupancy. The plan will include a process for corrective action if the results of the M&V plan indicate that energy savings are not being achieved.

Credit 6: Green Power (0 points expected)

The University may engage in a minimum 2-year renewable energy contract to provide at least 35% of the building's electricity from qualified renewable sources. This credit is not assumed, pending evaluation and decision by the University.

Materials and Resources (14 points available, 5 points expected)

Prerequisite 1: Storage and Collection of Recyclables

A dedicated area for the collection and storage of materials for recycling for the entire building, including paper, corrugated cardboard, glass, plastics and metals will be included in the building design. Food wastes from Dining Facilities are also expected to be recycled/composted.

Credit 1.1: Building Reuse, Maintain Existing Walls, Floors, and Roof (0 points expected)

The project is not eligible for this credit.

Credit 1.2: Building Reuse, Maintain Interior Nonstructural Elements (0 points expected)

The project is not eligible for this credit.

Credit 2: Construction Waste Management (2 points expected)

As much construction and demolition debris as possible will be salvaged/recycled. The goal is diversion of 95% of waste from landfills and incinerators. 75% is required for this credit.

Credit 3: Materials Reuse (0 points expected)

The credit is not being attempted. Credit 4: Recycled Content (1 point expected)Materials with recycled content will be selected whenever feasible, with the intention of at least 10% of total materials to be recycled content, based on cost.

Credit 5: Regional Materials (1 point expected)

Materials that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the site will be selected whenever feasible, with the intention of at least 10% of total materials to be of local/regional origin, based on cost.

Credit 6: Rapidly Renewable Materials (0 points expected)

The credit is not being attempted.

Credit 7: Certified Wood (1 point expected)

A minimum of 50% (based on cost) of wood-based materials used in the project will be certified as sustainably harvested by the Forest Stewardship Council (FSC).

Indoor Environmental Quality (15 points available, 13 expected)

Prerequisite 1: Minimum Indoor Air Quality Performance

The project will meet the ventilation requirements of ASHRAE Standard 62.-2007. The kitchen/dining air-handling units will be standard VAV type units with full economizer capability. A dedicated unit will serve the basement dining area and another unit will serve the ground and second floor dining areas. The office air-handling unit will be 100% Outside Air units with total energy wheel. Dining and servery spaces will be served by an all air system. Air will be supplied to the dining spaces and transferred into the servery spaces as hood makeup.

Prerequisite 2: Environmental Tobacco Smoke (ETS) Control

Smoking is prohibited in the building, per State of Massachusetts law.

Credit 1: Outdoor Air Delivery Monitoring (1 point expected)

Permanent CO2 monitoring systems will be installed to ensure that ventilation systems maintain design minimum requirements. Carbon dioxide levels will be monitored in all densely populated spaces.

Credit 2: Increased Ventilation (1 point expected)

Breathing zone outdoor air ventilation rates to all occupied spaces will be increased by at least 30% over the minimum required by ASHRAE 62.1-2007. The kitchen/dining air-handling units will be standard VAV type units with full economizer capability. A dedicated unit will serve the basement dining area and another unit will serve the ground and second floor dining areas. The office air-handling unit will be 100% Outside Air units with total energy wheel. Dining and servery spaces will be served by an all air system. Air will be supplied to the dining spaces and transferred into the servery spaces as hood makeup.

Credit 3.1: Construction IAQ Management Plan – During Construction (1 point expected)

The project contractor will be required to develop and implement an IAQ management plan for the construction and pre-occupancy of the building. The IAQ Plan will be based on SMACNA guidelines, protect porous materials from moisture, and use minimum MERV 8 filters on permanently installed air handlers.

Credit 3.2: Construction IAQ Management Plan – Before Occupancy (1 point expected)

The project contractor will be required to develop an IAQ management plan and implement it after all finishes have been installed and the building has been completely cleaned, but before occupancy. A building flush-out will be performed prior to occupancy.

Credit 4.1: Low-Emitting Materials, Adhesives and Sealants (1 point expected)

VOC-compliant adhesives and sealants will be specified on the inside of the building.

Credit 4.2: Low-Emitting Materials, Paints & Coatings (1 point expected)

VOC-compliant paints and coatings will be specified on the inside of the building.

Credit 4.3: Low-Emitting Materials, Flooring Systems (1 point expected)

VOC-compliant flooring systems, including carpets and hard flooring, will be specified on the inside of the building.

Credit 4.4: Low-Emitting Materials, Composite Wood & Agrifiber Products (1 point expected)

Specified composite wood and agrifiber products used on the inside of the building will contain no added urea-formaldehyde resins.

Credit 5: Indoor Chemical and Pollutant Source Control (1 point expected)

Permanent entry systems at least 10 feet long (grates, grilles or slotted systems that allow for cleaning underneath) will be employed at each main entry. Each space where hazardous gases or chemicals may be present or used (e.g., housekeeping areas, copying and printing rooms) will be designed to create negative pressure with respect to adjacent spaces. For each of these spaces, self-closing doors and deck-to-deck partitions will be provided. Exhaust rates will be at least 0.50 cfm per square foot, with no air recirculation. New air filtration media (minimum MERV 13) will be installed in regularly occupied spaces prior to occupancy.

Credit 6.1: Controllability of Systems – Lighting (1 point expected)

Individual lighting controls will be provided for 90% of the building occupants to enable adjustments to suit individual task needs and preferences. Lighting system controls will be provided for all shared multi-occupant spaces to enable adjustments that meet group needs and preferences.

Credit 6: Controllability of Systems – Thermal Comfort (1 point expected)

Comfort controls will be provided for a minimum of 50% of the building occupants to enable adjustments to meet individual needs and preferences. Comfort system controls will be provided for all shared multi-occupant spaces to enable adjustments that meet group needs and preferences.

Credit 7.1: Thermal Comfort – Design (1 point expected)

HVAC systems and the building envelope will be designed to meet the requirements of ASHRAE Standard 55-2004. Chilled beams will be used in the offices for heating and cooling. Dining and Servery spaces will have an all-air system. Perimeter heating will be done via overhead hot water heating panels or perimeter hot water baseboard. The ground floor dining area will have a limited radiant floor heating system at the entryways.

Credit 7.2: Thermal Comfort – Verification (1 point expected)

The University will conduct a thermal comfort survey of building occupants within 6 to 18 months after occupancy. A plan will be developed for corrective action if the survey results indicate that more than 20% of occupants are dissatisfied with thermal comfort in the building.

Credit 8.1: Daylight and Views – Daylight (0 points expected)

Daylight illuminance levels of a minimum of 25 foot-candles (fc) and maximum of 500 fc will be provided to 75% or more of all regularly occupied spaces. This credit is possible but not presumed pending confirmation once design is complete.

Credit 8.2: Daylight and Views – Views (0 points expected)

A direct line of site to the outdoor environment via vision glazing between 30 and 90 inches above the finish floor will be provided to building occupants in 90% of all regularly occupied spaces. This credit is possible but not presumed pending confirmation once design is complete.

Innovation & Design Process – 6 points available, 4 points expected

Credit 1: Innovation in Design Process (3 points expected)

The project anticipates achievement of at least three Innovation (e.g., Green Cleaning, Public Education) or Exemplary Performance (e.g., Water Efficiency Credit 3, Material & Resources Credit 2) Credits.

Credit 2: LEED Accredited Professional (1 point expected)

A LEED-AP consultant is managing the LEED process for the project.

Regional Priority Credits – 4 points available, 3 points expected

Credit 1: Regional Priority Credits (1-4 points)

The project is expected to earn three Regional Priority credits (Sustainable Sites credits 6.1, 7.1, and 7.2).

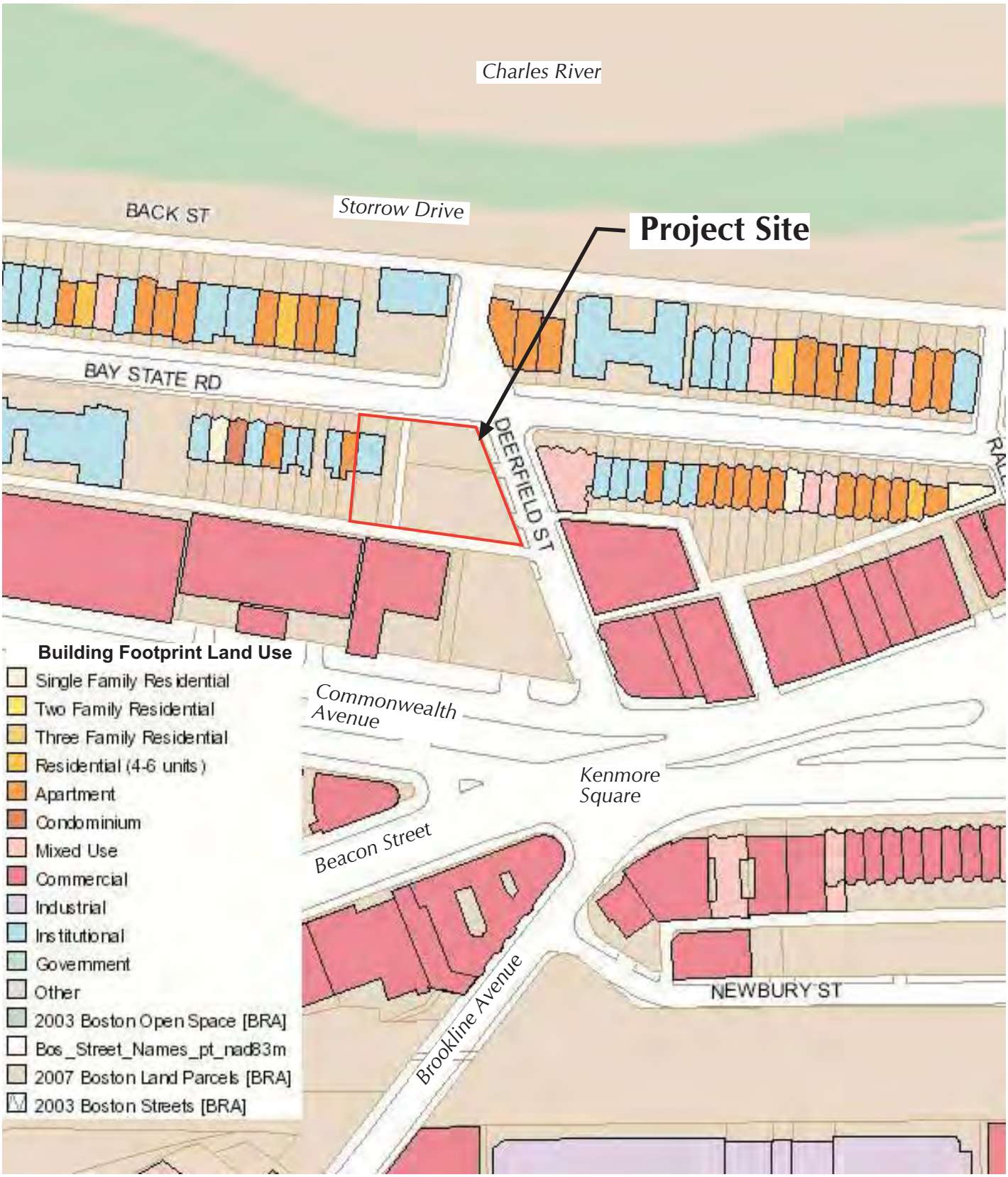


Figure 4-1
Site Context
source: BRA

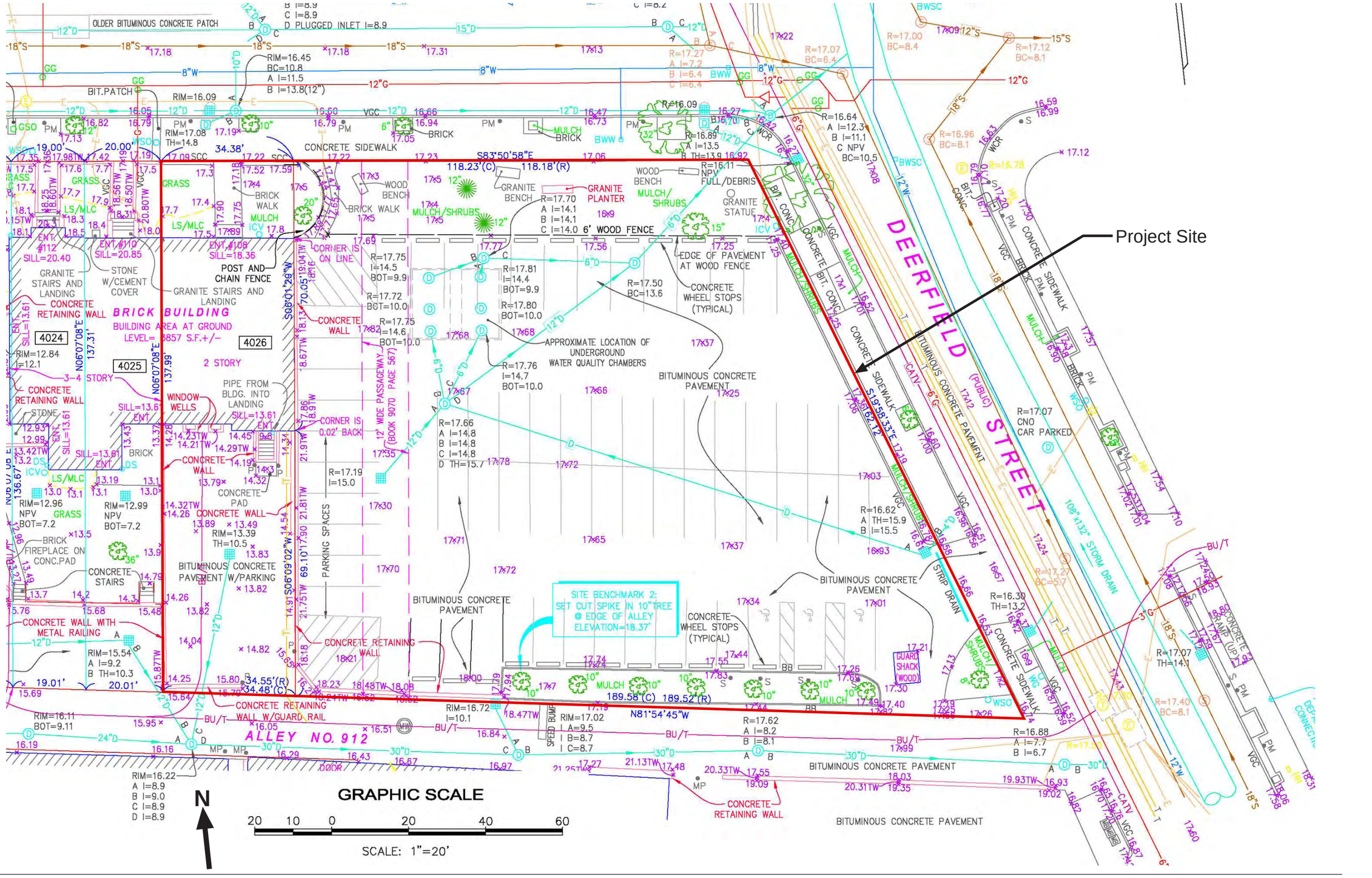


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Figure 4-2
Site Survey
source: Nitsch Engineering, February 4, 2010

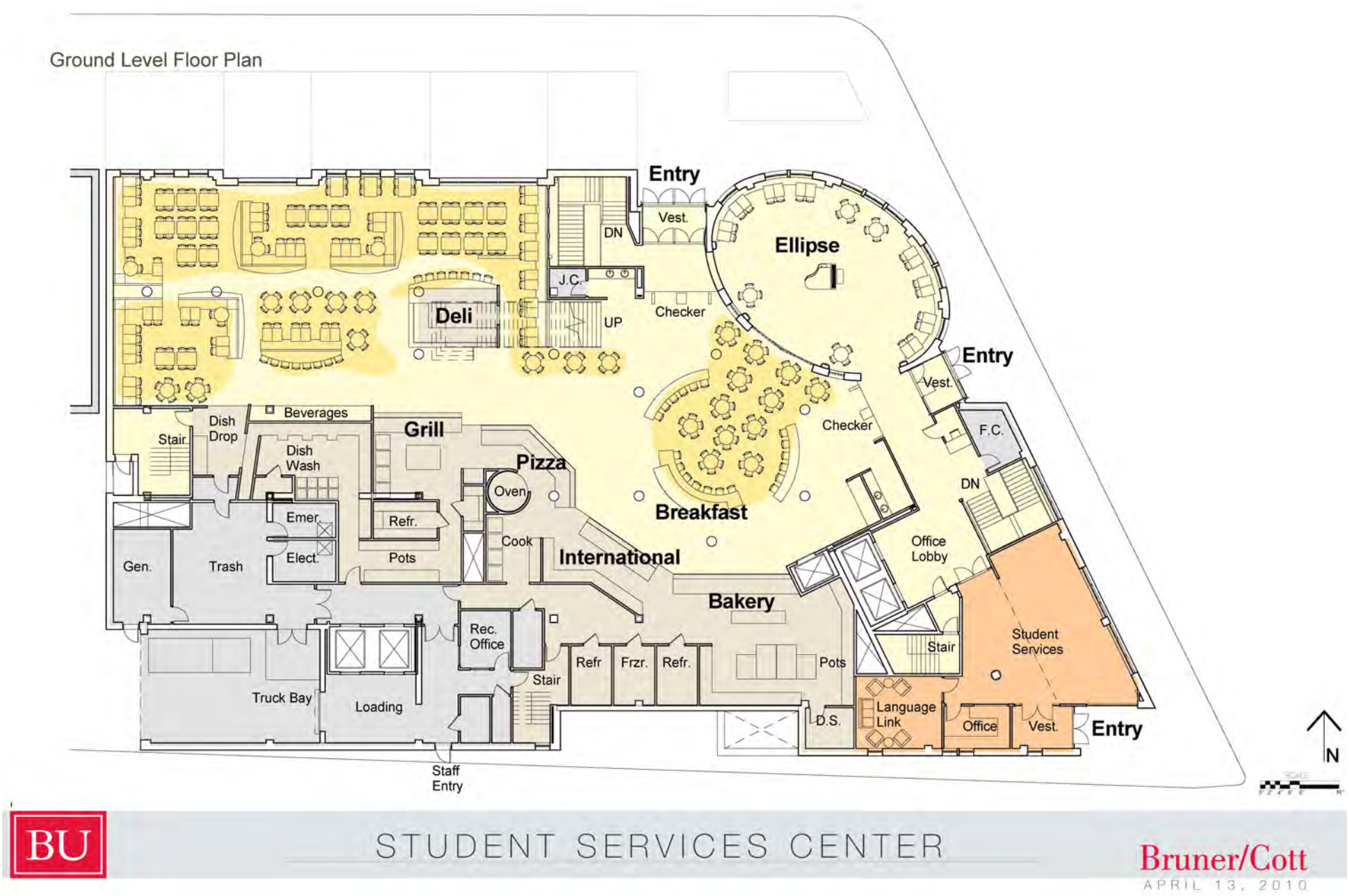

Figure 4-3
Ground Floor Plan
source: Bruner/Cott & Associates

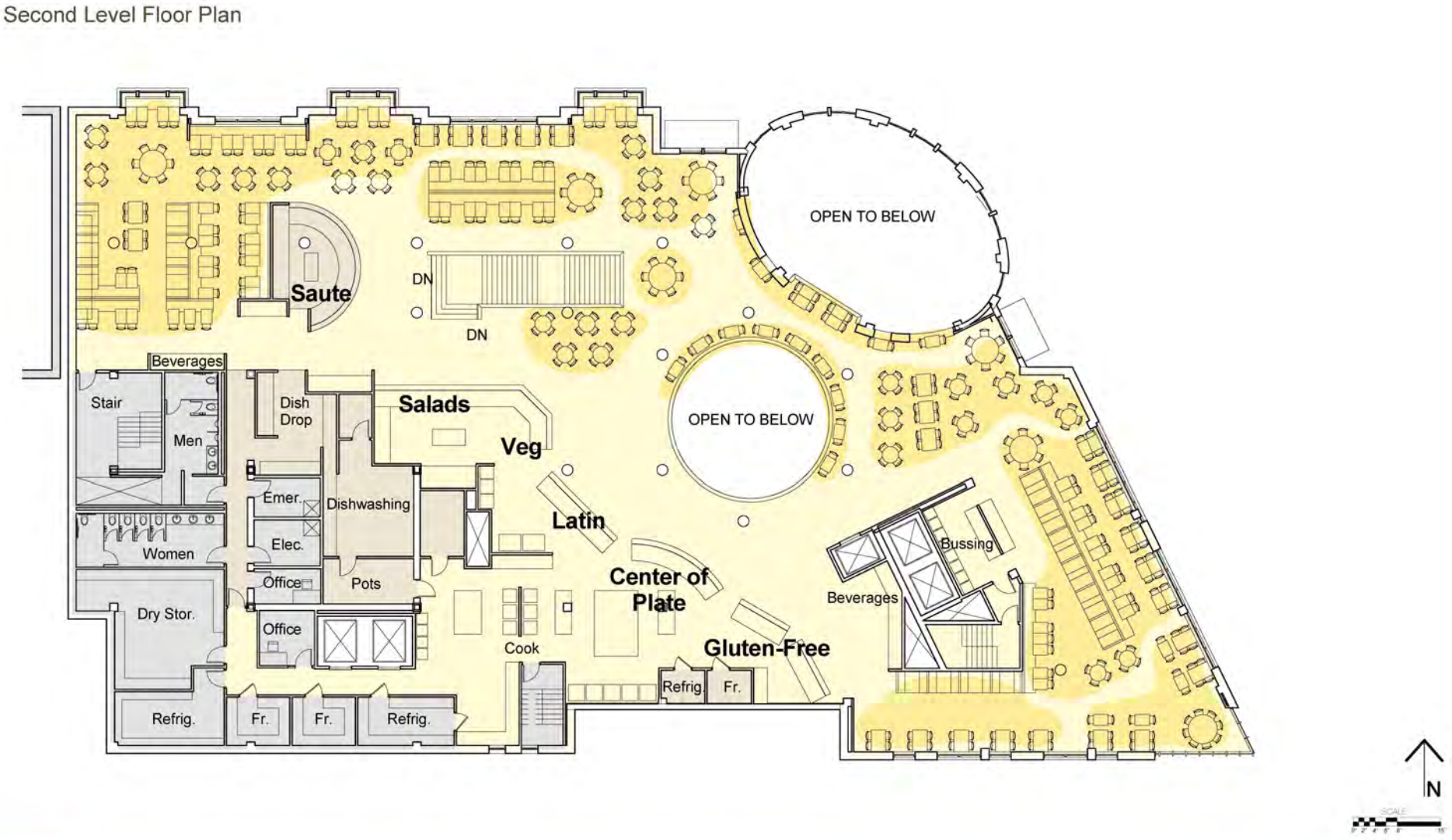

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Figure 4-4
Second Floor Plan
source: Bruner/Cott & Associates

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Figure 4-5
Typical Upper Floor Plan
source: Bruner/Cott & Associates

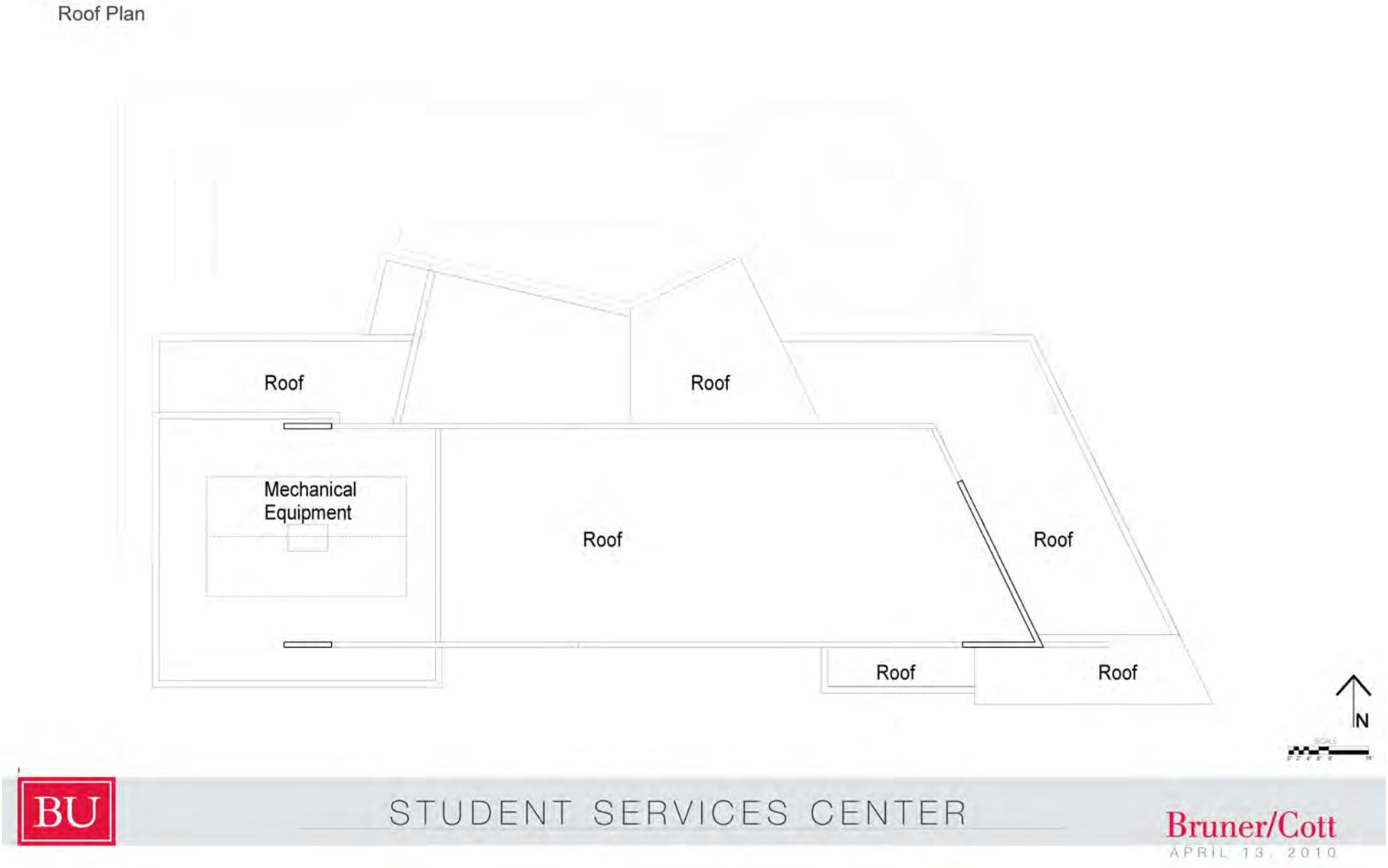

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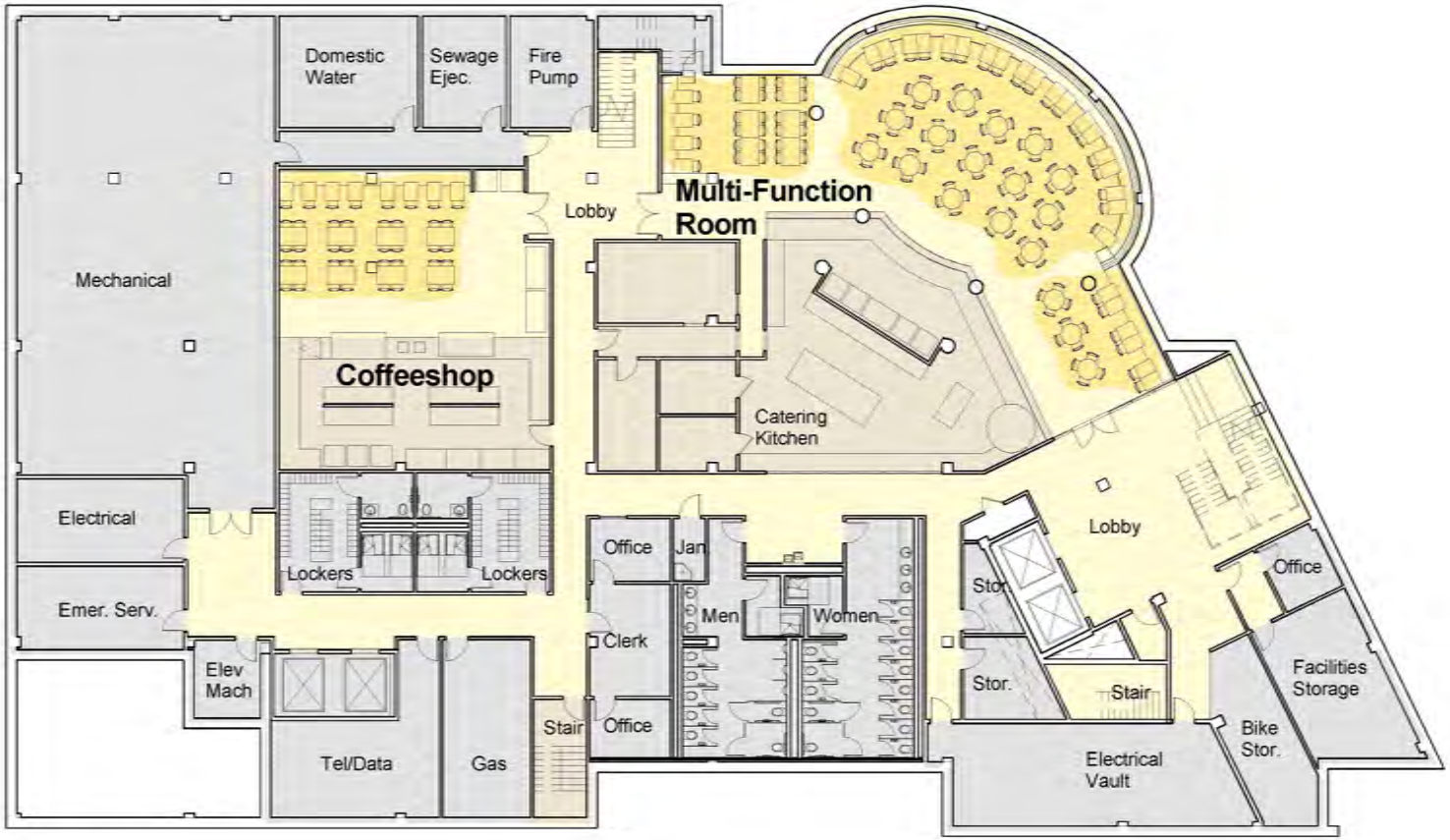
Figure 4-6
Roof Plan
source: Bruner/Cott & Associates

Basement Level Floor Plan



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STUDENT SERVICES CENTER

Bruner/Cott

APRIL 13, 2010

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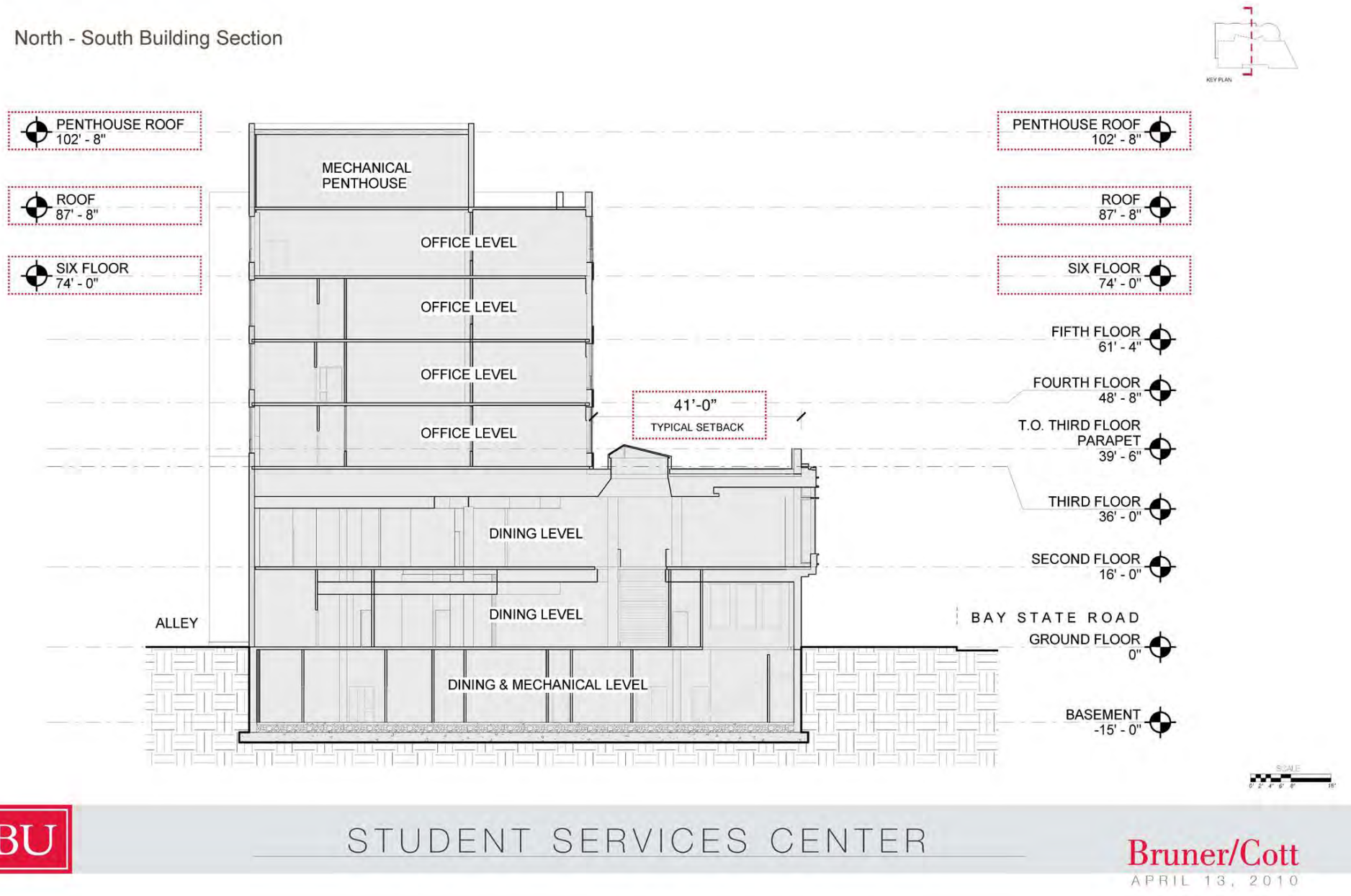
Figure 4-7
Basement Level Plan
source: Bruner/Cott & Associates


North - South Building Section
KEY PLAN
PENTHOUSE ROOF
102' - 8"
ROOF
87' - 8"
SIX FLOOR
74' - 0"
MECHANICAL
PENTHOUSE
OFFICE LEVEL
OFFICE LEVEL
OFFICE LEVEL
OFFICE LEVEL
41'-0"
TYPICAL SETBACK
DINING LEVEL
DINING LEVEL
DINING & MECHANICAL LEVEL
ALLEY
BAY STATE ROAD
PENTHOUSE ROOF
102' - 8"
ROOF
87' - 8"
SIX FLOOR
74' - 0"
FIFTH FLOOR
61' - 4"
FOURTH FLOOR
48' - 8"
T.O. THIRD FLOOR
PARAPET
39' - 6"
THIRD FLOOR
36' - 0"
SECOND FLOOR
16' - 0"
GROUND FLOOR
0"
BASEMENT
-15' - 0"
SCALE
BU
STUDENT SERVICES CENTER
Bruner/Cott
APRIL 13, 2010

Boston University
BOSTON, MASSACHUSETTS

Figure 4-9
Perspective Looking South
source: Bruner/Cott & Associates

Boston University
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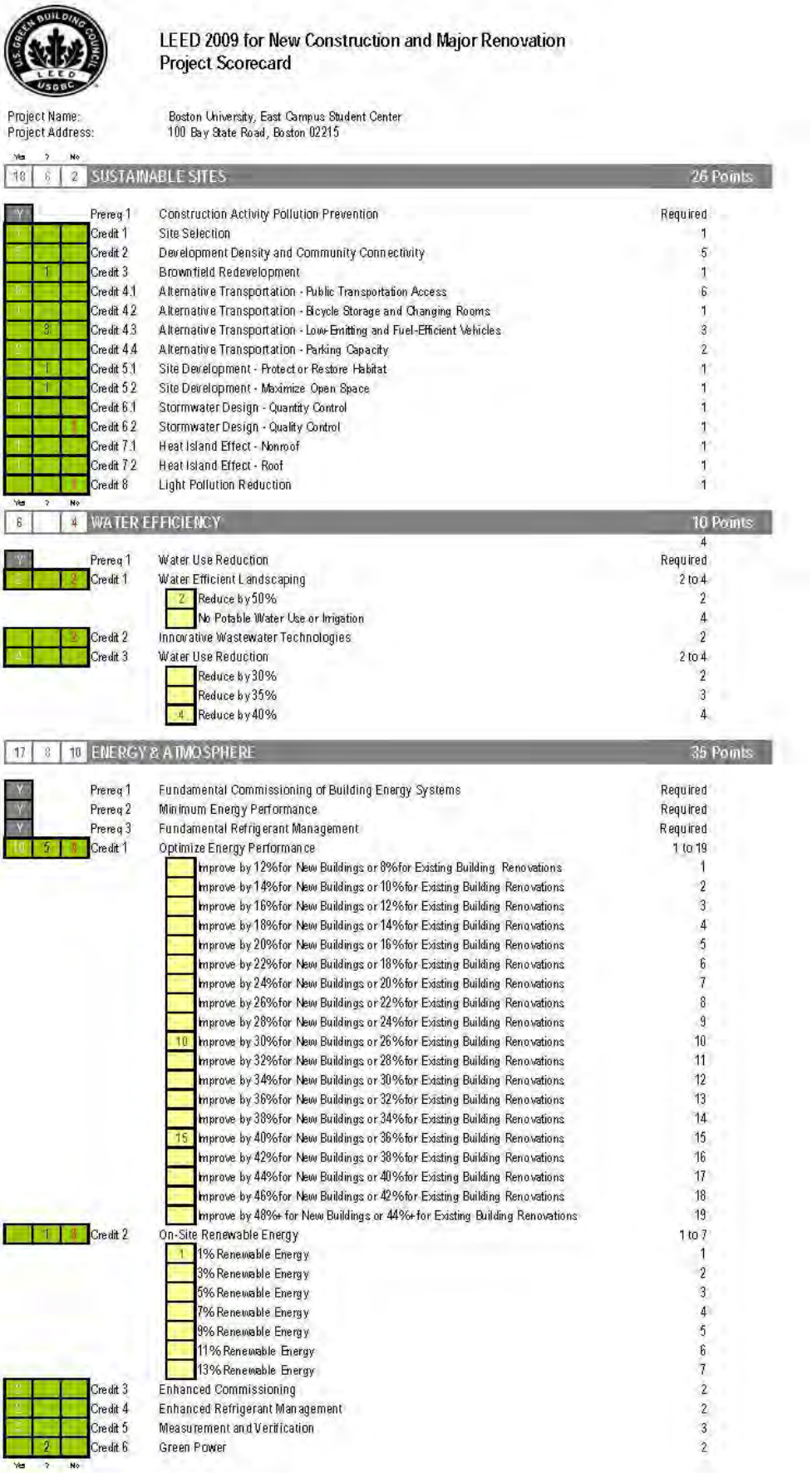
Figure 4-10
Perspective Looking North
source: Bruner/Cott & Associates



LEED 2009 for New Construction and Major Renovation
Project Scorecard

Project Name: Boston University, East Campus Student Center
Project Address: 100 Bay State Road, Boston 02215

Yes	?	No			
18	6	2	SUSTAINABLE SITES		26 Points
Y			Prereq 1	Construction Activity Pollution Prevention	Required
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 - Nonroof	1
1			Credit 7.2	Heat Island Effect - Roof	1
		1	Credit 8	Light Pollution Reduction	1
Yes	?	No			
6		4	WATER EFFICIENCY		10 Points
					4
Y			Prereq 1	Water Use Reduction	Required
2		2	Credit 1	Water Efficient Landscaping	2 to 4
			2	Reduce by 50%	2
				No Potable Water Use or Irrigation	4
		2	Credit 2	Innovative Wastewater Technologies	2
4			Credit 3	Water Use Reduction	2 to 4
				Reduce by 30%	2
				Reduce by 35%	3
			4	Reduce by 40%	4
17	3	10	ENERGY & ATMOSPHERE		35 Points
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	Fundamental Refrigerant Management	Required
10	5	3	Credit 1	Optimize Energy Performance	1 to 19
				Improve by 12% for New Buildings or 8% for Existing Building Renovations	1
				Improve by 14% for New Buildings or 10% for Existing Building Renovations	2
				Improve by 16% for New Buildings or 12% for Existing Building Renovations	3
				Improve by 18% for New Buildings or 14% for Existing Building Renovations	4
				Improve by 20% for New Buildings or 16% for Existing Building Renovations	5
				Improve by 22% for New Buildings or 18% for Existing Building Renovations	6
				Improve by 24% for New Buildings or 20% for Existing Building Renovations	7
				Improve by 26% for New Buildings or 22% for Existing Building Renovations	8
				Improve by 28% for New Buildings or 24% for Existing Building Renovations	9
			10	Improve by 30% for New Buildings or 26% for Existing Building Renovations	10
				Improve by 32% for New Buildings or 28% for Existing Building Renovations	11
				Improve by 34% for New Buildings or 30% for Existing Building Renovations	12
				Improve by 36% for New Buildings or 32% for Existing Building Renovations	13
				Improve by 38% for New Buildings or 34% for Existing Building Renovations	14
			15	Improve by 40% for New Buildings or 36% for Existing Building Renovations	15
				Improve by 42% for New Buildings or 38% for Existing Building Renovations	16
				Improve by 44% for New Buildings or 40% for Existing Building Renovations	17
				Improve by 46% for New Buildings or 42% for Existing Building Renovations	18
				Improve by 48%+ for New Buildings or 44%+ for Existing Building Renovations	19
	1	3	Credit 2	On-Site Renewable Energy	1 to 7
			1	1% Renewable Energy	1
				3% Renewable Energy	2
				5% Renewable Energy	3
				7% Renewable Energy	4
				9% Renewable Energy	5
				11% Renewable Energy	6
				13% Renewable Energy	7
2			Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
3			Credit 5	Measurement and Verification	3
	2		Credit 6	Green Power	2
Yes	?	No			

Figure 4-11
LEED Checklist
source: Bruner/Cott & Associates

LEED 2009 for New Construction and Major Renovation
Project Scorecard

Project Name: Boston University, East Campus Student Center
Project Address: 100 Bay State Road, Boston 02215

Yes	?	No			
5	2	7	**MATERIALS & RESOURCES**		14 Points
Y			Prereq 1	Storage and Collection of Recyclables	Required
		3	Credit 1.1	Building Reuse - Maintain Existing Walls, Floors and Roof	1 to 3
				Reuse 55%	1
				Reuse 75%	2
				Reuse 95%	3
		1	Credit 1.2	Building Reuse - Maintain Interior Nonstructural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
				50% Recycled or Salvaged	1
	2			75% Recycled or Salvaged	2
		2	Credit 3	Materials Reuse	1 to 2
				Reuse 5%	1
				Reuse 10%	2
1	1		Credit 4	Recycled Content	1 to 2
	1			10% of Content	1
				20% of Content	2
1	1		Credit 5	Regional Materials	1 to 2
				10% of Materials	1
				20% of Materials	2
		1	Credit 6	Rapidly Renewable Materials	1
1			Credit 7	Certified Wood	1

Yes	?	No			
13	2		**INDOOR ENVIRONMENTAL QUALITY**		15 Points
Y			Prereq 1	Minimum Indoor Air Quality Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
1			Credit 1	Outdoor Air Delivery Monitoring	1
1			Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction Indoor Air Quality Management Plan - During Construction	1
1			Credit 3.2	Construction Indoor Air Quality 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

Yes	?	No			
4	2		**INNOVATION IN DESIGN**		6 Points
3	2		Credit 1	Innovation in Design	1 to 5
				Innovation or Exemplary Performance TBD - ex: WEc3 exemplary performance	1
				Innovation or Exemplary Performance TBD - ex: MRc2 exemplary performance	1
				Innovation or Exemplary Performance TBD	1
				Innovation TBD - ex: Public Education	1
				Innovation TBD - ex: Green Cleaning	1
		1	Credit 2	LEED® Accredited Professional	1

Yes	?	No			
3		1	**REGIONAL PRIORITY**		4 Points
3		1	Credit 1	Regional Priority	1 to 4
				Regionally Defined Credit Achieved (SSc6.1)	1
				Regionally Defined Credit Achieved (SSc7.1)	1
				Regionally Defined Credit Achieved (SSc7.2)	1
				Regionally Defined Credit Achieved	1

Yes	?	No		
66	20	24	**PROJECT TOTALS (Certification Estimates)**	110 Points

Certified: 40-49 points Silver: 50-59 points Gold: 60-79 points Platinum: 80+ points

Figure 4-12
LEED Checklist (cont.)
source: Bruner/Cott & Associates

5.0 ENVIRONMENTAL PROTECTION COMPONENT

Article 80 of the Boston Zoning Code specifies that the BRA may require the Proponent, in its Scoping Determination, to study the direct and indirect environmental impacts attributable to the Project. When the potential for impacts exist, design measures may be required to mitigate the impacts to the extent feasible. The impact areas for which studies and mitigation may be required are addressed below:

5.1 Wind

A qualitative analysis of the potential pedestrian level wind (PLW) impacts of the proposed project was undertaken using the comfort criteria developed by the Boston Redevelopment Authority (BRA). This analysis considers the public areas and other areas of active pedestrian use in the vicinity of the Project Site, including the entrances to the Project building, sidewalks adjacent to the building, and the open space area along Bay State Road. Areas of concern include building entrances along Bay State Road and Deerfield Street, the bicycle area on Bay State Road, and existing and proposed sidewalks along these two streets. The detailed analysis is presented in Appendix 4, Pedestrian Level Wind Analysis.

The study used existing wind data to predict wind directions and wind speeds at the project site for each of the four seasons of the year. For the purposes of this assessment, it is assumed that there is no landscaping for either existing or proposed conditions.

Results for the wind study were obtained for the existing and build conditions as shown on Figure 5-1, No Build Conditions, including Building Heights and PLW Locations and Figure 5-2, Build Conditions, including Building Heights and PLW Locations.

None of the 30 locations considered for either existing or build conditions, including those adjacent to the project site and along Bay State Road and Deerfield Street, is estimated to have PLWs that exceed the Boston Redevelopment Authority (BRA) guideline wind speed of 31 mph one percent of the time. In fact, no location is predicted to have PLWs higher than Category 3 (comfortable for walking) for either existing or build conditions for any of the wind conditions considered. The proposed Student Services Center will not affect pedestrian level winds on Storrow Drive, in the park area between Storrow Drive and the river, or over the River. See Figure 5-3, Annual PLW Categories for No Build Conditions and Figure 5-4, Annual PLW Categories for Build Conditions.

5.2 Shadow

A shadow study was prepared for the Project to evaluate the potential shadow impact of the Project in the vicinity of the proposed building. The study identifies potential shadow impacts for existing and build conditions in the spring (March 21), summer (June 21), fall (September 21), and winter (December 21) months during the morning (9:00 AM), midday (12:00 Noon), and afternoon (3:00 PM) periods. Early evening (6:00 PM) shadow impacts are evaluated for the summer and fall.

The results of the shadow analysis are graphically illustrated in Figure 5-5, Shadow Analysis: March 21, 9 am and 12 pm through Figure 5-12, Shadow Analysis: December 22, 3 pm. For the spring season (March 21st), the new shadows in the morning (9:00 AM) fall primarily on existing buildings and the adjacent sidewalk along Bay State Road, with a very similar relationship to the existing shadows from existing buildings along Bay State Road. At noon, the shadows shift toward the north and extend over the proposed building and adjacent sidewalk. By mid-afternoon (3:00 PM), the new shadow falls along the adjacent sidewalks and across a portion of Deerfield Street.

During the summer months (June 21st), there is little new shadow. In the morning, some shadow falls on the rear yard areas of 110 – 118 Bay State Road. At noon, the shadow is confined to the site boundaries. In mid-afternoon, some shadow falls on Deerfield Street and the sidewalk adjacent to the building. In the early evening (6:00 PM), the shadow falls on Deerfield Street and the service alley.

During the fall (September 21st), the shadows essentially the same as those described above for the spring, except they are shifted by one hour due to the difference in daylight savings time. During the early evening in the fall, there is no net impact on shadow.

During the winter (December 21st), when the sun is low in the sky, the shadow impacts extend further from the building. In the morning, the only new shadow is cast upon rooftop areas. At noon, shadow is cast across Bay State Road to reach the buildings on the north side and is similar to, but larger than the shadow cast from adjacent buildings. In the mid-afternoon, the shadow moves across the Deerfield Street/Bay State Road intersection.

In general, the design and massing of the building is well suited to minimizing shadow impacts on Bay State Road. The higher element of the building is set back from Bay State Road and thus has shadow impacts that are close to the same as those of the lower element. The lower element massing matches the existing parapet heights along the street and thus has very similar shadow impacts as the existing buildings.

5.3 Daylight

As most of the project site is currently a vacant lot, there will be an increase in daylight obstruction over existing conditions. However, along Bay State Road, the daylight conditions are expected to match that of nearby three to five story buildings, due to the stepping back of the building form.

5.4 Solar Glare

As the Project will be composed of traditional materials, primarily of brick and masonry, and since the windows are not to be expansive, there should be no significant solar glare impacts from the Project.

5.5 Air Quality

The Project is not expected to adversely impact air quality in the Project area. There is not expected to be any reduction in levels of service of surrounding intersections as parking on the site will be reduced (thereby reducing vehicle trips to the site), employee and visitor trips to the new building are simply being relocated from other parts of the campus, and the trips associated with the student dining facilities will be almost exclusively pedestrian and bicycle trips.

5.6 Noise

The Project's mechanical equipment will be selected and placed in appropriate locations to insure compliance with the City of Boston and Massachusetts Department of Environmental Protection ("DEP") noise regulations. A noise assessment has been performed to establish the existing noise levels at the Project Site and to calculate future noise levels upon project completion to determine any noise impacts and to develop mitigation measures, if appropriate. The study will identifies the noise resulting from the Project's rooftop mechanicals, including the building's heating, venting, and air conditioning equipment. The study also proposes mitigation measures that will be employed to minimize any resultant noise. No adverse noise impacts are expected on the sensitive receptors, including residences, in the Project area.

The Boston University East Campus Student Services Center is located in a residential zone H-4, and is abutted on three sides by similar H-4 Residential Zones. For applicable criteria, we have referenced the City of Boston Air Pollution Control Commission: Regulations for the Control of Noise in the City of Boston. According to our interpretation of these Regulations, the noise levels from the building should not exceed 60 dBA during daytime and 50 dBA at all other times, as measured at the property line. (At this early planning stage, we are referring only to the single number A-weighted decibel level. Later, when particular sound data are available, we will review the full octave band spectrum, as specified by the Regulations.)

Although the design for the building is now in the Design Development phase, we have identified the following mechanical equipment for which these noise criteria will pertain.

a) Equipment in the mechanical penthouse above the 6th floor; this equipment includes chillers, boilers, pumps, compressors, exhaust fans, etc.;
b) Cooling tower and air handling unit on the 6th floor roof, adjacent to the west side of the penthouse;
c) Air handling units in the basement; and
d) Emergency generator.

The following noise control mechanisms and strategies will be implemented to meet the regulation. We also note that there will be NO equipment on the low (second floor) roof of the building, which is closest to street activity.

a) In the case of the penthouse equipment, the design will incorporate wall and roof constructions that will be adequate to attenuate the sound from inside (estimated to be possibly in the range of 80 dBA) to no more than 50 dBA at the edge of the roof. To assure that there are no breaches in this noise barrier construction, any and all louvers will have fan noise control such as silencers and acoustical louvers. There will be special attention to the discharge from the kitchen exhaust fans; we understand the fans themselves will be inside the penthouse.

b) With regard to the cooling tower and AHU, it is helpful select quiet units to start. And, as necessary, there will be a solid acoustical barrier around both units to block the sound; the barrier should be spaced far enough from the equipment in order to not impede the necessary air flow requirements from the manufacturer. (Any necessary openings for ventilation will be acoustically treated.) Attenuators may be considered for the upward fan discharge. Also, there will be consideration of variable speed drives to reduce the sound level at non-peak hours.

c) For the basement air handling units, there will be appropriate silencers (already noted in the design) and acoustical louvers between the fans and the areaways.

d) For the emergency generator, a full enclosure may be appropriate, depending on the size of the unit. The generator will be operated only when the electrical service to the building is interrupted and for occasional brief periods for testing purposes. Tests will occur only during daytime periods. A critical exhaust silencer will be provided for the generator.

With these strategies, the East Campus Student Services Center will comply with the City of Boston Regulations for the Control of Noise. Details for implementing these strategies will be established and developed as the design process continues.

5.7 Stormwater Management and Water Quality

The Project Site is currently almost entirely impervious and recharge potential for the site is limited due to the underlying soil characteristics and available site area. However, drainage and runoff collection and disposal systems will be designed to minimize impacts on the existing storm sewer systems. The roof runoff from the new building will be diverted into a groundwater recharge system within the green space area along Bay State Road. Consistent with the Groundwater Protection Overlay District, this system will be designed to recharge up to a 1 inch rainfall event. Details of the stormwater recharge system and its overflow are shown in Figure 5-13, Groundwater Recharge Plan and Figure 5-14, Groundwater Recharge Plan Details. Stormwater recharge calculations are included in Appendix 5. Based on the current proposed roof area, the required recharge for the site to collect one inch of stormwater runoff (as required under Article 32) is 2,329 cubic feet. The proposed recharge system will provide 2,489 cubic feet of volume.

A pollution prevention plan will be carried out for all stages of construction activity including the demolition of buildings. Mitigation measures such as oil and grease traps will be incorporated into the Project design and an operation and maintenance plan will be prepared to ensure minimal impacts on water quality in the area.

5.8 FEMA Flood Zones and ACECs

Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) for the City of Boston (Community Panel 25025C0076G, updated September 2009) was reviewed to determine if the Project Site lies within the 100-year flood plain. The Project Site falls within a Zone C, defined by FEMA as an "area of minimal flooding." Thus, the Project will not lead to an increased flood or storm damage risk.

No Areas of Critical Environmental Concern or State Certified Vernal Pools exist within the Project Site. Likewise, the Project Site is not included on the list of either Priority Habitats for State-Listed Rare Species or the list of Estimated Habitats for Rare Wildlife.

5.9 Geotechnical and Groundwater

5.9.1 Geotechnical

Based on available test boring information obtained at the site, subsurface soil conditions underlying the proposed building are characterized by the following general soil profile:

Generalized Description	Approximate Elevation of Top of Layer (ft, BCB)
Fill	Ground Surface

Organic Deposits	El. 11 to El. 8
Glaciofluvial Deposits	El. -1 to El. -5
Marine Clay	El. -10 to El. -20
Glacial Till	El. -145
Bedrock (Cambridge Argillite)	El. -155

Note that in general, the ground surface elevation varies between approximately El. 17 and 18.

Foundation Support and Below-grade Construction

The proposed building will generally be supported on a mat foundation bearing in the Glaciofluvial Sand. The basement walls and mat slab will be waterproofed and therefore, the permanent structure will not impact area groundwater levels.

A temporary lateral earth support system will be required to complete the excavation for the below grade space. The earth support system will be a relatively impermeable wall such as continuous interlocking steel sheet piles or a continuous overlapping soil-mix wall. The excavation support wall will be extended into the underlying marine clay to create a groundwater cut-off around the perimeter of the site, therefore area groundwater levels will be maintained during construction. Further, the system will be designed to mitigate potential lateral deflection during excavation, with lateral bracing by walers and corner braces, if required. The design of the system will take into account the adjacent BU owned 110 Bay State Road building to reduce potential settlement during construction.

Temporary construction dewatering will be required inside the limits of the relatively impervious excavation support wall to enable construction in-the-dry and also to enable utility construction. A National Pollutant Discharge Elimination System permit for temporary construction dewatering will be obtained for discharge of dewatering effluent.

5.9.2 Geotechnical Instrumentation

A geotechnical monitoring program will be implemented prior to and during construction and will consist of settlement monitoring of adjacent buildings. If construction methods undertaken during construction are likely to cause vibrations, the perimeter of the site may be monitored using engineering seismographs.

A program of monitoring existing observation wells located on and in the vicinity of the site will also be conducted prior to and during construction to document changes in groundwater levels. Three Boston Groundwater Trust (BGwT) observation wells, identified below will be monitored monthly during foundation construction activities.

- Well 23H-2568 – Located in front of 110 Bay State Road

- Well 23H-2679 – Located in the parking lot at the corner of Deerfield Street and Commonwealth Avenue
- Well 23H-2691 – Located in front of 86 Bay State Road.

Groundwater data will be shared with BGwT through monthly transmittals.

5.9.3 Groundwater

Several groundwater monitoring wells exist at and in the vicinity of the site. Data obtained from the on-site monitoring well and BGwT wells indicate that groundwater levels range from El. 6 to El. 9 BCB.

The proposed structure includes one below grade level. The foundation walls and basement mat slab will extend down to competent soils below the groundwater level. The foundation mat and walls will be waterproofed and designed to resist hydrostatic uplift pressures. The proposed structure will not cause the groundwater to raise, pond or be lowered in the surrounding area.

The Project is located within the Groundwater Conservation Overlay District (GCOD). The Project design will comply with GCOD and City standards by establishing design and construction methodology which protects groundwater. The Project will demonstrate through engineering evaluations that there are no negative impacts to groundwater levels. An engineers' certification report will be submitted to demonstrate that the standards have been met. Methods to assure these standards include use of fully waterproofed basement (walls and mat slab) for the portion of the structure that extends below groundwater levels. The Project will have no long-term groundwater pumping.

The Proponent will coordinate with the Boson Groundwater Trust in regard to groundwater monitoring prior to and during construction. One groundwater monitoring well will be installed to document existing groundwater levels and hydrogeologic conditions. As noted above, there are currently several existing wells in the area as shown on the BGwT website. The new observation well will be installed prior to the start of construction and will be installed in accordance with City and BGwT standards for permanent monitoring wells. The well will be installed at a location where it will be accessible for long term monitoring.

5.10 Solid and Hazardous Materials

<u>Solid Waste</u>

The Proponent will take an active role in ensuring that waste removal and disposal during construction and operation will be in conformance with the City and DEP's Regulations for Solid Waste. Waste during the construction stage will be generated largely from the demolition activities. Boston University has an active recycling program which will be implemented in the operation of this new building.

The building design will encourage the recycling of solid waste by providing storage areas for recyclable materials in appropriate areas. The building will provide the appropriate spaces required to institute a recycling program that meets or exceeds the City's recycling guidelines, and that provides recycling areas for food scraps, waste paper and newspaper, metal, glass, and plastics (#1 through #7, co-mingled).

Hazardous Materials

In the future, it is planned to obtain site specific information regarding environmental conditions to evaluate for the presence of oil and hazardous materials. Foundation construction for the new building will generate soil requiring off site transport and disposal. Chemical testing of the material will be required by receiving facilities to identify chemical constituents and any contaminants present. Chemical testing of the material will be conducted prior to construction in accordance with facility requirements.

Any material leaving the site will be required to be legally transported in accordance with local, state and federal requirements. Due to physical properties of the organic deposits, this material will likely be transported to facilities such as unlined landfills for use as daily cover. In addition any regulated soil and/or groundwater conditions related to oil and hazardous materials will be managed in accordance with appropriate Massachusetts Department of Environmental Protection (MA DEP) regulatory requirements.

5.11 Construction Impact

The following section describes impacts likely to result from the Project's construction and steps that will be taken to avoid or minimize environmental and transportation-related impacts. The Proponent will employ a construction manager who will be responsible for developing a construction phasing and staging plan and for coordinating construction activities with all appropriate regulatory agencies. The Project's geotechnical consultant will provide consulting services associated with foundation design recommendations, prepare geotechnical specifications, and review the construction contractor's proposed procedures.

Construction Management Plan

The Proponent will comply with applicable state and local regulations governing construction of the Project. The Proponent will require that the general contractor comply with the Construction Management Plan ("CMP") developed in consultation with and approved by the Boston Transportation Department ("BTD") prior to the commencement of construction. A draft copy of the Construction Management Plan may be found in Appendix 3. The construction manager will be bound by the CMP, which will establish the guidelines for the duration of the project and will include specific mitigation measures and staging plans to minimize impacts on abutters.

Proper pre-construction planning with the neighborhood will be essential to the successful construction of this Project. Construction methodologies that will ensure safety will be employed. Signage will include construction manager contact information with emergency contact numbers.

Construction Activity Schedule

The construction period for the proposed project is expected to last approximately 18-20 months, beginning by November 2010 and reaching completion by July 2012. The project will comply with City of Boston Noise and Work Ordinances. Normal work hours will be from 7:00 AM to 6:00 PM, Monday through Friday, along with any approved exceptions.

Perimeter Protection/Public Safety

The Draft CMP describes any necessary sidewalk closures, pedestrian re-routings, and barrier placements and/or fencing deemed necessary to ensure safety around the site perimeter. Barricades and secure fencing will be used to isolate construction areas from pedestrian traffic. In addition, sidewalk areas and walkways near construction activities will be well marked and lighted to ensure pedestrian safety.

The Proponent will continue to coordinate with all pertinent regulatory agencies and representatives of the surrounding neighborhoods to ensure they are informed of any changes in construction activities.

Construction Traffic Impacts

Truck traffic will vary throughout the phases of construction, depending on the type of activity occurring. It is expected that the daily truck traffic will range on average between five to eight trucks spread evenly throughout the day. The exception to this will be during the excavation phase when an average of approximately 15 trucks, spread evenly throughout the day, can be expected.

The anticipated truck routes to the site are shown on Figure 5-15, Construction Truck Routes, Inbound approaching from the west on I-90 will be directed to exit at the Allston/Brighton tolls to Cambridge Street WB, to Harvard Ave. SB, to Brighton Ave. EB, to Commonwealth Avenue EB, to Kenmore Square to Deerfield St. Trucks approaching from the south will be directed to exit the Southeast Expressway (I-93) at the Mass. Ave. Connector to Mass. Ave. NB, to Beacon Street WB, to Kenmore Square, to Deerfield Street. From the north (I-93 or Route 1) trucks will be directed one of two ways: I-93 SB to I-90 to the Allston/Brighton tolls then follow the route designated from the west, or I-93 to Albany Street/SB Frontage Rd exit to the Mass. Ave. connector then follow the designated route from the south. Anticipated routes for trucks leaving the site are shown in Figure 5-16, Construction Truck Routes, Outbound.

Typical truck deliveries of all materials, including concrete, will arrive and depart the site via Commonwealth Avenue and Deerfield Street. Construction truck traffic will be prohibited from using Bay State Road or Silber Way approaching or departing the site. The exception to this prohibition will be for the delivery of steel during the steel erection period (May 2011 to August 2011). During this time frame approximately two (2) steel deliveries per day are expected. The steel will arrive on combination vehicles, some as large as WB-62. For these deliveries, it is anticipated that the trucks will approach the site using the truck routes described above. In the immediate vicinity of the site, the trucks will enter the work site via Kenmore Square/Deerfield Street, however, because of their size, they will not be able to turn around and exit the site via Deerfield Street. Therefore, these two trucks per day will be required to exit the site via Bay State Road and Silber Way. Once at the intersection of Silber Way and Commonwealth Avenue, the exiting steel delivery trucks can turn right or left onto Commonwealth Avenue eastbound or westbound to exit the area. During the steel erection period, only the large steel delivery trucks will be permitted to use the portion of Bay State Road between Deerfield Street and Silber Way when exiting the site. All other construction-related vehicles will continue to enter/exit the site via Deerfield Street.

Please note that specific truck routes will be discussed with Boston Transportation Department and will be reflected on the staging and logistics drawings to be included in the Final CMP to be approved by the BTD. Construction contracts will include clauses restricting truck travel to BTD requirements. Primary access to and egress from the site will be restricted to the gates at locations approved by BTD.

Construction Worker Parking

The number of workers required for construction of the Project will vary during the construction period. However, it is anticipated that all construction workers will arrive and depart prior to peak traffic periods. No personal vehicles will be allowed to park in the adjacent neighborhood. Further, public transit use will be encouraged with the Proponent and construction manager working to ensure the construction workers are informed of the public transportation options serving the area.

Construction Air Quality

Construction activities may generate fugitive dust, which will result in a localized increase of airborne particle levels. Fugitive dust emission from construction activities will depend on such factors as the properties of the emitting surface (e.g. moisture content), meteorological variables, and construction practices employed.

To reduce emission of fugitive dust and minimize impacts on the local environment the construction contractor will adhere to a number of strictly enforceable mitigation measures. These measures may include:

- Using wetting agents to control and suppress dust from construction debris;
- Ensuring that all trucks traveling to and from the site will be fully covered;
- Removing construction debris regularly;
- Monitoring construction practices closely to ensure any emissions of dust are negligible;
- Cleaning streets and sidewalks to minimize dust and dirt accumulation; and
- Wheel-washing trucks before they leave the site during the excavation phase.

Construction Noise Impacts

To reduce the noise impacts of construction on the surrounding neighborhood, a number of noise mitigation measures will be included in the CMP. Some of the measures that may be taken to ensure a low level of noise emissions include:

- Initiating a proactive program for compliance with the City of Boston's noise limitation impact;
- Using mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on running equipment;
- Scheduling construction activities so as to avoid the simultaneous operation of the noisiest construction activities;
- Turning off all idling equipment;
- Locating noisy equipment away from abutters; and
- Shielding the noise generator by distance or enclosure.

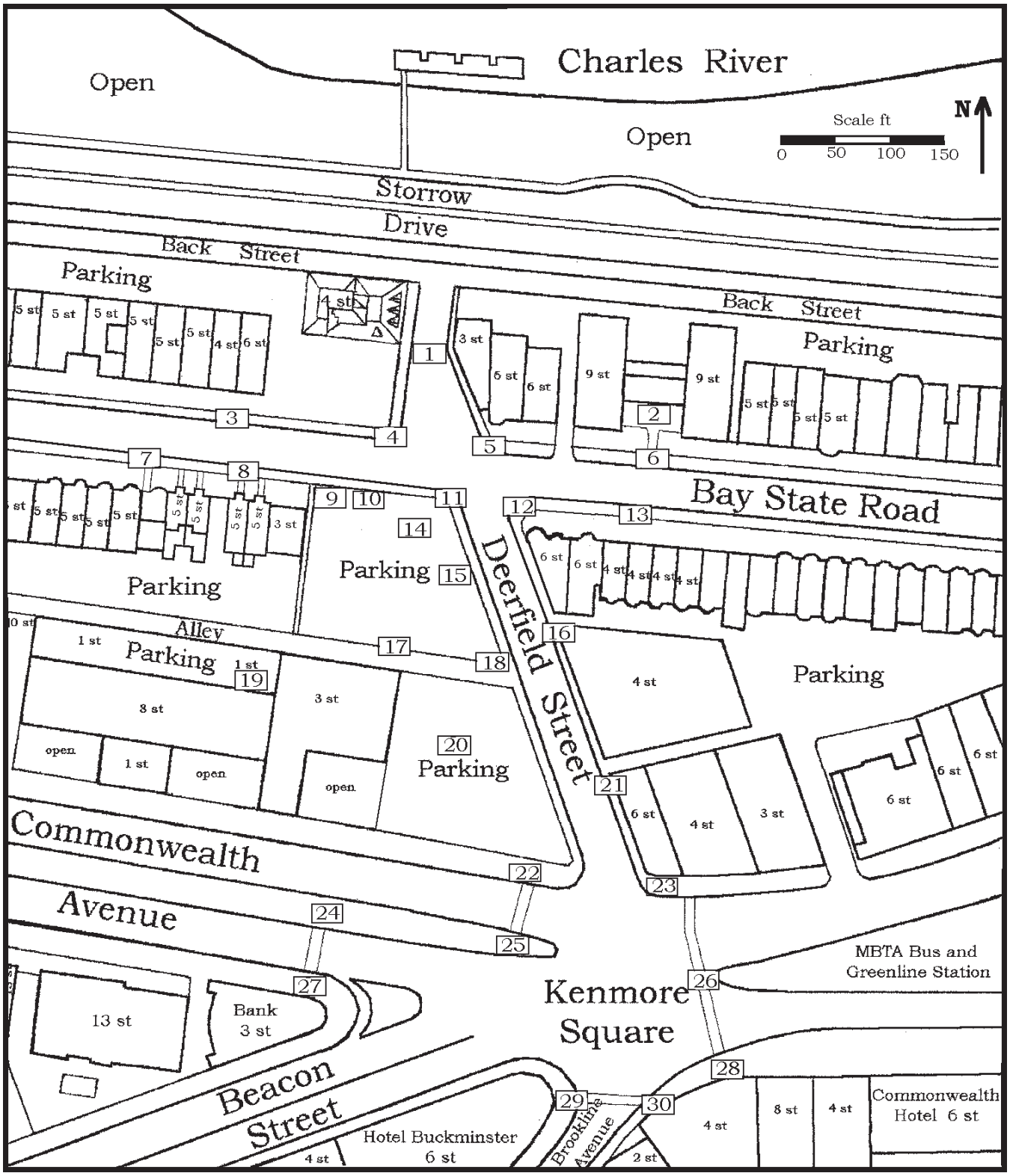
Rodent Control

The City of Boston enforces the requirements established under Massachusetts State Sanitary Code, Chapter 11, 105 CMR 410.550. This policy establishes that the elimination of rodents is required for issuance of any building permits. During construction, rodent control service visits will be made by a certified rodent control firm to monitor the situation.

Utility Protection During Construction

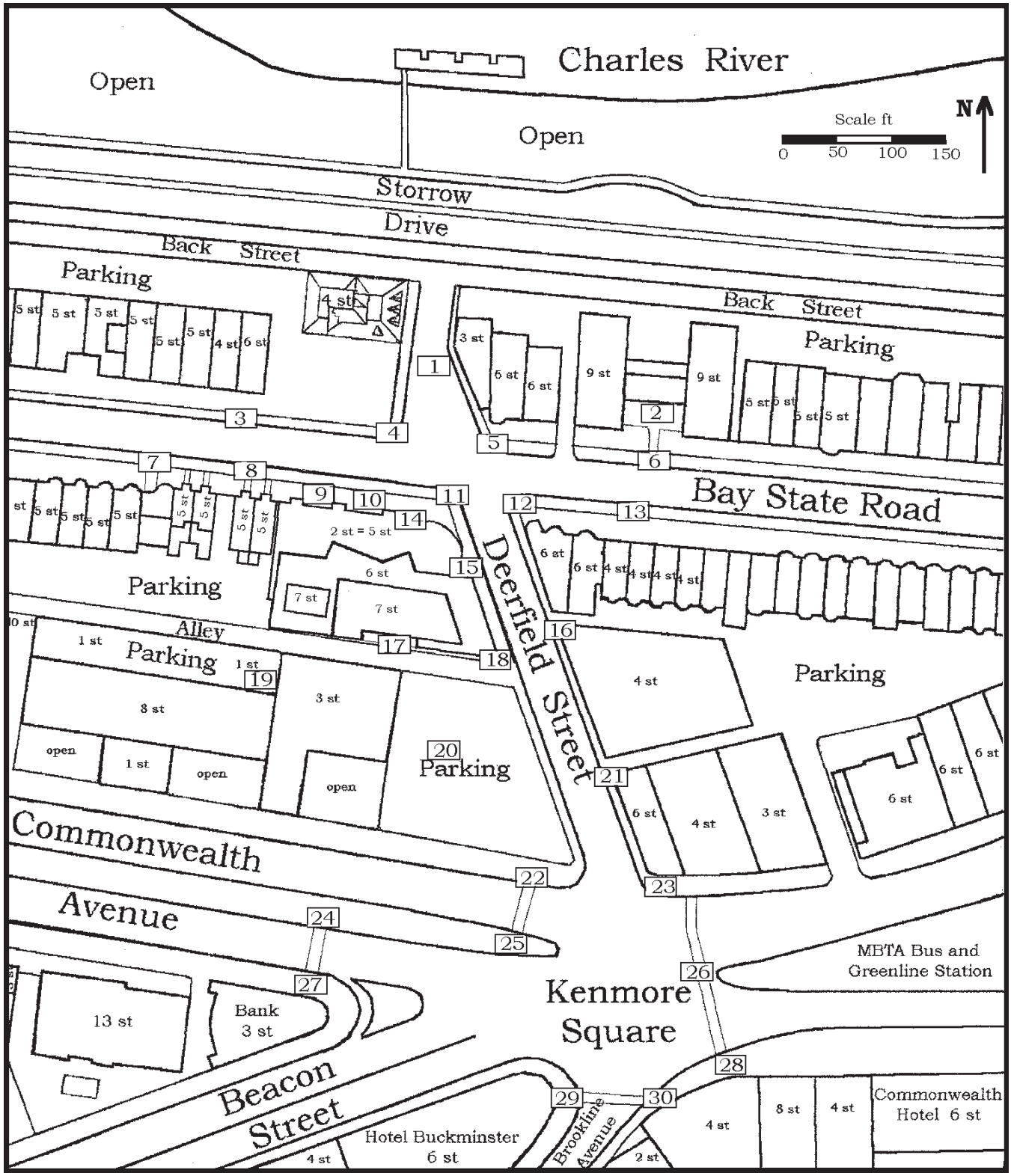
During construction, the City's infrastructure will be protected using sheeting and shoring, temporary relocations, and construction staging as required. The contractor will be required to coordinate all protection measures, temporary supports, and temporary shutdowns of all utilities with the appropriate utility owners and/or agencies. The contractor will also be required to

provide adequate notification to the utility owner/operator prior to any work commencing on their utility. Also, in the event a utility cannot be maintained in service during a switch-over to a temporary or permanent system, the contractor will be required to coordinate the shutdown with the utility owners/operators and Project abutters to minimize impacts and inconveniences accordingly.



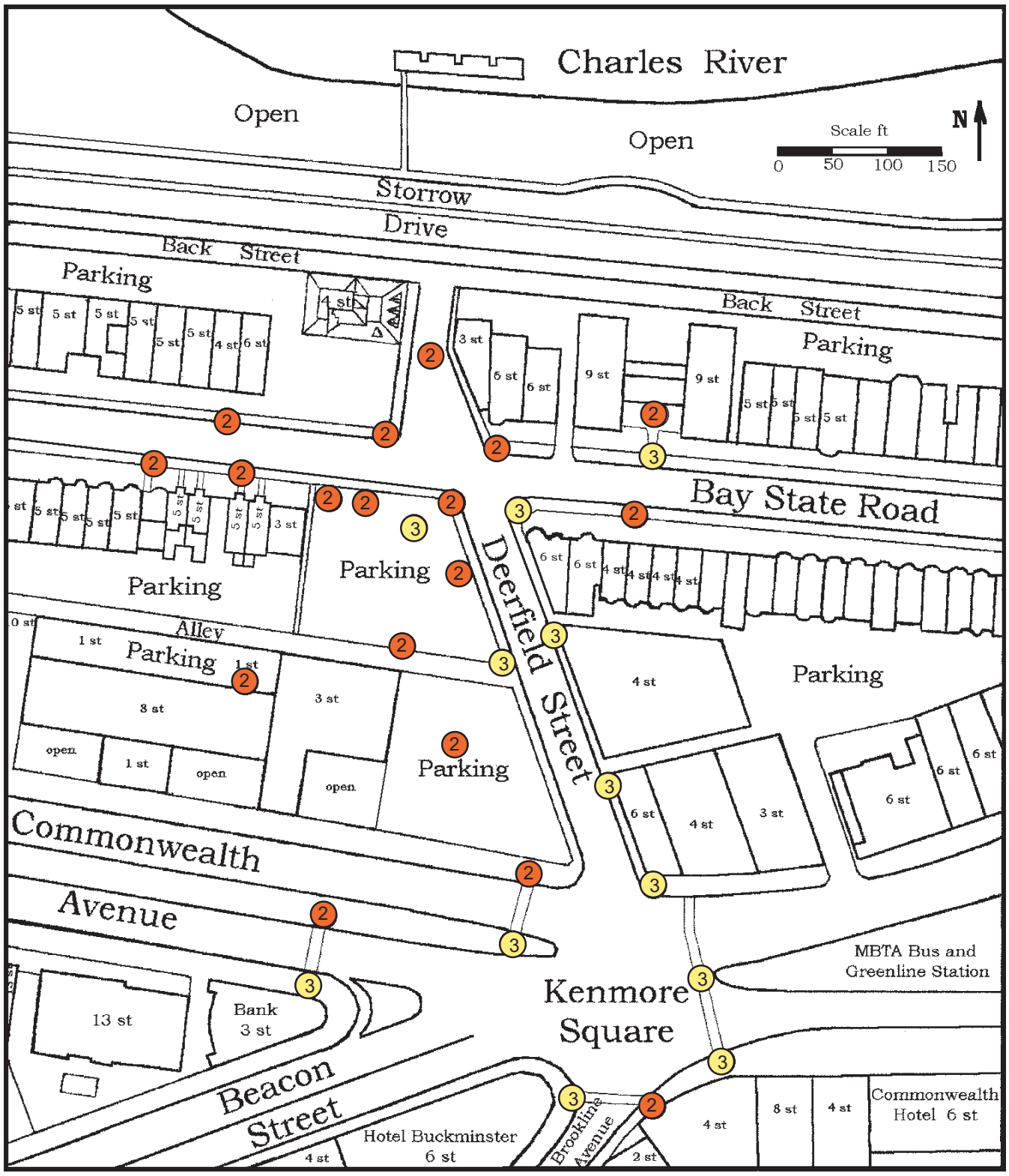
Boston University
BOSTON, MASSACHUSETTS

Figure 5-1
No Build Conditions including Building Heights and PLW Locations
source: Frank Durgin PE



Boston University
BOSTON, MASSACHUSETTS

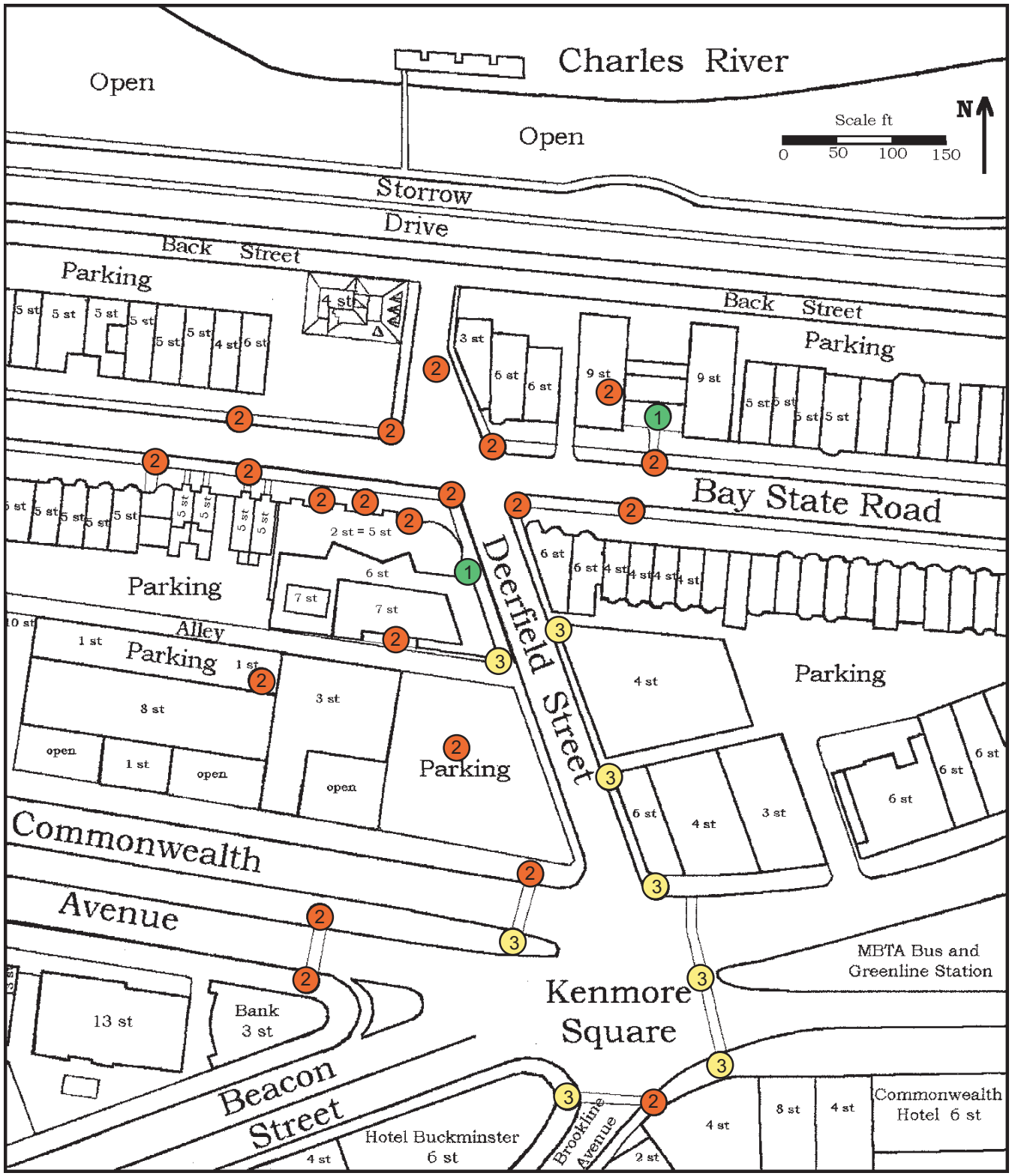
Figure 5-2
Build Conditions including Building Heights and PLW Locations
source: Frank Durgin PE



1 Comfortable for long periods of standing or sitting
2 Comfortable for short periods of standing or sitting
3 Comfortable for walking
4 Uncomfortable for walking

Boston University
BOSTON, MASSACHUSETTS

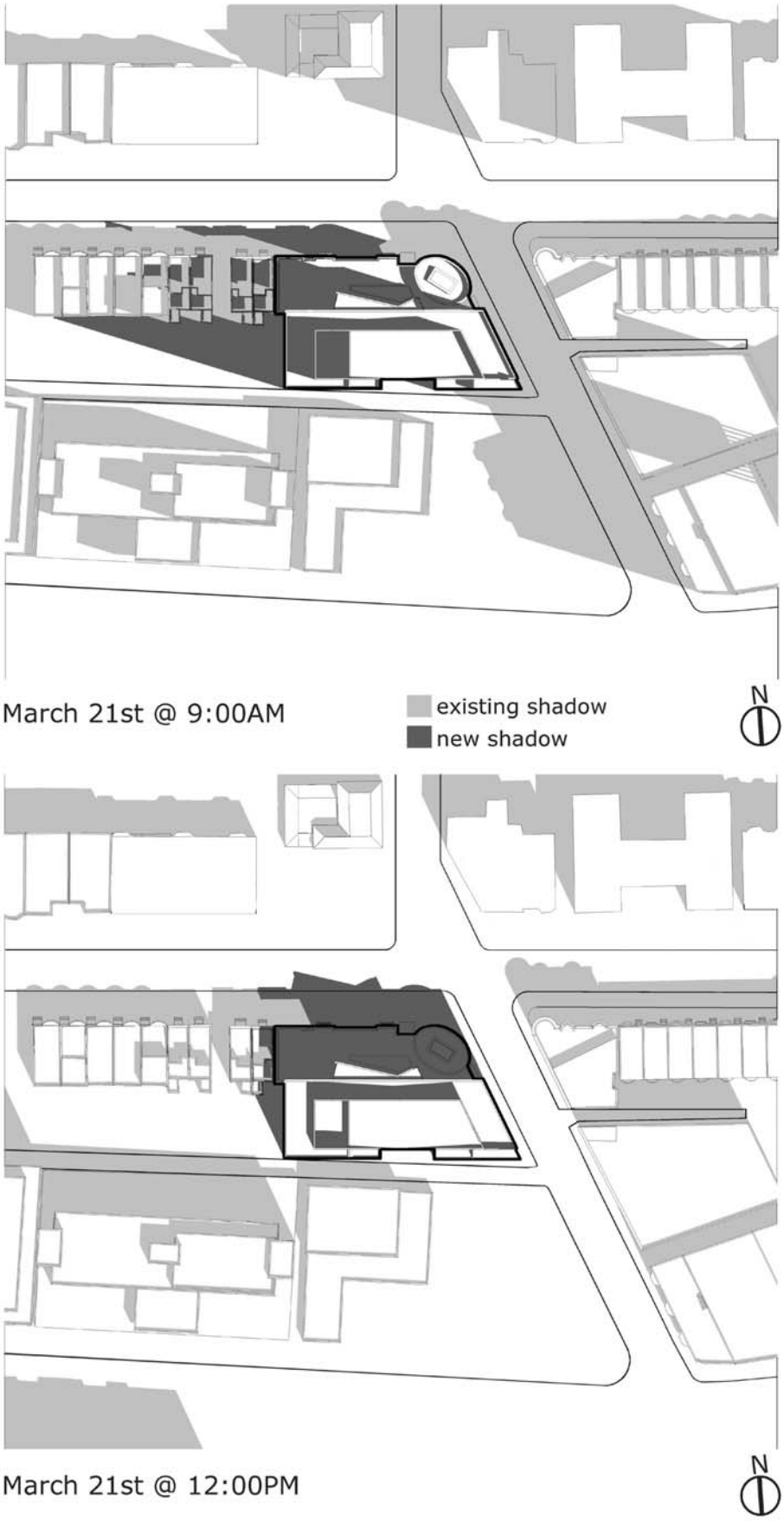
Figure 5-3
Annual PLW Categories for No Build Conditions
source: Frank Durgin PE



1 Comfortable for long periods of standing or sitting
2 Comfortable for short periods of standing or sitting
3 Comfortable for walking
4 Uncomfortable for walking

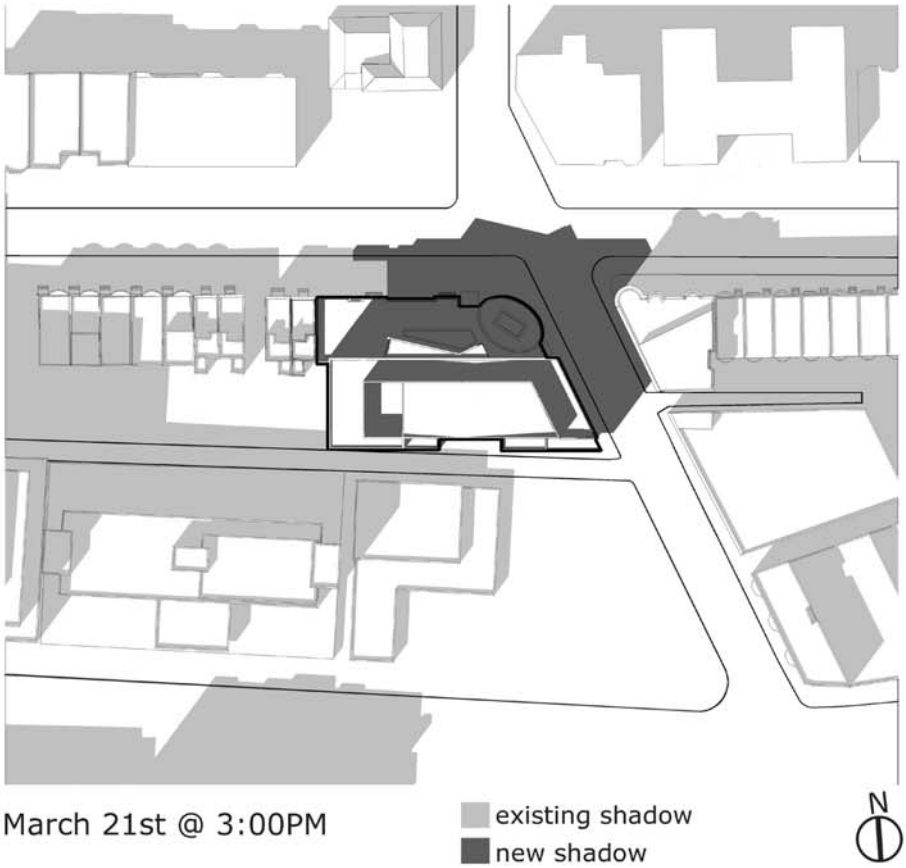
Boston University
BOSTON, MASSACHUSETTS

Figure 5-4
Annual PLW Categories for Build Conditions
source: Frank Durgin PE



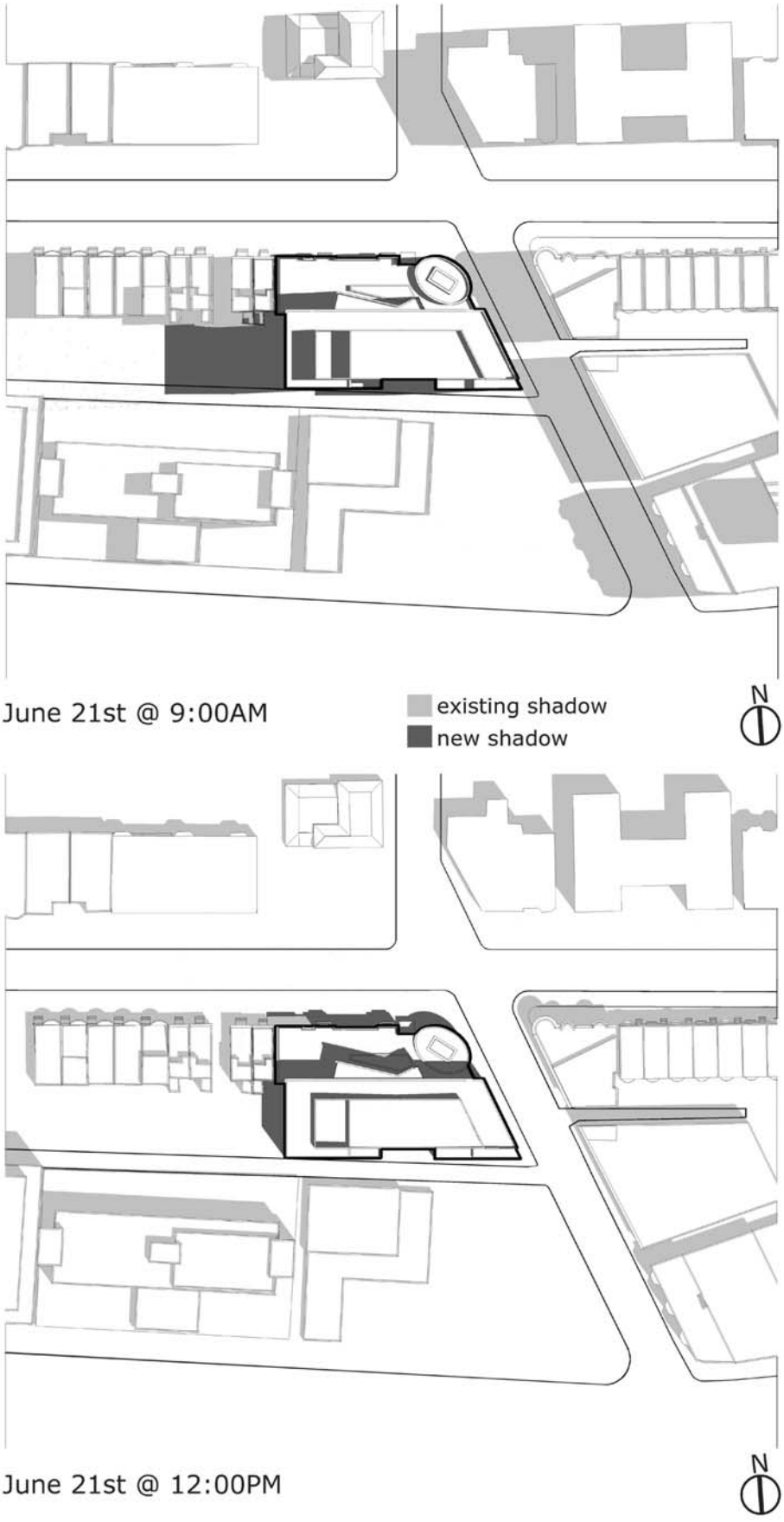
Boston University
BOSTON, MASSACHUSETTS

Figure 5-5
Shadow Analysis: March 21, 9 am and 12 pm
source: Bruner/Cott, 2010



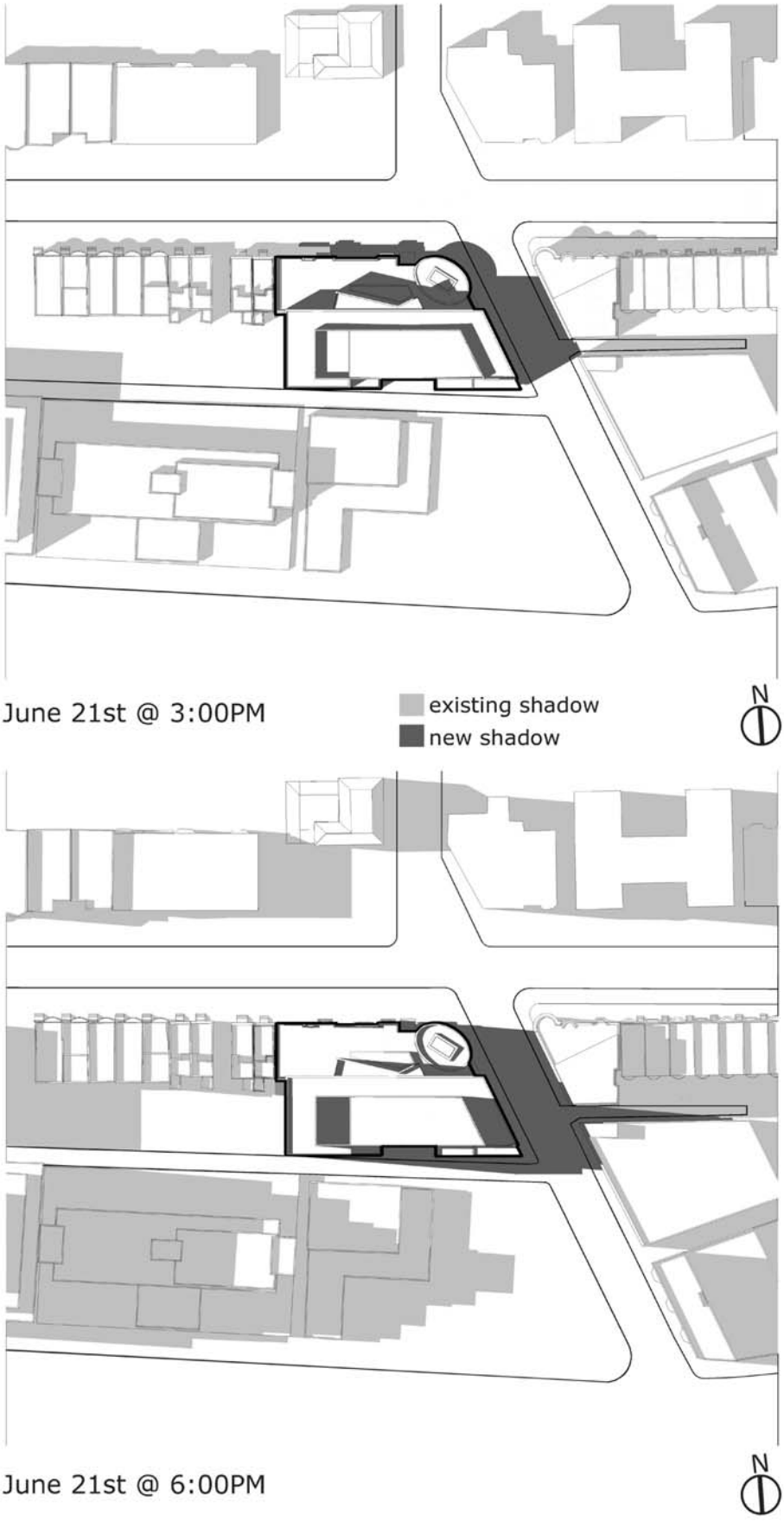
Boston University
BOSTON, MASSACHUSETTS

Figure 5-6
Shadow Analysis: March 21, 3 pm
source: Bruner/Cott, 2010



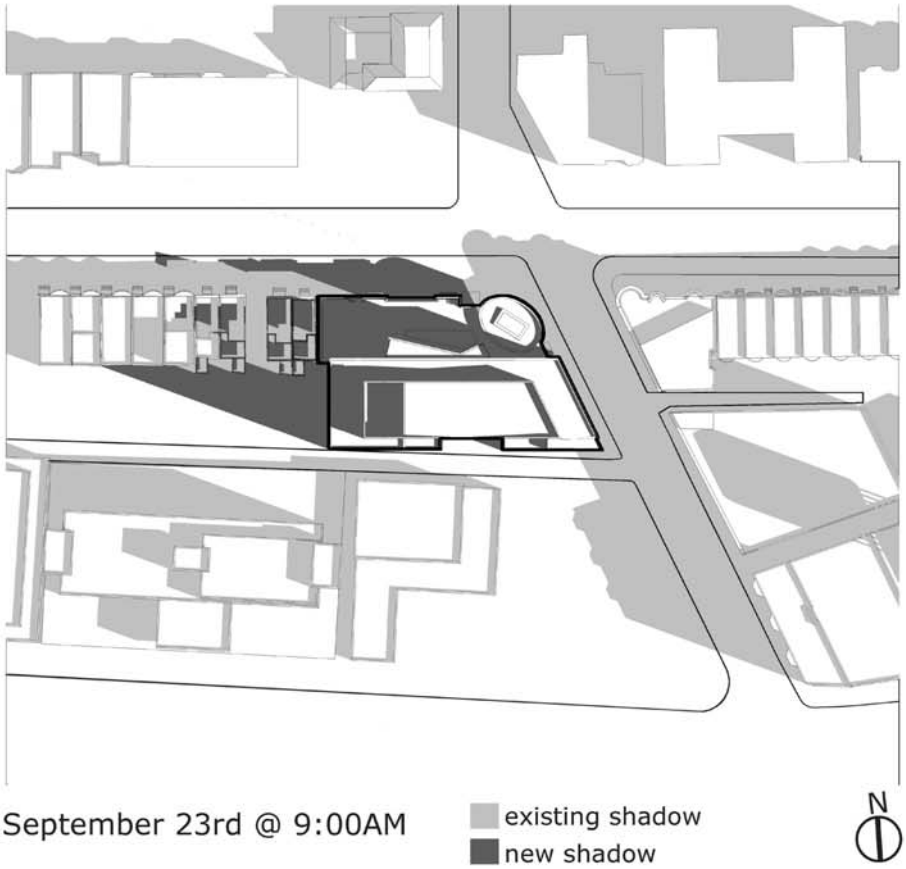
Boston University
BOSTON, MASSACHUSETTS

Figure 5-7
Shadow Analysis: June 21, 9 am and 12 pm
source: Bruner/Cott, 2010



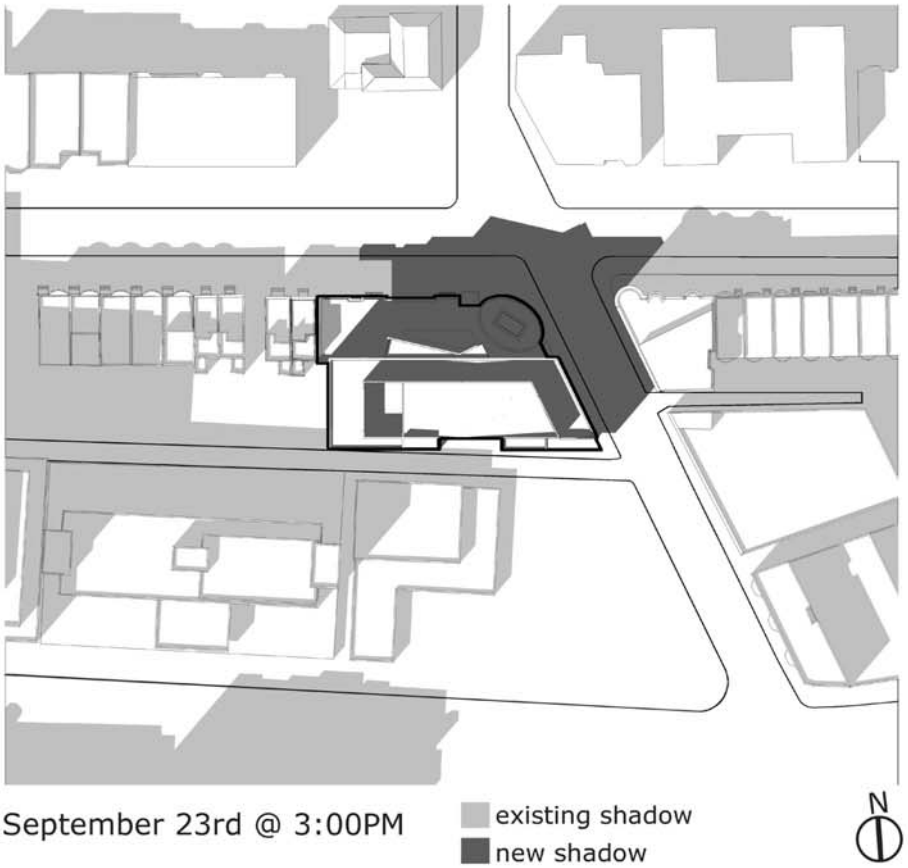
Boston University
BOSTON, MASSACHUSETTS

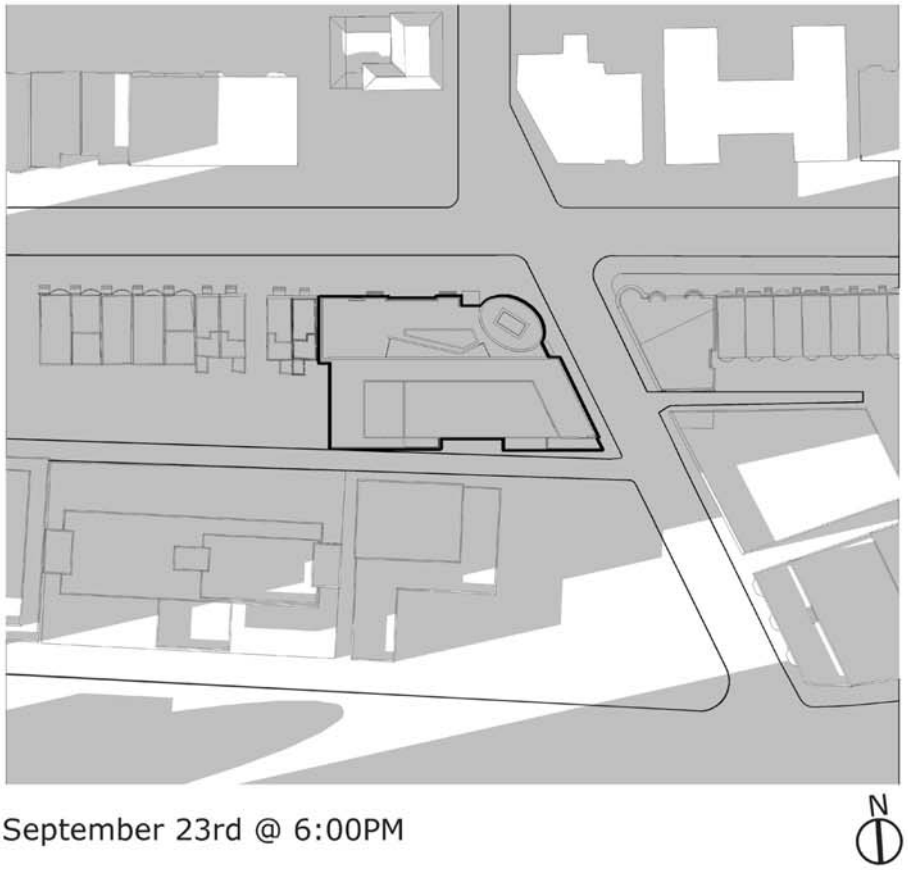
Figure 5-8
Shadow Analysis: June 21, 3 pm and 6 pm
source: Bruner/Cott, 2010



Boston University
BOSTON, MASSACHUSETTS

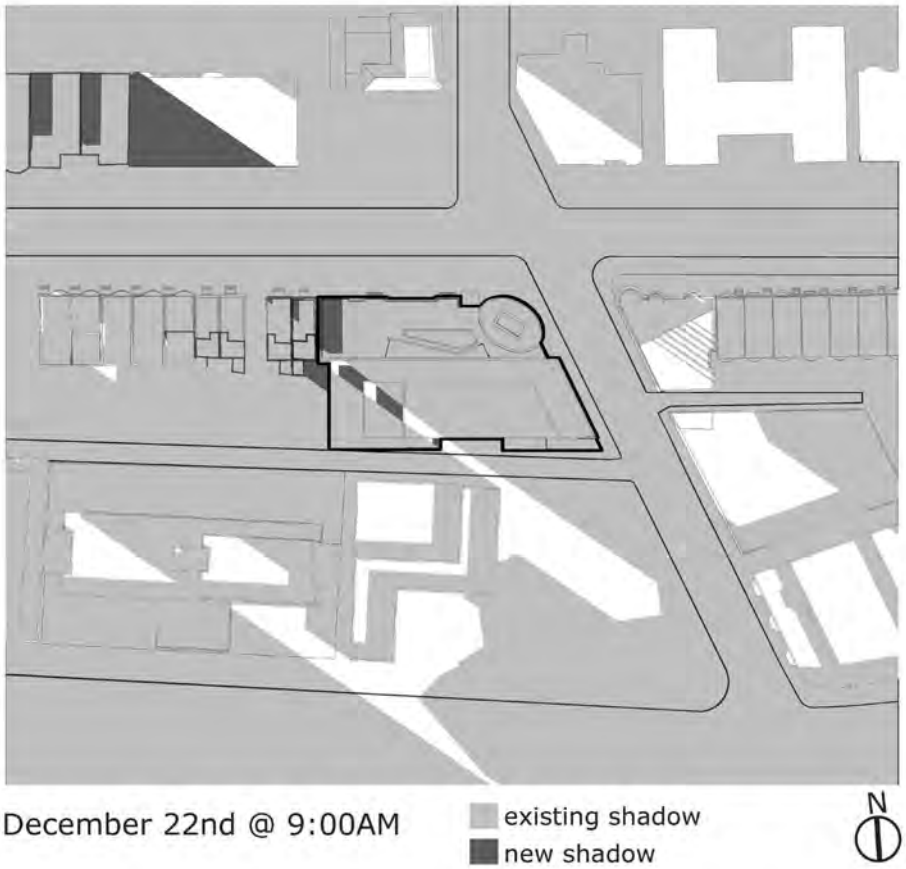
Figure 5-9
Shadow Analysis: September 23, 9 am and 12 pm
source: Bruner/Cott, 2010





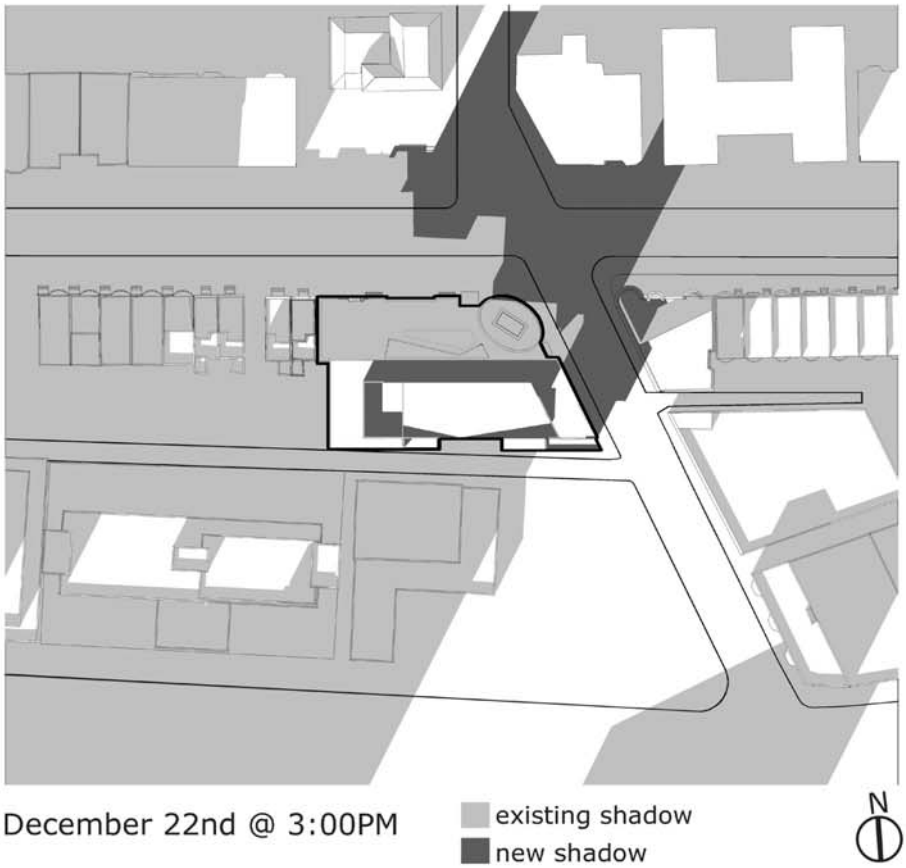
Boston University
BOSTON, MASSACHUSETTS

Figure 5-10
Shadow Analysis: September 23, 3 pm and 6 pm
source: Bruner/Cott, 2010



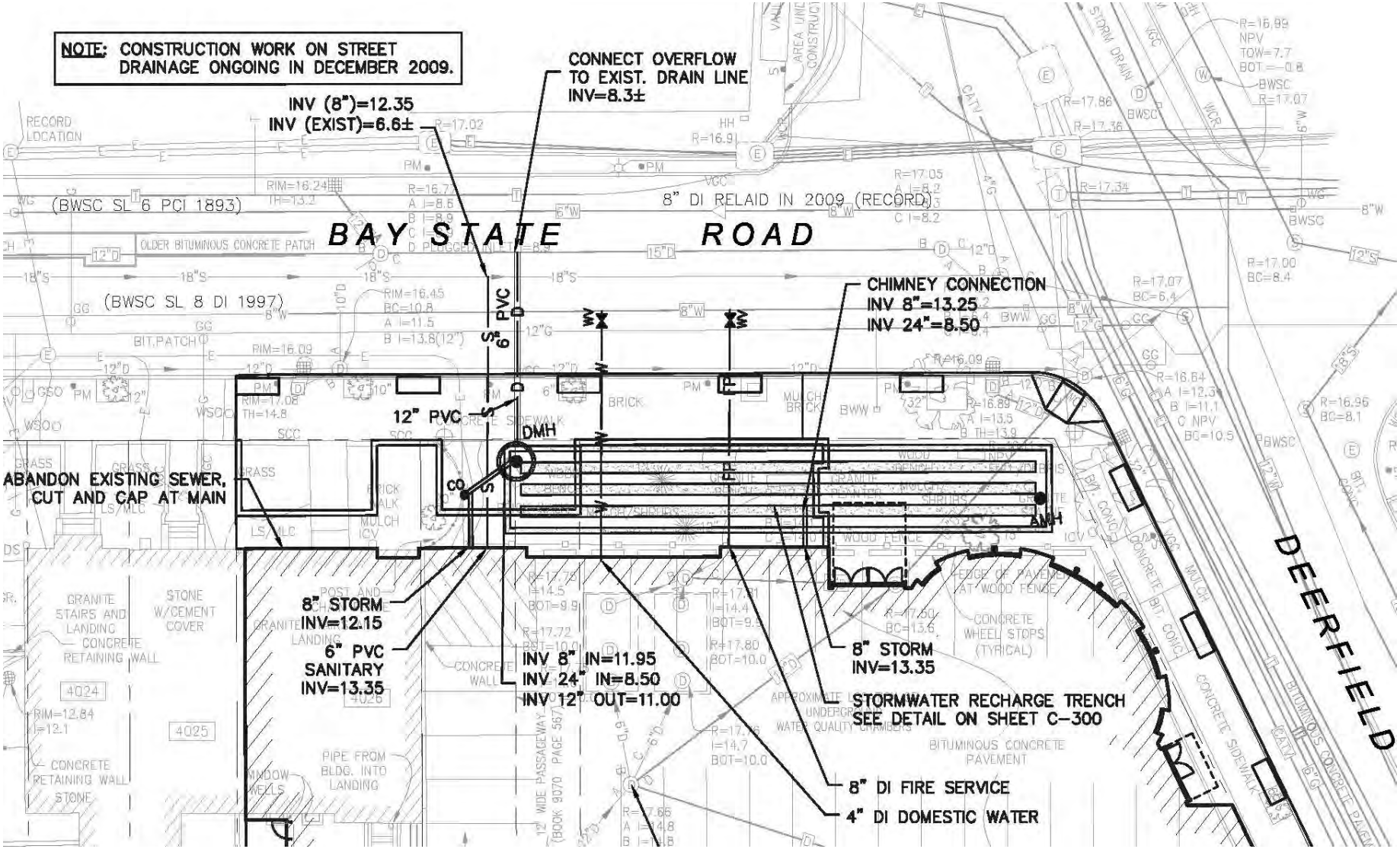
Boston University
BOSTON, MASSACHUSETTS

Figure 5-11
Shadow Analysis: December 22, 9 am and 12 pm
source: Bruner/Cott, 2010



Boston University
BOSTON, MASSACHUSETTS

Figure 5-12
Shadow Analysis: December 22, 3 pm
source: Bruner/Cott, 2010



Boston University
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Figure 5-13
Groundwater Recharge Plan
source: Nitsch Engeering

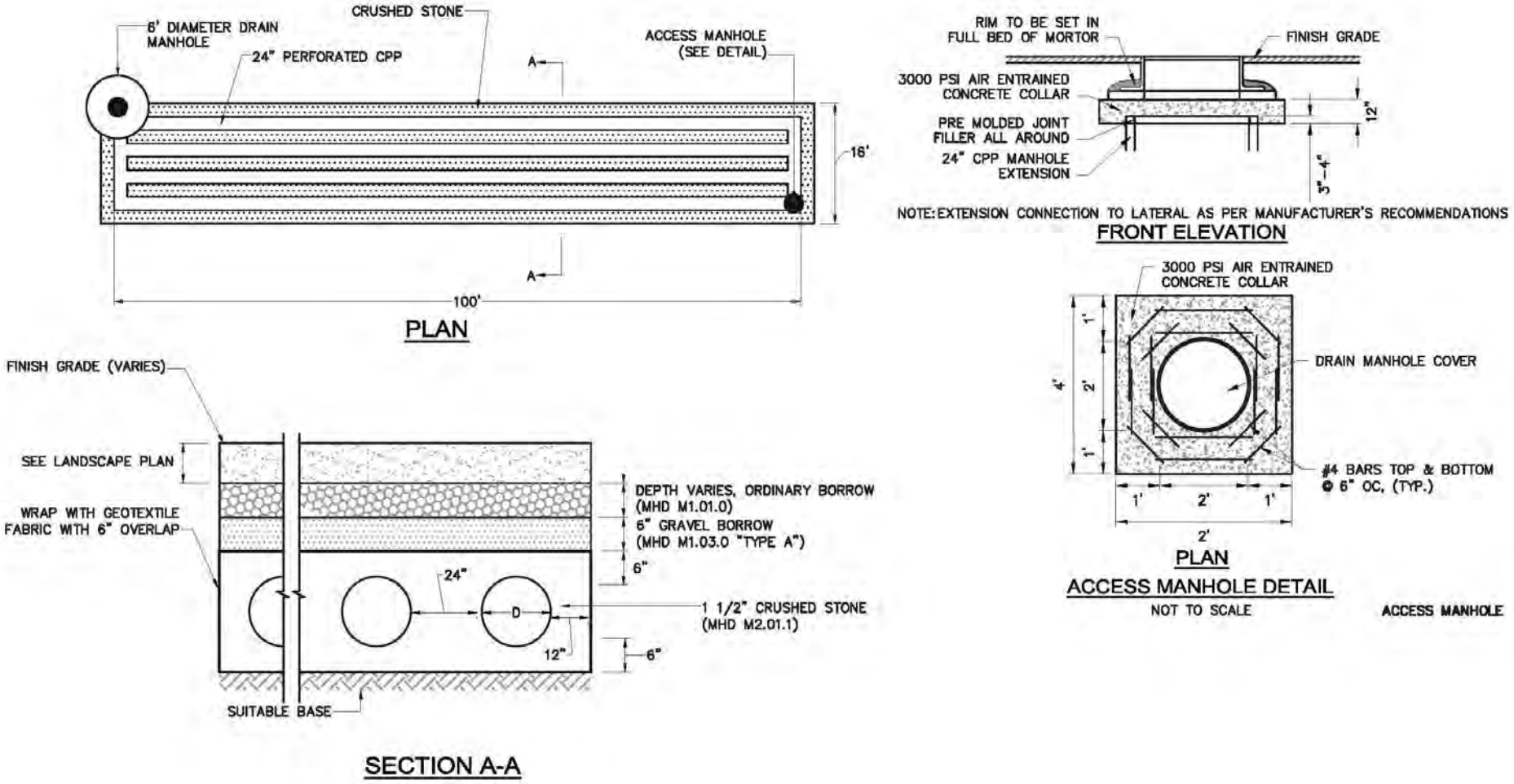


Figure 5-14
Groundwater Recharge Plan Details
source: Nitsch Engeering

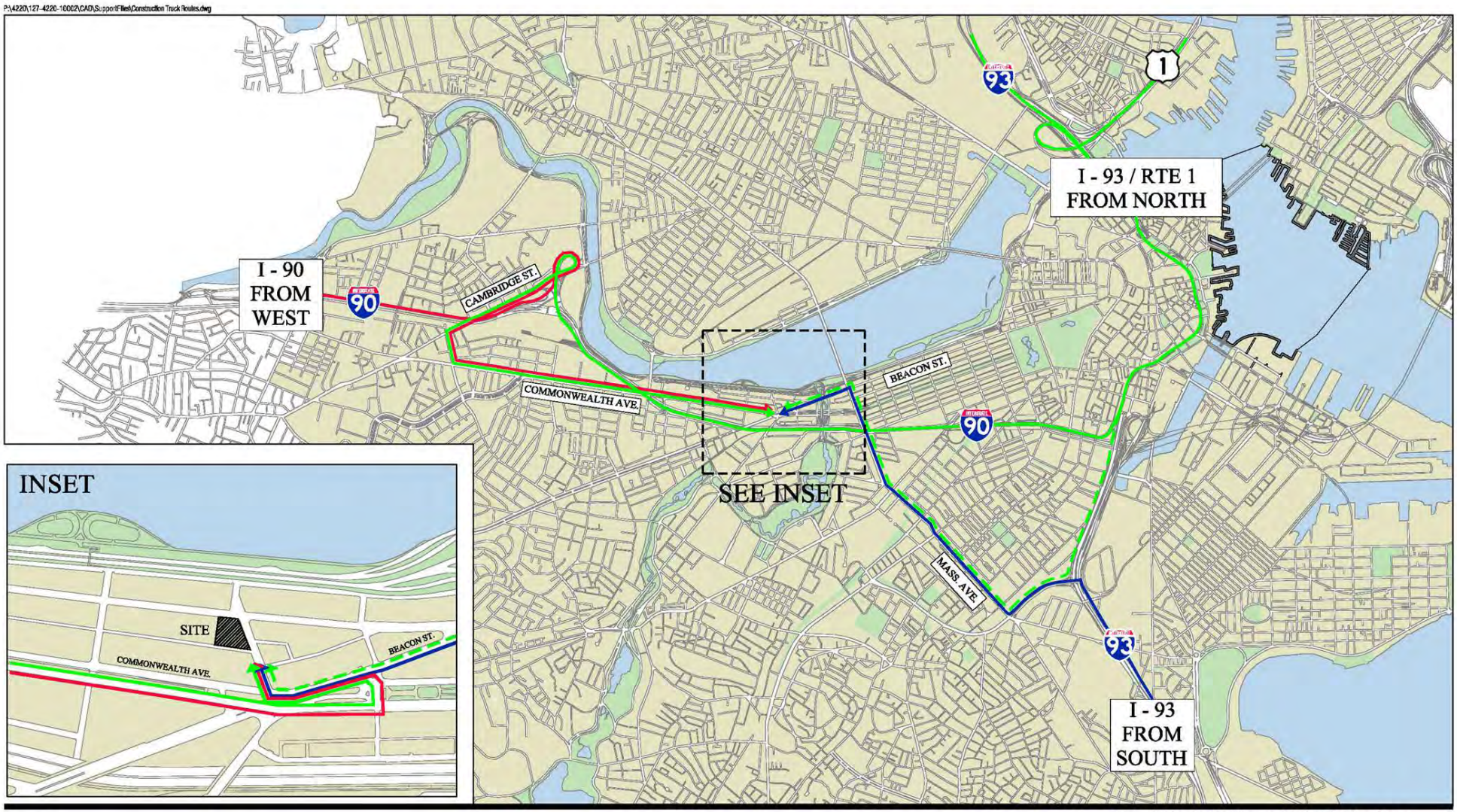


Figure 5-15
Construction Truck Routes, Inbound
source: Tetra Tech Rizzo, 2010

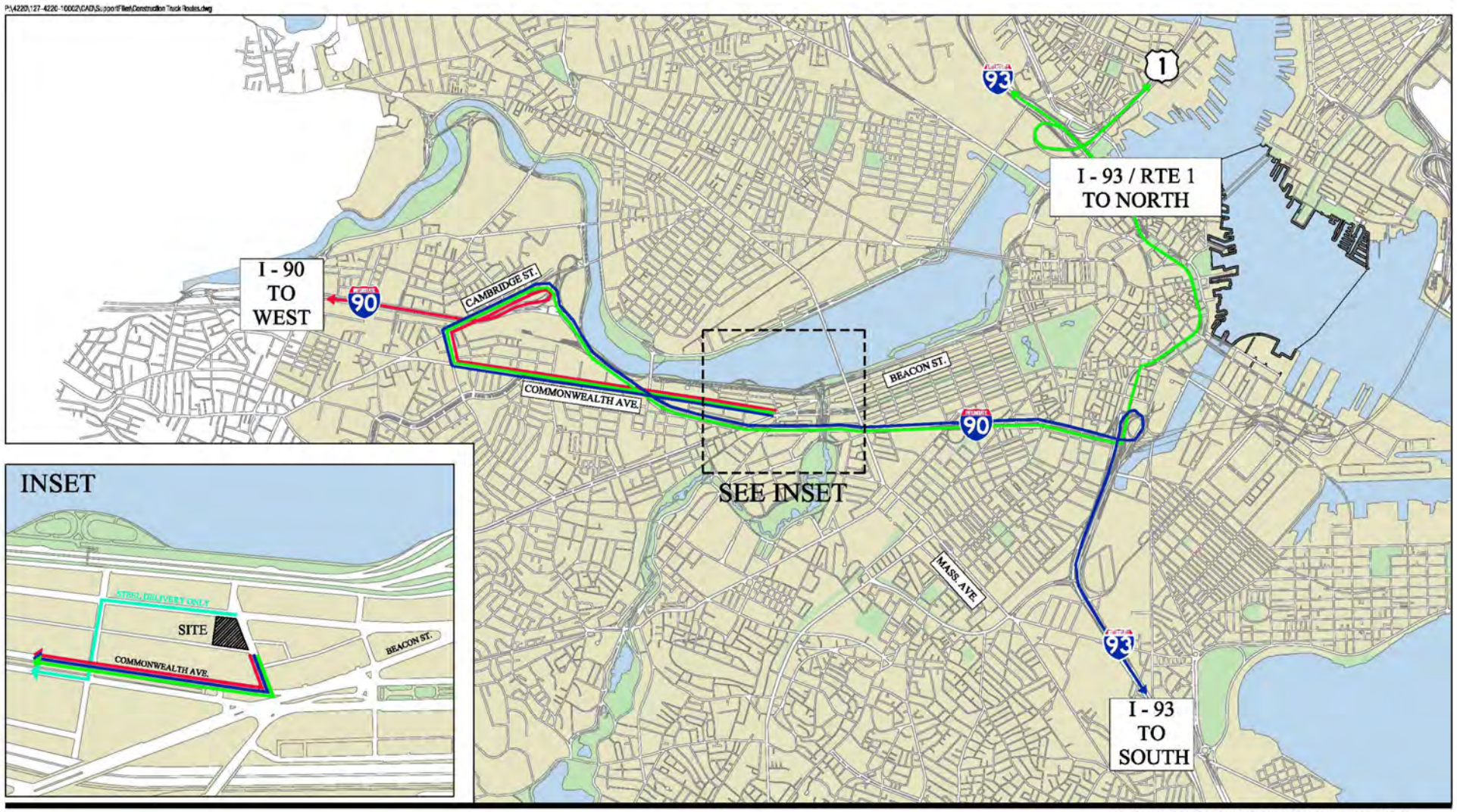


Figure 5-16
Construction Truck Routes, Outbound
source: Tetra Tech Rizzo, 2010

6.0 HISTORIC RESOURCES

The Project will replace a surface parking lot and an existing building at 108 Bay State Road with a new Student Services Center building, all located within the Bay State Road/Back Bay West Architectural Conservation District (BSR/BBW ACD).

6.1 Historic Structures and Districts

The Project Site is located within the BSR/BBW ACD. Figure 6-1, Historic Resources shows the following historic resources in the vicinity of the Project:

National Register:

- Charles River Basin Historic District
- Cottage Farm Historic District
- Olmsted Park Historic District

State Register:

- Charles River Basin Historic District
- Cottage Farm Historic District
- Olmsted Park Historic District
- Bay State Road/Back Bay West Architectural Conservation District (eligible for the National Register)

Local Historic Districts:

- Cottage Farm Historic District (Brookline)
- Bay State Road/Back Bay West Architectural Conservation District (Boston, eligible for the National Register).

6.2 Boston University Historic Preservation Plan

Boston University prepared the Charles River Campus Historic Preservation Plan in December 2005. This preservation plan identified and evaluated over 300 buildings on the Charles River Campus, including 114 Boston University-owned buildings located within the Bay State Road/Back Bay West Architectural Conservation District (BSR/BBWACD). This document identifies seven geographic areas of preservation concern, one of which was the BSR/BBW ACD. In general, the Plan recognized the positive contributions the University has made to the preservation of the historic character of Bay State Road through the full rehabilitation of some

44 buildings and the high level of maintenance of the existing buildings. Boston University has become the primary property owner in the district over the years, and has worked closely with the Architectural Conservation District Commission on its renovation projects. The plan also identified the vacant lots at 549-575 Commonwealth Avenue and 20-22 Deerfield Street as appropriate candidates for redevelopment as long as the design of proposed new buildings respects the historic character of the district.

6.3 Context

The proposed project site abuts Bay State Road and Deerfield Street at the southwest corner of their intersection. The Bay State Road/Back Bay West Architectural Conservation District is centered on the spine of Bay State Road, but also includes a concentration of residential buildings at the northern end of Kenmore Square.

According to the district study report, the BSR/BBWACD is a visually cohesive grouping of buildings united by their three bay, attached row house form, red brick exteriors, three to five story height, well-detailed historical revival styling, and common lot sizes and setbacks along tree-lined streets. Almost all of the 197 buildings in the district were constructed during a ten-year period between 1890, when Bay State Road was created on filled land, and the end of the 19th century. Only ten buildings were constructed after 1915; half of these are apartment houses, commercial buildings, and hotels dating from the 1920s. Primarily distinguished for its architectural quality, the District is also significant for its historic associations with individuals and institutions, including several prominent medical clinics.

6.4 100 Bay State Road and 20-22 Deerfield Street Lots

The three lots at 100 Bay State Road and 20-22 Deerfield Street have remained undeveloped since land fill operations were undertaken in 1890 by the Riverbank Improvement Company. They appear to have served as surface parking lots since the early-20th century. The Riverbank Improvement Company and Peter C. Brooks owned the Deerfield Street lots in 1912-1928 according to Bromley Atlases. By 1938, the land had passed to Fred L. Wayland, Jr. and Arthur D. Hill, et. al. The University purchased the property from Loyal Protective Life Insurance Company on June 30, 1978.

6.5 108 Bay State Road

108 Bay State Road is one of only ten buildings in the district that were constructed after 1915, which is identified as the close of the period of historic significance by the district study report. This building was constructed in 1939, nearly a quarter century after the period of significance's end date. (See Figure 6-2, Building Photos, 108 Bay State Road).

The building is chiefly associated with Dr. William P. Beetham (1902-1973), a distinguished ophthalmologist who served as Surgeon-in-Chief at Massachusetts Eye and Ear Infirmary (1940-1963). Beetham also made major contributions toward the understanding of diabetic eye disease and pioneered the modern laser treatment of diabetic retinopathy at the nearby Joslin Clinic, where the William P. Beetham Eye Unit is named in his honor. While Beetham and his partner/son-in-law, Dr. Lloyd M. Aiello, retained ownership of 108 Bay State Road for many years, it does not appear to have played a significant role in their careers. The University acquired the property in 1995.

The building is a low, two-story structure designed to serve as a combination office/residence. It is constructed of red brick in a modest Colonial Revival style, with a center entrance set at grade. The building's width, a product of combining two adjacent lots, coupled with its low height, stand in direct contrast to its more typical neighbors on Bay State Road, all of which date to 1910, and are characteristically narrow, three to five-story attached rowhouses. Its very spare design is a product of its unusually late construction date within the area.

The building was designed by Oliver L. Barker of Duxbury. Born in 1904, Barker was educated at Dartmouth College and MIT, and taught at MIT from 1929-34. During that five year period, Barker established an office with Herbert Beckwith under the name of Barker & Beckwith. Barker went into practice on his own in 1934. Barker's known works include the Masonic Hall in Duxbury, Mass. (1935), the American Legion Building in Marshfield, Mass. (1954), several residences in Minnesota and Duxbury in the 1940s and 50s, and the Norwell Police Station (1971).

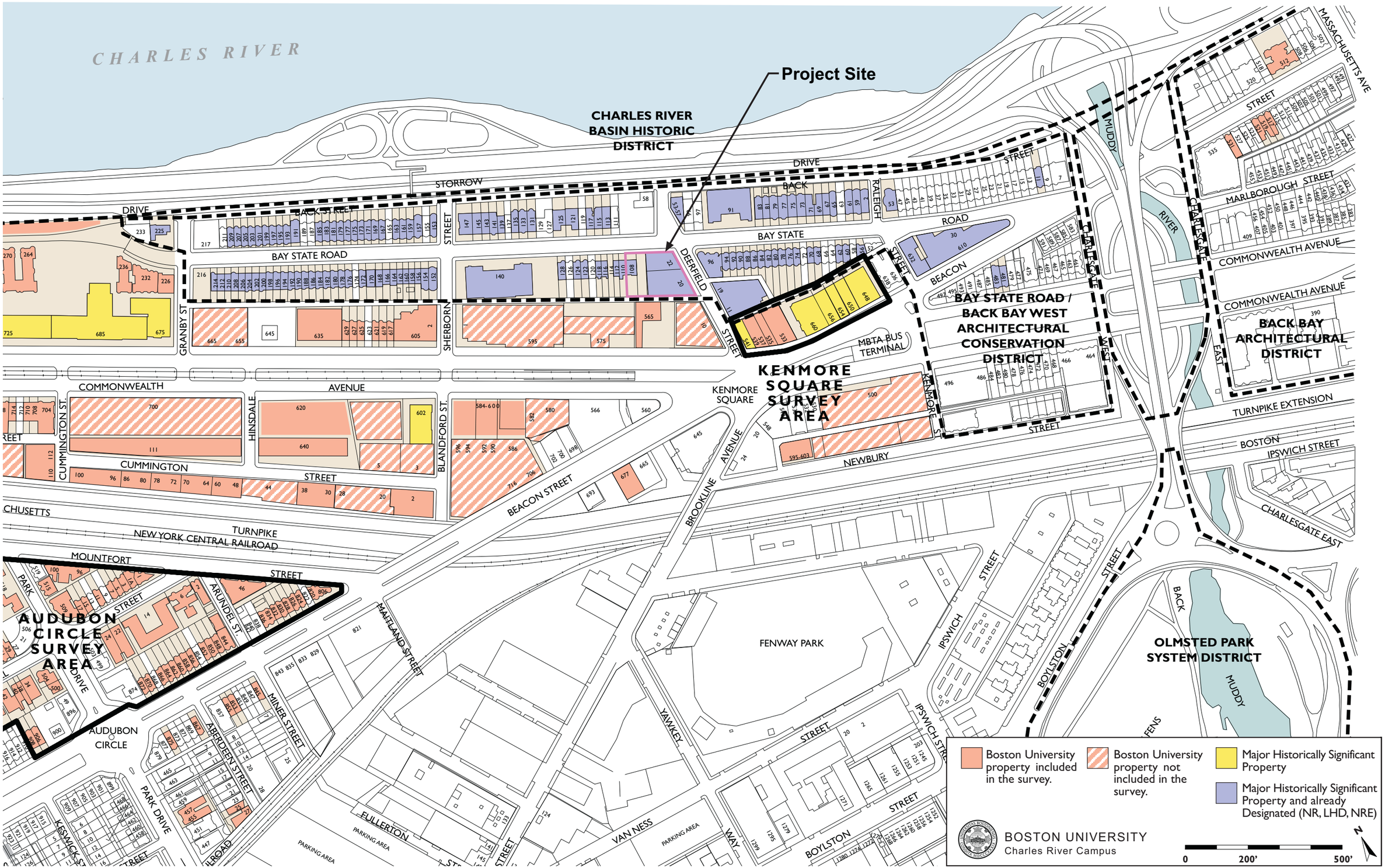
6.6 Conclusion

The new Student Services Center that is proposed to replace 108 Bay State Road and the adjacent vacant lots is carefully designed to respect the historical architectural character of the Bay State Road/Back Bay West Architectural Conservation District.

The vacant lots cited above are an appropriate location for new construction that respects the character of the District.

The building at 108 Bay State Road was constructed well after the end of the period of significance defined for the Bay State Road/Back Bay West Architectural Conservation District. While the building makes a minimal visual contribution to the district through its materials, setback, and stylistic concept, it is architecturally undistinguished. Its two-story height, double lot width, flat façade, ground-level entrance, and lack of architectural detail contrast with the prevailing design themes of the district. Little is known of the architect, who appears to have had a modest career in the Boston area. In addition, while the property provides a very late example of the medical offices and clinics that were prevalent in the area, its occupants in that field were primarily significant for their associations with other sites.

Although not an intrusion in the district, 108 Bay State Road has only minor architectural, historical, and urban design importance. The proposed Student Services Center would create a strong, consistent architectural edge at a prominent street corner. It would also establish an important and appropriate gateway to the Bay State Road/Back Bay West Architectural Conservation District at what is now a vacant lot.



Boston University
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Figure 6-1
Historic Resources
source: BU Historic Preservation Plan, 2005

View Looking West

View Looking South

View Looking East

View of the Building Facade

Figure 6-2
Building Photos, 108 Bay State Road
source: Fort Point Associates

7.0 INFRASTRUCTURE SYSTEMS COMPONENT

Since the Project is in schematic design, detailed infrastructure estimates have not yet been calculated. As the Project progresses, the Proponent will contact the appropriate agencies to discuss the capacity of various utility systems to service the new building, but in light of recent infrastructure improvements in the area, it is anticipated that there will be sufficient capacity at this site.

7.1 Sanitary Sewerage System

BWSC owns, operates, and maintains the sewerage system in the vicinity of the Project Site. The Project Site has sewer service available in the adjacent Deerfield Street and Bay State Road. The sanitary sewerage system ultimately connects to the Deer Island Wastewater Treatment Plant, where the flows are treated and discharged 9.5 miles offshore in Massachusetts Bay.

This building will generate an estimated 42,425 gallons per day (gpd) as calculated below. This calculation is based on 310 CMR 15.203 (Title V), which provides design flow parameters for various building uses.

64,000 s.f. of office space @ 75 gpd per 1,000 s.f.	=	*4,800 gpd*
1,075 seat dining hall @ 35 gpd per seat	=	*37,625 gpd*
Total		*42,425 gpd*

This calculation does not take into account the reduction in sewage flows from the closing of the three neighboring dining halls that this facility will replace. The new dining hall is equivalent in capacity to the three existing dining facilities. Due to this, the actual increase in sewage flows may be considered applicable only to the new office use. Therefore, it is estimated based on State regulations that there will be a net increase of sewage flows for this project of approximately 3,000 gpd. In addition, water conservation devices such as low-flow toilets and faucets will be used within the building reducing flows substantially below those estimated from State regulations.

Sanitary sewage discharge will connect to the existing 18-inch sanitary sewer in Bay State Road. Preliminary discussions with the Boston Water and Sewer Commission (BWSC) have indicated an adequate capacity in the sewerage system to serve the Project.

7.2 Water System

BWSC obtains its water supply from the Massachusetts Water Resources Authority (MWRA) transmission system. BWSC distributes the water locally within the City of Boston. Water service to the site is available from two 8-inch water mains in Bay State Road and from a 12-inch water main in Deerfield Street. The proposed connection is to the 8-inch water main in the southerly side of Bay State Road. Domestic water and fire service will be provided.

The estimated water consumption is based on the sewage generation estimates (defined by 310 CMR 15.00) with an added factor for system losses plus requirements for the Project's cooling system. Based on the projected sewage generation of 38,000 gpd, it is estimated that the proposed building will utilize 42,000 gpd of water. Since the heating and cooling systems for the building have not yet been designed, this value is only an estimate. Actual air conditioning make-up water requirements will be provided at a later date.

Preliminary discussions with BWSC have indicated an adequate capacity in the water supply system to serve the Project. Flow tests will be performed for final design of the proposed building fire suppression system during the detailed design phase.

Water service to the building will be metered in accordance with BWSC's Site Plan Requirements. The University will provide for the connection of the meter to BWSC's automatic meter reading system. The property owner will provide a meter interface unit ("MIU"), approved by BWSC and mounted near the meter, a telephone line and jack near the meter, and an outside meter reading device with access available to BWSC employees. A backflow preventer will be installed on the water services. Water supply systems servicing the Project will be gated so as to minimize public hazard or inconvenience in the event of a water main break. Fire protection connections for the Project will need approval by the Fire Chief. Prior to any water or sewer construction, the Proponent will submit a General Service Application and Site Plan to the BWSC for review and approval.

While the building is not fully designed, it is anticipated that it will use water conserving fixtures, such as sensor-operated sinks with water conserving aerators and sensor-operated toilets.

7.3 Storm Drainage System

Most of the existing site is impervious with a paved parking lot and small building. There is a small landscaped area long Bay State Road. The site currently contains four catch basins and a trench drain. The catch basins at the southwest corner of the site collect stormwater from the existing building back yard and the paved parking area behind the back yard and direct it to an existing manhole in Alley No. 912. The catch basins and trench drain in the parking lot collect stormwater from the parking lot and direct it into a stormwater runoff monitoring device that was part of the Charles River Stormwater Supplemental Environmental (SEP) project. The stormwater monitoring device is no longer in use. Water from the device discharges to the

existing drain system in Bay State Road. There are no other existing stormwater structures on the site. The existing drainage discharges via sheet flow to the adjacent street systems which are maintained by the BWSC. The adjacent BWSC storm water drains include a 15-inch storm drain in Bay State Road and a 108 x 132-inch storm drain in Deerfield Street both of which discharge to the Charles River. A drainage connection to one of these systems may be feasible with BWSC approval after the Site Plan Review process.

A component of the BWSC Site Plan Review will require a portion of the stormwater from the project to recharge into the groundwater table. The stormwater system design will include groundwater recharge, water quality management and a reduction of peak stormwater runoff from the existing conditions of this property.

Water quality impacts and a detailed discussion of stormwater management are provided in Section 5.7 of this IMPNF/PNF. Any new drainage structures on the Project Site will be fitted with standard BWSC Type V catch basins. These basins are fitted with sediment sumps and oil/gas traps. Oil/gas traps will be permitted through BWSC. All new catch basins and catch basins affected by this project, will receive BWSC plaques, if not already in place, that bear the warning “Don’t Dump - Drains to Boston Harbor.”

Any sewer and drain connections that are terminated will be cut and capped in accordance with the BWSC standards and by Site Plan Approval from BWSC.

7.4 Electrical Service

Electrical service to the site is provided by the electrical transmission system within Bay State Road and Deerfield Street maintained by NSTAR Services Company. The electrical, space heating and energy systems for the Project have not yet been designed. It is proposed that the Project be served via transformers installed in a vault in the building or within the setback area adjacent to the building. Consequently, transformer placement or other pads or vaults required for electrical distribution ventilation are not expected to disrupt pedestrian paths or public improvements in the vicinity or abutting the Project Site.

Pursuant to its commitment to sustainable design, the University is investigating the use of energy efficient lighting, and heating and cooling systems in the design for the building.

7.5 Telephone and Cable Systems

Verizon New England provides telephone service in the Project area via Boston University’s Office of Information Services and Technology. There are existing telephone manholes and telephone lines available adjacent to the project site. All the telephone facilities in this area are underground and consist primarily of copper and fiber-optic cables.

AT&T Broadband, formerly Cablevision of Boston, and RCN, in addition to the University's network, provide video, data and cable service in the Project area. The Project will be connected through the University's network.

7.6 Gas Service

KeySpan Energy provides natural gas service in the Project area. There is an existing 12-inch gas line in Commonwealth Avenue. It is anticipated that KeySpan will provide gas service to the Project Site from the existing 12-inch coated steel low pressure gas line in Bay State Road or from the 6-inch plastic low pressure line in Deerfield Street.

The space heating system for the Project has not yet been designed. However, it is not expected that the Project would require excessive amounts of gas. In addition, energy-saving measures will be incorporated into the building design and construction.

7.7 Utility Protection During Construction

During construction, infrastructure will be protected using sheeting and shoring, temporary relocations, and/or construction staging as required. The contractor will be required to coordinate all protection measures, temporary supports, and temporary shutdowns of all utilities with the appropriate utility owners and/or agencies. The contractor will also be required to provide adequate notification to the utility owner prior to any work commencing on their utility. Also, in the event a utility cannot be maintained in service during switch over to a temporary or permanent system, the contractor will be required to coordinate the shutdown with the utility owners and project abutters to minimize impacts and inconveniences accordingly.

8.0 TRANSPORTATION COMPONENT

8.1 Introduction

The project site is located at the intersection of Bay State Road and Deerfield Street. The site is currently occupied by a surface parking lot and an existing building at 108 Bay State Road owned by Boston University. The surface lot contains approximately 69 spaces and those spaces are regulated by the University's parking permit program. The proposed building program is comprised of approximately 99,600 square feet in six floors. The first two levels and the lower level will be a campus dining facility and the upper floors will be devoted to student services functions (tutoring, employment counseling, etc.).

The dining facility component of the project will consolidate food service functions that are currently located at three existing dining facilities close to the 100 Bay State Road site. Those facilities are located at 140 Bay State Road, Shelton Hall (91 Bay State Road) and Myles Standish Hall (610 Beacon Street)..

The Student Services programs to be located at the proposed office space are existing University functions that will be relocated to this new building. Some of these Student Services are currently located at 19 Deerfield Street, across the street from 100 Bay State Road.

8.2 Site Access

8.2.1 Pedestrian

Pedestrian access to 100 Bay State Road, which will be the primary mode of access and aggress to/from the site, can be achieved via sidewalks on Bay State Road and Deerfield Street. Both roadways have sidewalks on both sides. Sidewalks on Deerfield Street and Bay State Road are approximately 10 feet in width.

Pedestrian counts were conducted along the sidewalks and crosswalks in the vicinity of the proposed project site, and at the three existing dining facilities in the area that will be replaced by the 100 Bay State Road facility. Specifically, pedestrian counts were taken at the following locations:

- Crosswalks at the intersection of Bay State Road and Deerfield Street
- Crosswalks at the intersection Deerfield Street and Commonwealth Avenue
- Deerfield Street sidewalks between Commonwealth Avenue and Bay State Road
- Bay State Road sidewalks between Deerfield Street and Silber Way
- 140 Bay State Road

- Shelton Hall, and
- Myles Standish Hall.

The counts were conducted during the mid-day lunch time period (12 to 1 p.m.) and the evening dinner time period (between 6 and 7 p.m.). Preliminary counts were conducted on Thursday December 10, 2009 near the end of the fall semester. A second set of counts were conducted on Wednesday April 14, 2010. The April 2010 counts were approximately 5 to 50 percent higher than the December counts, depending upon the location. Figure 8-1, 2010 Weekday Pedestrian Volumes 12:00-1:00 PM illustrates the April 2010 mid-day pedestrian volumes and Figure 8-2, 2010 Weekday Pedestrian Volumes 5:00-6:00 PM presents the early evening volumes.

8.2.2 Bicycle

Bicycle access will be the second most important transport mode used by students accessing/egressing the proposed facility. As part of this project, bicycle storage for 100 bicycles will be provided at the site. Bicycle access to the site is anticipated via Bay State Road and Deerfield Street (from the bike lanes in Kenmore Square or along Commonwealth Avenue).

8.2.3 Vehicular

Parking will not be provided at the site. The vast majority of the trips to and from the proposed facility will be made by Boston University students and it is anticipated that they will arrive at the site by foot. Consequently, the amount of automobile trips made to and from the facility will be minimal. Some students may be dropped off at the new facility, or a student may park at one of the nearby metered spaces located on Deerfield Street or Bay State Road. In these rare circumstances, the drivers can approach the site along Bay State Road from the east (Bay State Road is one-way westbound) or via Deerfield Street from Kenmore Square.

University employees that will be working at the student services component of the proposed facility will not generate an appreciable amount of new vehicular trips to the Charles River Campus. As noted previously, the student service functions (and University employees) that will be housed at the facility are being relocated from other BU buildings within the campus. Therefore, the number of vehicle trips to/from the campus will be similar to current conditions. The only difference from the current conditions is that some of those relocated employees may park at a different University-owned parking facility that is more convenient to the project site as compare to where they currently park. Again, it is anticipated that there will be no impact on traffic operations along Bay State Road because of University employee trips related to this project and because no parking will be provided at the site.

8.2.4 Loading and Servicing

The proposed facility will be serviced exclusively from the existing mid-block Public Alley No. 912 that runs between Deerfield Street and Silber Way (parallel to Bay State Road). All deliveries and waste pick-up to support operations at the building will be accommodated in a truck bay and loading dock area located in the southwest corner of the proposed building. This truck bay and loading dock can only be accessed via the service alley.

Currently, the three existing dining facilities at 140 Bay State Road, Shelton Hall and Myles Standish Hall each take deliveries from vendors to support the dinning operations. Each of these facilities also has separate trucks arriving/departing for trash removal.

- 140 Bay State Road deliveries occur from the mid-block service alley that runs behind the building or from Bay State Road in front of the building where the vendor's delivery trucks may have to double park when unloading. Waste pick-up for 140 Bay State Road is handled from the service alley. During the week there are 7 to 9 truck deliveries that occur each day at this facility. Trucks range from small box trucks to large combination vehicles (e.g., WB-40 tractor trailer units). Waste pick-up occurs twice a week.
- At Miles Standish Hall, vendor deliveries and waste pick-up services occur at the service doors at the rear of the building, which is on Bay State Road. Although the deliveries and waste pick-up operations tend to occur in the early morning hours, these operations may impact travel along Bay State Road. There are 6 to 8 truck deliveries that occur at this facility on a daily basis (Monday – Friday). The trucks range in size from small box trucks to tractor trailer units. Waste pick-up also occurs twice a week.
- The Shelton Hall facility is typically serviced in the rear of the building from Back Street. Deliveries and waste pick-up operations, although they most often occur in the early morning hours, can impact traffic circulation along Back Street as they conduct their operations. Shelton Hall receives 6 to 9 deliveries per day from Monday to Friday. Waste pick-up also occurs twice weekly at this facility.

As the description of service operations above highlights, the existing facilities generate a fair amount of truck traffic that uses Bay State Road and Back Street. The proposed facility will be serviced exclusively from the existing mid-block service alley that runs between Deerfield Street and Silber Way (parallel to Bay State Road). All deliveries and waste pick-up to support operations at the building will be accommodated in a truck bay and loading dock area located in the southwest corner of the proposed building. This truck bay and loading dock can only be accessed via the service alley. Therefore, truck traffic is expected to be reduced along Bay State Road and Back Street.

8.3 Parking

8.3.1 On-Street Parking

Currently there is on-street parking along the north and south sides of Bay State Road in the vicinity of the project site. Parking on Bay State Road is regulated by parking meters with a 2-

hour limit. Along the site's frontage on Bay State Road, there are approximately eight parking meters (see photo below).

On Deerfield Street, parking on the west side of the street is prohibited between Bay State Road and Commonwealth Avenue, including in front of the project site. (See photo below). On the east side of Deerfield Street, there is angled metered parking with a 2-hour time limit. There are approximately 21 metered spaces between Commonwealth Avenue and Bay State Road.

Parking Meters on Bay State Road

Parking Restrictions on Deerfield St

8.3.2 Off-Street Parking

As the primary modes of access to the proposed site will be pedestrian or bicycles, no parking will be provided at the site as part of this project. This approach is consistent with the goals of Boston University's 2003 Transportation Master Plan of promoting non-vehicular modes of transportation within the Charles River Campus. One of the measures employed by the University to meet this goal is to limit the number of new parking spaces constructed within the campus.

University faculty and staff that are currently using the 69 permit-regulated spaces at the site will be absorbed into other Boston University-owned parking facilities in the central campus area. These facilities include the mid-block alley between Deerfield Street and Silber Way, the CAS lot at 240 Bay State Road, the lot at 575 Commonwealth Avenue, the Granby Street lot at 665 Commonwealth Avenue and the Warren Towers Garage.

8.4 Transportation Impacts

8.4.1 Pedestrian

Impacts on pedestrian facilities and circulation are expected to be minimal. Most of the students arriving at the proposed 100 Bay State Road facility are already travelling by foot in the Bay State Road/Deerfield Street area as their dormitories and their primary dining facility are in this area. It is not expected that pedestrian traffic along Bay State Road will increase to a degree that the increase will be perceptible or that the sidewalks cannot accommodate the demand.

As noted above, sidewalks are located on both sides of Bay State Road and Deerfield Street, and all of the sidewalks are approximately 10 feet wide. After construction of the project is completed, the sidewalks adjacent to the building will be restored along both Bay State Road and Deerfield Street. The new sidewalks will also be 10 feet in width. This is an adequate width to accommodate the current pedestrian demands along Bay State Road and Deerfield Street, which will not significantly increase because of the project. New sidewalks with an expanded width of 16 feet will be installed from Commonwealth Avenue to the Public Alley on the west side of Deerfield Street, along with an improved landscape design consistent with the Commonwealth Avenue redesign.

The maximum pedestrian activity level observed in the April 2010 counts was approximately 725 pedestrians/hour on the Bay State Road south sidewalk between 140 Bay State Road and Silber Way. Many of these pedestrians were coming to/from the dormitory/dining facility at 140 Bay State Road (approximately 600 pedestrians or 80 percent). When the new dining facility at 100 Bay State Road is open and the dining facility at 140 Bay State Road is closed, some of these students will continue east along Bay State Road to the new facility. Other pedestrians, depending where they are coming from on campus (i.e., classroom, athletic facility, etc.), may walk along Commonwealth Avenue to Deerfield Street to access the new dining facility at 100 Bay State Road.

Students who are living on campus and participate in the University's various meal plans have many options for dining over the course of the day at locations throughout the campus. Students living at the residence halls in the Bay State Road/Kenmore Square area do not have to return to their residence halls to eat. For example, if they are in West Campus attending classes or using the recreation center, they can eat lunch or dinner there. It is also important to note that the students do not necessarily dine in concentrated windows of time. Because of class and activity schedules, they eat lunch and dinner at a wide range of times throughout the day, and the various dining facilities on campus are open so they can get food when it is convenient for them. The result of having many choices of dining locations and hours is that there will <u>not</u> be a large concentration of students at the new 100 Bay State Road dining facility.

Regarding the student services component of the project, some of those services are currently located at 19 Deerfield Street, which means students coming to and from those offices are

already walking through the Bay State Road/Deerfield Street area. Thus, a significant increase in pedestrian activity in the area is not expected to result from this component of the project. Similar to the dining hall aspect of the project, the student services that will be located at the proposed facility will not draw large concentrations of students arriving at the same time. Student often have to make appointments for the particular service they are seeking, thereby assuring a distribution of arrivals over the course of the day.

As an example, the Education Resource Center (ERC) averages approximately 8,400 student visits per semester. This translates to an average of 525 visits per week (assuming a typical semester is 16 weeks). The ERC is open six days per week (Sunday – Friday), which means that there is about 85 visits per day. ERC hours vary by day, but overall the ERC is open 70 hours per week, or approximately 11 hours per day. Consequently, there will be an average of about eight students per hour arriving/departing the ERC (85/11= 7.7), which will not result in a perceptible change in pedestrian activity in the Bay State Road/Deerfield Street area.

8.4.2 Bicycle

No bicycle related impacts are expected to result from the proposed project. Bicycle storage capacity for 100 bicycles is planned for the facility. This amount of storage should be sufficient for daily operations. If the University finds that this level of bicycle capacity is not sufficient once the facility is open and operating, additional bicycle storage capacity can always be added in the future.

8.4.3 Vehicular

The project will not have a negative impact on traffic operations and circulation in the immediate area (Bay State Road and Deerfield Street) or within the Charles River Campus area. The project will not provide parking at the site and consequently will not generate an appreciable amount of traffic. Drivers that use the existing 100 Bay State Road surface parking lot are University faculty or staff. As noted previously, they will be relocated to other Boston University-owned parking facilities in the central campus area. Therefore, the number of vehicle trips to/from the campus will not change because of the proposed project. These trips will be reoriented from Bay State Road and Deerfield Street to Commonwealth Avenue, thus having a positive impact on traffic operations on Bay State Road and Deerfield Street.

8.4.4 Parking

<u>On-Street</u>

After the project is completed, on-street parking along the south side of Bay State Road will be restored to the existing conditions with no permanent loss of metered spaces. During the construction phase of the project, eight to ten meters on the south side of Bay State Road will be rented from the City to create a safe work zone for the site. Six to ten meters on the north

side of Bay State Road opposite the site frontage will also be needed during some phases of construction to ensure safe and efficient traffic operations on Bay State Road. A more detailed description of the construction phase parking impacts is provided in the Draft Construction Management Plan (CMP) (See Appendix 3, Draft Construction Management Plan).

Similar to Bay State Road, the on-street parking situation along Deerfield Street will be returned to existing conditions after construction is completed, including re-establishment of parking restrictions on the west side of the street, and restoration of all 26 metered spaces on the east side of Deerfield Street. Some temporary impacts to existing parking spaces on the east side of Deerfield Street will occur during construction and are described in the Draft CMP.

Off-Street

The elimination of the 69 spaces at the 110 Bay State Road lot will not result in impacts to the on-street parking supply in the adjacent area. As the current users are BU parking permit-regulated drivers who typically park for longer periods of time, they will not tend to use the on-street metered parking spaces along Bay State Road or Deerfield Street, but will need to park at another off-street facility.

As noted above, current users of the existing surface parking lot will be relocated to the existing University-owned parking supply in the central campus area. the closest parking areas owned by the University where most of the parking demand will shift to are: the CAS lot at 240 Bay State Road, the lot at 575 Commonwealth Avenue, the Granby Street lot at 665 Commonwealth Avenue, the Warren Towers Garage or spaces along the mid-block alley that runs between Deerfield Street and Silber Way. There is adequate supply at these facilities to absorb the maximum demand of 69 vehicles from the 100 Bay State Road lot.

8.4.5 Loading and Service

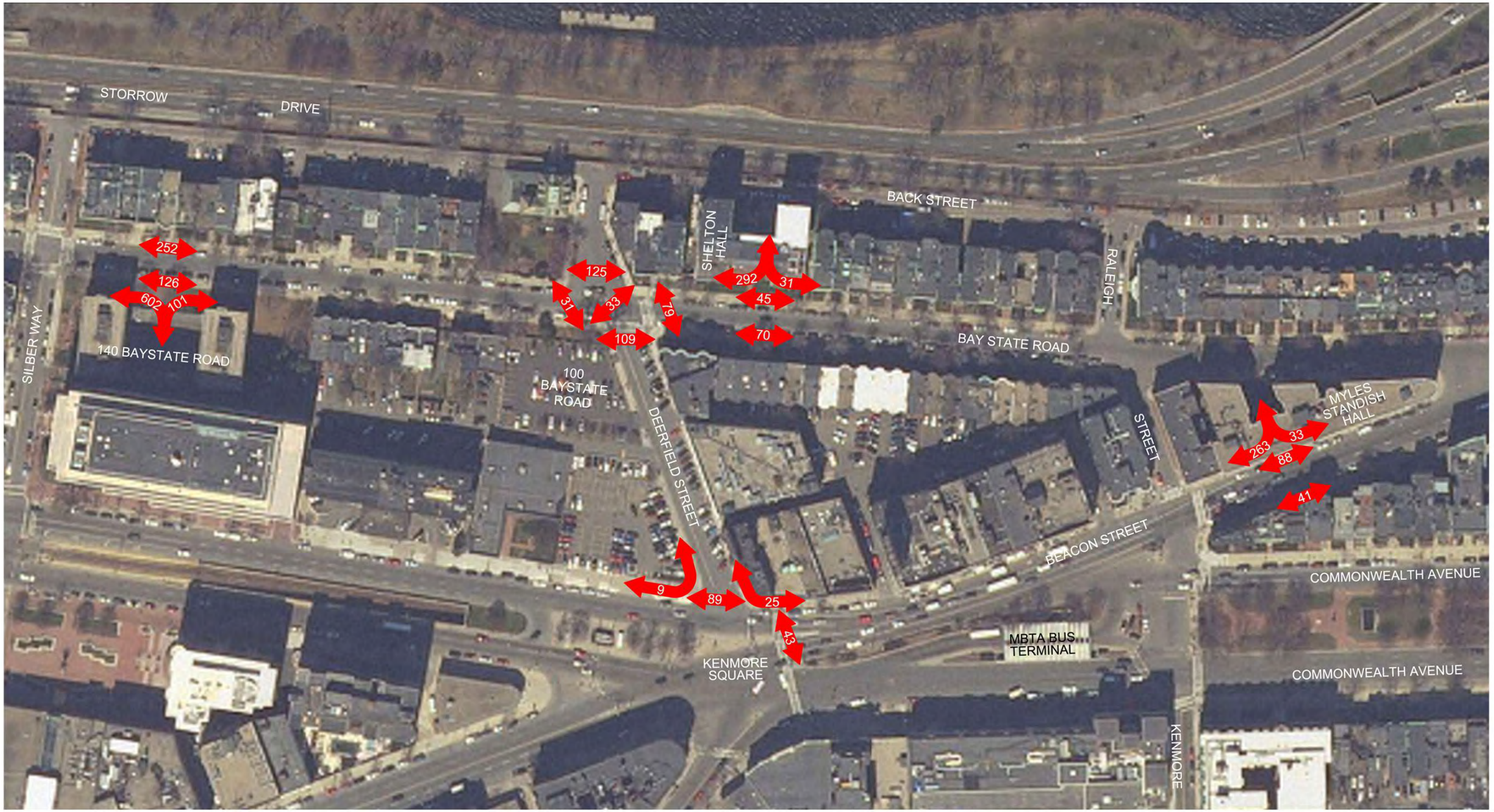
The proposed project will have a positive impact on delivery and service operations, and as a result, a positive impact on traffic operations and circulation along Bay State Road. Currently, the three separate dining facilities each generate 6 to 9 vendor truck deliveries per day between Monday and Friday. Each facility has waste pick-up occurring twice per week. When these deliveries or waste pick-up operations are occurring traffic operations may be affected along Bay State Road (Myles Standish Hall and 140 Bay State Road) or along Back Street (Shelton Hall).

With the proposed project, no loading will occur from the street. All deliveries and servicing will occur from a truck bay and loading dock area located in the southwest corner of the proposed building. This truck bay can only be accessed from the service alley that runs from Deerfield Street to Silber Way. The alley will have one-way operations in a westbound direction so trucks must enter from the Deerfield Street end and exit onto Silber Way. Because of the angle at the intersection of Deerfield Street and the service alley, delivery trucks will not be able to turn right

from Deerfield Street southbound (from Bay State Road). Therefore, delivery trucks will be required to access the site from Deerfield Street northbound via Kenmore Square/Commonwealth Avenue. This access pattern will reduce the number of truck trips on Bay State Road substantially.

Truck turning analyses for vehicles accessing the loading dock and service areas of the building have been performed and the results are illustrated on Figure 8-3, Truck Loading Dock and Figure 8-4, Dumpster Access. Figure 8-3 shows how a WB-40 truck will approach the site and back into the loading dock. Figure 8-4 illustrates how a large trash hauling truck will approach the site and back-up to the trash dumpsters/compactors.

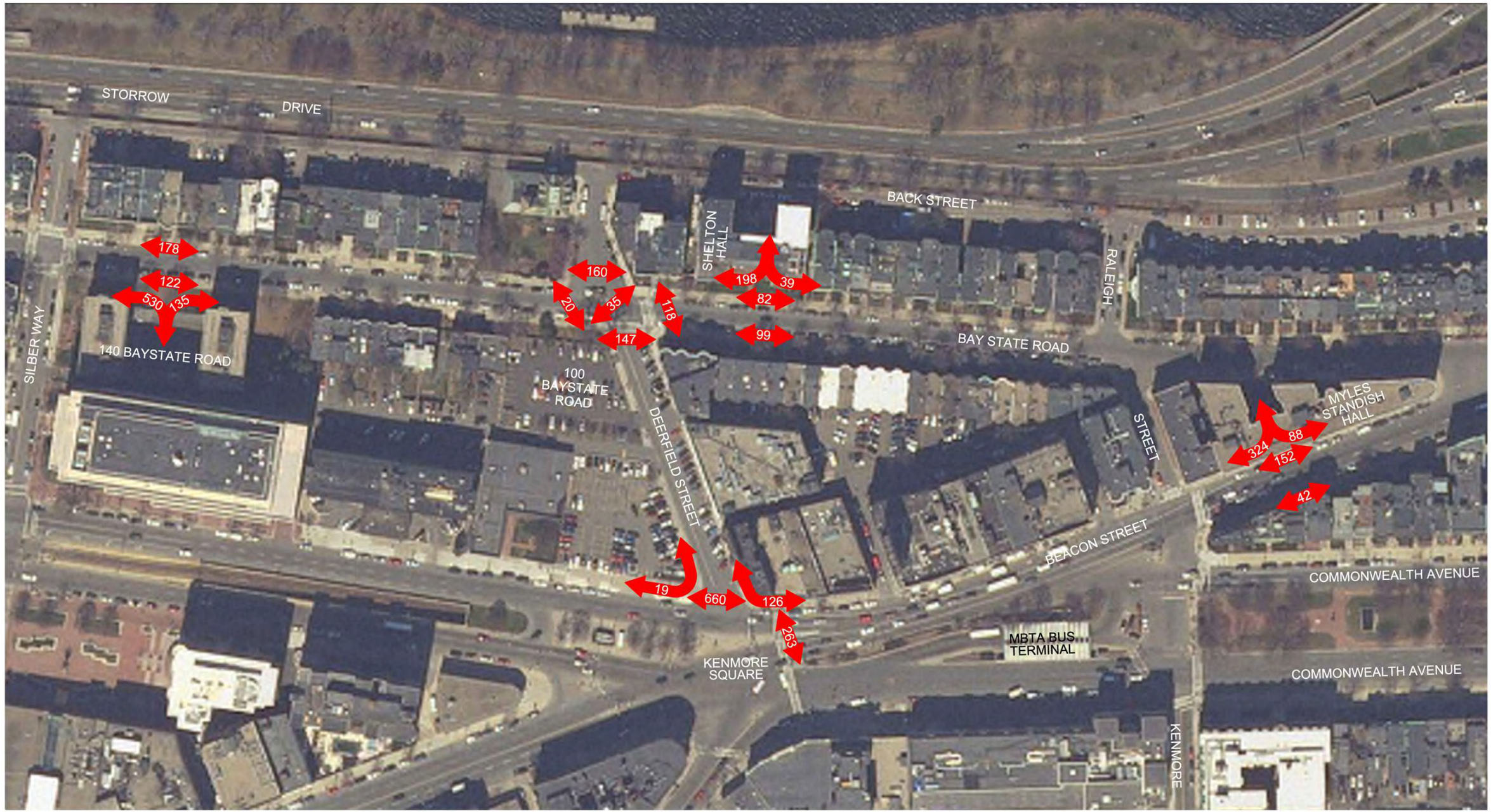
When exiting the site, trucks will proceed west on the service alley turning left onto Silber Way towards Commonwealth Avenue. Today, the larger delivery and waste pick-up trucks are able to make that turn after they service the existing dining facility at 140 Bay State Road, Consequently, it is anticipated that larger trucks leaving the proposed facility will also not have any problems making that turn. The egress pattern for the proposed facility will also result in a reduction in truck trips on Bay State Road.



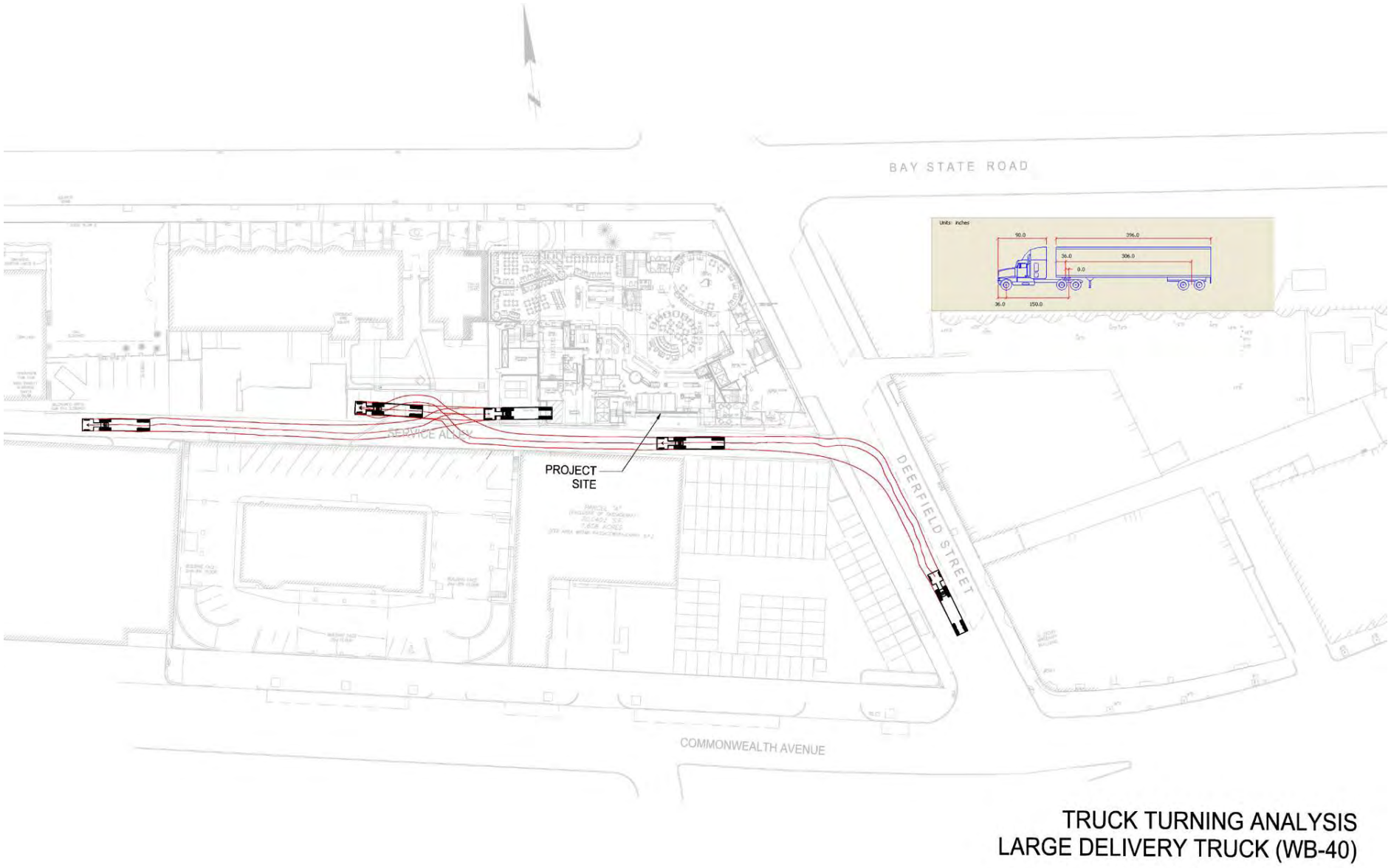
Note: Pedestrian Counts Taken on Wednesday, April 14, 2010

Boston University
BOSTON, MASSACHUSETTS

Figure 8-1
2010 Weekday, Pedestrian Volumes, 12:00 PM - 1:00 PM
source: Tetra Tech Rizzo, April 14, 2010

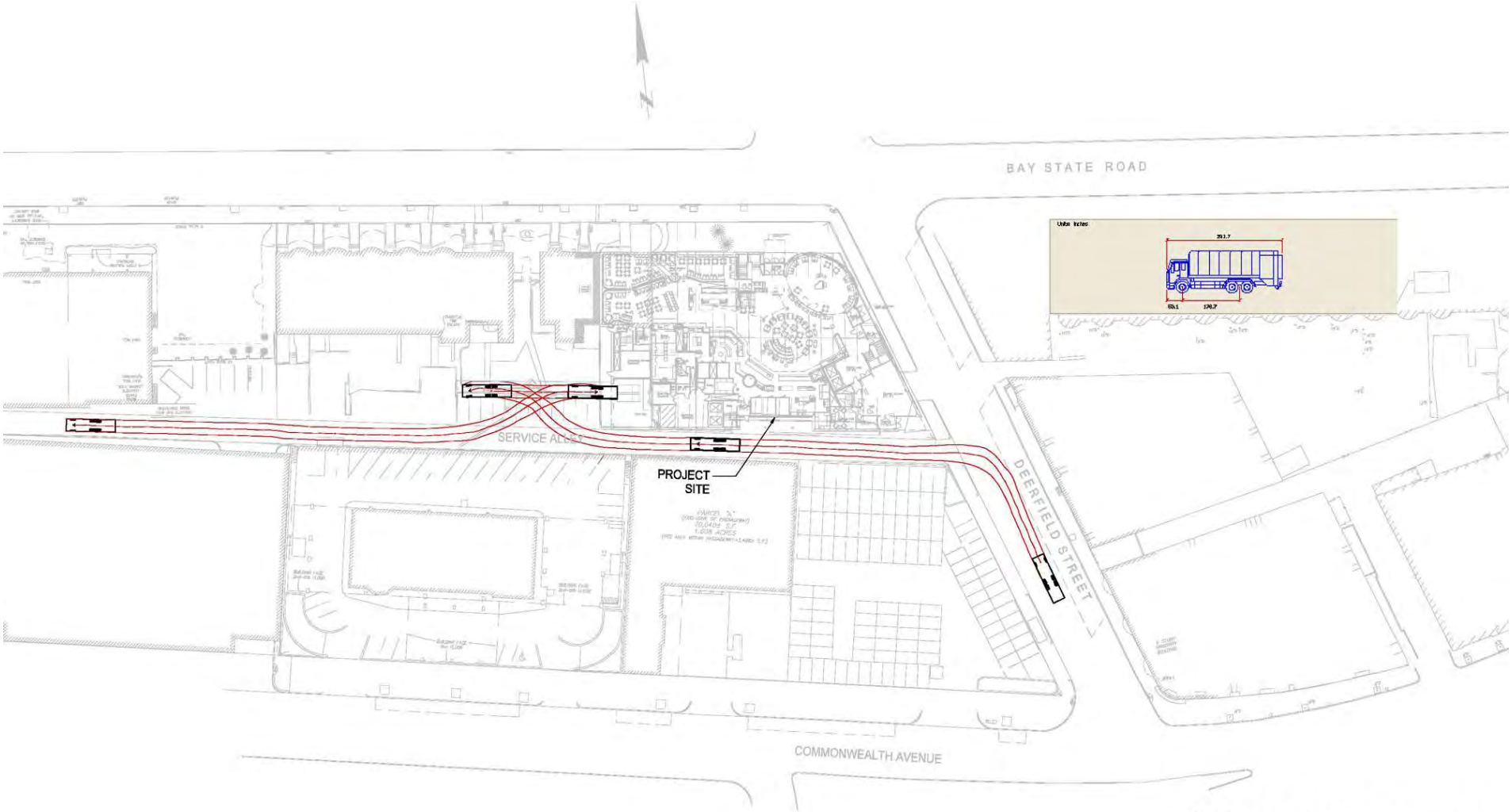


Note: Pedestrian Counts Taken on Wednesday, April 14, 2010



Boston University
BOSTON, MASSACHUSETTS

Figure 8-3
Truck Loading Dock
source: Tetra Tech Rizzo, 2010



Boston University
BOSTON, MASSACHUSETTS

Figure 8-4
Dumpster Access
source: Tetra Tech Rizzo, 2010

Appendix 1, BRA Scoping Determination

Boston Redevelopment Authority

Boston's Planning & Economic Development Office

Thomas M. Menino, *Mayor*
Clarence J. Jones, *Chairman*
John F. Palmieri, *Director*

One City Hall Square
Boston, MA 02201-1007
Tel 617-722-4300
Fax 617-248-1937

June 22, 2010

Robert Donahue, Director of City Relations
Boston University
Government & Community Affairs
121 Bay State Road
Boston, Massachusetts 02215

Dear Mr. Donahue:

Re: **Boston University, East Campus Student Services Center, 100 Bay State Road and Two (2) Year Institutional Master Plan Extension Request Boston, Massachusetts**
Institutional Master Plan Notification Form for the Proposed 99,600 Square Foot Structure Providing State of the Art Dining Facilities and Student and Faculty Services – Scoping Determination

Please find enclosed the Scoping Determination for the East Campus Student Services Center located at 100 Bay State Road consisting of 99,600 square foot structure that will provide undergraduate academic services and include a state of the art dining facilities. The Scoping Determination describes information required by the Boston Redevelopment Authority in response to the Institutional Master Plan Notification Form, which was submitted under Article 80 of the Boston Zoning Code on May 10, 2010 and noticed in the *Boston Herald* on the same day. Additional information may be required during the course of review of the proposal.

If you have any questions regarding the Scoping Determination or the review process, please contact me at (617) 918-4317.

Sincerely,

Jay Rourke
Senior Project Manager

Cc. James M. Tierney
Heather Campisano

BOSTON REDEVELOPMENT AUTHORITY
SCOPING DETERMINATION

FOR

BOSTON UNIVERSITY
INSTITUTIONAL MASTER PLAN FIRST AMENDMENT

FOR THE

EAST CAMPUS STUDENT SERVICE CENTER

PREAMBLE

Boston University ("BU" or "Proponent") completed an Institutional Master Plan for its Charles River Campus in 2003. The Boston Redevelopment Authority ("BRA") Board of Directors approved the Boston University Charles River Campus 2003-2010 Master Plan (the "Master Plan") on March 25, 2003 and the Boston Zoning Commission approved it on April 16, 2003. Under the Boston Zoning Code, a Master Plan has a dual purpose of meeting the needs of the institution and relating the campus to its context in a positive way. BU currently proposes its First Amendment to the IMP with East Campus Student Service Center (the "Proposed Project"). The Proposed Project was not referenced in the IMP but demand and consolidation of existing facilities in the area has prompted this First Amendment to the IMP. The BRA congratulates BU for implementing the Proposed Project and achieving their goals. BU is required to respond to the specific elements outlined in this Scoping Determination. Written comments constitute an integral part of the Scoping Determination and should be responded to in the First Amendment to the BU IMP (the "IMP First Amendment").

Specific concerns below are highlighted for additional emphasis and consideration:

- A detailed rendering showing the Proposed Project in the context of the area is required in the DPIR and the IMP First Amendment showing how it relates to the rest of the campus.

- With any future development projects highlighted in the IMP First Amendment, BU should consider and document how it would use the Leadership in Energy and Environmental Design (LEED) standards. Integrating green building components into the planning and design of new projects improves energy efficiency and promotes responsible and sustainable building practices.

- Groundwater is a great concern to the city as a whole. Proper steps need to be taken to ensure the safety of the Proposed Project and neighboring buildings so that no water depletion occurs during construction or in the future.

- Construction Impacts. The Development Team should take a pro-active approach to how the Proposed Project will be constructed. As with any urban development there needs to be a balance of construction related inconveniences and the day to day living, working, commuting and sightseeing needs of people who use the site. A detailed approach to the construction management needs to be included in the DPIR.

- The Proponent has requested a two (2) year extension of the IMP as part of the DPIR and the IMP First Amendment to the 2003 IMP. The BRA requests that near the expiration of the two (2) year extension that the Proponent will return to the BRA ready to do a new ten (10) year IMP that will outline the programmatic and development goals of the university. The new ten (10) year IMP should be prepared to go into depth on the current state of the university and all intended projects for the next decade. Language in the DPIR and the IMP First Amendment should reflect this promise.

SUBMISSION REQUIREMENTS

FOR

THE BOSTON UNIVERSITY
INSTITUTIONAL MASTER PLAN FIRST AMENDMENT

The Boston Redevelopment Authority ("BRA") is issuing this Scoping Determination ("Scope") pursuant to Article 80B and Article 80D-5.3 of the Boston Zoning Code ("Code"). On May 10, 2010, Boston University ("BU" or "Proponent") filed an Institutional Master Plan Notification Form ("IMPNF") with the BRA seeking an Adequacy Determination for the approval of an amendment to the Boston University Institutional Master Plan ("IMP" or "Master Plan"), approved in 2003. The proposed IMP First Amendment contemplates the new East Campus Student Services Center consisting of 99,600 square foot structure that will provide undergraduate academic services and include state of the art dining facilities. Therefore, the scope of review for the IMP First_ Amendment shall be limited to consideration of the cumulative impacts of the proposed new East Campus Student Services Center (the "Proposed Project")

when added to the existing uses and other institutional projects in the Master Plan. However, the Proponent is also required to provide additional information and materials as outlined in this Scope. The IMP First_ Amendment, along with any additional or supplemental information required by the BRA, together with the approved Master Plan will be acted on as the Amended Master Plan. BU is also requesting a two (2) year extension of their approved IMP. Notice of the receipt by the BRA of the IMPNF was published in the Boston Herald on May 10, 2010 initiating the public comment period that ended on June 11, 2010.

The Scope requests information required by the BRA for its review of the proposed IMP First Amendment in connection with the following:

1. Approval of the IMP First Amendment pursuant to Article 80D and other applicable sections of the Code;

2. Recommendation to the Zoning Commission for approval of the IMP First Amendment.

The IMP First Amendment should be documented in a report of appropriate dimensions and in presentation materials which support the review and discussion of the IMP First Amendment at public meetings. Sixty (60) copies of the full report should be submitted to the BRA. Twenty of those should be a full bound report and the remaining forty (40) should be submitted on CD.

I. SUMMARY OF BOSTON UNIVERSITY MASTER PLAN

It is useful for BU to provide a summary of the Master Plan in the IMP First Amendment. The summary should include, but not be limited to, the following elements:

- The mission of BU should be described. The description should articulate the larger, as well as the local, aspects of the mission;
- The University's role in the local community should be discussed. Services to the local community are of particular interest.

In addition, if possible, it would be useful for BU to provide the following information, but it is not necessary to supply this information now as long as it is included in the new ten (10) year Institutional Master Plan to be completed by BU at the conclusion of the two (2) year extension to the IMP:

- The population served by BU and the major programs conducted need to be described;
- BU should describe not only those elements of the IMP First Amendment but also anticipated future developments beyond the Master Plan timeframe;

- The longer term needs, goals, and objectives of the Master Plan should be reiterated in sufficient detail; and
- The Master Plan's expected growth in the number of students should be provided along with any change in the number since the Master Plan was approved. In addition to the expected growth, it is useful for BU to provide the most recent breakdown of student population and the percentage change over the years.

II. FIRST AMENDMENT TO BOSTON UNIVERSITY MASTER PLAN

SUBMISSION REQUIREMENTS

A. IMP First Amendment Description

A description of the Proposed Project as outlined in the IMPNF should be summarized. Included in the description should be current and future trends that are impacting BU and shaping program objectives, including a projection of changes on campus populations, new or expanded programs, research, housing, parking, BU enterprises, and other activities that require space on the BU campus.

B. Public Notice

The Proponent will be responsible for preparing and publishing in one or more newspapers of general circulation in the city of Boston a Public Notice of the submission of the IMP Amendment to the BRA as required by Section 80A-2. This Notice shall be published within five (5) days after the receipt of the IMP First Amendment by the BRA. Public comments shall be transmitted to the BRA within sixty (60) days of the publication of this notice, unless a time extension has been granted by the BRA in accordance with the provisions of Article 80 or to coordinate Boston University Institutional Master Plan Review.

APPENDIX 1
COMMENTS FROM CITY PUBLIC AGENCIES

APPENDIX 2
COMMENTS FROM THE PUBLIC

Boston

Groundwater Trust

234 Clarendon St., Third Floor, Boston, MA 02116
617.859.8439 voice • 617.266.8750 fax
bostongroundwater.org

May 24, 2010

Mr. Jay Rourke, Senior Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201-1007

Subject: Boston University East Campus Student Center

Dear Mr. Rourke:

Thank you for the opportunity to comment on the IMPNF for the new student center at Boston University. The Boston Groundwater Trust was established by the City Council to monitor groundwater levels in sections of Boston where the integrity of building foundations is threatened by low groundwater levels and to make recommendations for solving the problem. Therefore, my comments are limited to groundwater related issues.

I appreciate the commitment by the proponent in the IMPNF to meet the standards required under Article 32 of the Zoning Code in the Groundwater Conservation Overlay District both in terms of recharge and of designing the project so that it cannot cause a reduction in groundwater levels. I look forward to seeing more details in the Draft Project Impact Report.

The proponent has committed to installing a new groundwater observation well before construction in a location that will be permanently accessible to the Trust so that we can incorporate it into our network. They have also committed to monitor this and other existing wells before and during construction to be sure that there are no reductions in levels. As discussed in the scoping session, and agreed to by the proponent, these readings should be shared on an ongoing and prompt basis with the Authority and the Trust.

In the IMPNF, the proponent has committed to fully waterproofing the basement walls and slab and that there will be no long term groundwater pumping. I look forward to the more detailed engineering certification of how the design meets the criteria in the stamped certification from the engineer.

Since this is an Institutional Master Plan project, it will not go to the Board of Appeals. Therefore, I believe that the engineer's certification and the BWSC approval of the recharge system need to be in place before BRA approval. I look forward to working with the proponent and the Authority to assure that this project can have only positive impacts on area groundwater levels.

Very truly yours,

Elliott Laffer
Executive Director

Cc: Kathleen Pedersen, BRA
Maura Zlody, BED

APPENDIX 3
EXAMPLES OF PUBLIC NOTICE

SAMPLE

PUBLIC NOTICE

The Boston Redevelopment Authority ("BRA"), pursuant to Article 80 of the Boston Zoning Code, hereby gives notice that an Institutional Master Plan Amendment was submitted by the NAME OF INSTITUTION, on MONTH, DAY, AND YEAR. The NAME OF INSTITUTION Institutional Master Plan Amendment (the "IMP Amendment") describes currently proposed institutional projects and identifies potential future projects on the NAME OF INSTITUTION campus. Public comments on the IMP Amendment, including the comments of public agencies, should be transmitted to Jay Rourke, BRA, Boston City Hall, Boston, MA 02201, within sixty (60) days of this notice or by _____. Approvals are required of the BRA pursuant Article 80 for the issuance of an Adequacy Determination by the Director of the BRA for the approval of the IMP Amendment. The IMP Amendment may be reviewed or obtained at the Office of the Secretary of the BRA, Room 910, Boston City hall, Boston, Boston, MA 02201 between 9:00 AM and 5:00 PM.

BOSTON REDEVELOPMENT AUTHORITY
Brian T. Golden, Secretary

APPENDIX 4

SUBMISSION REQUIREMENTS FOR DESIGN DEVELOPMENT
AND CONTRACT DOCUMENTS SUBMISSIONS

Phase II Submission: Design Development

1. Written description of the Proposed Project.

2. Site sections.

3. Site plan showing:

    a. Relationship of the proposed building and open space and existing adjacent buildings, open spaces, streets, and buildings and open spaces across streets.

    b. Proposed site improvements and amenities including paving, landscaping, and street furniture.

    c. Building and site dimensions, including setbacks and other dimensions subject to zoning requirements.

4. Dimensional drawings at an appropriate scale (e.g., 1" = 8') developed from approved schematic design drawings which reflect the impact of proposed structural and mechanical systems on the appearance of exterior facades, interior public spaces, and roofscape including:

    a. Building plans

    b. Preliminary structural drawings

    c. Preliminary mechanical drawings

    d. Sections

    e. Elevations showing the Proposed Project in the context of the surrounding area as required by the Authority to illustrate relationships or character, scale and materials.

5. Large-scale (e.g., 3/4" = 1'-10") typical exterior wall sections, elevations and details sufficient to describe specific architectural components and methods of their assembly.

6. Outline specifications of all materials for site improvements, exterior facades, roofscape, and interior public spaces.

7. Eye-level perspective drawings showing the Proposed Project in the context of the surrounding area.

8. Samples of all proposed exterior materials.

9. Complete photo documentation (35 mm color slides) of above components including major changes from initial submission to the Proposed Project approval.

Phase III Submission: Contract Documents

1. Final written description of the Proposed Project.

2. A site plan showing all site development and landscape details for lighting, paving, planting, street furniture, utilities, grading, drainage, access, service, and parking.

3. Complete architectural and engineering drawings and specifications.

4. Full-size assemblies (at the project site) of exterior materials and details of construction.

5. Eye-level perspective drawings or presentation model that accurately represents the Proposed Project, and a rendered site plan showing all adjacent existing and proposed structures, streets and site improvements.

6. Site and building plan at 1" - 100' for Authority's use in updating its 1" = 100" photogrammetric map sheets.

Phase IV Submission: Construction Inspection

1. All contract addenda, proposed change orders, and other modifications and revisions of approved contract documents which affect site improvements, exterior facades, roofscape, and interior public spaces shall be submitted to the BRA prior to taking effect.

2. Shop drawings of architectural components which differ from or were not fully described in contract documents.

Appendix 2, Comment Letters

Boston Water and Sewer Commission

980 Harrison Avenue
Boston, MA 02119-2540
617-989-7000

June 9, 2010

Mr. Jay Rourke
Senior Project Manager
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Re: IMPNF/PNF-BU East Campus Student Services Center

Dear Mr. Rourke:

The Boston Water and Sewer Commission (BWSC) has reviewed the Institutional Master Plan Notification Form for Boston University and the Project Notification Form for the University's proposed East Campus Student Services Center. The purpose of the filing is to (1) renew the existing Boston University Charles River Campus Institutional Master Plan (IMP) for an additional period of two years; (2) to amend the IMP to include the Boston University East Campus Student Services Center (Services Center) as a Proposed Institutional Project under the IMP; and (3) to commence review of the proposed Services Center under Article 80B Large Project Review.

The proposed Services Center will consist of the construction of an approximately 99,600 square foot student services center at 100-108 Bay State Road. The Services Center will include academic related facilities, as well as a new dining facility. The new 36,000 square foot dining facility at the Student Center will result in the retirement and consolidation of antiquated facilities that are now located at The Towers at 140 Bay State Road, Shelton Hall at 91 Bay State Road and Myles Standish Hall at 610 Beacon Street.

The project site is served by two 8-inch BWSC water mains in Bay State Road and a 12-inch BWSC water main in Deerfield Street. The proposed connection is to the 8-inch water main in the southerly side of Bay State Road. For sanitary sewer service, the project site is served by an 18-inch BWSC sanitary sewer in Deerfield Street.

Most of the existing site is impervious with a paved parking lot and a small building. There is a small landscaped area along Bay State Road. There are no existing stormwater structures on the site. For drainage the project site is served by a 15-inch BWSC storm drain on Bay State Road and 108 x 132 – inch BWSC storm drain on Deerfield Street, both of which discharge to the Charles River. The proposed stormwater system design for the site is expected to include groundwater recharge, water quality management and a reduction of peak stormwater runoff from the existing conditions of this property. It is anticipated that roof runoff from the new building will be diverted into a groundwater recharge system within the green space along Bay State Road.

The proposed project site is located within the Groundwater Conservation Overlay District (GCOD). As such, the project will designed to comply with GCOD and City standards by establishing design and construction methodology that protects groundwater levels. Methods to assure that the project will not

result in any negative impacts to the groundwater levels will include fully waterproofed basement (walls and lowest level floor slabs) for the portion of the structure that extends below groundwater levels. The project will have no long term groundwater pumping.

The Commission submits the following comments regarding the proposed East Campus Student Services Center:

General

1. Before the proponent demolishes any existing structure, existing water and sewer connections to the structure must be cut and capped in accordance with Commission standards. The proponent must complete a Termination Verification Approval Form for a Demolition Permit, available from the Commission. The completed form must be submitted to the City of Boston's Inspectional Services Department before a Demolition Permit will be issued.

2. The proponent must submit a site plan and a General Service Application to the Commission for the proposed Services Center. The site plan must show the location of existing public and private water mains, sanitary sewers and storm drains serving the project site, as well as the locations of proposed service connections.

3. It is the proponent's responsibility to evaluate the capacity of the water, sewer and storm drainage systems serving the project site to determine if the systems are adequate to meet future project demands. With the site plan the proponent must provide an analysis of the impacts of the proposed project on the Commission's water, sewer and storm drainage systems.

4. With the site plan, the proponent must provide detailed and updated estimates for water demand, wastewater generation, and stormwater runoff for the proposed project. The amount of potable water required for landscape irrigation must be quantified and provided separately.

5. Any new, relocated, reconstructed or expanded water, sanitary sewer, or storm drainage pipes required to accommodate the project must be designed and constructed at the proponent's expense and in conformance with the Commission's Sewer Use and Water Distribution System regulations. The proponent should continue to keep the Commission apprised of any proposed plans regarding the sanitary sewer, storm drainage or drinking water systems.

6. To assure compliance with the Commission's requirements, the proponent should submit the site plan and General Service Application to the Commission for review when project design is 50 percent complete.

Sewage/Drainage

7. The project site is served by separate sewer and storm drain systems. Separate sanitary sewer and storm drain services must be provided from the new facility to the respective pipe in the street.

8. The site plan must show in detail how drainage from the building roof and from other impervious areas will be managed. Roof runoff and other stormwater runoff must be conveyed separately from sanitary waste at all times.

9. The Department of Environmental Protection (DEP), in cooperation with the Massachusetts Water Resources Authority (MWRA) and its member communities, are implementing a coordinated approach to flow control in the MWRA regional wastewater system, particularly the removal of extraneous clean water (e.g., infiltration/ inflow (I/I)) in the system. In this regard, DEP has been routinely requiring proponents proposing to add significant new wastewater flow to assist in the I/I reduction effort to ensure that the additional wastewater flows are offset by the removal of I/I. Currently, DEP is typically using a minimum 4:1 ratio for I/I removal to new wastewater flow added. The Commission supports the DEP/MWRA policy, and will require the proponent to develop a consistent inflow reduction plan.

10. The proponent must fully investigate methods for retaining stormwater on the project site before the Commission will consider requests to discharge additional stormwater to the Commission's system. Under no circumstances will stormwater be allowed to discharge to a sanitary sewer. A feasibility assessment for retaining stormwater on site must be submitted with the site plan.

11. The discharge of dewatering drainage to a sanitary sewer is prohibited by the Commission. The proponent is advised that the discharge of any construction site dewatering drainage to the storm drainage system requires a Drainage Discharge Permit from the Commission. If the dewatering drainage is contaminated with petroleum products for example, the proponent will be required to obtain a Remediation General Permit from Environmental Protection Agency (EPA) for the discharge.

12. In conjunction with the site plan and General Service Application the proponent will be required to submit a Stormwater Pollution Prevention Plan. The plan must:

    - Identify specific best management measures for controlling erosion and preventing the discharge of sediment, contaminated stormwater or construction debris to the Commission's drainage system when construction is underway.

    - Include a site map which shows, at a minimum, existing drainage patterns and areas used for storage or treatment of contaminated soils, groundwater or stormwater, and the location of major control or treatment structures to be utilized during construction.

    - Specifically identify how the project will comply with the Department of Environmental Protection's Performance Standards for Stormwater Management both during construction and after construction is complete.

Water

13. The Commission utilizes a Fixed Radio Meter Reading System to obtain water meter readings. Where a new water meter is needed, the Commission will provide a Meter Transmitter Unit (MTU)

and connect the device to the meter. For information regarding the installation of MTUs, the proponent should contact the Commission's Meter Installation Department.

14. The proponent should explore opportunities for implementing water conservation measures in addition to those required by the State Plumbing Code. In particular the proponent should consider outdoor landscaping which requires minimal use of water to maintain. If the proponent plans to install in-ground sprinkler systems, the Commission recommends that timers, soil moisture indicators and rainfall sensors be installed. The use of sensor-operated faucets and toilets in common areas of buildings should also be considered.

Thank you for the opportunity to comment on this project.

Yours truly,

John P. Sullivan, P.E.
Chief Engineer

JPS/as
cc:

M. Zlody, Boston Env. Dept.
P. Laroque, BWSC
P. Cusato, Vice President for Auxiliary Affairs, BU
G. Nicksa, Vice President for Operations, BU
J. Fay, Fort Point Associates, Inc.

Appendix 3, Draft Construction Management Plan

Draft Construction Management Plan

1. Introduction

This Construction Management Plan (CMP), submitted to Boston Transportation Department (BTD) for their approval prior to the start of construction, includes specific mitigation measures and staging plans to minimize impacts to abutters. The Construction Manager (Suffolk Construction) will be bound by the CMP.

2. Construction Activity Schedule

The construction period for this project is expected to be approximately 20 months in duration. It is anticipated that construction will start on or about 4th quarter 2010 and last through 3rd Quarter 2012. Typical construction hours will be from 7:00 am to 6:00 pm, Monday through Friday. Weekend or off hours activity would be the exception and would take place to minimize impact on vehicular and pedestrian traffic during delivery of large construction equipment (i.e. cranes, excavation equipment, etc.) as may be necessary to meet permitting restrictions. No truck idling, construction activity or staging after 6:00 pm and before 7:00 am will be allowed.

The anticipated schedule of major construction activities is as follows:

Time Period	**Activity**
November 2010 – May 2011	Demolition, excavation, foundations, site work
May 2011 – August 2011	Steel erection
August 2011 – March 2012	Exterior walls, roof, windows, etc.
March 2012 – August 2012	Interiors, finishes, testing

3. Construction Staging Area

The proposed staging plan is designed to isolate the construction while providing safe access for pedestrians and automobiles during normal day to day activities and emergencies.

The project at 100 Bay State Road consist of demolition of the existing building on the property and constructing a new structure containing student dining facilities and University office spaces. The project has frontage on Bay State Road and on Deerfield Street. There is a common alley at the south property line that is shared and access will be maintained throughout the course of construction.

A six foot high chain link fence will be placed along the entire perimeter of the jobsite. Vehicular access into the site will be thru two openings in the fence at both ends of Deerfield Street within the jobsite boundaries.

All construction material delivery trucks will be directed to the gated delivery points during the construction period. During the demolition phase, trucks and equipment will follow the designated truck route, as described below.

During the excavation phase, the same procedure will be used. Trucks will not be allowed to park or idle on the neighborhood streets. For major deliveries, such as steel, large pieces of mechanical equipment, etc., an offsite staging area will be utilized. The exact location will be determined as these major trades are purchased. Specific language regarding the locations and the fact that no “shaking out” or “staging” of materials will be allowed in the neighborhood streets will be specifically called out in all subcontracts. The location of any and all staging areas will be forwarded to BTD for record. A wheel wash station will be located at the entry/exit to the site and adjacent streets/sidewalks will be swept as necessary to minimize accumulations of dirt and dust. Mechanical sweeping will be utilized continuously during this phase.

During concrete placements for the majority of the building, the concrete pump will be parked inside the south Deerfield Street entrance, and concrete trucks, dispatched one at a time, will back up to the pump hopper from Deerfield Street, assisted by the detail officer. Trucks will not be allowed to wash out on site.

Steel deliveries will be staged in the drive lane on Deerfield Street. Deliveries will arrive one at a time to the site, to insure that no trucks are parked and/or idling in the street. A mobile crane will be situated south of the building utilizing the parking lane of Bay State Road and will pick steel from the trucks staged in the Deerfield Street drive lane. (See Figure CMP-1, Truck Turning Analysis.)

4. Perimeter Protection/Public Safety

The construction manger will work to ensure the staging areas minimize impact to pedestrian and vehicular flow. The specific configurations of staging and pedestrian access around the site will vary depending on the phase of work being performed.

In general, secured fencing will be used to isolate construction areas from pedestrian traffic. Police details will be provided as needed to facilitate traffic flow. Construction procedures will be designed to meet all OSHA safety standards for specific site construction activities.

Appropriate signage and temporary crosswalks will direct all pedestrians safely around the construction jobsite and activities. On Deerfield Street a temporary crosswalk will be installed south of the alley and pedestrian traffic directed to the east side of Deerfield Street. Similarly, a

temporary crosswalk will be installed on Bay State Road at the western end of the project site and pedestrian traffic routed from the south sidewalk to the north sidewalk. (See Figure CMP-2, Draft Site Logistics Plan.

Each subcontractor will implement and manage its own Safety and Health Program for the project. These programs will be reviewed, and compliance insured by Suffolk Construction's field staff and Safety Department. This program will insure that the subcontractor's employees, subcontractors and suppliers, regardless of tier, know and understand the complete safety and health requirements of the project.

Snow removal and ice treatment will be provided on the surrounding sidewalks, as will trash and debris clean up.

Adequate site lighting will be provided until the permanent street lighting is installed.

5. Material Handling/Construction Waste

Suffolk Construction will take an active role in with regard to the processing and recycling of construction waste. The disposal contract will include specific requirements that will insure that procedures allow for the necessary segregation, reprocessing, reuse and recycling of materials. For those materials that cannot be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per DEP's Regulations for Solid Waste Facilities, 310 CMR 16.00.

6. Construction Traffic Impacts

<u>Construction Trip Generation and Worker Parking</u>

The number of workers required during the construction will vary with an estimated average daily workforce of 120 during the peak of construction. Because the workforce will arrive prior to the AM peak traffic period and depart prior to the PM peak period, these trips are not expected to have an appreciable impact on traffic conditions. No personal vehicles will be allowed to park at the project construction site or in the adjacent neighborhood. Additionally, jobsite personnel will be encouraged to utilize public transportation. Due to the proximity of Kenmore Square, and connections to three Green Line branches and several MBTA bus routes, substantial level of public transportation use is anticipated by the workers. Lock-up facilities for work tools will be provided to make public transportation more convenient and desirable for workers. Terms and conditions related to workforce parking and public transportation use will be written into each subcontract.

Should some workers choose to drive to the site, there is available parking at two off-street commercial parking lots owned by the University; the lot at the corner of Deerfield Street and

Commonwealth Avenue and the lot located at the corner of Commonwealth Avenue and Granby Street. Both lots are pay as you go facilities and are not currently fully utilized during the week. Therefore, on-street parking at meters along Bay State Road is unlikely to be affected by workers at the site.

Truck Routes and Volumes

Truck traffic will vary throughout the construction period, depending on the activity. It is expected that the daily truck traffic will range on average between five to eight trucks spread evenly throughout the day. The exception to this will be during the excavation phase when an average of approximately 15 trucks, again spread evenly throughout the day, can be expected.

The anticipated truck routes to the site are shown in Figure CMP-3, Construction Truck Approach Routes. Trucks approaching from the west on I-90 will be directed to exit at the Allston/Brighton tolls to Cambridge Street WB to Harvard Ave. SB to Brighton Ave. EB to Commonwealth Avenue EB to Kenmore Square to Deerfield St. Trucks approaching from the south will be directed to exit the Southeast Expressway (I-93) at the Mass. Ave. Connector to Mass. Ave. NB to Beacon Street WB to Kenmore Square to Deerfield Street. From the north (I-93 or Route 1) trucks will be directed one of two ways: I-93 SB to I-90 to the Allston/Brighton tolls then follow the route designated from the west, or I-93 to Albany Street/SB Frontage Rd exit to the Mass. Ave. connector then follow the designated route from the south.

Typical truck deliveries of all materials, including concrete, will arrive and depart the site via Commonwealth Avenue and Deerfield Street. Construction truck traffic will be prohibited from using Bay State Road or Silber Way approaching or departing the site. The exception to this prohibition will be for the delivery of steel during the steel erection period (May 2011 to August 2011). During this time frame approximately two (2) steel deliveries per day are expected. The steel will arrive on combination vehicles, some as large as WB-62. For these deliveries, it is anticipated that the trucks will approach the site using the truck routes described above. In the immediate vicinity of the site, the trucks will enter the work site via Kenmore Square/Deerfield Street, however, because of their size, they will not be able to turn around and exit the site via Deerfield Street. Therefore, these two trucks per day will be required to exit the site via Bay State Road and Silber Way. Once at the intersection of Silber Way and Commonwealth Avenue, the exiting steel delivery trucks can turn right or left onto Commonwealth Avenue eastbound or westbound to exit the area. (See Figure CMP-4, Construction Truck Exit Routes.) During the 3 – 4 month steel erection period, only the large steel delivery trucks will be permitted to use the portion of Bay State Road between Deerfield Street and Silber Way when exiting the site. All other construction-related vehicles will continue to enter/exit the site via Deerfield Street.

Please note that specific truck routes will be discussed with Boston Transportation Department and will be reflected on the staging and logistics drawings to be included in the Final CMP to be approved by the BTD. Construction contracts will include clauses restricting truck travel to BTD requirements. Primary access to and egress from the site will be restricted to the gates at locations approved by BTD.

On-Street Parking

The proposed CMP will have an impact on existing parking meters on Deerfield Street and Bay State Road. The existing angled parking for 8 cars on the east side of Deerfield Street will be converted to parallel parking for 4 cars to create adequate maneuvering space for construction vehicles, thereby keeping truck traffic off the portion of Bay State Road between Beacon Street/Charlesgate and Deerfield Street. The net loss in parking meters on Deerfield Street (4 meters) will be rented by the project.

Approximately eight to ten parking meters will also need to be rented on the south side of Bay State Road in front of the project site to accommodate the proposed construction fence and work zone. An additional six to eight meters will likely need to be rented on the north side of Bay State Road opposite the construction zone in order to provide adequate width for safe and efficient vehicular operations on Bay State Road.

In order to accommodate the turning requirements of the WB-62 steel delivery trucks when they are exiting the site, additional parking meters will need to be rented during just the steel delivery phase of the project. It is anticipated that approximately two to four parking spaces on the north side of Bay State Road at Silber Way will need to be rented during this period, as well as approximately two to four spaces on the west side of Silber Way just south of the intersection with Bay State Road.

7. Special Provisions

Suffolk will coordinate with the BTD regarding any special provisions that may be required by the BTD for construction vehicle operations on Red Sox game days.

Likewise, Suffolk will coordinate with the University regarding special provisions governing construction activities during University events, such as Commencement.

8. Construction Air Quality

To reduce emission of fugitive dust and minimize impacts on the location environment, the construction contractor will adhere to a number of strictly enforced mitigation measures. These include:

- Wetting agents will be used regularly to control and suppress dust that may come from the construction materials.
- All trucks for transportation of construction debris will be fully covered.
- Actual construction practices will be monitored to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized and to ensure that any emissions of dust are negligible.
- Street and sidewalks will be cleaned periodically to minimize dust accumulations. A wheel wash station will be located at the Deerfield Street entrances/exits to the site during earthwork activities.

9. Construction Noise

The project will require the use of equipment that can be heard from off site locations. Construction of this project is expected to commence in January 2011 and be completed in August 2012, a period of approximately 20 months. This project is committed to mitigate noise impacts caused by the construction of the project. Increased community sound levels, however, are an inherent consequence of construction activities. The area currently has ambient noise due to urban activities including traffic noise from Kenmore Square and Storrow Drive.

The proposed construction process for the project has been designed around the constraints at the site. The exact pieces of equipment will be finalized after subcontractor selection is completed. Construction will occur during the daytime hours as defined by the Boston Noise Regulation (7:00 am to 6:00 pm except Sundays). In some instances, second shifts may be required. When these events arise, all required permits will be in place and the Department of Neighborhood Services will be notified.

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

- Scheduling of work during daytime hours. Project construction hours are planned to be from 7:00 am to 6:00 pm. This includes “start-up” time.
- Using appropriate mufflers on all equipment and providing ongoing maintenance of intake and exhaust mufflers.
- Maintaining muffler enclosures on continuously operating equipment, such as air compressors and welding generators.
- Replacing specific construction operations by less noisy ones where feasible and practical.
- Selecting the quietest practical items of equipment – e.g., electric instead of diesel powered equipment.
- Selecting equipment operations to keep average noise levels low, to synchronize noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels.
- Turn off idle equipment.

10. Rodent Control

The City of Boston has declared that the infestation of rodents in the City is a serious problem. In order to control this infestation, the City enforces the requirements established under the Massachusetts State Sanitary Code, Chapter 11, 105 CMR 410.550 and the State Building Code, Section 108.6. Policy Number 87-4 (City of Boston) established that extermination of rodents shall be required for issuance of permits for demolition, excavation, foundation and basement rehabilitation. The proposed project will develop a rodent control program prior to its construction start. The program will include performance of extermination and control procedures on a bi-weekly basis, and the placement of tamper resistant bait boxes around the perimeter of the site.

11. Geotechnical Impacts and Monitoring

Excavation for the project is required for foundations and to accommodate the one level below grade. Support of excavation will be required due to the depth of excavation, proximity of existing structures and lack of lay back area. It is anticipated that driven sheet piles will be used as the earth support system with cross-lot braces for support. Piles will be driven rather than vibrated in order to minimize impact on adjacent structures and utilities. The Owner will conduct a full existing conditions survey of the existing structures prior to the start of construction, with follow up on completion.

12. Utilities

Utility tie-ins will take place at both the Bay State Road and Deerfield Street sides of the site. Sewer, drainage, domestic water, fire protection water, telephone, gas, low voltage and electric will be tied in to the existing infrastructure.

The following new utilities will be connected to the new building:

Service	**Company**	**Target Date**
Water	BWSC	TBD
Sewer	BWSC	TBD
Gas	Keyspan	TBD
Electric	Nstar	TBD
Telephone	Verizon	TBD

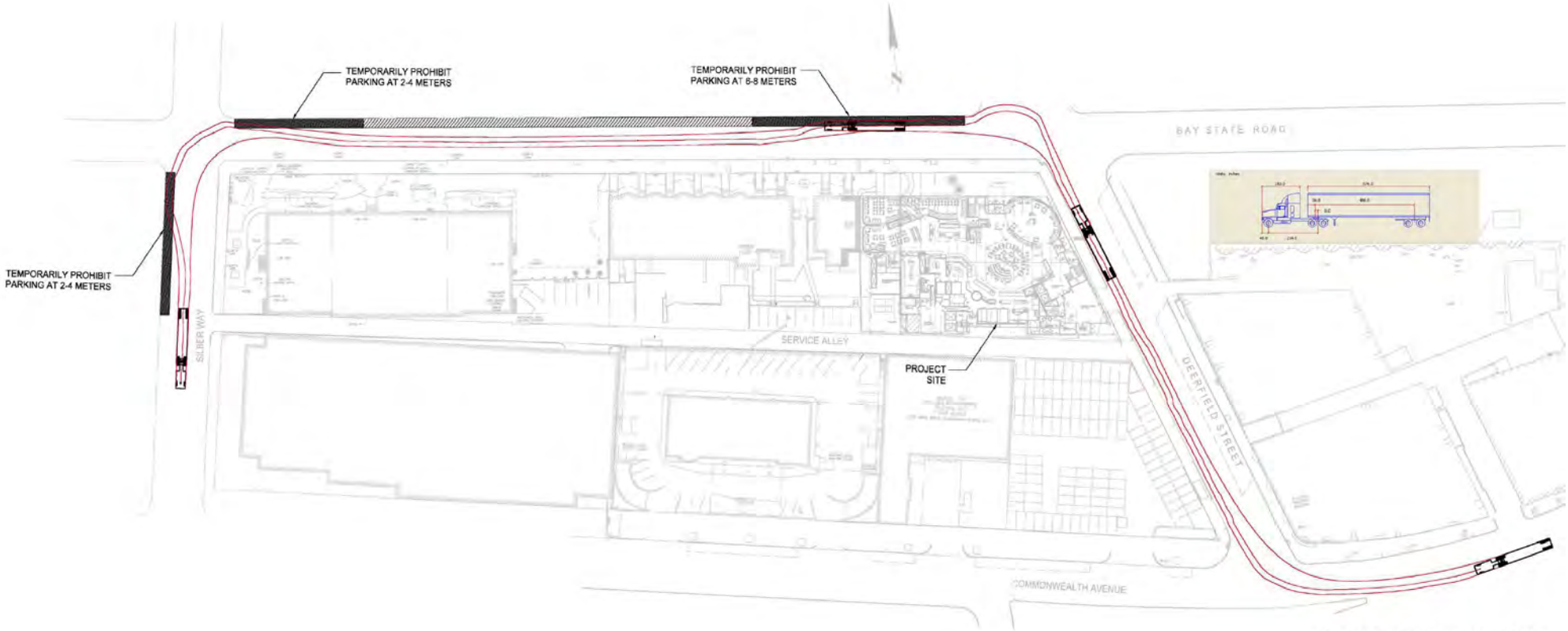
Specific traffic management plans will be developed for the work required to perform these tie-ins. Connections to the existing services will be coordinated with the proper utilities and their respective contractors as necessary. All shutdowns will be arranged with affected parties and proper notice will be given prior to any shutdowns. Any and all work requiring a BTD Permit will be approved in writing by the controlling contractor, Suffolk Construction, at the time of permit application. The written approval of Suffolk Construction will be presented to BTD by the contractor performing the work at the time of application of permit to BTD.

13. Groundwater Impacts

The construction of the project is not expected to impact area groundwater levels. Dewatering will be required inside the excavation to remove any rainwater or surface water runoff during excavation. Any groundwater removed from the excavation will be discharged to a catch basin under a BWSC discharge permit provided by the Owner. Water is assumed to be non-contaminated and treatment is limited to filtering. Monitoring will be done per contract specifications.

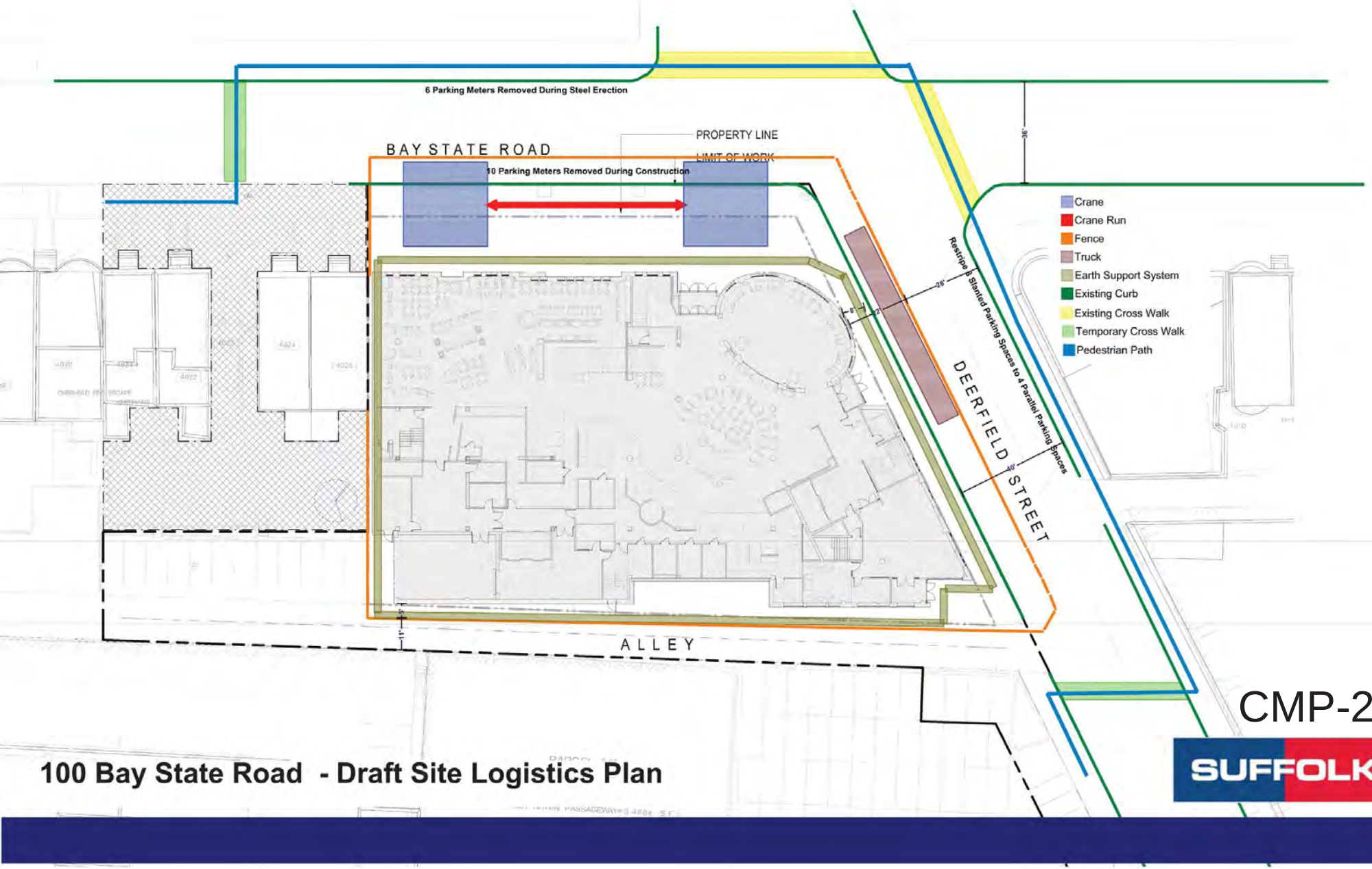
14. Emergency Contacts

A 24 hour emergency contact list will be distributed to all parties involved in the project. Additionally, appropriate signage (BTD-CWS) will be displayed at both gate locations.



TRUCK TURNING ANALYSIS
STEEL DELIVERY TRUCK (WB-62)

CMP-1



CMP-2

100 Bay State Road - Draft Site Logistics Plan

SUFFOLK

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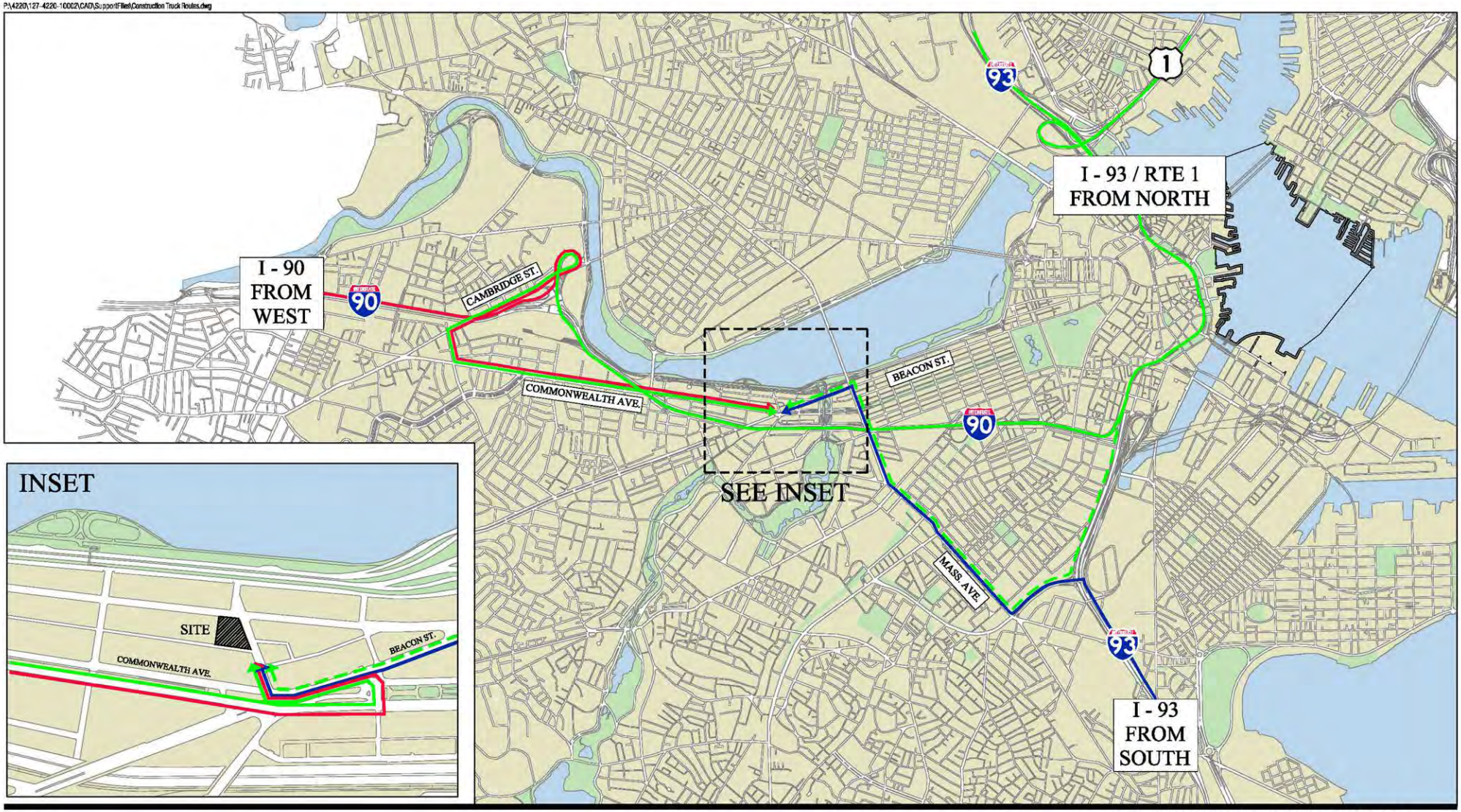


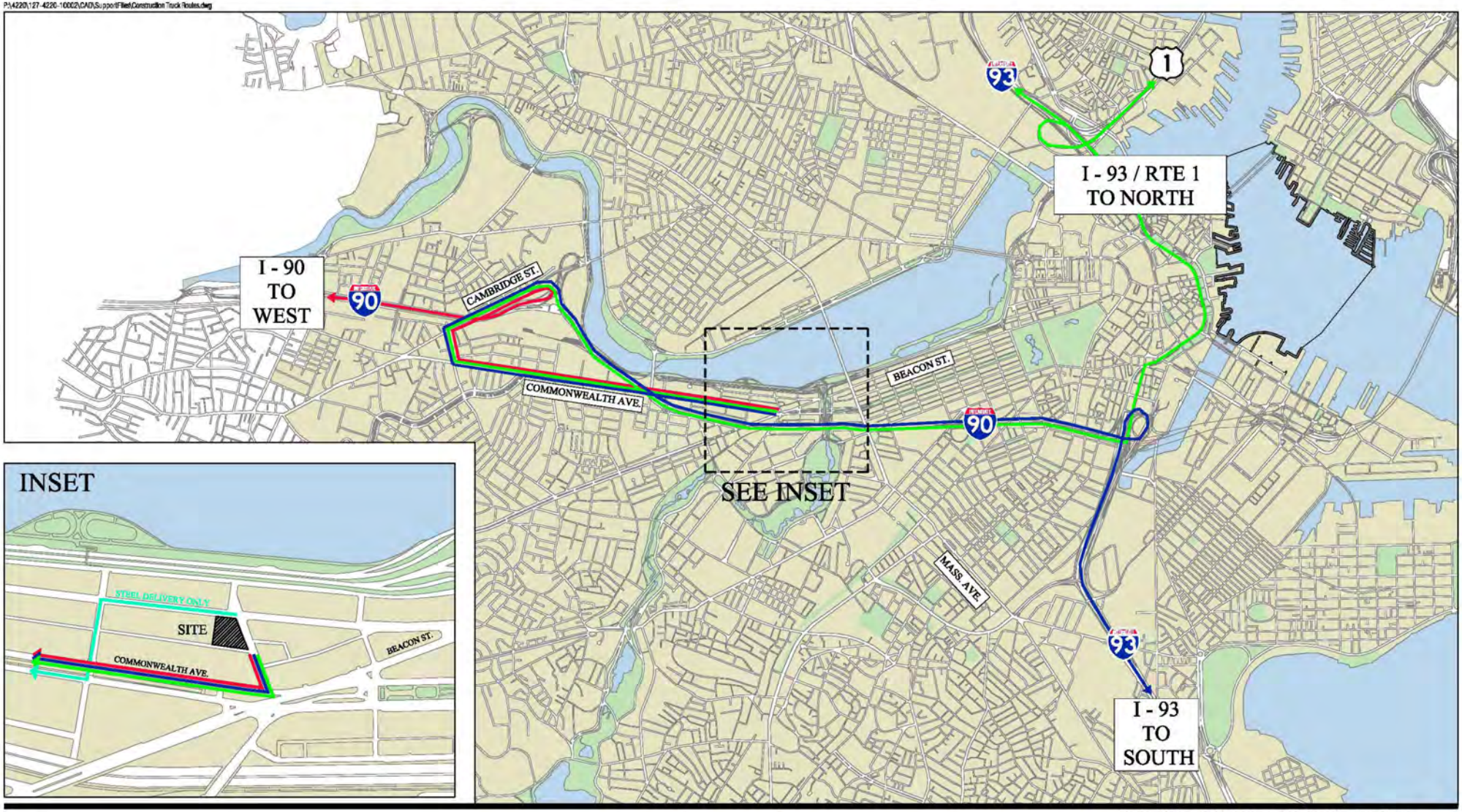
Not to Scale

TETRA TECH RIZZO

Boston University East Campus Student Services Center
Boston, Massachusetts

Construction Truck
Approach Routes

CMP-3



Not to Scale

TETRA TECH RIZZO

Boston University East Campus Student Services Center
Boston, Massachusetts

Construction Truck
Exit Routes

CMP-4

Appendix 4, Pedestrian Level Wind Analysis

A QUALITATIVE ASSESSMENT OF PEDESTRIAN LEVEL WINDS FOR THE PROPOSED BOSTON UNIVERSITY STUDENT SERVICES CENTER IN THE KENMORE SQUARE ARAE OF BOSTON, MASSACHUSETTS

BY FRANK H. DURGIN, P.E.

1.0 SUMMARY OF RESULTS

A qualitative assessment has been made to determine the effect of the proposed Boston University Student Services Center in the Kenmore Square area of Boston, Massachusetts, on pedestrian level winds (PLWs) in its vicinity. Results are obtained for both existing and build conditions.

None of the Thirty locations considered for either existing or build conditions is estimated to have PLWs that exceed the Boston Redevelopment Authority (BRA) guideline wind speed of 31 mph oftener than once in 100 hours. The proposed buildings tend to decrease PLWs. No location for either existing or build conditions has an estimated PLW Category higher than 3 (comfortable for walking) for any of the wind conditions considered. For existing conditions some locations near the proposed building are in the open and are in Category 3, whereas for build conditions, some of those are in Category 2 (comfortable for short periods of sitting or standing) or in Category 1 (comfortable for long periods of sitting or standing) due to the sheltering effects of the new building. The proposed Student Services Center will not affect pedestrian level winds along Storrow Drive, nor in the park area between Storrow Drive and the river. It will have no effect on winds over the Charles River.

Detailed results are presented in Figures 12-19 and Table 1, and are summarized in Table 2.

For this assessment, it has been assumed that there is no landscaping for existing conditions and none associated with the new building.

2.0 INTRODUCTION

This is an assessment of the effect of the proposed Boston University Student Services Center in the Kenmore Square area of Boston, Massachusetts, on PLWs in its vicinity. The assessment is based on:

1 An aerial map of the area surrounding the site obtained from Fort Point Associates (FPA);

2 Plans for the proposed buildings showing all entrances obtained from Bruner/Colt, Architects through FPA;

3 Three site visits and 52 photographs taken of existing conditions;

4 An evaluation of the urban context of the proposed project site;

5 A review of the Boston wind climate; and

6 The author's 37 years of experience dealing with PLWs.

The interaction of the wind with buildings and structures is very complicated and, at times, difficult to predict, especially for an urban area with a mixture of open spaces, low-rise and mid-rise buildings. Thus this evaluation provides a qualitative assessment of PLWs.

3.0 LOCATION AND DESCRIPTION OF THE PROJECT AND SURROUNDING AREA

3.1 DESCRIPTION OF EXISTING CONDITIONS (Figure 1)

The site is at the SW corner the intersection of Bay State Road and Deerfield Street. Currently the site is mostly a parking lot. There is a small two-story building to the west of the parking lot that will be torn down and included in the in the site of the proposed Student Services Center Building.

The locations at which PLWs are estimated are numbered rectangles. These locations were chosen to be in areas of expected pedestrian activity for build conditions.

3.2 DESCRIPTION OF BUILD CONDITIONS (Figure 2)

The proposed Student Services Center Building will have six stories and a mechanical penthouse. The building will be about 100 feet tall. The roof plan of the building is shown in Figure 2. The first two floors are devoted to student dining and extend from the Alley most of the way to Bay State Road. There are three major entrances to the first story. They are at locations 14, 15, and 18 in

figure 2. The tall part of the building will extend from along the Alley to about half way to Bay State Road as shown in Figure 2.

3.3 THE SURROUNDING AREA (Figures 1 and 2)

The area immediately surrounding the site is a mixture of parking lots and buildings from one to fourteen stories tall.

To the N of the site is an open lot, an extension of Deerfield Street, and three to six story buildings before Back Street. After Back Street it is open to the Charles River.

To the NE are a six-story building at the corner of Bay State Road and two nine-story towers across Bay State Road.

To the E is a six-story building across Deerfield Street and many four- and five-story buildings.

To the SE is a parking lot, a four-story office building across Deerfield Street and other four- and six-story buildings.

To the immediate South is a parking lot and three-story building. Across Commonwealth Avenue is a thirteen story building. The six-story Hotel Buckminster is also to the S of the site.

To the SW are a three-story, an eight-story, and a thirteen-story building.

To the W are many five story buildings along Bay State Road; and

To the NW are many three- to five-story buildings along Bay State Road.

As a result, the site is quite sheltered now.

4.0 THE WIND CLIMATE

4.1 THE VARIATION OF WIND SPEED WITH HEIGHT

In general, the natural wind is unsteady (*i.e.,* it is gusty) and its average speed increases with height above the ground [1]. Figure 3 [1] depicts how the average wind speed varies with height for different types of terrain. While generally it does not happen, when one puts up any building, the possibility exists that the building will bring the higher speed winds at the top of the building down to ground level.

Figure 4 shows schematically how an isolated building interacts with the wind. Because the wind speed increases with height, as the wind is forced to a stop at the upwind façade, the pressure recovered on that façade is higher near the top than at the bottom of the façade. As a result, the wind flows down the windward façade and forms the vortex upwind of the building shown in the figure. This vortex is stretched and accelerated as it goes around the two upwind lower corners, causing the accelerated flow areas (A) shown on the left hand side of Figure 4. Similar accelerated areas also occur for winds blowing

at the corners of the building (B in Figure 4). No Façade of the proposed Student Services Center Building will have undisturbed flow approaching it

Monolithic buildings (*i.e.,* those that do not change shape with height), if they are significantly taller than most of the surrounding buildings, almost invariably will be windy at their bases. However, when there are many buildings of similar height in an area, they tend to shelter one another. This is the case for much of this site.

4.2 STATISTICAL DESCRIPTION OF THE BOSTON WIND CLIMATE

The project site is located about 4 miles WSW of Logan Airfield. Thus, the wind data from Logan Airfield usually used to define the winds for the Boston area is applicable. Figure 5 depicts a wind rose for Boston. The wind speeds are estimated at pedestrian level at the airport. The length of each line radiating from the center of the figure to the outermost crossing line is proportional to the total time the wind comes from that direction. The other lines crossing the radial lines indicate the frequency of winds less than 7, 10, and 15 mph. As noted in the figure, the wind rose is based on surface wind data from Logan Airfield taken from 1945 to 1965. Data from 1965 to 2009 is also available, but it is not believed to be as representative of the true winds in Boston. Many 25- to 40-story buildings have been built in the financial district of Boston since 1965. The financial district is just one mile SSW of Logan Airfield.

Figure 5 shows that the winds in Boston come primarily from the NW, W, and SW. Figures 6 through 9 show pedestrian level wind roses for Boston for winter (Dec., Jan., and Feb.), spring (Mar., Apr., and May), summer (Jun., Jul., and Aug.), and fall (Sept., Oct., and Nov.). These figures show that NW winds tend to occur during the colder months and SW winds during the warmer months. Spring and fall are transitional, but winds are stronger in the spring than in the fall. Strong easterly winds usually occur during storms when there is precipitation.

The average wind speed at Logan Airfield at 58 feet (the average height at which the data was taken) is 12.9 mph. At pedestrian height (*i.e.,* at chest height, 4.5 feet) it is about 8.6 mph. The average wind speeds at 58 and 4.5 feet at Logan Airfield for each month are shown in Figure 10. Seasonally, the average wind speed at pedestrian level is 9.4 mph in the winter, 9.2 mph in the spring, 7.4 mph in the summer, and 8.2 mph in the fall.

5.0 CRITERIA

Since the early 1980s, the BRA has used a guideline criterion for acceptable winds of not exceeding a 31 mph effective gust more often than once in one hundred hours. The effective gust is defined as the average wind speed

plus 1.5 times the root mean square variation about the average. The effective gust can be shown to be about the fastest one-minute gust in an hour. When many locations are considered, the effective gust averages about 1.4 times the average hourly wind speed [3]. However, that ratio can vary widely from 1.4 for individual locations.

In 1978, Melbourne [2] developed a probabilistic criteria for average and peak PLWs, which accounted for different types of pedestrian activity as well as the safety aspects of such winds. Durgin [3] suggested the use of an Equivalent Average which combines the effects of average, gusting, and peak winds and later [4 and 5] reinterpreted Melbourne's criteria to apply to Equivalent Average winds (Figure 11). The Equivalent Average used in this figure is similar to an hourly average, but combines the effects of steady and gusting winds. Five categories of PLWs are defined:

1) Comfortable for long periods of standing or sitting;
2) Comfortable for short periods of standing and sitting;
3) Comfortable for walking;
4) Uncomfortable for walking;
5) Dangerous and unacceptable.

These criteria are not absolute (any location can have dangerous winds in a major storm or hurricane). Rather, they imply that the location would have wind speeds such that the activity suggested could be undertaken comfortably most of the time, and would be perceived[1] as such, by most people who frequent the location. For example, the PLWs at Logan Airfield are in Category 4 (uncomfortable for walking) but near the dividing line between Category 4 and Category 3 (comfortable for walking) (see Figure 11). But they are well under the BRA 31 mph effective gust wind speed guideline (converted to an equivalent average wind), which is in high Category 4. Therefore, most people would probably perceive conditions in the open at Logan Airfield as marginally comfortable for walking.

6.0 PEDESTRIAN LEVEL WINDS AT THE SITE

6.1 INTRODUCTION

The objective of this study was to examine the effects of the proposed Boston University Student Services Center Building near Kenmore Square in Boston, Massachusetts, on PLWs about the site and at nearby buildings.

[1] On a somewhat windy day, a person familiar with the location would choose not to go there for the specified activity.

In the following sections, the effects of NW winter winds, SW summer winds, and easterly storm winds will be discussed for existing and build conditions. The results from NW, SW, and storm directions will be summarized by an estimated prediction of the annual PLW category at each location considered. When a PLW Category does not change, it does not mean the PLWs did not increase or decrease, but only that they did not change sufficiently for the PLW Category to change.

The estimated Categories for all locations, wind directions, and annual winds for both existing and build conditions are shown in figures 12 to 19. The results for all locations, wind directions, and annual winds are tabulated in Table 1 and summarized in Table 2. Table 2 indicates both the number of locations that will not change Category and those that will change up or down one, or two Categories.

For the most part the weather in New England is dominated by either large coastal storms (fall, winter, and spring) or the Bermuda High (summer). Typically, when a coastal storm occurs, it rains or snows for 4 to 12 hours, then it clears, and, as the storm moves to the NE, the winds blow from the NW for three or four days until the next weather system arrives. These storms and the NW winds following them occur mostly in the fall, winter, and spring. NW winds are particularly uncomfortable in the winter, when, typically, they occur on cold days. The Bermuda High is generally responsible for the SW winds that occur in the summer.

6.2.1 Northwest (Winter) Winds (Figures 12 & 13)

NW winds blow from the upper left hand corner of Figures 12 and 13 toward the corner of Bay State Road and Deerfield Street. The results for NW winds include the effects of all winds blowing from W to N. The estimated Categories for all locations for existing and build conditions for NW winds are shown in Figures 12 and 13 (also see Tables 1 & 2).

For NW winds, the PLW Category at twenty-two of the thirty locations considered did not change. The PLW Category did not increase at any location, but did decrease by one at six locations (13, 17, 20, 23, 25, and 26). The PLW Category decreased by two at two locations (15 and 18). The decreases are due to the sheltering effects of the proposed building. Adding up the changes for all thirty of the locations considered there were 10 decreases in PLW Category. When the PLW Category does not change, it does not mean that the PLWs did not change, but only that they did not change sufficiently to cause a change in PLW Category.

6.2.2 Southwest (Summer) Winds (Figures 14 & 15)

The prevailing winds in the summer are from the SW. SW winds blow nearly up Brookline Avenue. The results for SW winds include effects of all winds blowing from S to W. The estimated categories for all locations for

existing and build conditions are shown in Figures 14 and 15 (also see Tables 1 & 2).

For SW winds, the PLW Category does not change at twenty-one of the thirty locations considered. The PLW Category increased by one at location 17 because the proposed building deflects SW winds down and along the Alley. The PLW Category did not increase by two at any location. but decreased by one at eight locations (2, 9, 10, 11, 14, 15, 18, and 19). Adding up the changes in PLW Category for all thirty locations considered, the total change comes to a decrease of 7 PLW Categories.

6.2.3 Easterly Storm Winds (Figures 16 & 17)

Easterly winds occur about one third of the time. Light easterly winds occur as a storm starts or in the summer as a sea breeze. During the first four to twelve hours of a typical coastal storm, it rains or snows depending on the temperature. The wind is from the NE or SE depending on whether the center of the storm passes to the east or west of the city. The results for easterly storm winds includes the effects of all winds blowing from N to E to S (i.e., from the eastern side of the compass).

Since for strong easterly winds, it will generally be raining or snowing, and people expect it to be windy, the emphasis in evaluating the effect of the proposed building should be on entering or exiting buildings. The Categories for all easterly wind directions from N-E-S were estimated and have been combined to obtain a single result for easterly winds. Bear in mind that the total time the winds come from all of these easterly directions is about the same as the time the wind comes from either the NW or SW quadrants.

The estimated Categories for all locations for existing and build conditions are shown in Figures 16 and 17 (See Tables 1 & 2).

For easterly winds, PLW Categories at seventeen of the thirty locations considered are estimated to remain unchanged. The PLW Category did not increase by two at any location. It increased by one at six locations (3, 4, 12, 15, 20, and 28). However, the PLW Category decreased by one at seven locations (6, 13, 16, 17, 19, 23, and 26) and none by two. Adding up all the changes in PLW Category the total change comes to a decrease of 1.

6.2.4 Annual Winds

In the above discussion, only winds from three general wind directions are discussed. While those are important directions related to seasons and storms, one cannot infer the overall annual windiness at any location from those results. PLW Categories were estimated for the eight major wind directions (i.e., from the NE, E, SE, S, SW, W, NW, and N directions). Those estimated categories were then used with an eight compass point statistical description of the Boston wind climate to estimate the overall annual category

for each of the thirty locations considered. The resulting estimated categories for each location for existing and build conditions are listed in the last column in Tables 1 & 2. In comparing these annual estimates with those for the five specific directions, one must remember that the total occurrence of winds from the easterly directions is roughly equal to that for either NW or SW. These annual estimates are qualitative and must be treated as such.

For annual winds, twenty-four of the thirty locations considered did not change Category. The PLW Category did not increase at any location. The PLW Category decreased by one at six locations (2, 6, 12, 14, 15, and 27). Again, these decreases in PLW Category are caused by sheltering of the new building. Summing up all the changes in PLW Category for the thirty locations considered, the overall decrease was five Categories.

7.0 SUMMARY AND CONCLUSIONS

A qualitative assessment has been made to determine the effect of the proposed Boston University Student Services Center in the Kenmore Square area of Boston, Massachusetts, on PLWs in its vicinity. Results are obtained for both existing and build conditions.

None of the Thirty locations considered for either existing or build conditions is estimated to have PLWs that exceed the Boston Redevelopment Authority (BRA) guideline wind speed of 31 mph oftener than once in 100 hours. The proposed building tends to decrease PLWs. No location for either existing or build conditions has an estimated PLW Category higher than 3 (comfortable for walking) for any of the wind conditions considered. For existing conditions some locations near the proposed building are in the open and are in Category 3, whereas for build conditions, some of those are in Category 2 (comfortable for short periods of sitting or standing) or in Category 1 (comfortable for long periods of sitting or standing) due to the sheltering effects of the new building. The proposed Student Services Center will not affect pedestrian level winds along Storrow Drive, nor in the park area between Storrow Drive and the river. It will have no effect on winds over the Charles River.

Detailed results are presented in Figures 12-19 and Table 1 and are summarized in Table 2.

For this assessment, it has been assumed that there is no landscaping for existing conditions and none associated with the new building.

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8.0 REFERENCES

1) Davenport, A.G., and Isyumov, N., "The Application of the Boundary Layer Wind Tunnel to the Prediction of Wind Loading", Proceedings of Intl. Seminar on Wind Effects on Buildings and Structures, Ottawa, Canada, September, 1967.

2) Melbourne, W.H., "Criteria for Environmental Wind Conditions", *Journal of Industrial Aerodynamics*, Vol.3, 1978, pp. 241-249.

3) Durgin, F.H., "Use of the Equivalent Average for Evaluating Pedestrian Level Winds", Presented at the Sixth U.S National Conf. on Wind Engineering, University of Houston, Houston, Texas, March 7-10, 1989, *Journal of Wind Engineering and Industrial Aerodynamics*, Vol. 36, pp. 817-828, 1990.

4) Durgin, F.H., "Pedestrian Level Wind Studies at the Wright Brothers Facility", Progress in Wind Engineering (Proc. of the 8th International Conference on Wind Engineering), New York, Elsevier, Part 4, 1992, pp. 2253-2264.

5) Durgin, F.H., "Pedestrian Level Wind Criteria Using the Equivalent Average", *Journal of Wind Engineering and Industrial Aerodynamics*, Vol. 66 (1997), pp. 215-226.

TABLE 1
ESTIMATED CATEGORIES FOR NW, SW, EASTERLY STORM, AND ANNUAL WINDS FOR EXISTING (Ex), AND BUILD (Bld) CONDITIONS

Loc	NW		SW		STORM		ANNUAL		Loc
No.	Ex	Bld	Ex	Bld	Ex	Bld	Ex	Bld	No.
1	2	2	2	2	1	1	2	2	1
2	1	1	2	1	1	1	2	1	2
3	1	1	2	2	1	2	2	2	3
4	2	2	2	2	1	2	2	2	4
5	2	2	2	2	1	1	2	2	5
6	1	1	2	2	2	1	3	2	6
7	2	2	2	2	2	2	2	2	7
8	2	2	2	2	2	2	2	2	8
9	2	2	2	1	2	2	2	2	9
10	2	2	2	1	2	2	2	2	10
11	2	2	2	1	2	2	2	2	11
12	2	2	2	2	1	2	3	2	12
13	2	1	2	2	2	1	2	2	13
14	2	2	2	1	1	1	3	2	14
15	3	1	2	1	1	2	2	1	15
16	3	3	3	3	2	1	3	3	16
17	2	1	1	2	2	1	2	2	17
18	3	1	3	2	2	2	3	3	18
19	2	2	2	1	2	1	2	2	19
20	2	1	2	2	1	2	2	2	20
21	2	2	3	3	1	1	3	3	21
22	2	2	2	2	1	1	2	2	22
23	3	2	3	3	2	1	3	3	23
24	2	2	2	2	2	2	2	2	24
25	3	2	3	3	2	2	3	3	25
26	3	2	3	3	3	2	3	3	26
27	2	2	1	1	3	3	3	2	27
28	3	3	2	2	2	3	3	3	28
29	3	3	1	1	3	3	3	3	29
30	2	2	2	2	3	3	2	2	30

TABLE 2

SUMMARY OF LOCATIONS THAT CHANGED CATEGORY BETWEEN EXISTING AND BUILD CONDITIONS

Direction	NW	SW	Storm	Annual
Up 2 Cat.	0	0	0	0
Up 1 Cat	0	1	6	0
No Change.	22	21	17	24
Down 1 Cat.	6	8	7	6
Down 2 Cat.	2	0	0	0

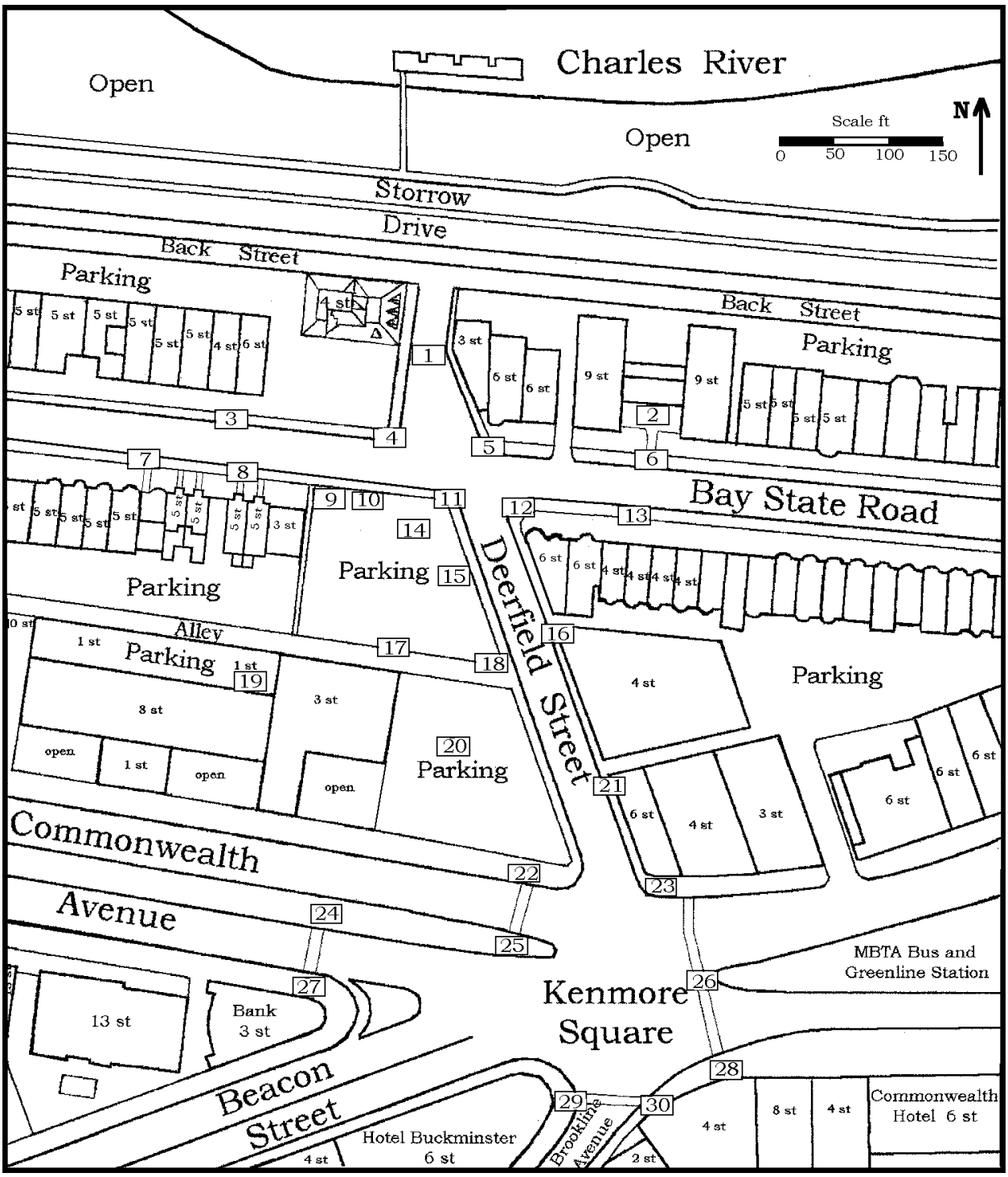


Figure 1 Map of Existing Conditions With PLW Location Numbers

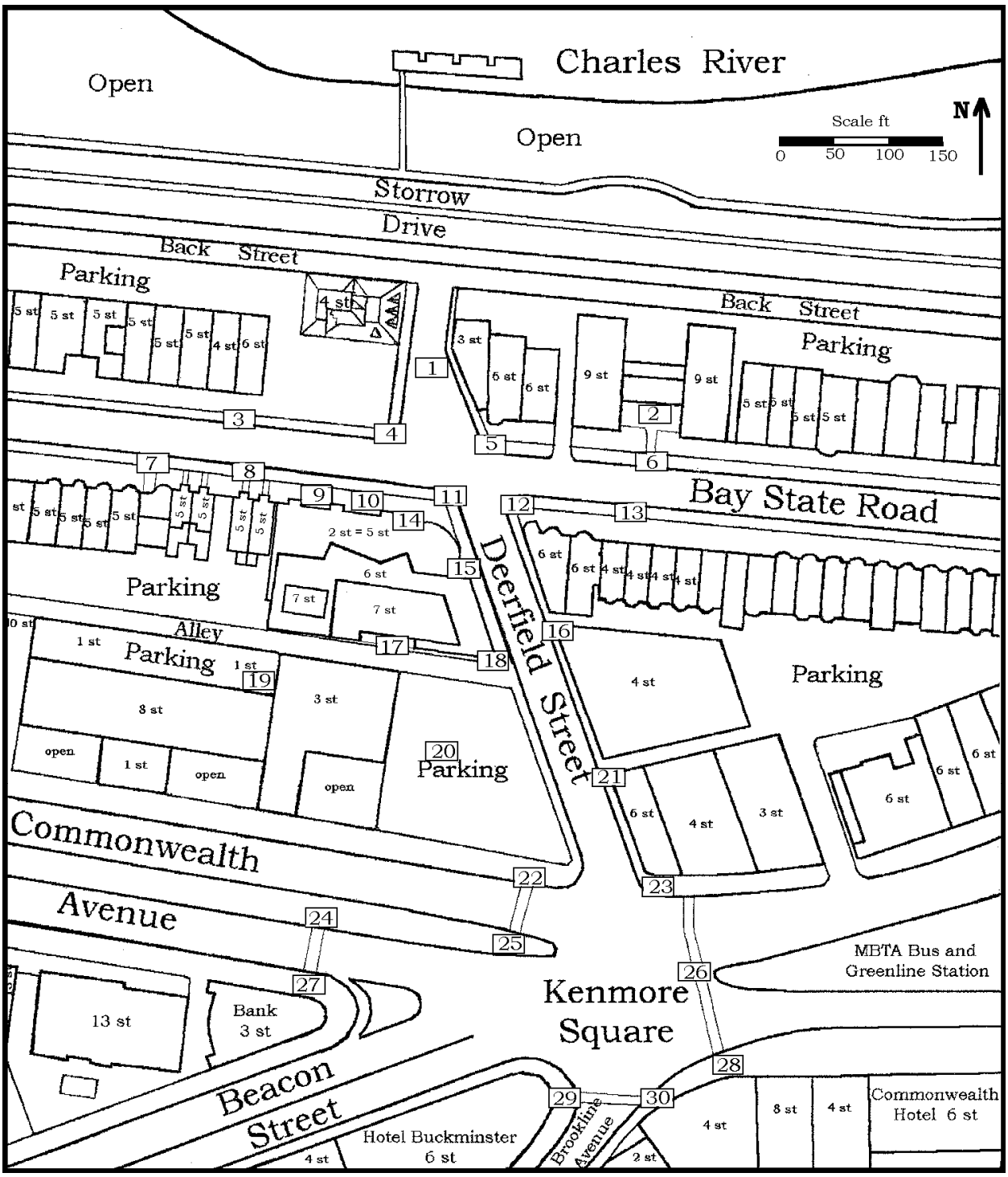


Figure 2 Map of Build Conditions With PLW Location Numbers

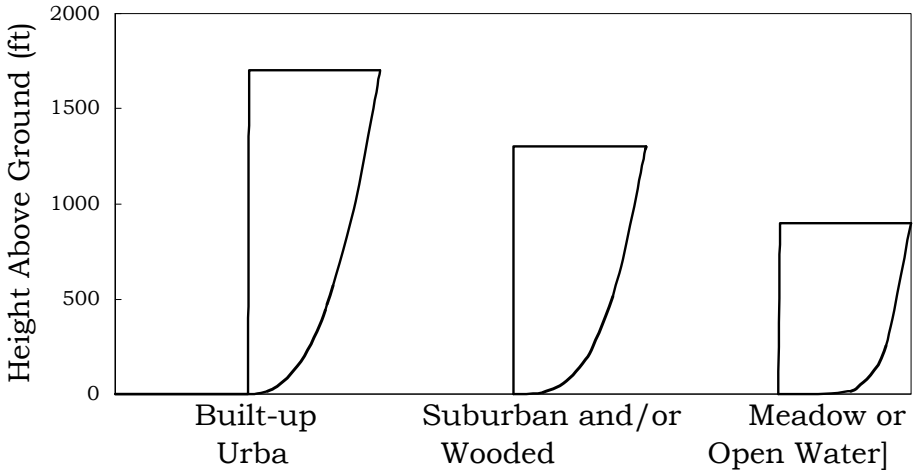


Figure 3 Types of Earth's Boundary Layers After Davenport

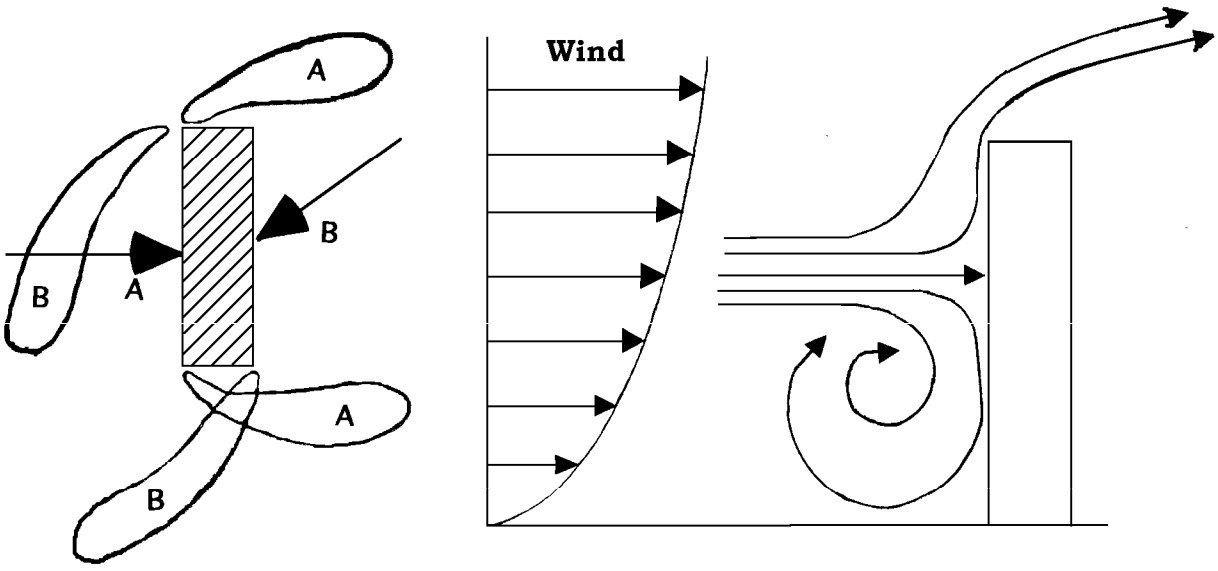


Figure 4 Schematic of the Wind Interacting with a Typical Building

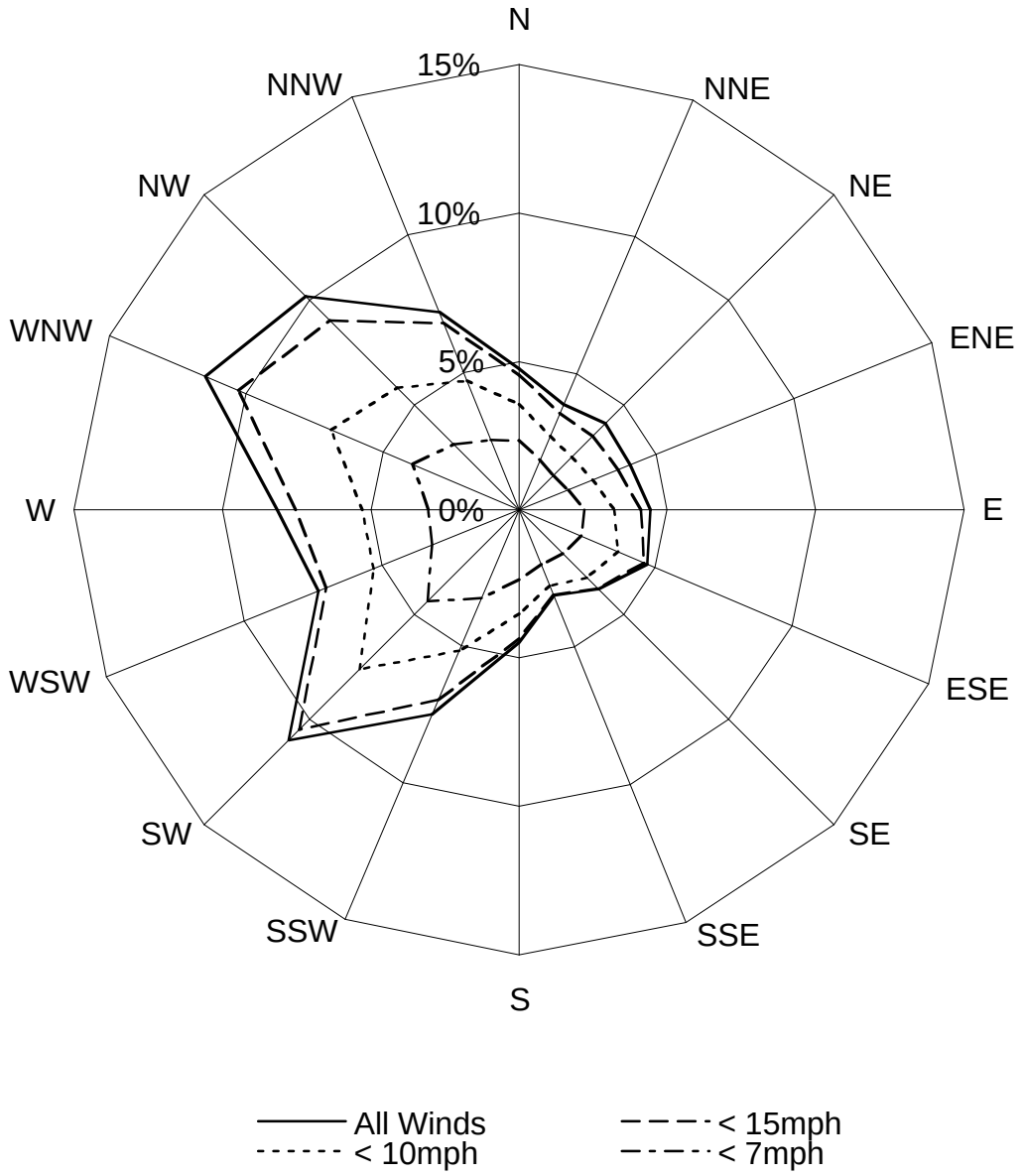


Figure 5 Annual Pedestrian Level Wind Rose for Boston Based on Surface Data from Logan Airfield 1945-1965

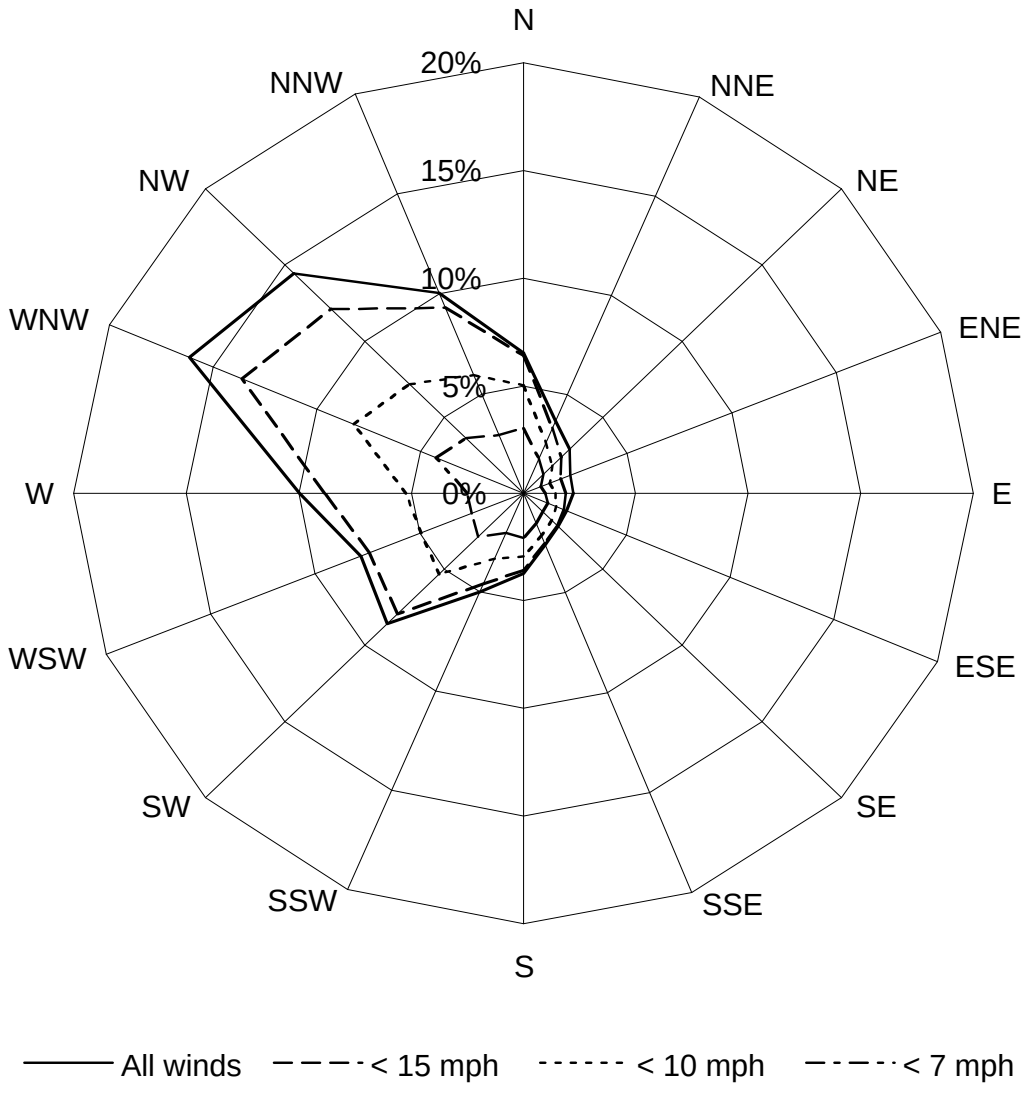


Figure 6 Winter (December, January, February) Pedestrian Level Wind Rose for Boston Based on Surface Data from Logan Air Field 1945-1965

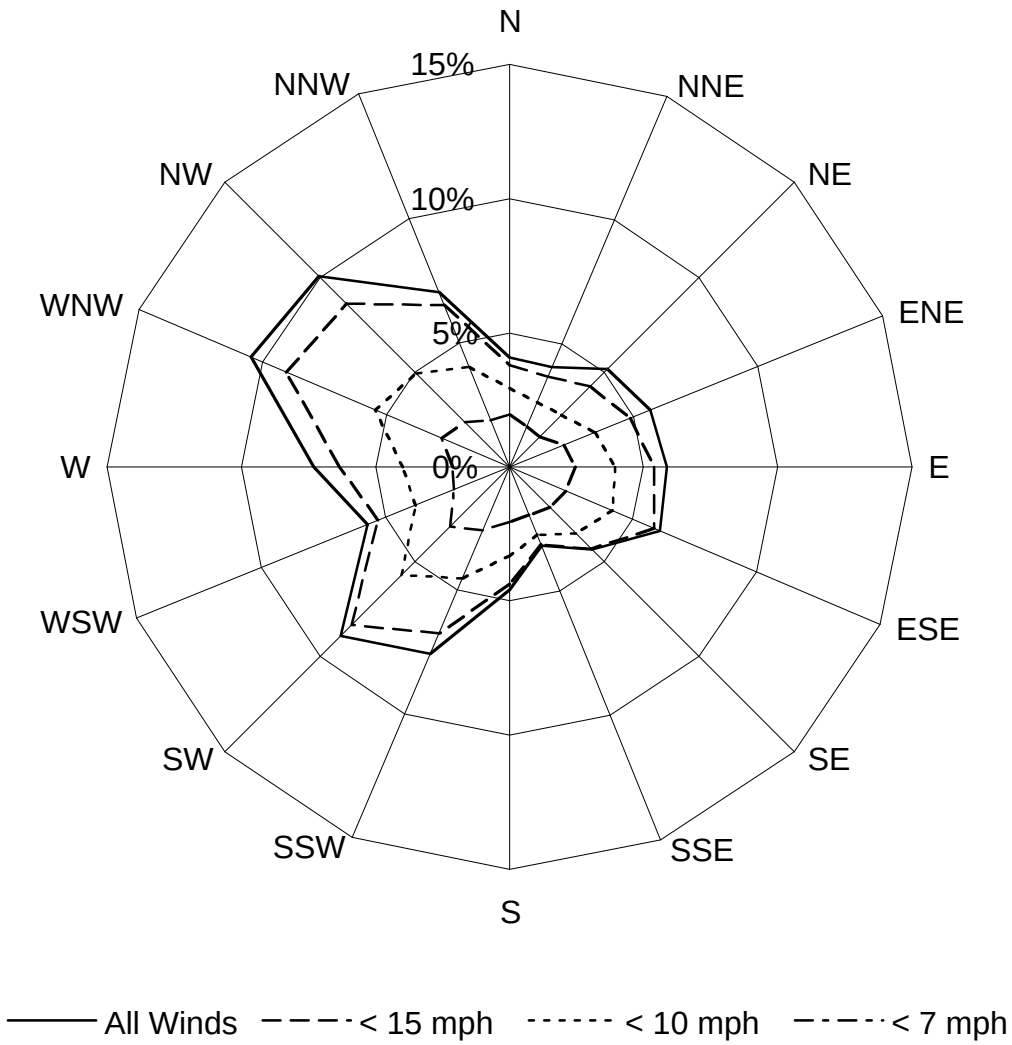


Figure 7 Spring (March, April, May) Pedestrian Level Wind Rose for Boston based on Surface Data from Logan Air Field 1945-1965

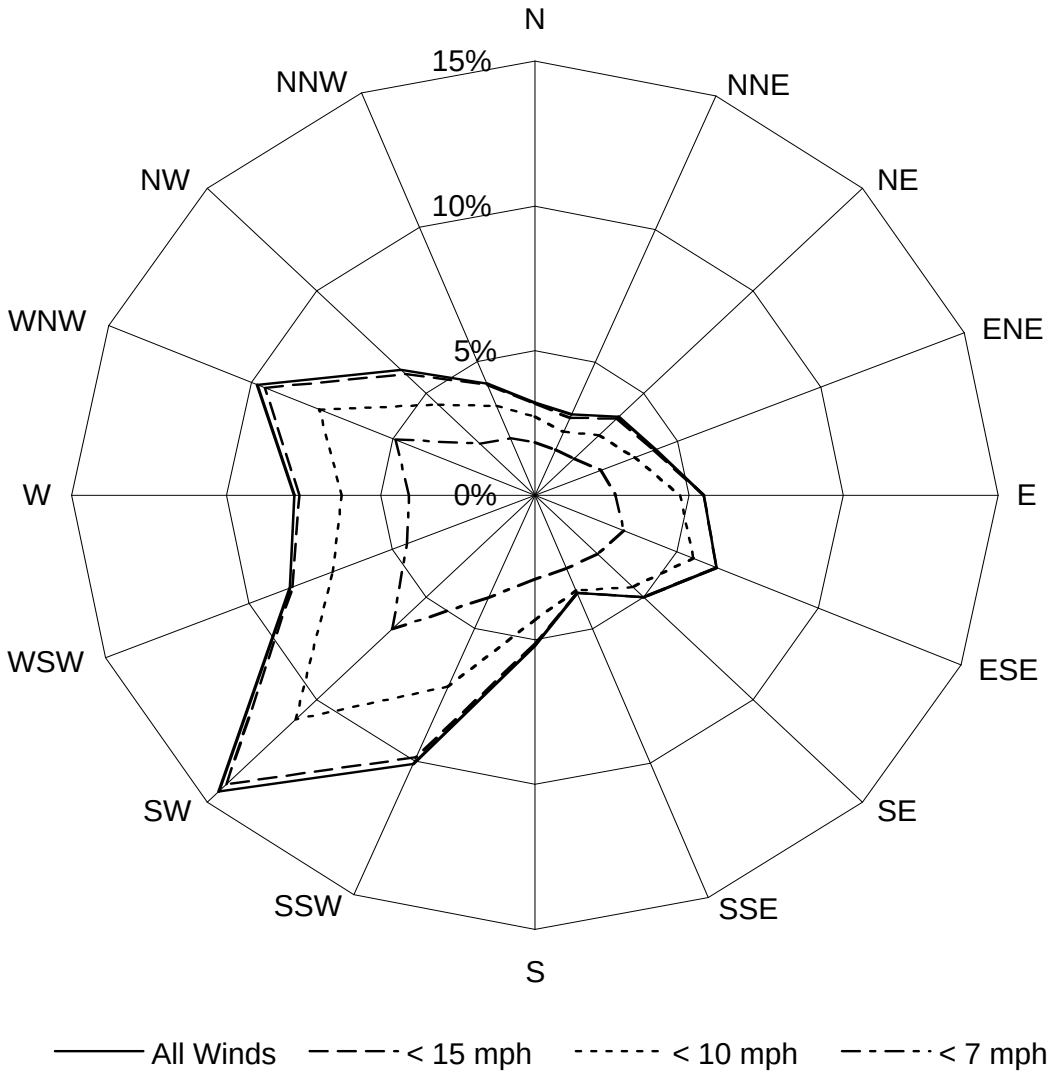


Figure 8 Summer (June, July, August) Pedestrian Level Wind Rose for Boston based on Surface Data from Logan Air Field 1945-1965

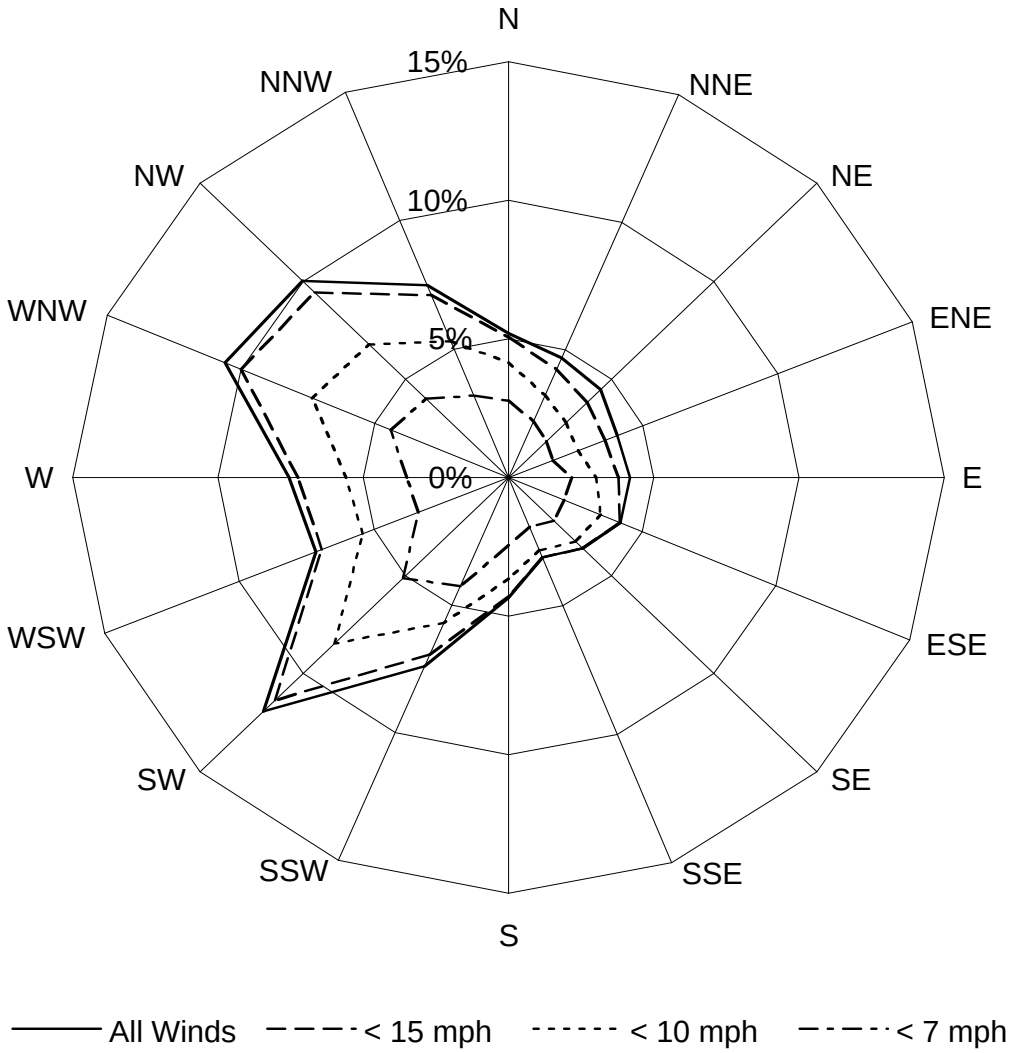
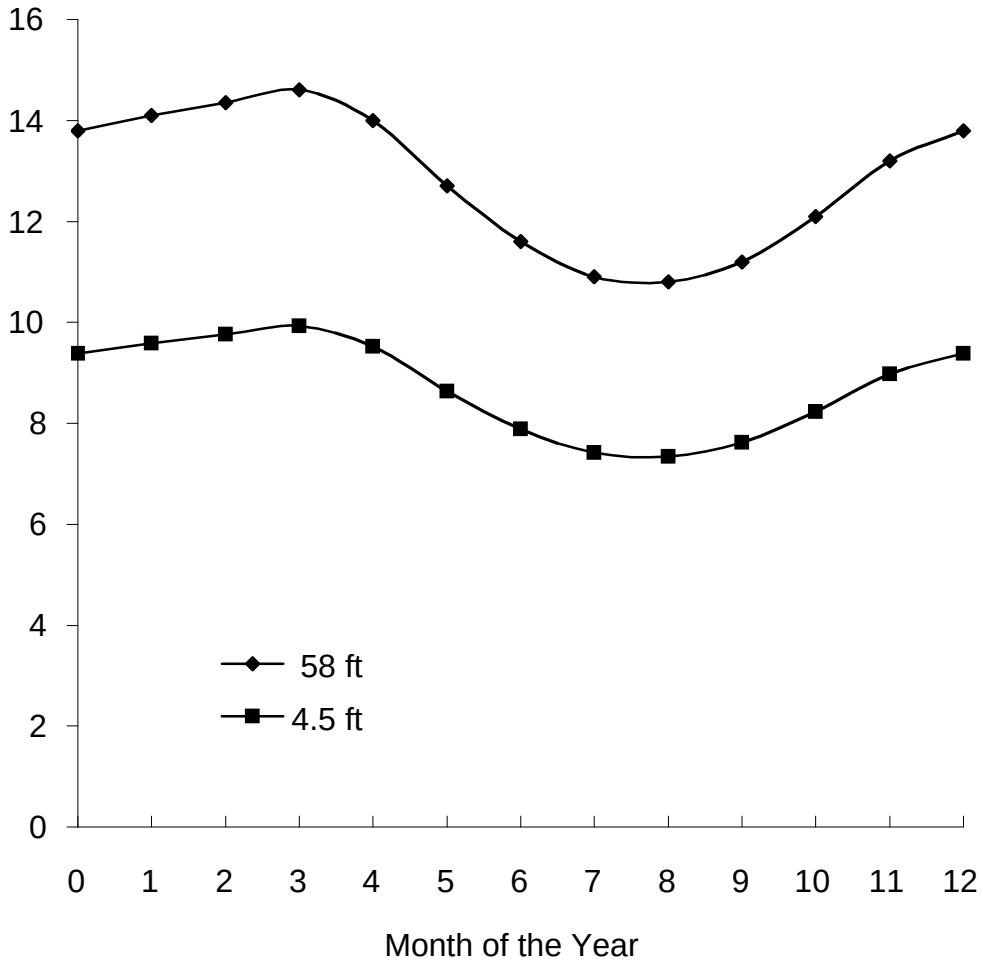


Figure 9 Fall (September, October, November) Pedestrian Level Wind Rose for Boston based on Surface Data from Logan Air Field 1945-1965



Yearly Average is 12.9 mph at 58 feet

Figure 10 Average Wind Speed at Logan Airfield Based on Surface Data from 1945-1965

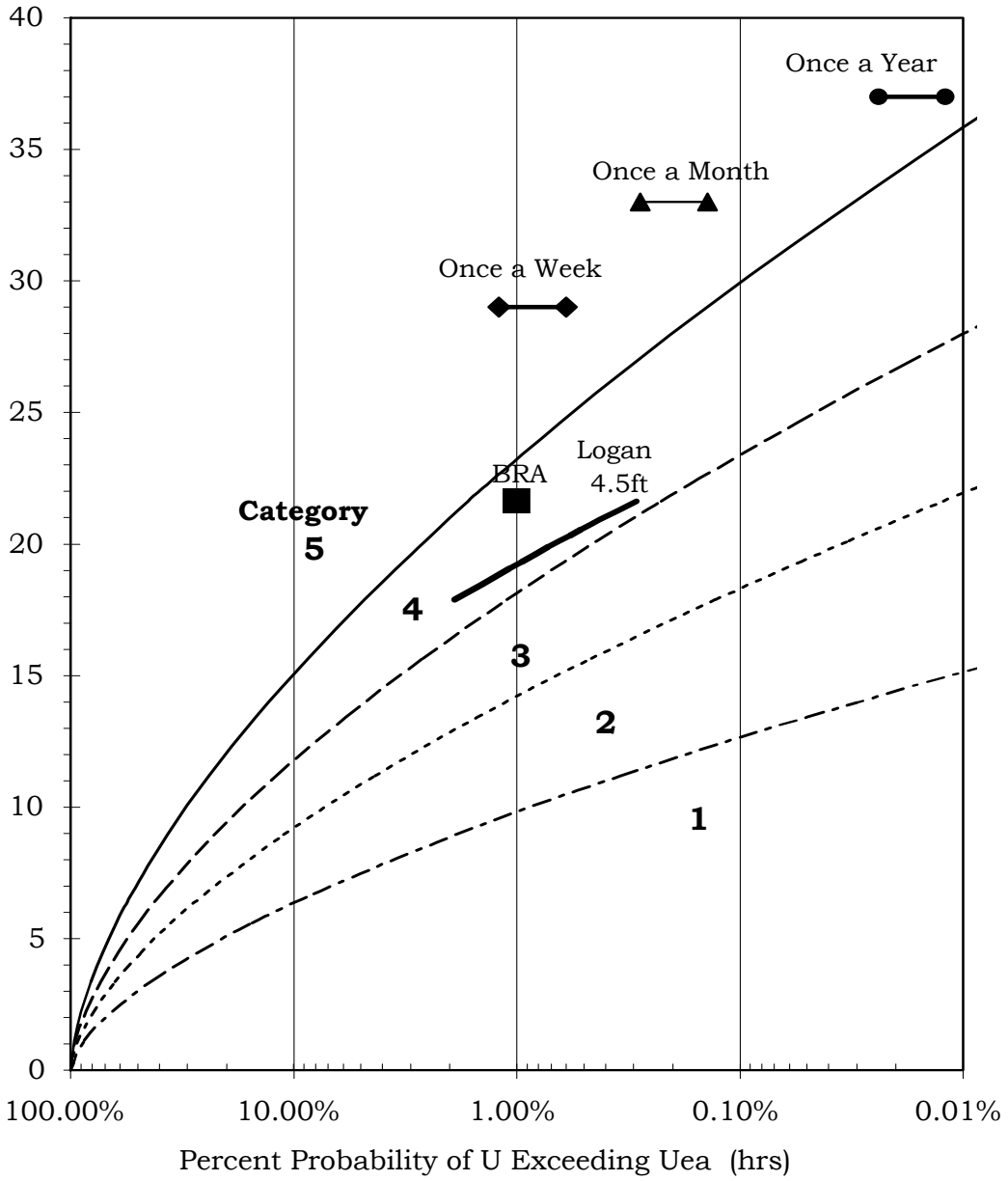


Figure 11 Pedestrian Level Wind Criteria for Equivalent Average Winds

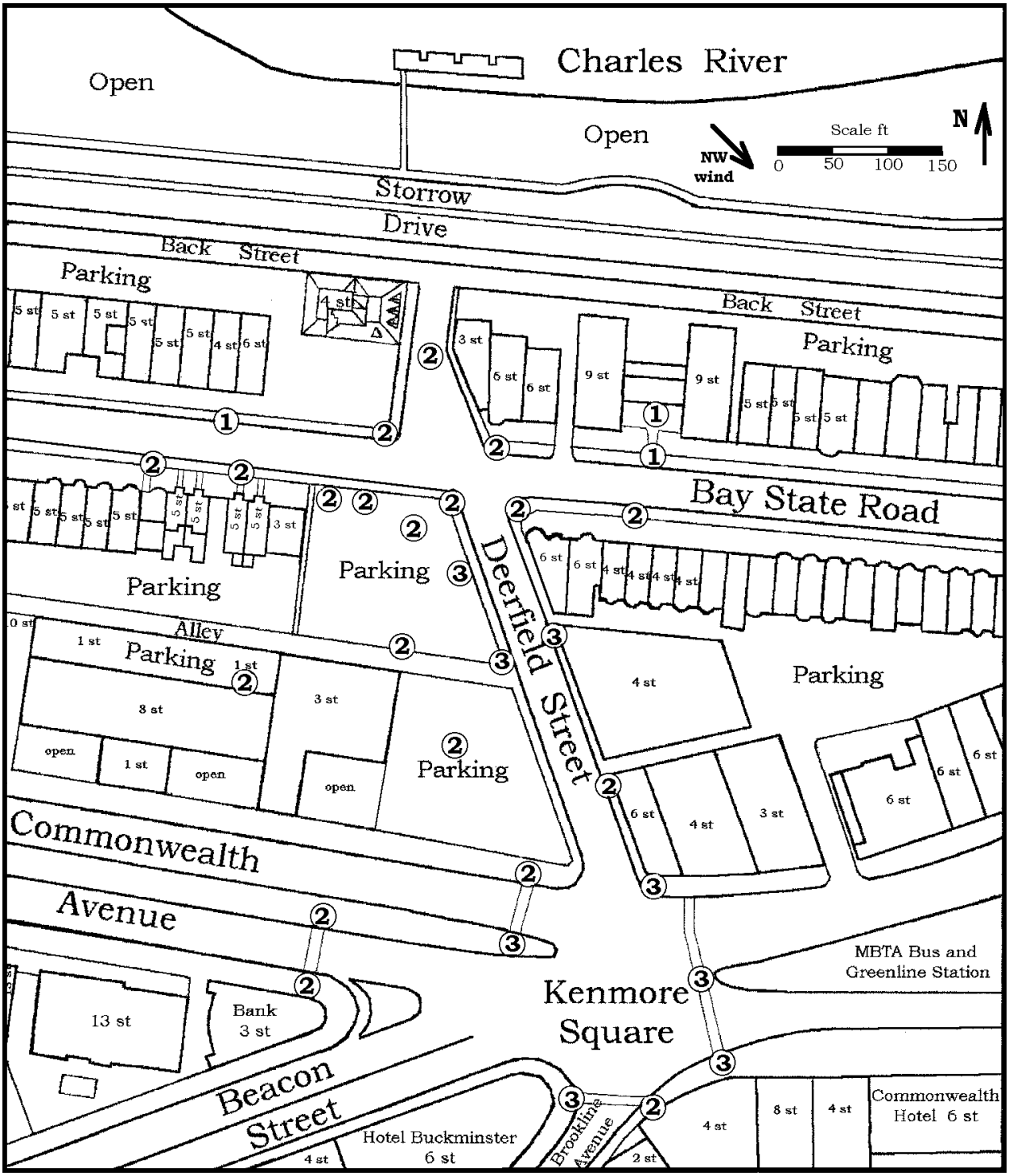


Figure 12 PLW Categories for NW Winds and Existing Conditions

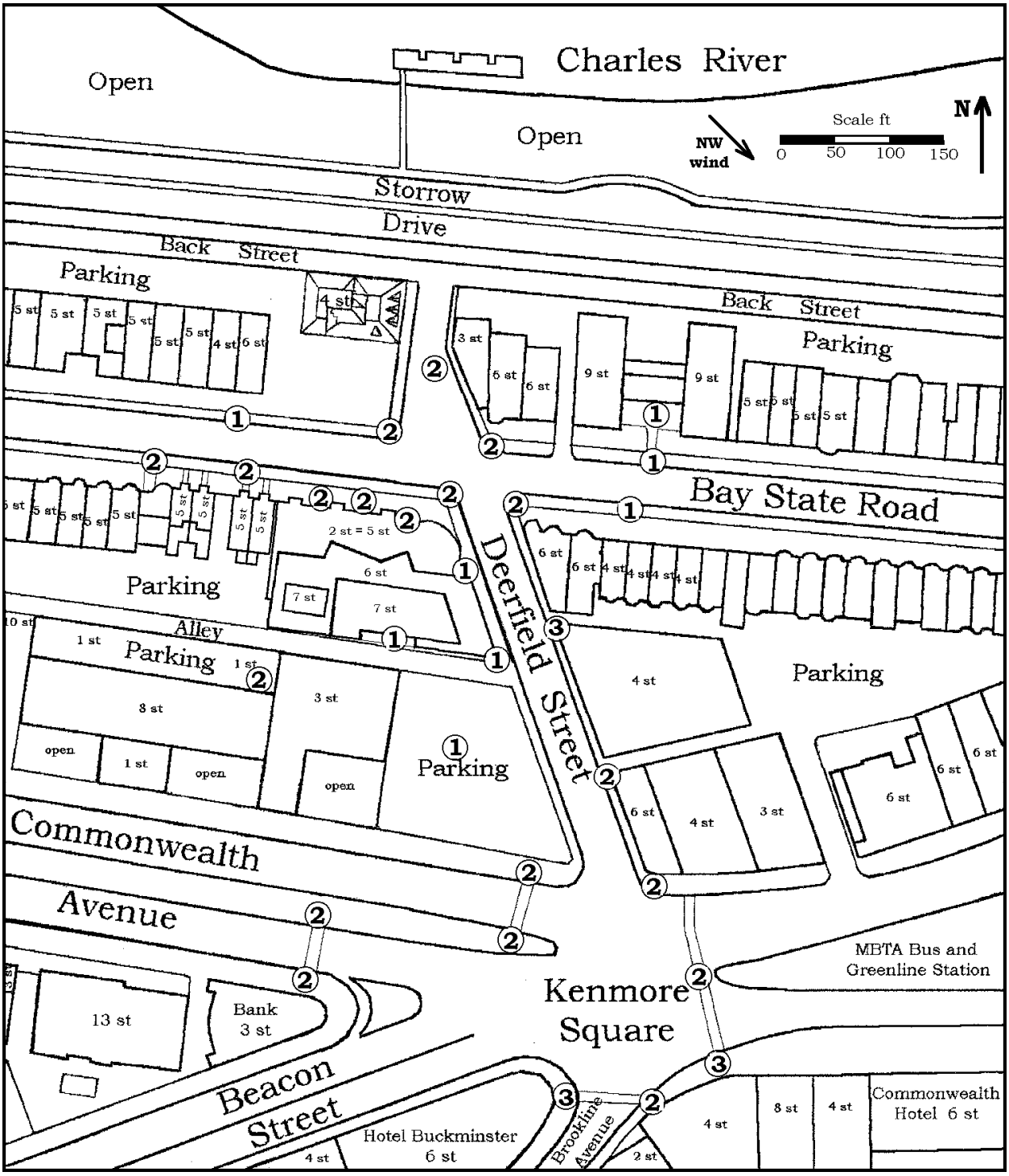


Figure 13 PLW Categories for NW Winds and Build Conditions

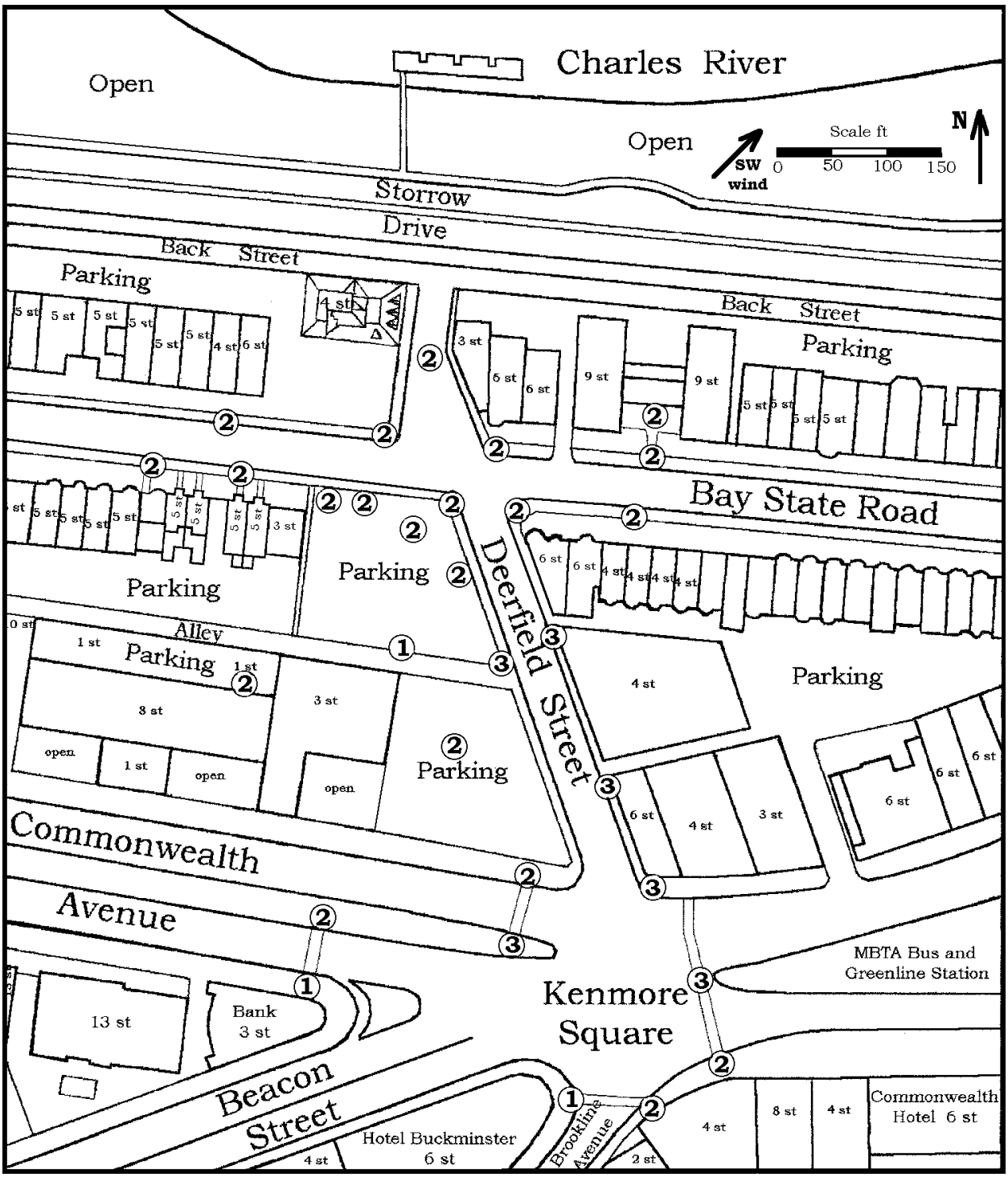


Figure 14 PLW Categories for SW Winds and Existing Conditions

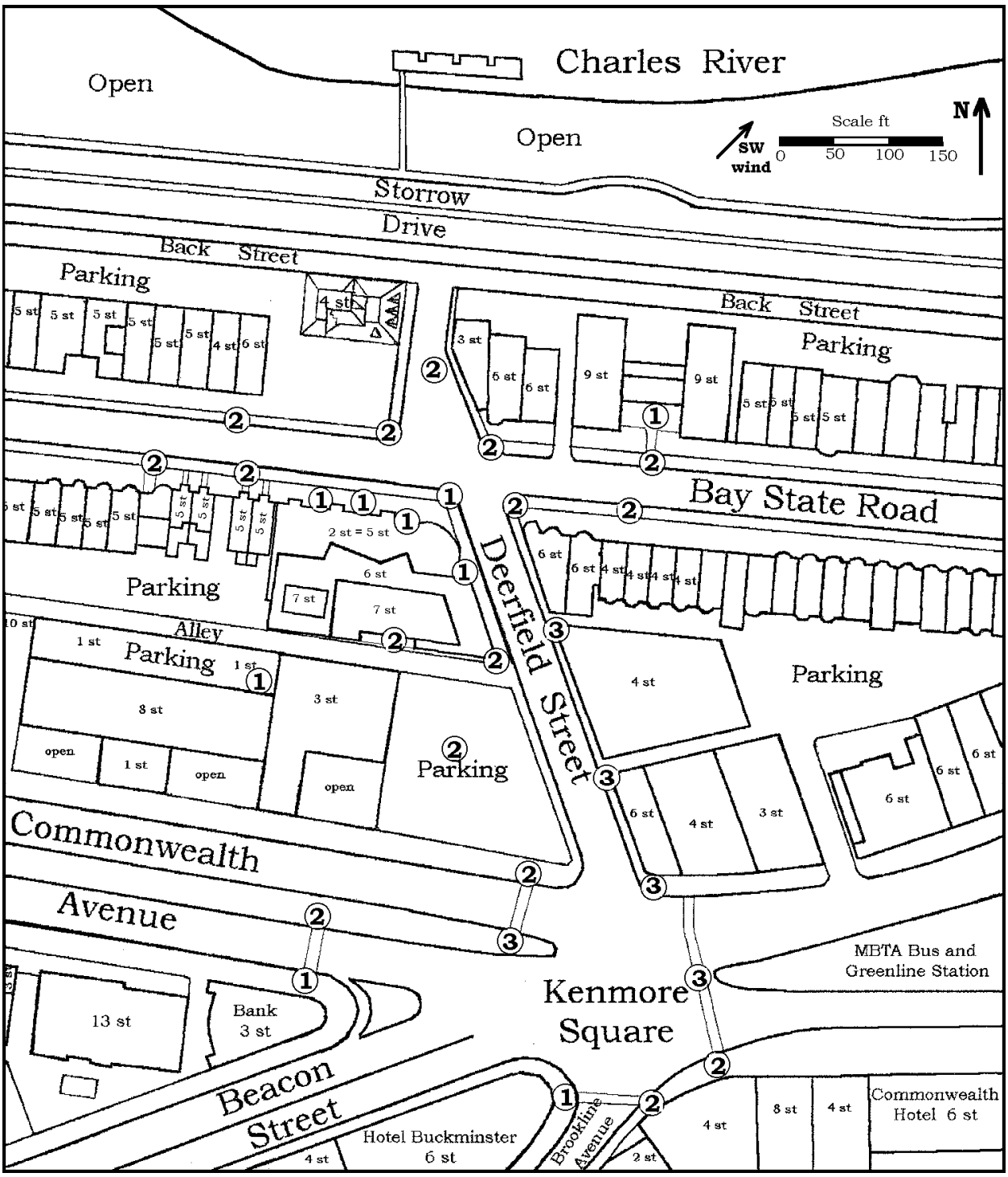


Figure 15 PLW Categories for SW Winds and Build Conditions

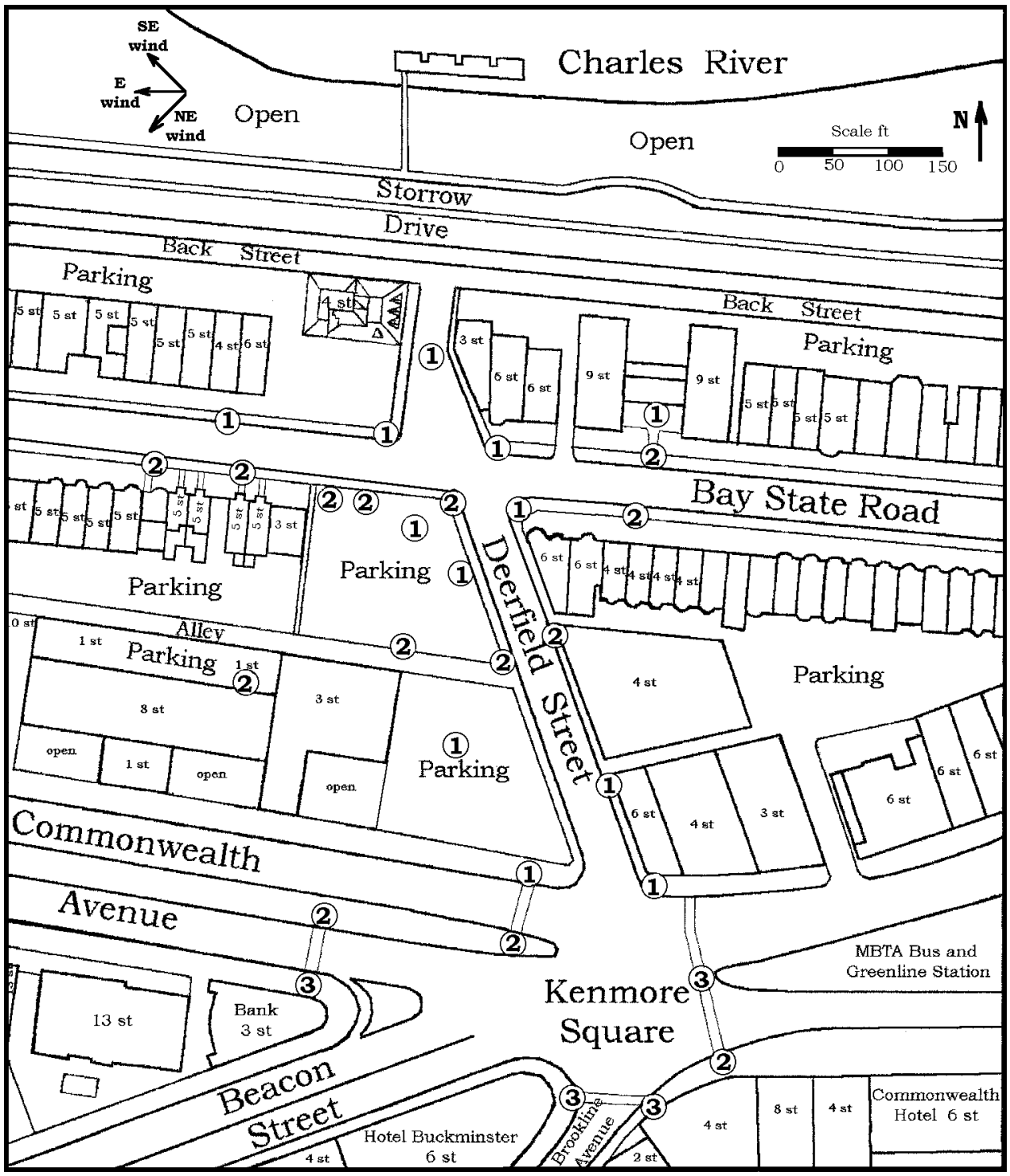


Figure 16 PLW Categories for Easterly Storm Winds and Existing Conditions

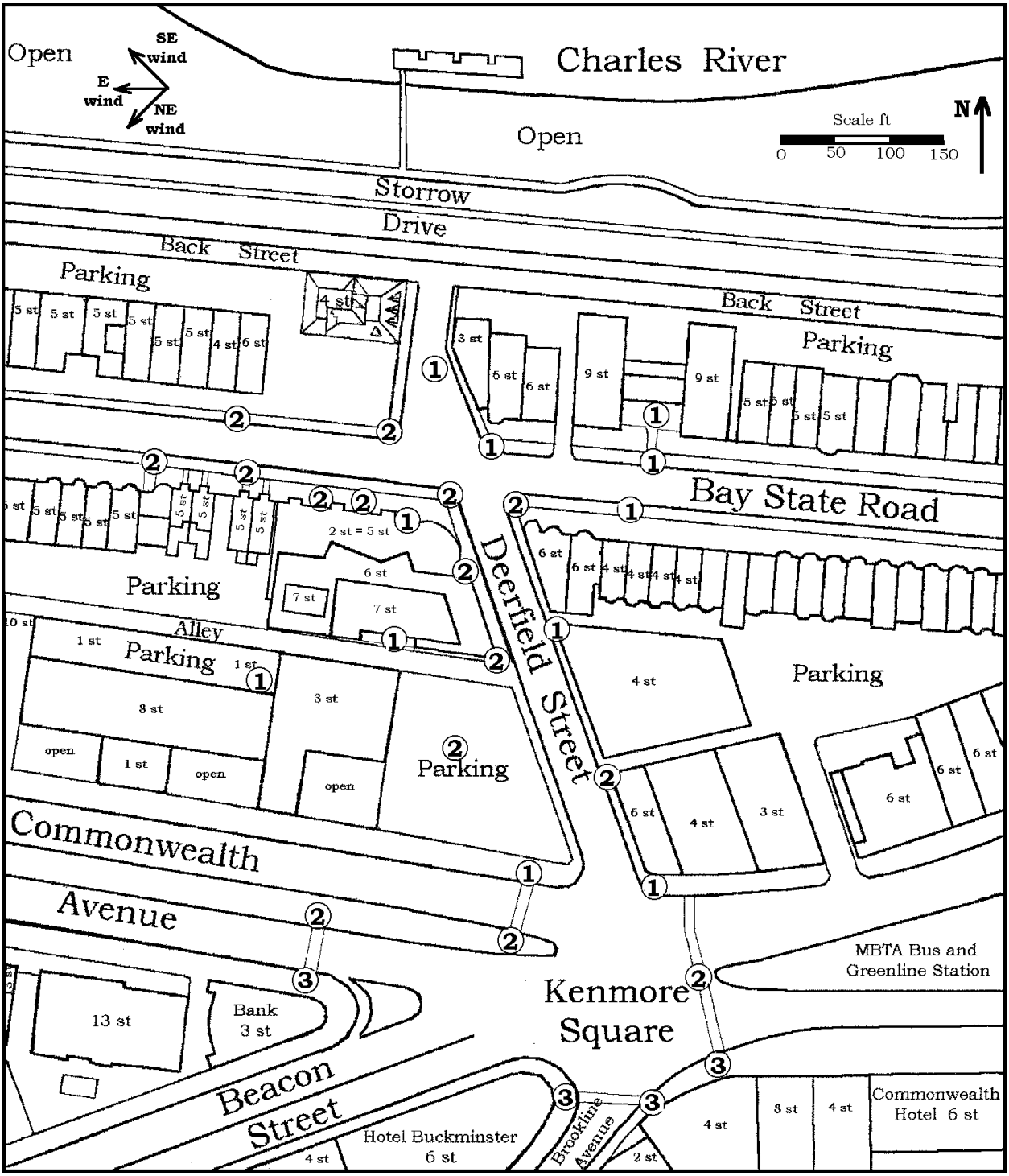


Figure 17 PLW Categories for Easterly Storm Winds and Build Conditions

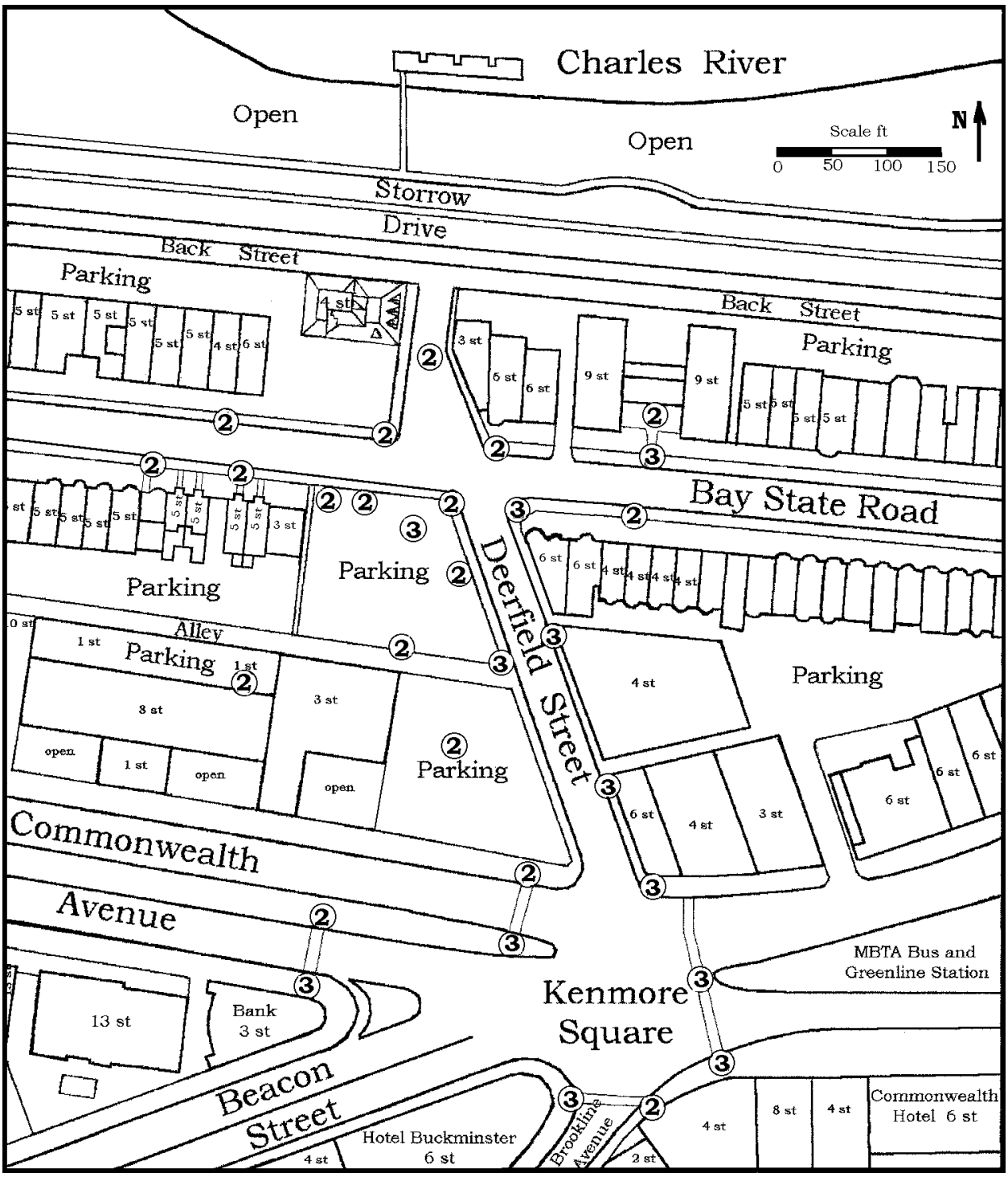


Figure 18 PLW Categories for Annual Winds and Existing Conditions

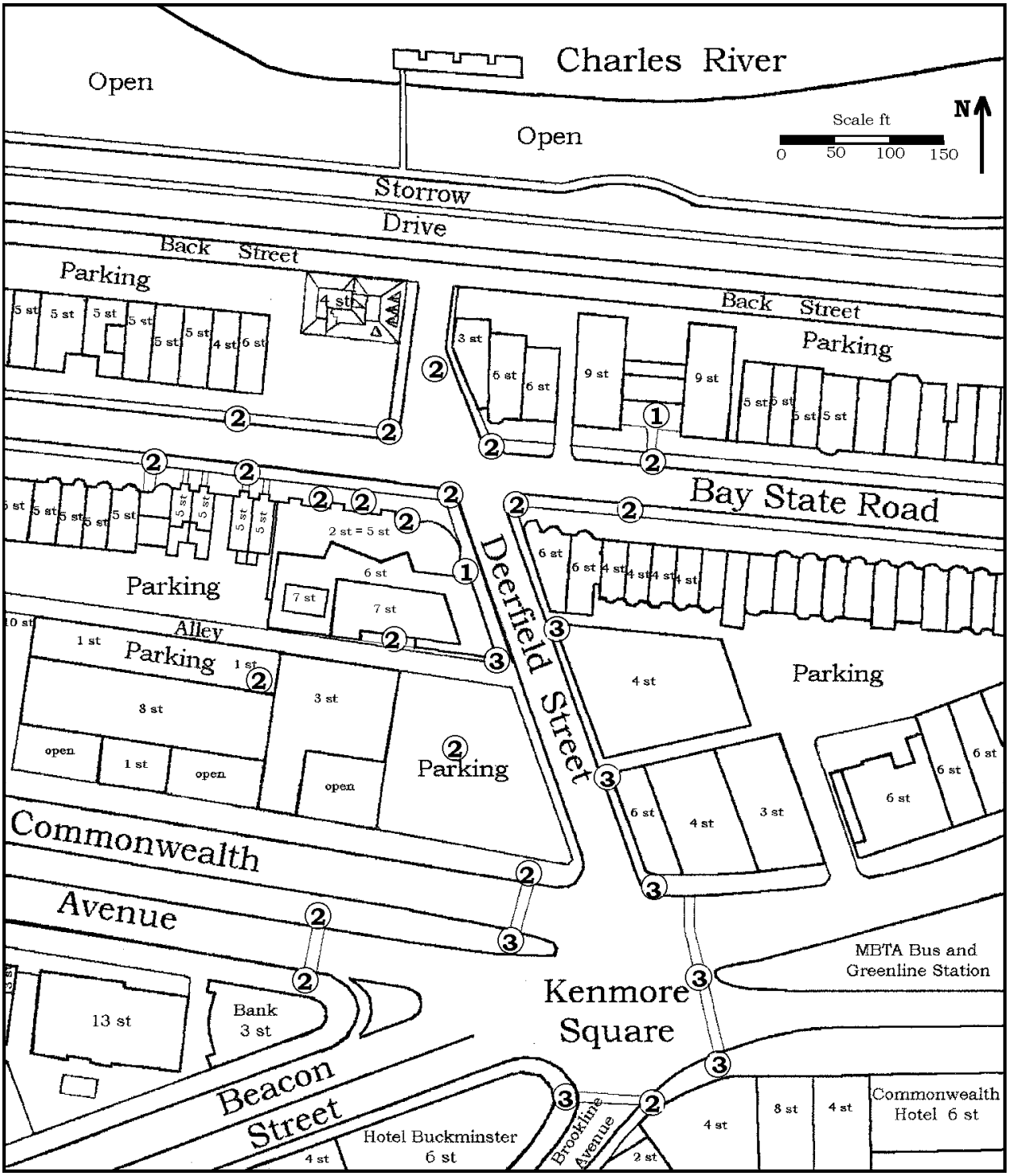


Figure 19 PLW Categories for Annual Winds and Build Conditions

Appendix 5, Stormwater Recharge Calculations

Summary for Subcatchment PR: Building Roof

Runoff = 0.44 cfs @ 12.07 hrs, Volume= 0.032 af, Depth> 0.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr One Inch Rainfall=1.00"

Area (sf)	CN	Description
20,927	98	Roofs, HSG C
20,927		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Pond RE: Recharge Trench

Inflow Area = 0.480 ac,100.00% Impervious, Inflow Depth > 0.79" for One Inch event
Inflow = 0.44 cfs @ 12.07 hrs, Volume= 0.032 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 2.18' @ 24.00 hrs Surf.Area= 1,200 sf Storage= 1,378 cf

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	977 cf	**12.00'W x 100.00'L x 3.50'H Prismatoid** 4,200 cf Overall - 942 cf Embedded = 3,258 cf x 30.0% Voids
#2	0.50'	942 cf	**24.0" D x 100.0'L Pipe Storage** x 3 Inside #1
		1,920 cf	Total Available Storage

Roof area = 20,927 SF

20,927 SF * 1" = 1744 CF STORAGE REQUIRED