35 CAMBRIDGE PARK DRIVE

SPECIAL PERMIT APPLICATION | 06.30.16

The Davis Companies

VHB Vanasse Hangen Brustlin, Inc.

SGA

ARCHITECTURE | PLANNING
INTERIOR DESIGN | VDC
BRANDED ENVIRONMENTS

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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: 35 Cambridgepark Drive

Zoning District: Office 2A/Alewife Overlay District (Triangle) 6

Applicant Name: TDC Development Group, LLC

Applicant Address: 125 High Street 21st Floor Boston, MA 02110

Contact Information: (617) 633-7731 dangelucci@thedaviscompanies.com

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.*

8.22.2a	Alteration of a pre-existing nonconforming use
20.95.1.5	1.75 FAR for non-residential use
20.95.34	Waiver of Yard Requirements
20.73	Flood Plan Overlay District Special Permit
20.96.3	Reduction in Open Space and Permeable Area

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

Project Narrative; Dimensional Form; Ownership Certificate; Supporting Statement; Photographs; Survey; Site Plan; Elevations; Floor Plans; Landscape Plan; Engineer's Report

Signature of Applicant: BCP Fan 6.28.11

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

b. SPECIAL PERMIT APPLICATION – SUMMARY OF APPLICATION

Project Name:
Address of Site: 35 Cambridgepark Drive
Applicant: TDC Development Group, LLC
Planning Board Project Number: (CDD)

Hearing Timeline (CDD)

Application Date:
Planning Board 1st Hearing Date: _____ *
(PUD Development Proposal, other special permit)
Planning Board Preliminary Determination: _____ *
(PUD Development Proposal)
Second Submission Date: _____ *
(PUD Final Development Plan)
Planning Board 2nd Hearing Date: _____ *
(PUD Final Development Plan)
Final Planning Board Action Date: _____ *
(PUD Final Development Plan, other special permit)
Deadline for Filing Decision: _____ *
**Subject to extension by mutual agreement of the Applicant and the Planning Board*

Requested Relief: (include other boards and commissions)

- Planning Board Special Permit
- Conservation Commission

Project Description

Brief Narrative: Applicant seeks to renovate existing technical office building by constructing a two story addition, relocating loading area, and creating open space through landscape and site improvements.

Project Size:

- Total GFA: 184,774 sf
- Non-residential uses GFA: 184,774 sf
- Site Area (acres and SF): 106,095 sf / 2.4 acres
- # of Parking Spaces: 327

Proposed Uses:

- # of Dwelling Units: N/A
- Other Uses none
- Open Space (% of the site and SF) _____

Proposed Dimensions:

- Height: 69'
- FAR: 1.75

INTRODUCTION

This is an application by The Davis Companies for a Special Permit to authorize the construction of a 47,139 sf addition to an existing three story building containing a technical office use. The subject property is located at 35 Cambridgepark Drive in the Triangle section of the Alewife Overlay District (AOD 6).

The Special Permit for additional FAR and reduced setbacks is being sought pursuant to Section 20.93.2. The applicant is also seeking a Flood Plain Special Permit pursuant to Section 20.70.

As set forth in the plans and related materials contained in this application, the project has been designed in accordance with the objectives, criteria and guidelines set forth in the Concord-Alewife Plan.

PROJECT NARRATIVE
35 CAMBRIDGE PARK DRIVE

SITE CHARACTERISTICS AND IMPROVEMENTS

The existing 35 Cambridge Park Drive site is currently comprised of two primary structures: a three-story steel and masonry office building (representing approximately 137,635 SF of Gross Floor Area) as well as a three-story steel and concrete structured parking facility (accommodating 351 parking spaces and exempt from the site's total Gross Floor Area). The existing office building currently includes a two-story extension to the east which faces the adjacent Alewife MBTA station. The edge facing the MBTA station currently consists of asphalt pavement, fencing along the Alewife Station Access Road and several pieces of outdoor mechanical and electrical equipment (including the primary building transformer and generator).

The proposed modifications to the site include an addition to the existing building, the demolition of the two-story extension and the relocation of the outdoor mechanical and electrical equipment. In addition to the renovation of the existing levels, which includes the re-cladding of the entire building, two new levels will be added vertically to the existing structure, for a total of five occupied levels of technical office use. This expansion represents approximately an additional 47,139 SF of Gross Floor Area, bringing the total Gross Floor Area to approximately 184,774 SF (which represents an FAR of 1.75). The footprint of the building will not significantly change, other than a minor extension at the south and east facades between levels 2-5. The building height will be approximately 69'-0" above the average grade (excluding the mechanical penthouse and screened area), which is within the allowable zoning height of 85'-0. The garage will remain (with minor modifications) and the total parking count will be reduced by approximately 20 spaces, totaling 331 spaces.

The eastern edge of the site has been given special consideration through the design process. This space is of significant importance as it constitutes an urban "gateway" to Cambridge Park Drive and welcomes pedestrians from the adjacent Alewife MBTA station. The removal of the existing two-story extension at this part of the site results in additional open space to accommodate active uses and considerable public realm upgrades to facilitate a softer, more engaging pedestrian experience at this edge. Approximately 7,500 SF of retail use will be provided on the ground level to enliven this critical corner of the site and to activate the street edge at Cambridge Park Drive. This retail edge, in concert with landscape features, hardscaped areas and new and existing street trees, will establish an active urban streetscape along Cambridge Park Drive.

BUILDING DESIGN

The proposed building massing is organized to create two distinct volumes which reduce the scale of the building façade along Cambridge Park Drive. A diverse composition of façade materials will be employed to further define these volumes, with one being comprised of mostly glazing and the other consisting of precast concrete panels with generous window openings. The scale and proportion of the window openings, mullion pattern and spacing between the two facades are similar along Cambridge Park Drive in order to establish a strong connection between the two volumes. The main building entrance is recessed between the two volumes. The façade facing the Alewife MBTA station is highly transparent and includes a notch which marks the new pedestrian entry at the ground level.

At the ground plane, the retail edge will employ large areas of glazing which will frame inset entry areas. Signage and graphics will be located at the ground level to support the retail use. Vertical fins and accent panels (consisting of opaque materials with a "warm" feel) are incorporated into the façade to reinforce a comfortable pedestrian scale. Areas of landscape and hardscape are organized along this edge to provide an active urban streetscape, accommodating outdoor seating, gathering areas and pedestrian circulation. Both building entries will have an articulated canopy to mark these points for pedestrians. Additionally, two loading spaces will be provided at the east edge of the building which will be significantly buffered from the building entrance with landscape elements.

Precast concrete panels and glazing are used at the north and west façades as well to provide a consistent design language with the primary façade on Cambridge Park Drive. At the roof level, the mechanical penthouse is integrated into the façade and will be clad in a combination of translucent and opaque panels.

Long term bicycle parking will be located within the existing garage. This space will provide 58 long term spaces and will also feature bicycle repair stations, improved lighting and finishes that will promote cycling. Additional short term bicycle parking will be provided adjacent to the building entries and retail spaces at the south and east edges of the site to accommodate 18 bicycles.

Certain mechanical and electrical equipment will be located within the mechanical penthouse, while other equipment, such as air handling units, cooling towers, and exhaust units will be located behind screens for both visual and acoustic purposes. To employ best practices related to resiliency challenges, the building's major electrical equipment, including the switchgear, transformer and generator, will be located at the upper levels of the garage in an enclosed room.

Sustainability is a significant consideration of this design concept with a primary focus on retaining and reusing the existing structure. Additional measures, including the use of high-efficiency mechanical equipment, high-performance cladding materials and other environmentally responsible strategies will allow this building to be certifiable at the LEED Silver threshold. This building will comply with the stretch energy code for the City of Cambridge and the Green Building requirements of Section 22.20 of the Zoning Ordinance.

OWNERSHIP CERTIFICATE

Project Address: 35 CambridgePark Drive **Application Date:**

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

I hereby authorize the following Applicant: DIV 35 CPD, LLC

at the following address: c/o The Davis Cos., 125 High St., Boston, MA 02110

to apply for a special permit for:

on premises located at: 35 CambridgePark Drive

for which the record title stands in the name of: DIV 35 CPD, LLC

whose address is: c/o The Davis Cos., 125 High Street, Boston, MA 02110

by a deed duly recorded in the:

Registry of Deeds of County: Middlesex Book: 66935 Page: 204

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

DIV 35 CPD, LLC
By: Fund III Manager Corp., its manager

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

By: Richard McCready
Title: President

To be completed by Notary Public:

Commonwealth of Massachusetts, County of Suffolk

The above named RICHARD McCREADY personally appeared before me,

on the month, day and year April 8, 2016 and made oath that the above statement is true.

Notary: Diane K. Remsberg

My Commission expires: 6/19/20

DIANE K. REMSBERG
Notary Public
Commonwealth of Massachusetts
My Commission Expires June 19, 2020

DIMENSIONAL FORM

Project Address: 35 Cambridgepark Drive **Application Date:**

	Existing	Allowed or Required (max/min)	Proposed	Permitted
Lot Area (sq ft)	106,095 SF		106,095 SF	
Lot Width (ft)				
Total Gross Floor Area (sq ft)	137,635 SF	185,666 SF	184,815 SF	
Residential Base				
Non-Residential Base			184,815 SF	
Inclusionary Housing Bonus				
Total Floor Area Ratio				
Residential Base				
Non-Residential Base	1.30	1.75 *	1.75	
Inclusionary Housing Bonus				
Total Dwelling Units	N/A	N/A	N/A	
Base Units				
Inclusionary Bonus Units				
Base Lot Area / Unit (sq ft)				
Total Lot Area / Unit (sq ft)				
Building Height(s) (ft)	51'-4"	85'-0"	69'-0"	
Front Yard Setback | CPD	17'-4"	15'-0" *	16'-0" **	
Front Yard Setback | Alewife	varies	15'-0" *	51'-4" **	
Side Yard Setback	varies	waived *	9'-2" **	
Side Yard Setback	0'-0"	waived *	0'-0" ***	
Open Space (% of Lot Area)	N/A			
Private Open Space	N/A			
Permeable Open Space	10,635 SF	15,913 SF	12,464 SF	
Other Open Space (Specify)				
Off-Street Parking Spaces	351	177 min.	331	
Long-Term Bicycle Parking	20	55	58	
Short-Term Bicycle Parking	0	14	18	
Loading Bays	1	2	2	

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

* upon the issuance of a Special Permit
** setback varies - see plans
*** existing building to remain

SUPPORTING STATEMENT FOR A SPECIAL PERMIT
COMPLIANCE WITH SECTION 10.40

A. REQUIREMENTS OF THE ORDINANCE CAN OR WILL BE MET FOR THE FOLLOWING REASON:

The proposed renovation and expansion of the existing structure and the associated site improvements have been designed in accordance with the objectives, criteria and guidelines of the Concord-Alewife Plan. As a result, the project, as proposed, satisfies the requirements of Section 20.93.2 of the Ordinance.

B. TRAFFIC GENERATED OR PATTERN OF ACCESS OR EGRESS WOULD NOT CAUSE CONGESTION HAZARD, OR SUBSTANTIAL CHANGE IN ESTABLISHED NEIGHBORHOOD CHARACTER OR THE FOLLOWING REASONS:

No additional parking spaces will be provided on the site. Rather, it is proposed that there will be a reduction in vehicle parking spaces in the existing parking garage supporting the property. As a result, it is expected that there will be no significant change in vehiclular traffic associated with the garage. The spaces freed-up by the elimination of vehicle parking spaces will enable the provision of much-enhanced bicycle parking and facilities on the property. The proposed new curb-cut will significantly improve access for delivery vehicles. The existing curb-cut on Cambridgepark Drive of the property will be improved to reduce the impact of its proximity to the Cambridgepark Drive/Alewife Station Access Road intersection.

C. THE CONTINUED OPERATION OF OR THE DEVELOPMENT OF ADJACENT USES AS PERMITTED IN THE ZONING ORDINANCE WOULD NOT BE ADVERSELY AFFECTED BY THE NATURE OF THE PROPOSED USE FOR THE FOLLOWING REASONS:

The proposal does not change the existing use of the property as technical office for R&D. (Sec 4.34.f.) The use is prevalent in Alewife Overlay District, including the most proximate and immediate abutter.

D. NUISANCE OF HAZARD WOULD NOT BE CREATED TO THE DETRIMENT OF THE HEALTH, SAFETY AND/OR WELFARE OF THE OCCUPANTS OF THE PROPOSED USE OR THE CITIZENS OF THE CITY FOR THE FOLLOWING REASONS:

The proposed renovations and expansions of the building will comply with the Green Building requirements of Section 22 of the Zoning Ordinance and the current edition of the State Building Code. As a result, the occupants of the renovated building and the citizens of the City will experience a more healthy environment.

E. FOR OTHER REASONS, THE PROPOSED USE WOULD NOT IMPAIR THE INTEGRITY OF THE DISTRICT OR ADJOINING DISTRICT OR OTHERWISE DEROGATE FROM THE INTENT OR PURPOSE OF THIS ORDINANCE FOR THE FOLLOWING REASONS:

The proposed project will result in the creation of a sustainable building containing green open space, permeable areas, improved stormwater management, enhanced pedestrian circulation, and an active group floor consistent with the City's Urban Design Objectives. As a result, the proposed project is entirely consistent with the General Purpose of the Alewife Overlay Districts enumerated in Section 20.92 of the rdinance.

CRITERIA FOR SPECIAL PERMITS
SECTION 20.93.2

I. COMPLIANCE WITH THE GOALS OF THE CONCORD ALEWIFE PLAN

The proposed project achieves several of the goals of the Concord-Alewife Plan for the Triangle District.

GUIDELINE: Encourage more transit-oriented development. Allow higher density and height to take advantage
of proximity to Alewife Station.

The project is the most proximate building in the Alewife Overlay District to Alewife Station and is thus well suited for the increased FAR allowed for in AOD-6.

GUIDELINE: Continue to allow commercial development to be focused in this area, while also encouraging housing close to the T station.

The building has accommodated an office use at this site since the early 1980's. The proposed project allows for the continuation of that use in a renovated and expanded building that meets the City's requirements for sustainability and efficiency.

GUIDELINE: Create public access to the Alewife Reservation from Cambridgepark Drive.

Public access to the Alewife Reservation has already been created at the end of Cambridgepark Drive. The proposed site improvements associated with this project will enhance the pedestrian connection from Alewife Station to the sidewalk on Cambridgepark Drive that leads to the public access into the Alewife Reservation.

GUIDELINE: Improve bicycle and pedestrian connections among the Minuteman Trail, Belmont Path, Linear Park, and a future pathway along the Watertown rail line.

The proposed project will greatly enhance the building's appeal to cyclists through the creation of long term bicycle parking and a bicycle repair room for employees.

II. COMPLIANCE WITH THE GUIDELINES OF THE CONCORD-ALEWIFE PLAN

The building design and site improvements are consistent with the Guidelines of the Triangle District (AOD-6)

GUIDELINE: Create a pedestrian-friendly environment along Cambridgepark Drive.

A widened sidewalk with café style seating and landscaping will be created along Cambridgepark Drive.

GUIDELINE: Provide small setbacks (5 to 15 feet) from the right-of-way for café seating, benches, or small open spaces.

A fifteen foot setback will be created along Cambridgepark Drive. Portions of the ground floor will be devoted to active uses such as retail and restaurants.

GUIDELINE: Screen service areas from Cambridgepark Drive.

All loading will occur away from Cambridgepark Drive. In addition, existing outdoor mechanical and electrical equipment, including the primary transformer and generator will be relocated away from the sidewalk edge along the Alewife T Access Road.

GUIDELINE: Provide pedestrian links that strengthen physical connections to Alewife Reservation, consistent with its master plan.

The enlarged and improved sidewalk along Cambridgepark Drive will provide pedestrians with a stronger physical connection to the sidewalk that leads to the Alewife Reservation.

GUIDELINE: Create building height / façade setbacks between 85' and 105'.

The proposed building height will be 69'.

GUIDELINE: Site new development to preserve right-of-way for future crossing of the railroad track to connect the Triangle and Quadrangle.

Unlike the sites on the opposite side of Cambridgepark Drive, this site is not adjacent to the railroad tracks that separate the Triangle and Quadrangle.

vhb

Memorandum

To: Cambridge Planning Board

Date: June 16, 2016

Project #: 13511.00

From: William Nichols, PE
Howard Moshier, PE

Re: 35 Cambridgepark Drive Redevelopment
Preliminary Stormwater & Floodplain Overlay District
Impact Summary

Based on a review of the Federal Emergency Management Agency (FEMA) maps and current topographic information, a portion of the Project site is located in the Flood Plain Overlay District. This memorandum serves to summarize the Project's expected impact on floodplain issues as identified in City of Cambridge Zoning Article 20.70 – Flood Plain Overlay District. This memorandum also summarizes the Project's stormwater management objectives. Included herein are the following:

- Description of flood plain elevations;
- Description of existing and proposed site surface conditions;
- Stormwater approach narrative;
- Compensatory storage narrative

The Project is providing the detailed landscape plan separately in the Special Permit Application.

Flood Elevations

A portion of the site is located within the limits of the Special Flood Hazard Area designated as Zone AE according to the Middlesex County Flood Insurance Rate Map (#25017C0419E dated June 4, 2010) issued by FEMA, and as determined by a field survey performed by Otte & Dwyer, Inc. in June 2016. The current 100-year flood elevation is +7 NAVD88 (EL. +18.66' Cambridge City Base (CCB)) and is presented in Figure 1. Cambridge Department of Public Works (CDPW) provided preliminary estimated 100-year flood elevations for design year 2030 (EL. +19.10' CCB) and 2070 (EL. +22.50' CCB). The design year 2030 100-year flood plain limit is shown on Figure 1. As noted on Figure 1, the current 100-year flood elevation limit based on field-measured elevations varies from the limits shown on FEMA mapping. For the purposes of all discussions herein (unless otherwise noted), impacts are measured based on the surveyed current 100-year flood elevation of +18.66 CCB.

Site Surface Conditions

Under existing conditions, the project site is primarily occupied by building roofs, paved areas, and a garage structure planned to remain. Figure 2 attached presents an overview of the pre-development pervious and impervious surfaces. Figure 3 presents the currently proposed post-construction surface condition. As indicated below in Table 1, the redevelopment project is currently proposing a net *increase* of pervious surface area. This change is expected to reduce stormwater rates and volumes from current conditions. The proposed permeable decking shown on Figure 3 has not been evaluated for its infiltration capacity at this time. Upon final analysis the decking could provide further

COMMONWEALTH OF MASSACHUSETTS
HOWARD F. MOSHIER
CIVIL
No. 45271
REGISTERED PROFESSIONAL ENGINEER

6-16-16

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vhb

Memorandum

stormwater benefits. Therefore, for the purposes of this memorandum, the decking has been treated as an impermeable surface.

Table 1: Site Surface Area Summary

	Pre-development (sf)	Post-development (sf)	Change (sf)
Impervious Surface Area	95,457	93,628	-1,829
Pervious Surface Area	10,635	12,464	+1,829

Stormwater Management Approach

The Project developed a conceptual stormwater management and grading approach to better understand the Project's impacts on stormwater quantities. Figure 4 provides the conceptual site plan.

As proposed, stormwater runoff from roof areas, ground level parking and plaza areas is expected be collected and routed to a detention/infiltration system as shown on Figure 4. In the event that existing geotechnical conditions do not allow for infiltration meeting Cambridge DPW guidance, the conceptual site plan contemplates overflow to be routed through a proprietary treatment device to provide stormwater quality benefits.

At this time the proposed site plan is conceptual and subject to review by Cambridge DPW and the Cambridge Conservation Commission. During the permitting process, it is conceivable that the proposed detention/infiltration system could take other forms (distributed infiltration areas for example). As the Project's design progresses, the Proponent will submit the selected design to the Cambridge Conservation Commission and CDPW for review and approval.

With the incorporation of stormwater management controls and the reduction of imperviousness in the developed condition, the Project is expected to result in an overall decrease in stormwater runoff from the 2-year, 10-year, and 25-year design storm events. The current condition runoff estimates are summarized in Table 2 below. Please note that the existing garage on site is expected to remain and no significant modifications to the garage are proposed. Drainage patterns from the garage are expected to remain unchanged and, as a result, the garage has been excluded from the stormwater analysis.

The Project is also considering the construction of a bio-retention area along Cambridge Park Place (see Figure 4). This bio-retention area would provide further stormwater benefits (both quantity and quality). The Project is conducting geotechnical evaluations and existing tree evaluations to determine the feasibility of this feature and will include in CDPW and Conservation Commission filings as applicable.

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Memorandum

Table 2: Existing Peak Flow Rates

Storm Event	Peak Flow Rates (CFS)
2-yr	4.97
10-yr	7.81
25-yr	10.01

Compensatory Storage Impacts

Figure 4 provides conceptual surface grading for the area east of the building, including the site that will be created by the removal of part of the existing building. In this area, the proposed grades represent an anticipated increase in flood plain storage. As discussed earlier, the Project is contemplating an excavation along the easterly side of the site to construct a bio-swale and those proposed grades are included in Figure 4.

The existing garage has below-grade space that appears vulnerable to storm events exceeding the current 100-year flood elevation. In the future, under projected 100-year flood elevations, the lower level of the garage has space unoccupied by parking that would provide additional compensatory storage.

Lastly, the proposed Project is removing part of the existing building. This removal will allow the Project to provide a limited amount of additional compensatory storage under current conditions. However, if flood plain elevations increase as projected by CDPW, the removal of the building will provide additional future flood plain storage.

Cambridge DPW and Conservation Commission

The project has not yet submitted this information included herein to CDPW or the Cambridge Conservation Commission for review and approval. At that time, the filings will be prepared by a Massachusetts registered professional engineer and will demonstrate that any encroachment of the floodway shall not result in any increase in flood levels during the occurrence of the current 100-year flood.

Summary

A portion of the Project site has surface elevations below the FEMA published current 100-year flood elevation. As currently proposed, the Project is expected to increase pervious surfaces, creating a stormwater benefit and reducing the Project site's contribution to the floodplain. With the implementation of stormwater management features such as bio-swales and detention/infiltration systems, the Project is expected to further reduce stormwater runoff and

Memorandum

improve runoff water quality. The Project's proposed grading and removal of a portion of the existing building is expected to increase the floodplain storage volume within the site limits.

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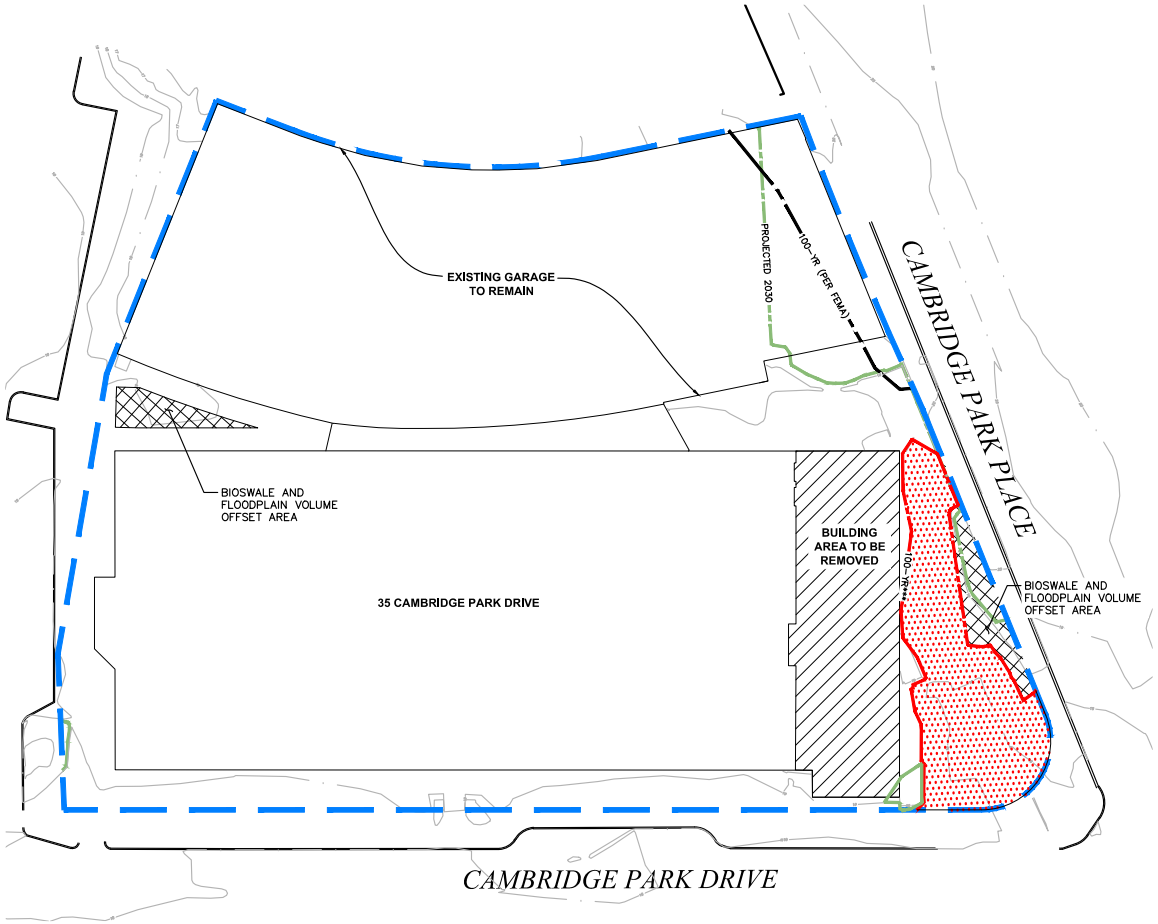


Legend

- Property Line
- 100-year Floodplain
- Bioswale & Floodplain Volume Offset Area

	Flood Elevations (Ft)
Current 100-year	18.66
Projected 2030	19.10
Projected 2070**	22.50

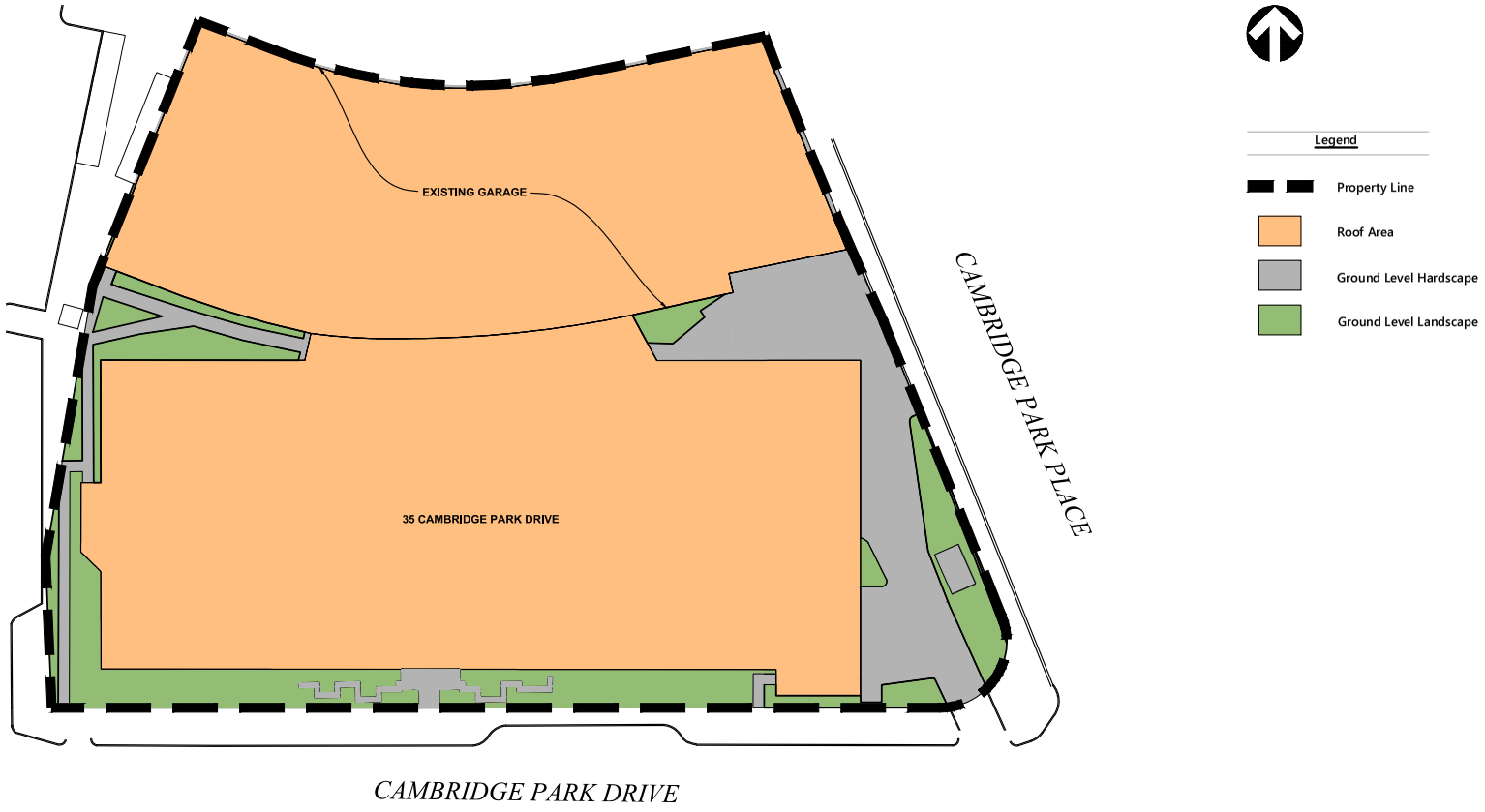
*All elevations refer to Cambridge City Base
**Projected 2070 flood elevation not shown
***Floodplains shown on this figure are based on site topography and may vary from FEMA limits.

0 25 50 100 Feet

35 Cambridge Park Drive
Flood Elevations
Cambridge, MA

Figure 1

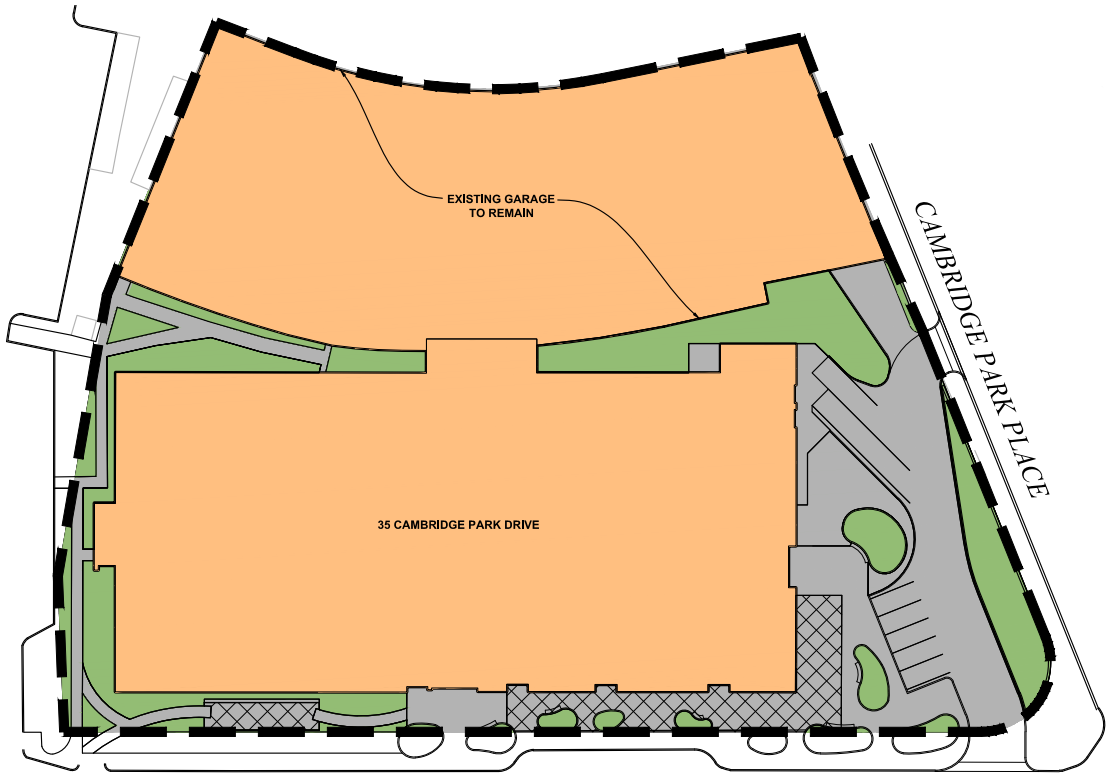
June 2016

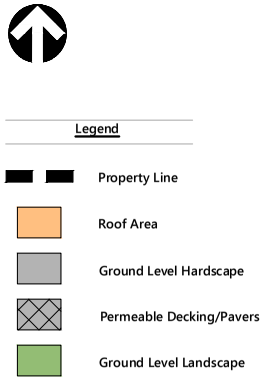


35 Cambridge Park Drive
Existing Surface Areas
Cambridge, MA

Figure 2

June 2016

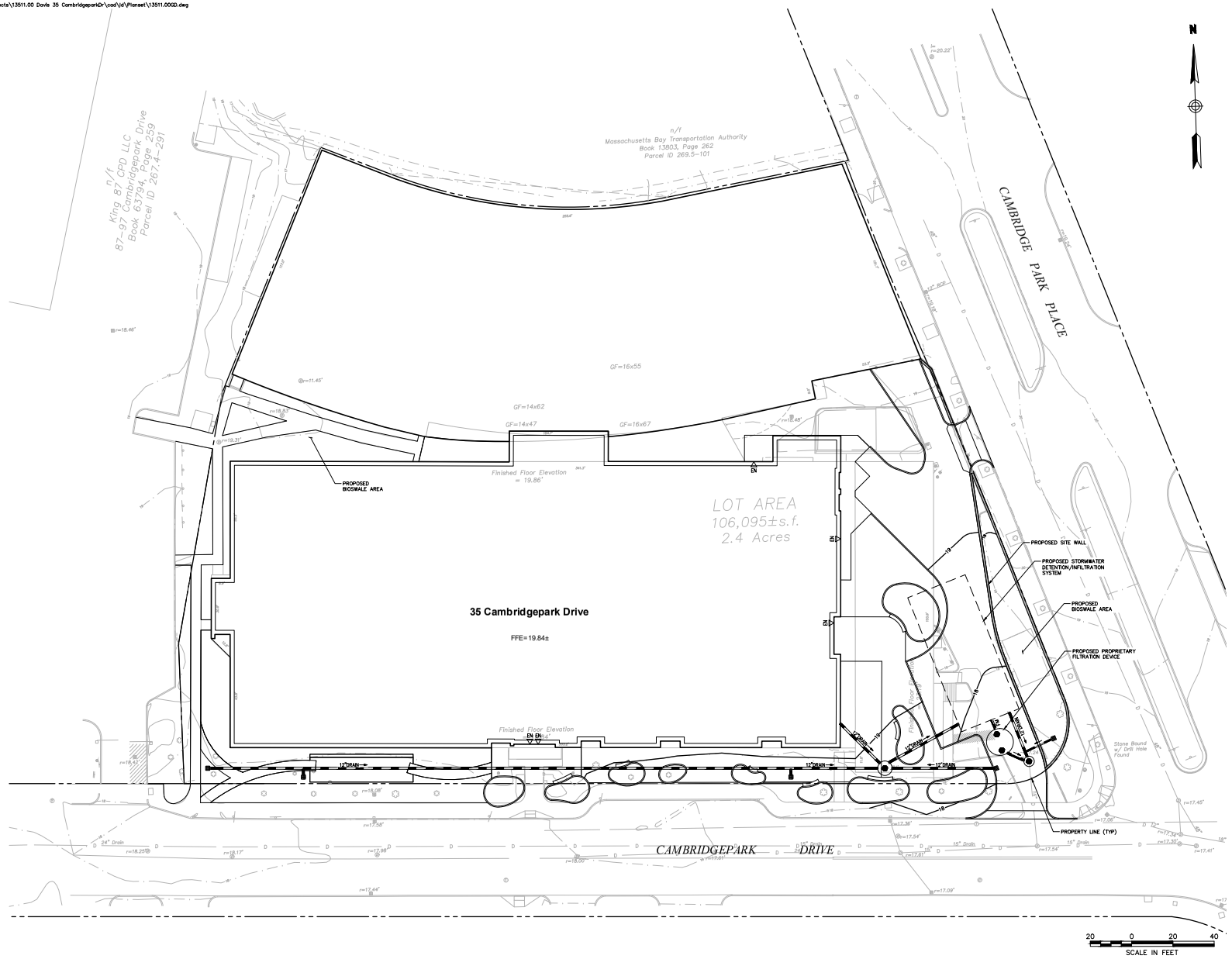




35 Cambridge Park Drive
Proposed Surface Areas
Cambridge, MA

Figure 3

June 2016



vhb.com
99 High Street
Boston, MA 02110
617.728.7777

35 Cambridgepark Dr

Cambridge, Massachusetts

No.	Revision	Date

Designed by | Checked by

Issued for | Date

Special Permit June 2016

Not Approved for Construction

Drawing Title

Conceptual Site Plan

Drawing Number

FIG-4

Project Number

13511.00

ACENTECH

33 Moulton Street
Cambridge MA 02138
617 499 8000
acentech.com

May 27, 2016

James Highum
Spagnolo Gisness Associates
200 High Street
Boston, MA 02110

Via email: jhighum@sga-arch.com

Subject **Environmental Noise Analysis**
35 Cambridge Park
Cambridge, MA
Acentech Project No. 627506

Dear Jim:

This letter presents our review and recommendations on the proposed mechanical equipment and emergency generator for 35 Cambridge Park Drive in Cambridge, MA. This project site needs to comply with the City of Cambridge noise regulation as well as the Massachusetts state regulation. This is a preliminary evaluation for the project as it is required to apply for Special Permit.

APPLICABLE NOISE REGULATION

Massachusetts

The Massachusetts Department of Environmental Noise Policy defines noise pollution by the condition resulting when:

- The equipment increases broadband sound level by more than 10 dBA above ambient, or
- The equipment with tonal sound - when any octave band center frequency sound pressure level exceeds the two adjacent bands by 3 dB or more

For this project, we assume that the existing background sound levels are high enough in the project area that the meeting the City of Cambridge Noise Regulation would be the more stringent requirement.

City of Cambridge

The City of Cambridge Noise Regulation has fixed sound emissions level limits for daytime and nighttime hours. There are different limits based on the zoning district. Based on the City of Cambridge Zoning Map, the equipment of our project should meet the Residential Zoning District at the closest receivers with sound pressure levels as shown in Table 1 on the following page at all times.

Octave Band Center Frequency of Measurement (Hz)	Residential Area (Daytime) dB	Residential Area (Nighttime) dB
31.5	76	68
63	75	67
125	69	61
250	62	52
500	56	46
1000	50	40
2000	45	33
4000	40	28
8000	38	26
Single Number Equivalent	60 dBA	50 dBA

Table 1. City of Cambridge Maximum Allowable Octave Band Pressure Levels

Daytime is defined by the City as the period between the hours of 7AM and 6PM except Sunday and holidays.

From our experience with similar projects, the existing background sound levels will result in higher noise limits than the Cambridge noise limits. Based on this assumption, this project is designed to meet 60 dBA during the daytime hours and 50 dBA during the nighttime hours. Because this is a core & shell building with expected future lab tenants, the analysis should include the expected sound levels of all these equipment. **We recommend designing the core & shell equipment to meet 55 dBA during the daytime hours and 45 dBA during the nighttime hours.** This will provide some noise allowance for the future tenants.

PRELIMINARY EQUIPMENT EVALUATION

Your engineer has provided us with preliminary rooftop equipment selections and emergency generator information. Most equipment units are located on the roof level and Level 6. There is also a mechanical room on Level 5 with an air handling unit and pumps. The preliminary layout is attached at the end of this report.

The list below shows the preliminary list of equipment for this project:

- Two 96,000 cfm air handling units by Custom Air Solutions with internal sound attenuators. One will be located in the mechanical room on the fifth floor and the other one will be located at the penthouse level.
- Strobic Tri-Stack lab exhaust air system with three fans, each fan with inlet flow of 32,000 cfm. Each exhaust fan will be provided with nozzle silencers provided by the fan manufacturer and the air bypass opening will also be provided with a short sound attenuator. These fans will also be on VFD. They will be located on the roof level.
- Three Marley model NC8409PCN3 cooling towers outfitted with Ultra Quiet Fans (C). The cooling towers will be located on the roof level with a screen.
- One 600 kW diesel engine emergency generator by Caterpillar, with a Pritchard Brown acoustic enclosure and exhaust muffler that achieves an average of 35 dB(A) overall sound reduction. This acoustic enclosure will help provide general reduction of engine and exhaust noise but it does not meet the daytime noise limit of 60 dBA. We understand that this is acceptable to the City of Cambridge as long as the generator is for emergency and testing use and not for other purposes where it will operate more frequently.
- Pump rooms on fifth floor mechanical room
- Chiller plant on the penthouse level

The following are our preliminary noise control recommendations to address the City of Cambridge noise regulation:

- Air handling units will be outfitted with OA sound attenuators internally or louver-backed sound attenuators to mitigate exterior noise.
- Lab exhaust fans will be outfitted with exhaust air discharge sound attenuators beyond the nozzle silencers provided by the manufacturer. The bypass opening will be provided with sound attenuators. The sound attenuators will be provided by third-party manufacturers such as VAW or Vibro-Acoustics.
- The cooling towers will be acceptable based on the current selection as long as they are on VFD with significantly reduced fan speeds at night. As the design develops, we will develop options to further reduce noise from the cooling towers.
- Generator enclosure by Pritchard Brown is acceptable and we will confirm whether a 35 dBA-enclosure is necessary as the design develops.
- Where there are mechanical room louvers, such as for the chiller plant, we anticipate the need to have louver-backed sound attenuators to address noise to the neighbors.
- We recommend providing a solid screen for the roof levels to provide some noise buffer for future tenant equipment. The screen should be solid and extend as close to the roof structure as possible.

* * * * *

I trust this letter provides the information that you need at this time. If you have questions, please call me on my direct line at 617.499.8080.

Sincerely,

Rose Mary Su
Senior Consultant

Encl: Preliminary Equipment Layout

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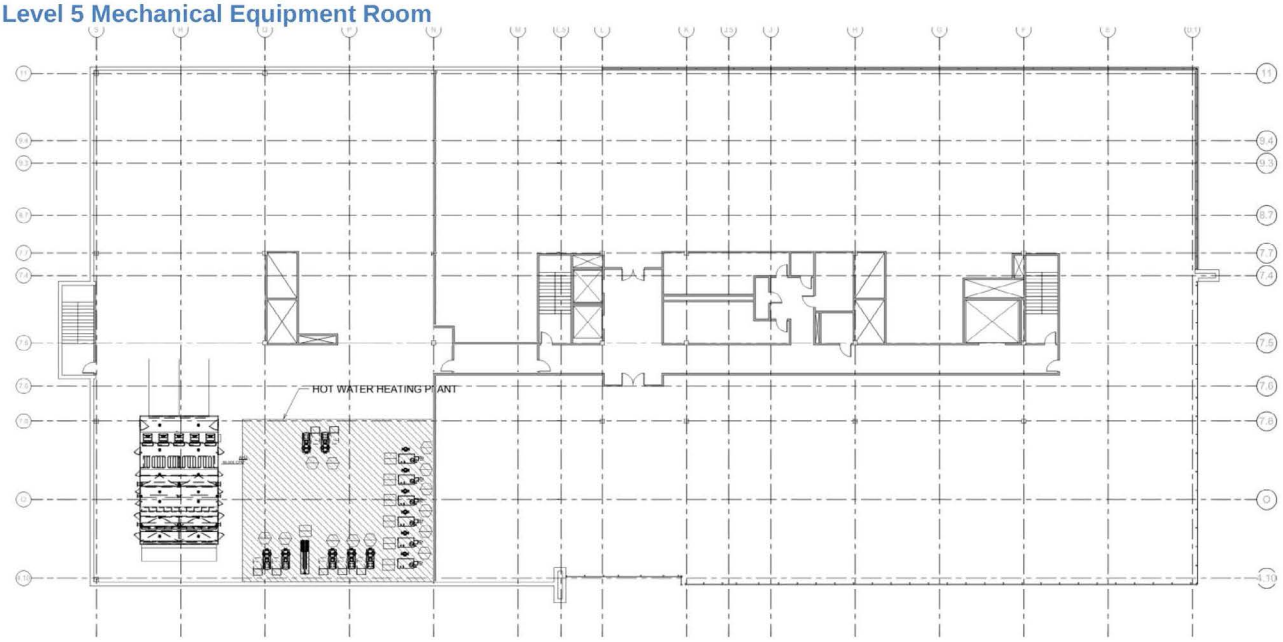
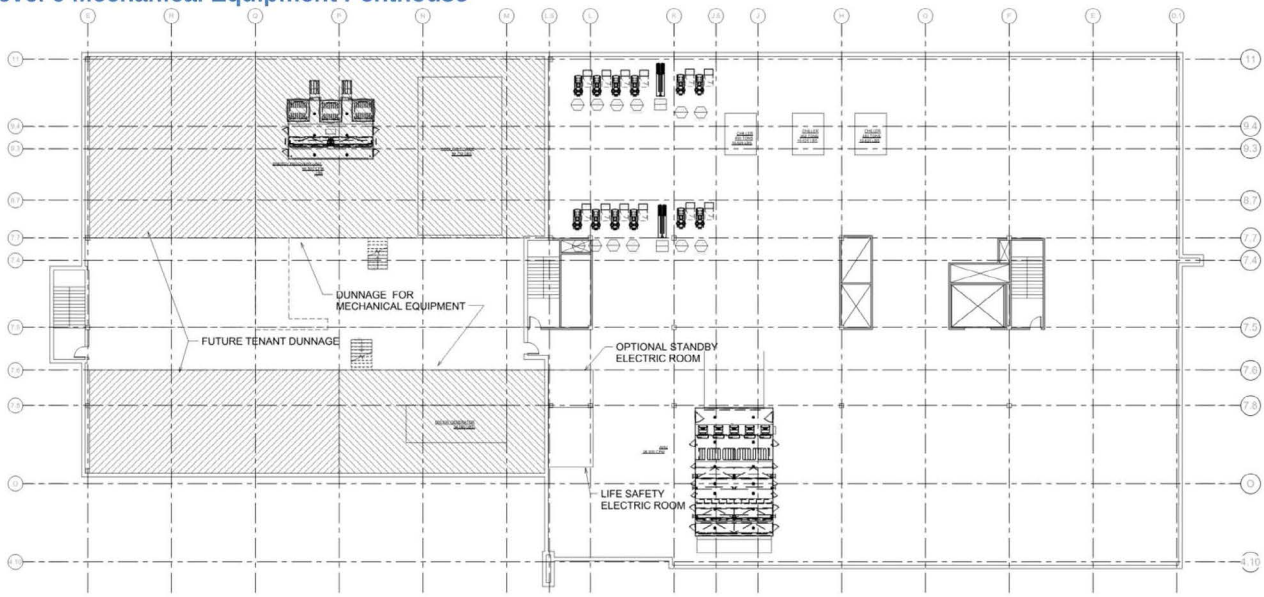
PRELIMINARY EQUIPMENT LAYOUT

Level 5 Mechanical Equipment Room



Level 6 Mechanical Equipment Penthouse



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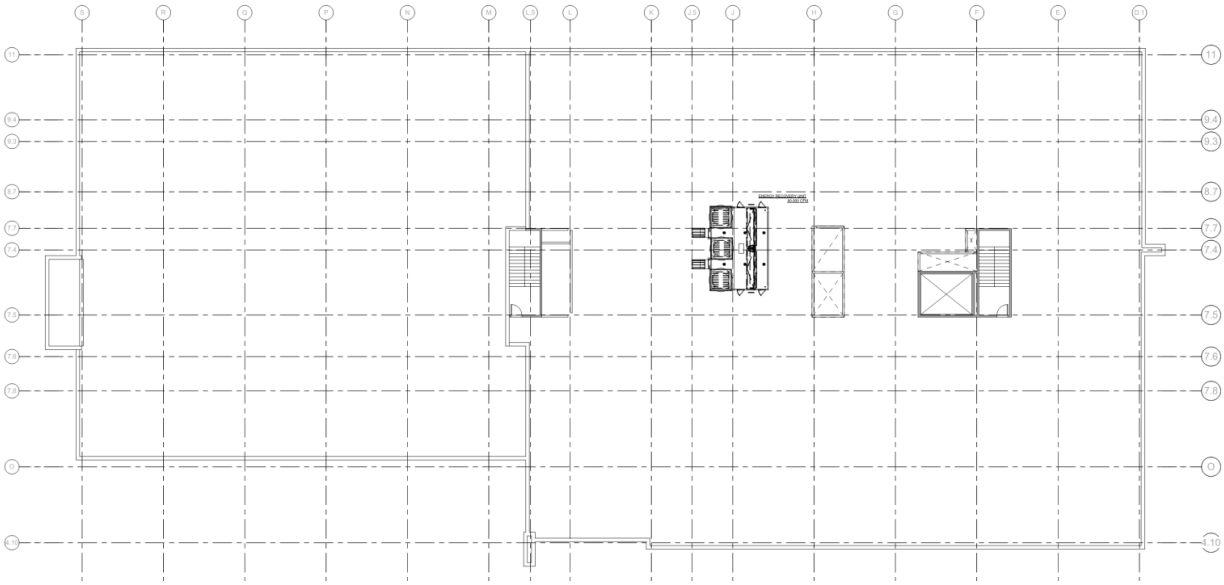
Roof Level



35 Cambridge Park Drive

Cambridge, MA

ARTICLE 22 SUSTAINABILITY NARRATIVE

Prepared for: **The Davis Companies**

Prepared By: **AHA Consulting Engineers**
24 Hartwell Ave, Lexington, MA 02421

June 16, 2016

Sustainable Design Narrative

Introduction

The Project team, with strong support from the project developer, is pursuing sustainable design and construction for the project, which will include review and evaluation of the requirements of Article 22 of the Cambridge Zoning Ordinance relative to the City's Green Building policies and procedures. The City is actively promoting measures to encourage buildings to decrease energy and water use and cost, improve the efficiency and useful life of building systems and infrastructure, and reduce the burdens imposed by buildings on city services, the environment, and public health.

The Project architectural/engineering/construction team includes several LEED Accredited Professionals, including the Sustainability Consultants, Samira Ahmadi, BEMP, LEED AP BD+C ID+C, and Allison Gaiko PE, LEED AP BD+C; and several other lead architects, engineers and construction personnel. Sustainability consultants met with the Proponent, Design Team and Construction Manager in a sustainable design charrette early in the Project, to identify the environmental design goals, motivations and issues, and discussed the LEED program impact on the design and build consensus.

A LEED checklist is provided at the end of this section to identify sustainability design objectives for this Project, highlights of which are included below. The project building has been registered with USGBC/GBCI to certify under the LEED for Core & Shell program. The 35 Cambridge Park Drive is meeting the Special Permit application requirement with a minimum of LEED v2009 Silver Certification for Core and Shell. At this stage of the design process, most of the specific building system specifications have been determined. System design solutions have been developed in an effort to achieve the targeted LEED credits. The final design and construction of the Project will create a sustainable building to promote the internal building environmental quality for the occupants, enhance the surrounding neighborhood locally, and reduce environmental impacts globally.

LEED checklist summary:

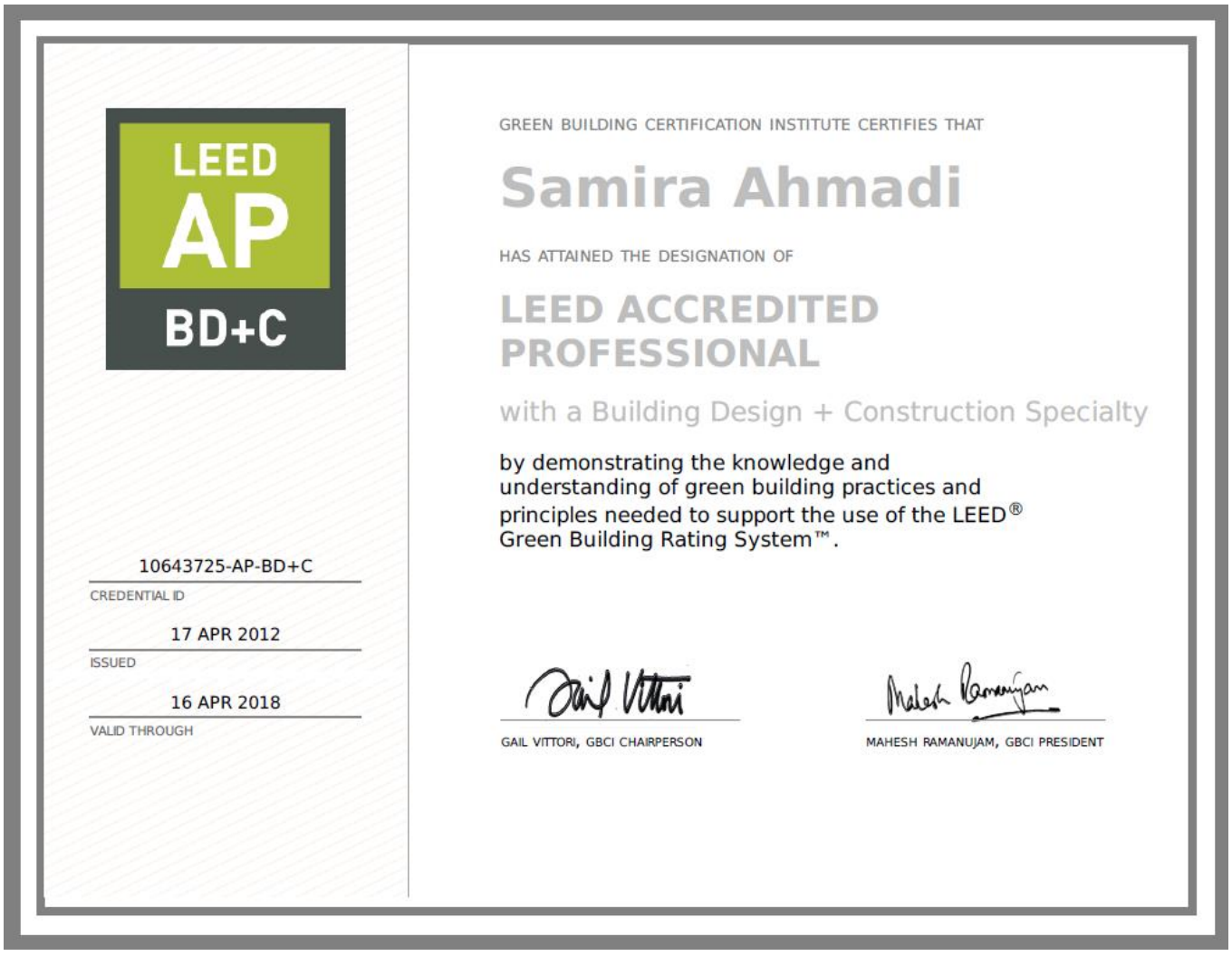
Sustainable Site	21 Points	6 Possible Points
Water Efficiency	5 Points	3 Possible Points
Energy and Atmosphere	15 Points	8 Possible Points
Materials and Resources	5 Points	5 Possible Points
Indoor Environmental Quality	8 Points	3 Possible Points
Innovation and Design Process	2 Points	4 Possible Points
Regional Priority	1 Point	2 Possible Points
Total Points	**57 Points**	**31 Possible Points**

Affidavit

As the lead Sustainability Consultant overseeing the planning, design and construction of the 35 Cambridge Park Drive, I, Samira Ahmadi, BEMP, LEED AP BD+C ID+C, certify that I am knowledgeable of the project's green building strategies, designs, plans and details and to the best of my knowledge this project has been planned and designed so as to meet the prerequisites and earn the credits necessary to achieve 57 points (minimum for Silver certification is 50 points) using the LEED for Core and Shell v2009 Rating System. The referenced project has been designed to meet the Green Building requirements under Article 22 of the Cambridge Zoning Ordinance.

Samira Ahmadi

Samira Ahmadi
LEED Administrator and Sustainability Consultant
AHA Consulting Engineers, Inc.



The following LEED Prerequisites and Credits are targeted for certification.

Sustainable Sites

1. Construction Activity Pollution Prevention (Prerequisite)
   A management plan will enforce measures to protect adjacent areas from pollution from wind and water-borne soil and sedimentation. The civil design team prepared an erosion and sedimentation plan that meats the local codes and the EPA Construction General Permit of the National Pollution Discharge Elimination System (NPDES) program. The construction team will implement the erosion and sedimentation measures and will follow the requirements of stormwater pollution prevention plan during the construction.

2. Site Selection (Credit 1)
   The Project Site has previously been completely developed and is located in an urban area of filled land. This site is located in the flood plain but since it's a previously developed land, it will meet the credit requirements. It is not within 100 feet of any wetlands or area of special concern identified by state or local authorities. This development does not violate any of the established criteria.

3. Development Density (Credit 2)
   The project is a major renovation of an existing building; therefore, it meets the "Previously Developed" requirements. This credit is being pursued following the Option 2: Community Connectivity requirements. The development is located within ½ mile of a densely residential area; the Cambridge Park Apartments are located across the street and its density is greater than 10 units per acre.
   The site is also within ½ mile of at least 10 basic services at Alewife and Fresh Pond Shopping Centers, including Whole Foods Market, Eastern Bank, Panera Bread, McDonalds, Apple Cinemas, Evolve Fitness, CVS Pharmacy, Russell Field, Fresh Pond Dental, and a beauty salon.

4. Alternative Transportation: Public Transportation Access (Credit 4.1)
   The project is located within ½ mile of the Alewife MBTA subway station. This credit is achieved by meeting the requirements of option 1: Rail Station Proximity, and also an innovation point for exemplary performance will be documented.

5. Alternative Transportation: Bicycle Storage & Changing Rooms (Credit 4.2)
   The project meets the credit requirements by providing at least 50 bike racks within 200 yards of the building entrance and at least 4 showers within the building. The Full Time Equivalent (FTE) is estimated to be 720; therefore, bike racks will be provided for 12% of all building users which meets the 3% requirements for C&S projects. Also, showers are provided for 0.55% of FTE occupants and meets the minimum 0.5% requirements.

6. Alternative Transportation: Low-Emitting and Fuel-Efficient Vehicles (Credit 4.3)
   Preferred parking will be provided with signage for low-emitting / fuel-efficient vehicles as part of the overall Transportation Demand Management plan on the site. There are 347 parking spaces in the 35

CPD Parking Garage next the building, including the handicap accessible and carpool spaces; 18 spaces (5.1%) will be provided with signs reserving the space for Low-Emitting / Fuel-Efficient vehicles.

7. Alternative Transportation: Parking Capacity (Credit 4.4)
   This credit will be achieved following Option 3 requirements by providing no new parking. 35 CPD Parking garage is an existing structure to remain and no new parking will be provided.

8. Heat Island Effect – Non-Roof (Credit 7.1)
   More than 50% of the parking spaces are located inside the 35 CPD Parking garage; the roof deck will go under renovation and vegetated green roof may be added. Therefore, this development meets the requirements of Option 2.

9. Tenant Design and Construction Guidelines (Credit 9)
   The proponent and the design team are in the process of developing a Tenant Design and Construction Guidelines for this C&S development. The document explains the sustainable aspects of the Core and Shell building design and construction, and also explains what steps are needed for tenants to achieve LEED CI Certification for their space fit-out design and construction.
   LEED-CI is a decision for individual tenants in the building. Tenants are encouraged to have their interior space constructed in an environmentally friendly manner. The rating system is designed to help guide and measure green strategies under the control of the tenants. These strategies can range from the selection of non-toxic paint to Energy Star Computers and office equipment. It is important to understand that the tenant is encouraged to play an active role in the fitting out of their new space.

Water Efficiency

1. Water Use Reduction (Prerequisite 1)
   Low Flush (1.28 GPF) toilets, 0.125 GPF Urinals, 0.5 GPM Metering lavatory faucets, and 1.5 GPM showerheads are specified and are calculated to achieve a reduction in water usage of at least 37% over the baseline. See LEED Water Use Calculator Inputs and Results at the end of this report.

2. Water Efficient Landscaping (Credit 1)
   Landscape plantings will be selected to be climate appropriate, and irrigation systems at the planting areas are specified to be drip irrigation with an automatic soil moisture sensing controller. This approach to irrigation will enable the project to reduce potable water consumption by at least 50% over conventional means. Two points under this credit are expected to be achieved.

3. Water Use Reduction (Credit 3)
   The project achieves this credit by using low-flow and low-flush plumbing fixtures. The preliminary water use calculations estimate 37% reduction. See the calculations at the end of this report.

Energy and Atmosphere

1. Fundamental Commissioning (Prerequisite 1)
   Commissioning of the Mechanical and Electric building systems is under contract and will be performed.

2. Minimum Energy Performance (Prerequisite 2)
   The energy code utilized for the Project will be the Massachusetts Building Code at a minimum, and ASHRAE Standard 90.1-2007, and the Massachusetts Stretch Energy Code. The energy model is developed by the energy consultants at AHA Consulting Engineers. The current prediction for savings is at least 20% in energy and 16% in energy cost (for 7 possible LEED points.)
   Energy Conservation measures will include: Improvements to the existing envelope, Low-E glazing, reduced lighting power density in the core areas, High-efficiency water-cooled centrifugal chillers, variable volume (VFD) based condenser and chilled water pumping, cooling towers with variable volume fans instead of two-speed fans, high-efficiency gas-fired condensing boilers supplying low temperature hot water to AHUs and reheat coils, variable volume hot water pumping, discharge static pressure reset on supply air handling units, and reduced-flow hot water fixtures (lavatory, and shower) to reduce hot water demand. See the energy modeling input and assumption tables at the end of this report.

3. Refrigerant Management (Prerequisite 3)
   No CFC-based refrigerants will be utilized for the Project.

4. Optimize Energy Performance (Credit 1)
   This development is planning to achieve at least 5 points under the Optimize Energy Performance credit. Energy modeling team is performing the energy analysis in accordance with the ASHRAE 90.1-2007, Appendix G, protocols using eQuest v3.65 software.

5. Enhanced Commissioning (Credit 3)
   A third party commissioning team has been designated to oversee the commissioning process, and conduct a review of drawings and submittals. The commissioning agent will perform the testing, develop a system manual, oversee the training of the operating personnel and will review the building operation with the facility management and staff.

6. Enhanced Refrigerant Management (Credit 4)
   The refrigeration devices and cooling equipment installed within this building will have total per impact ton of less than 100.

7. Measurement and Verification – Base Building and Tenant Submetering (Credit 5.1 and 5.2)
   Measurement and verification equipment, including sub-meters, will be provided in the design to enable the property management staff to perform on-going reviews of system operations, environmental conditions and indoor air quality, energy and water use, and review the potential for improvements. Tenant electric use will be individually metered and tenant will be responsible for their utility bills. The building will utilize a networked DDC control system to operate the HVAC systems equipment, track operating times and generate maintenance alarms, and monitor system performance. A Measurement & Verification plan will be created for the base building in accordance with Option D, Calibrated Simulation of the International Performance Measurement and Verification protocol (IPMVP) Volume III, April 2003. Also an implementation guideline will be created which advises future tenants of the included equipment and opportunities and the means of achievement.

Materials and Resources

1. Storage and Collection of Recyclables (Prerequisite)
   There will be a dedicated recyclable storage within the building. This area will be easily accessible to local recycling handlers for the collection of paper, corrugated cardboard, glass, plastics and metals.

2. Building Reuse: Maintain Existing Walls, Floors and Roofs (Credit 1)
   This project is a major renovation of an existing building located at 35 Cambridge Park Drive. It is targeted to maintain at least 25% of the building structure, including structural floor and roof decking, and envelope excluding windows.

3. Construction Waste Management (Credit 2)
   The Construction Manager will implement a waste management plan that will seek to divert at least 75% of construction and demolition waste material removed from the site from landfills through recycling and salvaging. This credit is expected to be achieved, and may be pursued aggressively in an opportunity to gain an exemplary performance credit of at least 95% construction waste recycling.

4. Recycled Content (Credit 4)
   Project Specifications will encourage provision and tracking of materials with recycled content where practical. The project team will select recycled materials such that the sum of post-consumer recycled content plus ½ of the pre-consumer content is at least 10% of the total value of materials in the project, excluding mechanical electrical, plumbing components and especially items such as elevators.

4. Regional Materials (Credit 5)
   Project specifications will encourage provision and tracking of materials that have been manufactured and extracted or harvested within 500 miles of the project site. This reduces the energy consumption and emissions associated with transportation, and helps local economies.

Indoor Environmental Quality

1. Minimum IAQ Performance (Prerequisite 1)
   The ventilation code utilized for the Project will be ASHRAE Standard 62.1-2007, as required by the present Massachusetts Building Code. The mechanical systems are designed to provide superior ventilation throughout the building. Ventilation air will be delivered to future lab and office spaces through the base building 100% OA Air Handling Units; therefore, the project will meet the minimum requirements of ASHRAE 62.01-2007, Minimum Ventilation Rate Procedure.

2. Environmental Tobacco Smoke Control (Prerequisite 2)
   The entire building has a no-smoking policy to comply with the Massachusetts Workplace Smoking law and is a Smoke-Free building; smoking is prohibited anywhere in the building, and within 25’ of main entries, operable windows and air intakes.

3. Construction IAQ Management Plan (Credit 3.1)
   An Indoor Air Quality Management plans will be implemented during the construction phase in accordance with the SMACNA Indoor Air Quality for Buildings under Construction Guideline. This document defines procedures for maintaining good indoor air quality inside the building during construction and also addresses construction practices to allow the best possible indoor environment after occupancy. These practices include cleaning during construction, interrupting paths of odor and dust travel within the building, segregating odor and dust producing activities from absorbent materials, and scheduling similar odor or duct producing activities to occur at the same time.

4. Low-Emitting Materials-Adhesives and Sealant (Credit 4.1)
   Adhesives and sealants will be specified with low-VOC content limits as prescribed by the respective applicable standard.

5. Low-Emitting Materials-Paints and Coatings (Credit 4.2)
   Paints and coatings will be specified with low-VOC content limits as prescribed by the respective applicable standards.

6. Low-Emitting Materials-Flooring Systems (Credit 4.3)
   Wood and solid flooring materials, carpet and carpet pads, adhesives, and grouts will be specified with low-VOC content limits as prescribed by the respective applicable standards.

7. Low-Emitting Materials-Composite Wood and Agrifiber Systems (Credit 4.4)
   Composite wood products and laminating adhesives used inside the building will be specified to have no added urea – formaldehyde.

8. Indoor Chemical and Pollutant Source Control (Credit 5)
   A permanent entryway system will be installed at high-volume building entrances to prevent air contaminants from entering the building. Housekeeping areas will be separated and exhausted to outside to comply with the requirements of this credit. Air handling units are expected to be provided with appropriate filtration (at least MERV 13) to meet the credit.

9. Thermal Comfort (Credit 7.1)
   The building envelope and HVAC systems are designed to meet the requirements of ASHRAE 55-2004. The HVAC system will be designed to maintain the building's occupied spaces between 70°F and 75°F, based on Code seasonal design temperatures of 7°F outside in winter and 87°F DB / 73°F WB outside in the summer. Thermal comfort ranges are as follows:

   - Temperature Range: 75°F ± 2° in summer, 70°F ± 2° in winter.
   - Humidity Range: 50% ± 10% summer, 20% ± 10% in winter.
   - Zone Control: All thermostats and humidity sensors are located in the zone served.
   - Outdoor Conditions: Per ASHRAE 90.1-2007, outdoor design conditions are 87°F DB/73°F WB in summer and 7°F DB in winter.

10. Daylight and Views - Views (Credit 8.2)
    The exterior wall vision glass will be selected for a high level of visible transmittance while having a good solar heat gain coefficient and U-value to minimize energy use due to the exposed location of the building. It's anticipated that the location and area of windows will give the future occupants views of the outdoors from the majority of the regularly occupied spaces.

Innovation and Design Process

1. Exemplary Performance: Alternative Transportation – Public Transportation Access (ID Credit 1.4)
   The project site is located within 1/2 mile of Alewife station with more than 200 transit rides per day.

2. Exemplary Performance: Construction Waste Management (ID Credit 1.1 - MR Credit 2)
   As noted above, the project will seek to divert more than 95% (by weight) of the construction waste generated on site from landfills.

2. Tenant Education (ID Credit 1.2)
   The project is expected to develop Sustainable tenant guidelines and may develop educational programs, with on-site signage, website information on sustainable aspects of the building, and tours and outreach for residents and the public.

END OF SUSTAINABLE DESIGN NARRATIVE

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END OF SUSTAINABLE DESIGN NARRATIVE

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Appendix A

LEED Checklist

Energy Modeling Inputs

Indoor Water Use Calculations

LEED 2009 for Core and Shell Development

Project Checklist

35 Cambridge Park Dr

Special Permit - June 16, 2016

Sustainable Sites — Possible Points: 28

Y	?	N			
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
	1		Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
2			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	2
3			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
	1		Credit 5.1	Site Development—Protect or Restore Habitat	1
	1		Credit 5.2	Site Development—Maximize Open Space	1
		1	Credit 6.1	Stormwater Design—Quantity Control	1
	1		Credit 6.2	Stormwater Design—Quality Control	1
1			Credit 7.1	Heat Island Effect—Non-roof	1
	1		Credit 7.2	Heat Island Effect—Roof	1
	1		Credit 8	Light Pollution Reduction	1
1			Credit 9	Tenant Design and Construction Guidelines	1

Water Efficiency — Possible Points: 10

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

Energy and Atmosphere — Possible Points: 37

Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
5	2	14	Credit 1	Optimize Energy Performance	3 to 21
	4		Credit 2	On-Site Renewable Energy	4
2			Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
3			Credit 5.1	Measurement and Verification—Base Building	3
3			Credit 5.2	Measurement and Verification—Tenant Submetering	3
	2		Credit 6	Green Power	2

Materials and Resources — Possible Points: 13

Y	?	N			
Y			Prereq 1	Storage and Collection of Recyclables	
1	1	3	Credit 1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 5
2			Credit 2	Construction Waste Management	1 to 2
	1		Credit 3	Materials Reuse	1
1	1		Credit 4	Recycled Content	1 to 2
1	1		Credit 5	Regional Materials	1 to 2
	1		Credit 6	Certified Wood	1

Indoor Environmental Quality — Possible Points: 12

Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
	1		Credit 1	Outdoor Air Delivery Monitoring	1
	1		Credit 2	Increased Ventilation	1
1			Credit 3	Construction IAQ Management Plan—During Construction	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
		1	Credit 6	Controllability of Systems—Thermal Comfort	1
1			Credit 7	Thermal Comfort—Design	1
	1		Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

1			Credit 1.1	Innovation in Design: Exceed SSc4.1	1
	1		Credit 1.2	Innovation in Design: Green Housekeeping	1
	1		Credit 1.3	Innovation in Design: MRc2 - Exceed 95% recycling?	1
	1		Credit 1.4	Innovation in Design: Exceed Materials MRc4 or MRc5?	1
	1		Credit 1.5	Innovation in Design: Education Display	1
1			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

	1		Credit 1.1	Regionally Defined Credit Achieved: SSc3	1
1			Credit 1.2	Regionally Defined Credit Achieved: SSc7.1; SSc7.2	1
		1	Credit 1.3	Regionally Defined Credit Achieved: MRc1	1
	1		Credit 1.4	Regionally Defined Credit Achieved: SSc6.1; EAc2 (1%)	1

Total — Possible Points: 110

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

	ASHRAE 90.1-2007 Baseline			Proposed Design and Suggested ECMs
Envelope	Metal Framing Curtainwall	U-value 0.45; SHGC-0.4		Low-E Double Pane Glass Target: Overall U-Value 0.41; SHGC-0.38
	Window-To-Wall Ratio	40%		less than 50%
	Roof	R-20 c.i.; U-value of 0.048		Target: R-25 c.i.; U-value of 0.039
	Exterior Walls (steel-framed)	R-13 + R-7.5 c.i.; U-0.064		Target: R-13 + R-11 c.i.; U-0.060
Interior Loads	Occupancy	Office: 250 SF/ Person; Lab: 400 SF/ Person		Office: 250 SF/ Person; Lab: 400 SF/ Person
	Interior Lighting	1 W/SF Office; 1.4 W/SF Lab; 1.7 W/SF Retail		Target: 10% reduction in core Tenant space similar to baseline case.
	Office Plug Load	Office: 0.75 W/SF; Lab: 1.4 W/SF		Office: 0.75 W/SF; Lab: 1.4 W/SF
	Elevator Load	2 cars (30 kW per car)		2 cars (30 kW per car)
DHW	Low-Flow Hot Water Fixtures	0.5 GPM Lavatory Faucet		0.5 GPM (0.1 GPC) Metering Lav Faucet
		2.5 GPM Showers		1.5 GPM Showers
		2.2 GPM Kitchenette Faucet		2.2 GPM Kitchenette Faucet (Future Tenant)
	Gas-fired Water Heater	Efficiency: 80%		Efficiency: 96%
CW System	Cooling Tower Fan Control	Two-Speed Axial Fans		Variable Speed Fans
	Cooling Tower Fan Power	19.5 W/gpm		Less than 19.5 W/gpm
	Condenser Water ΔT	10˚ F		15˚ F
	CW Pump Control	One Speed Pumps		Variable Speed Pumps
CHW System	Chiller Type	Centrifugal		Centrifugal with VSD
	Chiller Efficiency	6.1 COP; 6.40 IPLV		> 6.10 COP
	Chilled Water ΔT	12˚ F		14˚ F
	CHW Pump Control	One Speed Pumps		Variable Speed Pumps
HW System	HW Boilers	80% Efficient Natural Draft		96% Efficient Condensing
	HW Pump Control	One Speed Pumps		Variable Speed Pumps
	HW Supply Temperature	180˚ F		150˚ F
	Hot Water ΔT	50˚ F		30˚ F
Air-Side HVAC	Ventilation	Floor-by-Floor: 20% OA in Office and 100% OA in Lab		100% OA Unit serving lab spaces, and providing ventilation to office spaces/ units.
	Space Heating/ Cooling	Packaged Rooftop, Chilled Water Cooling; VAV with Reheat with Min. Volume setpoint of 0.4 CFM/SF.		Lab: 100% Outside air, Variable Volume Air Handling Units with Chilled Water Cooling Coil and Hot Water Heating Coil. Office: by Future Tenant. Identical to baseline case.
	Supply Fan Control	Variable Speed		Variable Speed
	VAV Fan Part-Load Performance	ASHRAE 90.1 Part Load		Discharge Static Pressure Reset Control

Note 1 The Baseline Model is based on ASHRAE 90.1-2007 (Consistent with the current Stretch Energy Code and LEED v2009).

LEED 2009 for New Construction and Major Renovations

WE PREREQUISITE 1: WATER USE REDUCTION
20% REDUCTION

All fields and uploads are required unless otherwise noted.

FIXTURES AND FIXTURE FITTINGS

This active sample form has been modified for offline access. Modified fields and instructions are indicated in purple. Sample forms are for reference only.

Note: Refer to the additional guidance document in the Credit Resources section of LEED Online for more information about documenting compliance with WEp1 and WEc3

Table WEp1-1. Daily Occupancy (Optional)

Note: For reference only. These values should inform, but not necessarily parallel, the numbers entered in the Table WEp1-2. Fixture Groups Definition.

FTE	Average Transients (Visitors)	Average Retail Customers	Residents	Total
720	0	60	0	780

The content highlighted in yellow above is linked to PIf3, SSc4.2, SSc4.3 & SSc4.4.

FIXTURE GROUPS INTRODUCTION

Organize project occupants in a way that best represents fixture usage patterns in the project. Occupants may be grouped together or separated into sub-groups. Usage groups must be derived from daily occupancy data for the project building. Accordingly, all project occupants, as documented in the "Occupant Information" section of PI Form 3, must be represented in the Table WEp1-2. Fixture Groups Definition below. All residential occupants should be represented separately from non-residential occupants.

Table WEp1-2. Fixture Groups Definition

Group Name	Annual Days of Operation	FTE	Transients (Visitors)	Retail Customers	Residents	% Female	% Male		
Employees	250	705	0	0	0	50	50	+	-
Retail	300	15	0	60	0	50	50	+	-

Briefly describe the inputs in the Table WEp1-2 above. Explain the methodology used to define each fixture group, as well as the derivation of data in each row. Additionally, provide a detailed explanation if the default gender ratio is not used.

FIXTURE DATA

Table WEp1-3. Flush Fixture Data

Enter flush fixture data for each fixture group defined in the Table WEp1-2. Fixture Groups Definition above. Click "Calculate" in the summary section of the table to perform the water savings calculations. "Calculate" must be clicked after any or all the data is entered in the table to refresh the calculated values and obtain accurate information.

Fixture Groups							Flush Rate (GPF)		Annual Water Consumption (kGal)			
Select	Display	Fixture ID[1]	Fixture Family	Fixture Type	Default	Total Daily Uses[2]	Baseline	Installed[3]	IPC/UPC Baseline	Performance Case		
Employees	Employees		Water Closet	IPC/UPC (Conventional)	☒	1,410	1.6	1.28	564	451.2	+	-
Employees	Employees		Urinal	IPC/UPC (Conventional)	☒	705	1	0.13	176.25	22.91	+	-
Retail	Retail		Water Closet	IPC/UPC (Conventional)	☒	39	1.6	1.6	18.72	18.72	+	-
Retail	Retail		Urinal	IPC/UPC (Conventional)	☒	18	1	1	5.4	5.4	+	-
Total calculated flush fixture water use annual volume, baseline case [4] (kGal)								764.37				
Total calculated flush fixture water use annual volume, performance case (kGal)								498.23	Calculate			
Percent reduction of water use in flush fixtures (%)								34.82				

Notes:
1 Define a reference name or descriptor that can be used to identify each fixture family/type.
2 May be modified for special circumstances. Deselect the "Default" checkbox to enter modified Total Daily Uses value. Default assumes urinals are installed. Refer to the additional guidance document in the Credit Resources section for more information about fixture groups that do not include urinals.
3 To account for dual-flush fixtures, enter a weighted average flush rate.
4 Summary information in yellow above is linked to WEc2.

Table WEp1-4. Flow Fixture Data

Enter flow fixture data for each fixture group defined in the Table WEp1-2. Fixture Groups Definition above. Click "Calculate" in the summary section of the table to perform the water savings calculations. "Calculate" must be clicked after any or all the data is entered in the table to refresh the calculated values and obtain accurate information.

Fixture Groups								Flow Rate (GPM / GPC)		Annual Water Consumption (kGal)			
Select	Display	Fixture ID[1]	Fixture Family	Fixture Type	Default	Total Daily Uses[2]	Duration[3] (Secs)	Baseline	Installed[4]	IPC/UPC Baseline	Performance Case		
Employees	Employees		Public Lavatory Faucet	IPC/UPC (Conventional)	☒	2115	30	0.5	0.1	132.19	26.44	+	-

Fixture Groups								Flow Rate (GPM / GPC)		Annual Water Consumption (kGal)			
Select	Display	Fixture ID[1]	Fixture Family	Fixture Type	Default	Total Daily Uses[2]	Duration[3] (Secs)	Baseline	Installed[4]	IPC/UPC Baseline	Performance Case		
Employees	Employees		Shower	IPC/UPC (Conventional)	☒	71	300	2.5	1.5	221.88	133.13	+	-
Employees	Employees		Kitchen Sink	IPC/UPC (Conventional)	☒	705	15	2.2	2.2	96.94	96.94	+	-
Retail	Retail		Public Lavatory Faucet	IPC/UPC (Conventional)	☒	57	30	0.5	0.5	4.28	4.28	+	-
Retail	Retail		Kitchen Sink	IPC/UPC (Conventional)	☒	15	15	2.2	2.2	2.48	2.48	+	-
Total calculated flow fixture water use annual volume, baseline case (kGal)									457.77				
Total calculated flow fixture water use annual volume, performance case (kGal)									263.27	Calculate			
Percent reduction of water use in flow fixtures (%)									42.49				

Notes:
1 Define a reference name or descriptor that can be used to identify each fixture family/type.
2 May be modified for special circumstances. Deselect the "Default" checkbox in order to insert the modified Total Daily Uses value.
3 May be modified for special circumstances. Provide a narrative in the Special Circumstances section below to justify modifications.
4 For metering public lavatory faucets, convert all flow rates in gallons per minute (GPM) to gallons per cycle (GPC) based on duration from the product specifications.

Does the project building include pre-rinse spray valve(s)?

○ Yes ○ No

SUMMARY

Upload WEp1-1. Provide the plumbing fixture and fitting schedule for the project highlighting flush and flow rates for all applicable plumbing fixtures and fittings within the project building.

Upload *Files:*

Table WEp1-5. Flush & Flow Fixtures Summary

Total calculated fixture water use annual volume, baseline case (kGal)	1,222.14
Total calculated fixture water use annual volume, performance case (kGal)	761.5
Reduction of water use in all fixtures (%) *Must be 20 to document credit compliance*	37.69

The content highlighted in yellow above is linked to WEc3.

ADDITIONAL DETAILS

☐ Special circumstances preclude documentation of credit compliance with the submittal requirements outlined in this form.

☐ The project team is using an alternative compliance approach in lieu of standard submittal paths.

SUMMARY

WE Prerequisite 1: Water Use Reduction - 20% Reduction Compliance Documented:	N	Check Compliance