MIT Kendall Square Initiative
SoMa Project

Article 19 Project Review Special Permit

July 27, 2015

Submitted by:

Massachusetts Institute of Technology (MIT)

OWNER/ PROJECT PROPONENT

Massachusetts Institute of Technology (MIT)

LEGAL COUNSEL

Goulston & Storrs

Gallucio & Watson, LLP

PROJECT MANAGEMENT

Redgate

Northstar (Building 6)

BUILDING DESIGN ARCHITECTS

Elkus Manfredi Architects (Building 2)

Perkins + Will Architects (Building 3)

NADAAA/Perkins & Will (Building 4)

Weiss/Manfredi Architects (Building 5)

nARCHITECTS (Building 6)

LANDSCAPE ARCHITECTS

Hargreaves Associates

RETAIL AND PLACEMAKING

Graffito SP

CIVIL ENGINEERING

Nitsch Engineering

TRANSPORTATION ENGINEERING

VHB

PARKING CONSULTANT

Desman Design Management

M/E/P Engineering

AHA Consulting Engineers

Bard Rao + Athanas Consulting Engineers

WSP

ARUP

Structural Engineering

MacNamara · Salvia

Robert Silman Associates

Odeh Engineers

GeoTechnical/GeoEnvironmental

McPhail Associates, LLC

Acoustical Engineering

Acentech

Sustainability Consultant

Atelier Ten

The Green Engineer

District Energy Consultant

JB&B

Wind Consultant

RWDI Consulting Engineers

Surveyor

Feldman

PreConstruction Services

Turner Construction

Elaine Construction

Communications

Solomon McCown & Company

SUBMITTED MATERIALS

MIT is requesting a Project Review Special Permit pursuant to Article 19 of the Zoning Ordinance. Special Permit Application Forms including Cover Sheet, Dimensional Form (as modified for this project), Ownership Certificate and Fee Schedule are included in this Project Review Special Permit Application immediately following this page.

The proponent submitted a Traffic Impact Study for this project on June 22, 2015 and City of Cambridge Traffic, Parking and Transportation Department (TPT) certified the study on July 21, 2015. Due to the size of the study it is not included as an Appendix to this document but is available upon request of the proponent or the TPT.

The proponent has met with the City Arborist and has submitted a preliminary Tree Study demonstrating how the project can meet the requirements of the Tree Protection Ordinance, Chapter 8.66 of the Cambridge Municipal Code. A final Tree Study will be provided in the Final Development Plan following review of the landscape plans by the Planning Board.

As required by Section 19.24 of the Zoning Ordinance this Application includes an Urban Design Objectives Narrative, a Sewer Service Infrastructure Narrative, a Water Service Narrative and a Noise Mitigation Narrative. A Wind Study, Shadow Study and Acoustical Study are included as Appendices to this Application.

As required by Article 22 of the Ordinance, MIT has included in this application LEED Project Checklists for the Site and for each of the 5 buildings proposed as well as a Sustainability Narrative describing how the project will be designed to meet the applicable requirements.

This application also addresses the requirements of Section 13.80 Planned Unit Development 5 District as appropriate.

A separate SoMa Project Graphics Materials package has been submitted under separate cover to accompany this Application. The graphics package includes Existing Conditions and Site Context Maps and Photographs as well as Proposed Site Plans, Floor Plans, Landscape Plans, Elevations and Perspectives.

Certifications of Receipt of Plans are included in the Appendix of this Application.

CITY OF CAMBRIDGE, MASSACHUSETTS

PLANNING BOARD

CITY HALL ANNEX, 344 BROADWAY, CAMBRIDGE, MA 02139

SPECIAL PERMIT APPLICATION • COVER SHEET

In accordance with the requirements of the City of Cambridge Zoning Ordinance, the undersigned hereby petitions the Planning Board for one or more Special Permits for the premises indicated below.

Location of Premises: Various Addresses (See attached addendum)

Zoning District: Residence C-3B, Mixed Use Residential Overlay (MXR), PUD-5

Applicant Name: Massachusetts Institute of Technology

Applicant Address: 238 Main Street, Cambridge, MA 02142

Contact Information: 617-258-5634 mowu@mit.edu

Telephone # Email Address Fax #

List all requested special permit(s) (with reference to zoning section numbers) below. *Note that the Applicant is responsible for seeking all necessary special permits for the project. A special permit cannot be granted if it is not specifically requested in the Application.*

Planned Unit Development Special Permit (Article 12.000 and Section 13.82)
Project Review Special Permit (Section 19.20)

List all submitted materials (include document titles and volume numbers where applicable) below.

Planned Unit Development Special Permit Application
MIT Kendall Square Initiative – SoMa (South of Main) Project
Project Review Special Permit Application
MIT Kendall Square Initiative – SoMa (South of Main) Project
MIT Kendall Square Initiative – SoMa (South of Main) Graphics Package

Signature of Applicant:

For the Planning Board, this application has been received by the Community Development Department (CDD) on the date specified below:

Date Signature of CDD Staff

MIT – SoMa Special Permits Application Filing

Addendum to Application Cover Sheet

Location of Premises:

Development Parcel B

84 Wadsworth Street and 36 Memorial Drive.

Development Parcel C

226-254 Main Street, 65 Wadsworth Street, 16 Hayward Street, Hayward Street, 264 Main Street, 292 Main Street, 1 Hayward Street, 8, 26, 28, 34, 42 and 46 Carleton Street, Carleton Street, 310, 322 and 336 Main Street, 65 Carleton Street, 5 and 21 Deacon Street, and 40 Ames Street.

OWNERSHIP CERTIFICATE

Project Address: Multiple Parcels (see attached) **Application Date:** July 27, 2015

This form is to be completed by the property owner, signed, and submitted with the Special Permit Application:

I hereby authorize the following Applicant: Massachusetts Institute of Technology

at the following address: 77 Mass. Ave, Cambridge MA 02139

to apply for a special permit for: A mixed-use multi-building project

on premises located at: Several properties (see attached addendum)

for which the record title stands in the name of: Massachusetts Institute of Technology

whose address is: 77 Mass. Ave, Cambridge MA 02139

by a deed duly recorded in the:

Registry of Deeds of County: See attached Book: Page:

OR Registry District of the Land Court, Certificate No.: Book: Page:

Signature of Land Owner (If authorized Trustee, Officer or Agent, so identify)

To be completed by Notary Public:

Commonwealth of Massachusetts, County of middlesex

The above named Seth Alexander personally appeared before me,

on the month, day and year 7/23/15 and made oath that the above statement is true.

Notary: Christine A. Martignetti

My Commission expires:

CHRISTINE A. MARTIGNETTI
Notary Public
Massachusetts
Commission Expires Mar 5, 2021

MIT – SoMa Special Permits Application Filing

Addendum to Ownership Certificate

Property Addresses:

Development Parcel B

84 Wadsworth Street and 36 Memorial Drive.

Development Parcel C

226-254 Main Street, 65 Wadsworth Street, 16 Hayward Street, Hayward Street, 264 Main Street, 292 Main Street, 1 Hayward Street, 8, 26, 28, 34, 42 and 46 Carleton Street, Carleton Street, 310, 322 and 336 Main Street, 65 Carleton Street, 5 and 21 Deacon Street, and 40 Ames Street.

Vesting Deed References:

Development Parcel B

Deed dated October 31, 1952 and recorded with Middlesex South Registry of Deeds in Book 7986, Page 523 and filed with Middlesex South Registry District of the Land Court as Document No. 264993 (creating Certificate of Title 76987),

Deed dated September 25, 1956 and recorded with Middlesex South Registry of Deeds in Book 8823, Page 106,

Deed dated November 15, 1963 and filed with Middlesex South Registry District of the Land Court as Document No. 399602 (creating Certificate of Title 112995),

Deed dated December 28, 1950 and filed with Middlesex South Registry District of the Land Court as Document No. 246868 (creating Certificate of Title 71877), and

Deed dated February 28, 1964 and filed with Middlesex South Registry District of the Land Court as Document No. 402652 (creating Certificate of Title 113752) and recorded in Book 10473, Page 318.

Development Parcel C

Portion containing and abutting Building Parcel 3

Deed dated April 9, 1968 and recorded with Middlesex South County Registry of Deeds in Book 11490, Page 32; Deed dated March 6, 1962 and recorded in Book 9995, Page 432; and Deed dated September 15, 1961 and filed as Document 370630 creating Certificate of Title 105748.

Portion containing Hayward Street

Grant of Easement from the City of Cambridge to the Massachusetts Institute of Technology, dated June 28, 1993, and recorded in Book 23326, at Page 15.

Portion containing and abutting Building Parcel 4

Deed dated July 2, 1969 and recorded with Middlesex South County Registry of Deeds in Book 11703, Page 181; Deed dated July 23, 1968 and recorded in Book 11563, Page 512; Deed dated November 7, 1988 and recorded in Book 19459, Page 156; Deed dated April 30, 1982 and recorded in Book 14596, Page 508; Deed dated December 13, 1967 and recorded in Book 11443, Page 194 and filed as Document 450990 (Certificate of Title 125701); Deed dated January 16, 1974 and filed as Document 519189 (Certificate of Title 142984); and Deed dated December 13, 1967 and recorded in Book 11443, Page 199.

Portion containing Carleton Street

Easement from the City of Cambridge to the Massachusetts Institute of Technology, dated June 28, 1993, and recorded in Book 23326, at Page 21.

Portion containing and abutting Building Parcel 5

Deed dated December 4, 1986 and recorded with Middlesex South County Registry of Deeds in Book 17637, Page 455; Deed dated December 13, 1967 and recorded in Book 11443, Page 194; Deed dated December 22, 1986 and filed as Document 730908 (Certificate of Title 178776); Deed dated November 7, 1988 and filed as Document 787433 (Certificate of Title 184147) and also recorded in Book 19459, Page 151; and Release Deed recorded in Book 65786, at Page 60.

Portion containing and abutting Building Parcel 6 (and portion running between westerly side of Carleton Street and Building Parcel 6)

Deed dated December 27, 1960 and recorded with Middlesex South Registry of Deeds in Book 9737, Page 321, and filed with Middlesex South Registry District of the Land Court as Document No. 32160 (creating Certificate of Title 103584), by virtue of a Deed dated March 13, 1970 and recorded with Middlesex South Registry of Deeds in Book 11811, Page 117, and filed at Middlesex South Registry District of the Land Court as Document No. 474308 (creating Certificate of Title No. 131990); by virtue of deed dated September 30, 1971 and recorded in Book 12083 Page 668 and filed as Document 490396 (creating Certificate of Title No. 136077); and by virtue of a deed dated May 18, 1973, and recorded with the Middlesex South District Registry of the Land Court as Document No. 511001 (creating Certificate of Title No.140922).

Project Address: Multiple Parcels (see attached) **Application Date:** July 27, 2015

The Applicant must provide the full fee (by check or money order) with the Special Permit Application. Depending on the nature of the proposed project and the types of Special Permit being sought, the required fee is the larger of the following amounts:

- If the proposed project includes the creation of new or substantially rehabilitated floor area, or a change of use subject to Section 19.20, the fee is ten cents ($0.10) per square foot of total proposed Gross Floor Area.
- If a Flood Plain Special Permit is being sought as part of the Application, the fee is one thousand dollars ($1,000.00), unless the amount determined above is greater.
- In any case, the minimum fee is one hundred fifty dollars ($150.00).

Fee Calculation

New or Substantially Rehabilitated Gross Floor Area (SF): 1,130,500	× $0.10 =	$113,050
Flood Plain Special Permit	Enter $1,000.00 if applicable:	
Other Special Permit	Enter $150.00 if no other fee is applicable:	$150
TOTAL SPECIAL PERMIT FEE	**Enter Larger of the Above Amounts:**	$113,200

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SECTION I: Introduction

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MIT's Kendall Square Initiative South of Main ("SoMa") Project (the "SoMa Project") is an opportunity to transform five parking lots owned by MIT on its East Campus into a new, fully urban, mixed-use district in the heart of Kendall Square that will:

- Enhance the ground floor public realm and provide the foundation for continuous streetwall and related ground floor retail from Ames Street to the Longfellow Bridge on the south side of Main Street
- Increase the amount of publicly beneficial open space with a focus on community interaction and programming
- Increase the amount of MIT graduate student housing and locate it in the center of Kendall Square
- Create new office and R&D jobs and reinforce Kendall Square, MIT, and Cambridge's preeminent position as a leader in innovation
- Provide critical space to accelerate MIT's innovation and impact, strengthen the innovation ecosystem, and enable stronger interactions between the MIT campus community and the Kendall Square community
- Provide a new location for the MIT Museum and an opportunity to increase its exposure and role as a regional resource

The SoMa Project area consists of 293,808 sf (6.75 acres) divided into two development parcels. Parcel B, the site of proposed Building 2, is the site of the existing MIT Eastgate graduate housing building and its associated surface parking and measures 69,711 sf (1.6 acres). Parcel C, the site of Buildings 3-6, is the site of 485 surface parking spaces, several underutilized campus and commercial buildings and MIT loading facilities and measures 224,097 sf (5.14 acres). Existing conditions are shown on Figures A-1 – A-6 of the *MIT Kendall Square Initiative – SoMa Project Graphics Materials* dated July 27, 2015 ("Graphics Set").

The proposed SoMa Project includes five buildings: three will house office and/or R&D uses, one will provide graduate student housing, and one is proposed as a small retail building. All will include retail and/or actives uses on the ground floor. MIT has selected accomplished architectural teams to design each of these five buildings. Each building has its own expression and concept that is reflective of its uses while ensuring that the buildings work together to create a complementary urban context. The modern design respects the City of Cambridge (the "City") urban design guidelines and highlights the interaction with the public realm with multiple openings.

The SoMa Project will retain and incorporate the three historic buildings along Main Street: The Kendall Building (238 Main Street, E48); The J.L. Hammett Building (264 Main Street, E39) and The Suffolk Building (292 Main Street; E38). The ground floor retail in these buildings will be repositioned and the buildings will be modified through techniques including lowering the ground floor to meet grade, which will increase accessibility and porosity of retail and other active uses (retail entries are currently approximately 3 feet above grade). The ground floors of existing buildings along Wadsworth Street, Hayward Street and Carleton Street will also be modified to include active uses as they integrate into the active ground floors of the proposed buildings. MIT believes that celebrating the three historic buildings and integrating their design with the proposed modern buildings serves as a physical expression of the evolution of Kendall Square from its early industrial roots to a center of innovation.

The SoMa Project – in conjunction with MIT's NoMa (North of Main) Project – includes over 100,000 square feet of new or repositioned ground floor retail and active uses for much-needed neighborhood amenities such as a potential drugstore and an urban grocer in Kendall Square and continue the growth of restaurants, and other establishments to serve the workforce, neighborhood and region.

The SoMa Project transforms existing parking lots and streets into more than two acres of new publicly accessible and porous open space that will be added to the eight acres currently existing within PUD-5. The landscape is designed to be a cohesive and pedestrian-oriented open space, connected by upgraded streetscapes to adjacent properties and neighborhoods. Hayward Street will be closed to through vehicular traffic, the north and south sections serving only as access for building-specific service and loading, and a key section of Carleton Street will be converted into a shared street, and raised crossings will prioritize the pedestrian experience on Wadsworth Street. Each of Carleton and Wadsworth Streets leads into the open space and extends access to an area that will promote greater public use. The open space is the connective tissue of the Kendall Square Initiative, connecting the MIT east and main campuses and connecting the campus and the community.

The public realm is designed to offer a diversity of destinations and program opportunities for a broad range of anticipated users: residents, neighbors, workers, visitors and students. It will serve as a gathering space for the community and include programming influenced by the open space and retail advisory committee. Key elements include an 'urban forest' of canopy trees above a richly textured unit paver ground plane, interspersed with discrete lawns, and densely planted gardens of native and adaptive planting. This landscape may include an interactive fountain or interactive technology-focused art installation, either permanent or temporary.

The SoMa Project is designed to be a leader in sustainability. All of the buildings will be designed to achieve USGBC LEED Gold V.4 ratings and will include comprehensive sustainability strategies such as district stormwater capture and reuse, high performance envelopes that integrate a mix of insulating materials, advanced glazing materials, external shading, efficient building mechanical systems to reduce energy consumption and an open space that fosters healthful interaction with the surroundings.

The SoMa Project includes 1,494 (809 net new) parking spaces primarily located in two below grade garages. A below grade garage on Parcel B will include 278 spaces to serve Building 2 above. Parking will be provided on Parcel C to serve the new demand generated from buildings 3, 4, 5 and 6 (531 spaces), replace the surfaces spaces displaced by the proposed project in Parcels B and C (485 spaces) and relocate spaces from elsewhere on the MIT campus (200 spaces). Of these 1216 spaces on Parcel C, 1,156 will be located in the below grade "SoMa Garage" and approximately 60 will be located at a new, well-landscaped surface parking area that will continue to serve visitors to the MIT Medical Department, the Media Lab and other academic groups. The garages will include long-term secured bike parking and space for carpools/vanpools, carsharing and alternative energy vehicles. Short-term bike parking will be provided at grade. Parking and bikes storage is shown on Figures D-77 – D-85.

SECTION II: Project Description, Development Phasing and Schedule and Public Benefits

SECTION II: PROJECT DESCRIPTION, DEVELOPMENT PHASING AND SCHEDULE AND PUBLIC BENEFITS

A. Project Description

i. Existing Conditions

The SoMa Project site is located in East Cambridge adjacent to the MBTA Red Line Kendall Square Station, and bounded by Main Street to the north, MIT Building E19 to the west, Amherst Street to the south and the MIT Sloan School of Management (MIT Building E62) to the east. The proposed SoMa Project is comprised of two Development Parcels referred to as "SoMa Development Parcel B" (including Building Parcel 2) and "SoMa Development Parcel C" (including Building Parcels 3-6). Concurrent with this filing, MIT has filed a separate Development Proposal for NoMa Development Parcel A for a property in the PUD-5 district that is located north of Main Street in the Third Street Transition Subdistrict (the "NoMa PUD Filing"). The parcel organization is shown on Figures A1 and A2 described below:

SoMa Development Parcel B is located south of Main Street, northwest of the Sloan School of Management and east of Wadsworth Street. Development Parcel B site is currently occupied by MIT's Eastgate Building (E55) which provides 201 graduate housing units as well as a childcare facility to support the MIT community. These existing graduate housing and childcare uses will be transferred from this site to Building Parcel 4 as part of the proposed development. The 49 surface parking spaces adjacent to Eastgate will be relocated to the parking facilities at Development Parcel C as part of the proposed development. Access to the existing parking lot is provided from Wadsworth Street as well as from Main Street.

SoMa Development Parcel C is located south of Main Street, west of Wadsworth Street, north of the Muckley building (E40) and Amherst Street, and is bounded at its westerly end by MIT Buildings E23, E25, E18 and E19 and includes Hayward Street and a portion of Carleton Street. Three historic buildings along Main Street will be retained and incorporated as part of the proposed project.

- The Kendall Building (E48; 238 Main Street) is a five-story brick building containing 69,219 GSF of office space that will be retained in the proposed project in addition to

12,781 GSF of retail that will be repositioned.

- The Hammett Building (E39; 264 Main Street) is a three-story brick building containing 31,994 GSF of office space that will be retained in the proposed project and 10,806 SF of retail that will be repositioned.
- The Suffolk Building (E38; 292 Main Street) contains 64,646 GSF of academic space that will be retained in the proposed project and 1,800 SF of retail that will be repositioned.

A total of four buildings located in Development Parcel C will be removed. These include:

- E33 and E34 are academic buildings totaling 35,313 GSF
- E28/Cambridge Trust is a one-story brick building on the northwest corner of the site that contains the 2,923 GSF Cambridge Trust Company and 4,239 GSF of office space.
- 8 Carleton Street is a three-story brick building totaling 12,624 GSF of office/lab space.

Development Parcel C includes surface parking lots for 414 spaces that will be replaced on Parcel C as part of the SoMa Project:

- 49 academic surface parking spaces as well as 70 commercial spaces between Wadsworth Street and Hayward Street that support the buildings along Main Street. Access to the academic lot is located on Hayward Street while the curb cut to the commercial parking lot is provided on Wadsworth Street.
- 189 surface parking spaces for MIT academic uses, 19 parking spaces for commercial, retail and office tenants along Main Street and 13 commercial parking spaces serving 8 Carleton in lots between Hayward Street and Carleton Street. Parking is accessed from Hayward Street and from Carleton Street.
- 60 surface parking spaces for MIT academic uses and 14 surface commercial parking spaces for Cambridge Trust. Access to the MIT parking spaces is provided by a curb-cut on Deacon Street while a separate curb-cut is used to access the Cambridge Trust parking lot on Dock Street adjacent to the Kendall Hotel.

Development Parcel C also includes the area for the future Building 6 located on the south side of Main Street between the MIT Ford building (E19) and the Kendall Hotel on the E19 loading dock facility and MIT fleet vehicle parking lot. There is one approximately 60 foot wide curb-cut serving MIT fleet vehicles and trucks accessing the loading docks. There are 22 parking spaces provided for MIT fleet vehicles to use throughout the day. Five loading docks as well as two trash compactors serve the loading needs for the academic buildings on MIT's East campus. The loading and service activity for the MIT campus will continue after

Building 6 is completed. This new building will help create continuous active storefronts all the way from E19 to MIT's Sloan School.

The entirety of both SoMa Development Parcel B and SoMa Development Parcel C is currently owned and controlled by MIT with the exception of Carleton and Hayward Streets which are owned by the City of Cambridge but over which MIT has perpetual easements to maintain, control and construct improvements in such streets. Existing conditions are shown in Figures A-1 – A-6.

The existing site uses that will be replaced with proposed development are presented in Table A.: Existing Buildings to be Removed.

Table A Existing Buildings to be Removed (in Gross Square Feet "GSF")

Building Site	Academic GSF	Office GSF	Retail GSF	Residential GSF	Academic Housing GSF	Total
Development Parcel B						
E55 (Eastgate)	**0**	**0**	**0**	**0**	**172,350**	**172,350**
Development Parcel C						
E33	7,980	0		0	0	7,980
E34	27,333			0	0	27,333
8 Carleton		13,624				13,624
E28/Cambridge Trust		4,239	2,923			7,162
Total Parcel C	**35,313**	**17,863**	**2,923**	**0**	**0**	**56,099**
TOTAL SoMa	35,313	17,863	2,923	0	172,350	228,449

ii. Proposed Development

a. Buildings

The SoMa project will transform 5 parking lots into an active mixed use environment. The SoMa Project development program is summarized in Table C, and is described below. In addition to the building program, the project will facilitate a continuous retail environment along Main Street that will include a significant number of local and independent retailers as well as more than two acres of new open space which will be programmed to enhance interaction among all members of the MIT and greater Kendall communities.

SoMa Development Parcel B

Building 2 will contain approximately 300,000 GSF of office uses and approximately 18,000 GSF of ground floor retail and active uses. The building will be positioned on the Development Parcel to activate the corner of Main Street and Wadsworth Street, facilitating pedestrian and bike travel to the river and extending Main Street retail all the way to the Sloan School. The building will be set back so that travelers crossing the Longfellow Bridge from Boston to Cambridge will have the iconic clock tower on the Kendall Building in full view.

SoMa Development Parcel C

Building 3 will be an addition to the rear of the Kendall Building totaling approximately 280,000 GSF of research, laboratory and technical office space (R&D) use and approximately 27,000 GSF of new and repositioned retail and active uses. Approximately 69,219 GSF of office space currently located in the Kendall Building will be retained. The top of Building 3 will be designed and positioned to provide a frame for the clock tower while still providing an opportunity for larger retail such as an urban grocer or a pharmacy at the base of the building.

Building 4 will include approximately 330,000 GSF of Academic Graduate Housing and a 9,000 GSF childcare facility as well as 28,000 GSF of new retail or repositioned retail and active uses in E38, E39 and the new building. The Academic Graduate Housing and childcare facility are being moved from Building Parcel 2 (E55) to Building 4. The Graduate Housing will increase in size from 201 units to approximately 450 units. The upper floors of E38 will continue to contain 64,646 GSF of academic space but will be the home of MIT's Innovation and Entrepreneurship (I&E) programs, bringing these activities at the center of the Kendall Square innovation cluster. The upper floors of E39 will continue to contain 31,994 GSF of academic office space.

Building 5 will contain approximately 360,000 GSF of office and approximately 20,000 GSF of retail on the ground floor. In addition, this Building is the proposed new home of the MIT Museum which will occupy approximately 65,000 GSF. The Museum will naturally serve as a new anchor in the neighborhood and provide an activity center that extends past weekday work hours. The innovative design will make it a signature piece of architecture that gives Kendall Square an enhanced identity. MIT sees this parcel as a nexus point that connects

the community to the MBTA, MIT, and Main Street.

Building 6 will contain two stories of approximately 6,600 GSF of retail located on the northeast portion of the E19 Loading facility and parking lot. The loading facility will continue to serve the academic uses of the East Campus, however, the curb-cut will be minimized and moved slightly to the west to accommodate the proposed building. This new building helps to create continuous active storefronts all the way from E19 to MIT's Sloan School.

MIT is exploring the opportunity to relocate and update the existing MBTA Red Line head house slightly to the south in order to enhance the public realm and to create a more transparent, inviting and unique-to-Kendall-Square entrance to the MBTA.

The total proposed development program for the SoMa Project is summarized in Table C and illustrated in Figure A-7. The number of graduate student housing units proposed is approximately 450 and will depend on final unit configurations.

Table B Total Proposed Development Program by Building and Land Use (GSF)

Building	Office (GSF)	R&D (GSF)	Retail (GSF)	Museum (GSF)	Grad Housing (GSF/units)	Child Care (GSF)	Total (GSF)
Development Parcel B							
Building 2	300,000	0	18,000	0	0	0	318,000
Development Parcel C							
Building 3	0	280,000	27,000	0	0	0	307,000
Building 4	0	0	28,000	0	330,000	9,000	367,000
Building 5	360,000	0	20,000	65,000	0	0	445,000
Building 6	0	0	6,600	0	0	0	6,600
Development Parcel C	360,000	280,000	81,600	65,000	330,000	9,000	1,125,600
Total SoMa	665,000	280,000	99,600	65,000	330,000	9,000	1,443,600

b. Vehicular and Bicycle Parking and Loading

The SoMa Project will include 1,494 (809 net new) parking spaces primarily located in two below-grade garages.

The proposed SoMa office, R&D and retail project uses will generate a demand for 809 spaces based on the maximum parking ratios prescribed in the PUD-5 zoning and in conjunction with the Kendall Square Planning Study (K2). Additionally, 485 existing surface spaces will be replaced within the new project. Finally, MIT will relocate 200 spaces from other locations on campus to the

proposed parking garage at Development Parcel C. No net new parking is associated with the graduate housing, MIT Museum or childcare facility.

Approximately 278 parking spaces to serve the building uses will be provided in a below-grade garage beneath Building 2 (Development Parcel B). These spaces will be accessed via a single ramp located on the easterly side of Wadsworth Street. In addition, loading and service trucks will access at-grade loading docks from Wadsworth Street.

Parking for 1,216 cars will be included on Development Parcel C in an 1,156 space below-grade parking garage located beneath Building 4 and the open space located to the south of Building 4 and accessed via Wadsworth Street and Amherst Street and in a 60 space surface lot accessed from Amherst Street. Loading and service for the office, R&D, museum, retail, graduate housing and daycare will take place in the designated loading docks below grade. These loading facilities will be accessed from Hayward Street.

The Cambridge Zoning Ordinance applies parking ratios to a building's Gross Floor Area (GFA). GFA is defined in Article 2 of the Ordinance and is generally calculated by deducting from the Gross Square Footage (GSF) such items as vertical penetrations, attics, cellars, access to parking and loading, machine rooms, among other items. Other exemptions permitted in the PUD-5 district are not included. The Gross Floor Area (GFA) used to calculate parking demand for the SoMa Project is shown in Table C.

Table C Total Proposed GFA for Parking Demand

Building	Office (GFA)	R&D (GFA)	Retail (GFA)	Museum (GFA)	Grad Housing (GFA)	Child Care (GFA)	Total (GFA)
Development Parcel B							
Building 2	298,000	0	18,000	0	0	0	316,000
Development Parcel C							
Building 3	0	270,000	27,000	0	0	0	297,000
Building 4	0	0	28,000	0	330,000*	9,000	367,000
Building 5	305,000	0	20,000	65,000	0	0	390,000
Building 6	0	0	6,000	0	0	0	6,000
Development Parcel C	305,000	270,000	81,000	65,000	330,000	9,000	1,060,000
Total SoMa	603,000	270,000	99,000	65,000	330,000	9,000	1,376,000

Table D Vehicle Parking Demand

Building	Office (.9/1000)	R&D (.8/1000)	Retail (.5/1000)	Museum	Grad Housing	Child Care	Total
Development Parcel B Uses							
Building 2	269	0	9	0	0	0	**278**
Development Parcel C Uses							
Building 3	0	216	13	0	0	0	229
Building 4	0	0	14	0	0	0	14
Building 5	275	0	10	0	0	0	285
Building 6	0	0	3	0	0	0	3
Development Parcel C Total	275	216	40	0	0	0	**531**
Replaced Surface							**485**
Relocated Academic							**200**
Total Parking Demand							**1,494**

Table E Vehicle Parking Supply

	Total
Development Parcel B Garage	278
Development Parcel C Garage ("SoMa Garage")	1,156
Development Parcel C Surface Lot	60
Total Parking Supply	**1,494**

Bike storage spaces will be provided consistent with the City of Cambridge Bicycle Parking Requirements as shown on Tables F and G below and as shown on Figures D-77 – D-85.

Table F Long Term Bike Parking Demand

	Office	R&D	Retail	Museum	Grad Housing	Child Care	Total
Development Parcel B							
Building 2	**90**	**0**	**3**	**0**	**0**	**0**	**93**
Development Parcel C							
Building 3	0	60	4	0	0	0	64
Building 4	0	0	4	0	236	2	242
Building 5	92	0	3	8	0	0	103
Building 6	0	0	2	0	0	0	2
Development Parcel C	**92**	**60**	**13**	**8**	**236**	**2**	**411**
Total SoMa	**182**	**60**	**16**	**8**	**236**	**2**	**504**

Table G Short Term Bike Parking Demand

	Office	R&D	Retail	Museum	Grad Housing	Child Care	Total
Development Parcel B							
Building 2	19	0	12	0	0	0	31
Development Parcel C							
Building 3	0	17	17	0	0	0	34
Building 4	0	0	17	0	25	2	44
Building 5	19	0	13	8	0	0	40
Building 6	0	0	5	0	0	0	5
Development Parcel C	19	17	52	8	25	2	123
Total SoMa	65,000	280,000	99,600	65,000	330,000	9,000	1,443,600

c. Open Space

The Development Proposal transforms existing parking lots and streets into more than two acres of new publicly accessible and porous open space that will be added to the eight acres currently existing within PUD-5. The landscape is designed to be a cohesive and pedestrian-oriented open space, connected by upgraded streetscapes to adjacent properties and neighborhoods. Hayward Street, a private way controlled by the Applicant pursuant to easement rights, will be closed to through vehicular traffic with the north and south sections serving only as access for building-specific service and loading. In addition, a key section of Carleton Street, a private way controlled by the Applicant pursuant to easement rights, will be converted into a shared street. MIT also intends to install raised crossings in Wadsworth Street to prioritize the pedestrian experience on this street. Each street leads into the open space and extends access to an area that will promote greater public use. The open space is the connective tissue of the Kendall Square Initiative, connecting the MIT east and main campuses

and connecting the campus and the community.

The public realm is designed to offer a diversity of destinations and program opportunities for a broad range of anticipated users: residents, neighbors, workers, visitors, faculty and students. It will serve as a gathering space for the community and include programming influenced by the open space and retail advisory committee. Key elements include an 'urban forest' of canopy trees above a richly textured unit paver ground plane, interspersed with discrete lawns, and densely planted gardens of native and adaptive planting. This landscape may include an interactive fountain or interactive technology-focused art installation, either permanent or temporary.

Site furnishings may include moveable tables and chairs in addition to a variety of fixed seating opportunities and materials. The public realm is above all else intended to be an adaptable landscape accommodating to passive sitting and socializing. These elements can accommodate both active events such as festivals, lectures, and outdoor symposia, as well as more passive daily activities such as eating lunch on a bench or relaxing on the lawn under the shade of a tree. The balance of hardscape paving and softscape vegetation throughout the core open space maximizes the flexible use of the space and could promote activities such as outdoor classes, chessboards, farmers markets and innovation demonstrations. The balance of activities planned for this space prioritizes full public access, and an 18-hour / all seasons design, including snow removal and storage.

In order to achieve this dynamic and active open space, intrinsically adaptable to future change, the proposed plan integrates with existing urban networks. Enhanced connections are provided both to and from the core open space. Essential connections through the space are emphasized, with particular attention paid to the interfaces with Main Street's upgraded streetscape, MIT's internal campus spine 'Infinite Corridor', and neighborhood connections along Third Street to the river along Wadsworth Street. In addition, the district public realm is designed to integrate with the following networks: streetscape network, urban canopy and green space, existing activities and amenities, public transportation, pedestrian and bike networks, lighting and wayfinding, and stormwater management.

Ample and distributed exterior locations for short term bike storage integrate this project into the greater bike infrastructure of Cambridge. Significantly expanded long-term bike storage in the garages complement the approximately 154 short-term bike racks distributed across the open space.

Consistent with MIT's April 9, 2013 Commitment Letter, adopted as part of the PUD-5 zoning amendment, MIT will establish an advisory committee that will meet annually to ensure that the community is involved in the programming of activities for the open space and the retail. This committee will include representatives from the Community Development Department, adjacent neighborhoods and MIT.

d. Ground Floor Activation and Retail Uses

Section 13.810.1 of the PUD-5 Zoning requires that development plans enhance the public pedestrian usage of the sidewalks and create a sense of neighborhood continuity by providing an interesting, lively and active presence at street level. To ensure this, the PUD-5 Zoning further calls for active uses to comprise 75% of the first floors (to a depth of 20 feet from the principal front wall plane of the building) abutting Main Street, Broadway and Broad Canal Way. The SoMa Project takes this concept further by providing active uses on ground floors along the secondary streets of Wadsworth, Hayward and Carleton and along the south side of the adjoining newly constructed buildings as they face the planned open space.

The SoMa Project includes 99,000 gsf of ground floor space available for retail and other active uses, while the companion NoMa Project includes an additional 16,000 square feet. MIT has engaged the services of a retail consultant who has expertise in Kendall Square and Cambridge and in placing local and independent retailers. MIT is committed to ensuring the presence of small and local retailers in Kendall Square and has a track record of implementing strategies to enable these retailers to thrive in Kendall Square and Central Square. As set forth in the Commitment Letter, MIT has committed that 50% of the retailers will be local and independent so we will use similar techniques in the PUD-5 District to satisfy this commitment.

Included in the experience is proven and public placemaking with creative and flexible spaces provided for all. MIT has worked with this retail consultant to develop an initial retail vision for the ground floor spaces in the PUD-5 District. Although this submission is primarily focused on the SoMa Project, the retail strategy is best understood through discussions of the PUD-5 District in its entirety, including the Broad Canal Way area of the NoMa Project.

As shown on Figures C-1 – C-4, the retail strategy for PUD-5 District consists of four zones that complement existing uses in proximate buildings in order to establish a seamlessly integrated pattern of robust retail and active uses. The design of the ground floor spaces and the open space will work together to encourage spill out of ground floor building activity into the landscape, providing

flexible zones along the building faces. Multiple doors and windows at the ground floor will emphasize the connection to the public realm and create a feeling of transparency between inside and outside. Temporary events or activities can spill out from the buildings into the open space. The overarching objective is to blur the distinction between inside and outside by maximizing clear glass and operable glazing and taking advantage of opportunities to occupy both the ground floor and immediate exterior space as part of a diverse range of active uses.

"Main Street" Retail Zone: Retail on the south side of Main Street is currently interrupted by a loading dock at Building Parcel 6 and the parking lot at Building Parcel 2. The retail environment for the existing retailers that are present is suboptimal due to the fact that the first floors of the Hammett and Suffolk Engraving Buildings are situated approximately 3 feet above grade. The proposed SoMa Project provides the opportunity to program retail and active uses from Ames Street to the Sloan School on the South side of Main Street. The retail at the ground floors of the existing buildings along Main Street will be repositioned as part of the strategy. The ground floors will be dropped to the street level so as to make the retail more accessible and interactive with the public realm, while preserving the historic ensemble and bringing new life to these buildings. Retail on both sides of Main Street will create a critical mass along this corridor and also provide a new context for the retail at the existing One Broadway building situated in the NoMa Development Parcel.

The strategy for retailers along the Main Street zone is to meet the needs of various communities through the types of neighborhood retail that supports students, faculty, residents and workers. In Kendall Square, this will include the practical and accessible retailers the community has called for such as a pharmacy, a grocer, grab and go food service, and soft goods retailers including the MIT Press Bookstore and sit-down restaurants. Care will be taken to tenant key corners to facilitate interaction with the streetscape, sidewalk, pedestrians and landscaping at those edges.

"Gathering" Zone: The area around the MBTA station where Main Street and Carleton Street connect is the crossroads of Kendall Square – the nexus where business, academic, community and visitors connect. As shown in Figure B-17, the width of the plaza area is approximately 89 feet and is anchored by an architecturally enhanced MBTA station and the new MIT Museum in Building 5. It is also a prime connector between the MIT campus, the new public open space, links to the river, and Main Street. As with the Main Street side, the ground floor of E38 on the west side will be dropped to grade to foster accessibility and permeability and to bring new life and activity into the historic structure.

Ground floor active uses that occur here will foster interaction between all users of the adjacent spaces, be complementary to the MIT Museum and be conducive to activities that spill out onto the open space during the majority of the year in order to foster life beyond the work day. This is the prime location to create an extended hours environment in Kendall Square throughout the week and weekends.

Neighborhood and Campus Services Zone: The ground floors of Buildings 2, 3 and 4 have been designed to provide active ground floor uses on their south side as they open onto the open space. By activating both sides of the new buildings, we are creating a porous and unique environment that allows students, faculty, workers and neighborhood residents to enjoy the retail from both the hustle and bustle of Main Street as well as the relaxing open space on the south side of the buildings. Ground floor active uses could incorporate and integrate with activities in the open space allowing residents, students, visitors and workers to experience the practical retail and MIT-focused uses along with the restaurants and extended-hours retail.

Broad Canal Zone: While this document focuses on SoMa, the retail and public realm strategy covers the entire district and thus it is important to understand how the activation of Broad Canal Way at the northerly edge of the NoMa Project has been imagined and is integrated. The infill building at the south side of Broad Canal Way presents an opportunity to complement the successful uses along the north side and create a two-sided retail corridor. The existing uses on the north side are primarily neighborhood restaurants and an upscale wine/beverage store. Complementary uses on the south side could add additional neighborhood restaurants as well as a market with prepared foods. The NoMa Project is located at a critical juncture in the Charles River pedestrian and recreation system. The Broad Canal accommodates put-in for kayaks while runners and bicyclists travel in multiple directions throughout Kendall Square, creating opportunities for more active retail such as a bike shop, a yoga studio or an outdoor supply store. The new pathway connecting Main Street to Broad Canal Way is an ideal location for a retailer or other family-friendly activities that complement the active lifestyle of Kendall Square's residents, workers and visitors. The planned 20' pedestrian corridor will enhance the experience both during the day and at night with a safe, convenient, and active pathway to and from the Canal.

Kendall Square is home to some of the most groundbreaking technological advancements in the world. Incorporating that spirit into ground floor spaces – whether the MIT Museum, maker space or similar programming -- will recognize and celebrate the creative genius that is Kendall Square.

The ground floors will be subdivided into small spaces except where a larger format use such as a grocer, pharmacy or entertainment space is contemplated. Although zoning includes incentive for retail spaces under 5,000 square feet, MIT envisions that most of the retailers will be significantly smaller than that, fostering more doors on the street, and increased and varied offerings.

B. Development Schedule and Phasing

MIT expects to develop the SoMa Project buildings over the next 7-10 years. MIT intends to move forward immediately following receipt of permits. The exact sequence will be determined based on MIT needs and market conditions. MIT may choose to pursue more than one building simultaneously or in sequential fashion. With that said, the SoMa Project is complex and there are a few constraints that will be considered as the phasing moves forward:

- Building 6 is a 6,600 gsf infill retail building that will serve to contribute to continuous streetwall and retail uses on the south side of Main Street. This building does not have interdependencies with the other SoMa buildings, and, therefore, could be built at any time. MIT anticipates that it will be built early in the development.
- Building 2 will not be developed until Building 4 is completed and occupied with new graduate housing available to replace the existing graduate housing at Eastgate, thus not causing any loss in available graduate housing. MIT anticipates that Building 4 will be built early in the development.
- The below-grade parking at SoMa Development Parcel B will be constructed simultaneously with Building 2.
- Market conditions, future tenant requirements, and MIT's institutional needs will dictate which commercial building will move forward first –an office building and MIT Museum at Building 5 or an office/R&D building at Building 3.
- The below grade garage situated with SoMa Development Parcel C (the "Parcel C Garage") will be constructed sufficiently to support the initial commercial building(s) as well as to replace the displaced surface parking caused by the initial construction. However, MIT may choose to construct Parcel C Garage at one time in order to take advantage of construction efficiencies and below grade loading requirements.
- Open space and public realm improvements immediately adjacent to buildings will be constructed in conjunction with the construction of the buildings. The open space above the Parcel C Garage will be constructed immediately following the completion of the Garage. Pedestrian connections will be implemented to connect new open spaces as the spaces come on-line.
- Temporary parking or surface loading to service a new building may also be needed during the interim phases of construction.

C. Project Commitments and Community Benefits

The SoMa Project proposal incorporates a number of benefits including the addition of over two acres of open space, new ground floor retail and active uses, space for the MIT Museum, additional graduate student housing, new office/R&D space including innovation space and, as part of the companion NoMa Development Plan, additional market-rate and affordable housing. In addition, MIT has agreed to a number of other benefits related to the PUD-5 Zoning and the Commitment Letter. Due to the interrelationship of the SoMa and NoMa Development Plans, particularly as it relates to the public realm, the public benefits are best understood when described together, and, therefore, appear verbatim in both the SoMa and NoMa Development Proposals.

i. Preservation and Adaptive Reuse of Existing Buildings

MIT has worked closely with the Cambridge Historical Commission to develop a design plan that integrates the existing ensemble of historical buildings on Main Street. Kendall Square has always been a hotbed for innovation, from large manufacturers in the 1880s to the 'clean' industries that valued the newly filled land near the Broad Canal in the 1920s. Recognizing that the spirit of innovation is reflected in the Kendall, Hammett and Suffolk Buildings and the long history that has led Kendall Square to what it is today, the SoMa Project integrates the existing historic buildings in order to preserve and honor this important industrial heritage while simultaneously preparing for the groundbreaking work of the future — the work that defines MIT's mission and that of our many innovative partners in this district and beyond.

a. Building 3: The building will connect to and integrate with 238 Main Street at the first two levels through a common entranceway off Main Street.
b. Building 4: We will drop the first floors of the Hammett (264 Main Street) and Suffolk (292 Main Street) Buildings to the ground level to create more active and accessible retail for everyone. We have also designed the new building to be positioned over the top of the Hammett building, which integrates it into the design and creates an innovative juxtaposition of new and old.

ii. Transportation Improvements

a. Public Transportation Improvements: We are in discussions with the MBTA to create a new MBTA headhouse that would reflect the uniqueness of Kendall Square and Cambridge. The new headhouse will be subject to the MBTA's approval.

b. Pedestrian Improvements: The porous design of the project allows the community to access the open space and the newly activated retail from a number of different directions, and provides a clear path from Third Street to the river. The new development will create a clear path starting at Parcel A in the NoMa Project between Building 1 and the Red Cross, crossing Main Street on the proposed new crosswalk and entering Parcel B that will activate Wadsworth Street and continue the new path all the way to the river. We are making sure pathways to the river, through the open space, are enhanced for pedestrians and bikers visiting, working and living in Kendall Square and the surrounding neighborhoods.

c. Bicycle Accommodations: Walking and bicycling will be encouraged through an enhanced connection between NoMa Development Parcel A and the Red Cross building on Main Street that will provide a connection to existing bicycle lanes on Broadway/Main Street and Third Street, and over the Longfellow Bridge. In addition, we will be adding both short-term and long-term bicycle storage in the residential building and additional bicycle parking throughout Kendall Square.

iii. Open Space Network

MIT committed to providing a minimum of 15% of the land as accessible and welcoming open space for all in the community to enjoy so MIT will transform more than two acres of existing parking lots into accessible open space. To ensure the public has ample access to the open space, we have created a porous plan that draws the public into the open space at a number of access points and provides a clear path to the river. There will be activities that bring everyone in and it is envisioned as a nexus for business, MIT and the community to meet, socialize, converse and relax.

iv. Neighborhood Retail/Amenities

MIT will bring a new vitality to Kendall Square with practical ground floor retail—such as an urban grocer and a pharmacy; connected gathering and open spaces; and year-round programmable activities that draw people in. We are working with a retail consultant and are carefully curating the retail to meet the community's needs, including child and family-friendly retail and spaces and practical retail for residents that exists beyond the traditional workday. The MIT Museum will be a strong draw that will anchor activity in the area and create an extended hours environment.

v. Labor and Workforce Development

a. Union Labor: It is anticipated that the SoMa Project combined with the NoMa Project will generate approximately 1,300 construction jobs and 2,500 permanent new jobs. MIT will use or cause its contractors to use union labor for all building trades.

b. Apprentice Program: Career development and education are engrained in both Kendall Square and MIT's fabric. MIT will contribute up to $20,000 annually for a period of 10 years, commencing upon the Building Trade Council's creation of an apprentice Pathways Program for Cambridge residents. This will create approximately 15 new apprentice opportunities for Cambridge residents.

c. Workforce Development: MIT has been and will continue to include in new leases of commercial space in the PUD-5 District a covenant requiring that tenants notify the City of Cambridge Office of Workforce Development of all new job opportunities as they become available.

vi. **Cherry Street Lot**

MIT has committed land situated at 35 Cherry Street (Assessor's Lot #75-118) to the City of Cambridge or a third party designated by the City - for uses that directly benefit the Area IV community. The assessed value of the lot is $517,700.

vii. **Grand Junction Bicycle and Pedestrian Facilities**

MIT, jointly with the City, completed a study of all parcels it owns adjacent to the portion of the Grand Junction railroad branch between Main Street and Memorial Drive in order to consider the feasibility of granting the City of Cambridge easements for the construction of off-road bicycle and pedestrian facilities adjacent to the railroad line. MIT is also contributing $500,000 to the Cambridge Redevelopment Authority to construct a section of the path from Main Street to Broadway.

viii. **Innovation Space**

In addition to the innovation space included in PUD-5, MIT will provide an area equal to 5% of the gross floor area approved in the Development Plan for office use for innovation space for tenants not greater than 5,000 sf within 1.25 miles of PUD-5. MIT takes great pride in being a world leader in innovation and has helped create Kendall Square and the surrounding area into an Innovation and Academic District. Even though it has not yet begun to construct new buildings, MIT has already begun to expand the innovation area by working with Lab|Central to establish space for start-up tenants requiring laboratory facilities. Lab|Central is expected to expand in early 2016 when space becomes available and will occupy nearly 70,000 square feet. MIT has also historically used One Broadway to house Cambridge Innovation Center (CIC) and expects that relationship to continue and grow where possible.

ix. **Community Contributions:**

a. Community Benefit Organization: MIT shall make a contribution to the City of Cambridge in an amount equal to $4 multiplied by the number of square feet of new gross floor area of commercial uses. This contribution will be used to establish a fund that provides financial support to non-profit charitable community benefit organizations serving the residents of the City of Cambridge. The applicable GFA for the Kendall Square Initiative SoMa and NoMa projects combined is 888,000 GFA, resulting in a total contribution of $3,552,000. MIT has paid $1 million of this contribution.

b. Community Fund Contribution: MIT shall make a contribution to the City of Cambridge in an amount equal to $10 multiplied by the number of square feet of new gross floor area of commercial uses to a Community Fund established by the City Manager. The applicable GFA for the Kendall Square Initiative SoMa and NoMa projects combined is 888,000 GFA, resulting in a total contribution of $8,800,000. MIT has paid $2.5 million of this contribution. It is wholly at the City's discretion as to how the funding will be used, but it could be allocated to things like open space, transit services, and workforce development, which were discussed in the City's Kendall Square Central Square (K2C2) Planning Study.

x. Real estate Taxes:

When stabilized, it is anticipated that the buildings in the development plan will contribute approximately $10 million annually in real estate taxes to the City of Cambridge.

SECTION III: Consistency with Urban Design Objectives

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A. Introduction

The SoMa Project has been designed to be consistent with the City Of Cambridge Citywide Urban Design objectives (Section 19.30) as well as the dimensional requirements and goals established in the PUD-5 zoning, Eastern Cambridge Plan, the Eastern Cambridge Design Guidelines and the Kendall Square Design Guidelines (June 2013) developed as part of Cambridge's K2C2 study.

The narrative below broadly follows the structure of the Kendall Square Design Guidelines (June 2013), addressing key components of other relevant guidelines within as appropriate. Please reference the accompanying MIT Kendall Square Initiative SoMa Project Graphic Materials dated July 27, 2015 for additional detail.

B. Walkability/ Open Space/Universal Access/Ground Floor

The design of the buildings, open space and streetscape in the SoMa Project has been coordinated with the express intent to enhance pedestrian environmental and connections and break down the barriers between inside and outside of the buildings to create a dynamic and integrated public realm. Open Space and Connections are shown on Figures B-1 – C-4.

Building heights and setbacks are consistent with the requirements of the PUD-5 zoning.

The new buildings respect the established north south street grid and enhance the pedestrian network through the establishment of a new east – west pedestrian access corridor from the MIT medical buildings (E25) to the Sloan School and a pedestrian connection from the Sloan School to East Cambridge at a new pedestrian crossing across Main Street from the Sloan School to East Cambridge near the Red Cross building.

The SoMa Project also enhances the pedestrian experience along the secondary streets. The existing project area includes several narrow streetscapes currently lacking street trees – particularly Carleton Street, Hayward Street, and Wadsworth Street. The proposed plan anticipates widening building setbacks where possible to allow for broader sidewalks and a more heavily vegetated streetscape. These improved streetscapes will encourage neighborhood pedestrian use, enhancing street life along essential urban corridors where the active ground floor experience of buildings engages the public realm. These streetscapes will also contribute to and expand the urban canopy of

Cambridge, offering shade for comfort, mitigation of heat island effect, and contribute to stormwater management. Hayward Street will be partially discontinued to vehicular travel in order to further enhance the pedestrian nature of the area.

The new buildings are sited and oriented on the lots to be consistent with the established streetscape and to enhance the goals of walkability as follows:

- Building 2 is sited on its parcel in such a way as to activate the corner of Main Street and Wadsworth Street in a way that the current use of the site (Eastgate) does not.

- Buildings 3 and 4 are set behind preserved historic buildings resulting in a natural setback from Main Street. These new buildings are integrated with the existing buildings and the ground floors of the historic buildings and the new buildings will be connected to create a dynamic ground floor and pedestrian environment. Active ground floor uses that currently exist only on Main Street will wrap the historic buildings and continue along the secondary streets of Wadsworth, Hayward and Carleton. Active ground floor uses will also occur on the south side of the new buildings as they front the newly created open space.

- Building 5 is a hinge between the new open space to the south, and the vibrant commercial life of Kendall Square and Main Street to the north, and will redefine the arrival to the Kendall Square MBTA Station. At the pedestrian scale, the building cantilevers and folds back from the north east corner to create a generous sidewalk connection between Main Street and the MBTA station and the new public plaza space beyond. This cantilever is pulled well above the street scape to allow sun to reach the new MBTA station and Main Street Plaza and to give the ground floor retail full street frontage exposure. Arriving from the west side of Main Street, the building pulls back at this north east corner on the ground floor to frame the historic Suffolk Engraving Building, further inviting pedestrians into the open space beyond.

- Building 6 is sited to continue the street wall along Main Street.

- Parking and loading entries are located on secondary streets and consolidated where possible. Building 2 loading is internal to the building. The loading for Buildings 3-6 is consolidated and located below grade with a single access point off of Hayward Street. Parking for buildings 3-6 is also consolidated with access points off of Wadsworth Street and Amherst Street. Loading facilities are not more than 30 feet wide and will have the ability to be closed off when not in use. There are no turnaround or drop off facilities on public streets.

- The transformation of existing parking lots into a vibrant public realm includes the addition of much needed green open space for the PUD-5 District. Within the core open space, green bands of lawn and gardens provide a diversity of destinations for the MIT and Cambridge communities, offering areas for relaxation, shade, play, and gathering.
- The landscape design of the projects provides pedestrian links from Main Street to this open space at Carleton, Hayward, and Wadsworth Streets. The link at Carleton Street is also intended to serve as a new gateway from Kendall Square to the MIT campus, and will be an opportunity to help orient visitors arriving in Kendall Square via the MBTA. The open space will both continue and complement the Main Street activities. Ground floor uses along the southern edge of Building 4 include additional retail and active uses, entries to the graduate housing and childcare facilities, and an elevator leading from the underground parking. In addition, the open space itself will provide trees, landscape, and seating, as well as space for special and seasonal events. The open space will provide an exciting urban amenity for the growing Kendall Square community.
- The proposed open space plan balances the need for clear and flexible circulation and program space with ample green open space to help manage stormwater. Trees and vegetated softscape are distributed and designed to catch stormwater. This is augmented by areas of permeable pavers to mitigate runoff from paved areas. Located in zones of reduced foot traffic, these areas collect and convey stormwater to an underground cistern, where water is stored for re-use in building systems or on-site irrigation.
- The SoMa Project includes a significant number of new trees in the open space, designed to include a range of species and to contribute to the biodiversity of the urban canopy of Cambridge. Street trees will begin with the preferred street tree list for Cambridge. All plant selections for the public realm are native or adaptive species, minimizing irrigation and maintenance needs.
- The Kendall Square MBTA Station offers an ideal opportunity for the district to link into the regional mass transit network, serving as an essential way for users to access and experience this space. The area around the MBTA station is designed as a distinct welcoming zone for the district. This area is important for wayfinding and legibility of the district for MBTA users, and serves as a primary point of connection and key node linking the larger community to the core open space of the SoMa Project. MIT has initiated discussions with the MBTA to develop a new MBTA headhouse and landscaped plaza just east of Building 5. If approved by the MBTA, the MBTA station will feature new stairs, escalator, and elevators and a new canopy. Glass walls will allow light to reach the platform level below and provide a more inviting entry to the T.
- The proposed plan improves accessibility along the west edge of Carleton Street at the entrance to Building E23 by removing the steps and grading to meet the entrance. Raised crossings and

a flush interface between Hayward Street and the adjacent open space allows for broad accessible routes through the core open space. Re-grading removes existing site retaining walls.

- As a new, active urban destination in Cambridge, the public realm will include appropriate vehicular and pedestrian lighting to ensure a safe, public environment 24-hours a day. Lighting levels will achieve the standards required for safety and comfort, while remaining below levels that will contribute to light pollution for adjacent properties or users. Feature lighting throughout the public open space will also contribute to wayfinding, district identity, and public realm activation.
- The open space will be programmed for activities to serve the wide variety of community members anticipated to use the space. This includes a variety of ages, abilities, interests and incomes.
- The pedestrian and bicycle improvements will increase the porosity and legibility of the Kendall Square area south of Main Street. Enhanced and improved wayfinding will be an important component of the SoMa Project.
- Buildings entries will meet the sidewalk at grade, including at the historic buildings where the first floors will be lowered to meet this purpose.
- The 6-level Parcel C Garage is accessed by ramps off Wadsworth Street and Amherst Street for automobiles and bicycles. Ample automobile parking is provided and bicycles have abundant indoor parking with elevator access as well as shower facilities. The loading docks for Buildings 3, 4 and 5 are accessed via a truck ramp on Hayward Street to a below-grade loading zone which connects directly to the buildings' elevator cores.
- The SoMa Project has been designed to encourage active use at the ground floors. Over 75% of the street frontage along Main Street will contain retail uses. Throughout all five of the buildings lobbies are minimized in favor of active uses at the ground level.
- Multiple doors and windows at the ground floor emphasize the connection to the public realm and a transparency between inside and outside. Temporary events or activities can spill out from buildings into the open space. The over-arching objective is to blur the distinction between in and out, by maximizing clear glass and operable glazing, maximizing opportunities to occupy both ground floor and immediate exterior space as part of a diverse range of district destination attractors.
- The retail spaces are designed to facilitate small retailers and have many doors on the street. At least 50% of the ground floor space will be leased to small retailers.
- The ground floors have been designed to be flexible in order to accommodate larger retail spaces in order to accommodate larger format retailers that are consistent with articulated neighborhood needs.

- Ground floor heights of all buildings proposed for SoMa are at least 15'.

C. Built Form and Architectural Intent

The designers for the five buildings in the SoMa Project (and the one building in the NoMa Project) have been working with the Dean of MIT's School of Architecture + Planning and the Head of the Architecture Department to ensure that the buildings as a group create a sense of being of a family. The design teams have been coordinating with each other to make the buildings harmonious and, in keeping with the K2 design guideline Built Form, have been creating an architectural approach that will distinctly represent Kendall Square. The buildings will have a similar massing with a base or podium that aligns with the existing historic fabric and then steps back with potential roof terraces at the 4th or 5th floor level. The main tower or office block rises above the step back with the top treated in a different manner at the junction of the program floors and the penthouse level. All the design teams are working on maintaining a simplified form but utilizing other design strategies including differentiating materials, sunshades, and vertical façade. Within the overall massing scheme, each building will maintain a distinct character due to its unique context such as integration with the historic buildings or the uses programmed for the building such as the MIT Museum or academic housing or a significant ground floor retail or active use.

Development Parcel B, Building 2

Building 2 is envisioned as a commercial office/laboratory building as the primary use. The ground floor is intended as a mix of uses including retail, building lobby, campus related active uses and necessary functional access including parking, loading and mechanical. Building 2 is situated on the northeast corner of the parcel and the building's primary frontage to the City is along Main Street to the north and Wadsworth Street to the west. The building fronts newly designed open space to the east and to the south. Building 2 is shown on Figures D-1 – D-15.

As envisioned by the Kendall Square Initiative planning process, the project maximizes publically accessible uses at the ground level in order to activate the street scape and public realm. The Building siting strategy is intended to define the corner (urban edge) of Main Street and Wadsworth Street, but is deliberately set back slightly from both the northerly and westerly property lines. The setback along the northerly edge of the building is intended to allow for views to the historic clock tower (the Kendall Building at 238 Main Street) when visitors to Cambridge arrive from the east, and the westerly setback is intended to create a generous sidewalk to enhance the pedestrian

connection from the neighborhood to the north to the Charles River to the south. Additionally, the new open space to the east and south of Building 2 allows for an alternate pedestrian connection through the site from the Broad Canal Way via a new pedestrian path along the west side of the existing Red Cross building and across a new pedestrian cross walk connecting to the south of Broadway.

Parcel 2 is currently occupied by the Eastgate graduate student housing tower and a parking lot that services Eastgate tower and MIT Sloan Building. The existing parking and roadway system on the site also services as both emergency vehicle access and building service access.
Eastgate tower (E55) is a 29-story (356 ft.) residential building that was completed and first occupied in August 1967. The building hosts graduate student families (students with spouses/partners and/or children) as well as a child care center. The tower is topped by a radio antenna mast for MIT's Class A broadcast radio station, WMBR.

Building 2 is 13 stories with approximately 300,000 gross square feet of office and/or lab space on floors 2 - 13, with up to 18,000 of retail space and active uses located at street level along the perimeter of the building creating a vibrant ground floor environment.

The primary building massing is composed of two volumes. The base volume is composed of a lower mass similar in height to the existing buildings fronting the south side of Main Street and is oriented in a north-south direction parallel to Wadsworth Street. This orientation allows for an increased ground level open space to the east creating an extension of the existing open space fronting the MIT Sloan Building.

The upper volume is rotated 90 degrees to the lower volume orientating the building mass to conform to the primary Main Street frontage. The juxtaposition of the building massing creates a dynamic cantilever and reduces the overall building massing impact on the surrounds. Additionally, the shifting of the masses creates unique outdoor space on the roof of the lower mass and below the building cantilever.

The building’s exterior fenestration is composed of a high performance glass curtain wall system. Each of the building’s facades address their respective solar exposures with the addition of carefully detailed brise-soleil (solar shade) systems on the east, west and south facades in order to reduce both the heat gain and glare caused by the sun resulting in higher energy efficiency and superior internal working environment.

Development Parcel C, Building 3

Building 3 is sited behind the Kendall Building at 238 Main Street. The 12 story building includes 280,000 gsf flexible commercial lab and office space from level 2-12 as well as 27,000 gsf retail and active uses on the ground floor (including repositioned retail at the ground floor of the Kendall Building). A 2 story penthouse completes the program with area for base building and tenant equipment. Access to the below grade parking garage is off Wadsworth Street. The redevelopment of the Kendall Building is a companion to the project as well. This early 1900's building with its unique clock tower will become the main entry to the complex with a 5 story atrium separating the existing and new buildings' lower masses. Building 3 is shown on Figures D–16 – D-35.

Building 3 reinforces the scale and character of Main Street by preserving the Kendall Building. The new building is sited directly to the south of the Kendall Building and is separated by a 30 wide 5 story high glass atrium that allows abundant light into each building. The atrium, accessed through the front entry of the Kendall Building, provides ground floor entrances to the tenants in both buildings. The ground floor in both buildings expands upon the existing retail activity with retail and active uses on Main Street, Hayward Street, Wadsworth Street, and the public open space to the south.

The building has two dynamic massing moves that connect this building to the ensemble of buildings that MIT is developing south of Main Street in Kendall Square. The first 5 stories of the building create a similarly scaled lower mass to the existing Kendall Building and also relates to the Suffolk Engraving Building (E38) and the J.L. Hammett Building (E39) to the northwest, and to the height and scale of the Muckley Building (E40) to the south. This 5 story expression locks the building into the context of these early 20th century brick and precast manufacturing buildings.

The upper 6 stories dramatically rotates 90 degrees to reinforce Wadsworth Street as the predominate north-south street connector that links East Cambridge to the Charles River. This mass pivots on a recessed 6th floor that allows the mass to float above its base and creates a living green roof over-looking the new public open space being developed by the larger development. The pivoted mass also creates a gateway expression from the public space to the east towards the Sloan School. This upper mass is composed of a glass curtain wall which will reflect the sky, screen the mechanical penthouse, and create an asymmetric volume behind the clock tower which articulates the end of Third Street.

The new building works with the surrounding 6-story structures to create a pedestrian scaled early 20th century feel. Its ground floor spaces will enliven the area with restaurants, service, specialty retail activities and other active uses. The retail design will create a range of pedestrian oriented expansions with canopies, awnings, and entries that will announce each retail opportunity.

The Kendall Building entry will open into the 5 story atrium anticipated to extend the width of the back with 6 story glass walls on each end filling the Atrium with light throughout the day and connecting to the existing pedestrian system. This interior public space will provide seating display and meeting space for tenants, visitors, students, faculty, and neighbors. The Kendall Building and the new building will each have lobbies to access their upper floors and it is anticipated that sky bridges may connect the Kendall Building and the new lab/office building at upper levels dependent on tenant space requirements.

The lower mass will pick up on the scale of the Kendall Building, and is wrapped in a highly glazed skin with tightly-spaced vertical aluminum fins. The upper portion of the mass will continue the module, scale, and materiality of the lower mass in a transparent, slightly reflective, glass curtain wall. The penthouse will continue this expression with the vertical fins unifying the louvered face with the glazed wall below, such that the screen will appear to disappear into the skyline. This architecture is complimentary of the scale and character of the early 20th century buildings being preserved and a bold new expression of 21st century office/lab buildings.

Development Parcel C, Building 4

The Building 4 Parcel incorporates the existing Suffolk Building at 292 Main Street (E38) and the Hammett Building at 290 Main Street (E39) with new construction to the south. A new 28-story graduate student housing tower will span over E39 and the new construction podium along the open space. Building 4 will have a rich collection of mixed use programs, which will add energy and vitality to Kendall Square and MIT's East Campus and consists of four primary components:

- Existing E38, renovated to include ground floor retail and five levels of academic space housing MIT's innovation and entrepreneurial programs
- Existing E39, renovated to include ground floor retail and 2 floors of office space
- A three-level "podium" to the south of the existing buildings, containing ground floor retail and other active uses (28,000 gsf including repositioned retail in E38 and E39), a second level childcare facility (9,000 gsf) with associated outdoor space, and a third level of common space and outdoor space for use by the resident graduate students

- A housing tower containing 25 levels for MIT graduate students in a mix of 2 bedroom, 1 bedroom, and efficiency apartments (330,000).

A principal urban design objective of Building 4 is to enhance the quality of Main Street for the Kendall Square community. By preserving E38 and E39, Building 4 reinforces the historic scale and character of Main Street. Retail along Main Street, currently elevated about 3-4 feet above street level, will be lowered to grade to allow for universal accessibility and to enhance the pedestrian experience. The residential tower is oriented north-south in order to minimizing the shadow impacts on Main Street, in particular at the plaza in front of the Marriot Hotel.

The facades of E38 and E39 will be largely preserved. The first floors will be lowered to accommodate at-grade access to the retail spaces within each building. The new podium to the south is designed to relate to the height and massing of E38 and E39, and to provide a transition to the tower above. The ground level will be largely transparent, creating a strong visual connection between indoor and outdoor activities. The façade of the tower will be largely panelized. Openings will be limited to 30-40% of the exterior envelope in order to achieve sustainability goals targeted for the project.

In all, Building 4 will provide a greatly enhanced urban environment in Kendall Square by increasing the quality and quantity of public space amenities to a capacity capable of supporting the growing Kendall Square community well into the future. Building 4 is shown on Figures D-36 – D-52.

Development Parcel C, Building 5

The design will leverage the site's fortuitous location on Main Street adjacent to the Kendall Square T-Station. As a corner site, the Building 5 parcel will reveal and build upon the existing community of innovation by creating a pedestrian centric gateway from Main Street to the central green space. Building 5 is shown on Figures D-53 – D-68.

Building 5's ground floor is transparent on the north and east elevations to enhance the visual and physical connections between interior and exterior spaces. The ground floor includes the building lobby, retail space, the MIT Museum, and support facilities to the south. Continuous glass frontage provides street level views into the building lobby, retail, active use, and museum space that front the public north and east faces of the building. The main floors of the MIT Museum will be located on the second and third floor of the building, creating the plinth that relates in height and scale to the Kendall Hotel and Suffolk Building, the historic buildings adjacent to the site. The MIT Museum will

become an active destination for visitors, school groups, students, faculty, and staff. The museum will be an important site linking MIT's legacy of innovation to its future engagement in the Kendall Square neighborhood. The upper floors, floors four through seventeen, contain approximately 305,000 gross square feet of office spaces. The building engages the horizon with a rooftop silhouette scaled to the greater metropolitan context.

The plinth, level 2 and 3, establishes an urban scale compatible with adjacent historic buildings. The two museum levels occupy the plinth, giving an independent expression to the MIT Museum. The plinth is distinguished from the tower above through a horizontal terrace, one floor in height. The plinth and terrace are positioned to relate to the existing horizontal datum created by the low rise historic buildings on Main Street, directly adjacent to Site 5.

Above the plinth, the office tower folds back from Main Street to satisfy the zoning requirements. The tower façade complements the pattern of the museum façade. Strong horizontals at every third floor and vertical folded facades scale the building and accommodate oblique street level views. The tower façade will include a combination of high preforming coated, fritted, and acid etched glass to maximize daylight and capture panoramic views of both Boston and Cambridge.

To the east of Building 5, three 3-6 story early 1900's industrial era buildings of historic significance line Main Street. The Suffolk Engraving Building is directly east of the site and to the east of it, the former J.L. Hammett Building and the Kendall Building continue this mid-rise urban street front. To the west of Site 5 is the Kendall Hotel, distinguished by pitched roofs and dormers. This former fire house, Engine 7 built in 1895, is separated into two masses, one historic three story structure on Main Street and a recent seven story structure set back from the street, which shares the lot line with Site 5. To the west of the Kendall Hotel, a different style emerges with the Ford Building. A seven story concrete and brick building from the 1920's, this represents a style formerly common in Kendall Square.

Building 5 creates a setting that supports retail, academic, and commercial uses to form a new model for a multiuse building - one that reflects the active research and innovation that is prolific throughout this district. Building 5 has the unique opportunity to capitalize on MIT's leadership in research to attract the most active science and technology industries.

The Class A commercial office space in the tower portion of Building 5 will be open and loft like with efficient and flexible floor plates. The building will maximize natural daylighting on all office floors. Large expanses of glass and high floor to floor dimensions create an optimal work environment and

provide expansive views. The floor plates support the needs of variously-sized tenants, creating floors that appeal to multiple tenants as easily as to a single, larger tenant. Column free floor plans and flexible mechanical systems will accommodate the widest possible range of potential users while promoting an open, sustainable, and collaborative atmosphere. The building is planned to have 17 occupiable floors and a current height of 250'.

Building 5 is both a gateway on Main Street and a landmark on the horizon. It welcomes the scale of the pedestrian and joins the urban horizon.

Development Parcel C, Building 6

Building 6 is 2 story retail building sited between the Kendall Hotel and the MIT Ford Building (E19). The building will have a total of 6,600 gross square feet of retail on both floors and may be divided into 2 retail occupancies on the ground floor, with one entrance at the Northwest corner off of Main Street and one at the Northeast corner, from a sidewalk courtyard off of Main Street. Building 6 is shown on Figures D-69 – D-76.

Building 6 represents a significant placemaking opportunity for MIT's Kendall Square project. As a small building, surrounded by larger ones, it's all retail programming will activate Main Street with pedestrian friendly uses. Currently, the site is used as a parking lot by MIT and provides access to a heavily utilized loading dock at the Ford Building (E19). The proposed Building 6 seeks to minimize the traffic at this loading dock by relocating MIT parking to the larger proposed underground parking garages. By locating the building core at the south end of the building, the building maximizes retail street frontage along Main Street. The resulting width of the loading dock access is reduced to almost a third of the existing situation, with the remainder of the site enlivened by restaurants, service or specialty retail activities.

The sloping roof form of the building responds to the varying existing building heights by angling down towards the Kendall Hotel and sloping up towards the Ford building. The building volume serves to integrate an elevator bulkhead and a roof well to house the mechanical equipment for the building, hiding it from public view and mitigating the noise impact of the equipment. The unique conditions of the site and context result in an iconic form for Building 6 that is also respectful of its context.

Building 6 cants away from the Kendall Hotel and its cupola tower, to create a lively sidewalk courtyard, activated by entrance doors to retail at the ground level. This urban gesture is repeated on

the Main Street side with an inward inflection of the volume. In this way, the sidewalk deepens to accommodate pedestrian activity at the entry to the building.

A gradient of fenestration across the façade provides maximum transparency at the ground level along Main Street, but opacity along the loading dock access. The window sizes takes cues from the Kendall Hotel and the Ford Building to further integrate the building within its context while providing a dynamic and engaging façade to help it stand out, not apart. A reflective metal façade will engage the surrounding and provide an 'industrial' aesthetic for Building 6, appropriate to its scale and the innovative ethos of MIT.

D. Environmental Quality

Shadow

The SoMa buildings are sited to activate existing parking lots and are consistent with the shadow impacts associated with a two sided urban street. The net new shadow impact is mitigated by the fact that the Buildings 3 and 4 are set behind the existing Kendall Building, Hammett Building and Suffolk Engraving Building, the shadow cast by existing buildings in Kendall Square and the thoughtful massing and orientation of the proposed buildings.

MIT has conducted shadow studies to evaluate the shadow impacts of the proposed buildings on the public realm including the sidewalks on the north and south sides of Main Street, the sidewalks in front of One Broadway, Point Park, the new open space to be created by the proposed project and the sidewalks of Wadswroth Street, Hayward Street and Carleton Street. These studies are included as Figures F-1 – F-3 in the Graphics Materials and are summarized below:

- On September 21 and March 21:
    - 9:00 am Building 4 and 5 contribute a minor amount of new shadow to the sidewalks on the south side of Main Street around Carleton Street but the majority of the sidewalk on the south side is in shadow from existing buildings. Buildings 3, 4 and 5 cast new shadow on the sidewalks on the north side of Main Street and Building 2 casts new shadow at Point Park.
    - By noon, the siting and massing of the buildings results in shadow cast in alternating bands with area in sunshine. Building 6 casts minor shadow to the Main Street south sidewalk directly in front of the building, Building 5 casts shadow on sidewalks to the north and south sidewalks of Main Street, Buildings 4 and 3 cast shadow directly in front of the buildings to the sidewalks on the north side of Main Street and

point park and Building 2 casts some new shadow on the sidewalk in front of One Broadway. On the south sidewalks new shadow is mitigated by the presence of shadow cast by the existing buildings.

  - At 3:00 pm, much of the Kendall area is in long shadows. Building 6 does not contribute new shadow at this time, Building 5 casts new shadow to both the south and north sidewalks on Main Street as well as to the north end of Carleton Street. Building 4 adds shadow to Point Park. Buildings 2, 3+4 add shadow to the sidewalk in front of One Broadway and the Red Cross Building. Buildings 2+3 contribute shadow to the south side of Main Street.

- On June 21, the impact of the shadows is minimal and largely confined to the development area. The project buildings do not cast shadow at Point Park or to the sidewalks in front of One Broadway.
  - At 9:00 am, no new shadow is cast along Main Street. The shadows are cast toward the west and are added to the first block of Main Street of Wadsworth Street, Hayward Street, Carleton Street and Dock Street.
  - At noon, minor net new shadow is cast to Main Street sidewalks directly in front of Buildings 5, 4 and 2.
  - At 3:00 pm minor amounts of new shadow is cast on the sidewalks on the south side of Main Street between Carleton Street and the Sloan School.
- On December 21, the shadows are long in the Kendall area and the proposed buildings do not cause significant additional shadow to public spaces in the area.
  - At 9:00 am, Building 2 casts new shadow to the eastern edge of Point Park and the sidewalks of Broadway. Buildings 4+5 add minor additional shadow to the Main Street sidewalks and to the first block of Carleton Street.
  - At noon, Buildings 5+6 add some new shadow to Main Street sidewalks directly in front of the buildings. The siting and massing of the proposed buildings preserves sunlight along the Wadsworth Street, Hayward Street and Carleton Street corridors.
  - At 3:00 pm, most of Kendall Square is in existing shadow. The proposed project adds minimal amounts of shadow to sidewalks on Wadswroth Street and on Main and Broadway between Building 2 and One Broadway.

Wind

MIT conducted a pedestrian wind assessment to assess wind comfort conditions on and around the development and recommend mitigation measures if necessary. The complete report is included in Appendix B and summarized below. The SoMa Buildings are sited and massed to minimize wind

impacts but are in schematic design. As design develops additional strategies to reduce wind impact – both those recommended in the report and those representing industry best practices – such as canopies, windscreens and landscaping will be incorporated to further reduce impacts.

Overall the wind conditions on the north side (Main Street) of Buildings 2, 3, 4 and 5 are anticipated to be comfortable for standing or strolling in the summer and strolling or walking in the winter. While these conditions are appropriate for sidewalks and other areas where pedestrians would be active, they are higher than desired at entrances. Reducing wind speeds around the entrances can be achieved by introducing overhead canopies or dense coniferous landscaping along Main Street entrances. In addition, entrances can be recessed to protect them from downwashing wind flows. Examples of these wind control measures are shown on Image 7 of the wind study included in Appendix B.

Wind speeds along Wadsworth Street, Hayward Street, Carleton Street and Dock Street are predicted to be comfortable for strolling in the summer and strolling or walking in the winter, which are appropriate for sidewalks but higher than desirable for entrances. The trees in these areas would reduce wind speed in the summer but would need to be coniferous to reduce wind speed in the winter. Alternatives to coniferous landscaping include windscreens which would improve wind conditions for both sidewalks and entrances. These mitigation measures will be explored and advanced as building design progresses.

The proposed open space to the south of Buildings 2, 3, 4 and 5 is sheltered by the massings of the proposed buildings from the predominantly northeasterly and northwesterly winds and therefore wind speeds are anticipated to be calm in these areas.

SECTION IV: Sustainability Narrative

SECTION IV. Sustainability Narrative

MIT's proposed SoMa Project employs a comprehensive approach to achieve sustainability that involves international best practices in establishing a new benchmark in urban sustainable development, community, and innovative solutions to local and regional environmental design issues. This will be one of the largest LEED developments in the Cambridge and Boston areas.

Consistency with City of Cambridge Zoning and Sustainability Initiatives

The SoMa Project is designed to be consistent with the City of Cambridge's zoning requirements with respect to sustainability broadly in Article 22 of the Ordinance and more specifically in Section 13.89.4 of the PUD-5 zoning. In addition, the City of Cambridge has ongoing initiatives that expand its leadership role in sustainability. MIT has participated with the City in these initiatives and the SoMa Project's approach to energy, stormwater management, transportation, etc. is consistent with the goals and objectives of these two City initiatives as follows.

MIT participated in the City's "Getting to Net Zero" public process which culminated in a City Council-adopted Net Zero Action Plan for the City of Cambridge. Net zero is a target for carbon-neutral building operations and is defined as a community of buildings for which, on an annual basis, all greenhouse gas emissions produced through building operations are offset by carbon-free energy production. Cambridge was one of the first municipalities to adopt the Commonwealth's Stretch Energy Code, and in recent years the City has become more energy efficient, earning an official designation as a Green Community. During the net zero process, MIT provided expertise, shared best practices and knowledge, and assisted in shaping the recommendations, along with residents, sustainability professionals, and other property owners.

MIT was invited by the City to participate in the planning of a proposed Kendall Square EcoDistrict. An EcoDistrict is a neighborhood committed to sustainability that links green buildings, smart infrastructure and behavior to meet ambitious sustainability goals over time. Staff attended a training workshop at the Portland Sustainability Institute in Portland, Oregon, and then joined a City-led working group with other Kendall Square stakeholders. The group is exploring strategies and actions aimed at creating a more sustainable district in Kendall Square, and is working with

consultant teams to prepare an energy study-and a stormwater study. MIT is providing expertise, knowledge, and is helping to frame the next steps.

Environmental Design Targets

MIT is committed to adopting the next generation of sustainable building benchmarking. Each of the SoMa buildings is committed to achieving a LEED Gold rating, under the latest, and more stringent LEED version 4 system. (See the LEED narratives and affidavit for LEED compliance commitment). In addition, the SoMa Project will explore opportunities to align with requirements in the Sustainable Sites Rating System program. Most importantly, the design teams have collaborated to comprehensively respond to local and timely sustainability concerns to address landscape, water, and energy responsibly.

The mixed-use aspects of the SoMa Project also strives to achieve a social sustainability in its context that helps support a thriving community of students, workers, residents, and visitors. By providing connections and amenities, this development will create a destination that will perpetually enhance Kendall Square, serving as an educational and regional model of how sustainability can integrate into urban existing contexts.

- The development will create a public educational program for green initiatives to foster innovation.
- Depending on the type of use for each building, projects will target 10-20% energy cost when compared to the more stringent LEED v4 code compliant baseline building, which is already 17% more efficient than the baseline referenced in LEED v3.
- SoMa building designs and tenant guidelines will encourage a 20-40% reduction in energy consumption for lighting and equipment
- Each SoMa building will target 30-40% potable water use reduction across the board for fixtures and process/equipment water uses.
- SoMa buildings will aim to collect and reuse runoff from the 95th percentile storm event, and increased landscaping and porous pavement will improve stormwater runoff from existing paved parking conditions.
- The SoMa Project will embrace climate resilient strategies including elevating mission-critical equipment and residential units above elevation 26 ft, incorporating stormwater mitigation strategies, and providing back-up systems for vital operations.

The proposed project plans to achieve its sustainability goals and meet the designated targets by employing the following strategies.

Cutting Edge Technology

Educational and cutting edge technologies will be implemented in order to be at the forefront of environmental principles as advancements in strategies and technologies are developed, included as a public educational program for green initiatives to foster innovation. This can include renewable energy demonstrations, energy storage, water management systems, and other sustainability initiatives including the topics below.

Water

- Stormwater Management – The SoMa Project is being designed to collect and store stormwater for reuse within the buildings to minimize potable water consumption. The reuse system will be designed to capture the 95th percentile rain event and will reuse approximately 5 million gallons of water yearly. This will reduce site runoff and improve water quality to City drainage systems while reducing potable water demands on public supplies by using reclaimed water from non-potable uses such as cooling towers, fixtures and irrigation. Moreover, opportunities for combining tank volumes in a district approach within the shared below-grade areas may allow for sharing of stormwater or greywater sources between buildings as needed to optimize potable water use reductions site-wide through centralized storage and reuse. A graphic representation on the rainwater harvesting concept is shown on Figure F-6.
- Water Savings - LEED v4 takes a holistic look at building water consumption, including not just building fixtures but also process water which was not previously included in LEED v3. Therefore, each SoMa building will target 30-40% potable water use reduction across the board for fixtures and equipment water uses. Reuse strategies for process water will help maximize water reductions.

Energy

- Energy Savings – SoMa buildings will be designed to a higher performance than is mandated by code, thereby going beyond best practice and local standards to reduce energy consumption, greenhouse gas emission, and the buildings' impact on the grid. Depending on the type of use for each building, projects will target 10-20% energy savings when compared to the more stringent LEED v4 code compliant baseline building, which is already 17% more efficient than the baseline referenced in LEED v3.
- Efficiency Improvements - As equipment efficiency and controls are continuously improving, we can expect to see a reduction in energy use of the future fitout beyond even today's best performing buildings. Buildings will encourage a 10-20% reduction in energy consumption for

equipment, based on using more innovative controls and efficient equipment selection and strategies.

- District Energy - Building 4 will be connected to the existing efficient MIT Central Utility Plant. New commercial buildings south of Main Street will continue to study opportunities to share heating and cooling systems and be evaluated against the following criteria: efficiency improvements, energy cost savings, emissions reductions, regulatory opportunities, phasing and feasibility.

Site and Transportation

- Landscape - The landscape vision includes increasing the amount of open space by more than 2 acres. The landscape plan also includes boosting softscape, tree cover and utilizing 100% native or adapted species to create a more vibrant and engaging urban landscape and canopy. This will help create comfortable microclimates and shaded spaces to encourage outdoor activities throughout the seasons. The SoMa Development Parcels will be used to demonstrate high performance and sustainable goals possible on a multiple-site scale.
- Transportation - Site infrastructure will be provided to encourage multimodal transportation, including connections to public transit buses, the Kendall MBTA station, and enhancing existing bicycle networks. Building parking areas will include electric charging stations and preferred parking for low-emitting vehicles and carpools to reduce the emissions from vehicles on the road.

Healthy Buildings

Healthy buildings will be encouraged by material palette and promotion of active design for occupant health. SoMa buildings will examine materials for their content to ensure products are being specified that create healthy indoor environments. Materials will be low- emitting, avoiding hazardous chemicals too often found in building materials, and selected based on their reduced embodied emissions as they make their way to be installed on-site. Lastly, active movement through buildings and the open spaces will be encouraged through good design of stairways and circulation to increase appeal of physical activity for some occupants while still providing accessibility for all, to enhance live, work, learn and play opportunities.

LEED

MIT has made sustainability an integral part of the SoMa Project's design process. As required under the PUD-5 Zoning, the SoMa buildings will achieve a minimum of Leadership in Energy and Environmental Design (LEED) Gold. The MIT teams are developing buildings that are sustainably designed, energy efficient, environmentally conscious, and healthy for the occupants, visitors, and community, and are committed to earning at least 60 credit points for each building under the LEED v4

system, for LEED Gold ratings. The SoMa LEED Scorecards are included in Appendix C of this document.

The Kendall Square Development will register an overall LEED Master Site with USGBC for the SoMa Project that will take advantage of combined site, landscape, and transportation strategies. Then, each individual building will achieve the remaining credits required for a Gold rating under either the LEED v4 for Core and Shell system (Buildings 2, 3 and 5) or LEED v4 for New Construction (Buildings 4 and 6).

The SoMa Buildings will be registered with the USGBC and target several credits which span the nine LEED version 4 categories (Integrative Process, Location & Transportation, Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Innovation in Design Process and the additional Regional Priority Credits) to enable the project to meet the zoning requirements.

In addition to achieving the LEED project goals, the measures will be taken to meet the guidelines outlined in the PUD-5 Zoning Requirements for Sustainability for the Development.

This report provides a discussion of the sustainability efforts related to the Kendall Square Development project. MIT is committed to developing buildings that are sustainably designed, energy efficient, environmentally conscious and healthy for the occupants and visitors that enhance the community.

All points below are being pursued unless noted as a maybe/possible credit, if it is determined that some of the credits under consideration will not be attainable.

All LEED Minimum Program Requirements and Prerequisites will be met.

MASTER SITE CREDITS

The LEED Master Site credits are applicable to Buildings 2, 3, 4 and 5 as they will share central site amenities. Buildings will meet the credit requirements for these credits with shared amenities as well as local amenities to insure minimum requirements are met for each building's designated occupants and visitors.

29 points targeted in total, +6 Medium probability points to be studied further

Location & Transportation

The SoMa Development Parcels are previously developed sites in urban Cambridge, close to several public transportation services including an MBTA transit stop, and public bus services. Occupants shall have access to bicycle racks and showers, as well as preferred parking for hybrid and/or low-emitting vehicles.

Credit 1 LEED for Neighborhood Development Location

Buildings 2-5 are not part of, or applicable to pursue, a LEED for Neighborhood development, so this credit is not possible.

Credit 2 Sensitive Land Protection

The development parcels are located on a previously developed urban site in Cambridge.

Credit 3 High Priority Site

Cleanup work will be required on site before construction to remediate the open site area. A site environmental survey will be required to confirm soil classification.

In addition, the work on Buildings 3 and 4 will interface with historical buildings that they will abut or connect to.

Credit 4 Surrounding Density and Diverse Uses

The development parcels are the center of Kendall Square in urban Cambridge, Massachusetts. The surrounding community is replete with housing, restaurants, shops, grocery stores, educational and religious institutions, performance venues and other community amenities. In addition, the project itself will add residential, office, lab, retail and services to the community.

Credit 5 Access to Quality Transit

The development parcels are situated directly over a head house for the Kendall Square MBTA Station. In addition, local bus routes connect the location to other areas of the community and Boston. Finally, campus shuttle services will continue to serve the MIT community in Kendall Square, linking to other regions of MIT's campus and student community.

Credit 6 Bicycle Facilities

Short term and long term bicycle parking will be provided for occupants and visitors. In addition, showers will be located in each individual building to serve their full time occupants. The dormitory building will include secure storage as needed. In addition, the PUD-5 District will host

a Hubway bike share hub, which is the current bike-share system of Cambridge and the City of Boston. Site and roadway access will be provided to enhance the bicycle network already so prevalent in the City of Cambridge.

Showers will be provided for occupants based on LEED v4 credit guidelines for full time occupants, residents, and visitors.

Credit 7 Reduced Parking Footprint

A below grade centralized garage will be provided for the buildings on Development Parcel C and an additional below grade garage will provide parking for Building 2 on development Parcel B . The top level of each garage will provide preferred parking for carpools for 5% of spaces.

Credit 8 Green Vehicles

MIT is targeting 5% of parking spaces for fuel-efficient vehicles and charging stations for 2% of all net new parking spaces. MIT will confirm the capacity and number of required spaces through design phases.

Sustainable Sites

MIT is taking a comprehensive approach to site, landscape, habitat creation, stormwater management, and human use.

Prerequisite 1 Construction Activity Pollution Prevention

The contractor shall follow best practice construction methods and submit and implement an Erosion and Sedimentation Control (ESC) Plan for construction activities related to the construction of the new building specific to this project. The ESC Plan shall conform to the erosion and sedimentation requirements of the 2003 EPA Construction General Permit and specific municipal requirements for the City of Cambridge.

Credit 1 Site Assessment

The civil and landscape teams will conduct a comprehensive site survey to study topography, hydrology, climate, vegetation, soils, human use, and human health effects to achieve credit requirements.

Credit 2 Site Development, Protect or Restore Habitat *MAYBE*

MIT is investigating opportunities for restoring landscape in what is currently a primarily hardscaped surface site. The design team is evaluating design options that to specify native or adapted

vegetation for trees and green roofs to meet credit requirements and limit turf grass. This credit is not currently anticipated.

Credit 3 Open Space

This development acts as an urban infill project that will enhance the landscape while providing significant services and a thriving 24/7 mixed-use community to the sometimes deserted Kendall Square area. Maintaining pedestrian oriented open space that is inviting and engaging is a top priority for the SoMa Project for the amount of open space that will be provided. Credit to be calculated based on LEED Master Site boundary for campus based credits, which differs from PUD boundaries.

Credit 4 Rainwater Management

The current design considers a water reuse strategy with stormwater capture from roof and site surfaces for reuse in cooling towers and possibly fixtures. The intent will be to design the system such that the reuse strategy and landscape design meets the more stringent LEED v4 requirements as well as local watershed requirements. The stormwater treatment strategy will include treatment of a majority of stormwater falling on site, including collection from roof and site/landscape runoff strategies, for 80% reduction in total suspended solids (TSS).

Through the design process, some SoMa buildings may choose to pursue Rainwater Management on the building level, rather than a shared Master Site approach.

Credit 5 Heat Island Reduction

All roofs will be designed with high-albedo materials to reflect heat and mitigate the urban heat island effects. In addition, almost all parking on site will be below grade in a shared garage for South of Main properties. The design will include high SRI and permeable pavers, which would comply with the requirements for this credit. Trees and shading elements are being explored to further reduce heat island effects on hard scape areas.

Credit 6 Light Pollution Reduction *MAYBE*

This credit will be pursued under dark-sky lighting strategies. Credit compliance will be fully evaluated in the next phase to determine if team will pursue. Efforts will be made to design the site with night sky friendly fixtures, while maintaining safety and security with the adjacency to the MIT campus.

Water Efficiency

MIT will pursue Water Efficiency credits on a building-by-building approach. However, the Master Site area will have a single approach to outdoor water use for the shared open space. In addition, each

building may seek to reduce potable water for any outdoor water use for green roof or planters via elimination of irrigation, non-potable water use for irrigation, or efficient irrigation systems.

Credit 1 Outdoor Water Use Reduction, 50%/No Potable Water

The SoMa Project will target a minimum of 50% reduction through efficient irrigation and/or stormwater reuse for irrigation. To meet the credit requirements of 50% reduction in potable water use for irrigation, potable water use for irrigation will be limited and reuse strategies feasible for irrigation will be explored, including stormwater, reverse osmosis, or other reuse water available for irrigation AND/OR use of native, drought resistant vegetation. Baseline design includes conservation strategies and no reuse.

Regional Priority Credits

Regional Priority Credits (RPC) are established LEED credits designated by the USGBC to have priority for a particular area of the country. When a project team achieves one of the designated RPCs, an additional credit is awarded to the project. Up to four RPCs can be achieved on a project. The following RPCs are applicable to SoMa Development Parcels in LEED v4, under a Master Site approach. Additional Regional Priority credits are only applicable to individual SoMa buildings, and can be found under the building specific narratives.

- High Priority Site (2 pts required, 2 possible)
- Rainwater Management (2 pts required, up to 3 points)

Energy Efficiency and District Energy

MIT is committed to developing a sustainable campus, following our reputation as a worldwide leader in energy, engineering, technological advancement, and climate change studies. The SoMa Buildings will strive to establish a precedent for sustainable urban construction and operation efficiency in the Northeast.

Design and engineering must address building energy consumption and loads first in order to maximize energy efficiency and reduce environmental footprints. Once loads are reduced, opportunities for district systems and building interconnections can be investigated to find the optimal solution for meeting energy needs. The SoMa buildings will benchmark performance above peer buildings in the region and seek to serve the community as a guide for how to develop high performance buildings. The Genzyme building, one of the earliest LEED 2.0 Platinum certified

projects and often the benchmark case study for sustainable building in Cambridge and beyond, has a site energy use intensity of 90.3 kBtu/sf (2010 data, "The World's Greenest Buildings: Promise Versus Performance in Sustainable Design," p71). By comparison, Building 5 is projecting less than 70 kBtu/sf for site energy use intensity, 20% less than the Genzyme building. With performance tracking and energy education programs, these buildings strive to become the new sustainable performance standard for both the community and international peers.

The SoMa buildings will reduce energy consumption and greenhouse gas emissions through the integration of high performance facades, efficient building systems, reduced lighting power consumption, advanced controls, efficient equipment, and occupant education programs. Each SoMa building will employ envelopes that integrate a mix of insulating materials, advanced glazing materials, external shading, and internal shading to minimize heat gains and losses through the envelope. The mechanical systems are designed to minimize energy use and maximize flexibility and operability, utilizing high efficiency equipment and a next generation approach to building conditioning. By specifying the latest mechanical system elements, the projects establish up to a 10-20% improvement over similar equipment components that would have been selected even a few years ago.

MIT is one of the first institutions to commit to pursuing the newest and most stringent version of LEED, LEED v4, on all future major construction projects. The SoMa buildings will pursue LEED v4, which requires benchmarking against a more efficient ASHRAE 90.1-2010 code baseline building, as compared to previous versions of LEED. The baseline itself establishes a roughly 17% improvement from the LEED v3 baseline performance. Each SoMa building depending on the building use is targeting a range of 10-20% further reduction in energy consumption from the more stringent LEED v4 current code baseline, achieved solely by efficiency improvements installed within each building's footprint.

After exploring opportunities for building level efficiency improvements, the team performed a comprehensive energy study that evaluated several district energy options against multiple criteria, including physical, regulatory, market, and financial criteria. The options included energy sourced from onsite generation, MIT's central utility plant, district steam, building by building, and variations of different options. While elements of the study, such as further evaluation of the provision of steam by the local district steam provider, will continue during the iterative design phase, the current results of the study show that the comprehensive building and system design in a building by building approach combined with a hybrid approach to district energy connection for MIT academic

buildings results in the optimum performance and meets all criteria including greenhouse gas emissions measurement.

MIT is committed to implementing best practice and meeting or exceeding local standards in incorporating a whole system, integrated approach and to continually revise and reevaluate design strategies to stay at the forefront of adoption of environmental principles. In Kendall Square, sustainability takes an expanded view at the intersection of environmental, economic, and social issues to ensure that all are properly examined and aligned to meet the projects objectives throughout all phases of development. Energy efficiency and resource conservation are at the heart of the sustainability framework developed for Kendall Square, and will remain a focus for the team as the SoMa Project develops.

The iterative process and the analysis to date indicates the following hybrid district energy strategy should be pursued:

- Site 4 will connect to the MIT Central Utility Plant for chilled water, steam, and electricity
- Investment in building energy efficiency measures with efficient local systems for Buildings 2, 3, and 5 can provide significant energy and emissions savings as compared to a central plant
- Conversations will continue with Veolia to explore opportunities for local steam connection, including crossing a potential easement in Main Street to serve the SoMa sites as well as the NoMa Project.

SECTION V: Infrastructure Narrative

SECTION V: Sewer Service Infrastructure and Water Service Infrastructure Narratives

Sanitary Sewer:

The SoMa Development Parcels have a dedicated sanitary sewer system that collects and conveys flows from the redevelopment area to the Cottage Farm treatment facility. There is an existing gravity collection system that discharges to an existing lift station maintained by the City adjacent to the Kendall Square MBTA headhouse that pumps sanitary flows from the redevelopment area to a gravity main located in Main Street. The sanitary sewerage network is shown graphically in Figure F-4 and the location of the lift station is shown in Figure F-5.

SoMa buildings will connect their sanitary sewer services to the existing municipal sanitary sewer system located within and adjacent to each respective building. Individual SoMa buildings may require lift stations to pump flows up to the gravity mains, however, these lift stations will be privately owned and maintained by MIT. New building sanitary service connections will be appropriately sized to carry the anticipated daily flow from the contributing plumbing fixtures internal to the buildings. Once the project program has been finalized, the project team will continue to work with the City of Cambridge Department of Public Works (DPW) to coordinate the new service connection locations to the existing sewer mains.

Based on discussions with and information obtained from the City of Cambridge DPW, the existing lift station described above had not been functioning for several years and has only recently been repaired and continually maintained by the City. The lift station is only needed to overcome a small change in elevation of less than two feet. The existing sewer system still functioned when the lift station was not operating due to the relatively small amount of head or elevation the flow needed to overcome. There have not been issues in the area of surcharged sewer lines. However, sewer lines in the area were in constant need of maintenance and cleaning. The DPW expressed their wish to attempt to provide a gravity connection from the area that would allow the lift station to be removed. The City has performed initial studies into providing a gravity system. The project team will continue to work with the DPW using existing studies that have been done in the area to try to eliminate the need for a municipal lift station.

The initial estimate of the total average daily flow currently generated by the existing SoMa Development Parcels B and C building uses is estimated to be 60,095 gallons per day. The proposed SoMa development Parcels sewer flows are anticipated to be 220,968 gallons per day, or

a proposed increase of approximately 160,873 gallons per day. See Tables 1 & 2 below for more detail.

TABLE 1 - EXISTING SANITARY DESIGN FLOWS

Building ID	Building Area (sf)	Use Category	Unit Count	Unit Flow (GPD / Unit)	Unit	Flow (GPD)
E28 (Cambridge Trust Bank)	4,027	Retail	4,027	50	1000 SF	201
8 Carleton (Office)	12,943	Private Office	12,943	200	1000 SF	2,589
E33	2,777	Private/Academic Office	2,777	200	1000 SF	555
E34	25,966	Private/Academic Lab	25,966	200	1000 SF	5,193
E38	63,124	Office/ 1st floor Retail	63,124	75	1000 SF	4,734
E39	40,660	Office	32,660	75	1000 SF	2,450
		Restaurant	8,000	1750	1000 SF	14,000
E48	77,900	Office/ 1st floor Retail	77,900	75	1000 SF	5,843
E55	163,733	Residential	223	110	Bed	24,530
TOTAL	**391,130**				**TOTAL FLOW**	**60,095**

TABLE 2 – PROPOSED SANITARY SEWER FLOW PROJECTIONS

Building ID	Program GSF	Use Category	Unit Count	Unit Flow (GPD / Unit)	Unit	Flow (GPD)
Building 2	**318,000**	-	-	-	-	-
		Office	300,000	75	1000 SF	22,500
		Combined Retail	18,000	400	1000 SF	7,200
		Parking/Loading (B1-B4)	-	-	-	-
		Other (BOH)	-	-	-	-
		Mechanical Blowdown	From MEP Bleed		GPD	9,600
				Building Total		**39,300**
Building 3	**307,000**	-	-	-	-	-
		Lab	280,000	200	1000 SF	56,000
		New Combined Retail	13,000	400	1000 SF	5,200
		Reno Combined Retail	14,000	400	1000 SF	5,600
		Parking/Storage Below	-	-	-	-
		Mechanical (PH1 + PH2)	From MEP Bleed		GPD	9,600
				Building Total		**76,400**
Building 4	**367,000**	-	-	-	-	-
		Academic - Housing	330,000	130	1000 SF	42,900
		Academic - Non Housing – Day Care	9,000	286	1000 SF	2574
		Combined Retail	28,000	400	1000 SF	11200
		Other	-	-	-	-
				Building Total		**56,674**
Building 5	**445,000**	-	-	-	-	-
		Office	360,000	75	1000 SF	27,000
		Combined Retail	20,000	310	1000 SF	6,200
		Museum / Academic	65,000	50	1000 SF	3,250
		Mechanical (18th Fl)	from MEP Bleed	-	GPD	10,575
				Building Total		**47,025**
Building 6	**6,600**	-	-	-	-	-
		Combined Retail	6,600	400	GPD/1000 SF	2,640
				Building Total		**2,640**
TOTAL	**1,443,600**				**TOTAL FLOW**	**220,968**

The project team understands that Infiltration and Inflow mitigation will be needed to offset the increase in sewer flows from the SoMa Development Parcels. This mitigation will be required at a rate of four to one per City regulations. Based on the preliminary design flows in Table 1 and Table 2, the increase in flow from the SoMa Development Parcels is 160,873 gallons per day. At a four to one mitigation rate the SoMa Project will need to mitigate for 643,493 gallons per day. The project team will continue to work with the City of Cambridge DPW to finalize the estimate of sanitary sewer flow increase from the new development, identify mitigation projects, and prepare a phasing plan to ensure appropriate mitigation is in place as the various SoMa buildings are constructed and additional sanitary flows are added to the municipal sanitary sewer system.

Water:

The SoMa Development Parcels are comprised of variously sized water mains located within and adjacent to the development area. The water distribution system is shown graphically in Figures F-7 – F-8.

The SoMa buildings will connect both fire and domestic water services to the existing water mains located in the area. Redundant water supply systems will be provided for the new SoMa buildings. Details of the redundant systems will be coordinated with the Cambridge Water Department (CWD) as design of the individual buildings progresses.

The capacity of the existing water supply infrastructure in the area is currently being fully investigated; however, based on initial conversations the DPW has had with the CWD, the capacity of the system in this area appears adequate. Additionally, the Longfellow Bridge project has committed to recreating the redundant connection to the 24-inch water main located under Broadway/Main Street which will provide a reliable secondary source of water for this area of the City. The condition of the water mains in the area is still being investigated; however, it is likely that some of older water mains in the area will need to be lined or replaced as part of the SoMa Project. The design team will continue to coordinate with the CWD to determine which mains may be in need of lining or replacement.

Hydrant flow tests will be performed to determine the capacity and pressures in the water mains surrounding the development area. Should it be determined that there is inadequate pressure to provide the required flows for a SoMa building, a fire flow pump will be provided.

New domestic water and fire protection service connections will be appropriately sized for each SoMa building. The connections to the existing mains are anticipated to be provided through the installation of new tee fittings or tapping sleeves and new valves, and will be fully coordinated with the CWD. Existing fire hydrant locations will be reviewed with the CWD and the Cambridge Fire Department. Additional fire hydrants will be added within the SoMa Development Parcel areas, as required, to supplement the City's firefighting supply system. Additionally, all new building fire protection systems will be coordinated with the Cambridge Fire Department.

Based on current program projections for the SoMa Development Parcels, it is anticipated that the development will use approximately 320,000 gallons per day for its domestic water demand and non-potable uses. Rainwater collection cisterns will be used to supplement demands within the SoMa Development Parcels reducing the actual demand on the municipal water system. The project estimates that approximately 5,000,000 gallons of water per year can be saved with the rainwater collection and reuse system for development areas within the adjacent buildings 2 - 6. It is unknown at this time if one or multiple cisterns will be used to accomplish the reuse. This will be further studied as designs for the SoMa Project are advanced. Possible non-potable uses for the collected rainwater include: MEP makeup water (cooling towers), toilet flushing and landscape irrigation. Rainwater collection and reuse is discussed in further detail in the Stormwater section of this narrative.

Stormwater:

The SoMa Development Parcels currently consist predominantly of parking lots, buildings and roadways. The existing development area is approximately 91% impervious. Stormwater run-off in the development area is currently collected via street and parking lot drainage inlets and conveyed south to the Charles River, approximately 500 feet from the southern limit of SoMa Development Parcels, via underground pipe systems of various sizes and capacities. The existing stormwater infrastructure is shown graphically in Figure F-9. Runoff from the SoMa Development Parcels is largely untreated prior to its discharge to the Charles River. Additionally, the drainage systems within and adjacent to the development area convey run-off mostly from within the SoMa Development Parcels. There is very little "pass through" drainage from other areas of the City being conveyed to the Charles River through the local drainage network.

The SoMa Project plans to take a larger overall "districtwide" view of stormwater within the development area rather than a building by building, site by site approach that is more typically used. The proposed stormwater management system will be designed to mitigate stormwater from the entirety of the SoMa Development Parcels. It will be designed in a manner that will meet or exceed the provisions of the MassDEP Stormwater Management Policy for a redevelopment project and the requirements of the City of Cambridge Stormwater Policy and Stormwater Control Permit. A complete, detailed analysis of the project drainage will be prepared by Nitsch Engineering for submittal to the City under the requirements of the DPW's Stormwater Control Permitting Program. Additionally, each individual building constructed as part of the SoMa Project will submit its own Stormwater Control Permit to be reviewed by the DPW.

The proposed stormwater management collection system will generally consist of area drains, deep-sump, hooded catch basins, manholes, and underground pipes. A rainwater collection cistern and filtration system (located within in the proposed underground parking garage and/or within proposed building footprints) will capture and manage roof and site drainage for reuse within the SoMa Project. Potential non-potable uses for the collected rainwater include: MEP makeup water (cooling towers), toilet flushing, and irrigation demands. The project's goal is to collect and reuse water from the 95th percentile storm event (approximately 1.3" rainfall within 24 hours) and will explore options to increase that to the 98th percentile storm (approximately 1.8" of rainfall within 24 hours) if the relationship between watershed collection area, storages, and non-potable re-use demand is feasible. See Figures F-6 and F-9 for a graphical representation of the reuse strategy described above.

Preliminary stormwater analysis indicates the following (refer to Tables 3 – 5):

- 150,000 gallons of rainwater storage is currently proposed to capture and reuse the volume of runoff from the 95th percentile storm event for Buildings 3 through 6.
- 50,000 gallons of rainwater storage is currently proposed to capture and reuse the volume of runoff from the 95th percentile storm event for Building 2.
- Non-potable water demand of 78,000 gallons per day will be supplied from the 200,000 gallons of rainwater storage, providing an estimated water savings of 5,000,000 gallons per year, on average.
- 8,000,000 gallons of stormwater runoff will be generated by the site every year, on average. 5,000,000 gallons will be diverted for non-potable uses, with the remaining 3,000,000 gallons discharged to the Charles River: a post-development runoff reduction of 60%.

- Preliminary analysis indicates the project will meet the City of Cambridge 65% phosphorus removal requirement by the conversion of parking to non-parking areas, greening of the site, and rainwater reuse.

Table 3 – Preliminary Land Cover Changes

	Existing	Proposed	Change
Roof	75,724	172,510	96785
Parking and Streets	246,439	74,663	-171775
Pedestrian	49,235	109,544	60309
Porous Pavement	-	4,702	4702
Grass / Landscape	31,188	41,168	9980
Total Impermeable	**371,398**	**356,717**	**-14681**
Total Permeable	**31,188**	**45,870**	**14681**

Table 4 – Preliminary Runoff Estimates

	Existing				
	Area acre	Land Cover Factor	R/f Rate inches/24 hr	Total R/f ac-in	Total R/f gallons
Runoff - 95th Percentile (1.3")	9.24	0.85	1.30	10.25	278,462
Runoff - Annual (40.3")	9.24	0.85	40.30	317.90	8,632,321

	Proposed				
	Area acre	Land Cover Factor	R/f Rate inches/24 hr	Total R/f ac-in	Total R/f gallons
Runoff - 95th Percentile (1.3")	9.24	0.83	1.30	9.99	271,324
Runoff - Annual (40.3")	9.24	0.83	40.30	309.75	8,411,032

	Change				
	Area acre	Land Cover Factor	R/f Rate inches/24 hr	Total R/f ac-in	Total R/f gallons
Runoff - 95th Percentile (1.3")	0.00	-0.02	0.00	-0.26	-7138
Runoff - Annual (40.3")	0.00	-0.02	0.00	-8.15	-221289

Table 5 – Preliminary Rainwater Harvesting Estimates

	Tank Volume gallons	Runoff Capture gallons/yr	Avg. Annual Water Savings gallons/yr	Avg. Annl. flow to Charles River gallons/yr	Percent Reduction %
Sites 3-6: District System	150,000	4,000,000	3,700,000	300,000	93%
Site 2: Future Local System	50,000	1,400,000	1,300,000	100,000	93%
TOTAL	200,000	5,400,000	5,000,000	400,000	93%

Water quality requirements (both MassDEP and City of Cambridge) will be met through site greening, rainwater collection/reuse, and potentially some proprietary water quality structures. However, the majority of the mitigation will be provided by the rainwater collection and reuse cistern. The proposed reuse cistern will collect stormwater run-off from the proposed site and roofs of new

buildings within the Development Parcels and potentially some existing buildings adjacent to the Development Parcels. The run-off will be collected, pre-treated, and discharged directly to the rainwater cistern(s). Maximizing the amount of rainwater reuse will allow the SoMa Project to meet and likely exceed the 65% Phosphorous removal requirements of the City.

The soils within the SoMa Parcels are generally consist of a surface fill layer of varying composition and thickness underlaid by marine clays and glacial till. Depending on the location of the sample, these fill materials consisted of a range from gravels from coarse and fine sands to organics and silts/clay. As such, large scale infiltration-type stormwater management practices will be difficult to employ within the SoMa Development Parcels. Although site conditions do not readily support the use of infiltration as a significant stormwater control measure, the project team is proposing to green the site to provide additional opportunity for infiltration. The SoMa Project also includes an underground garage under proposed buildings but also under the open space. The garage areas under the open space will have over four feet of soil above it and will provide sufficient depth of soil that will allow for some capacity to hold rainwater, provide the opportunity for additional evapotranspiration through plants, and slow the rate of stormwater run-off. The project team will continue to explore other locations, which may support infiltration-type Best Management Practices (BMPs) such as tree pits for further management of run-off for satisfaction of City and MassDEP requirements for quality and quantity of run-off. The project team will also continue its cooperation with the City of Cambridge DPW to define the final approach for the mitigation of run-off within the SoMa Development Parcels.

CONFORMANCE TO SECTION 19.30:

19.33 The Building and Site Design Should Mitigate Adverse Environmental Impacts on Neighbors

Stormwater BMPs and other measures that minimize run-off and improve water quality will be implemented

The stormwater system for the SoMa Project will be designed to meet the provisions of the MassDEP Stormwater Management Policy for a redevelopment project. Stormwater management strategies for the proposed buildings and site improvements will seek to mitigate the stormwater run-off as required by the City standards and standard engineering practices of the Commonwealth of Massachusetts. Proposed mitigation measures include the use of Cambridge-approved Best Management Practices ("BMP's"), including proprietary water quality management structures and rainwater collection/reuse cistern(s). Rainwater collected from the SoMa Development Parcels

(rooftops and site drainage) will be directed to the rainwater reuse cistern(s) and any overflow will be routed to the drainage systems in the surrounding streets that ultimately discharge to the Charles River. Additionally, a significant amount of site greening is planned as part of the development. This will help mitigate both stormwater quantity and quality from the SoMa Development Parcels. Also, wherever possible, run-off will be directed into porous landscaping surfaces to promote increased potential for infiltration.

During construction operations, standard engineering practices for erosion and sedimentation control will be implemented onsite. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared for the site per the requirements of the United States Environmental Protection Agency (US EPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) as project construction will disturb more than one acre. The SWPPP will also be used to document compliance with the Leadership in Energy and Environmental Design (LEED) Sustainable Sites Prerequisite for Erosion and Sedimentation Control.

19.34 Projects Should Not Overburden City Infrastructure

The building and site design will be designed to make use of water-conserving plumbing where possible and to minimize the amount of stormwater run-off through the use of BMPs for stormwater management.

The following strategies and technologies will be employed in the plumbing design for buildings within the SoMa Development Parcels, which aid in water conservation:

- Low-flow plumbing fixtures in restrooms.
- Rainwater Collection and Reuse Cistern to reduce non-potable water demands.
- Reduced or eliminated irrigation by use of native, tolerant plant species.

The stormwater management system for the SoMa Development Parcels will be designed to meet the provisions of MassDEP's Stormwater Management Policy for a redevelopment project. Stormwater management strategies for the proposed buildings and site improvements will pursue mitigation of stormwater run-off as available and required by the City standards and standard engineering practices of the Commonwealth of Massachusetts.

The capacity and condition of drinking water and wastewater infrastructure systems are shown to be adequate, or the steps necessary to bring them up to an acceptable level are identified.

It is the project team's understanding that based on initial conversations the DPW has had with the CWD, there aren't currently any capacity issues in the vicinity of the SoMa Development Parcels. Hydrant flow tests will be performed to determine the capacity of the water mains within and surrounding the SoMa Development Parcels. Should it be determined that there is inadequate pressure to provide the required flows, booster pumps will be added to any new building within the development area to handle the deficiency. The condition of the water mains in the area is still being investigated, however, it is likely that some of older water mains in the area will need to be lined or replaced as part of the development of this area. The design team will continue to coordinate with the CWD to determine which mains may be in need of upgrading.

Based on discussions with the City of Cambridge DPW, the capacity and condition of the sewer mains in the area of the SoMa Development Parcels vary. There is an existing sewer lift station located adjacent to the Kendall Square "T" Head House that is currently maintained by the City. The project team will be exploring the potential to eliminate the need for the lift station and provide the area with a gravity connection to the Main Street sewer system. The SoMa Development Parcels sewerage service locations and connection points for individual buildings within the development area will continue to be discussed and reviewed with the City of Cambridge DPW.

The project team understands that infiltration and inflow mitigation will be required at a rate of four to one. The project team will continue to work with the Cambridge DPW to finalize the estimate in increase of sanitary sewer flows, identify mitigation projects, and prepare a phasing plan to ensure appropriate mitigation is in place as the various building projects are constructed and additional sanitary flows are added to the municipal sanitary sewer system.

SECTION VI: Noise Mitigation Narrative

SECTION VI: Noise Mitigation Narrative

The City and the MassDEP have noise requirements that protect residents from excessive sound. The SoMa buildings will comply with Section 13.89.1 Rooftop Mechanical Equipment Noise Mitigation and Section 8.16, Noise Control of the Ordinance as well as meet MassDEP Noise Guidelines. All mechanical equipment components for each of the sites listed in this report will meet specifications outlined in Section 8.16 of the Ordinance. This includes cooling towers, air handling units, exhaust fans, and all mechanical room louver openings.

During the permitting phase it is necessary to determine the degree of sound reduction required. This is based upon estimates of the sound that will propagate from the facility and the sound level criteria appropriate for the neighborhood. The acoustical study is included as Appendix D of this document. The sound criteria for this project will address the following factors:

- Ambient or background sound levels during the quieter times
- Type of neighborhood – residential, business, or industrial
- Character of sound generated by proposed facility – sound level and spectrum

Consistent with Section 13.89.2 of the PUD-5 zoning in the Ordinance, prior to the issuance of the first certificate of occupancy of any SoMa building MIT will submit an acoustical report, including field measurements, demonstrating compliance of such building with all applicable noise requirements.

Emergency Generators

Emergency generator noise emissions from each SoMa building do not need to be included as part of the noise emissions study. Depending on the major equipment and noise control selected for a project, a typical emergency generator facility can emit tonal and/or broadband sounds, low frequency sound, and steady and/or intermittent sounds that are noticeable in the community. However, the emergency generators for this project are exempt from the Cambridge Ordinance, as long as they are tested during the daytime hours.

The SoMa buildings will provide appropriate generator noise control measures to meet the MassDEP Noise Guidelines. The Commonwealth of Massachusetts has

enacted regulations for the control of air pollution (310 CMR 7.10). To enforce these regulations, MassDEP has issued guidelines that limit the level of industrial noise in inhabited areas as follows: a) not to increase the residual ambient sound level by more than 10 dBA and b) not to produce a pure tone condition where the sound pressure level in one octave band exceeds the levels in the two adjacent octave bands by 3 dB or more. The residual ambient sound level may be defined for the purpose of these guidelines as the measurement of the L90 level over the time period of concern or by other means acceptable to MassDEP. In addition, MassDEP typically applies these guidelines both at the property line and at the nearest inhabited residences, with most concern at the residence.

Based on the MassDEP guidelines and the results of our ambient sound survey, we suggest the following sound goals for the emergency generators:

- No significant tonal sounds at community residences; and
- 60 dBA - maximum sound level at the community residences

Loading Dock Noise

A preliminary study has been conducted by the design team regarding the location of the loading dock locations and truck paths at the SoMa Development Parcels. The loading docks are shown in gray for each building on Figure 6 of the acoustical study. Most of the loading dock areas are partially enclosed within the respective buildings, reducing the likelihood of noise impact to the residences. When the trucks are idle, they will be required to shut off their engine for loading and unloading. All deliveries will occur between 9AM and 9PM as agreed under the City of Cambridge Noise Ordinance, limiting truck noise during the nighttime hours.

Rooftop Mechanical Equipment

Based on the equipment layout shown in Figures 1L through 1S of the acoustical study, abatement methods to be employed to control the sound of the SoMa Project will include the following:

Buildings 2 and 3

The following mitigation measures are based on the building systems designed for Buildings 2 and 3:

- Solid acoustical barrier around cooling towers
- Sound attenuators outfitted for the discharge and intake openings of all rooftop lab exhaust fans, visual screens provided as required by Article 19
- Mechanical penthouse enclosing the chillers, boilers, pumps, and air handling units, with louvers and roof openings outfitted with sound attenuators to mitigate sound to the exterior

Building 4

Building 4 will be designed with the following sound mitigation measures;

- All lower level mechanical rooms will be provided with sound attenuators at the louvers
- All residential tower mechanical rooms will be provided with sound attenuators at the louvers
- Solid acoustical barrier around all outdoor equipment on the lower roof and higher roof
- Emergency generator will be provided with an acoustic enclosure to meet the MassDEP noise limit
- Generator exhaust pipe will be outfitted with 'critical hospital' grade muffler
- Visual screen around the emergency generator as required by Article 19

Building 5

Building 5 will be designed with the following sound mitigation measures;

- Solid acoustical barrier around cooling towers and exhaust fans
- Sound attenuators outfitted for all rooftop exhaust fans
- Mechanical penthouse enclosing the chillers, boilers, pumps, and air handling units, with louvers and roof openings outfitted with sound attenuators to mitigate sound to the exterior
- Emergency generator will be provided with an acoustic enclosure to meet the MassDEP noise limit

- Generator exhaust pipe will be outfitted with 'critical hospital' grade muffler
- Visual screen around the emergency generator as required by Article 19
- All ground level mechanical room louvers will be provided with sound attenuators

Building 6

Building 6 will be designed with the following sound mitigation measures;

- Cooling towers and air handling units will be located within a mechanical well, with sound absorptive finishes on the inside face of the mechanical well
- Forced-draft cooling towers with inlet and discharge sound attenuators will be provided
- The air handling unit will be provided with sound attenuators at the outside air opening and the exhaust air opening

Parcel C Garage

The SoMa garage will be designed with the following sound mitigation measures;

- Garage exhaust fans will be provided with sound attenuators
- Louvers will be provided with sound attenuators

The sound emissions from emergency generators for the SoMa Project will be specified to address compliance with the MassDEP noise guidelines and City of Cambridge Noise Standards. Table 3 of the acoustical study presents the initial sound estimates for the project-only equipment only at representative community locations, which include both residential and commercial areas. These estimates are based on information provided us on the equipment that will operate continuously (24/7 operation) and on the recommended noise specification values. Table 4 of the acoustical study presents similar information as Table 3 of the acoustical study, but the estimated total sound levels include the contributions of both the project equipment sound and the average ambient sound that we measured on the quieter second night in the community across Locations 1 – 10. The estimates, which are

based on current project information, address compliance with the applicable noise requirements.

SECTION VII: Appendices

A. SoMa Project Graphics Materials
(Under Separate Cover)

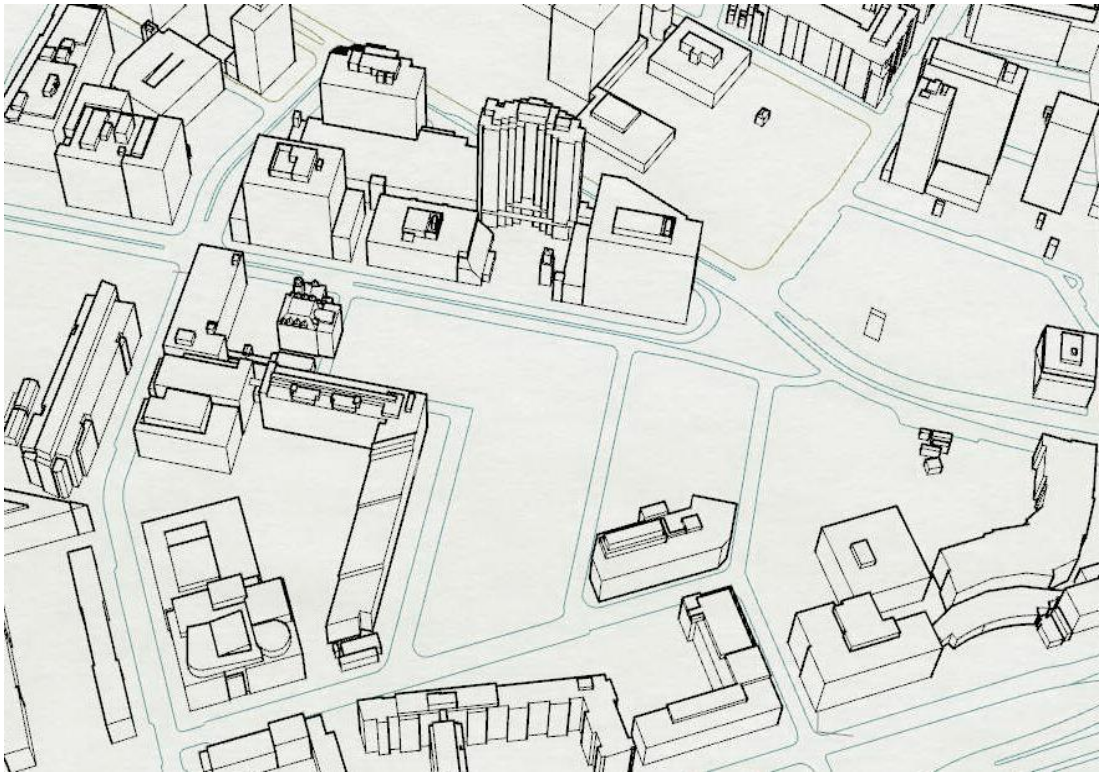
B. MIT Kendall Square Initiative Wind Study

SOMA Sites 1, 2, 3, 4, 5 and 6

Cambridge, MA

Pedestrian Wind Assessment

RWDI # 1501051
July 10, 2015



SUBMITTED TO

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SUBMITTED BY

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1. Introduction

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by Perkins+Will to assess the potential wind conditions for the proposed development of SOMA Sites 1, 2, 3, 4, 5 and 6 in Cambridge, MA (Image 1). The objective of this assessment was to provide a qualitative evaluation of wind comfort conditions on and around the development and recommend mitigation measures, if necessary.

This qualitative assessment is based on the following:

- a review of regional long-term meteorological data;
- previous wind-tunnel tests on buildings in the Cambridge area;
- design drawings received by RWDI on April 27 and May 21, 2015;
- our engineering judgment and expert knowledge of wind flows around buildings[1-3];
- use of software developed by RWDI (*Windestimator*[2]) for estimating the potential wind comfort conditions around generalized building forms.

This qualitative approach provides a screening-level estimation of potential wind conditions. To quantify these conditions or refine any conceptual mitigation measures, physical scale model tests would typically be required.

Note that other wind issues, such as those related to door pressures, exhaust re-entrainment, snowdrifts, wind loading, etc. are not considered in the scope of this assessment.

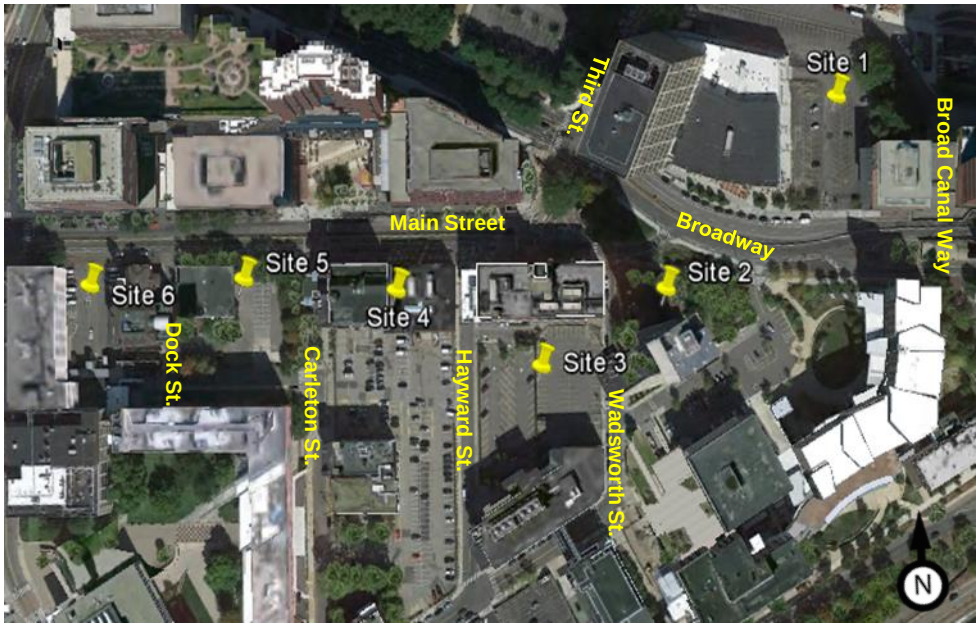


Image 1 - Aerial Photograph of Existing Site and Surroundings
(Courtesy of Google earth™)

1. H. Wu and F. Kriksic (2012). "Designing for Pedestrian Comfort in Response to Local Climate", *Journal of Wind Engineering and Industrial Aerodynamics*, vol.104-106, pp.397-407.
2. H. Wu, C.J. Williams, H.A. Baker and W.F. Waechter (2004), "Knowledge-based Desk-Top Analysis of Pedestrian Wind Conditions", *ASCE Structure Congress 2004,* Nashville, Tennessee.
3. C.J. Williams, H. Wu, W.F. Waechter and H.A. Baker (1999), "Experience with Remedial Solutions to Control Pedestrian Wind Problems", *10th International Conference on Wind Engineering*, Copenhagen, Denmark.

2. Building and Site Information

The proposed project site is located on the east campus of Massachusetts Institute of Technology (MIT) in Cambridge, as shown in the aerial photo in Image 1. The proposed development will consist of six sites named Site 1, 2, 3, 4, 5 and 6. The mixed-use sites in the development include office towers, student housing, retail, laboratories, academic buildings and parking garages (See Image 2). The sites will be of varying heights, but overall similar to the general build-up in the surroundings.

Pedestrian areas include building entrances and sidewalks along Main Street, Broadway, Broad Canal Way, Third Street, Carleton Street, Wadsworth Street, Dock Street and Ames Street, walkways between the sites and outdoor seating areas around the buildings.

The development area currently consists of parking lots with low rise buildings. Most of the existing buildings adjacent to the site are of lower heights than the proposed development with the exception of two towers to the northwest that are approximately 240 feet and 187 feet in height.

Some degree of intervention is expected with respect to some of the existing buildings. The existing buildings E38 and E39 are intended to be part of Site 4, E48 and E70 are anticipated to remain with newly built Site 3 and 1 respectively (Image 2).

There are approximately 1330 parking spaces planned for the development including underground garages in Sites 2, 3, 4, 5 and in the open space to the south of the proposed sites.

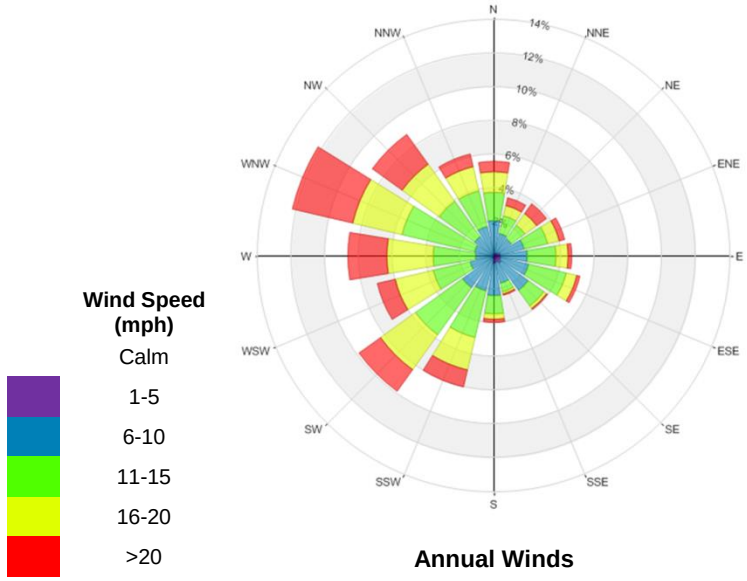
Image 2 – Site Plan

3. Meteorological Data

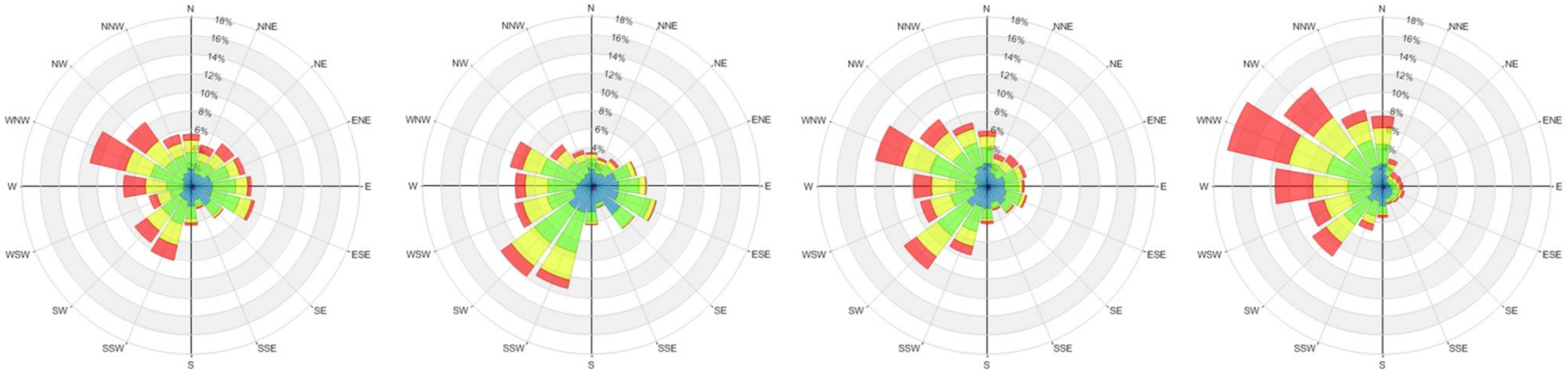
Wind statistics at Boston-Logan International Airport between 1981 and 2011 were analyzed for the spring (March to May), summer (June to August), fall (September to November) and winter (December to February) seasons. Image 3 graphically depicts the distributions of wind frequency and directionality for these four seasons and for the annual period. When all winds are considered, winds from the northwest and southwest quadrants are predominant. The northeasterly winds are also frequent and strong, especially in the spring.

Strong winds with mean speeds greater than 20 mph (red bands) measured at the airport are prevalently from the northwesterly directions throughout the year, while the southwesterly and northeasterly winds are also frequent.

Therefore, winds from the northwest, southwest and northeast directions are considered most relevant to the current study, while winds from other directions are also considered in our analysis.



Annual Winds



Spring (March to May) | **Summer (June to August)** | **Fall (September to November)** | **Winter (December to February)**

Image 3 - Directional Distribution (%) of Winds (Blowing From) - Boston Logan International Airport (1981 to 2011)

4. Explanation Of Criteria

The RWDI pedestrian wind criteria are used in the current study. These criteria have been developed by RWDI through research and consulting practice since 1974. They have also been widely accepted by municipal authorities as well as by the building design and city planning community.

Sitting: Calm or light breezes desired for outdoor restaurants and seating areas where one can read a paper without having it blown away.

Standing: Gentle breezes suitable for main building entrances and bus stops.

Strolling: Moderate winds that would be appropriate for window shopping and strolling along a downtown street, plaza or park.

Walking: Relatively high speeds that can be tolerated if one's objective is to walk, run or cycle without lingering.

Wind conditions are considered suitable for sitting, standing or walking if the wind speeds are expected for at least four out of five days (80% of the time). An **uncomfortable** designation means that the criterion for walking is not satisfied.

Safety is also considered by the criteria and is associated with excessive gust wind speeds that can adversely affect a pedestrian's balance and footing. If winds sufficient to affect a person's balance occur more than 0.1% of the time, the wind conditions are considered severe. Wind control measures are typically required at locations where winds are rated as uncomfortable or they exceed the wind safety criterion.

These criteria for wind forces represent average wind tolerance. They are sometimes subjective and regional differences in wind climate and thermal conditions as well as variations in age, health, clothing, etc. can also affect people's perception of the wind climate.

For the current development, wind speeds comfortable for walking or strolling are appropriate for sidewalks. Lower wind speeds comfortable for standing are required for major building entrances, where pedestrians may linger. Low wind speeds comfortable for sitting are desired for outdoor amenity areas in the summer, when these spaces are typically in use.

5. Pedestrian Wind Conditions

5.1 Background

Predicting wind speeds and occurrence frequencies is complicated. It involves building geometry, orientation, position and height of surrounding buildings, upstream terrain and the local wind climate. Over the years, RWDI has conducted more than 2,500 wind-tunnel model studies on pedestrian wind conditions around buildings, yielding a broad knowledge base. This knowledge has been incorporated into RWDI's proprietary software that allows, in many situations, for a qualitative, screening-level numerical estimation of pedestrian wind conditions without wind tunnel testing.

As outlined in Image 4, the surroundings to the west, north and east are generally a mix of built-up and suburban terrain. There are open areas to the south due to the Charles River Basin, with suburban terrain beyond.

Image 4 – Arial View of Surroundings

A building taller than its surroundings tends to intercept the stronger winds at higher elevations and redirect them to the ground level. Such a "downwashing flow" is the main cause for increased wind activity around a tall building at the pedestrian level. Oblique winds also cause "corner flow accelerations" around the downwind building corner. When two buildings are situated side by side, wind flow tends to accelerate through the space between the buildings due to a "channeling effect". If these building/wind combinations occur for prevailing winds, there is a greater potential for increased wind activity.

Image 5a – Downwashing Flow

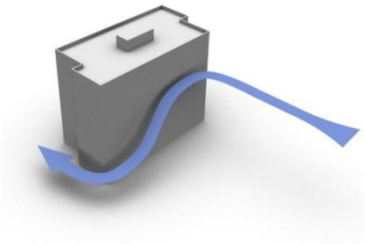


Image 5b – Corner Acceleration

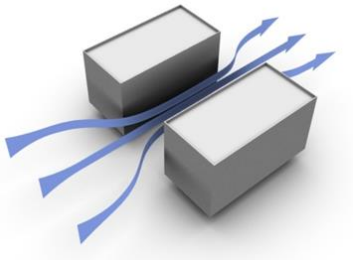


Image 5c - Channeling Effect

5.2 Potential Wind Conditions at Grade

Given the building geometries and position as well as the local wind climate, it is our prediction that the potential wind conditions at all pedestrian areas, including entrances and sidewalks, will meet the mean speed and safety criteria for most of the areas. The following discussion on wind conditions focus on these areas.

Image 6 shows the ground floors of all the buildings with main entrances indicated by blue triangles. The main lobbies and retail spaces are indicated in orange and pink, respectively. It is our understanding that the location of retail entrances will vary as the design develops.

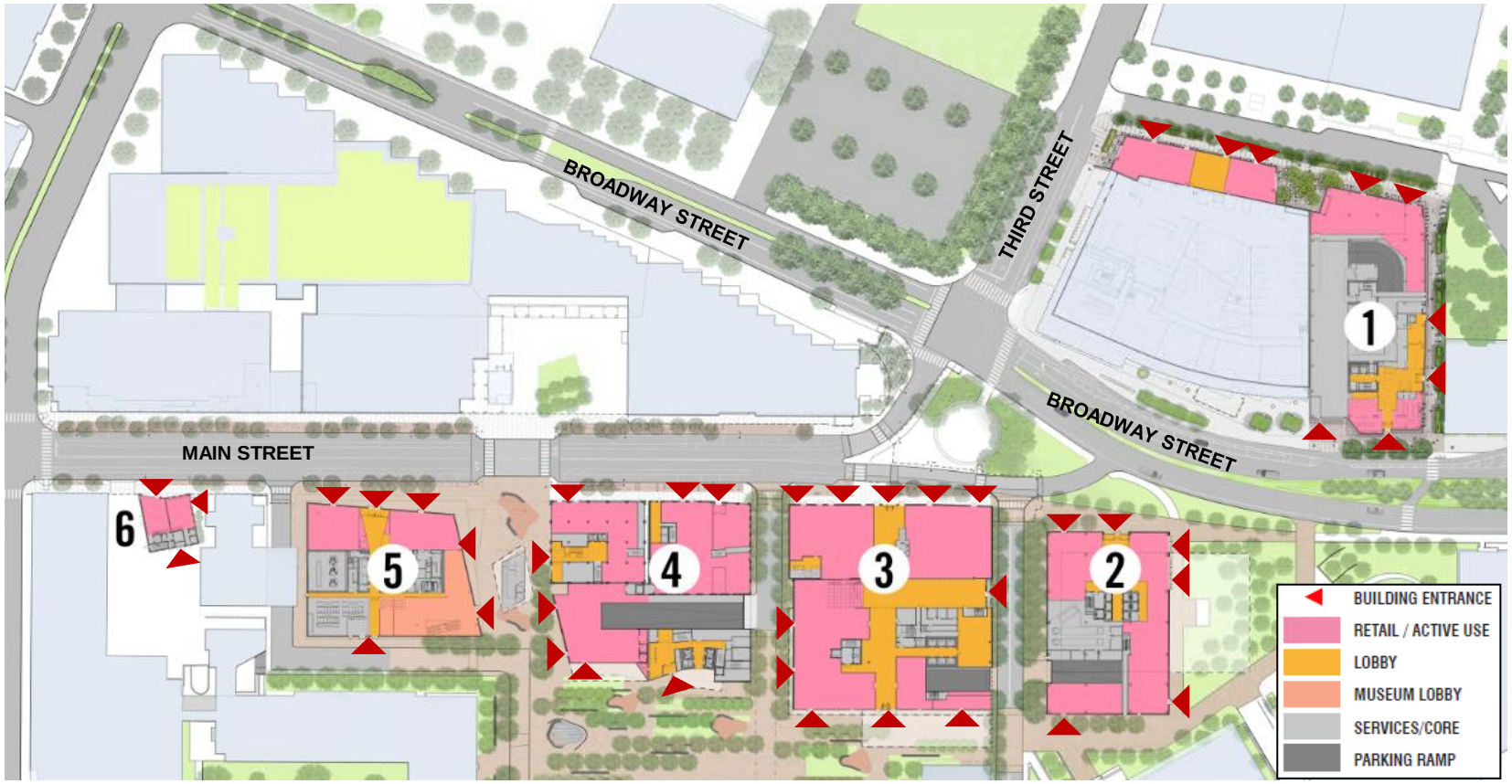


Image 6 – Wind Control Measures for Building Entrances

5.2 Potential Wind Conditions at Grade

A. Site 1

Overall, winds at the entrances of Site 1 are predicted to be comfortable for the intended usage. However, higher than desired wind speeds may occur occasionally as a result of the tall towers interacting with the predominant winds.

The predominant northeasterly winds are expected to downwash off the north and east façades, creating higher wind speeds at the entrances, particularly at the east side (Image 5a). Part of Site 1 will be located along the south side of Broad Canal Way between two existing high-rise towers on either side of the street. The tall towers would encourage northwesterly winds to channel along Broad Canal Way and thereby yield slightly higher wind speeds than desired on particularly windy days (Image 5c).

The effects of channeling and downwashing described above would extend onto the sidewalks as well. However, active pedestrians on sidewalks are tolerant to higher wind speeds than those desired at areas of passive usage like entrances and outdoor seating areas. Wind conditions on the sidewalks are expected to be comfortable for standing or strolling in general. Higher wind activity may occur on Broad Canal Way, especially at the northeast corner of Site 1, due to the acceleration of northeast winds at that corner (Image 5b).

Street trees and landscaping are effective wind control measures in the summer. In the winter, they are less effective due to the loss of their foliage. Providing canopies above entrances is an effective measures to reduce the impact of downwashing flows at entrances. Alternatively, recessing the entrances from the main façade or providing closed vestibules are also good measures to allow for a protected area for pedestrians to wait on windy days. A combination of coniferous trees, planters and wind screens may be placed along the sidewalks and in open spaces to reduce the wind speeds to an appropriate level. Examples of these are shown in Image 7. Wind tunnel testing is recommended to quantify the wind conditions and evaluate the effectiveness of feasible mitigation strategies.

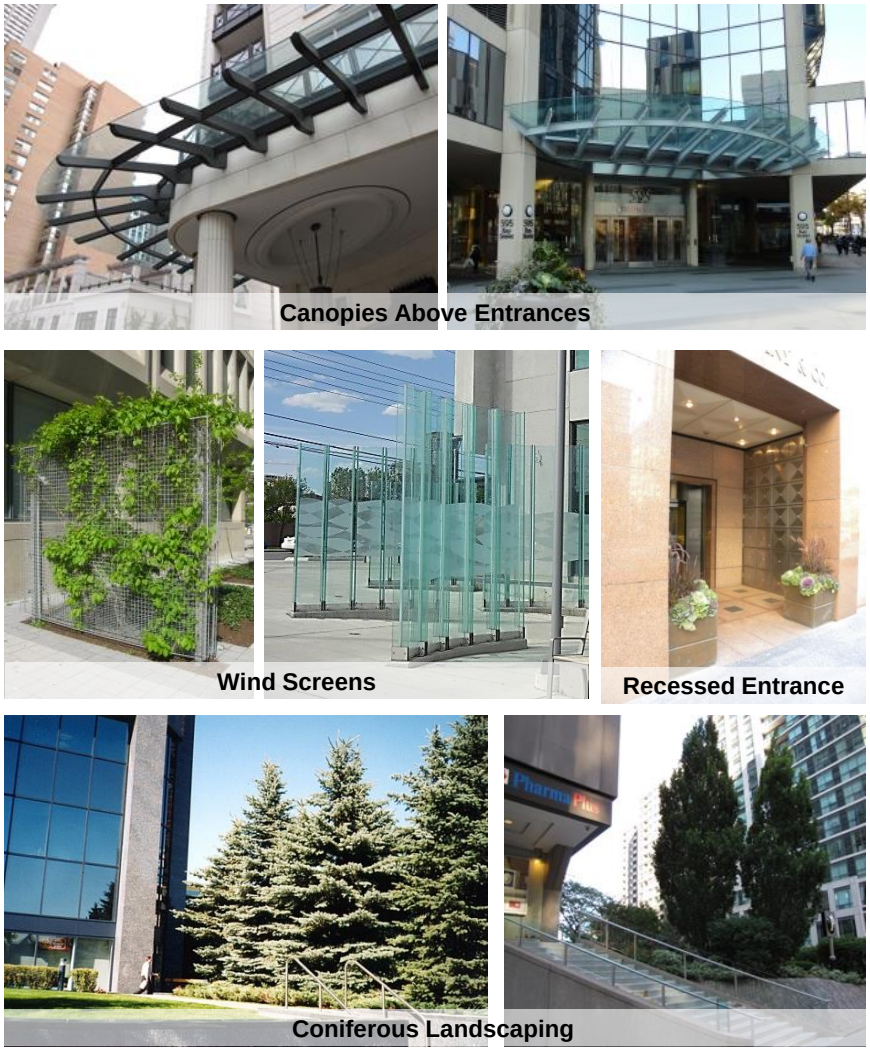


Image 7 – Wind Control Measures for Entrances and Sidewalks

5.2 Potential Wind Conditions at Grade

B. Sites 2, 3, 4 and 5

Sites 2, 3, 4 and 5 are proposed to be tall towers, with entrances on all sides at grade level. These buildings are located side by side on the south side of Main Street. The towers will be comparable in height to other high-rise buildings in the surroundings to the northeast, north and northwest.

North Side (Main Street)

The dense surroundings are predicted to provide ample shelter from predominant winds to the grade level areas around the proposed buildings. However, winds from the northeast and northwest are expected to downwash off of the north facades of all of the proposed towers (Image 5a).

The roofs of the existing E38, E39 and E48 buildings will intercept flows downwashing off of Sites 3 and 4. As a result, wind conditions similar to those currently observed are expected to occur in the vicinity of those sites. Sites 2 and 5 do not include such low rise features that would keep downwashing flows above grade level and therefore the buildings would result in a slight increase in winds on Main Street.

Overall, wind conditions on the north side of Sites 2, 3, 4 and 5 are anticipated to be comfortable for standing or strolling in the summer and strolling or walking in the winter. While these conditions are appropriate for sidewalks and other areas where pedestrians would be active, they are higher than desired at entrances.

Reduced wind speeds around the entrances can be achieved by introducing overhead canopies or dense coniferous landscaping along Main Street entrances. In addition, the entrances can be recessed to protect them from the downwashing wind flows. Examples of these wind control measures are shown in Image 7.

East, South and West Sides

Due to the fact that the towers are relatively tall separated by narrow gaps, the proposed buildings would encourage wind acceleration between them on the east and west sides. As a result of this channeling effect (Image 5c), higher than desired wind conditions may occur occasionally both at the entrances and along Wadsworth, Hayward, Carleton and Dock Streets. Wind speeds in these areas are predicted to be comfortable for strolling in the summer and strolling or walking in the winter, which are appropriate for sidewalks, but higher than desirable for entrances. The trees in these areas would reduce wind speeds to appropriate levels in the summer. However, the trees would have to be coniferous to be effective in the winter as well. As an alternative to coniferous landscaping, wind screens may be considered. These would improve wind conditions both for the entrances as well as the sidewalks. Similar to the suggestions made in the previous section, recessing the entrances or designing them with vestibules would provide a sheltered waiting area for pedestrians.

Winds to the south of the these sites are expected to be calmer compared to other directions, as these areas are sheltered by the towers from the predominant northeasterly and northwesterly winds by the building massing itself.

C. Site 6

Site 6 will be a low-rise structure, with a height similar or lower than it's surroundings. This is advantageous in terms of wind flows – the building would be sheltered by it's surroundings and would not bring about a significant change to the existing wind conditions in the vicinity. Winds at the entrances and around the site would be comfortable for standing in the summer and strolling in the winter. Winds redirected to grade level by Sites 2, 3, 4 and 5 would render winds comfortable for walking on the sidewalks, particularly in the winter.

6. Summary

The introduction of the proposed towers is not predicted to affect pedestrian level wind conditions substantially. Although a slight increase in the wind speeds is predicted around the taller towers, in particular around Sites 1, 2 and 5, the resulting wind conditions are predicted to be appropriate for pedestrian use. The exceptions to this is the northeast corner of Site 1 where higher than desired wind conditions are predicted, particularly in the winter due to the seasonal stronger northeasterly winds. Higher than desired wind speeds are predicted at building entrances along Main Street and Broad Canal Way due to downwashing and channeling effects. On occasion, higher wind speeds are expected to the east and west sides of Sites 2, 3, 4 and 5 as well.

Winds at the south side of all the sites and around Site 6 are predicted to be appropriate for the intended usage throughout the year.

RWDI suggests detailed wind tunnel testing to quantify the extent and understand in greater detail the wind activity levels at areas identified as a potential concern. The advantage of this testing would be to understand the magnitude and benefit of any potential mitigation measures.

7. Applicability Of Results

In the event of any significant changes to the design, construction or operation of the building or addition of surroundings in the future, RWDI could provide an assessment of their impact on the design considered in this report. It is the responsibility of others to contact RWDI to initiate this process.

C. SoMa Project LEED Scorecards

LEED v4 - Kendall Master Site

last updated: April 23, 2015

Achievability			
hi	med	low	NP
29	6	4	0

Certified 40 to 49 points **Silver** 50 to 59 points **Gold** 60 to 79 points **Platinum** 80 or more points

Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.

30 Projected Points

				Prerequisites		**Standard**
Y				SS Prereq 1	**Construction Activity Pollution Prevention**	Create and implement erosion control plan that meets the 2003 EPA Construction General Permit.
Y				WE Prereq 1	**Outdoor Water Use Reduction:** 30%	Reduce outdoor water use by 30% over the baseline specified in LEED.
Y				EA Prereq 4	**Fundamental Refrigerant Management**	Eliminate CFCs in building HVAC&R.
Y				MR Prereq 2	**Construction and Demolition Waste Management Planning**	Develop and implement a construction and demolition waste management plan
Y				IEQ Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	Prohibit smoking inside building, and locate exterior smoking areas at least 25 feet away from building.
17	**0**	**3**	**0**		**Location & Transportation**	**Standard**
			20	LT Credit 1	**LEED for Neighborhood Development Location**	Locate the project in within a development certified under LEED for Neighborhood Development
2				LT Credit 2	**Sensitive Land Protection**	Locate the development footprint on land that has been previously developed.
		3		LT Credit 3	**High Priority Site**	Locate the project on a site where contaminated soil/groundwater remediation is required or in historic district/building.
6				LT Credit 4	**Surrounding Density and Diverse Uses**	Locate on a site with an existing density of 22,000sf/acre - 35,000 sf/acre and within 1/2 mile of 4-8 basic services.
6				LT Credit 5	**Access to Quality Transit**	Locate project within 1/2 mile of a rail station or ferry terminal or 1/4 mile of bus, streetcar or rideshare.
1				LT Credit 6	**Bicycle Facilities**	Access to bicycle network. Short term (2.5% peak visitors) and long term (5% all occupants) bike parking and FTE showers
1				LT Credit 7	**Reduced Parking Footprint**	Preferred parking for carpools for 5% of the total parking spaces
1				LT Credit 8	**Green Vehicles**	Preferred parking for Green Vehicles: 5% of all parking spaces and electric vehicle charging or alternative fuel facility for 2%
6	**3**	**1**	**0**		**Sustainable Sites**	**Standard**
1				SS Credit 1	**Site Assessment**	Complete comprehensive site survey; topography, hydrology, climate, vegetation, soils, human use and human health effects.
	2			SS Credit 2	**Site Development:** Protect or Restore Habitat	Protect 40% of greenfield and restore 30% of previously developed site (2pts) or provide $0.40/sf to accredited land trust (1pt).
	1			SS Credit 3	**Open Space**	Provide outdoor space greater than or equal to 30% of the total site area (including building footprint).
3				SS Credit 4	**Rainwater Management**	Manage runoff for the 95th percentile (2pt), 98th percentile (+1pt) with low-impact development (LID) and green infrastructure.
2				SS Credit 5	**Heat Island Reduction**	Meet high albedo requirements for roof and site OR place a minimum of 75% parking under cover (1pt).
		1		SS Credit 6	**Light Pollution Reduction**	Meet uplight and light trespass requirements and do not exceed exterior signage luminance requirements.
1	**1**	**0**	**0**		**Water Efficiency**	**Standard**
1				WE Credit 1	**Outdoor Water Use Reduction:** 50% Reduction	Reduce potable water used for irrigation by 50%.
	1			WE Credit 1	**Outdoor Water Use Reduction:** No Potable Water	No potable water use for irrigation.
4	**1**	**0**	**0**		**Innovation in Design**	**Standard**
1				ID Credit 1.1	**Innovation in Design**, Green Education	Pending GBCI review and comment.
1				ID Credit 1.2	**Innovation in Design**, Green Cleaning	Pending GBCI review and comment.
1				ID Credit 1.3	**Innovation in Design**, Organic Landscape Management	Pending GBCI review and comment.
	1			ID Credit 1.4	**Innovation in Design**, Integrated Pest Management	Pending GBCI review and comment.
1				ID Credit 2	**LEED™ Accredited Professional**	LEED Accredited Professional on design team.
1	**1**	**0**	**0**		**Regional Priority**	**Standard**
	1			RP Credit 1.3	**Regional Priority**, High Priority Site	Pursuant to USGBC determined zone-based regional priority credit (2 points, required point threshold = 2)
1				RP Credit 1.4	**Regional Priority**, Rainwater Management	Pursuant to USGBC determined zone-based regional priority credit (Up to 3 points, required pt threshold = 2)

LEED v4 for BD+C: Core and Shell

Project Checklist

Project Name: Building 2
Date: 5/6/2015

Y	?	N			
1			Credit	Integrative Process	1

17	3	0	**Location and Transportation**		20
			Credit	LEED for Neighborhood Development Location	20
2			Credit	Sensitive Land Protection	2
	3		Credit	High Priority Site	3
6			Credit	Surrounding Density and Diverse Uses	6
6			Credit	Access to Quality Transit	6
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

8	2	2	**Sustainable Sites**		11
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
		2	Credit	Site Development - Protect or Restore Habitat	2
	1		Credit	Open Space	1
3			Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
	1		Credit	Light Pollution Reduction	1
2			Credit	Tenant Design and Construction Guidelines	1

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

6	12	14	**Energy and Atmosphere**		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
2	3	1	Credit	Enhanced Commissioning	6
3	3	11	Credit	Optimize Energy Performance	18
	1		Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
	3		Credit	Renewable Energy Production	3
1			Credit	Enhanced Refrigerant Management	1
	2		Credit	Green Power and Carbon Offsets	2

6	5	3	**Materials and Resources**		14
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
3		3	Credit	Building Life-Cycle Impact Reduction	6
	2		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
1	1		Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
	2		Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

4	3	3	**Indoor Environmental Quality**		10
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
1	1		Credit	Enhanced Indoor Air Quality Strategies	2
2	1		Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
		3	Credit	Daylight	3
	1		Credit	Quality Views	1

2	0	0	**Innovation**		6
1			Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

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

52	30	26	**TOTALS**	Possible Points:	110

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

LEED v4 for Core and Shell Development
Project Scorecard

Project Name: Site N
Project Address: Main Street Cambridge, MA
Updated: May 12, 2015

TOTALS

63	6	14	26

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

				GENERAL PROJECT DOCUMENTATION				
Y				PI form 1	Minimum Program Requirements	Required		
Y				PI form 2	Project Summary Details	Required		
Y				PI form 3	Occupant Usage Data	Required		
Y				PI form 4	Schedule and Overview Documents	Required		
Y				PI form 5	Building Systems Control	Required		
Yes	?+	?-	No					
1	0	0	0	**Integrative Process**		1	5/12 updates	
1				Credit 1	**Integrative Process**	1		
Yes	?+	?-	No					
17	0	3	0	**Location + Transportation**		20	5/12 updates	
				Credit 1	**LEED for Neighborhood Development**	20		
2				Credit 2	**Sensitive Land Protection**	2		
		3		Credit 3	**High Priority Site**	3		
6				Credit 4	**Surrounding Density and Diverse Uses**	6	Master Site Credit	
6				Credit 5	**Access to Quality Transit**	6	Master Site Credit	
1				Credit 6	**Bicycle Facilities**	1	Master Site Credit	
1				Credit 7	**Reduced Parking Footprint**	1	Master Site Credit	
1				Credit 8	**Green Vehicles**	1	Master Site Credit	
Yes	?+	?-	No					
8	1	1	0	**SUSTAINABLE SITES**		11	5/12 updates	
Y				Prereq 1	**Construction Activity Pollution Prevention**	Required	REQUIRED	
1				Credit 1	**Site Assessment**	1	Master Site Credit	
2				Credit 2	**Site Development - Protect or Restore Habitat**	2	MITIMCo interested in pursing crecit via Option 2. Via Land Trust support	
	1			Credit 3	**Open Space**	1	Consider attempting on a project basis - dependent on final design	
3				Credit 4	**Rainwater Management**	3	Master Site Credit	
1		1		Credit 5	**Heat Island Reduction**	1 to 2	Master Site Credit	
		1		Credit 6	**Light Pollution Reduction**	1	Consider pursing on project basis	
1				Credit 7	**Tenant Design and Construction Guidelines**	1	Assumes owner will provide non-binding Tenant Design and Construction Guidelines to potential tenants	
Yes	?		No					
7	1	2	1	**WATER EFFICIENCY**		11	5/12 updates	
Y				Prereq 1	**Outdoor Water Use Reduction**	Required	REQUIRED. Master Site	
Y				Prereq 2	**Inddoor Water Use Reduction**	Required	REQUIRED	
Y				Prereq 3	**Building Level Water Metering**	Required	REQUIRED	
2				Credit 1	**Outdoor Water Use Reduction 50%**	2	Master Site Credit; assumes reduced potable water use for irrigation by 50% OR no irrigation	
4		1	1	Credit 2	**Indoor Water Use Reduction 30%-50%**	2 to 6	Assumes project will achieve a 40% water use reduction and attempt to reach the 40% threshold	
	1	1		Credit 3	**Cooling Tower Water Use**	1 to 2	Consider attempting this credit requires conducting a one-time potable water analysis to measure 5 established control parameters and determining the max allowed concentration level of each in the make up water. Limit cooling tower cycles.	
1				Credit 4	**Water Metering**	1	Consider attempting - requires additional water end use metering	

Building 3

Yes	?		No					
10	2	2	19	**ENERGY & ATMOSPHERE**		**33**	**5/12 updates**
Y				Prereq 1	**Fundamental Commissioning of Building Energy Systems**	Required	REQUIRED
Y				Prereq 2	**Minimum Energy Performance**	Required	REQUIRED
				Prereq 3	**Building Level Energy Metering**	Required	REQUIRED
Y				Prereq 4	**Fundamental Refrigerant Management**	Required	
6				Credit 1	**Enhanced Commissioning**	2 to 6	Project will pursue enhanced commissioning; monitor based commissioning and building envelop commissioning.
3	1	2	12	Credit 2	**Optimize Energy Performance**	up to 18	Pending AHA energy model updates. HOLD until MEP design is further developed
	1			Credit 3	**Advanced Energy Metering**	1	Consider attempting this credit. Requires installation of advanced energy metering for the base building and to enable tenants to independently meter energy consumption for all systems within their space NOTE: MIT is typically interested in a high level of energy metering
			2	Credit 4	**Demand Response**	2	Assumed 'no'
			3	Credit 5.1	**Renewable Energy Production**	3	Dependent on design team input; Assumed 'no'
1				Credit 5.2	**Enhanced Refrigerant Management**	1	Dependent on design team input
			2	Credit 6	**Green Power and Carbon off-sets**	1 to 2	Not a design decision

Yes	?		No				
6	2	3	3	**MATERIALS & RESOURCES**		**14**	**5/12 updates**
Y				Prereq 1	**Storage and Collection of Recyclables**	Required	REQUIRED
Y				Prereq 2	**Construction and Demolition Waste Management Planning**	Required	REQUIRED. Master Site prerequisite. May on be applicable if the CM is the same for all projects and construction occurs simultaneously or progressively
3			3	Credit 1	**Building Life-Cycle Impact Reduction**	2 to 6	Assumes project will pursue Option 4 whole-building life-cycle assessment
	1	1		Credit 2	**Building Product Disclosure and Optimization - Environmental Product Declaration**	2	Assumes project will attempt Option 1 EPDs for 20 products from at least 5 different manufacturers
1		1		Credit 3	**Building Product Disclosure and Optimization - Sourcing of Raw Materials**	2	Assumes project will attempt Option 2 Leadership extraction practices and consider Option 1 Raw material source & extraction reporting
	1	1		Credit 4	**Building Product Disclosure and Optimization - Material Ingredients**	2	Assumes project will attempt Option 2 Leadership extraction practices
2				Credit 5	**Construction and Demolition Waste Management**	2	Assumes technical specifications will include a section for Construction Waste Management in Division 1

Yes	?		No				
5	0	2	3	**INDOOR ENVIROMENTAL QUALITY**		**10**	**5/12 updates**
Y				Prereq 1	**Minimum Indoor Air Quality Performance**	Required	REQUIRED
Y				Prereq 2	**Environmental Tobacco Smoke (ETS) Control**	Required	REQUIRED. Master site prerequisite
1		1		Credit 1	**Enhanced Indoor Air Quality Strategies**	2	Assumes project will meet criteria for walk off mats, filtration, etc.
2		1		Credit 2	**Low Emitting Materials**	1 to 3	Assumes 4 of the possible 6 categories will be met
1				Credit 3	**Construction Indoor Air Quality Management Plan**	1	Assumes technical specifications will include a section for Indoor Air Quality Management in Division 1
			3	Credit 4	**Daylight**	3	Assumed 'no'. Requires daylight modeling
1				Credit 5	**Quality Views**	1	Dependent on typical tenant layout

Yes	?		No				
6	0	0	0	**INNOVATION IN DESIGN**		**6**	**5/12 updates**
1				Credit 1.1	**ID - Exemplary Performance in SSc4.1**	1	Master Site Credit
1				Credit 1.2	**ID - Exemplary Performance SSc7.2**	1	Master Site Credit
1				Credit 1.3	**ID - Green Education**	1	Master Site Credit
1				Credit 1.4	**ID - Green Cleaning**	1	Master Site Credit
1				Credit 1.5	**ID -Organic Landscape Management or Integrated Pest Control**	1	Master Site Credit
1				Credit 2	**LEED® Accredited Professional**	1	

Yes	?		No				
3	0	1	0	**REGIONAL PRIORITY - zip code 02139**		**4**	**5/12 updates**
1				Credit 1	**Regional Priority for 02139:** Renewable Energy Production; Optimize Energy Performance 8pt threshold; High Prio	1	Rainwater Management
1				Credit 2	**Regional Priority for 02139:** Renewable Energy Production; Optimize Energy Performance 8pt threshold; High Prio	1	Building Life Cycle Impact Assessment
1				Credit 3	**Regional Priority for 02139:** Renewable Energy Production; Optimize Energy Performance 8pt threshold; High Prio	1	40% Indoor water use reduction
		1		Credit 4	**Regional Priority for 02139:** Renewable Energy Production; Optimize Energy Performance 8pt threshold; High Prio	1	

Yes	?		No		
63	6	14	26	**PROJECT TOTALS (Certification Estimates)**	**110**

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

LEED v4 for New Construction - Kendall Square Building 4

last updated: May 4, 2015

Achievability			
hi	med	low	NP
58	26	17	9

Certified 40 to 49 points **Silver** 50 to 59 points **Gold** 60 to 79 points **Platinum** 80 or more points

Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.

70 Projected Points

				Prerequisites		**Standard**
Y				SS Prereq 1	**Construction Activity Pollution Prevention**	Create and implement erosion control plan that meets the 2003 EPA Construction General Permit.
Y				WE Prereq 1	**Outdoor Water Use Reduction:** 30%	Reduce outdoor water use by 30% over the baseline specified in LEED.
Y				WE Prereq 2	**Indoor Water Use Reduction:** 20%	Reduce indoor water use by 20% over the baseline specified in LEED and meet requirements for process water use.
Y				WE Prereq 3	**Building-Level Water Metering**	Install permanent water meters for building and grounds
Y				EA Prereq 1	**Fundamental Commissioning and Verification**	Engage commissioning agent, and develop and execute a commissioning plan. Prepare O&M plan for current facilities.
Y				EA Prereq 2	**Minimum Energy Performance**	Reduce energy cost by 5%, compared to ASHRAE 90.1-2010, Appendix G; meet mandatory provisions of ASHRAE 90.1-2010.
Y				EA Prereq 3	**Building-Level Energy Metering**	Install meters to provide data on total energy consumption AND commit to share data with the USGBC for 5 years
Y				EA Prereq 4	**Fundamental Refrigerant Management**	Eliminate CFCs in building HVAC&R.
Y				MR Prereq 1	**Storage & Collection of Recyclables**	Provide space for the collection and storage of paper, cardboard, glass, plastic, and metals.
Y				MR Prereq 2	**Construction and Demolition Waste Management Planning**	Develop and implement a construction and demolition waste management plan
Y				IEQ Prereq 1	**Minimum IAQ Performance**	Meet sections 4 through 7 of ASHRAE 62.1-2010.
Y				IEQ Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	Prohibit smoking inside building, and locate exterior smoking areas at least 25 feet away from building.

1	0	0	0		**Integrative Process**	**Standard**
1				IP Credit 1	**Integrative Process**	Perform preliminary energy model and water budget before the completion of SD and document in OPR & BOD.

12	2	2	0		**Location & Transportation**	**Standard**
			16	LT Credit 1	**LEED for Neighborhood Development Location**	Locate the project in within a development certified under LEED for Neighborhood Development
1				LT Credit 2	**Sensitive Land Protection**	Locate the development footprint on land that has been previously developed.
		2		LT Credit 3	**High Priority Site**	Locate the project on a site where contaminated soil/groundwater remediation is required or in historic district/building.
5				LT Credit 4	**Surrounding Density and Diverse Uses**	Locate on a site with an existing density of 22,000sf/acre - 35,000 sf/acre and within 1/2 mile of 4-8 basic services.
5				LT Credit 5	**Access to Quality Transit**	Locate project within 1/2 mile of a rail station or ferry terminal or 1/4 mile of bus, streetcar or rideshare.
1				LT Credit 6	**Bicycle Facilities**	Access to bicycle network. Short term (2.5% peak visitors) and long term (5% all occupants) bike parking and FTE showers
	1			LT Credit 7	**Reduced Parking Footprint**	Preferred parking for carpools for 5% of the total parking spaces
	1			LT Credit 8	**Green Vehicles**	Preferred parking for Green Vehicles: 5% of all parking spaces and electric vehicle charging or alternative fuel facility for 2%

6	3	0	1		**Sustainable Sites**	**Standard**
1				SS Credit 1	**Site Assessment**	Complete comprehensive site survey; topography, hydrology, climate, vegetation, soils, human use and human health effects.
	1		1	SS Credit 2	**Site Development:** Protect or Restore Habitat	Protect 40% of greenfield and restore 30% of previously developed site (2pts) or provide $0.40/sf to accredited land trust (1pt).
	1			SS Credit 3	**Open Space**	Provide outdoor space greater than or equal to 30% of the total site area (including building footprint).
3				SS Credit 4	**Rainwater Management**	Manage runoff for the 95th percentile (2pt), 98th percentile (+1pt) with low-impact development (LID) and green infrastructure.
2				SS Credit 5	**Heat Island Reduction**	Meet high albedo requirements for roof and site OR place a minimum of 75% parking under cover (1pt).
	1			SS Credit 6	**Light Pollution Reduction**	Meet uplight and light trespass requirements and do not exceed exterior signage luminance requirements.

3	4	2	2		**Water Efficiency**	**Standard**
1				WE Credit 1	**Outdoor Water Use Reduction:** 50% Reduction	Reduce potable water used for irrigation by 50%.
		1		WE Credit 1	**Outdoor Water Use Reduction:** No Potable Water	No potable water use for irrigation.
2	1			WE Credit 2	**Water Use Reduction:** 25% / 30% / 35%	Reduce building water use over LEED baseline .
	2	1		WE Credit 2	**Water Use Reduction:** 40% / 45% / 50%	Reduce building water use over LEED baseline .
			2	WE Credit 3	**Cooling Tower Water Use**	Conduct a water analysis to optimize cooling tower cycles. Maximizing cycles (1pt), >10 cycled or 20% non-potable water use (2pts).
	1			WE Credit 4	**Water Metering**	Install permanent water meters for two or more water subsystems.

14	3	12	4	Energy & Atmosphere		Standard
6				EA Credit 1	**Enhanced Commissioning**	CD review, post occupancy review, recommissioning manual (3pts) AND develop monitoring procedures (4pts) AND/OR envelope Cx (2pts)
3				EA Credit 2	**Optimize Energy Performance:** 6% / 8% / 10%	Reduce building energy cost by 6% / 8% / 10% compared to ASHRAE 90.1-2010, Appendix G.
3				EA Credit 2	**Optimize Energy Performance:** 12% / 14% / 16%	Reduce building energy cost by 12% / 14% / 16% compared to ASHRAE 90.1-2010, Appendix G.
2	1			EA Credit 2	**Optimize Energy Performance:** 18% / 20% / 22%	Reduce building energy cost by 18%/ 20%/ 22% compared to ASHRAE 90.1-2010, Appendix G.
	2	1		EA Credit 2	**Optimize Energy Performance:** 24% / 26% / 29%	Reduce building energy cost by 24% / 26% / 29% compared to ASHRAE 90.1-2010, Appendix G.
		3		EA Credit 2	**Optimize Energy Performance:** 32% / 35% / 38%	Reduce building energy cost by 32%/ 35%/ 38% compared to ASHRAE 90.1-2010, Appendix G.
		3		EA Credit 2	**Optimize Energy Performance:** 42% / 46% / 50%	Reduce building energy cost by 42%/ 46%/ 50% compared to ASHRAE 90.1-2010, Appendix G.
		1		EA Credit 3	**Advanced Energy Metering**	Install energy metering for whole building energy and individual energy end uses representing 10% of more of total consumption.
			2	EA Credit 4	**Demand Response**	Design building and equipment for participation in demand response programs through load shedding or shifting.
		2	1	EA Credit 5	**Renewable Energy Production:** 1% / 5% / 10%	Produce renewable energy on-site for 1% / 5% / 10% of building energy consumption, calculated by cost.
			1	EA Credit 6	**Enhanced Refrigerant Management**	Select refrigerants with low global warming potential and ozone depletion potential.
		2		EA Credit 7	**Green Power and Carbon Offsets**	Engage a 5 year contract for at least 50% or 100% of the project's energy from green power, carbon offsets, or RECs

5	6	0	2	Materials & Resources		Standard
	3		2	MR Credit 1	**Building Life-Cycle Impact Reduction**	Conduct a life-cycle assessment that demonstrates a minimum of 10% reduction in at least three of the six impact measures (3pts). Credit can also be earned for building and material reuse, or renovation of an abandoned building (2-5pts).
1	1			MR Credit 2	**Building Product Disclosure & Optimization:** Environmental Product Declarations	Use 20 products sourced from five different manufacturers that meet disclosure criteria (1pt) AND/OR use products that exhibit optimized performance , 50% by cost (1 pt)
1	1			MR Credit 3	**Building Product Disclosure & Optimization:** Sourcing of Raw Materials	Use 20 products sourced from five different manufacturers that have publicly released a report from their raw material suppliers (1pt) AND/OR products that meet responsible extraction criteria, 25% material cost (1pt)
1	1			MR Credit4	**Building Product Disclosure & Optimization:** Material Ingredients	Use 20 products sourced from five different manufacturers that demonstrate the chemical inventory of the products (1pt AND/OR use products that document their material ingredient optimization, 25% material cost (1pt)
2				MR Credit 5	**Construction & Demolition Waste Management:** 50% / 75%	Divert 50%, three material streams (1pt) OR 75%, four material streams (2pts), OR generate less than 2.5 lbs waste/sf (2pts)

11	4	1	0	Indoor Environmental Quality		Standard
2				IEQ Credit 1	**Enhanced Air Quality Strategies**	Provide entryway systems, prevent interior cross-contamination, and specify MERV 13 filters (1pt) AND/OR prevent exterior contamination or increase ventilation or monitor CO2 (1pt).
2	1			IEQ Credit 2	**Low-Emitting Materials:** 2 / 4 / 5 categories	Achieve the threshold level of compliance with emissions and content standards for 2, 4 or 5 product categories
1				IEQ Credit 3	**Construction IAQ Management Plan**	Develop an IAQ plan for construction and preoccupancy phases that meets SMACNA IAQ Guidelines for Occupied Buildings Under Construction
1	1			IEQ Credit 4	**Indoor Air Quality Assessment**	Perform pre-occupancy building flush out (1pt) or testing (2pts).
1				IEQ Credit 5	**Thermal Comfort**	Meet ASHRAE 55-2010, Thermal Comfort Conditions for Human Occupancy.
2				IEQ Credit 6	**Interior Lighting**	Provide lighting controls for 90% of individuals AND/OR meet four of LEED's lighting quality requirements.
2		1		IEQ Credit 7	**Daylight:** 55% / 75%	Demonstrate through annual simulations that daylight autonomy300/50% (sDA300/50%) is achieved (2/3pts)
	1			IEQ Credit 8	**Quality Views**	Provide direct views to the outside in 75% of regularly occupied spaces which meets 2 out of 4 LEED view criteria.
	1			IEQ Credit 9	**Acoustic Performance**	Meet requirements for HVAC background noise, sound isolation, reverberation time, & sound reinforcement for all occupied spaces.

4	2	0	0	Innovation in Design		Standard
1				ID Credit 1.1	**Innovation in Design**, Green Education	Pending GBCI review and comment.
1				ID Credit 1.2	**Innovation in Design**, Green Cleaning	Pending GBCI review and comment.
1				ID Credit 1.3	**Innovation in Design**, Low Mercury Lighting	Pending GBCI review and comment.
	1			ID Credit 1.4	**Innovation in Design**, Organic Landscape Management	Pending GBCI review and comment.
	1			ID Credit 1.5	**Innovation in Design**, Integrated Pest Management	Pending GBCI review and comment.
1				ID Credit 2	**LEED™ Accredited Professional**	LEED Accredited Professional on design team.

2	2	0	0	Regional Priority		Standard
	1			RP Credit 1.1	**Regional Priority**, Indoor Water Use Reduction	Pursuant to USGBC determined zone-based regional priority credit (Up to 6 points, required pt threshold = 4)
1				RP Credit 1.2	**Regional Priority**, Optimize Energy Performance	Pursuant to USGBC determined zone-based regional priority credit (Up to 18 points, required pt threshold = 8)
	1			RP Credit 1.3	**Regional Priority**, High Priority Site	Pursuant to USGBC determined zone-based regional priority credit (2 points, required point threshold = 2)
1				RP Credit 1.4	**Regional Priority**, Rainwater Management	Pursuant to USGBC determined zone-based regional priority credit (Up to 3 points, required pt threshold = 2)
				RP Credit	**Regional Priority**, Renewable Energy Production	Pursuant to USGBC determined zone-based regional priority credit (Up to 3 points, required pt threshold = 2)

LEED v4 for Core & Shell - Kendall Square Building 5

last updated: April 23, 2015

Achievability			
hi	med	low	NP
63	21	21	6

Certified 40 to 49 points **Silver** 50 to 59 points **Gold** 60 to 79 points **Platinum** 80 or more points

Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.

71 Projected Points

				Prerequisites		**Standard**
Y				SS Prereq 1	**Construction Activity Pollution Prevention**	Create and implement erosion control plan that meets the 2003 EPA Construction General Permit.
Y				WE Prereq 1	**Outdoor Water Use Reduction:** 30%	Reduce outdoor water use by 30% over the baseline specified in LEED.
Y				WE Prereq 2	**Indoor Water Use Reduction:** 20%	Reduce indoor water use by 20% over the baseline specified in LEED and meet requirements for process water use.
Y				WE Prereq 3	**Building-Level Water Metering**	Install permanent water meters for building and grounds
Y				EA Prereq 1	**Fundamental Commissioning and Verification**	Engage commissioning agent, and develop and execute a commissioning plan. Prepare O&M plan for current facilities.
Y				EA Prereq 2	**Minimum Energy Performance**	Reduce energy cost by 5%, compared to ASHRAE 90.1-2010, Appendix G; meet mandatory provisions of ASHRAE 90.1-2010.
Y				EA Prereq 3	**Building-Level Energy Metering**	Install meters to provide data on total energy consumption AND commit to share data with the USGBC for 5 years
Y				EA Prereq 4	**Fundamental Refrigerant Management**	Eliminate CFCs in building HVAC&R.
Y				MR Prereq 1	**Storage & Collection of Recyclables**	Provide space for the collection and storage of paper, cardboard, glass, plastic, and metals.
Y				MR Prereq 2	**Construction and Demolition Waste Management Planning**	Develop and implement a construction and demolition waste management plan
Y				IEQ Prereq 1	**Minimum IAQ Performance**	Meet sections 4 through 7 of ASHRAE 62.1-2010.
Y				IEQ Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	Prohibit smoking inside building, and locate exterior smoking areas at least 25 feet away from building.

1	0	0	0		**Integrative Process**	**Standard**
1				IP Credit 1	**Integrative Process**	Perform preliminary energy model and water budget before the completion of SD and document in OPR & BOD.

17	0	3	0		**Location & Transportation**	**Standard**
			20	LT Credit 1	**LEED for Neighborhood Development Location**	Locate the project in within a development certified under LEED for Neighborhood Development
2				LT Credit 2	**Sensitive Land Protection**	Locate the development footprint on land that has been previously developed.
		3		LT Credit 3	**High Priority Site**	Locate the project on a site where contaminated soil/groundwater remediation is required or in historic district/building.
6				LT Credit 4	**Surrounding Density and Diverse Uses**	Locate on a site with an existing density of 22,000sf/acre - 35,000 sf/acre and within 1/2 mile of 4-8 basic services.
6				LT Credit 5	**Access to Quality Transit**	Locate project within 1/2 mile of a rail station or ferry terminal or 1/4 mile of bus, streetcar or rideshare.
1				LT Credit 6	**Bicycle Facilities**	Access to bicycle network. Short term (2.5% peak visitors) and long term (5% all occupants) bike parking and FTE showers
1				LT Credit 7	**Reduced Parking Footprint**	Preferred parking for carpools for 5% of the total parking spaces
1				LT Credit 8	**Green Vehicles**	Preferred parking for Green Vehicles: 5% of all parking spaces and electric vehicle charging or alternative fuel facility for 2%

6	3	1	0		**Sustainable Sites**	**Standard**
1				SS Credit 1	**Site Assessment**	Complete comprehensive site survey; topography, hydrology, climate, vegetation, soils, human use and human health effects.
	2			SS Credit 2	**Site Development:** Protect or Restore Habitat	Protect 40% of greenfield and restore 30% of previously developed site (2pts) or provide $0.40/sf to accredited land trust (1pt).
	1			SS Credit 3	**Open Space**	Provide outdoor space greater than or equal to 30% of the total site area (including building footprint).
3				SS Credit 4	**Rainwater Management**	Manage runoff for the 95th percentile (2pt), 98th percentile (+1pt) with low-impact development (LID) and green infrastructure.
2				SS Credit 5	**Heat Island Reduction**	Meet high albedo requirements for roof and site OR place a minimum of 75% parking under cover (1pt).
		1		SS Credit 6	**Light Pollution Reduction**	Meet uplight and light trespass requirements and do not exceed exterior signage luminance requirements.
	1			SS Credit 7	**Tenant Design and Construction Guidelines**	Develop Tenant Guildelines for future tenants to fit out their space.

6	4	1	0		**Water Efficiency**	**Standard**
1				WE Credit 1	**Outdoor Water Use Reduction:** 50% Reduction	Reduce potable water used for irrigation by 50%.
	1			WE Credit 1	**Outdoor Water Use Reduction:** No Potable Water	No potable water use for irrigation.
3				WE Credit 2	**Water Use Reduction:** 25% / 30% / 35%	Reduce building water use over LEED baseline .
1	1	1		WE Credit 2	**Water Use Reduction:** 40% / 45% / 50%	Reduce building water use over LEED baseline .
	2			WE Credit 3	**Cooling Tower Water Use**	Conduct a water analysis to optimize cooling tower cycles. Maximizing cycles (1pt), >10 cycled or 20% non-potable water use (2pts).

1				WE Credit 4	**Water Metering**	Install permanent water meters for two or more water subsystems.

12	5	13	3	**Energy & Atmosphere**		**Standard**
4		2		EA Credit 1	**Enhanced Commissioning**	CD review, post occupancy review, recommissioning manual (3pts) AND develop monitoring procedures (4pts) AND/OR envelope Cx (2pts)
3				EA Credit 2	**Optimize Energy Performance:** 6% / 8% / 10%	Reduce building energy cost by 6% / 8% / 10% compared to ASHRAE 90.1-2010, Appendix G.
3				EA Credit 2	**Optimize Energy Performance:** 12% / 14% / 16%	Reduce building energy cost by 12% / 14% / 16% compared to ASHRAE 90.1-2010, Appendix G.
	3			EA Credit 2	**Optimize Energy Performance:** 18% / 20% / 22%	Reduce building energy cost by 18%/ 20%/ 22% compared to ASHRAE 90.1-2010, Appendix G.
	2	1		EA Credit 2	**Optimize Energy Performance:** 24% / 26% / 29%	Reduce building energy cost by 24% / 26% / 29% compared to ASHRAE 90.1-2010, Appendix G.
		3		EA Credit 2	**Optimize Energy Performance:** 32% / 35% / 38%	Reduce building energy cost by 32%/ 35%/ 38% compared to ASHRAE 90.1-2010, Appendix G.
		3		EA Credit 2	**Optimize Energy Performance:** 42% / 46% / 50%	Reduce building energy cost by 42%/ 46%/ 50% compared to ASHRAE 90.1-2010, Appendix G.
1				EA Credit 3	**Advanced Energy Metering**	Install energy metering for whole building energy and individual energy end uses representing 10% of more of total consumption.
		2		EA Credit 4	**Demand Response**	Design building and equipment for participation in demand response programs through load shedding or shifting.
			3	EA Credit 5	**Renewable Energy Production:** 1% / 5% / 10%	Produce renewable energy on-site for 1% / 5% / 10% of building energy consumption, calculated by cost.
1				EA Credit 6	**Enhanced Refrigerant Management**	Select refrigerants with low global warming potential and ozone depletion potential.
		2		EA Credit 7	**Green Power and Carbon Offsets**	Engage a 5 year contract for at least 50% or 100% of the project's energy from green power, carbon offsets, or RECs

5	3	3	3	**Materials & Resources**		**Standard**
		3	3	MR Credit 1	**Building Life-Cycle Impact Reduction**	Conduct a life-cycle assessment that demonstrates a minimum of 10% reduction in at least three of the six impact measures (3pts). Credit can also be earned for building and material reuse, or renovation of an abandoned building (2-5pts).
1	1			MR Credit 2	**Building Product Disclosure & Optimization:** Environmental Product Declarations	Use 20 products sourced from five different manufacturers that meet disclosure criteria (1pt) AND/OR use products that exhibit optimized performance , 50% by cost (1 pt)
1	1			MR Credit 3	**Building Product Disclosure & Optimization:** Sourcing of Raw Materials	Use 20 products sourced from five different manufacturers that have publicly released a report from their raw material suppliers (1pt) AND/OR products that meet responsible extraction criteria, 25% material cost (1pt)
1	1			MR Credit4	**Building Product Disclosure & Optimization:** Material Ingredients	Use 20 products sourced from five different manufacturers that demonstrate the chemical inventory of the products (1pt AND/OR use products that document their material ingredient optimization, 25% material cost (1pt)
2				MR Credit 5	**Construction & Demolition Waste Management:** 50% / 75%	Divert 50%, three material streams (1pt) OR 75%, four material streams (2pts), OR generate less than 2.5 lbs waste/sf (2pts)

9	3	0	0	**Indoor Environmental Quality**		**Standard**
2				IEQ Credit 1	**Enhanced Air Quality Strategies**	Provide entryway systems, prevent interior cross-contamination, and specify MERV 13 filters (1pt) AND/OR prevent exterior contamination or increase ventilation or monitor CO2 (1pt).
2	1			IEQ Credit 2	**Low-Emitting Materials:** 2 / 4 / 5 categories	Achieve the threshold level of compliance with emissions and content standards for 2, 4 or 5 product categories
1				IEQ Credit 3	**Construction IAQ Management Plan**	Develop an IAQ plan for construction and preoccupancy phases that meets SMACNA IAQ Guidelines for Occupied Buildings Under Construction
1	1			IEQ Credit 4	**Indoor Air Quality Assessment**	Perform pre-occupancy building flush out (1pt) or testing (2pts).
2	1			IEQ Credit 5	**Daylight:** 55% / 75%	Demonstrate through annual simulations that daylight autonomy300/50% (sDA300/50%) is achieved (2/3pts)
1				IEQ Credit 6	**Quality Views**	Provide direct views to the outside in 75% of regularly occupied spaces which meets 2 out of 4 LEED view criteria.

5	1	0	0	**Innovation in Design**		**Standard**
1				ID Credit 1.1	**Innovation in Design**, Green Education	Pending GBCI review and comment.
1				ID Credit 1.2	**Innovation in Design**, Green Cleaning	Pending GBCI review and comment.
1				ID Credit 1.3	**Innovation in Design**, Low Mercury Lighting	Pending GBCI review and comment.
1				ID Credit 1.4	**Innovation in Design**, Organic Landscape Management	Pending GBCI review and comment.
	1			ID Credit 1.5	**Innovation in Design**, Integrated Pest Management	Pending GBCI review and comment.
1				ID Credit 2	**LEED™ Accredited Professional**	LEED Accredited Professional on design team.

2	2	0	0	**Regional Priority**		**Standard**
	1			RP Credit 1.1	**Regional Priority**, Indoor Water Use Reduction	Pursuant to USGBC determined zone-based regional priority credit (Up to 6 points, required pt threshold = 4)
1				RP Credit 1.2	**Regional Priority**, Optimize Energy Performance	Pursuant to USGBC determined zone-based regional priority credit (Up to 18 points, required pt threshold = 8)
	1			RP Credit 1.3	**Regional Priority**, High Priority Site	Pursuant to USGBC determined zone-based regional priority credit (2 points, required point threshold = 2)
1				RP Credit 1.4	**Regional Priority**, Rainwater Management	Pursuant to USGBC determined zone-based regional priority credit (Up to 3 points, required pt threshold = 2)
				RP Credit	**Regional Priority**, Renewable Energy Production	Pursuant to USGBC determined zone-based regional priority credit (Up to 3 points, required pt threshold = 2)

LEED v4 for BD+C: Core and Shell

Project Checklist

Project Name: Kendall Building 6 (Draft Checklist)

Date: 30-Apr-15

Y	?	N			
	1		Credit	Integrative Process	1

Y	?	N		Location and Transportation	20
		20	Credit	LEED for Neighborhood Development Location	20
1	1		Credit	Sensitive Land Protection	2
1		2	Credit	High Priority Site	3
4	2		Credit	Surrounding Density and Diverse Uses	6
4	2		Credit	Access to Quality Transit	6
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
		1	Credit	Green Vehicles	1

Y	?	N		Sustainable Sites	11
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
1		1	Credit	Site Development - Protect or Restore Habitat	2
		1	Credit	Open Space	1
2	1		Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1
1			Credit	Tenant Design and Construction Guidelines	1

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

Y	?	N		Energy and Atmosphere	33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
5	1		Credit	Enhanced Commissioning	6
6	4	8	Credit	Optimize Energy Performance	18
1			Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
		3	Credit	Renewable Energy Production	3
1			Credit	Enhanced Refrigerant Management	1
	1	1	Credit	Green Power and Carbon Offsets	2

Y	?	N		Materials and Resources	14
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
	3	3	Credit	Building Life-Cycle Impact Reduction	6
	1	1	Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
	1	1	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
	1	1	Credit	Building Product Disclosure and Optimization - Material Ingredients	2
1	1		Credit	Construction and Demolition Waste Management	2

Y	?	N		Indoor Environmental Quality	10
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit	Enhanced Indoor Air Quality Strategies	2
2	1		Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
3			Credit	Daylight	3
	1		Credit	Quality Views	1

Y	?	N		Innovation	6
2	2	1	Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

Y	?	N		Regional Priority	4
	1		Credit	Regional Priority: Specific Credit	1
	1		Credit	Regional Priority: Specific Credit	1
	1		Credit	Regional Priority: Specific Credit	1
	1		Credit	Regional Priority: Specific Credit	1

Y	?	N		Possible Points:
51	30	49	TOTALS	110

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

D. MIT Kendall Square Initiative Acoustical Study

ACENTECH

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Cambridge MA 02138
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13 July 2015

Ms. Sandra Smith, AIA, LEED AP
Perkins+Will
225 Franklin Street, Suite 1100
Boston, MA 02110

Via email: sandra.smith@perkinswill.com

Subject: Article 19 Noise Mitigation Narrative
MIT Investment Management Company/MIT
SoMa and NoMa Site Environmental Noise Evaluation and Compliance
Cambridge, MA
Acentech Project No. 626051

Dear Ms. Smith:

We present you the MIT and MITIMCo South of Main (SoMa) and North of Main (NoMa) Noise Mitigation Narrative as a part of the Article 19 submission for the City of Cambridge. A final compliance for noise will be reviewed and confirmed as the various projects develop.

INTRODUCTION

The following is a list of the building sites for SoMa and NoMa as part of this study, also shown in the figure on the following page:

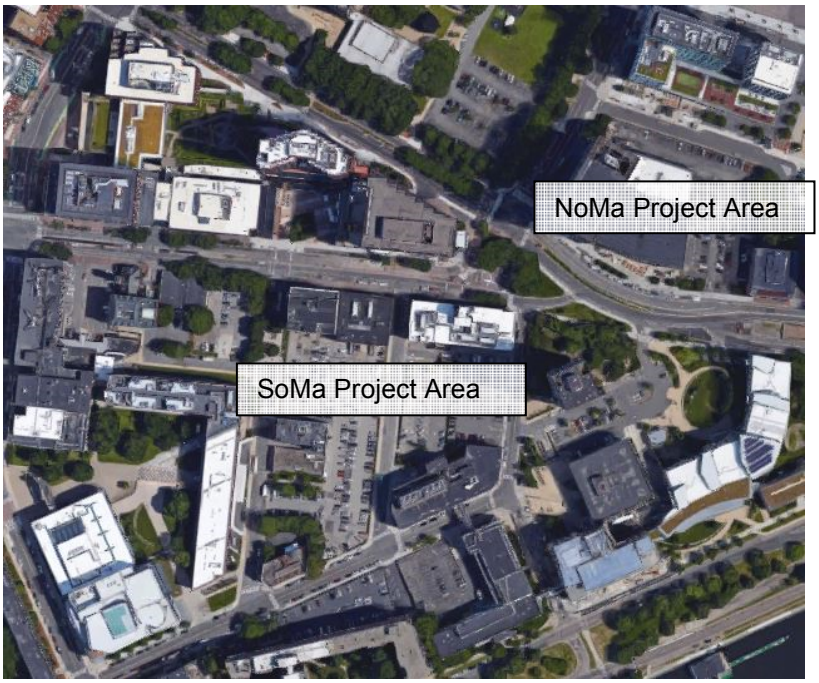
- Site 1 - This will be a residential tower with ground floor retail space designed by Elkus | Manfredi (MIT)
- Site 2 - This will be a future laboratory tower to be designed by Elkus | Manfredi (MITIMCo)
- Site 3 - This will be a new laboratory/office tower designed by Perkins + Will (MITIMCo)
- Site 4 - This will be a mixed-use Retail/Office/Residential tower and some renovation of the existing E38 and E39 buildings designed by Perkins + Will and NAADA (MIT); a mostly underground parking garage designed by Perkins + Will (MITIMCo), which will connect the various SoMa sites, is adjacent to the south side of Site 4
- Site 5 - This will be a commercial office building that will include space for the MIT Museum and retail space on the lower floors designed by Weiss/Manfredi (MIT)
- Site 6 - This will be a building used for Retail/Office designed by nArchitects (MITIMCo)

Acentech has reviewed project information from all of the different design teams, conducted a series of ambient sound measurements, and estimated property line and off-site sound levels associated with the proposed equipment. The pertinent findings of our study are summarized in this letter report.

Figures 1-S1 through 1-S6 show the preliminary design layout for each building and the locations of the major sound sources.

EXISTING ACOUSTIC ENVIRONMENT

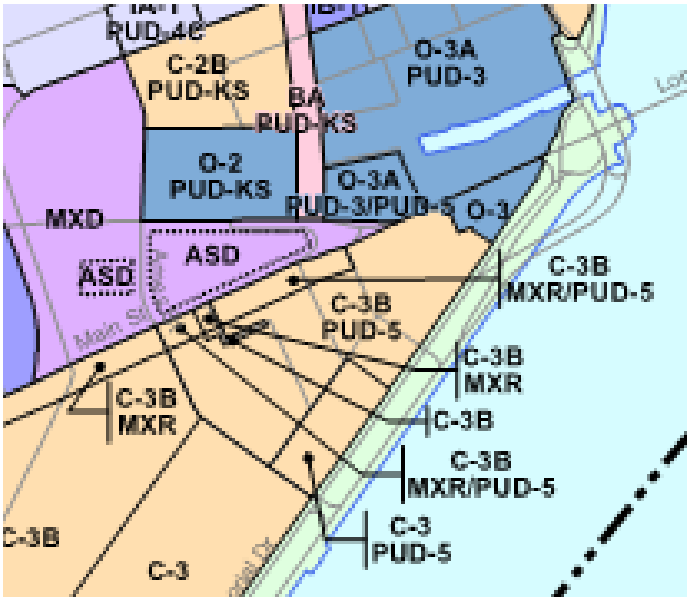
The figure below is an aerial photograph that shows the SoMa and NoMa project and surrounding community areas.



There are two hotels and one residential tower that we are aware of adjacent to the SoMa and NoMa sites. One hotel is north of Site 4 and another hotel is located between Sites 5 and 6. A residential tower is located north of Site 1. In April and May of 2015, we collected continuous ambient sound data during nominal one week periods at four locations and obtained short-term sound data during nighttime surveys at ten additional locations.

The purpose of the ambient survey was to characterize the existing land uses, sound sources, and acoustic environment in the area. The long-term measurements demonstrated the variation in the ambient sound levels over the day and night hours of weekday and weekend periods. In addition, we conducted short-term ambient sound measurements and observations on two weeknights as part of the overall April/May 2015 survey. Table 1 attached to the end of this narrative lists the instruments that we employed for the ambient measurements. Each sound monitor was laboratory-calibrated within the past year and each instrument's calibration was checked in the field with an acoustic calibrator before and after the measurements. The microphone for each instrument was fitted with a windscreen and mounted at a height of about four to five feet above the ground or roof location. Weather conditions during the overall survey period from 24 April to 14 May 2015 were quite variable with day and night temperatures ranging from about 40ºF to above 85ºF, periods of calm to moderately high winds, and a few periods of light rain. Although there was construction along Main Street during the weekdays, we judge that, in general, the sound data and observations collected during our survey characterize the typical existing acoustic environment in the area.

Zoning in this area is complex; the following figure shows the published Cambridge zoning map for the area. All "C" zoned areas are considered residential and all "O" zoned areas are offices. "ASD" is a part of Ames Street District, which is a mixed-use development area. For the purpose of our study, our recommendations base the hotels and residential tower as "residential" per the City of Cambridge Noise Ordinance. All other properties are considered "Business".



LONG-TERM DATA

The long-term collected sound data show the hour-to-hour and day-to-day variations in the background sound levels in the area and the short-term data characterize the background acoustic environment during typically quieter times. The main areas of interest are toward the Marriott Residences Hotel north of SoMa and the Kendall Hotel between Sites 5 and 6. The Watermark residential tower located north of NoMa is another property of interest. A MIT residential building is south of the SoMa site but much farther away along Memorial Drive. Other land uses in the area include: office towers north of SoMa; office and lab buildings northwest and west of SoMa; and MIT academic buildings west, south, and east of SoMa.

Figure 2 identifies the four locations selected for the collection of representative long-term ambient sound data. The long-term monitoring locations, which were selected based on their accessibility as well as their proximity to the project areas and potential noise sensitive community receptors, are:

- Location A -- Low roof of Badger Building (One Broadway) next to future Site 1
- Location B -- Lawn around Eastgate (on grade) at Site 2
- Location C -- Roof of MIT Coop across Main Street from Sites 4, 5, and 6
- Location D -- Low roof between Mudd Building and Whitaker College close to Sites 5 and 6

Figures 3a, 3b, 3c, and 3d show the L1, Leq, and L90 A-weighted sound levels for each 10-minute interval over the survey at the four long-term monitoring locations. These figures indicate a wide range of sound levels at the four locations, with the highest and lowest levels typically measured, respectively, during the day and night. The Leq sound levels include both the steady background sounds (e.g., distant traffic, distant construction, building HVAC systems) plus the short-term intrusive sounds (e.g., local car passbys). The L1 sound levels represent the nominal maximum sounds (e.g., local car passbys or sirens) that must occur for at least 1% of each interval (i.e., six seconds of each 10-minute interval). The L90 sound levels characterize the lowest background, or residual sound level that is exceeded for 90% of the time of each interval (i.e., 9 minutes of each 10-minute interval). The L90 sound level occurs when short-term intrusive sound sources, such as local traffic passbys, are absent and the sound level returns to a lower residual value. During this survey, the L90 sound levels were typically controlled by sounds of distant road traffic and modest to moderate contributions of sounds from the existing nearby commercial buildings. The four figures indicate that the lowest sound levels of about 52 to 56 dBA typically occurred at night.

SHORT-TERM DATA

In addition to long-term sound data, we performed manual short-term sampling of the overall A-weighted sound levels and spectral levels, and observed sound sources during two nighttime periods at each of the 10 locations shown in Figure 4 attached. The sound data were measured over a 10-minute period at each location with a precision sound level meter. The primary sound sources observed at these locations include: local traffic and existing mechanical equipment from the commercial buildings in the surrounding area. Sound from a water sprinkler system was also noted at one location on one night. Table 2 summarizes the residual (L90) ambient sound levels that were measured at each location. As noted above, the L90 level is the value exceeded for nine of the 10-minute sampling period at a location and represents the background, or residual, sound level. The data in Table 2 and Figure 5 indicate residual ambient sound levels ranging from 54 to 61 dBA on the first night and from 50 to 57 dBA on the second night over the 10 locations. As Figure 5 illustrates, the measured residual levels are greater than the residential nighttime standard and less than the commercial anytime standard in the Cambridge Noise Ordinance.

SOUND CRITERIA AND SUGGESTED OVERALL PROJECT SOUND GOALS

During the permitting phase it is necessary to determine the degree of sound reduction required. This is based upon estimates of the sound that will propagate from the facility and the sound level criteria appropriate for the neighborhood. The sound criteria for this project will address the following factors:

- Ambient or background sound levels during the quieter times
- Type of neighborhood – residential, business, or industrial
- Character of sound generated by proposed facility – sound level and spectrum

EXISTING LOCAL AND STATE NOISE REQUIREMENTS

Depending on the major equipment and noise control selected for a project, a typical emergency generator facility can emit tonal and/or broadband sounds, low frequency sound, and steady and/or intermittent sounds that are noticeable in the community. The City of Cambridge and the MassDEP have noise requirements that protect residents from excessive sound. These requirements are:

LOCAL CAMBRIDGE NOISE REQUIREMENTS

We understand from the City of Cambridge that the emergency generator noise emissions from each building do not need to be included as part of the noise emissions study. The emergency generators for this project are exempt from this ordinance, as long as they are tested during the daytime hours. We will provide appropriate generator noise control measures to meet the MassDEP Noise Guidelines. All mechanical equipment components for each of the sites listed in this report will need to meet the Chapter 8.16, NOISE CONTROL of the City of Cambridge Code of Ordinances. This includes cooling towers, air handling units, exhaust fans, and all mechanical room louver openings.

Under City of Cambridge Zoning Ordinance Article 19 for Planning & Urban Design, the article has requirements to submit a Noise Mitigation Narrative. This article also references the City of Cambridge noise ordinance as discussed above.

STATE MASSDEP NOISE GUIDELINES

The Commonwealth of Massachusetts has enacted regulations for the control of air pollution (310 CMR 7.10). To enforce these regulations, The Massachusetts Department of Environmental Protection (MassDEP) has issued guidelines that limit the level of industrial noise in inhabited areas as follows: a) not to increase the residual ambient sound level by more than 10 dBA and b) not to produce a pure tone condition where the sound pressure level in one octave band exceeds the levels in the two adjacent octave bands by 3 dB or more. The residual ambient sound level may be defined for the purpose of these guidelines as the measurement of the L90 level over the time period of concern or by other means acceptable to MassDEP. In addition, MassDEP typically applies these guidelines both at the property line and at the nearest inhabited residences, with most concern at the residence. No other project noise criteria have been provided to us for consideration.

Based on our discussions with the City of Cambridge, we understand that emergency generators in a commercial area with no residences nearby do not need to meet the daytime and nighttime noise regulation due to the emergency nature. However, the generators must only be tested during the daytime hours. The generator must still adhere to the MassDEP noise guidelines. Based on the MassDEP guidelines and the results of our ambient sound survey, we suggest the following sound goals for the emergency generators:

- No significant tonal sounds at community residences; and
- 60 dBA - maximum sound level at the community residences

LOADING DOCK NOISE

A preliminary study has been conducted by the design team regarding the location of the loading docks and truck paths in the SoMa and NoMa project areas. The loading docks are shown in gray for each building on Figure 6 attached. Most of the loading dock areas are partially enclosed within the respective buildings, reducing the likelihood of noise impact to the residences. The loading dock for Site 5, which is adjacent the Kendall Hotel, will be provided with a solid screen on the east side of the loading dock. When the trucks are idle, they will be required to shut off their engine for loading and unloading. The loading dock for Site 1 will face Main Street and would not interfere with the residences at Watermark north of Site 1. All deliveries will occur between 9AM and 9PM as agreed under the City of Cambridge Noise Ordinance, limiting truck noise during the nighttime hours.

OPERATION SOUND AND MITIGATION MEASURES

Based on the equipment layout shown in Figures 1-S1 through 1-S6, abatement methods to be employed to control the sound of the SoMa and NoMa project will include the following:

Site 1

The design team for Site 1 will provide the following:

- Solid acoustical barrier around the cooling towers
- Visual screen around the emergency generator as required by Article 19

- Acoustical enclosure around the emergency generator to meet the MassDEP noise limit
- Generator exhaust pipe will be outfitted with 'critical hospital' grade muffler
- Mechanical penthouses will enclose the major mechanical equipment, with louvers and roof openings outfitted with sound attenuators where needed to mitigate sound to the exterior
- All lower level mechanical room louvers, if any, will be provided with sound attenuators where needed
- Garage exhaust fans, if any, will be provided with sound attenuators where needed to mitigate sound to the exterior

Sites 2 and 3

The design teams for Sites 2 and 3 will provide the following, which will be confirmed once design is more established. The following mitigation measures are based on the building systems initially designed for Site 3:

- Solid acoustical barrier around cooling towers
- Sound attenuators outfitted for the discharge and intake openings of all rooftop lab exhaust fans, visual screens provided as required by Article 19
- Mechanical penthouse enclosing the chillers, boilers, pumps, and air handling units, with louvers and roof openings outfitted with sound attenuators where needed to mitigate sound to the exterior

Site 4

The design team for Site 4 will provide the following:

- All lower level mechanical rooms will be provided with sound attenuators where needed at the louvers
- All residential tower mechanical rooms will be provided with sound attenuators where needed at the louvers
- Solid acoustical barrier around all outdoor equipment on the lower roof and higher roof
- Emergency generator will be provided with an acoustic enclosure to meet the MassDEP noise limit
- Generator exhaust pipe will be outfitted with 'critical hospital' grade muffler
- Visual screen around the emergency generator as required by Article 19
- Garage ventilation fans will be provided with sound attenuators

Site 5

The design team for Site 5 will provide the following:

- Solid acoustical barrier around cooling towers and exhaust fans
- Sound attenuators outfitted for all rooftop exhaust fans
- Mechanical penthouse enclosing the chillers, boilers, pumps, and air handling units, with louvers and roof openings outfitted with sound attenuators to mitigate sound to the exterior
- Emergency generator will be provided with an acoustic enclosure to meet the MassDEP noise limit
- Generator exhaust pipe will be outfitted with 'critical hospital' grade muffler
- Visual screen around the emergency generator as required by Article 19

- All ground level mechanical room louvers will be provided with sound attenuators where needed

Site 6

The design team for Site 6 will provide the following:

- Air cooled condenser units and air handling units will be located within a mechanical well, with sound absorptive finishes on the inside face of the mechanical well
- Air cooled condenser units with inlet and discharge sound attenuators will be provided
- The air handling unit will be provided with sound attenuators at the outside air opening and the exhaust air opening

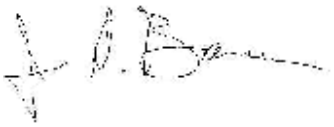
The sound emissions from emergency generators for SoMa and NoMa will be specified to address compliance with the MassDEP noise guidelines and City of Cambridge Noise Standards. Table 3 presents the initial sound estimates for the project-only equipment at representative community locations, which include both residential and commercial areas. These estimates are based on information provided us on the equipment that will operate continuously (24/7 operation) and on the recommended noise specification values. Table 4 presents similar information as Table 3, but the estimated total sound levels include the contributions of both the project equipment sound and the average ambient sound that we measured on the quieter second night in the community across Locations 1 – 10. The estimates, which are based on current project information, address compliance with the applicable noise requirements.

****

I trust that this letter provides a useful summary of our study. Should you have any questions regarding our study or this report, please call me at 617-499-8018.

Sincerely yours,

James D. Barnes, P.E.



Acentech Incorporated

Figures 1 to 6
Tables 1 to 4

cc: Rose Mary Su – Acentech

Figure 1-S1. Preliminary Layout of Generator and Mechanical Equipment (Site 1).

ROOF LEVEL

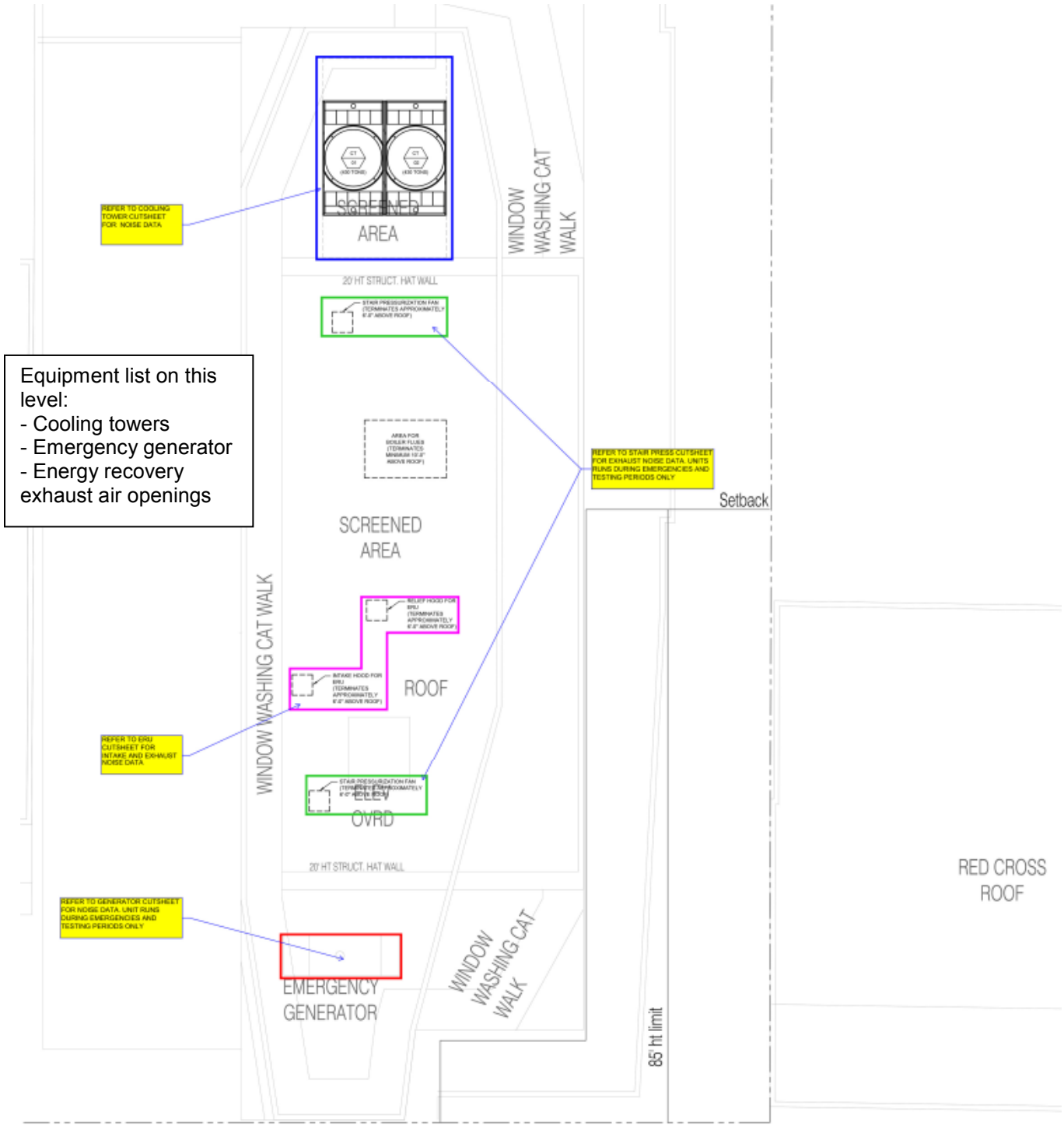


Figure 1-S1 (Con't). Preliminary Layout of Generator and Mechanical Equipment (Site 1).

ROOF AND PENTHOUSE LEVEL

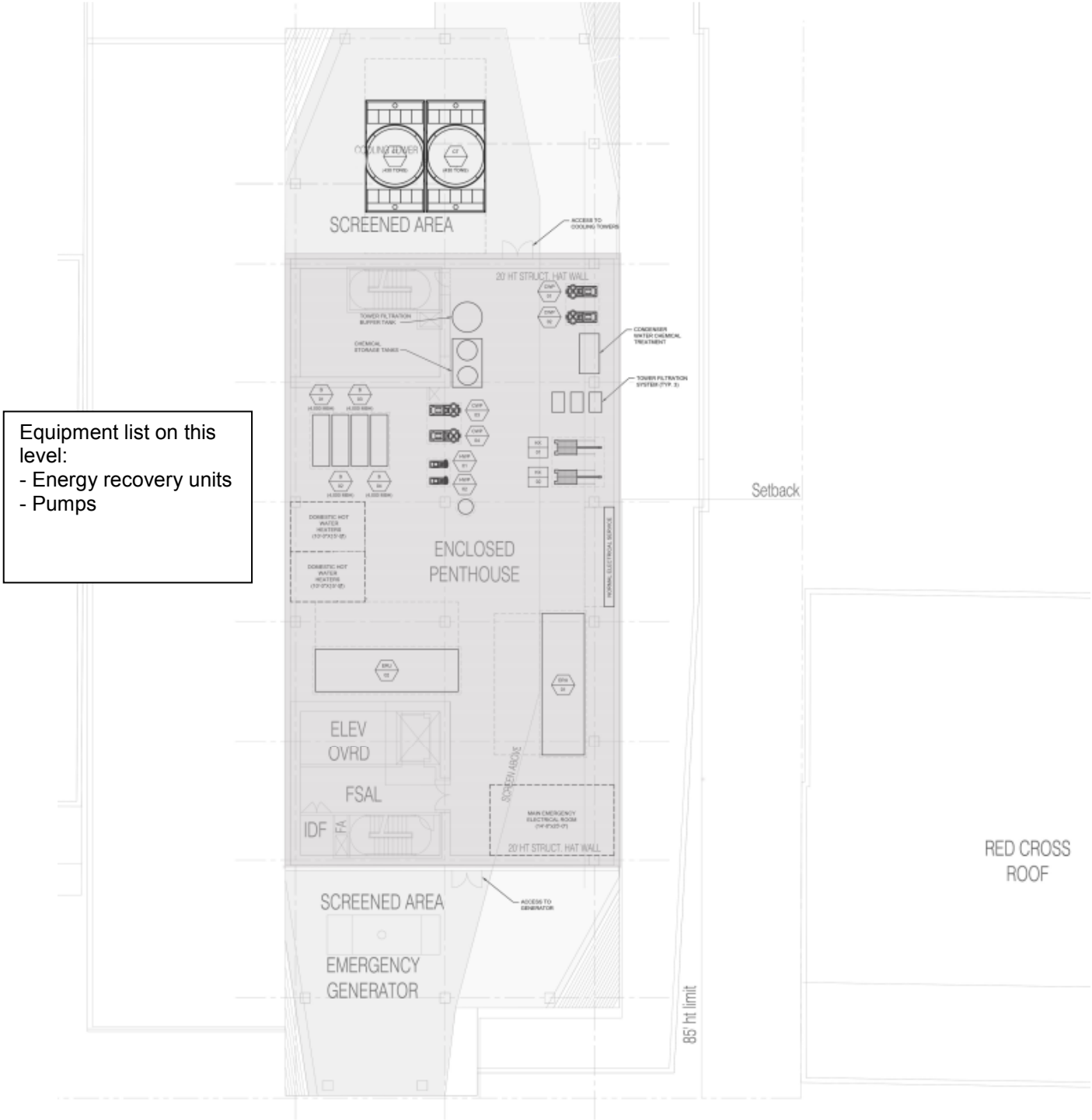
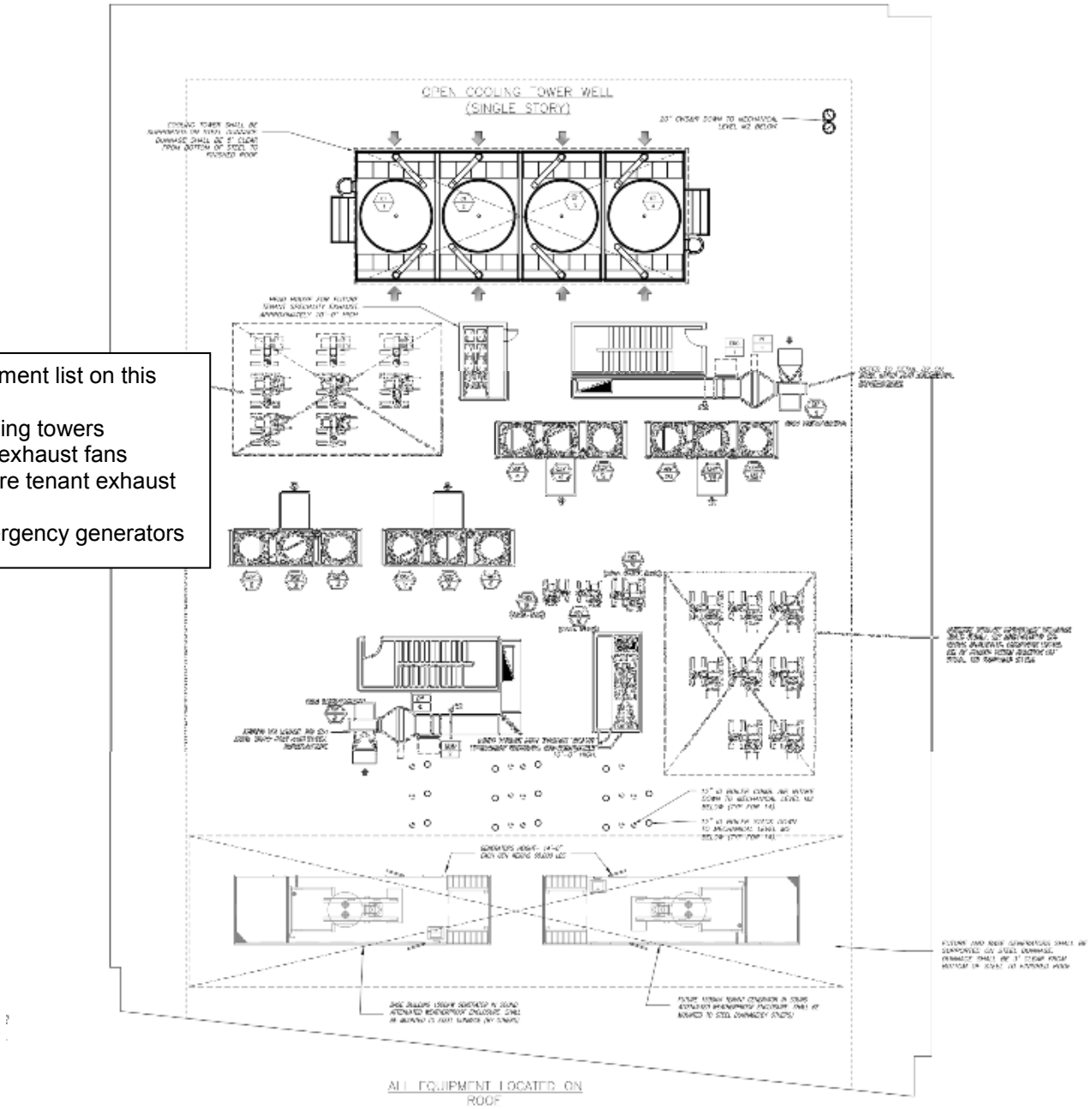


Figure 1-S2. Preliminary Layout of Generator and Mechanical Equipment (Site 2).
No information is available for this building at this time. The building for Site 2 is modeled as a building that is similar to Site 3.

Figure 1-S3. Preliminary Layout of Generator and Mechanical Equipment (Site 3).

ROOF LEVEL



Equipment list on this level:
- Cooling towers
- Lab exhaust fans
- Future tenant exhaust fans
- Emergency generators

Figure 1-S3 (Con't). Preliminary Layout of Generator and Mechanical Equipment (Site 3).

PENTHOUSE LEVEL 2

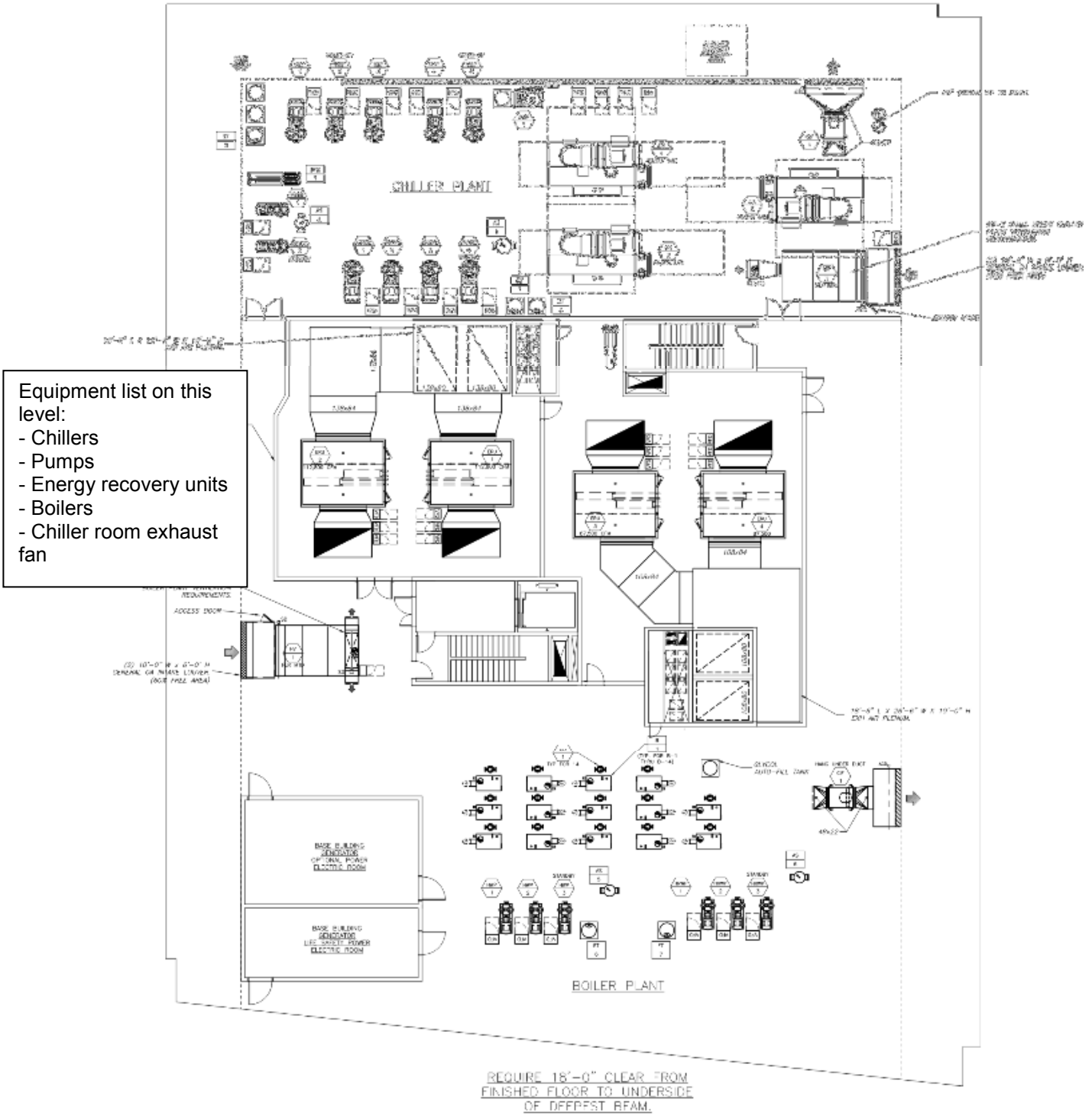


Figure 1-S3 (Con't). Preliminary Layout of Generator and Mechanical Equipment (Site 3).

PENTHOUSE LEVEL 1

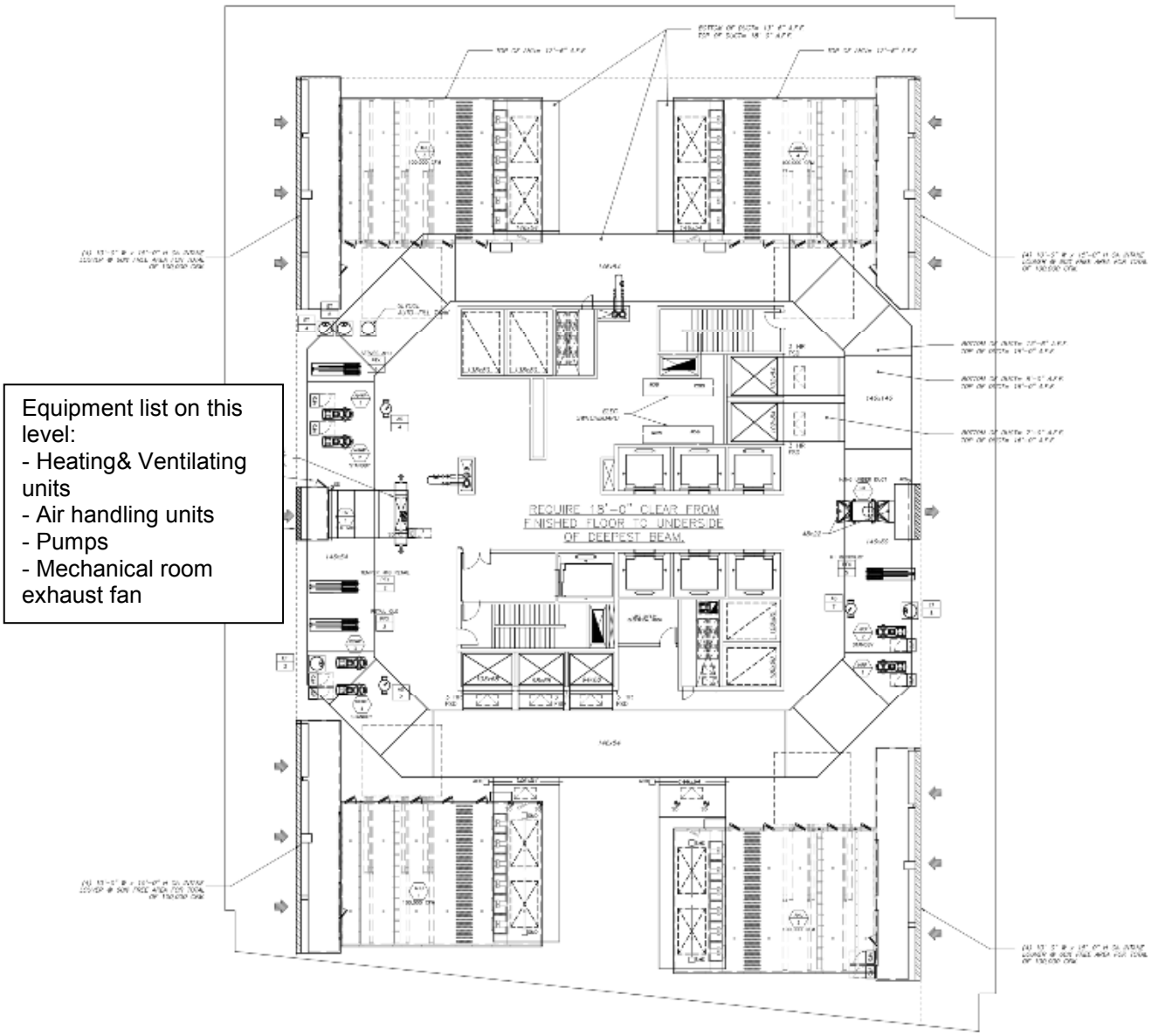


Figure 1-S4. Preliminary Layout of Generator and Mechanical Equipment (Site 4).

Equipment list on this level:
- Air handling units
- Emergency generator
- General exhaust fans

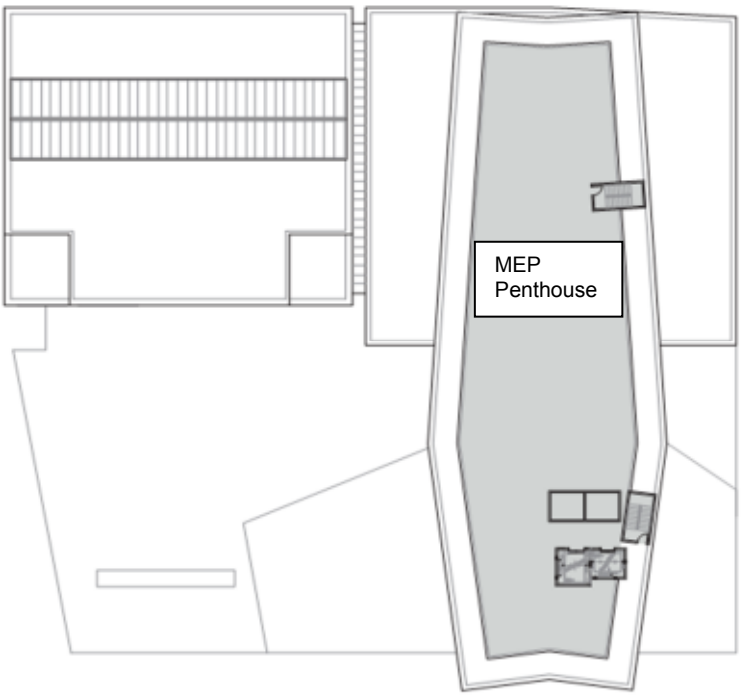
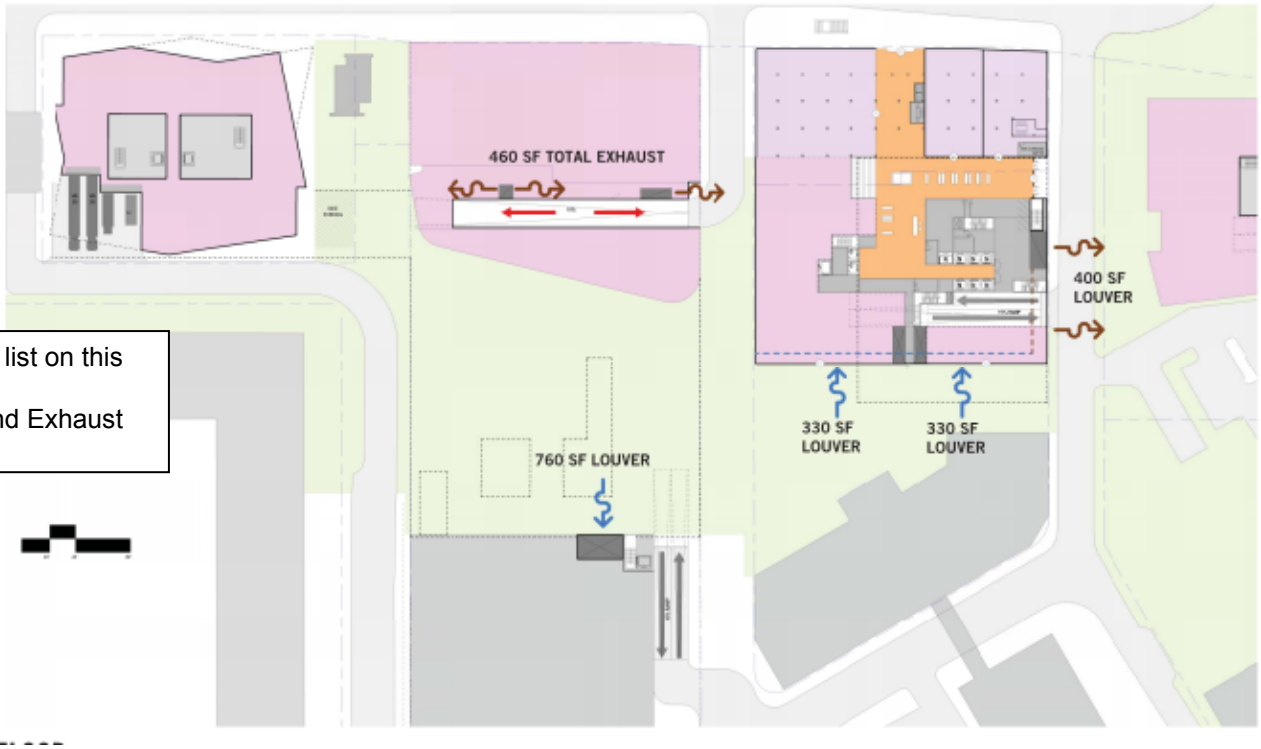


Figure 1-S4 (Con't). Preliminary Layout of Garage Level Mechanical Equipment (South Side of Site 4).

GROUND FLOOR



Equipment list on this level:
- Supply and Exhaust Fans

Figure 1-S5. Preliminary Layout of Generator and Mechanical Equipment (Site 5).

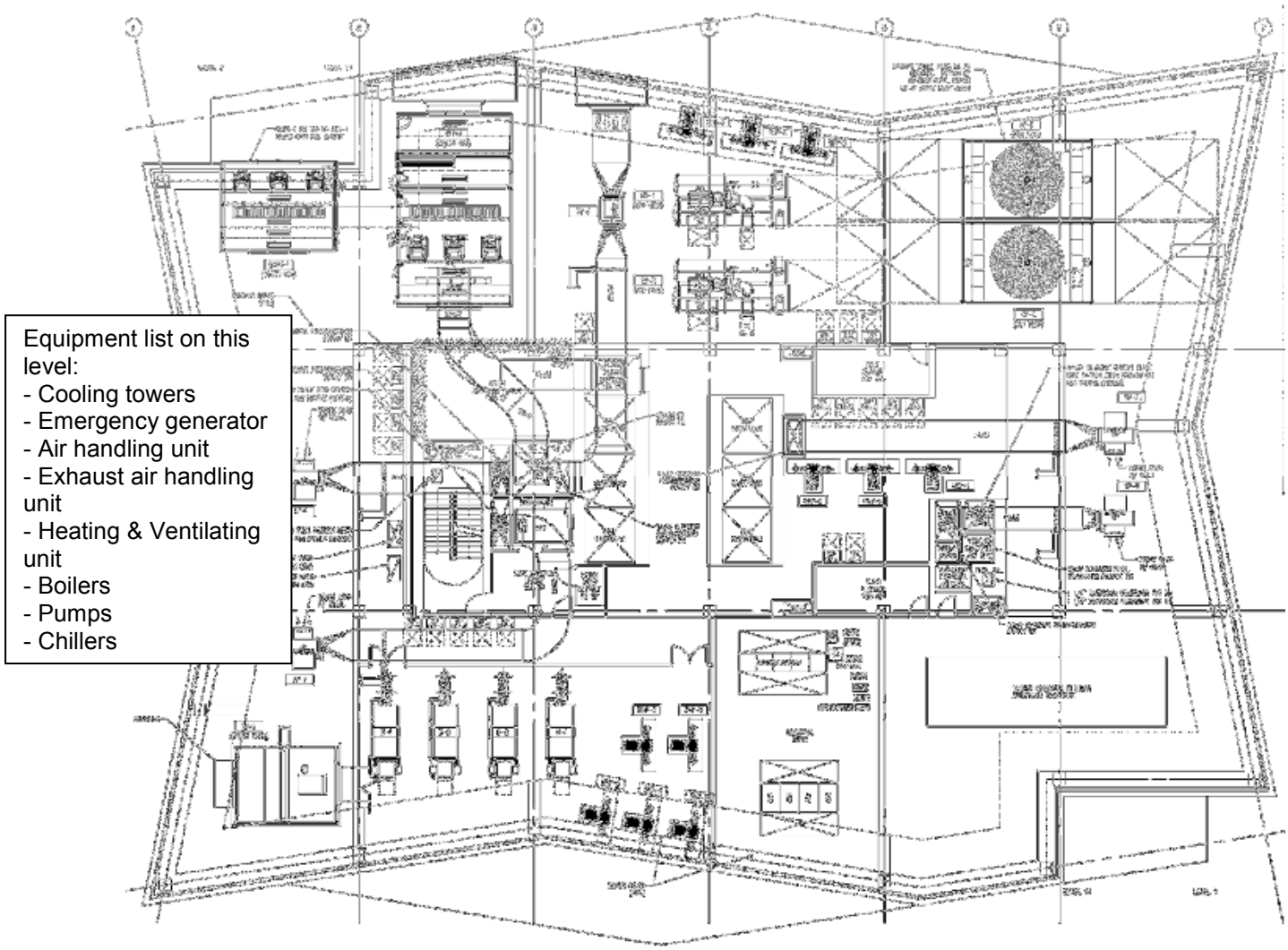


Figure 1-S6. Preliminary Layout of Mechanical Equipment (Site 6).

Equipment list on this level:
- Air cooled condenser units
- Energy recovery unit

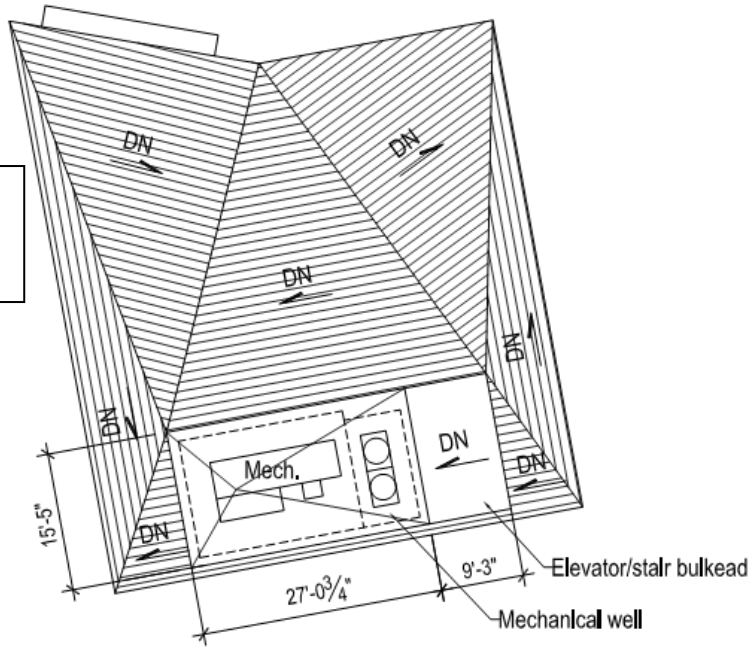


Figure 2. Aerial Photo Showing General Areas of Kendall SoMa/NoMa and Long-Term Sound Measurement Locations A to D (April/May 2015 Survey).

Figure 3a. L1, Leq, and L90 Sound Levels Measured for 10-Minute Intervals at Monitoring Location A (4 to 11 May 2015).

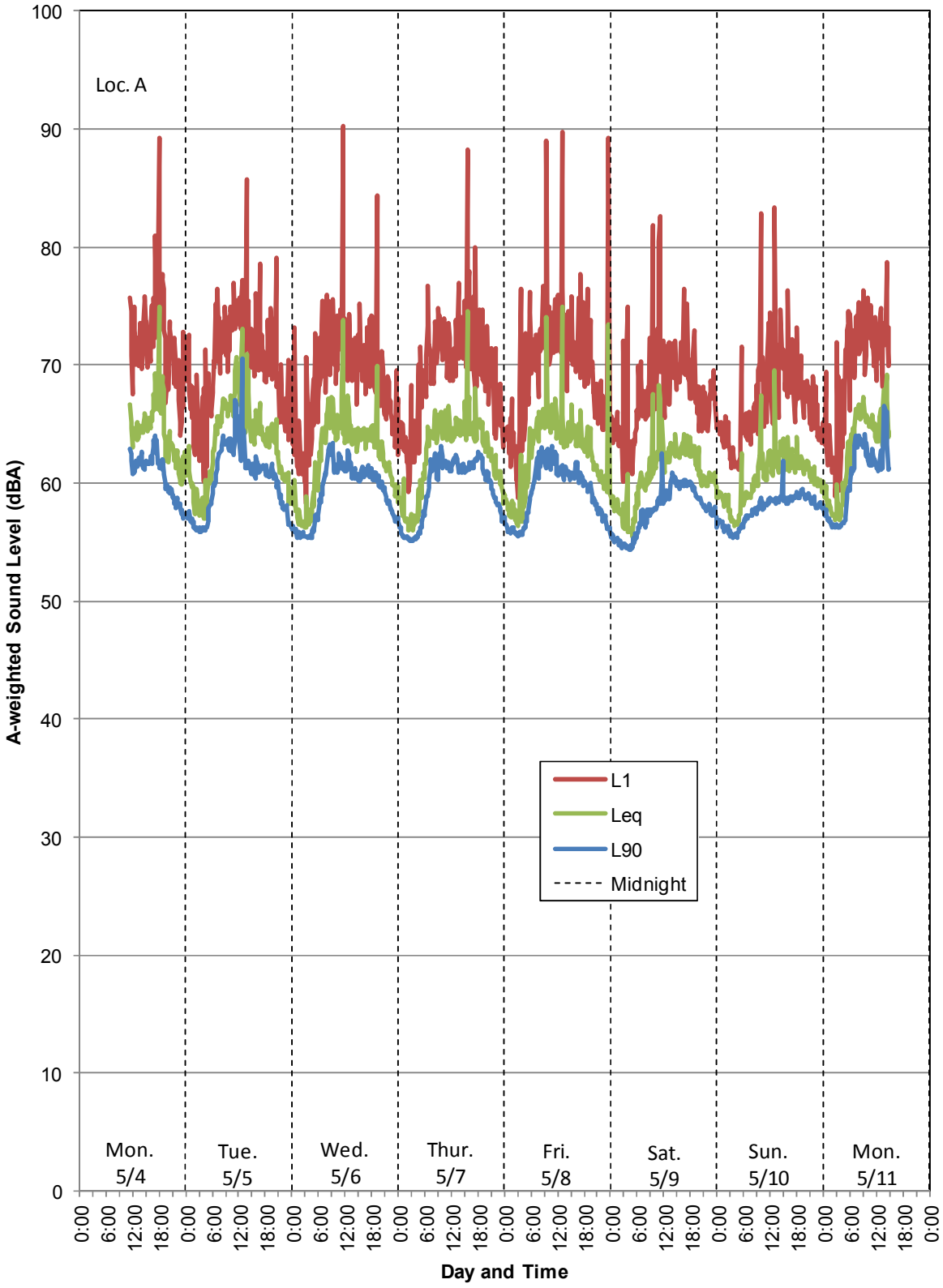


Figure 3b. L1, Leq, and L90 Sound Levels Measured for 10-Minute Intervals at Monitoring Location B (24 April to 1 May 2015).

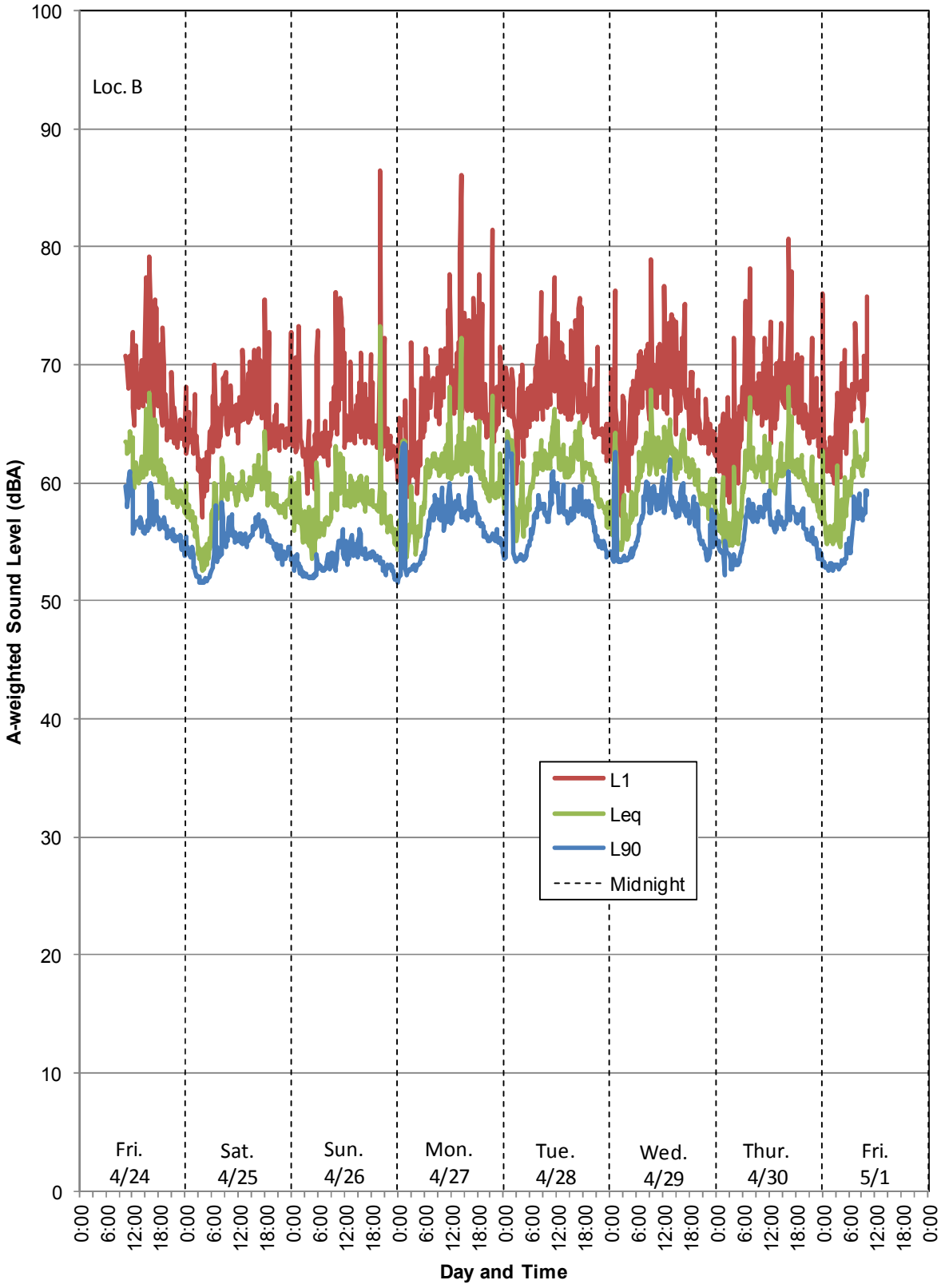


Figure 3c. L1, Leq, and L90 Sound Levels Measured for 10-Minute Intervals at Monitoring Location C (29 April to 7 May 2015).

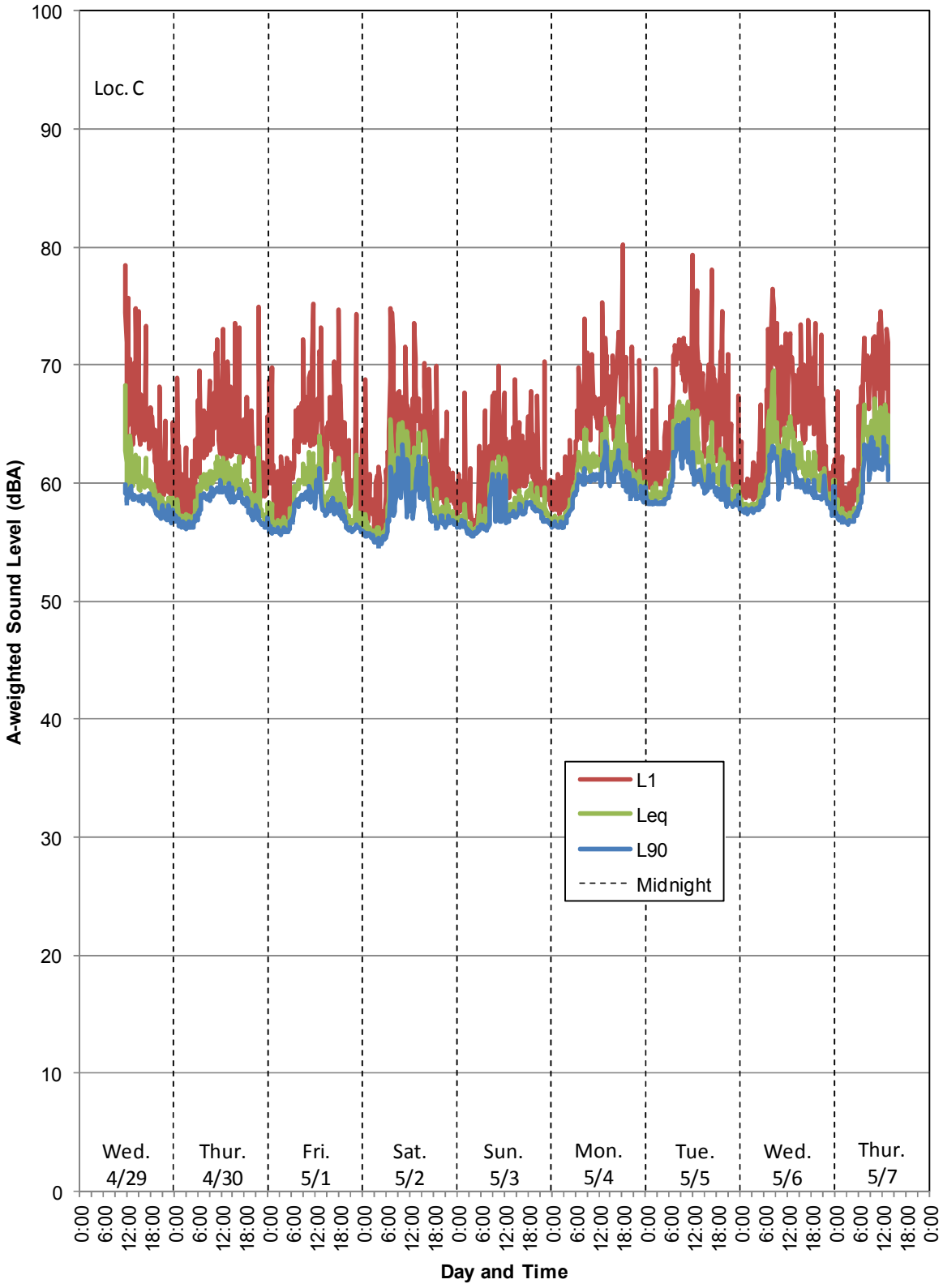


Figure 3d. L1, Leq, and L90 Sound Levels Measured for 10-Minute Intervals at Monitoring Location D (24 April to 1 May 2015).

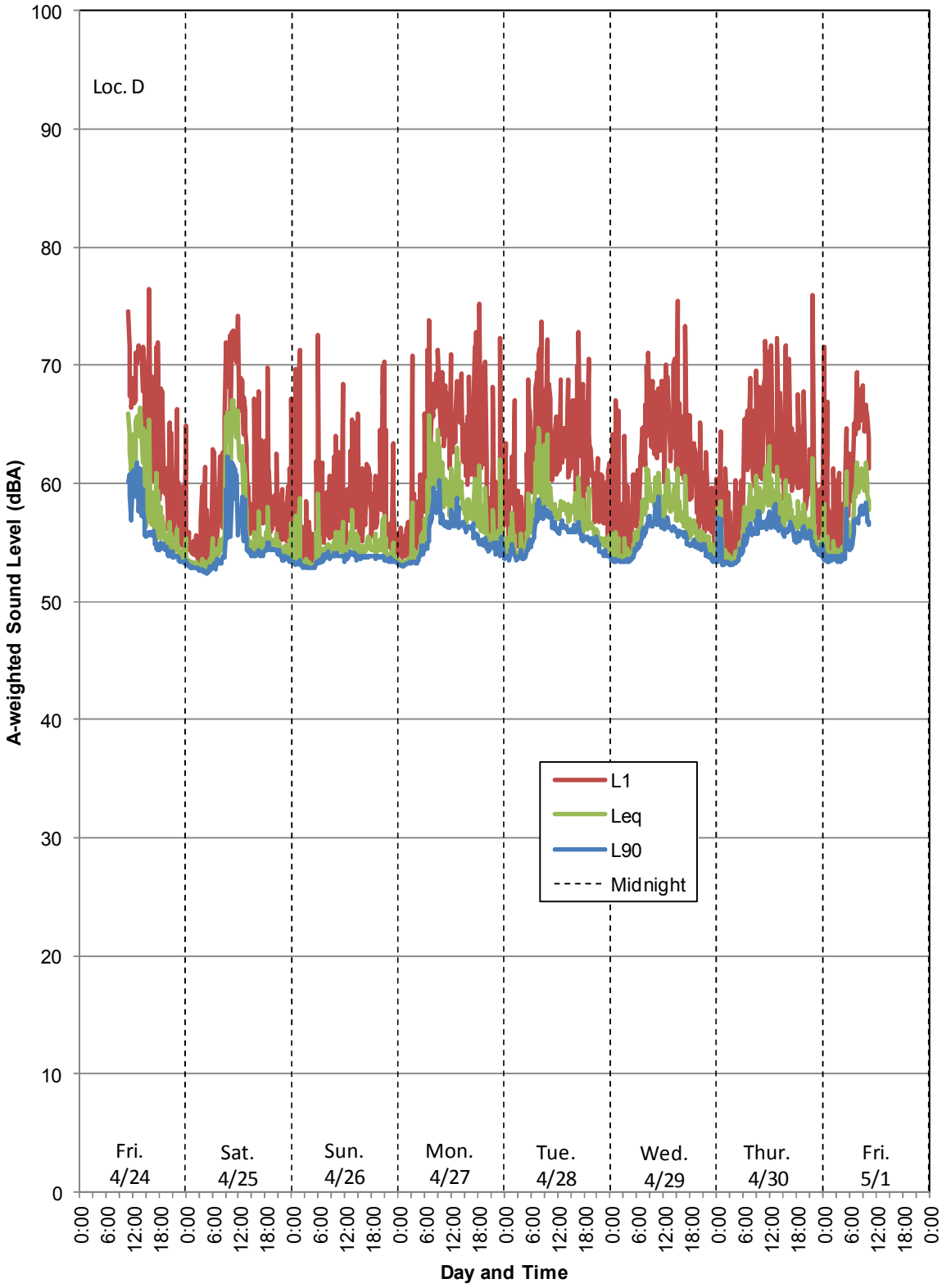


Figure 4. Aerial Photo Showing General Area of Kendall SoMa/NoMa and Short-Term Sound Measurement Locations 1 to 10 (April/May 2015 Survey).

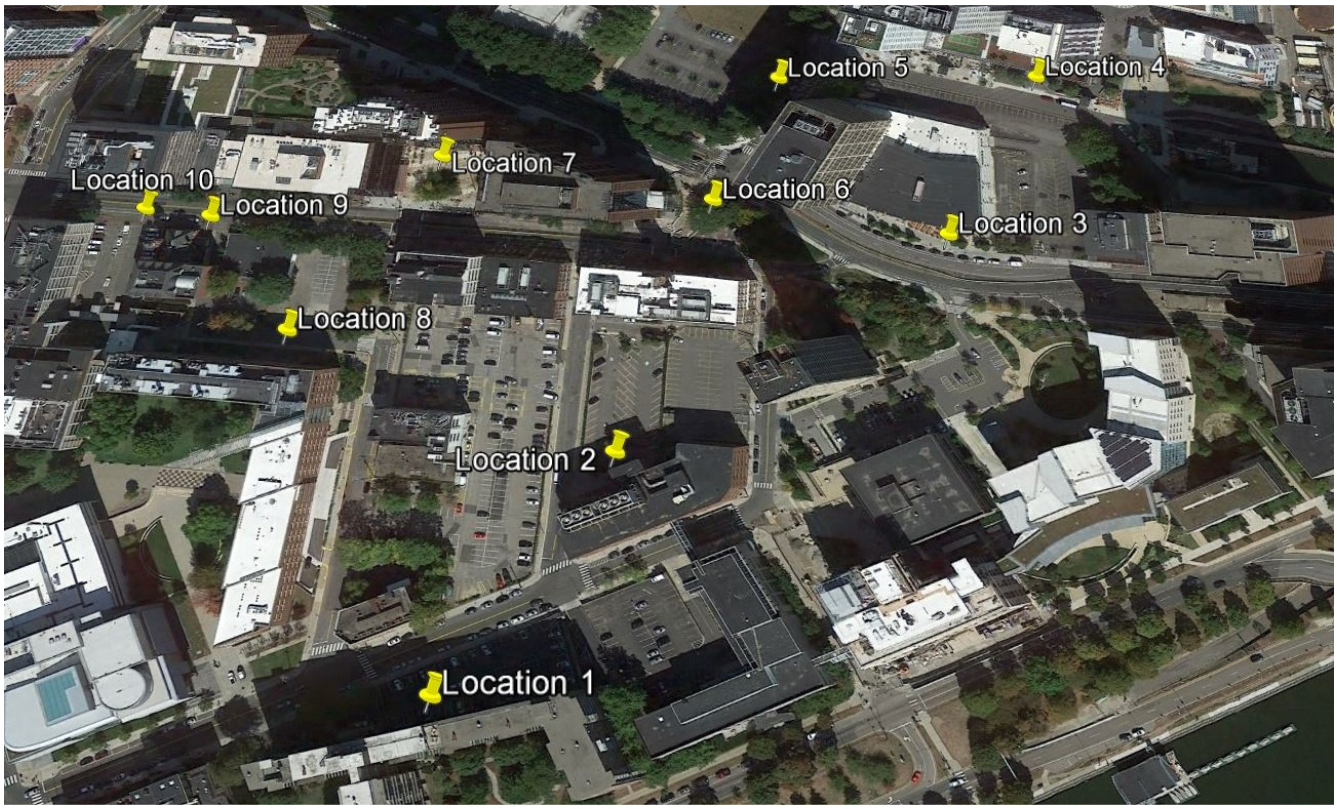


Figure 5. Range of Short-Term Sound Measurements Obtained during Two Nights (4-5 May and 13-14 May 2015) at Locations 1 to 10 and Cambridge Residential and Commercial Noise Standards.

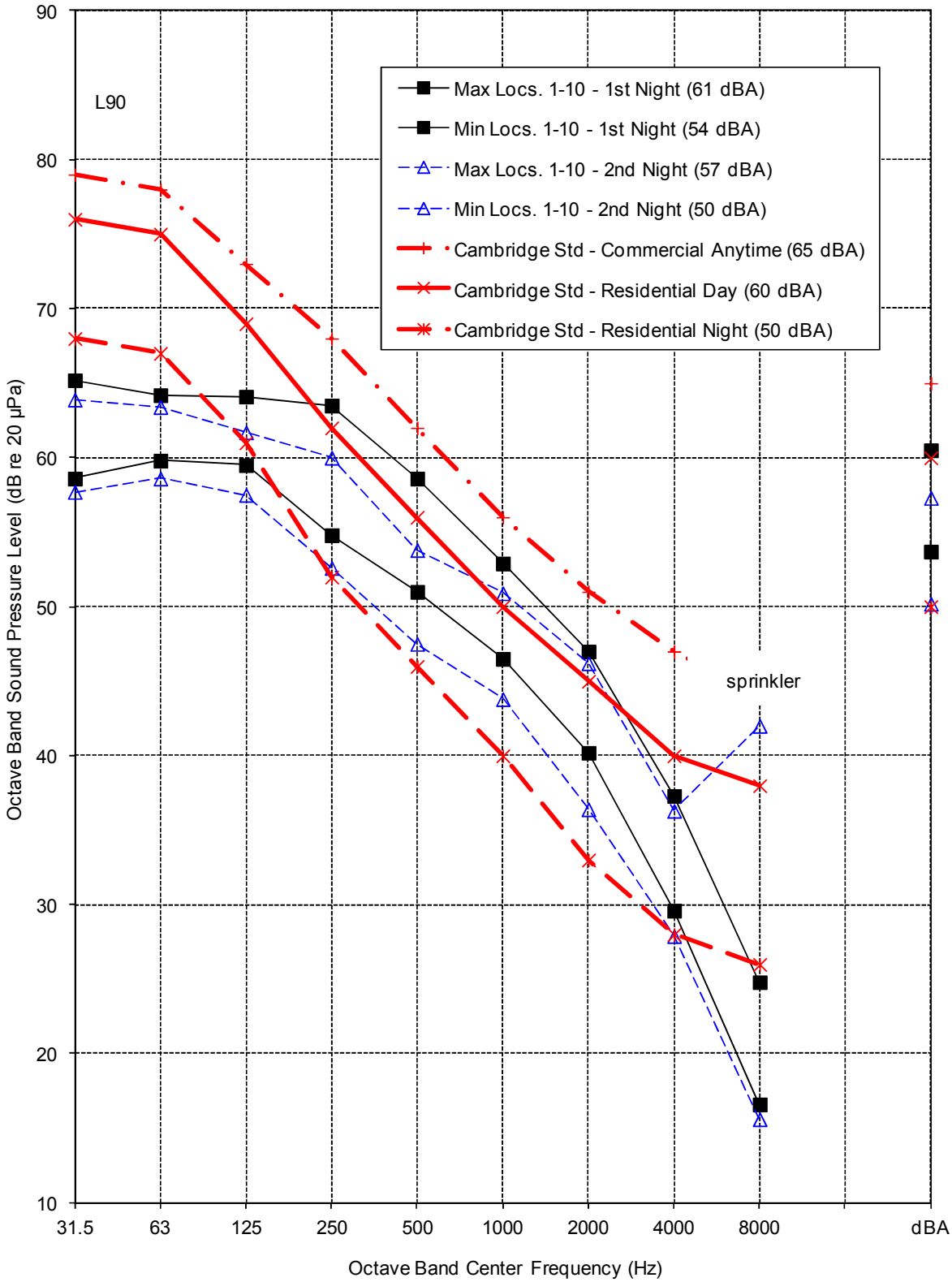


Figure 6. Loading Dock Study (shown in gray).

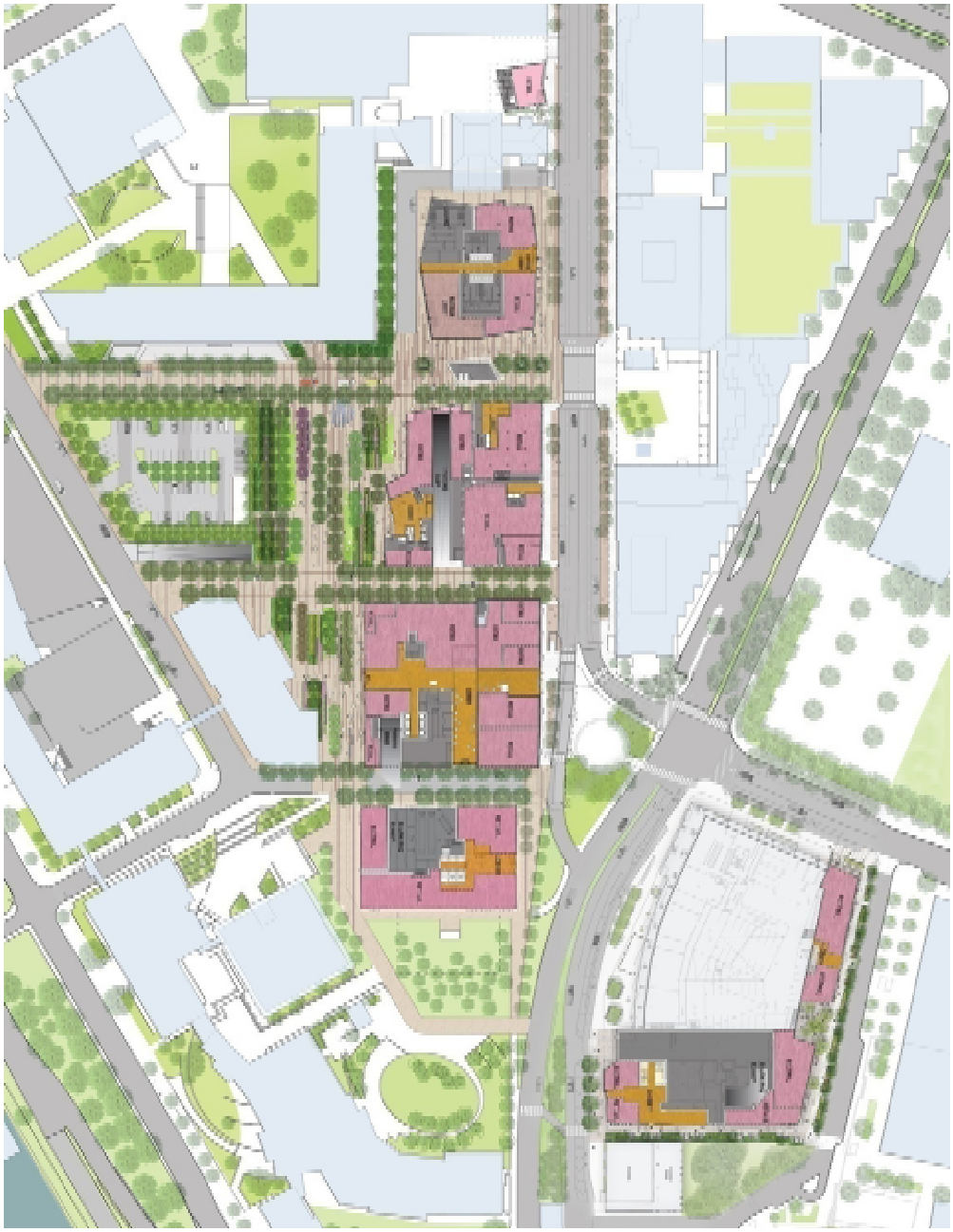


Table 1. Type of Acoustic Instrumentation Used for Ambient Sound Measurements during April/May 2015 Survey.

SHORT-TERM MEASUREMENTS

Instrument Type	Manufacturer	Model
Sound Level Meter	Rion	NA-28
Preamplifier	Rion	NH-23
1/2" Microphone	Rion	UC-59
Acoustic Calibrator	Norsonic	1251

LONG-TERM MEASUREMENTS

Instrument Type	Manufacturer	Model
Sound Level Meter	Rion	NL-52
Preamplifier	Rion	NH-25
1/2" Microphone	Rion	UC-59
Acoustic Calibrator	Gen Rad	1987

Table 2. Summary of Short-Term Residual (L90) Sound Measurements Obtained during Two Nights (4-5 May and 13-14 May 2015) at Locations 1 to 10.

Location	Octave Band Center Frequency (Hz)									Overall dBA
	31.5	63	125	250	500	1000	2000	4000	8000	
	Nighttime Ambient (5/4-5/2015 11:10pm - 1:10am)									
1	64	61	64	64	59	52	42	35	23	61
2	62	61	63	59	54	47	40	30	17	56
3	62	63	62	58	54	50	44	33	21	56
4	64	64	63	61	56	53	47	37	25	59
5	62	60	60	55	51	49	43	32	20	54
6	65	62	61	57	51	47	40	33	22	54
7	62	62	61	56	52	48	42	33	18	54
8	63	63	62	57	53	49	43	32	19	55
9	62	62	61	56	53	49	43	33	18	55
10	59	60	60	57	51	48	43	33	17	54
	Nighttime Ambient (5/13-14/2015 11:00pm - 1:10am)									
1	60	59	58	57	52	47	39	28	16	54
2	60	59	58	53	48	44	36	28	16	50
3	62	61	60	58	53	49	43	31	16	55
4	64	63	61	60	54	51	46	36	24	57
5	63	62	62	57	51	48	41	30	17	54
6	60	59	58	53	50	46	39	28	17	52
7	59	60	59	54	50	47	40	35	42	53
8	60	60	59	54	51	48	42	32	18	53
9	58	59	58	56	51	47	41	35	20	53
10	62	63	61	56	53	49	43	34	21	55

Data obtained for 10-minute period at each street level location with a hand-held sound level meter.

Table 3. Estimates of Project-Only Sound Pressure Levels and Overall A-Weighted Sound Levels at Community Locations Compared with Average Measured Nighttime Ambient Sound Levels and City of Cambridge Noise Standards.

Location	Octave Band Center Frequency (Hz)									Overall dBA
	31.5	63	125	250	500	1000	2000	4000	8000	
Watermark Condos-elevated (west bldg)	46	47	46	43	42	39	33	27	14	44
100 Memorial Drive Apts (elevated)	43	45	44	39	34	30	25	18	2	37
Marriott Hotel (elevated)	46	49	47	45	41	39	33	26	12	44
Kendall Hotel (elevated)	56	60	55	42	34	26	26	25	22	42
1	42	43	42	38	32	28	23	16	-2	35
2	47	47	49	43	46	42	34	26	18	46
3	44	46	46	42	39	35	29	23	12	40
4	48	48	47	40	42	39	30	23	13	43
5	42	44	43	39	36	34	25	17	2	38
6	47	50	49	44	37	33	30	26	16	41
7	40	41	39	35	30	25	20	14	-1	32
8	41	43	42	37	34	31	24	17	5	36
9	41	42	38	31	27	24	18	8	-8	30
10	45	46	39	30	24	20	14	6	-4	29
Average Ambient Measured during Quieter Nighttime										
1-10	61	61	59	56	51	47	41	32	21	54
City of Cambridge Noise Standards										
Commercial Anytime	79	78	73	68	62	56	51	47	44	65
Residential Day	76	75	69	62	56	50	45	40	38	60
Residential Night	68	67	61	52	46	40	33	28	26	50

Emergency generators not included in Project-Only sound estimates.

Average ambient sound levels based on the quieter second night data shown on Table 2.

Table 4. Estimates of Total (Project + Ambient) Sound Pressure Levels and Overall A-Weighted Sound Levels at Elevated Receptor and Property Line Locations.

Location	Octave Band Center Frequency (Hz)									Overall dBA
	31.5	63	125	250	500	1000	2000	4000	8000	
Watermark Condos-elevated (west bldg)	61	61	60	56	52	48	42	33	22	54
100 Memorial Drive Apts (elevated)	61	61	60	56	51	48	41	32	21	54
Marriott Hotel (elevated)	61	61	60	56	52	48	42	33	21	54
Kendall Hotel (elevated)	62	63	61	56	51	47	41	33	24	54
1	61	61	59	56	51	47	41	32	21	54
2	61	61	60	56	52	48	42	33	23	54
3	61	61	60	56	51	48	41	32	21	54
4	61	61	60	56	52	48	41	32	21	54
5	61	61	59	56	51	48	41	32	21	54
6	61	61	60	56	51	48	41	33	22	54
7	61	61	59	56	51	47	41	32	21	54
8	61	61	59	56	51	48	41	32	21	54
9	61	61	59	56	51	47	41	32	21	54
10	61	61	59	56	51	47	41	32	21	54

Totals include the Project-Only and Average Nighttime Ambient sound levels shown in Table 3. Emergency generators not included.

E. Quantitative Data

DIMENSIONAL FORM

Project Address: Various Addresses (See Addendum) **Application Date:** 07-27-2015

	Existing	Allowed or Required (max/min)	Proposed	Permitted
Lot Area (sq ft)	N/A	25,000	See Addendum	
Lot Width (ft)	N/A	None	N/A	
Total Gross Floor Area (sq ft)	See attached*	See attached*	3,191,589*	
Residential Base	282,816*	0	282,816	
Non-Residential Base	1,990,954*	3,822,014*	2,908,773*	
Inclusionary Housing Bonus	N/A	N/A	N/A	
Total Floor Area Ratio	See attached*	3.9 (PUD-5)*	See attached*	
Residential Base	See attached*	3.9 (PUD-5)*	See attached*	
Non-Residential Base	See attached*	3.9 (PUD-5)*	See attached*	
Inclusionary Housing Bonus	N/A	N/A	N/A	
Total Dwelling Units	262	0	262	
Base Units	262	0	262	
Inclusionary Bonus Units	N/A	N/A	N/A	
Base Lot Area / Unit (sq ft)	N/A	N/A	N/A	
Total Lot Area / Unit (sq ft)	N/A	N/A	N/A	
Building Height(s) (ft)	See Addendum	250/300 (one building)	See Addendum	
Front Yard Setback (ft)	0	16' above 85' (Main St)	16' above 85' (Main St)	
Side Yard Setback (ft)	0	N/A	N/A	
Side Yard Setback (ft)	0	N/A	N/A	
Rear Yard Setback (ft)	0	N/A	N/A	
Open Space (% of Lot Area)				
Private Open Space				
Permeable Open Space				
Other Open Space (Specify)	29.6%** (PUD-5/SoMa)	15%** (PUD-5)	35.6%** (PUD-5/SoMa)	
Off-Street Parking Spaces	990*		1,999*	
Long-Term Bicycle Parking	504*		504*	
Short-Term Bicycle Parking	154*		154*	
Loading Bays	15-20		29-34	

Use space below and/or attached pages for additional notes:

*See attached chart breaking out specific Gross Floor Area, FAR and off-street parking and bicycle parking requirements. ** Required open space is "Publicly Beneficial Open Space"..

MIT

Addendum to Dimensional Form

Property Addresses:

Development Parcel B

84 Wadsworth Street and 36 Memorial Drive.

Development Parcel C

226-254 Main Street, 65 Wadsworth Street, 16 Hayward Street, Hayward Street, 264 Main Street, 292 Main Street, 1 Hayward Street, 8, 26, 28, 34, 42 and 46 Carleton Street, Carleton Street, 310, 322 and 336 Main Street, 65 Carleton Street, 5 and 21 Deacon Street, and 40 Ames Street.

Lot Area of Development Parcels:

Development Parcel B: 69,711 square feet

Development Parcel C: 224,097 square feet

Building Heights:

Building 2 - 200 feet
Building 3 - 200 feet
Building 4 - 300 feet
Building 5 - 250 feet
Building 6 - 43 feet

Loading Bays:

Building 2 - 3 bays
Building 3 - 4 bays
Building 4 - 3 bays
Building 5 - 4 bays
Building 6 - 0 bays

PUD-5 Aggregate

Land Uses and Development

	Required	Existing	Proposed Removal	Proposed Project	PUD - 5
Land Area	As exists	1,149,765	N/A	1,149,765	1,149,765
Total Non-Exempt GFA	**4,484,084 max**	**2,540,839**	**242,414**	**1,555,233**	**3,853,658**
Residential	Min. 240,000 net new	282,816	0	285,000	567,816
Commercial	Max. 980,000 net new	407,176	45,134	945,500	1,307,542
Office (not incl. Innov.)	*N/A*	*349,012*	*16,970*	*618,000*	*950,042*
Lab (not incl. Innov.)	*N/A*	*0*	*0*	*270,000*	*270,000*
Non-Exempt Innovation	*See Note 1*	*30,000*	*0*	*0*	*30,000*
Non-Exempt Retail	*N/A*	*28,164*	*28,164*	*57,500*	*57,500*
Academic (all types)	N/A	1,625,677	33,547	74,000	1,666,130
Non-Exempt Dormitory	N/A	225,170	163,733	163,733	225,170
Structured Parking	N/A	0	0	87,000	87,000
Total Non-Exempt FAR	Max. 3.9	2.21	.21	1.35	3.35
Total Exempt GFA	**N/A**	**30,000**	**0**	**223,767**	**253,767**
Ground-Floor Retail	N/A	0	0	57,500	57,500
Public Transportation	N/A	0	0	0	0
Residential/Dormitory	(net new S. of Main)	0	0	166,267	166,267
Innovation	See Note 1	30,000	0	0	30,000
Total Dwelling Units	No max. or min.	262	0	290-300	552-562
Market Rate Units		262	0	237-246	499-508
Affordable Units	[Total D.U. * 18% new]	0	0	53-54	53-54
Dormitory Beds/Units	No max. or min.	347	201	450	596
Open Space					
Publicly Beneficial	3.96 acres (15%)	8.24 acres (31.2%)	0	1.89 acres	10.13 acres (38.35%)

PUD-5 Aggregate

Vehicular Parking

	Required	Existing	Removed	Proposed Project	PUD - 5
Total New Parking	**981-1,056**	**N/A**	**N/A**	**988**	**988**
Res. @ 0.5-0.75/unit	150-225 spaces	N/A	N/A	157	157
Office @ 0.9/KSF max.	558	N/A	N/A	558	558
Lab @ 0.8/KSF max.	216	N/A	N/A	216	216
Retail @ 0.5/KSF max.	57	N/A	N/A	57	57
Academic (per zoning)	See Note 2	N/A	N/A	0	0
Dormitory (per zoning)	See Note 2	N/A	N/A	0	0
Replacement Parking	**Per PB approval**	**1,420**	**599**	**685**	**1,506**
Residential (note sites)		0	0	0	
Commercial (One Broadway Garage and Surface; SoMa Lots)		546	230 (114 at One Broadway surface and 116 at SoMa surface)	116	432
Academic (SoMa Lots)		874	369	369	874
Dormitory		0	0	0	0
Other (academic replacement)		0	0	200	200
Net Parking	**Per PB approval**	**1,420**	**599**	**1,673**	**2,494**

PUD – 5 Aggregate

New Bicycle Parking

	Required	**Proposed**
Total Long-Term	**827**	**827**
Res. @ 1.00-1.05/unit	314	314
Office @ 0.3/KSF min.	188	188
Lab @ 0.22/KSF min.	60	60
Retail @ 0.1/KSF min.	19	19
Academic @ 0.2/KSF	10	10
Dormitory @ 0.5/bed	236	236
Total Short-Term	**197**	**197**
Res. @ 0.1/unit min.	30	30
Office @ 0.06/KSF min.	40	40
Lab @ 0.06/KSF min.	17	17
Retail @ 0.6/KSF min.	75	75
Academic @ 0.4/KSF	10	10
Dormitory @ 0.05/bed	25	25

PUD-5 – South of Main Street

Land Uses and Development

	Required	Existing	Removed	Proposed Project	SoMa PUD Total
Land Area	1,033,493	1,033,493	N/A	1,033,493	1,033,493
Total Non-Exempt GFA		**2,273,770**	**242,414**	**1,160,233**	**3,191,589**
Residential		282,816	0	0	282,816
Commercial		140,107	45,134	922,500	1,017,473
Office (not incl. Innov.)	*N/A*	*111,943*	*16,970*	*603,000*	*697,973*
Lab (not incl. Innov.)	*N/A*	*0*	*0*	*270,000*	*270,000*
Non-Exempt Innovation	*[=Off/lab*50%*5%]*	*0*	*0*	*0*	*0*
Non-Exempt Retail	*N/A*	*28,164*	*28,164*	*49,500*	*49,500*
Academic (all types)	N/A	1,625,677	33,547	74,000	1,666,130
Non-Exempt Dormitory	N/A	225,170	163,733	163,733	225,170
Total Non-Exempt FAR		2.20	.23	1.12	3.09
Total Exempt GFA	**N/A**	**0**	**0**	**215,767**	**215,767**
Ground-Floor Retail	N/A	0	0	49,500	49,500
Public Transportation	N/A	0	0	0	0
Residential/Dormitory	(net new S. of Main)	0	0	166,267	166,267
Innovation	See Note 1	0	0	0	0
Total Dwelling Units		262	0	0	262
Market Rate Units	No max. or min.	262	0	0	262
Affordable Units	18% of new d.u.	0	0	0	0
Dormitory Beds/Units	No max. or min.	347	201	450	596
Open Space					
Publicly Beneficial	15% in PUD-5 total	7.82 acres (29.6%)	0	1.58	9.4 acres (35.6%)

PUD-5 – South of Main Street

Vehicular Parking

	Required	Existing	Removed	Proposed Project	SoMa PUD - 5 total
Total New Parking	**809**	**N/A**	**N/A**	**809**	**809**
Res. @ 0.5-0.75/unit	0	N/A	N/A	0	0
Office @ 0.9/KSF max.	544	N/A	N/A	544	544
Lab @ 0.8/KSF max.	216	N/A	N/A	216	216
Retail @ 0.5/KSF max.	49	N/A	N/A	49	49
Academic (per zoning)	See Note 2	N/A	N/A	0	0
Dormitory (per zoning)	See Note 2	N/A	N/A	0	0
Replacement Parking	**Per PB approval**	**990**	**485**	**685**	**1,190**
Residential (note sites)			0	0	0
Commercial (SoMa Lots)		116	116	116	116
Academic (SoMa Lots)		874	369	369	874
Dormitory		0	0	0	0
Other (academic replacement)		0	0	200	200
Net Parking	**Per PB approval**	**990**	**485**	**1,494**	**1,999**

PUD-5 – South of Main Street

Bicycle parking –

	Required	**Proposed**
Total Long-Term	**504**	**504**
Res. @ 1.00-1.05/unit	0	0
Office @ 0.3/KSF min.	182	182
Lab @ 0.22/KSF min.	60	60
Retail @ 0.1/KSF min.	16	16
Academic @ 0.2/KSF	10	10
Dormitory @ 0.5/bed	236	236
Total Short-Term	**154**	**154**
Res. @ 0.1/unit min.	0	0
Office @ 0.06/KSF min.	38	38
Lab @ 0.06/KSF min.	17	17
Retail @ 0.6/KSF min.	64	64
Academic @ 0.4/KSF	10	10
Dormitory @ 0.05/bed	25	25

PUD-5 – North of Main Street

Land Uses and Development

	Required	Existing	Removed	Proposed	NoMa PUD Total
Land Area	116,272	116,272	N/A	116,272	116,272
Total Non-Exempt GFA		**267,069**	**0**	**395,000**	**662,069**
Residential		0	0	285,000	285,000
Commercial		267,069	0	23,000	290,069
Office (not incl. Innov.)	*N/A*	*237,069*	*0*	*15,000*	*252,069*
Lab (not incl. Innov.)	*N/A*	*0*	*0*	*0*	
Non-Exempt Innovation	*See Note 1*	*30,000*	*0*	*0*	*30,000*
Non-Exempt Retail	*N/A*	**Existing included in Office sf above*	*0*	*8,000*	*8,000*
Academic (all types)	N/A	0	0	0	0
Non-Exempt Dormitory	N/A	0	0	0	0
Other, Above Grade Pkg				87,000	87,000
Total Non-Exempt FAR		2.3	0	3.4	5.69
Total Exempt GFA	**N/A**	**30,000**	**0**	**8,000**	**38,000**
Ground-Floor Retail	N/A	0	0	8,000	8,000
Public Transportation	N/A	0	0	0	0
Residential/Dormitory	(net new S. of Main)	0	0	0	0
Innovation	See Note 1	30,000	0	0	30,000
Total Dwelling Units	No max. or min.	0	0	290-300	290-300
Market Rate Units	No max. or min.	0	0	237-246	237-246
Affordable Units	53-54	0	0	53-54	53-54
Open Space					
Publicly Beneficial	15% in PUD-5 total	.42 acre		.31 acre	.73 acre

PUD-5 – North of Main Street

Parking

	Required	Existing	Proposed
Total New Parking	**172- 247**	**0**	**179**
Res. @ 0.5-0.75/unit	150 – 225 spaces	0	157
Office @ 0.9/KSF max.	14	0	14
Retail @ 0.5/KSF max.	8	0	8
Replacement Parking	**Per PB approval**	**430**	**316**
Residential (note sites)	0	0	0
Commercial (note sites)	One Broadway	430	316
Net Parking	**Per PB approval**	**430**	**495**

Bicycle Parking – NoMa PUD

	Required	Proposed
Total Long-Term	**323**	**323**
Res. @ 1.00-1.05/unit	314	314
Office @ 0.3/KSF min.	6	6
Retail @ 0.1/KSF min.	3	3
Total Short-Term	**43**	**43**
Res. @ 0.1/unit min.	30	30
Office @ 0.06/KSF min.	2	2
Retail @ 0.6/KSF min.	11	11

Building by Building Proposed GFA – SoMa Project

	Proposed GFA in SF – at full build-out (including exempt)						Exemptions		Proposed at full build-out		
Building	**Total**	**Office/Lab**	**Retail**	**Res.**	**Academic**	**Dormitory**	**Retail**	**Other**	**Parking**	**L-T Bike**	**S-T Bike**
B-2	316,000	298,000	18,000	0	0	0	9,000	0	278	93	31
C-3	297,000	270,000	27,000	0	0	0	13,500		230	64	34
C-4	367,000	0	28,000	0	9,000	330,000	14,000	166,000	14	242	44
C-5	390,000	305,000	20,000	0	65,000	0	10,000	0	284	103	40
C-6	6,000	0	6,000	0	0	0	3,000	0	3	2	5
TOTAL	**1,376,000**	**873,000**	**99,000**	**0**	**74,000**	**330,000**	**49,500**	**166,000**	**809**	**504**	**154**

Building by Building Proposed GFA – NoMa Project

	Proposed GFA in SF – at full build-out							Proposed at full build-out		
Building	**Total**	**Office/Lab**	**Retail**	**Res.**	**Academic**	**Parking**	**Exempt Retail**	**Parking**	**L-T Bike**	**S-T Bike**
A-1	403,000	15,000	16,000	285,000	0	87,000	8,000	179	323	43
TOTAL	**403,000**	**15,000**	**16,000**	**285,000**	**0**	**87,000**	**8,000**	**179**	**323**	**43**

Notes:

Note 1: Requirement for Innovation is 5% of the New Gross Floor Area approved in the final development plan for Office uses. Total office proposed for PUD-5 before exemption is 618,000 SF. The PUD-5 requirement for innovation is 30,900 SF.

Note 2: Parking for Existing and Proposed Academic and Dormitory uses is included in MIT's pooled parking supply. Therefore, there is no specific requirement for the uses proposed in the Project.

F. Certifications of Receipt of Plans

CITY OF CAMBRIDGE, MASSACHUSETTS

PLANNING BOARD

CITY HALL ANNEX, 344 BROADWAY, CAMBRIDGE, MA 02139

CERTIFICATION OF RECEIPT OF PLANS
BY CITY OF CAMBRIDGE TRAFFIC, PARKING & TRANSPORTATION

City Department/Office:

Project Address:

Applicant Name:

For the purpose of fulfilling the requirements of Section 19.20 and/or 6.35.1 and/or 5.28.2 of the Cambridge Zoning Ordinance, this is to certify that this Department is in receipt of the application documents submitted to the Planning Board for approval of a Project Review Special Permit for the above referenced development project: (a) an application narrative, (b) small format application plans at 11" x 17" or the equivalent and (c) Certified Traffic Study. The Department understands that the receipt of these documents does not obligate it to take any action related thereto.

Signature of City Department/Office Representative **Date**

CITY OF CAMBRIDGE, MASSACHUSETTS

PLANNING BOARD

CITY HALL ANNEX, 344 BROADWAY, CAMBRIDGE, MA 02139

CERTIFICATION OF RECEIPT OF PLANS
BY CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

City Department/Office:

Project Address:

Applicant Name:

For the purpose of fulfilling the requirements of Section 19.20 of the Cambridge Zoning Ordinance, this is to certify that this Department is in receipt of the application documents submitted to the Planning Board for approval of a Project Review Special Permit for the above referenced development project: (a) an application narrative and (b) small format application plans at 11" x 17" or the equivalent. The Department understands that the receipt of these documents does not obligate it to take any action related thereto.

Signature of City Department/Office Representative **Date**

CITY OF CAMBRIDGE, MASSACHUSETTS

PLANNING BOARD

CITY HALL ANNEX, 344 BROADWAY, CAMBRIDGE, MA 02139

CERTIFICATION OF RECEIPT OF PLANS BY CITY OF CAMBRIDGE TREE ARBORIST

City Department/Office:

Project Address:

Applicant Name:

For the purpose of fulfilling the requirements of Section 4.26, 19.20 or 11.10 of the Cambridge Zoning Ordinance, this is to certify that this Department is in receipt of the application documents submitted to the Planning Board for approval of a MultiFamily, Project Review or Townhouse Special Permit for the above referenced development project: a Tree Study which shall include (a) Tree Survey, (b) Tree Protection Plan and if applicable, (c) Mitigation Plan, twenty one days before the Special Permit application to Community Development.

Signature of City Department/Office Representative **Date**

CITY OF CAMBRIDGE, MASSACHUSETTS

PLANNING BOARD

CITY HALL ANNEX, 344 BROADWAY, CAMBRIDGE, MA 02139

CERTIFICATION OF RECEIPT OF PLANS
BY CITY OF CAMBRIDGE WATER DEPARTMENT

City Department/Office:

Project Address:

Applicant Name:

For the purpose of fulfilling the requirements of Section 19.20 of the Cambridge Zoning Ordinance, this is to certify that this Department is in receipt of the application documents submitted to the Planning Board for approval of a Project Review Special Permit for the above referenced development project: (a) an application narrative and (b) small format application plans at 11" x 17" or the equivalent. The Department understands that the receipt of these documents does not obligate it to take any action related thereto.

Signature of City Department/Office Representative **Date**

CITY OF CAMBRIDGE, MASSACHUSETTS

PLANNING BOARD

CITY HALL ANNEX, 344 BROADWAY, CAMBRIDGE, MA 02139

CERTIFICATION OF RECEIPT OF PLANS BY CITY OF CAMBRIDGE LEED SPECIALIST

City Department/Office:

Project Address:

Applicant Name:

For the purpose of fulfilling the requirements of Section 22.20 of the Cambridge Zoning Ordinance, this is to certify that this Department is in receipt of the application documents submitted to the Planning Board for approval of a Special Permit for the above referenced development project: (a) an application narrative, (b) small format application plans at 11" x 17" or the equivalent and (c) completed LEED Project Checklist for the appropriate LEED building standard, accompanying narrative and affidavit. The Department understands that the receipt of these documents does not obligate it to take any action related thereto.

Signature of City Department/Office Representative **Date**