MIT Kendall Square Initiative
NoMa Project

Article 19 Project Review Special Permit Application

July 27, 2015

Submitted by:

Massachusetts Institute of Technology (MIT)

Owner/ Project Proponent

Massachusetts Institute of Technology (MIT)

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Landscape Architects

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Retail and Placemaking

Graffito SP

Civil Engineering

VHB

Transportation Engineering

VHB

Parking Consultant

Desman Associates

M/E/P Engineering

Vanderweil

Structural Engineering

McNamara Salvia, Inc.

GeoTechnical/GeoEnvironmental

McPhail Associates, LLC

Environmental Permitting Consultant

Epsilon Associates

Acoustical Engineering

Cavanaugh Tocci

Sustainability Consultant

Atelier Ten

District Energy Consultant

JB&B

Wind Consultant

RWDI Consulting Engineers

Surveyor

Feldman

PreConstruction Services

JMA

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 building 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 NoMa 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: One Broadway

Zoning District: Office 3A, PUD-3, PUD-5 and Flood Plain Overlay District

Applicant Name: MIT One Broadway Fee Owner LLC

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 – NoMa (North of Main) Project
Project Review Special Permit Application
MIT Kendall Square Initiative – NoMa (North of Main) Project
MIT Kendall Square Initiative – NoMa (North 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

OWNERSHIP CERTIFICATE

Project Address: One Broadway **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: MIT One Broadway Fee Owner LLC

at the following address: One Broadway

to apply for a special permit for: A mixed-use residential project with retail and limited office

on premises located at: One Broadway

for which the record title stands in the name of: MIT One Broadway Fee Owner LLC

whose address is: 238 Main Street, Cambridge, MA 02142

by a deed duly recorded in the:

Registry of Deeds of County: Middlesex Book: 51973 Page: 539

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

EKA

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

Project Address: One Broadway **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): 395,000	× $0.10 =	$39,500
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:**	$39,650

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SECTION I: Introduction

SECTION I: Introduction

MIT's Kendall Square Initiative North of Main ("NoMa") Project (the "NoMa Project") will transform the One Broadway parking lot owned by MIT's affiliate ("MIT") into a new, fully urban, residential mixed-use project in the heart of Kendall Square that will include:

- Approximately 290-300 residential units, including over 50 (18%) affordable units, proximate to public transit
- Improved streetscape along Main Street, Broad Canal Way, Third Street and Broadway
- Opening a currently closed off vacant site to provide a pedestrian connection from Main Street to the Charles River and East Cambridge
- Ground floor retail space to activate the NoMa site and the pedestrian way along Broad Canal Way, and add to the activation of Kendall Square
- Protected short term and long term bicycle parking and carsharing spaces
- A LEED Gold designed building

The NoMa Project is proposed as a mixed-use development, predominantly residential, with retail and parking and includes one new building ("Building 1") with two components. A 250' tall residential building will occupy the existing surface parking area that fronts Main Street and Broad Canal Way and abuts the Luke Building (currently owned and occupied by the American Red Cross). In addition, new construction will provide a one story retail building along the northerly face of the existing One Broadway parking garage, fronting on Broad Canal Way with retail at grade.

The NoMa site consists of approximately 1.24 acres in Kendall Square. It is bounded by Main Street, Broad Canal Way and Third Street. The western edge of the residential site abuts One Broadway, an existing office building, and a small portion of the site extends to Third Street. The northern portion of the site runs along Broad Canal Way. Building 1's eastern edge runs along an existing open green space to the northeast and the Luke Building to the southeast. The site's southern edge is directly across from MIT's campus and Sloan School of Management, along Main Street.

As envisioned by the Kendall Square Initiative planning process, the NoMa Project features enhanced streetscapes and important new pedestrian connections through and around the site. It will contribute significant ground floor retail. The current state of the site is a void in the urban fabric which the Project will fill and enrich to the benefit of the entire East Cambridge community.

SECTION II: Project Description, Development Schedule and Public Benefits

SECTION II: PROJECT DESCRIPTION, DEVELOPMENT PHASING AND PUBLIC BENEFITS

A. Project Description

i. Existing Conditions

The proposed NoMa Development area is referred to as "NoMa Development Parcel A." Concurrent with this filing, MIT is providing a separate SoMa (South of Main Street) Development Plan 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). The parcel organization is shown on Figure A-1 in the accompanying MIT Kendall Square Initiative NoMa Project Graphics Materials dated July 27, 2015 and described below:

The NoMa Development Parcel A is located in Kendall Square and is bounded by Main Street to the south, Broad Canal Way to the north and Third Street to the west. The Parcel's eastern edge fronts along an existing open green space to the northeast and the Luke Building at 135-145 Main Street (occupied by American Red Cross) to the southeast. The Parcel's southern edge is directly across from MIT's campus, including the MIT Sloan School of Management, along Main Street. The project site is currently used as a 114-space surface parking lot and external service functions, such as a location for dumpster and mechanical units associated with the operation of the existing building at One Broadway.

The Development Parcel also includes One Broadway, a 16-story, 307,000 sf office building. Built in the late 1960's, the building includes:

- A lower basement floor containing mechanical and various storage spaces
- Retail along Broadway on the ground floor with an office lobby at the southwest corner of the block
- A 16 story building on the west side of the Parcel, along Third Street, containing office space, notably the Cambridge Innovation Center (CIC)
- Ground floor parking, accessed through Third Street, extending up the western podium portion of the building, allowing for four above grade levels of parking

The architectural style of One Broadway can be described as Brutalism, a style often used in civic buildings from the 1950s to the 1970s. These buildings are typically concrete. The southern part of

the ground floor of One Broadway is lined with retail with the main office lobby occupying the south west corner.

In 2001 office extensions created an additional office floor above the garage of One Broadway. In 2008, façade renovations created more transparency for the building at floors one through five, achieving a friendlier streetscape.

ii. Proposed Development

a. Building

The Applicant is proposing a new, approximately 416,000 sf mixed-use building ("Building 1") with two components, which will include predominately residential space along with ground floor retail, parking and potentially office space.

The first component will be an approximately 250' tall residential building with an above grade parking podium that will occupy the existing surface parking area that fronts Main Street, Broad Canal Way and is adjacent to the Luke Building. The second component will be a new one to three story building along Broad Canal Way to Third Street with ground floor retail and up to two upper levels of office space.

The residential component will be located on the larger part of the site which is currently occupied by surface parking. The proposal includes an active retail base with approximately 9,000 gsf of retail. This retail occurs along the newly established pedestrian path where MASSDOT has proposed a new cross walk that connects the MIT campus and Charles River with East Cambridge. The proposed residential lobby is situated along Main Street, between retail spaces on the ground floor. Above the ground floor retail, the podium will contain three floors of above grade parking at approximately 87,000 gsf. Entry to the parking will be located along the middle of the block on Main Street. The parking in the podium will be mechanically ventilated and enclosed in a building envelope consistent with the quality of envelope of the building above.

The podium of the project lines up approximately with the height of the Luke Building. The roof of the podium allows for outdoor terraces that will serve as residential amenity spaces. The building accommodates approximately 290 residential units in approximately 285,000 gsf. It will include a mix of unit sizes and market rate, affordable and innovation housing.

The retail components seeks to activate the edge that is currently lined with building utilities with a base of approximately 7,000 sf of retail. The retail along the northern edge of this liner building is anticipated to be restaurant spaces that could spill out onto the wide sidewalk that provides convenient pedestrian access to Broad Canal.

b. Vehicular and Bicycle Parking and Loading

On-site parking will be provided above grade within the building podium that is accessed on Main Street. On-site parking will accommodate 179 vehicles and is designed primarily for the residential occupants with some office and retail parking. Employees and residents will be charged market rates for parking.

Loading and delivery is accessed from Main Street as well. Two interior loading bays are included in the current design.

c. Open Space

The design of the public realm is a collective attempt in both architecture and landscape architecture to create seamless interior and exterior open space. The open space consists of two public streetscapes and a pedestrian corridor. Collectively, these areas will serve to activate the building and integrate the site with the surrounding neighborhood. The sidewalks are part of the larger pedestrian network, facilitating direct and comfortable circulation. The pedestrian way along the eastern edge of the building will be lined with active retail spaces to provide connectivity to and from MIT and East Cambridge.

The Broadway streetscape will respond to the redevelopment and rehabilitation of the Longfellow Bridge. Pedestrian crossings and bicycle lanes will be emphasized for ease and safety. Pedestrian and bicycle amenities will be extended throughout Building 1, accented by safe lighting that is cognizant of the surrounding building use and “night sky” objectives.

An intricate system of paving, seating, bicycle parking, lighting and planting strengthens the pedestrian streetscape, and flexible sidewalk seating produces a vibrant public realm. Multiple and unique opportunities to gather allow many users to congregate for dining, seating, and public interaction along Broad Canal Way. Wood benches and decks make direct reference to the boardwalk at the canal while steel grates, bicycle racks and lighting reference the appealing urban

qualities of the surrounding area. An integrated bio-retention system parallels the street, referencing the historic Broad Canal and larger watershed, while using state-of-the-art mechanics for treatment prior to recharge.

The pedestrian way, located between the new architecture, the existing Luke Building, and green space adjacent to the Broad Canal, provides an active north-south connection to Broad Canal, with its very popular kayak rental, and beyond. The insertion of urban furnishings, including precast benches and paving, and its own bio-retention system, enhances the retail, circulation, gathering and urban ecology experience.

Best Management Practices will be implemented for the control of runoff and improved water quality. Details along the street, integrated into sidewalks and all of the roof designs will assure that water is collected, reused, treated and detained as best suited.

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.

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 43 short-term bike spaces distributed across the open space.

Consistent with the Commitment Letter, 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 shall 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 zoning further calls for active uses at 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 NoMa Project includes 16,000 gsf of ground floor space available for retail and other active uses while the companion SoMa development plan includes an additional 99,000 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. 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 meet 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 area. Although this submission is primarily focused on NoMa, the retail strategy is best understood through discussions of the PUD-5 District in its entirety.

The retail strategy for the 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.

Broad Canal Zone: As shown on Figure A-12, 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.

The NoMa Project retail and active uses will be complemented by a robust activation strategy south of Main Street with three additional retail zones proposed as part of the SoMa Project:

"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. 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.

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

While MIT intends to move forward immediately following receipt of permits, the exact timing will be determined based on market conditions. Open space and public realm improvements immediately adjacent to buildings will be constructed in conjunction with the construction of the buildings. Section 13.89.2 of the Ordinance requires that construction of 240,000 of new Gross Floor Area of residential uses has commenced prior to the issuance of a building permit allowing construction of more than 600,000 sf of commercial uses in the aggregate in PUD-5 District.

C. Project Commitments and Community Benefits

The NoMa Project proposal incorporates a number of benefits including the addition of 290-300 market-rate and affordable housing and activation of Broad Canal Way. In addition, MIT has agreed to a number of other benefits related to the zoning and Commitment Letter for the PUD-5 District. Due to the interrelationship of the SoMa and NoMa Development Proposals, particularly as it relates to the public realm, the public benefits are best understood when described together.

i. Housing Creation

a. Market Rate Housing

The NoMa Project will add approximately 240 units of market rate housing to Kendall Square. This housing contributes to the regional goal of additional housing units and will add to the support of the Kendall Square retail environment.

b. Affordable Housing

The NoMa Project will also add over 50 affordable housing units to the affordable housing program in Cambridge. This represents 18% of the project units which is significantly higher than the 11.5% - 15% included in typical multifamily residential projects in Cambridge.

c. Innovation Housing

Consistent with the Commitment Letter, approximately 8% of the GFA of the residential component will be devoted to units measuring 300 – 550 square feet in size. These units will be designed to include features that enhance affordability and communication among residents.

ii. Transportation Improvements

a. Public Transportation Improvements:

MIT is 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 NoMa and SoMa Projects 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, MIT has 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. MIT is working with a retail consultant and is 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

The PUD-5 zoning requires that 5% of the proposed office space in the PUD be devoted to innovation uses number. As configured today, the PUD-5 District contains in excess of the requirement in the existing building at One Broadway, which contains the Cambridge Innovation Center ("CIC"). The space within CIC complies with the requirements and limitations of Section 13.89.3. The Lease Agreement between the Owner of One Broadway and CIC requires that CIC maintain space that complies with the requirements of Section 13.89.3 so as to ensure that the Owner of One Broadway has the ability to ensure the existence of the Innovation Office Space for many years to come.

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

Section III: Consistency with Urban Design Objectives

A. Introduction

The Kendall Square project has been designed to be wholly consistent with the City Of Cambridge Citywide Urban Design objectives (Section 19.30) as well as the dimensional requirements and goals established in the zoning for PUD-5, Eastern Cambridge Plan, the Eastern Cambridge Design Guidelines and the Kendall Square Design Guidelines (June 2013) developed as part of the 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 NoMa 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 NoMa 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. The building components are sited such that they enable pedestrian connection from Main Street to Broad Canal in a way that is not presently possible. The site will be landscaped and lighted to encourage pedestrian usage throughout the day. Likewise the building massing activates the street edge of Board Canal Way resulting in a double sided street with ground floor uses and an improved path to the Broad Canal from Third Street.

Building heights and setbacks, including setbacks from the Luke Building, are consistent with the requirements of the PUD-5 zoning.

- The proposed plan includes new trees. Proposed trees are designed to include a range of species, 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.

- 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 project.
- The NoMa project has been designed to encourage active use at the ground floors. Over 75% of the street frontage along Main Street and Broad Canal Way will contain retail uses and building 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 level floor to floor heights of the buildings proposed for NoMa will measure at least 15'.

C. Built Form and Architectural Intent

Development Parcel A, Building 1

The building is designed to reduce perceived mass, by tapering gradually so that the upper portions of the building have a slightly reduced volume. Balconies, tucked into the south and north facades, lessen pedestrian wind impacts and provide visual interest and diversity on the facade. The sculpted

massing along the north/south axis will generate a fractured perception of the articulated glass envelope.

The residential units will push existing housing typologies, to serve the city's diverse population and demographics. The architecture and interior spaces encourage innovation, collaboration and interdisciplinary interaction. Spaces such as the ground floor lobby /coffee shop and the various residential amenities on the fifth floor encourage engagement between residents that come from diverse backgrounds, fostering a sense of community and place.

The project has been designed to be sensitive to the adjacent Luke Building while also reinforcing and enhancing the complex urban aspects of Cambridge as it has historically developed. The Luke Building, currently surrounded by surface parking, will again be part of an active urban landscape as the vacant lots are replaced with active uses.

The residential building is set back from Main Street and is oriented north-south to minimize visual and shadow impacts. The podium of the new building responds to the height of the Luke Building and maintains a pedestrian scale along Main Street. The new building is set back at the Luke Building, separated by a 20-foot wide pedestrian passage, consistent with zoning for the site and urban design objectives. The setback between the two buildings allows for an eclectic historic combination of a smaller scale historic structure and a larger scale contemporary residential building to coexist harmoniously along the same pedestrian passage. Ground floor active use on all sides of the building will help extend a vibrant and active streetscape.

D. Environmental Quality

Shadow

Building 1 is sited to activate existing parking lots and service areas and is consistent with the shadow impacts associated with two sided urban streets. In general shadow is mitigated to the north by the massing of the residential building in the north-south direction. MIT has conducted shadow studies to evaluate the shadow impacts of the proposed buildings on the public realm including the sidewalks on in front of One Broadway, the sidewalks on both sides of Broad Canal Way and the edges of the Broad Canal as well as on the Luke Building. These studies are attached and summarized below:

- On September 21 and March 21:

    - 9:00 am Building 1 casts net new shadow toward the intersection of Third Street and Broad Canal Way.
    - At noon, the shadow from the residential component is cast due north in a sliver directly in front of residential component.
    - At 3:00 pm, the residential component casts shadow toward the open space at the canal and on the Luke Building.
- On June 21, the impact of the shadows is minimal.
    - At 9:00 am, net new shadow is cast on the sidewalks on the north side of Broadway in front of the One Broadway building.
    - At noon, the shadow from the residential component is cast due north in a sliver directly in front of residential component.
    - At 3:00 pm the residential component casts shadow toward the open space at the canal and on the Luke Building.
- 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 1 casts net new shadow toward the intersection of Third Street and Broad Canal Way, including to the sidewalks on the west side of Third Street.
    - At noon, due to the north-south orientation of the residential building, net new shadow is cast in a sliver across Broad Canal Way.
    - At 3:00 pm, Building 1 casts net new shadow toward the open space at Broad Canal.

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 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 at Building 1 are predicted to be comfortable for the intended usage. Wind conditions on the sidewalks are expected to be comfortable for standing or strolling in general. Higher wind activity may occur at Broad Canal Way, especially at the northeast corner of Building 1 due to the acceleration of winds at that corner. As the design develops the design team will explore the opportunities to create canopies to mitigate the wind at building entrances as well as coniferous

trees, planters and windscreens (in addition to street trees and landscaping) along sidewalks, outdoor seating and open spaces to reduce wind impacts at those locations.

SECTION IV: Sustainability Narrative

SECTION IV: Sustainability Narrative

MIT's proposed NoMa 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. Combined with the proposed SoMa Project, 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 NoMa 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 NoMa 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. Building 1 is committed to achieving a LEED Gold rating, under the latest, and more stringent LEED version 4 system. (See the LEED narrative and affidavit for LEED compliance commitment).

Building 1 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.
- Building design and tenant guidelines will encourage a 20-40% reduction in energy consumption for lighting and equipment
- Building 1 will aim to collect and reuse stormwater runoff meeting The City of Cambridge standard of reducing peak flows from a 25-year storm down to a 2-year storm. Increased pervious area such as landscaping and pervious pavement will improve existing paved parking conditions.
- Building 1 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.
- Building 1 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. \ 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.
- 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, Building 1 will target 30-40% potable water use reduction across the board for fixtures and equipment water uses.

Energy

- Energy Savings – Building 1 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. Building 1 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.

Site and Transportation

- Landscape The landscape plan 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.
- 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. Building 1 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 Kendall Square development project's design process. As required under the PUD-5 Zoning, Building 1 shall achieve a minimum of Leadership in Energy and Environmental Design (LEED) Gold. The MIT team's efforts in developing buildings that are sustainably designed, energy efficient, environmentally conscious, and healthy for the occupants, visitors, and community and committed to earn the buildings at least 60 credit points under the LEED v4 system, for LEED Gold ratings.

The Kendall Square Development projects 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. LEED version 4 is more stringent than the previous version of LEED, LEED v3 (2009).

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.

Building 1 LEED CREDITS

Due to Building 1's location across Main Street, the project will not connect to the SoMa project buildings. Therefore, all LEED credit requirements and commitments will be met within the boundaries of the Building 1 site.

59 points targeted, +23 medium probability points to be studied further for at least 60 points

Integrative Process

Integrative Process

The design team is conducting a preliminary energy model and water budget before the completion of SD and both will be documented in the Owner's Project Requirements (OPR) & Basis of Design (BOD).

Location & Transportation

The project site is located on a previously developed site in urban Cambridge, close to several public transportation services including a Massachusetts Bay Transportation Authority subway stop, and public bus services. Residents shall have access to bicycle racks and showers, as well as preferred parking for hybrid and/or low-emitting vehicles. Preferred parking will also be provided for low-emitting vehicles for Retail and visitor occupants.

Credit 1 LEED for Neighborhood Development Location *NOT POSSIBLE*

The site is not part of a LEED for Neighborhood development, so this credit is not possible.

Credit 2 Sensitive Land Protection

The project site is 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. Team to determine if any contamination exists on site, and to remediate if found.

Credit 4 Surrounding Density and Diverse Uses

The Development Parcel is located at 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, retail and services to the community.

Credit 5 Access to Quality Transit

The building is located close to the MBTA Kendall Square T-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, and is a short walk from the building.

Credit 6 Bicycle Facilities *NOT LIKELY*

Short term and long term bicycle parking will be provided for resident, retail workers, and visitors. Residential buildings will include secure storage as needed. The 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.

Credit 7 Reduced Parking Footprint

The garage will provide preferred parking for carpools for 5% of all parking spaces provided in the new garage. After zoning for special permit is established, requirements for this credit will be recalculated and included in design.

Credit 8 Green Vehicles

The new garage will include parking spaces for fuel-efficient vehicles and the above grade infrastructure will provide charging stations. The project will endeavour to meet the LEED requirements of 5% of parking spaces and 2% of parking spaces, respectively, but due to this being a predominately residential use it may not be possible to achieve this LEED credit.

Sustainable Sites

The team 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 *NOT POSSIBLE*

The team is investigating opportunities for restoring landscape in what is currently a primarily hardscaped surface site. This credit is not currently anticipated. The design team is evaluating design options that to specify native or adapted vegetation for trees and other plant material to meet credit requirements and limit turf grass.

Credit 3 Open Space *MAYBE*

This development acts as an urban infill project that will enhance the landscape while providing significant services and thriving community to the sometimes deserted Kendall Square area. Maintaining pedestrian oriented open space that is inviting and engaging is a top priority for this project for the amount of open space that will be provided. Credit compliance to be calculated in later phases.

Credit 4 Rainwater Management

Stormwater will be captured from roof and site area and directed into subsurface stormwater trenches. The intent will be to design the system such that the stormwater 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).

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, all parking on site will be above grade in a garage under cover of the tower above. All garage roof areas not under the tower will use high Solar Reflectance Index (SRI) materials. 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

This credit will be pursued under dark-sky lighting strategies. Credit compliance will be fully evaluated in the next phase. 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.

Credit 7 Tenant Design and Construction Guidelines (For Core and Shell Retail)

Design requirements for tenant fitouts will be utilized for Core and Shell projects to commit future tenants to the principles pursued by the projects as a whole for sustainability.

Water Efficiency

Outdoor and process water use reduction will be a primary driver on the project. The project will specify low-flow and low-flush plumbing fixtures to achieve Water Efficiency. The team shall also consider other water strategies to reduce potable water use.

Prerequisite 1 Outdoor Water Use Reduction, 30% Reduction

Through the use of native and adapted vegetation and efficient irrigation systems, the project will reduce the demand for irrigation by 30%.

Prerequisite 2 Indoor Water Use Reduction, 20% Reduction

Through specifying efficient fixtures and equipment, the project will achieve a 20% reduction in potable water use inside the building.

Prerequisite 3 Building Level Water Metering

New in LEED v4, the project will install meters for building and site grounds to measure and ongoing reevaluate water consumption for each building.

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

The project will target a minimum of 50% reduction through efficient irrigation and/or stormwater reuse for irrigation. Full elimination of potable water for irrigation is not anticipated at this point in the design. To meet the credit requirements of 50% or 100% 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. Current design includes conservation strategies and no reuse.

Credit 2 Water Use Reduction 25/30/35/40/45/50%

The project will install efficient flow and flush fixtures as well as compliant equipment to reduce building potable water consumption. Each building's water reduction target is a 40% reduction.

Through the use of low-flow and low-flush plumbing fixtures in the building, as outlined in the project basis of design, the project shall implement water use reduction strategies that use at least 20% less

water than the water use baseline calculated for the building (not including irrigation) after meeting Energy Policy Act of 1992 fixture performance requirements.

Credit 3 Cooling Tower Water Use *MAYBE*

The mechanical engineers will conduct a water analysis to optimize cooling tower cycles, to achieve at least >10 cycles, or 20% non-potable water use to maximize points for this credit.

Credit 4 Water Metering *MAYBE*

Beyond the whole building and site water metering, the projects will study installing permanent water meters for two or more water subsystems each. This credit is under consideration but not yet anticipated.

Energy and Atmosphere

The building systems of Building 1 shall be designed to optimize energy performance and will not use refrigerants that are harmful to the environment. The owner has engaged a third party Commissioning Agent to confirm the building systems are installed and function as intended and designed.

Prerequisite 1 Fundamental Commissioning and Verification

Building will engage a commissioning agent and develop and perform fundamental commissioning.

Prerequisite 2 Minimum Energy Performance

The current design should meet this prerequisite. The next model will measure energy cost savings against LEED Baseline. Further study and energy modeling in subsequent project phases will confirm compliance.

Prerequisite 3 Building-Level Energy Metering

Meters must be installed to provide data on total energy consumption. This LEED requirement is in line with City of Cambridge energy data reporting guidelines.

Prerequisite 4 Fundamental Refrigerant Management

The specifications for refrigerants used in the building HVAC systems will not use CFC based refrigerants.

Credit 1 Enhanced Commissioning

The Commissioning agent will perform a review of the CD documents and provide any comments to the team for design revision. In addition, the Commissioning agent will perform post-occupancy reviews and draft a recommissioning manual and develop monitoring procedures for ongoing operations and maintenance.

Credit 2 Optimize Energy Performance (6%-50%, up to 18 points

The design is targeting at least a 20% savings through the design of an efficient building envelope, high performance lighting and energy-saving HVAC systems.

Credit 3 Advanced Energy Metering

The projects will install energy metering for whole building energy and individual energy end uses representing 10% or more of total consumption.

Credit 4 Demand Response *MAYBE*

Credit requires designing building and equipment for participation in demand response programs through load shedding or shifting. This credit is not likely pursued.

Credit 5 Renewable Energy Production (1%, 5%, 10%) *MAYBE*

Currently, the team is exploring opportunities to incorporate renewables in the projects. The density of the development and potential for renewables may only achieve the 1% threshold if pursued. Credit is not likely.

Credit 6 Enhanced Refrigerant Management

Equipment with refrigerant over 0.5 lbs should be selected for low Lifecycle Direct Global Warming Potential (LCGWP) and Lifecycle Ozone Depletion Potential (LCODP).

Credit 7 Green Power and Carbon Offsets *MAYBE*

A primary strategy for this project will be reduction in energy consumption. The teams will discuss green power purchasing if other LEED credits are necessary to achieve the target certification rating. Green-e certified power contracts would be written into tenant guidelines as required.

Materials and Resources

Throughout the construction phase of the project, the contractor shall endeavor to divert construction and demolition waste from area landfills and procure materials that have recycled content and/or are manufactured locally.

Prerequisite 1 Storage and Collection of Recyclables

Storage of collected recyclables shall be accommodated throughout the buildings. An aggregate of at least 500 square feet has been allocated for recycling storage in addition to area for ground level collection, sorting, and bundling for pick-up. A recycling plan will be developed.

Prerequisite 2 Construction and Demolition Waste Management Planning

Projects will follow construction and demolition waste management best practices. The construction manager will draft Construction and Demo Waste Management Plans to maximize waste diverted from landfill.

Credit 1 Building Life-Cycle Impact Reduction *MAYBE*

Project will conduct a life-cycle assessment that demonstrates a minimum of 10% reduction in at least three of the six impact measures.

- Global warming potential (greenhouse gasses), in CO2e
- Depletion of the stratospheric ozone layer, in kg CFC-11
- Acidification of land and water sources, in moles H+ or kg SO2
- Eutrophication, in kg nitrogen or kg phosphate
- Formation of tropospheric ozone, in kg NO2 or kg ethane
- Depletion of nonrenewable energy resources, in MJ

Credit 2 Building Product Disclosure & Optimization: Enviro. Product Declarations *MAYBE*

Team will specify 20 products sourced from five different manufacturers that meet the disclosure criteria and use products that exhibit optimized performance on those disclosures for 50% by cost.

Credit 3 Building Product Disclosure & Optimization: Sourcing of Raw Materials *MAYBE*

Team will use 20 products sourced from five different manufacturers that have publicly released a report from their raw material suppliers and those reports demonstrate products meet responsible extraction criteria (25% material cost).

Credit 4 Building Product Disclosure & Optimization: Material Ingredients *MAYBE*

Team will use 20 products sourced from five different manufacturers that demonstrate the chemical inventory of the products and document their material ingredient optimization (25% by material cost).

Credit 5 Construction & Demolition Waste Management (50/75%)

The project will pursue optimized waste diversion from landfill to achieve 75% reduction in 4 material streams OR generate less than 2.5 lbs of waste/sf.

Indoor Environmental Quality

The air quality shall be monitored during the construction phase of the project and likely prior to occupancy. Low emitting materials will be used throughout construction to maintain and improve air quality. The building occupants will be able to maintain a comfortable environment through access to thermal and lighting controls.

Prerequisite 1 Minimum IAQ Performance

The building mechanical systems will be designed to meet or exceed the requirements of ASHRAE Standard 62.1-2010 sections 4 through 7 and/or applicable building codes.

Prerequisite 2 Environmental Tobacco Smoke (ETS) Control

Smoking will be prohibited inside the building and within 25 feet of the building, especially any entryways or air intakes.

Credit 1 Enhanced Air Quality Strategies

Project will provide entryway systems to avoid contamination from exterior particulates and prevent interior cross contamination. In addition, MERV 13 filters will be specified. In addition, project will either provide increased ventilation or monitor CO2, depending on the program type for which compliance path is most energy efficient.

Credit 2 Low-Emitting Materials

The team will target achieving threshold level of compliance for VOC content in at least 4 categories. Enhanced performance will target 5 categories.

- Interior paints and coatings
- Interior adhesives and sealants applied on-site (including flooring)
- Flooring
- Composite wood
- Ceilings, walls, thermal, and acoustic insulation
- (Furniture not applicable)

Credit 3 Construction IAQ Management Plan

A Construction IAQ Management Plan will be drafted and implemented on all projects during construction and pre-occupancy according to the SMACNA Guidelines.

Credit 4 Indoor Air Quality Assessment

In addition to managing air quality during construction and pre-occupancy, a building flush-out or air quality testing will be performed before each building is occupied.

Credit 5 Daylight (55%/75%) *MAYBE*

Project will design for adequate daylighting and visual comfort where possible. Building enclosures will be designed to mitigate heat gains and temper interior daylighting levels. In addition, daylight dimming will be studied for perimeter building zones. This credit will be calculated in later design phases.

Credit 6 Quality Views *MAYBE*

Direct views will be provided to the outside for 75% of regularly occupied spaces, which meet 2 of 4 LEED criteria.

- Multiple lines of sight to vision glazing in different directions at least 90 degrees apart
- Views that include at least 2 of the following (1) flora, fauna, or sky; (2) movement; and (3) objects at least 25 feet from the exterior of the glazing
- Unobstructed views located within the distance of three times the head height of the vision glazing
- Views with a view factor of 3 or greater, as defined in: "windows and Offices, A Study of Office Worker Performance and the Indoor Environment"

Innovation & Design Processes

The project team has identified several possible ID credits which are listed below, limited to 5 ID credits total. Throughout the design process these along with other potential innovation and design process credits will be evaluated.

Credit 1.1 Green Building Education – under consideration

Green building education is a recommended best practice. MIT is considering educational building dashboards and shall pursue an informational website, building tours, or signage for sustainable features for residents and visitors.

Credit 1.2 Green Housekeeping – under consideration *MAYBE*

Green housekeeping is a recommended best practice. The team will discuss developing and implementing a plan for occupants.

Credit 1.3 Exemplary Performance, Low Mercury Lighting *MAYBE*

This innovation credit can be earned by specifying low-mercury lighting which reduces the toxicity of waste streams.

Credit 1.4 Innovation in Design, Organic Landscape Management

Site may choose to pursue organic landscape management, to enhance the quality of the site and reduce chemicals and pesticides used on site areas. This will improve the quality of stormwater runoff and green spaces that occupants and visitors may come in contact with.

Credit 1.5 Innovation in Design, Integrated Pest Management

Team will explore alternative ID credits; however, an integrated pest management approach that meets LEED EBOM standards will help improve indoor air quality for occupants, and can be included as a requirement in the Tenant Guidelines.

Credit 2 LEED Accredited Professional

Atelier Ten, a group of LEED accredited professionals, is overseeing the overall sustainability of the Kendall Square development. They are also serving as the sustainability lead on the Building 1 design team. In addition, many other design team members have LEED accredited professionals working on the projects.

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 the Kendall Square Development area in LEED v4:

Credits to be Pursued

Optimize Energy Performance (8 pts required, up to 18 points)
High Priority Site (2 pts required, 2 possible)
Rainwater Management (2 pts required, up to 3 points)
Indoor Water Use Reduction (4 pts required, up to 6 points)

Credits Not Pursued

Renewable Energy Production (5% required, up to 3 points)

Energy Efficiency and District Energy

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 NoMa and SoMa Projects develop.

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: Infrastructure Narrative

Introduction

This section describes the existing infrastructure systems within and surrounding the Project Site, and discusses Project capacity needs and potential impacts on utilities. The following utilities are evaluated: sanitary sewer, water, stormwater management, natural gas, electricity, and telecommunications. Figure C-1 shows the existing utilities that serve the Project Site, and the Figure C-2 shows the schematic design for proposed infrastructure.

The Project will connect to existing city and utility company systems in the adjacent public streets. Based on initial investigations and consultations with the appropriate agencies and utility companies, all existing infrastructure systems are adequately sized to accept the incremental increase in demand associated with the development and operation of the Project. As design progresses, all required engineering analyses will be conducted and the final design will adhere to all applicable protocols and design standards ensuring that the proposed building is properly supported by and properly uses city infrastructure. Detailed design of the Project's utility systems will proceed in conjunction with the design of the building and interior mechanical systems.

The systems discussed herein include those owned or managed by the Cambridge Public Works Department (CPWD), Cambridge Water Department (CWD), private utility companies, and on-site infrastructure systems.

The relocation of the street edge and utilization of the portion of Main Street along the site frontage will be completed by the Massachusetts Department of Transportation (MassDOT) as part to the Longfellow Bridge Project.

Sanitary Sewer

The Project will connect to sewer infrastructure in Main Street at the site frontage for the Building 1 Residential Component, and if required, in Third Street for the Building 1 Retail Component.

The City provides separate sanitary and stormwater sewer collection systems in the Project area. For the current design, sanitary flows from the Building 1 Residential Tower will be discharged through a proposed 10-inch service into an existing 16-inch sewer main in Main Street. The Retail Component

proposed 10-inch service into an existing 16-inch sewer main in Main Street. The Retail Component will be discharged through a proposed 10-inch service into an existing 10-inch sewer main in Third Street. Both services exit the buildings below the foundation slabs.

To comply with the Cambridge Sewer design standards, the sanitary sewer system for the Residential Component will include an onsite retention tank to hold up to 8 hours of peak flow, thus protecting the existing sanitary sewer infrastructure in the area.

The Project's wastewater generation rate was estimated using design sewage flow rates obtained from 310 CMR 15.000 - The State Environmental Code, Title 5: Standard Requirements for the Siting, Construction, Inspection, Upgrade and Expansion of On-Site Sewage Treatment and Disposal Systems and for the Transport and Disposal of Septage. The following flow criteria will be used for the Residential Component and the Retail Component to project the anticipated gallons per day (GPD) of sanitary sewer usage:

- 75 GPD per 1,000 SF for office;
- 50 GPD per 1,000 SF for retail;
- 110 GPD per bedroom for residents; and
- 35 GPD per seat for restaurants.

The total average daily flow generated by the Residential Component is estimated to be 46,685 GPD, and the Retail Component is estimated to be 10,150 GPD; totaling an estimated Project total of approximately 56,835 GPD.

Water Supply

The Project will make connections for fire protection and domestic use to available water infrastructure in Main Street at the site frontage for Building 1 – Residential Component, and if required, in Third Street for the Building 1 – Broad Canal Way Retail Component. It is anticipated at this time that the water demand for the Broad Canal Way – Retail Component can be attained from the existing One Broadway building supply.

The Residential Component is estimated to require 51,355 GPD, and the Retail Component is estimated to require 11,165 GPD; totaling an estimated Project total of approximately 62,519 GPD of water demand.

A redundant domestic water supply will be provided for this Project. It is anticipated that the Residential Component will require two 6-inch domestic water services, and one 8-inch fire protection service from the 12-inch or 24-inch water main in Main Street. All services will enter the proposed building to the east side below the foundation slab, with bends provided at the building face to allow for water meter access.

The Applicant will work with the CPWD and CWD on the development of the project design and submit plans for formal approval prior to the issuance of the Building Permit for the Project.

Stormwater Management

The Project Site currently contains relatively little pervious areas, as it is predominated by building roof area and existing surface parking. The existing One Broadway building is drained via a closed pipe drainage system discharging to the existing City of Cambridge stormwater system in Third Street, while the existing surface lot is drained via a closed pipe drainage system discharging directly into the Broad Canal.

An existing 54-inch diameter storm drain exists to the north of the Site, adjacent to Broad Canal Way. This pipeline was constructed in the 1980's during the filling of the Broad Canal. The pipe was laid flat and discharges directly into the current Broad Canal to the East. The condition of the existing pipeline is unknown as it currently flows approximately 85% surcharged due to a regular tailwater elevation in the Broad Canal. The limits of the 54-inch storm drain within the Project Site will be relocated as part to this project. The relocation will not affect the capacity of the existing drainage system.

Since the Project Site is already mostly impervious, the Project will not produce significant changes in either the pattern of, or rate of, stormwater runoff. Stormwater management controls will be established in compliance with the CPWD standards. The Project will not result in the introduction of any peak flows, pollutants, or sediments that would potentially impact the receiving waters of the local municipal stormwater drainage system.

The use of detention and infiltration as part of the Project's stormwater management system will reduce site peak flows, replenish groundwater and provide quality treatment for building roof runoff. The onsite detention/infiltration system design complies with the City of Cambridge's Low Impact Development Guidelines. Final connections to this system will be reviewed and approved by the Cambridge Public Works Department prior to construction.

The entire Site is previously altered and mostly developed. The Project will result in a net increase in pervious surfaces (0.027 acres); which is inclusive of a portion of the Site being dedicated to new public open space containing paved walkways, public seating, and a landscaped swale area. The Project will provide stormwater Best Management Practices (BMPs) in conformance with DEP's Stormwater Management Standards.

The Project is reviewing the alternative of stormwater re-use for the purposes of irrigation and/or cooling towers make-up water. Re-use of stormwater is beneficial as it will contribute to the reduction of peak storm flows, and the reduction of potable water use from the City's water system. The feasibility of this alternative will be vetted out during design development.

The final design will incorporate facilities to reduce phosphorus on site by 65% compared to the existing conditions, in compliance with CPWD standards.

The Project's construction documents will include measures and specifications regarding erosion and sediment controls and barriers (e.g. silt fence, silt sacks). Construction dewatering discharges will be appropriately controlled and discharged in accordance with National Pollutant Discharge Elimination System (NPDES) and state and local dewatering standards.

Other Utilities

The Project will also require electrical, natural gas, and telecommunications services all of which are immediately available within the Main Street right-of-way and Third Street right-of-way. The project team will work with the respective private utility authorities on sizing and configuration of services. The design of these utilities will be included on the CPWD and CWD submission drawings to ensure that the work is coordinated as part of the public review process.

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 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 attached in Appendix D. 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 in Appendix D, abatement methods to be employed to control the sound of the SoMa Project will include 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 rooms, if any, will be provided with sound attenuators at the louvers
- Garage exhaust fans, if any, 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 in Appendix D 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 in Appendix D presents similar information as Table 3 in Appendix D, 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. NoMa Project Graphics Materials
(Under Separate Cover)

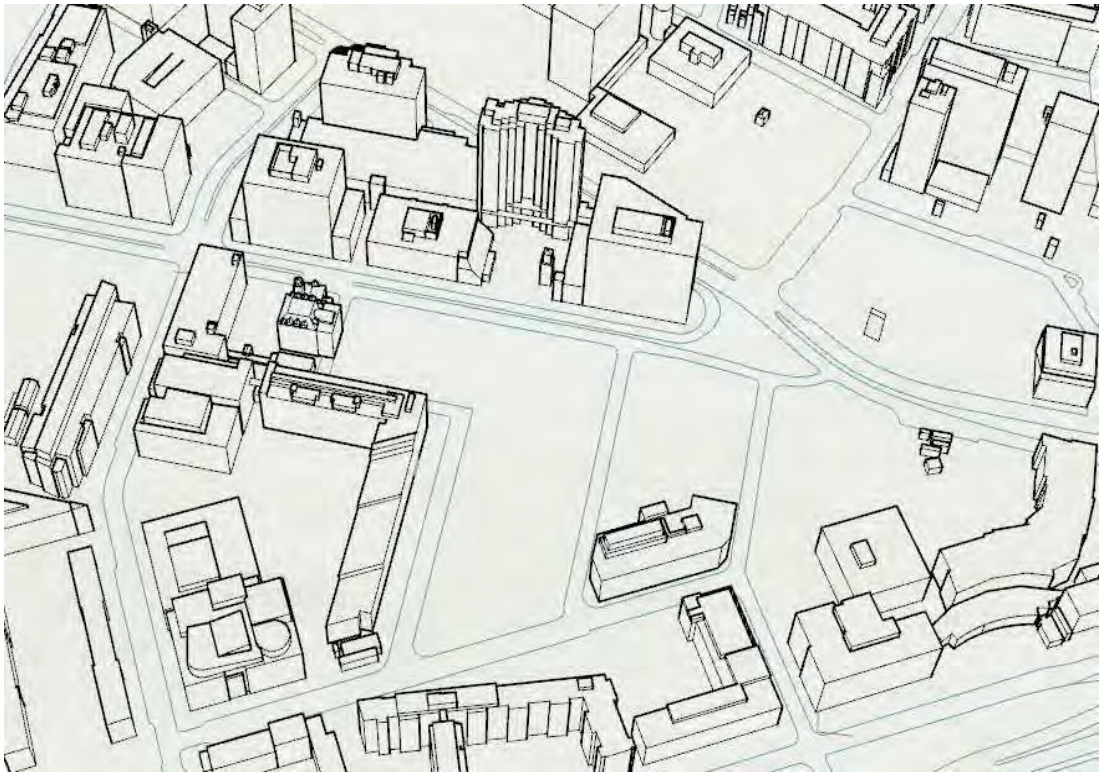
B. MIT Kendall Square Initiative Wind Study

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

Cambridge, MA

Pedestrian Wind Assessment

RWDI # 1501051
July 10, 2015



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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.

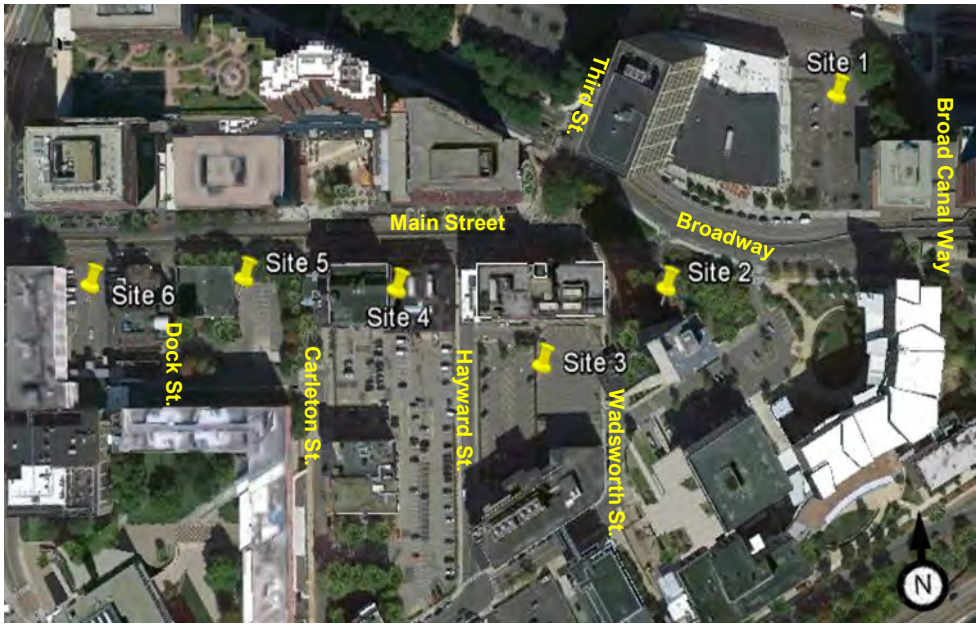


Image 1 - Aerial Photograph of Existing Site and Surroundings
(Courtesy of Google earth™)

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.

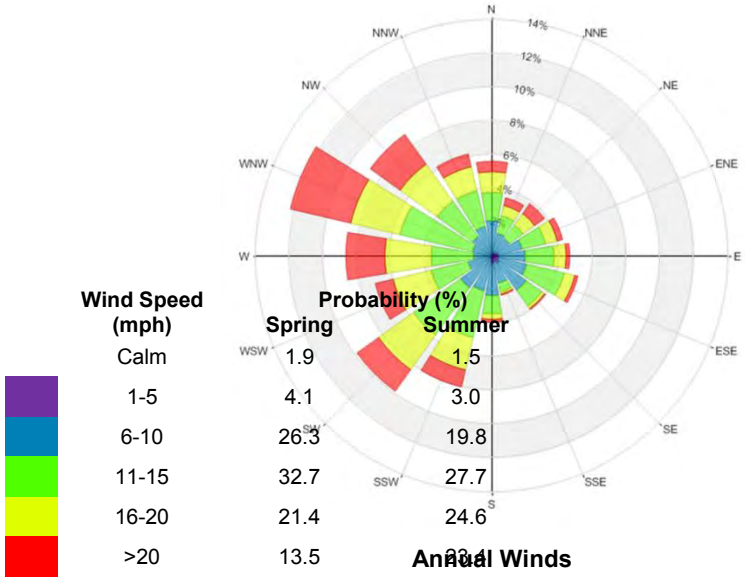
Image 2 – Site Plan

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.



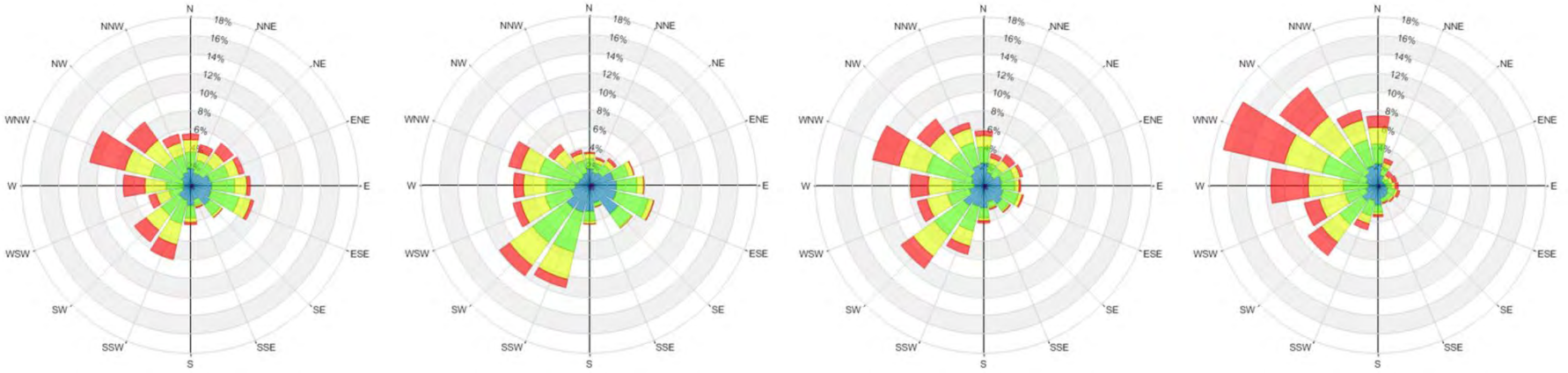


Image 3 - Directional Distribution (%) of Winds (Blowing From) - Boston Logan International Airport (1981 to 2011)

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

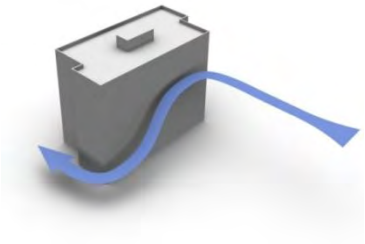


Image 5b – Corner Acceleration

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.

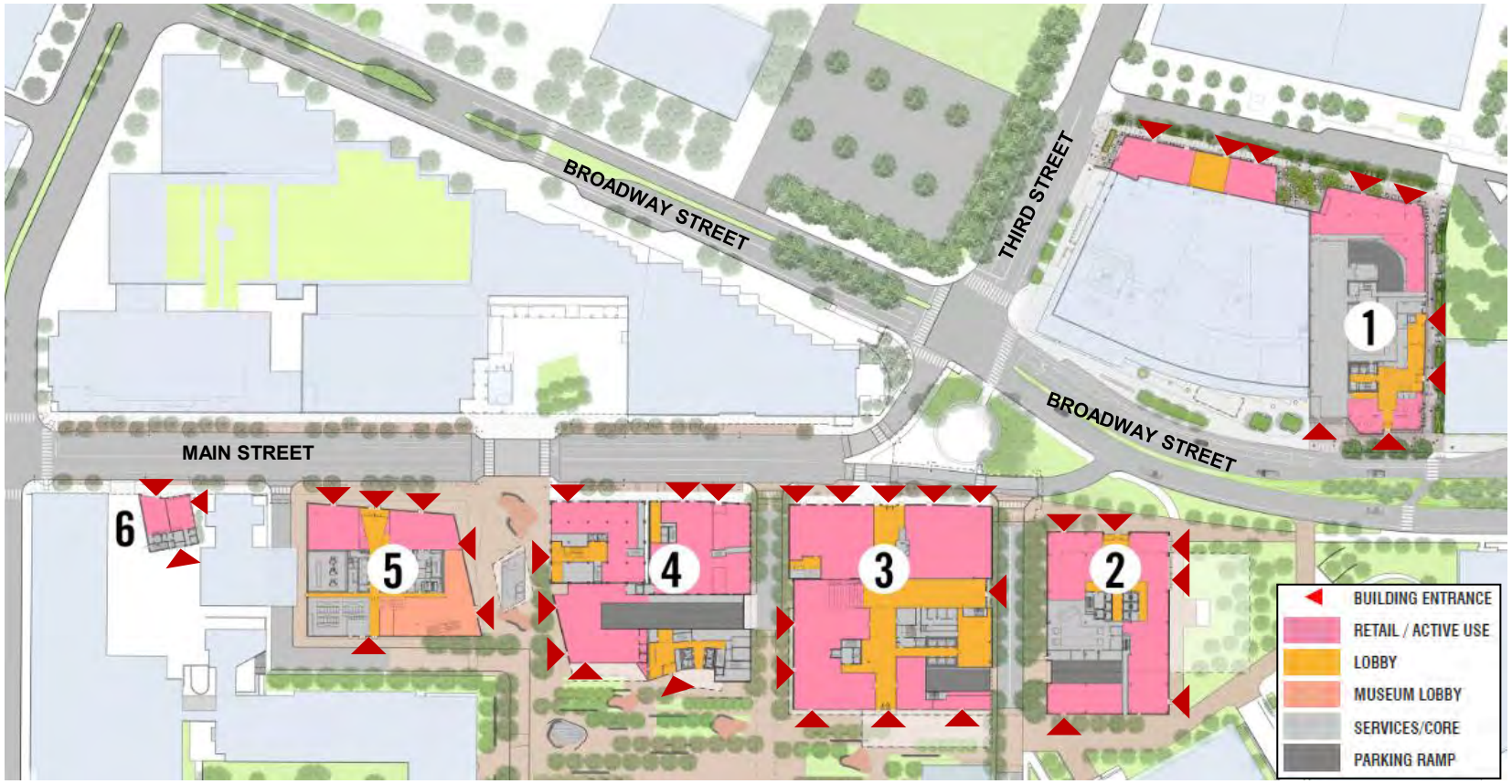


Image 6 – Wind Control Measures for Building Entrances

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.

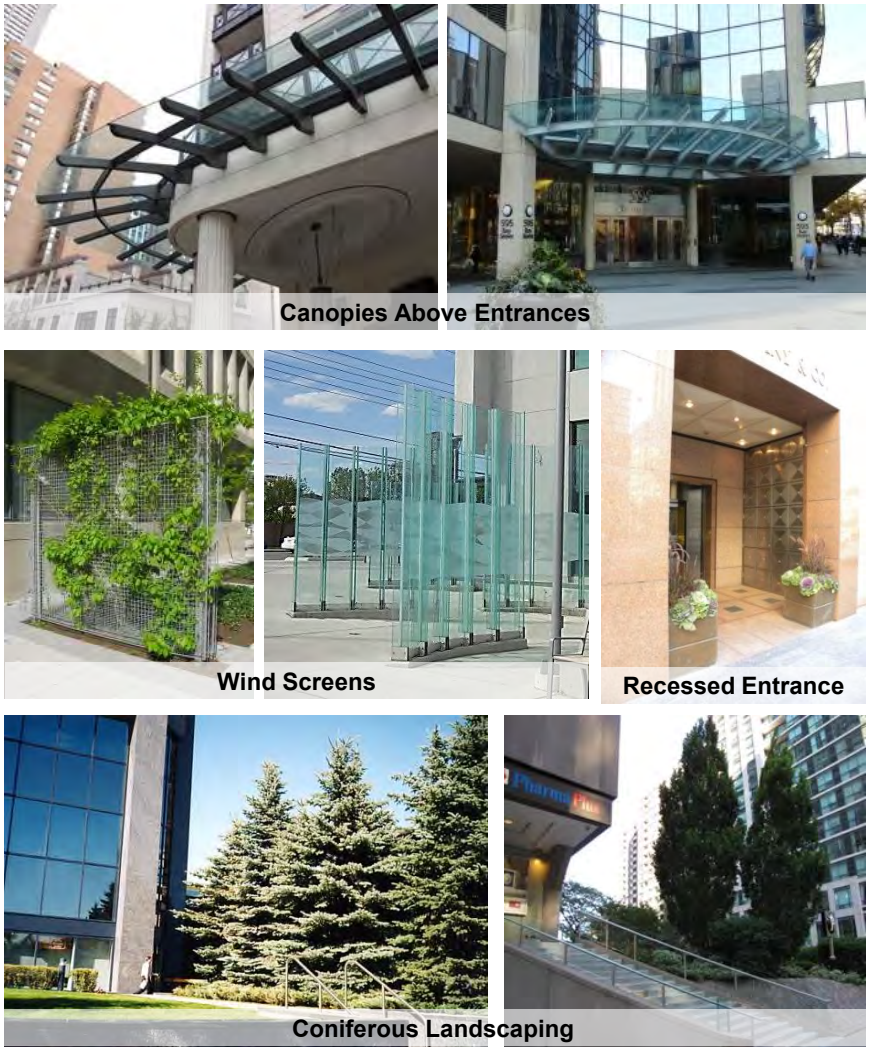


Image 7 – Wind Control Measures for Entrances and Sidewalks

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. NoMa Project LEED Scorecards

LEED v4 for New Construction - Kendall Square Building 1

last updated: June 1, 2015

Achievability			
hi	med	low	NP
59	23	24	4

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.

69 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.

13	1	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	2	1	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.

8	2	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	15	1	**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.
1	2			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	3	3	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)

8	6	2	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).
1	1	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)

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:

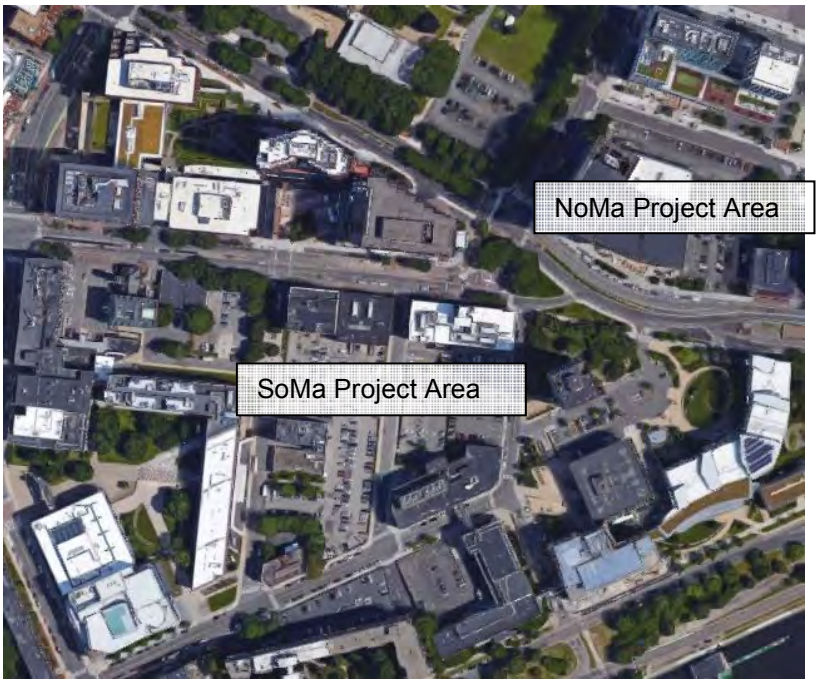
- Site 1 - This will be a residential tower with ground floor retail space designed by Elkus | Manfredi (MIT)
- Site 2 - This will be a future laboratory tower to be designed by Elkus | Manfredi (MITIMCo)
- Site 3 - This will be a new laboratory/office tower designed by Perkins + Will (MITIMCo)
- Site 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

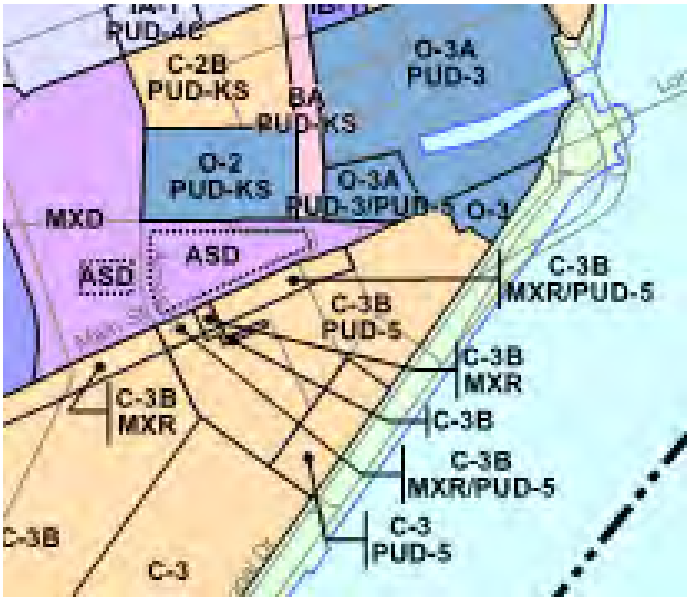
The figure below is an aerial photograph that shows the SoMa and NoMa project and surrounding community areas.



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

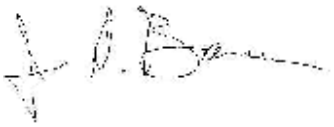
The sound emissions from emergency generators for SoMa and NoMa will be specified to address compliance with the MassDEP noise guidelines and City of Cambridge Noise Standards. Table 3 presents the initial sound estimates for the project-only equipment at representative community locations, which include 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

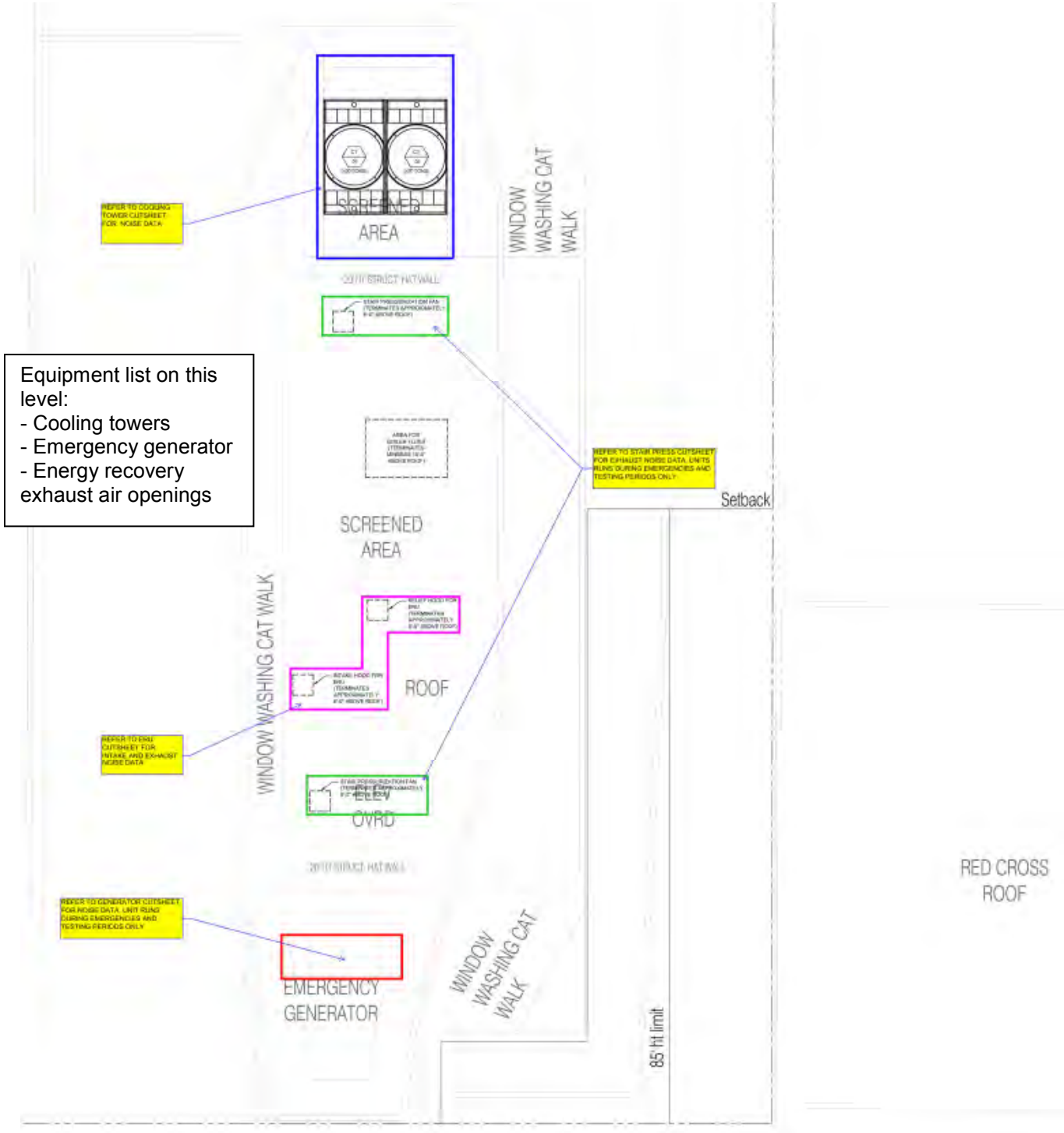
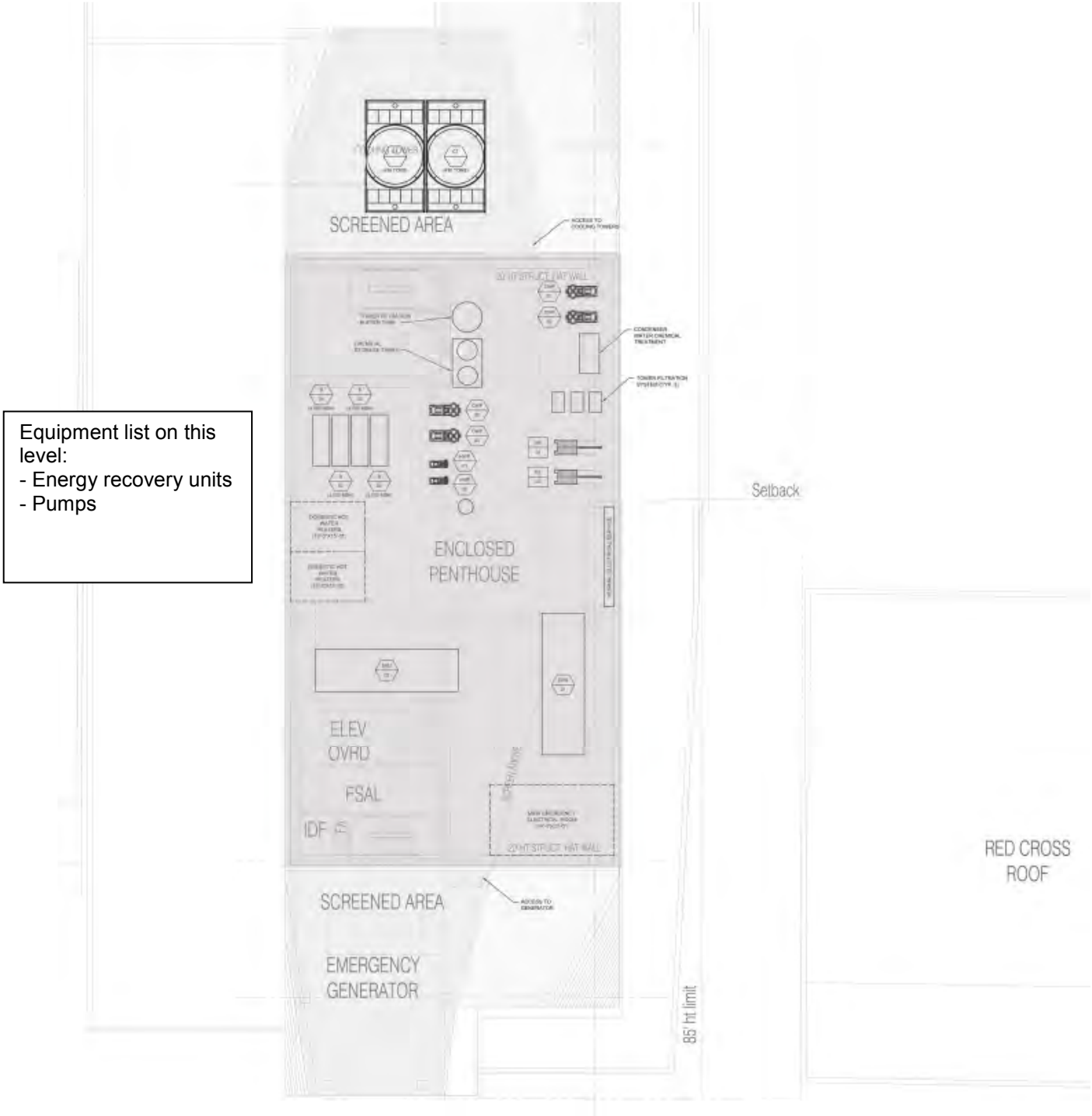


Figure 1-S1 (Con't). Preliminary Layout of Generator and Mechanical Equipment (Site 1).

ROOF AND PENTHOUSE LEVEL

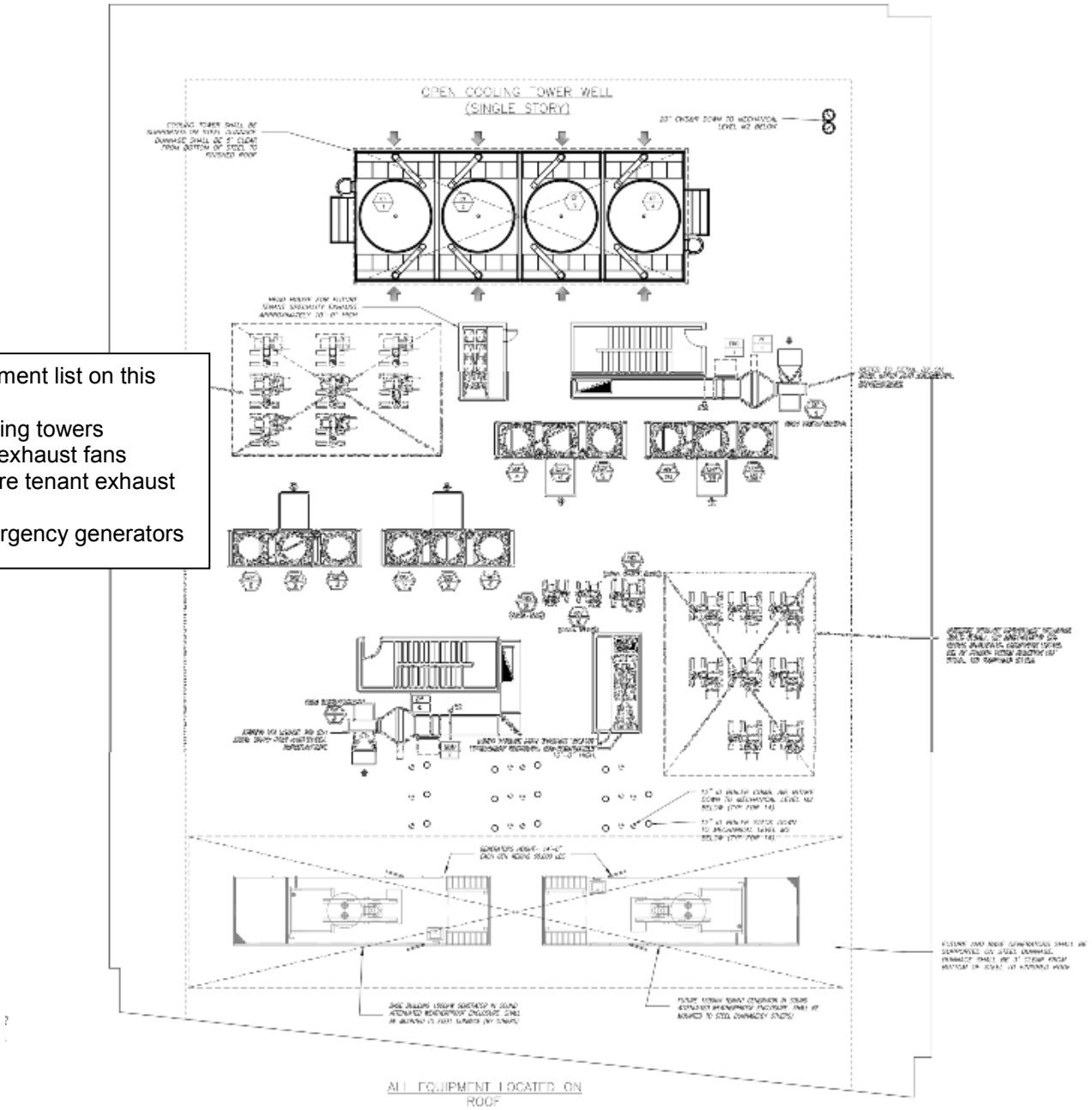


Equipment list on this level:
- Energy recovery units
- Pumps

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

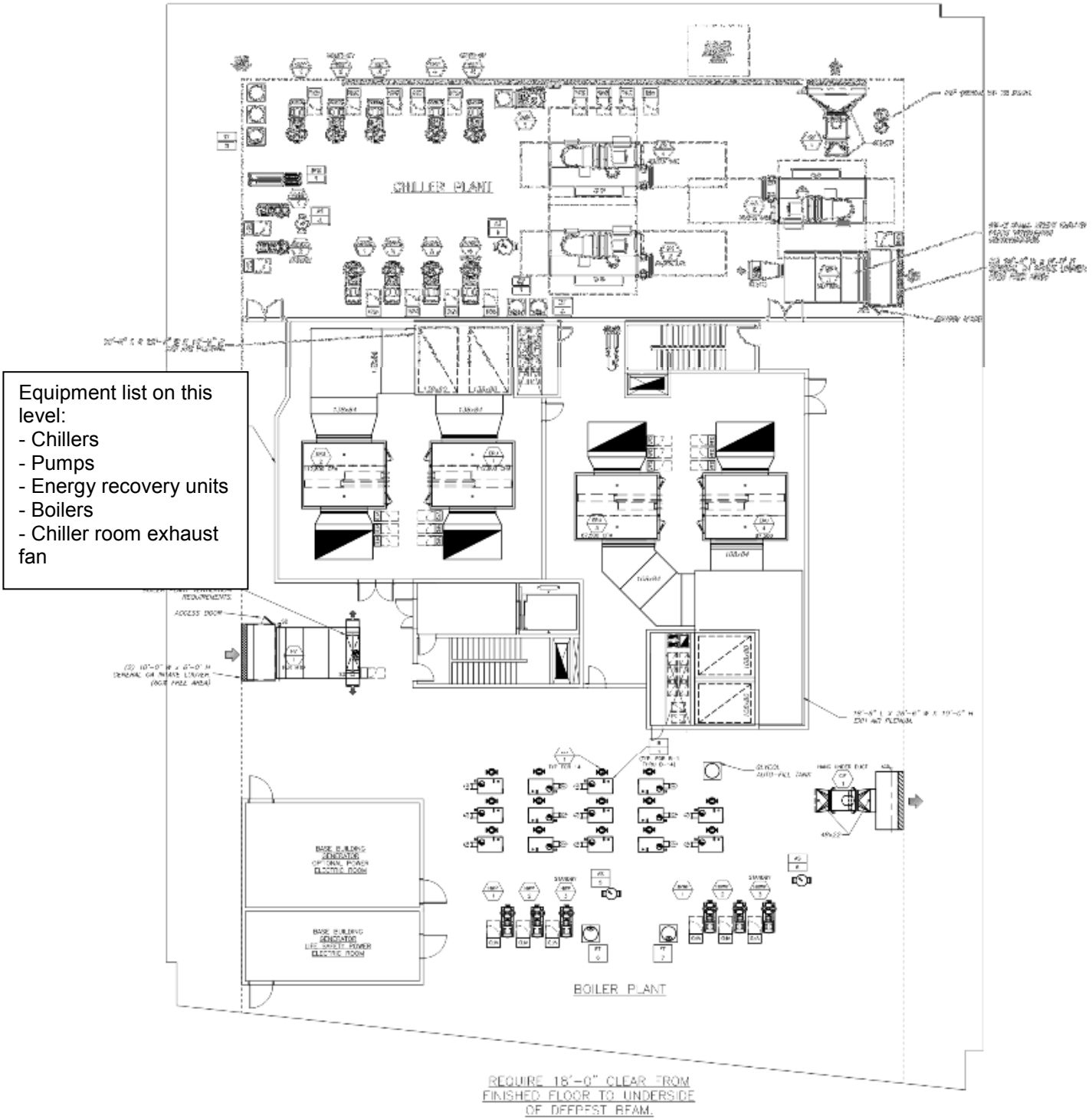


Figure 1-S3 (Con't). Preliminary Layout of Generator and Mechanical Equipment (Site 3).

PENTHOUSE LEVEL 1

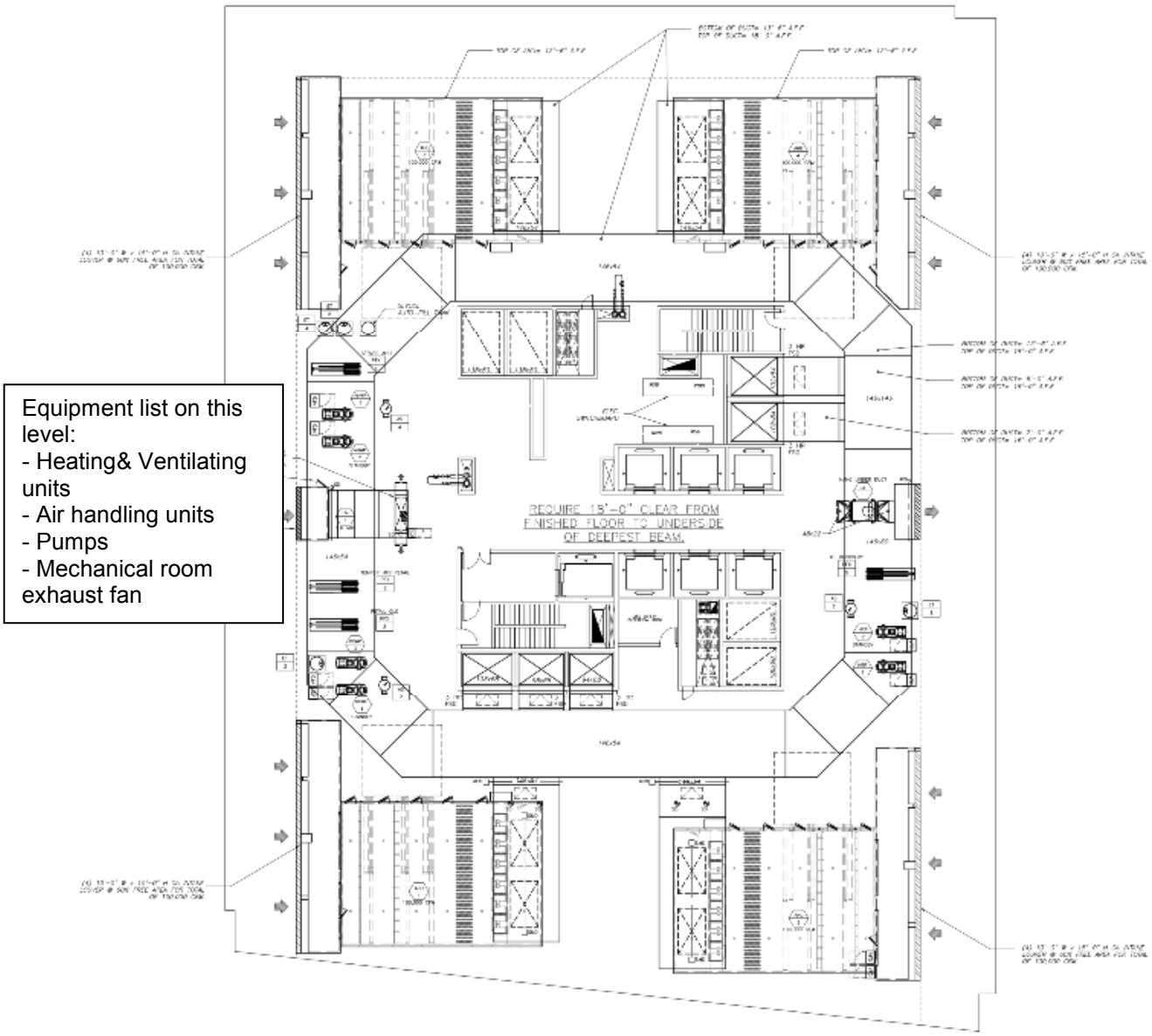


Figure 1-S4. Preliminary Layout of Generator and Mechanical Equipment (Site 4).

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

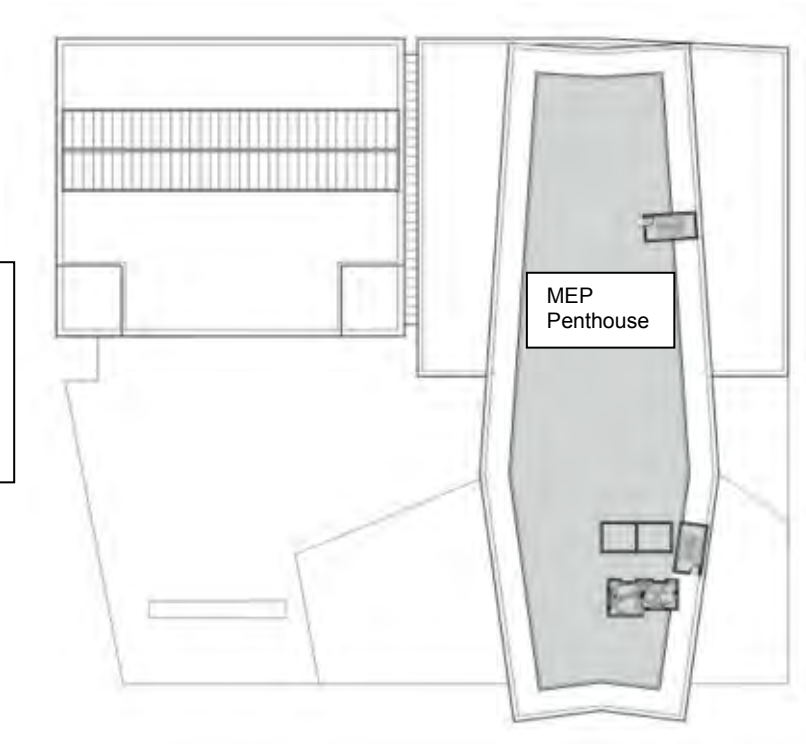
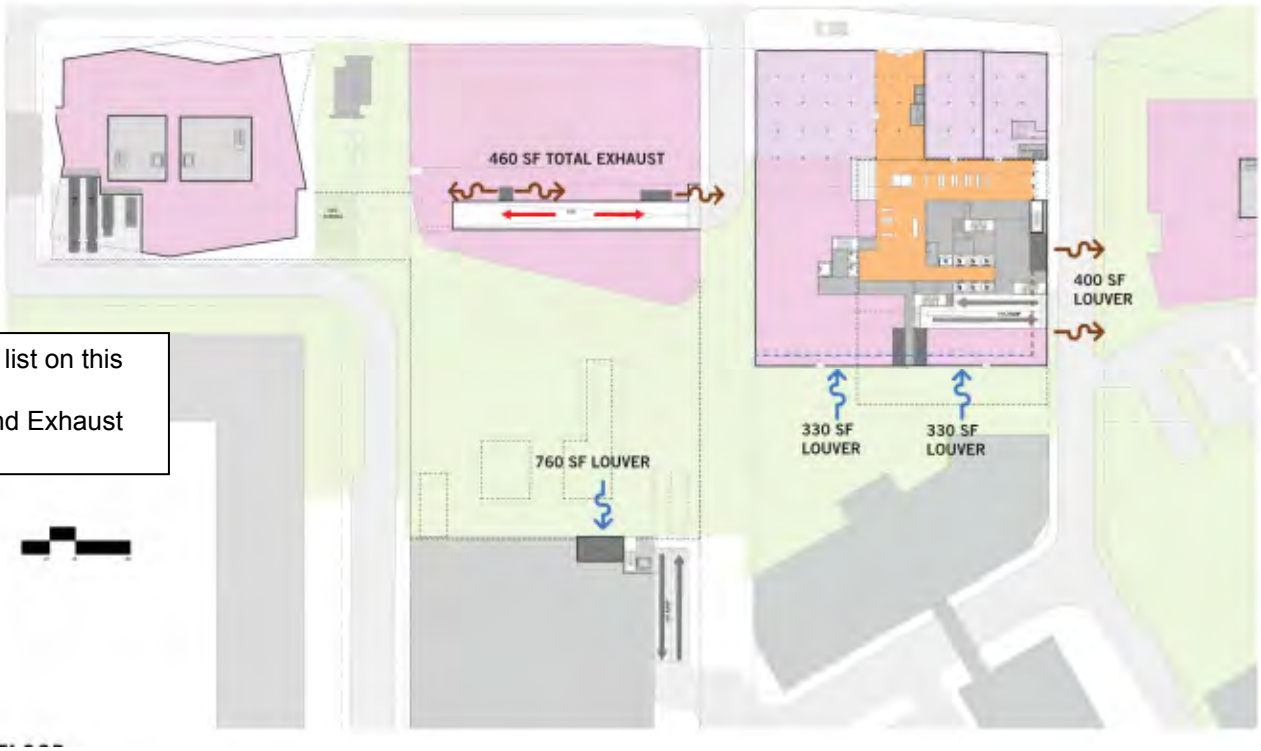


Figure 1-S4 (Con't). Preliminary Layout of Garage Level Mechanical Equipment (South Side of Site 4).

GROUND FLOOR



Equipment list on this level:
- Supply and Exhaust Fans

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

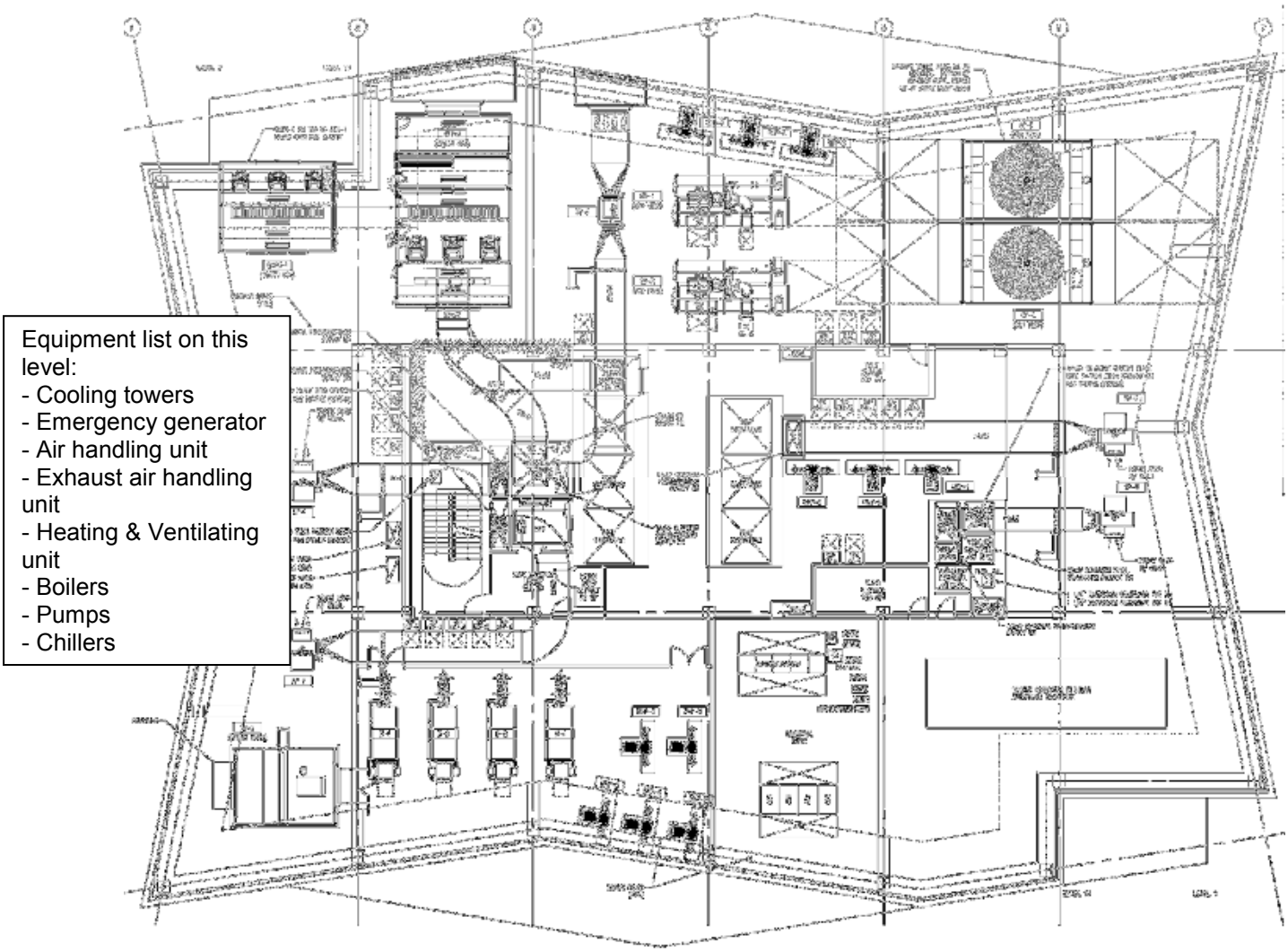


Figure 1-S6. Preliminary Layout of Mechanical Equipment (Site 6).

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

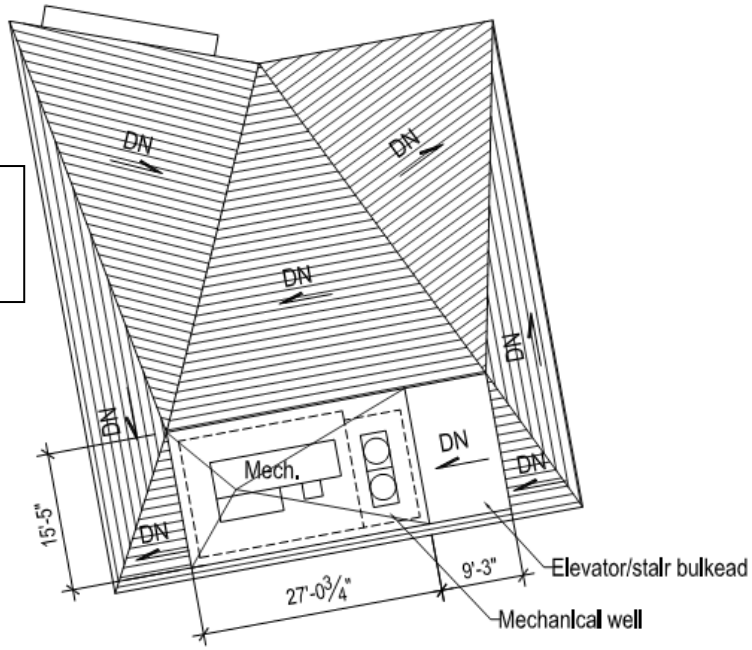


Figure 2. Aerial Photo Showing General Areas of Kendall SoMa/NoMa and Long-Term Sound Measurement Locations A to D (April/May 2015 Survey).

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

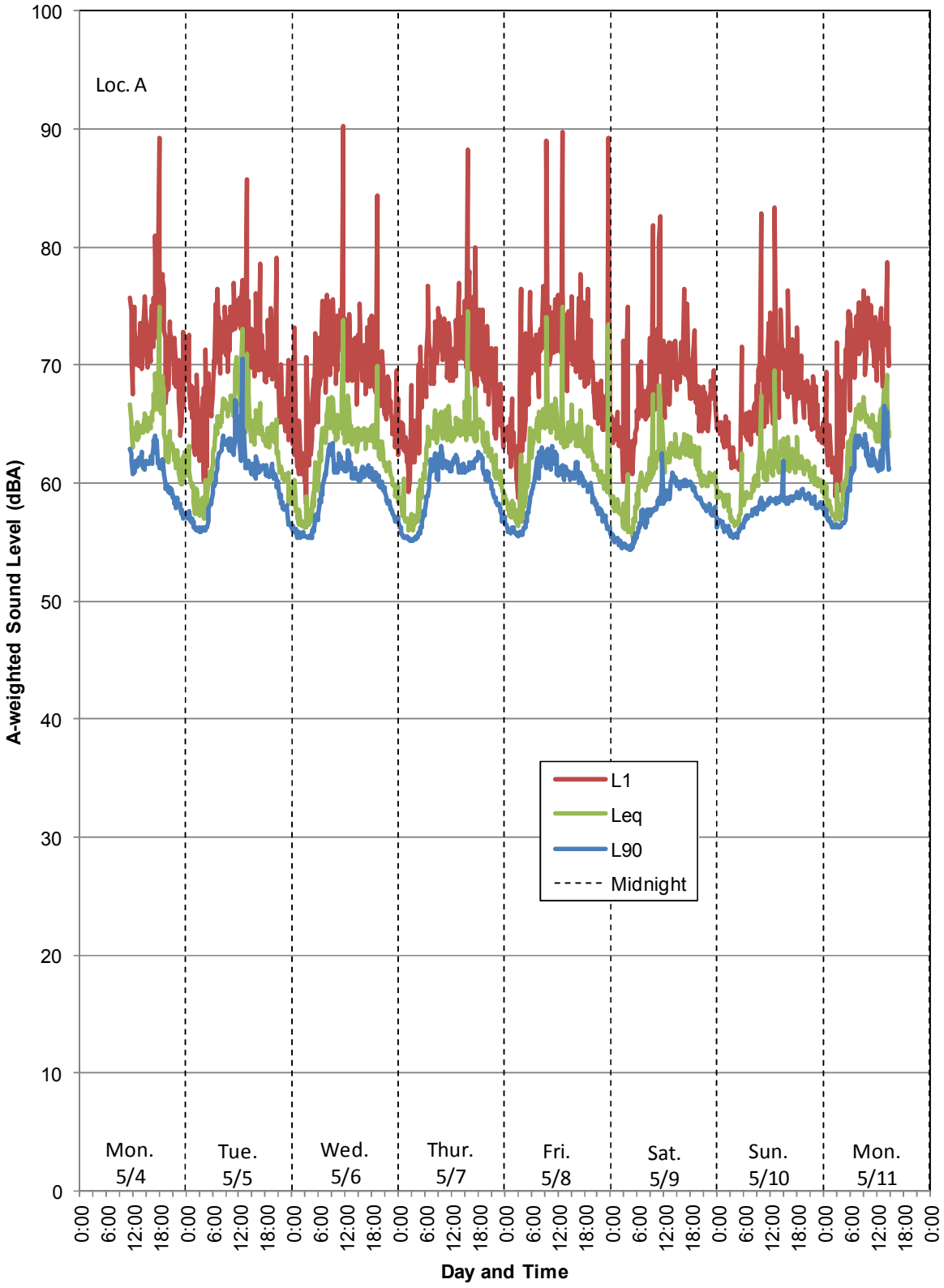


Figure 3b. L1, Leq, and L90 Sound Levels Measured for 10-Minute Intervals at Monitoring Location B (24 April to 1 May 2015).

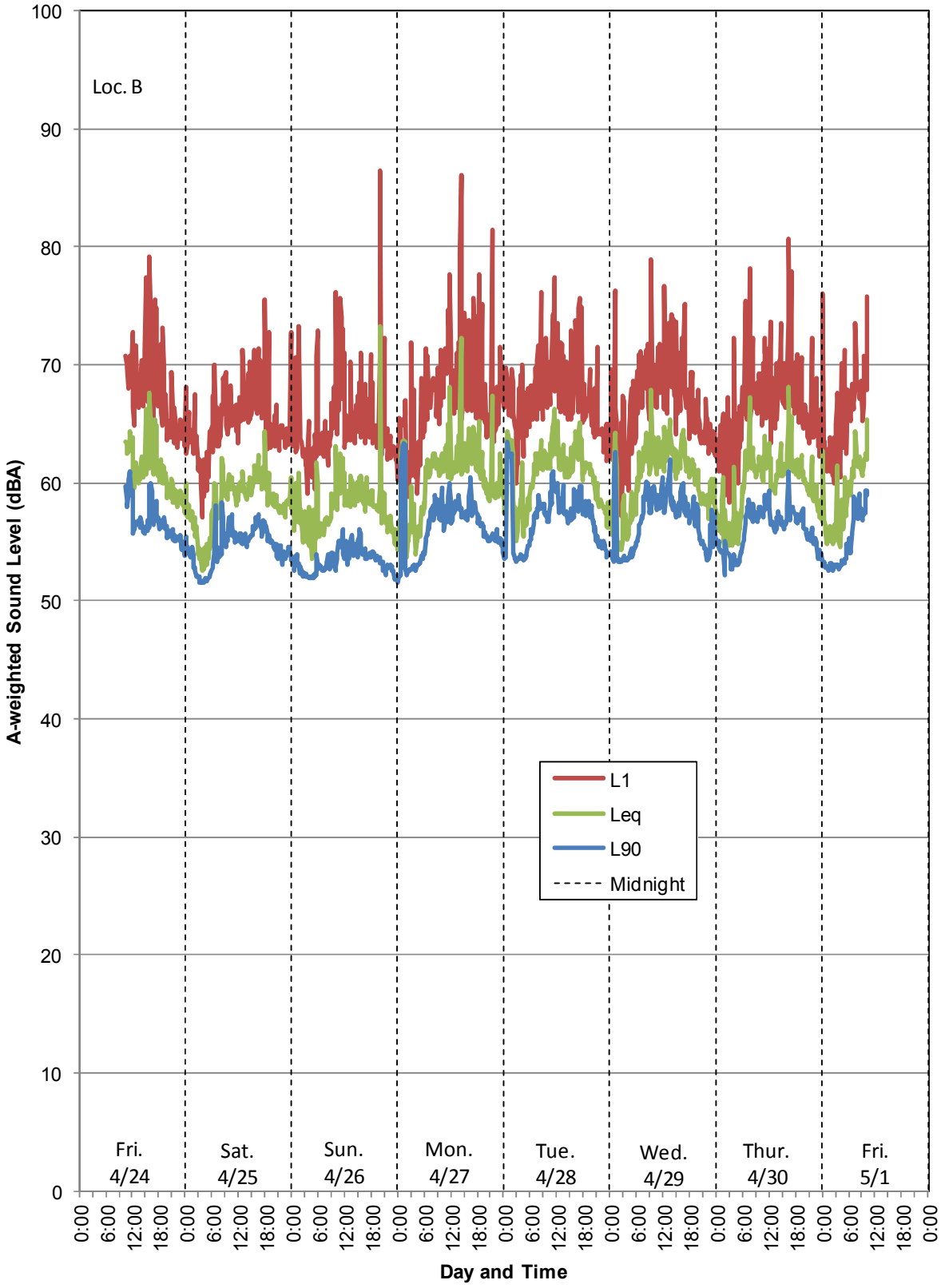


Figure 3c. L1, Leq, and L90 Sound Levels Measured for 10-Minute Intervals at Monitoring Location C (29 April to 7 May 2015).

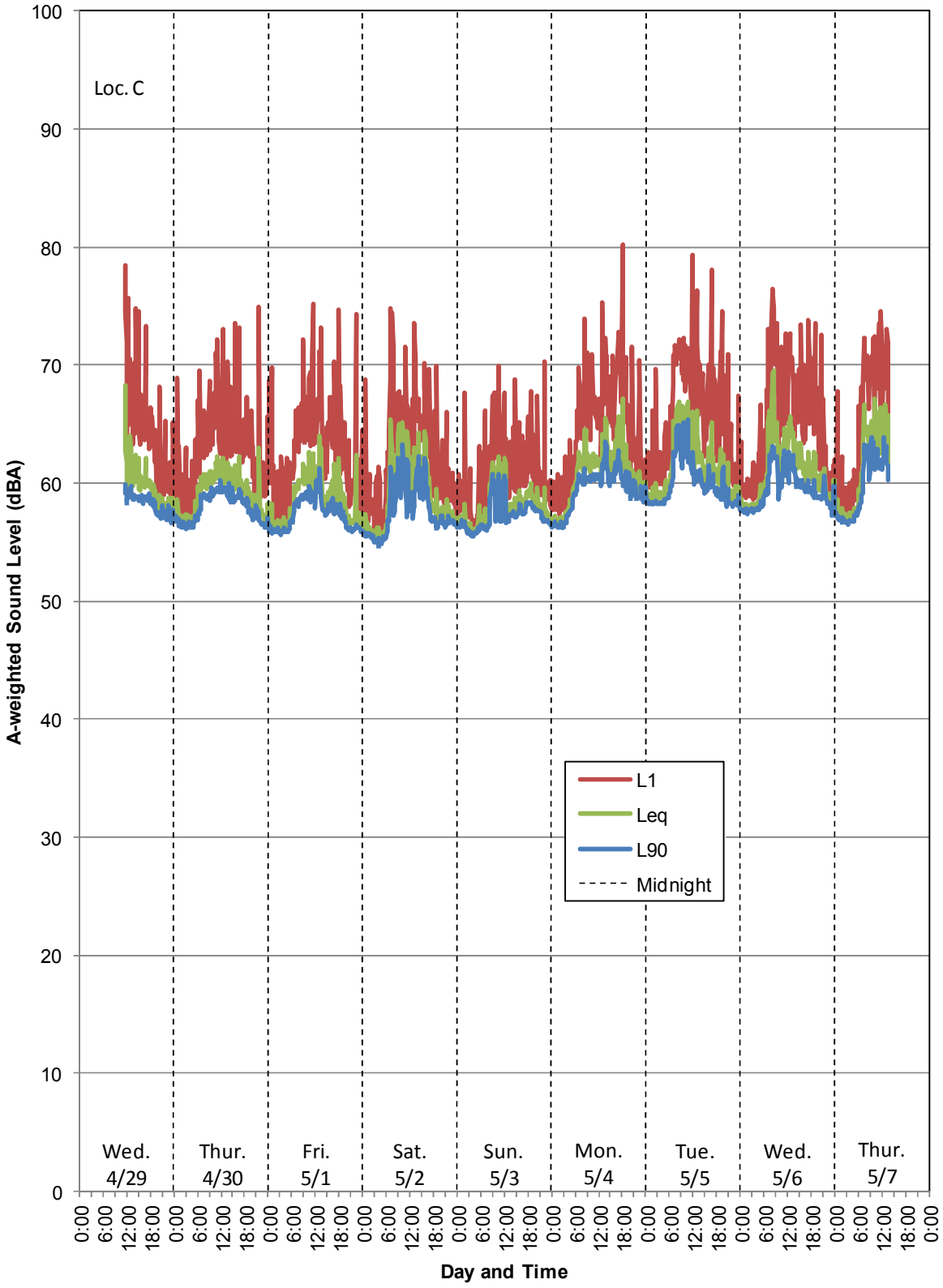


Figure 3d. L1, Leq, and L90 Sound Levels Measured for 10-Minute Intervals at Monitoring Location D (24 April to 1 May 2015).

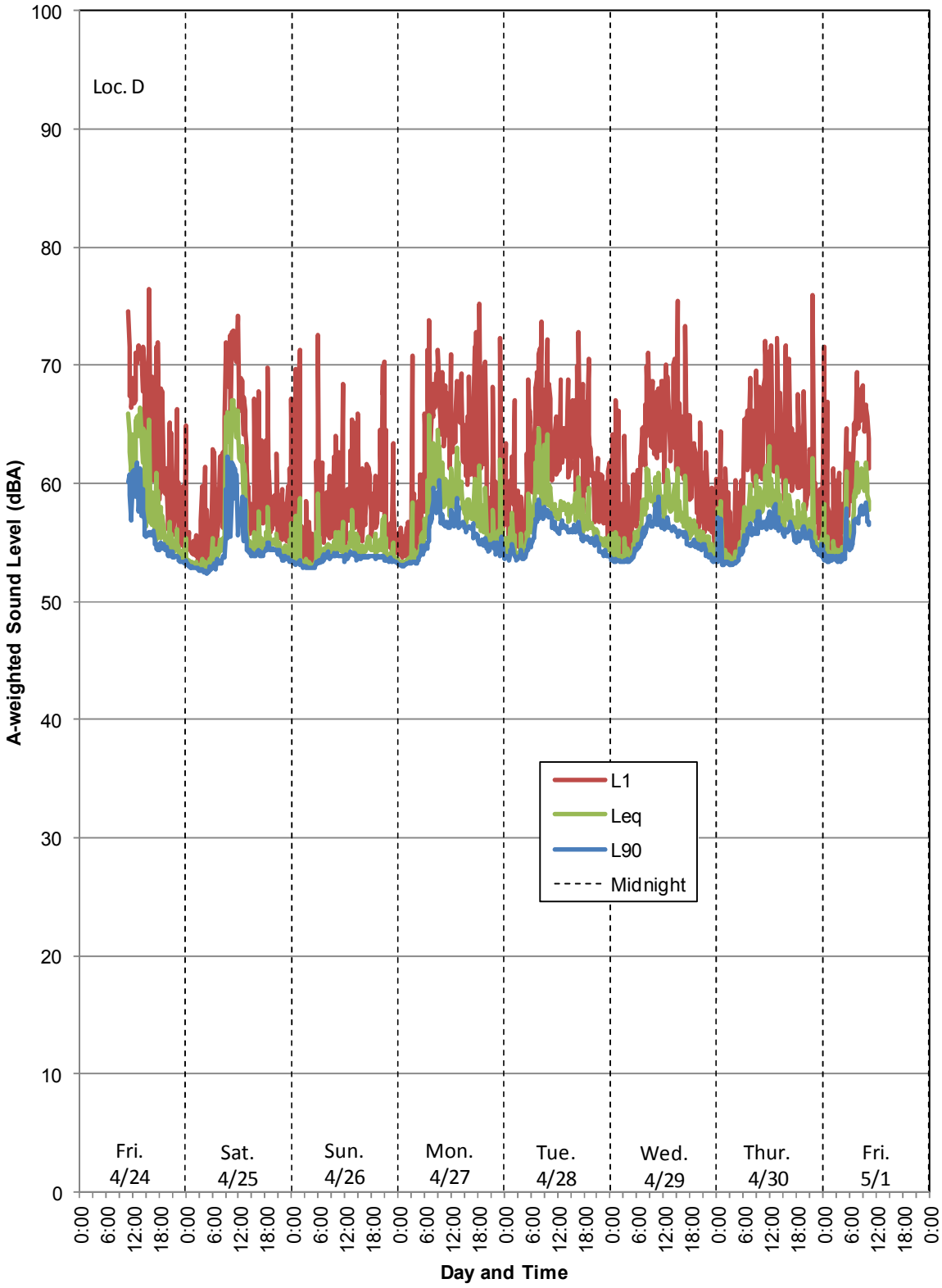


Figure 4. Aerial Photo Showing General Area of Kendall SoMa/NoMa and Short-Term Sound Measurement Locations 1 to 10 (April/May 2015 Survey).

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.

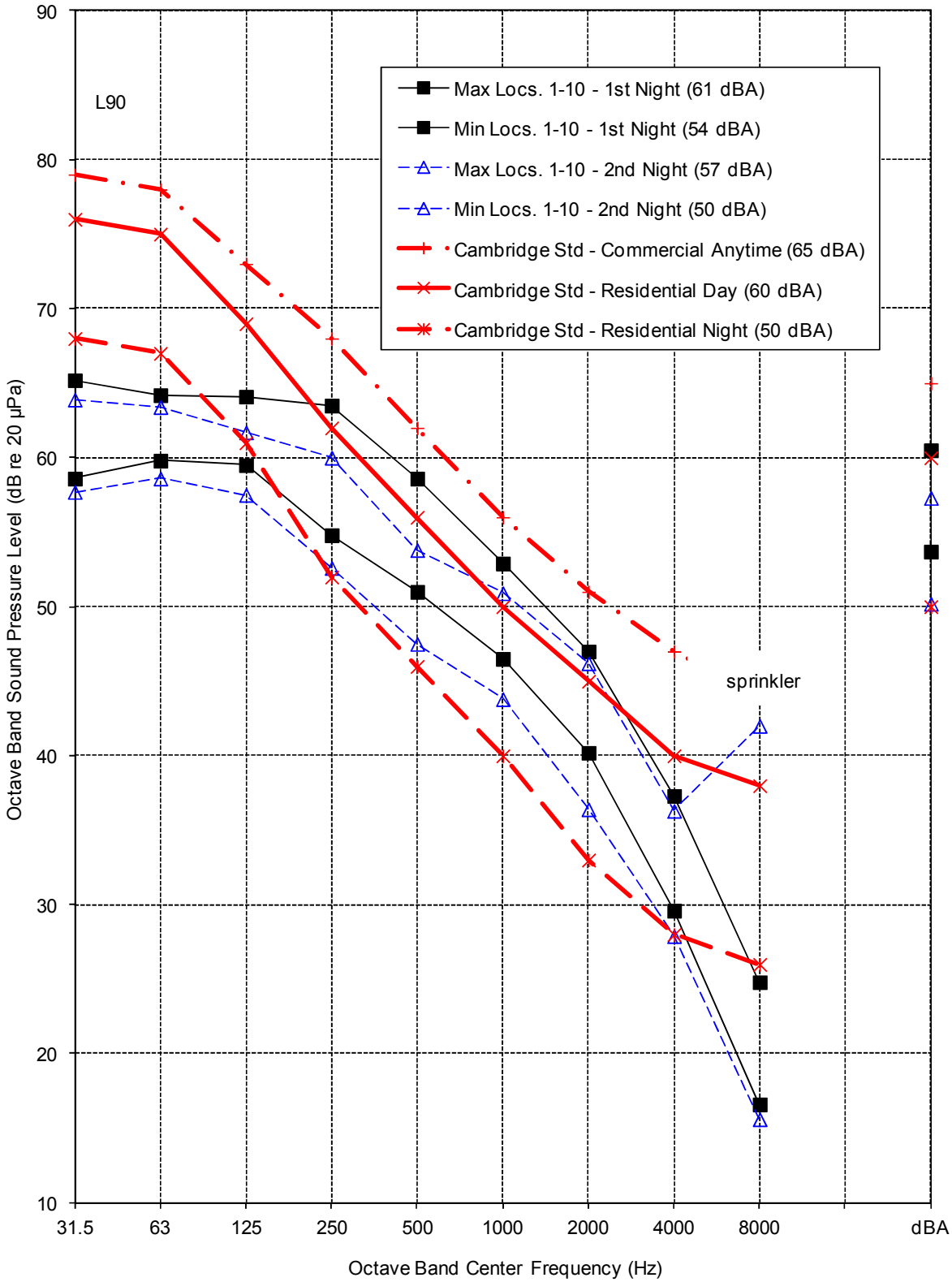


Figure 6. Loading Dock Study (shown in gray).

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: One Broadway **Application Date:** 07-27-2015

	Existing	Allowed or Required (max/min)	Proposed	Permitted
Lot Area (sq ft)	116,272	25,000	116,272	
Lot Width (ft)	365.41	0	365.41	
Total Gross Floor Area (sq ft)	267,069	267,069	662,069	
Residential Base	0	240,000	285,000	
Non-Residential Base	267,069		290,069	
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	0	No Min # (240,000 sf required)	290-300	
Base Units	0	No Min # (240,000 sf required)	290-300	
Inclusionary Bonus Units	0	N/A	N/A	
Base Lot Area / Unit (sq ft)	0	None	400.93-387.57 sf	
Total Lot Area / Unit (sq ft)	0	None	400.93-387.57 sf	
Building Height(s) (ft)	230	300	250	
Front Yard Setback (ft)	0	16' above 85'	16' above 85'	
Side Yard Setback (ft)	141.1	20'/36' above 85'	20'/36' above 85'	
Side Yard Setback (ft)	N/A	N/A	N/A	
Rear Yard Setback (ft)	N/A	N/A	N/A	
Open Space (% of Lot Area)				
Private Open Space				
Permeable Open Space				
Other Open Space (Specify)	15.6% **	15% (PUD-5) **	27.3% **	
Off-Street Parking Spaces	430	*	495*	
Long-Term Bicycle Parking	0	323*	323*	
Short-Term Bicycle Parking	0	43*	43*	
Loading Bays	4		6	

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

*See attached chart for specific breakdown of Gross Floor Area and FAR; Open Space and Required Off-Street Parking and Bicycle Parking;. ** Required open space is "Publicly Beneficial Open Space"

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**