



THE ABBOT BUILDINGS

CAMBRIDGE, MA

PLANNING BOARD SPECIAL PERMIT PRESENTATION (REVISED)

March 20, 2017

PCA
ARCHITECTURE PLANNING INTERIORS
www.pallawitchbilinski.com

**Regency
Centers.**

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BACKGROUND

A public hearing on the application was held by the Planning Board on January 30, 2018. In response to issues identified at the hearing by the public and Board members, the applicant has modified several aspects of its proposed design.

On February 14th, the applicant and its architectural team participated in a collaborative design review with Erik Thorkildsen and Stuart Dash of the Community Development Department and Charles Sullivan and Sarah Burks from the staff of the Historical Commission. The session was effective in providing a forum where design issues identified at the Planning Board hearing could be reviewed with input from the Historical Commission staff.

As suggested by the Board, the applicant also has met with the Traffic, Parking and Transportation Department to review loading and parking issues for the project. On February 14, a meeting was held with Joseph Barr, Director of Traffic, Parking and Transportation, Adam Shulman, Transportation Planner and Patrick Baxter, Engineering Manager. The meeting included a review of the location of existing loading zones in the public ways surrounding the project and exploration of potential additional opportunities. T,P&T representatives expressed general agreement that the proposed location of the principal loading door on JFK Street was appropriate. The design of the internal circulation system for deliveries and trash removal was also reviewed and likewise regarded as appropriate.

Discussions also included preliminary strategies for Construction Mitigation measures to effectively manage pedestrian and vehicular circulation during the construction process. It is anticipated that T,P&T will be issuing a memorandum to the Board regarding the issues discussed at the meeting as well as its position on the Special Permit request to waive parking and loading requirements in exchange for a payment to the Harvard Square Improvement Fund.

MEMORANDUM 1

PROJECT: The Abbot Buildings in Harvard Square
PROJECT NO: 17010.00
DATE: February 27, 2018

RE: Response to 01.30.2018 Planning Board hearing and
02.14.2018 meetings with CDD and Historic Commission

TO: Cambridge Planning Board
Community Development Department, Attn: Liza Paden
344 Broadway
Cambridge, MA 02139

SUMMARY: *At the January 30th 2018 Planning Board hearing, we were encouraged to give the building more LIFE, and to allow the activities and vitality of the building to be expressed while showing proper respect for the proportion and integrity of the two existing buildings. This new structure should add an identity to the street that would also be worth preserving at a future date.*

The Board's comments on January 30th as well as those from the subsequent February 14th meeting with CDD staff fall under several categories as listed below.

1. 4th floor design

Planning Board/CDD comment:

The 4th floor design was understated and the grey roof and bay detailing needed to be more special.

Revisions:

Our approach is to make the life on the 4th floor of the building to be more visible. We reviewed a dormer approach at the roof with CDD and Historic Commission. This was found to be too busy, and were encouraged to create a more simple and elegant solution.

The revised design includes changing the roof material from a grey metal to a copper colored standing seam metal roof, thus adding warmth to the roof.

The revised design also adds more glazing on the Brattle Street façade with glazing wrapping around the corner facing Brattle Square per Planning Board comments. The window glazing and mullion design and detailing has been revised to be more modern and elegant in its approach, taking a cue from the rooftop addition to the Swiss Consulate on Broadway.

2. **4th floor Roof Deck**

Planning Board/CDD comment:

To provide more opportunity for the active uses of the 4th floor to be more apparent; study expanding the extent of the proposed roof deck.

Revisions:

The 4th floor roof deck area has been revised to extend over the Brattle building and also wraps the corner to enable active uses to be visible and overlook Brattle Square.

3. **Proportion of glass reveals between the old and new buildings**

Planning Board/CDD comment:

The width of the openings seemed too large and not in proportion with the overall façade.

Revisions:

Along Brattle Street, the width of the glass reveals have been narrowed from 8 feet to 6 feet, allowing the proportion of the window openings to match JFK Street.

Along JFK Street, the glass façade adjacent to 39 JFK Street has been changed to a brick and glass façade.

4. **JFK Street Façade: Center Bay**

Planning Board comment:

The recessed brick bay in the center of the JFK façade seemed unnecessary. The interrupted storefront would be more difficult to sub-divide.

Revisions:

The revised design has eliminated the center bay recess and simplified the façade design along JFK Street enabling more flexible retail tenancy.

5. **Proportions of Granite storefront surround and windows above**

Planning Board/CDD comment:

Study proportions of the ground floor storefront openings and heights of the granite surrounds and width of piers.

Revisions:

The revised design adjusts the height of the granite surrounds to fit better with JFK and Brattle street façade proportions. The head of the granite opening along JFK Street has been raised and Brattle street has been lowered to create better proportions. The width of the piers has been modified to provide the minimum width needed to conceal the interior columns.

6. **Metal Grill at windows**

Planning Board/CDD comment:

The metal grill pattern looked too ethereal and did not have a strong enough vocabulary to fit with the balance of the composition.

Revisions:

The revised design adjusts the pattern to be denser and more robust; more in keeping with the other façade elements.



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THE ABBOT BUILDINGS

CAMBRIDGE, MA

PLANNING BOARD SPECIAL PERMIT PRESENTATION (REVISED)

March 20, 2018

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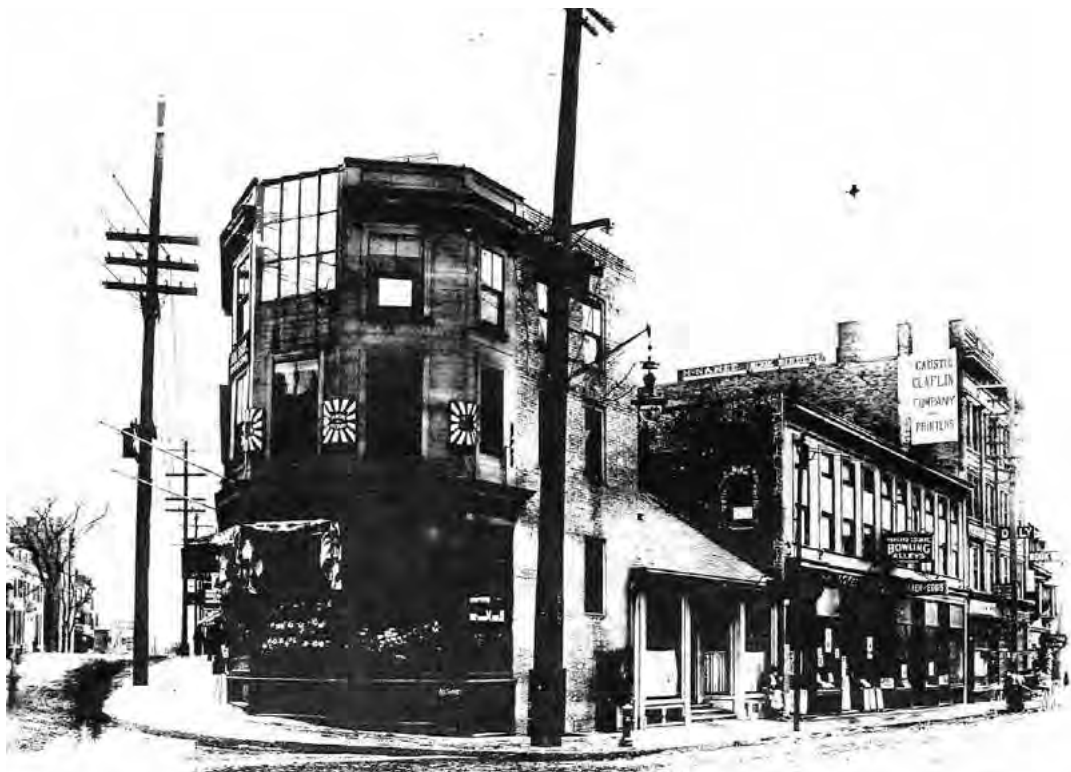
SHADOW STUDIES_____33



VIEW FROM HARVARD SQUARE - 1960'S



VIEW FROM HARVARD SQUARE - 1980'S



VIEW FROM HARVARD SQUARE - LATE 1800'S



VIEW FROM JFK STREET - 1940's



VIEW FROM HARVARD SQUARE - EARLY 1900'S



VIEW FROM HARVARD SQUARE - 1950'S



VIEW FROM HARVARD SQUARE - 1960'S



VIEW FROM BRATTLE STREET - LATE 1800'S



VIEW FROM BRATTLE STREET - 1950'S



VIEW FROM BRATTLE STREET - 1980'S



VIEW FROM HARVARD SQUARE



VIEW FROM HARVARD SQUARE INTERSECTION



VIEW FROM BRATTLE STREET



VIEW FROM BRATTLE SQUARE

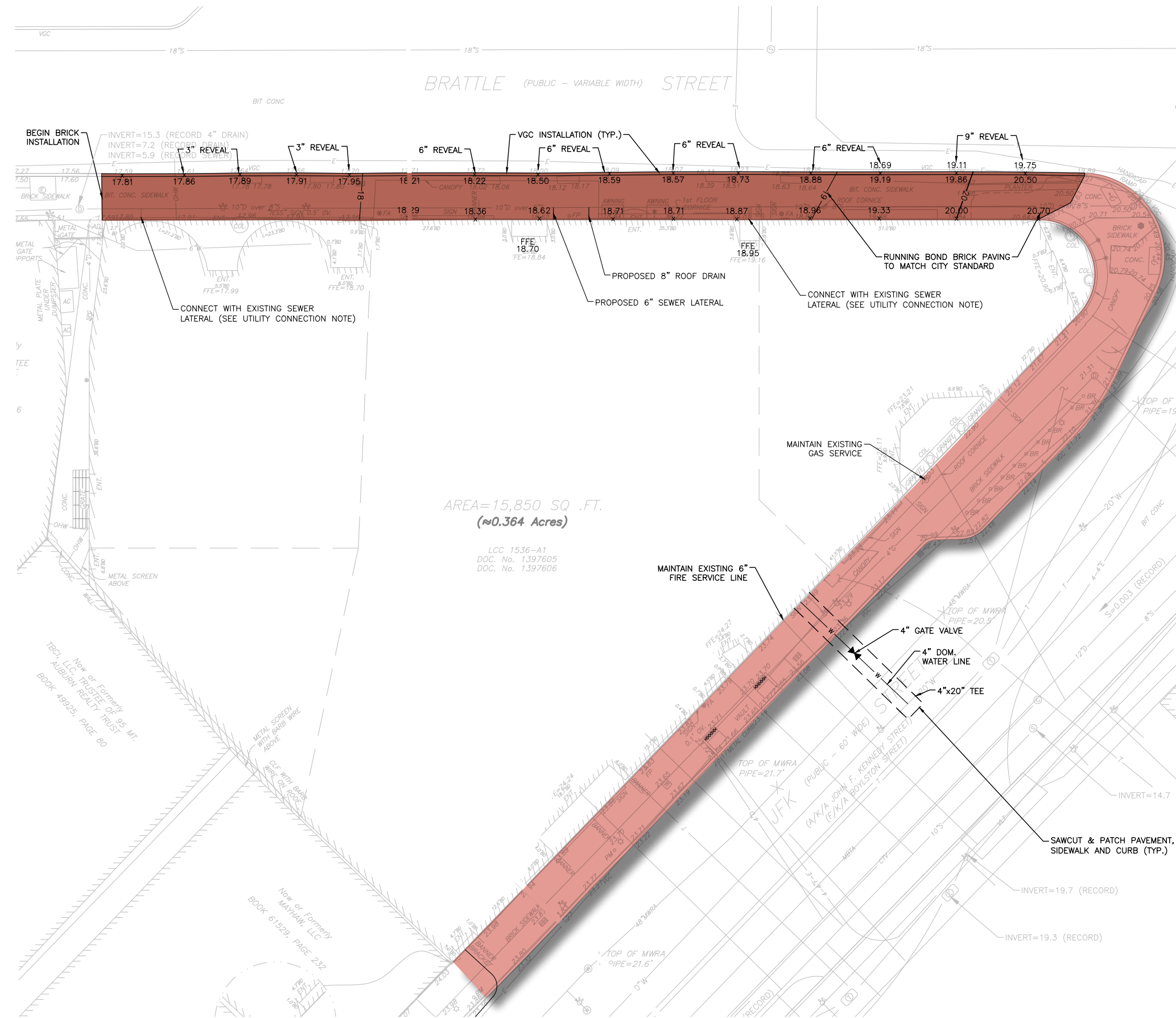


VIEW FROM JFK STREET



VIEW FROM JFK STREET & MT. AUBURN

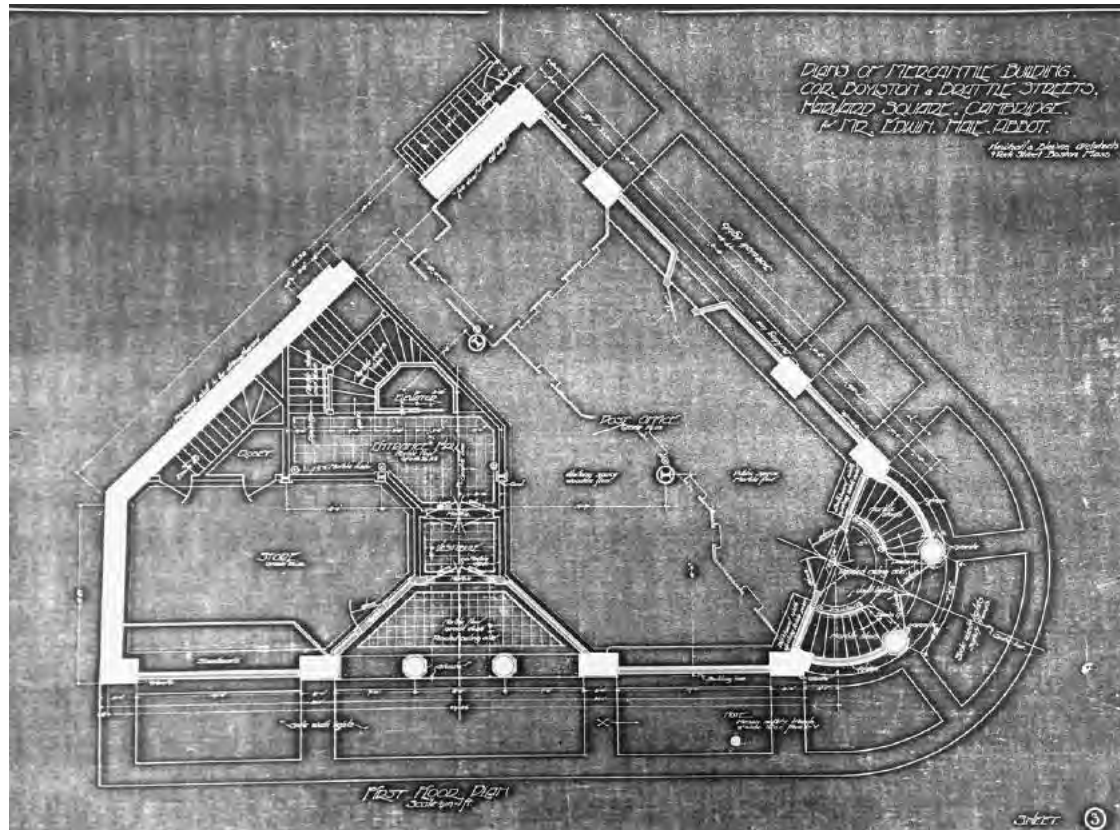




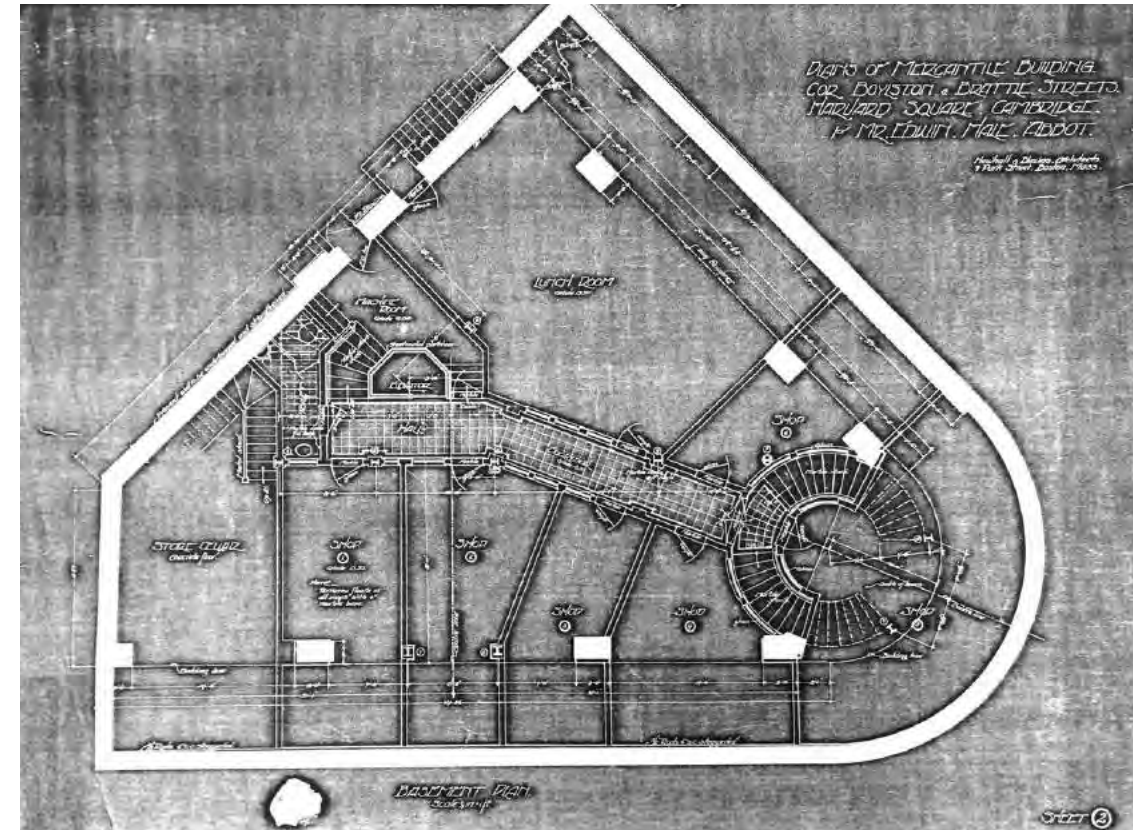
EXISTING SIDEWALK CONDITION



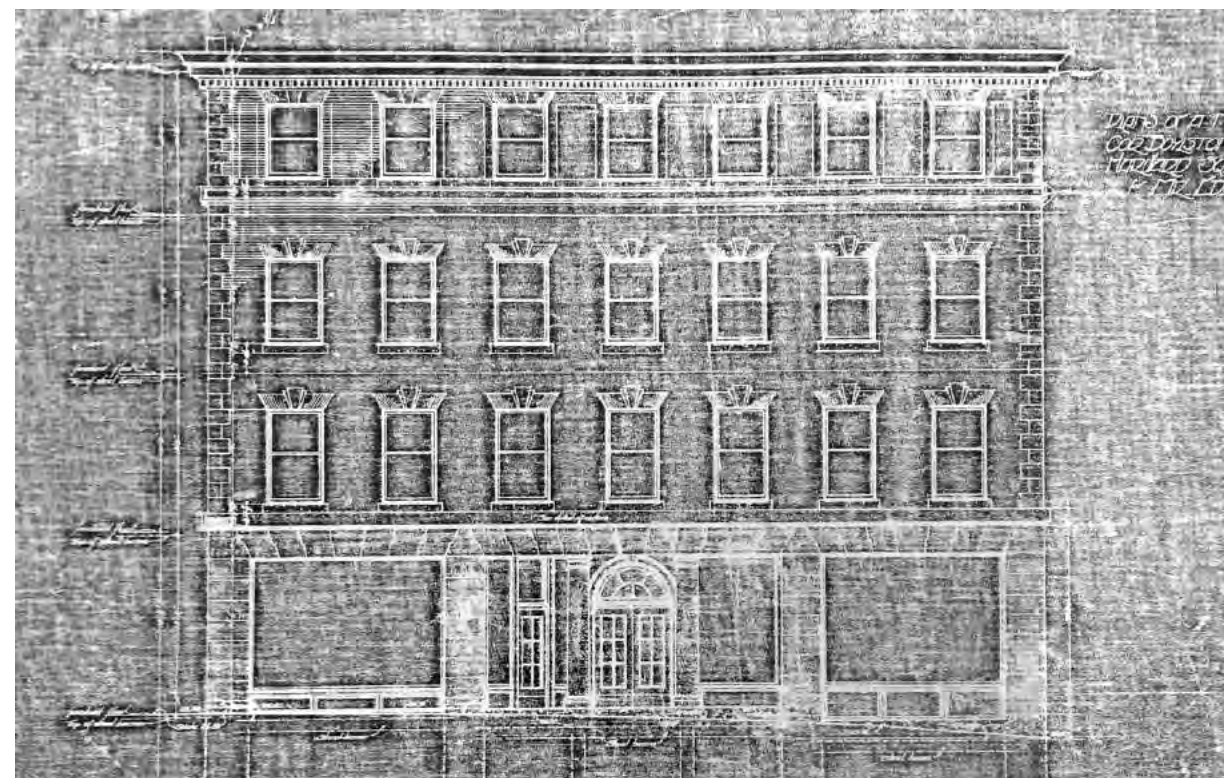
PROPOSED SIDEWALK CONDITION



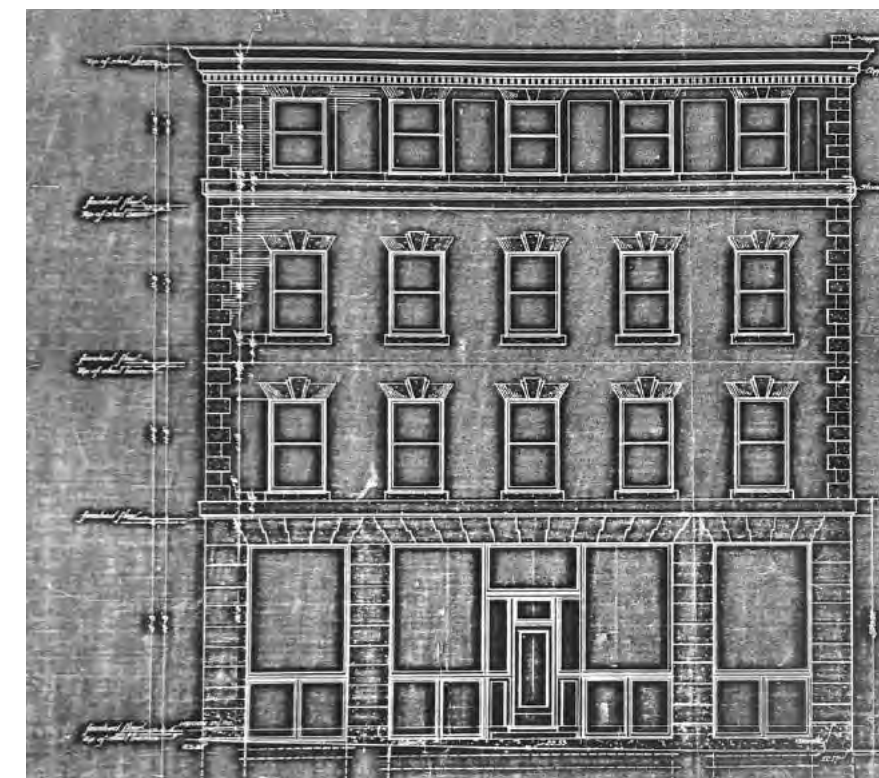
EXISTING GROUND FLOOR PLAN



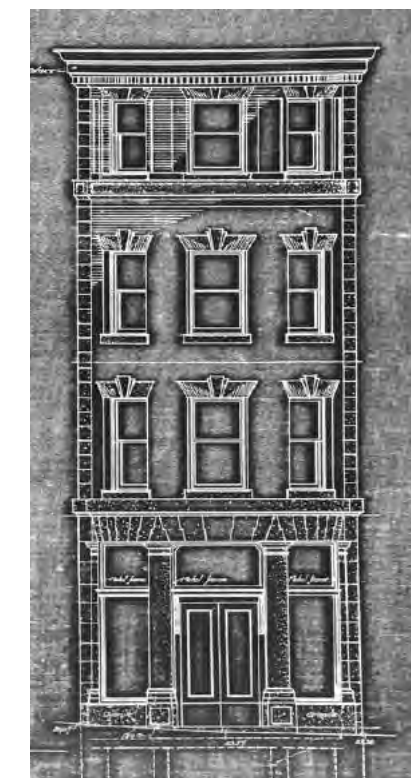
EXISTING GROUND FLOOR PLAN



EXISTING JFK STREET ELEVATION



EXISTING BRATTLE STREET ELEVATION



EXISTING END ELEVATION



NOTED FEATURES:

- (1) WINDOW OPENINGS EXTEND TO GRANITE BASE
- (2) CURVED GLASS STOREFRONT AT ENTRANCE, SIDES, AND TRANSOM
- (3) GRANITE CURBS AT ENTRANCE SIDES
- (4) LIMESTONE PILASTERS AT RETURNS (STILL EXTANT AT JFK ENTRANCE)



NOTED CHANGES

- (1) LIMESTONE INFILLS AT WINDOW OPENINGS
- (2) OPENING RECONFIGURED IN 1948. FLAT WALL AND DOOR RECESSED IN CURVED FACADE
- (3) GRANITE CURBS REMOVED
- (4) LIMESTONE INFILL PIERS FLANKING NEW ENTRANCE COVER PILASTERS

Abbot Building

Built in 1908

Newhall & Blevins – architects

L. D. Willcutt & Sons Company – builder

Alterations to curved entrance in 1948:

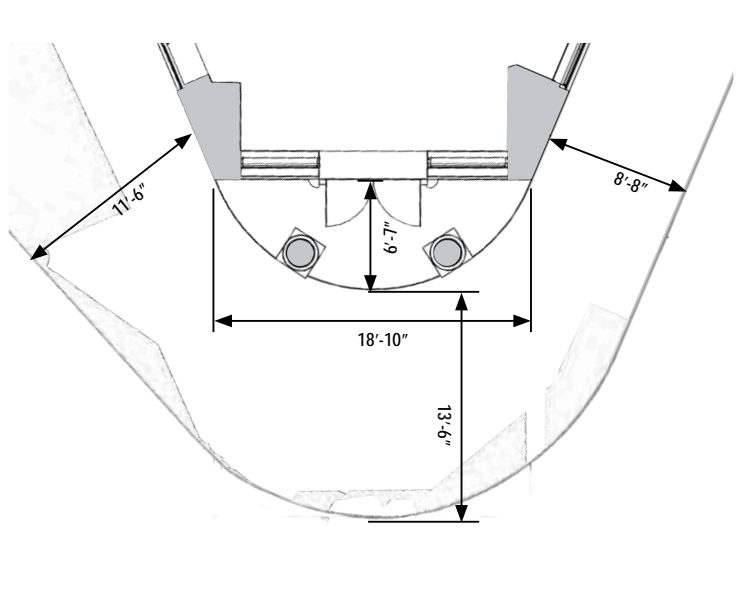
- Removed granite curbs
- Installed flat entrance door and sidelights
- Added limestone infill below first floor window openings on JFK and Brattle Streets
- Added limestone infill in front of pilasters
- Upper floor elevations remain intact

18-24 Brattle Street

Built in 1894

Extensive fire in 1922 requires rebuilding the façade

- Newhall & Blevins – architects for 1922 work
- Becomes the Abbot Mercantile Building
- Storefronts at street level changed over time
- Upper floor elevations remain intact





TYPICAL LIMESTONE AND BRICK SOILING



CRACK IN LIMESTONE TO BE REPAIRED WITH PINS AND GROUT



FERROUS ANCHORS, CONDUITS, AND ATTACHMENTS TO BE REMOVED AND RESULTING HOLES PATCHED



WOOD WINDOW FRAMES TO BE RESTORED. WOOD WINDOW SASH TO BE REPLACED TO MATCH ORIGINAL PROFILES AND CONFIGURATION.



PREVIOUS LIMESTONE PATCHES TO BE REMOVED AND NEW PATCHES INSTALLED TO MATCH SURROUNDING STONE



OPEN JOINTS AT LIMESTONE BELT COURSE. COPPER CORNICE TO BE INSPECTED



- PROTECT EXISTING POLISHED GRANITE COLUMNS
- REMOVE SIGN TO EXPOSE LIMESTONE FRIEZE
- PROTECT EXISTING POLISHED GRANITE COLUMNS
- REMOVE LIMESTONE INFILL

EXISTING JFK STREET ELEVATION

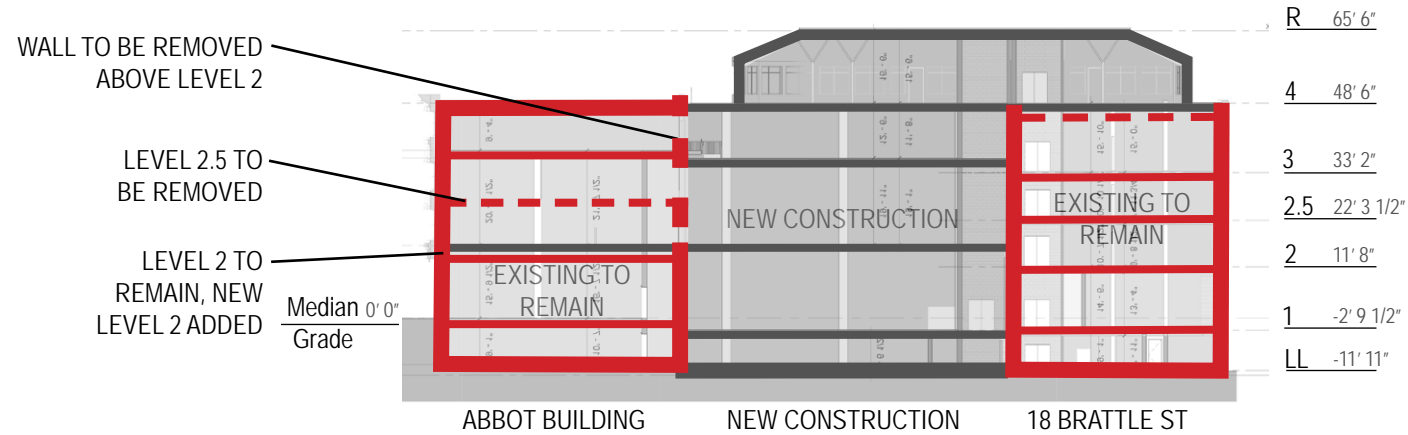
General Restoration Notes for Abbot Building and 18-24 Brattle Street:

- Carefully remove all limestone infill panels installed after the original construction.
- Clean brick and limestone using gentlest means possible to remove atmospheric soiling and staining.
- Repoint all open brick and limestone mortar joints. Use mortar that matches existing in color, texture and composition.
- Remove all ferrous anchors, conduits and attachments. Patch resulting holes in brick and limestone with cementitious patching material (<1" diameter); or Dutchman (>1" diameter).
- Replace any cracked brick with new brick matching existing in color, texture and composition.
- Repair cracks in limestone with stainless steel pins and patching material.
- Remove all previous limestone patches that are failing, or do not match surrounding in color or texture. Patch resulting voids with cementitious patching material (<1" diameter); or Dutchman (>1" diameter).
- Furnish and install new wood windows to match historic profiles.
- Restore existing wood frames and trim.

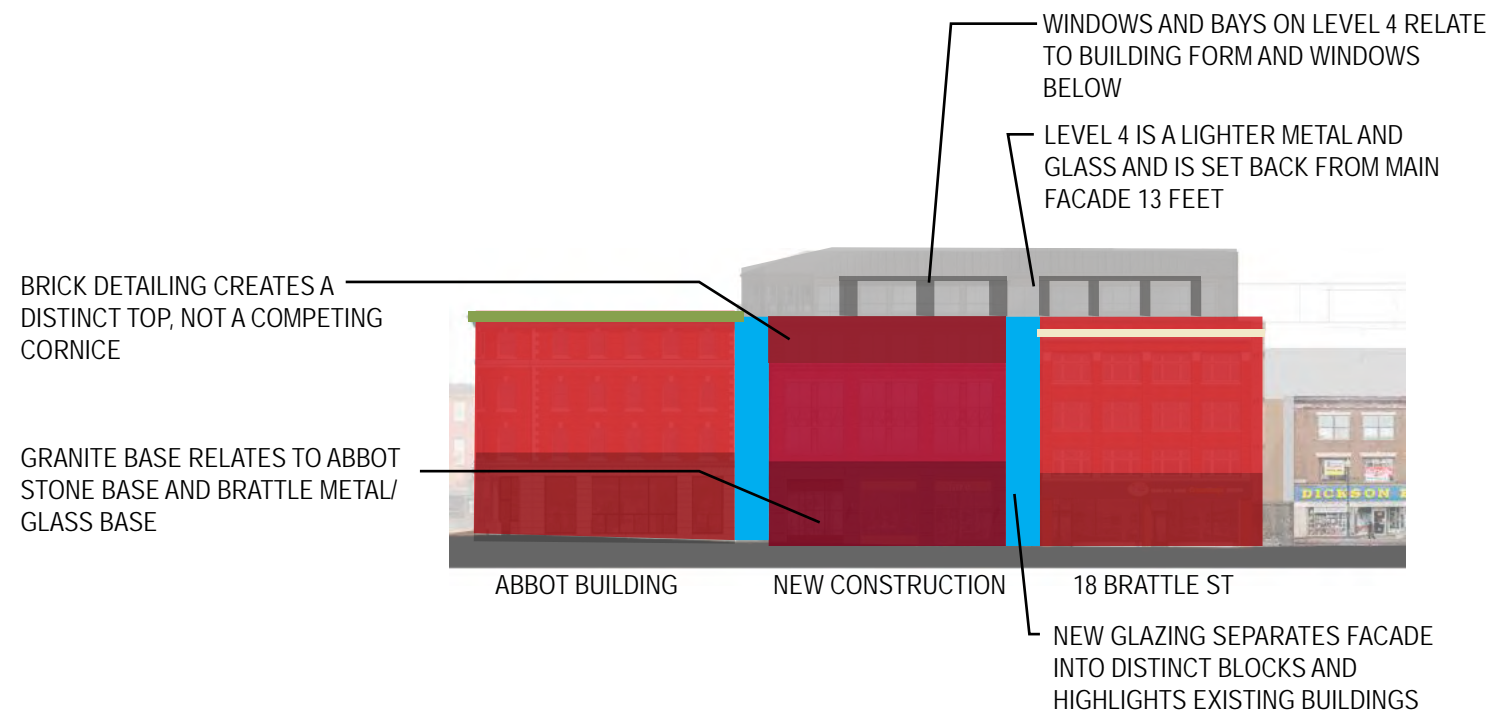


- REMOVE SIGN TO EXPOSE LIMESTONE FRIEZE
- PROTECT EXISTING POLISHED GRANITE COLUMNS
- REMOVE LIMESTONE INFILL

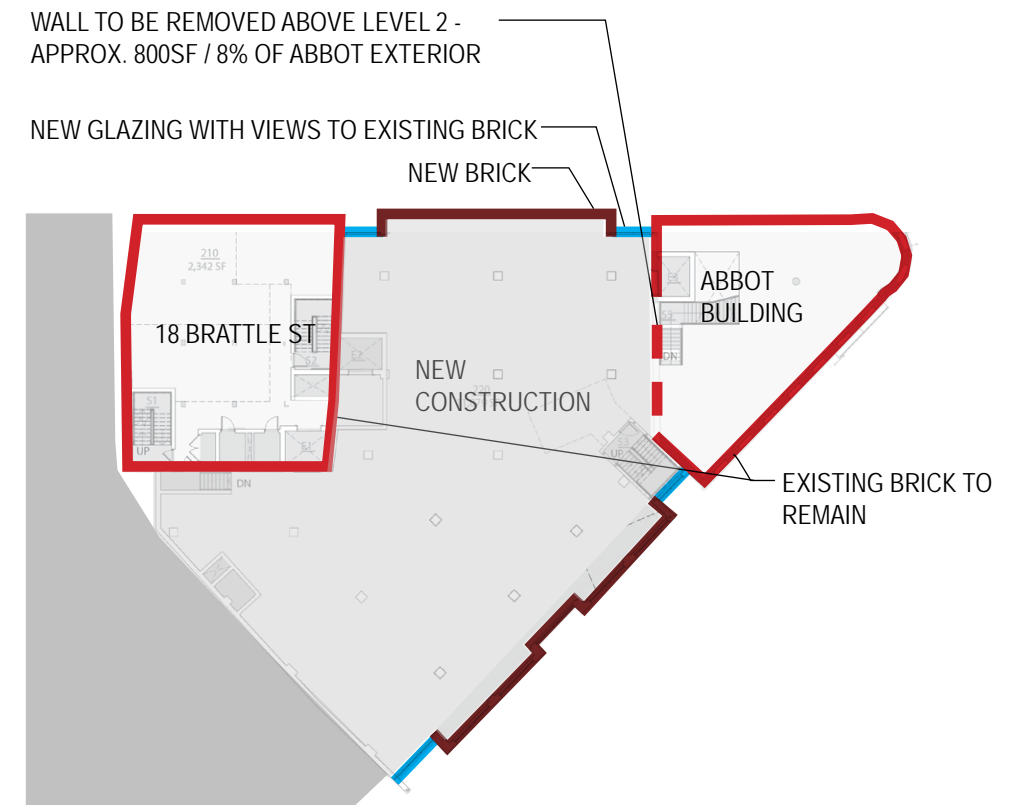
EXISTING BRATTLE STREET ELEVATION



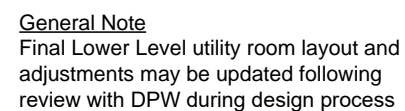
EXISTING AND NEW CONSTRUCTION



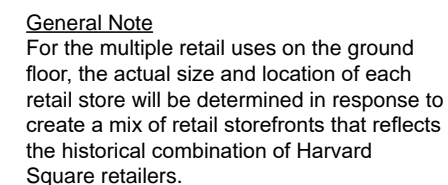
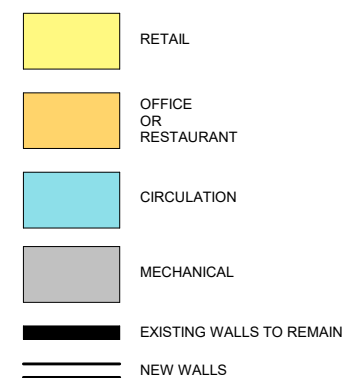
DESIGN CONCEPT: DISTINCT BUILDING BLOCKS



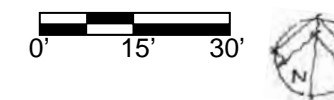
DESIGN CONCEPT: HIGHLIGHT EXISTING BUILDINGS

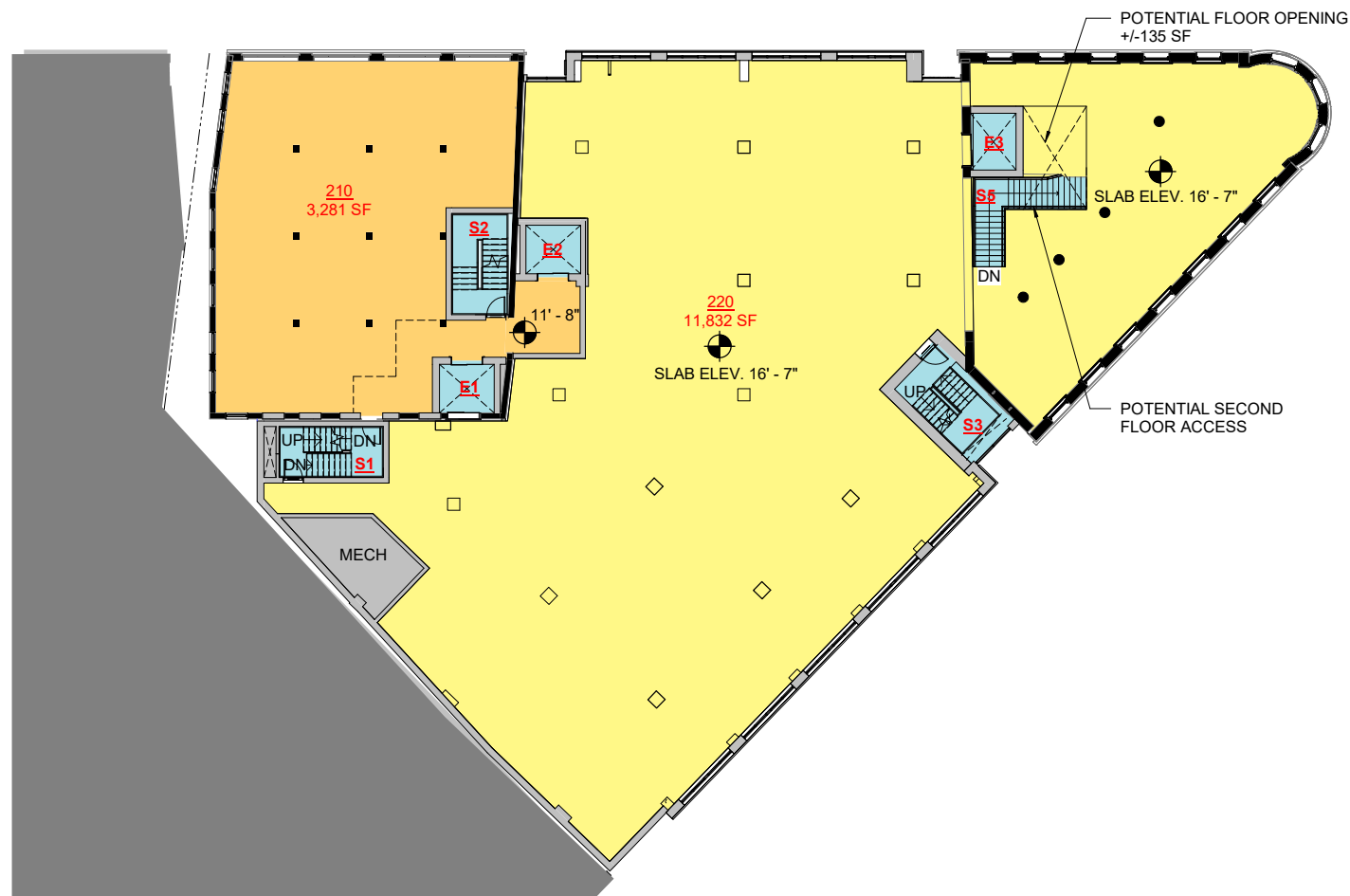


Retail:	10,556 SF
Office:	0 SF
<hr/>	
Total Building Area:	15,433 SF
Total Zoning Area:	11,283 SF



Retail:	15,325 SF
Office:	0 SF
Total Building Area:	15,325 SF
Total Zoning Area:	15,293 SF

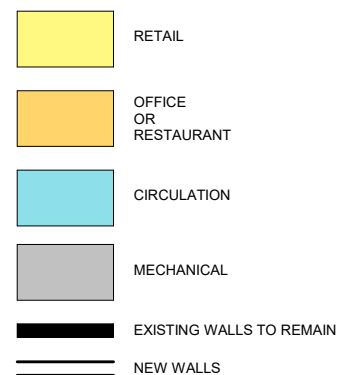




REVISED LEVEL 2

Revised Area

Retail:	12,043 SF
Office:	3,281 SF
Total Building Area:	15,324 SF
Total Zoning Area:	15,113 SF

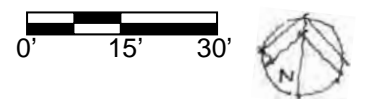


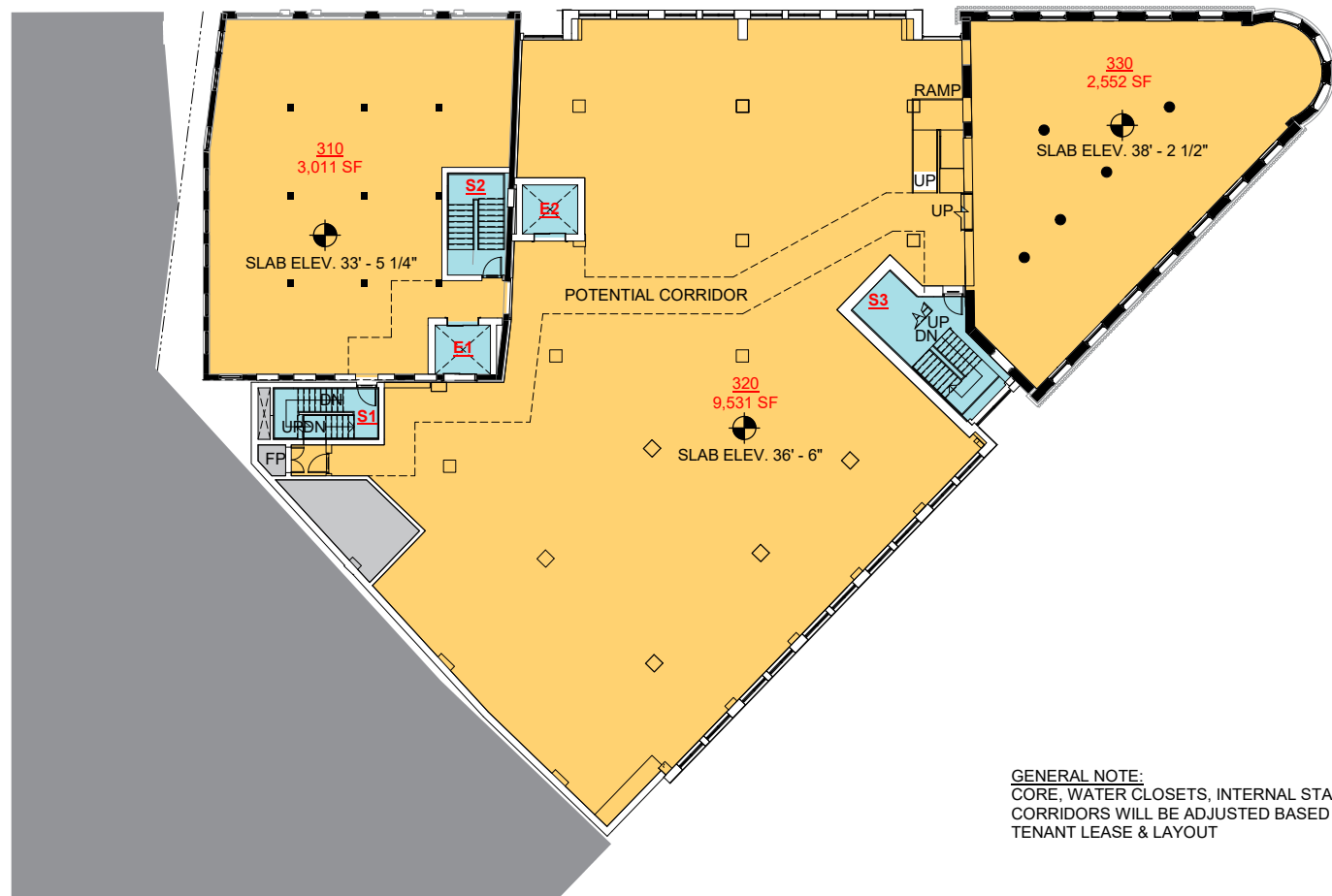
REVISED LEVEL 2.5

Revised Area

Retail:	2,345 SF
Office:	3,281 SF
Total Building Area:	5,626 SF
Total Zoning Area:	5,609 SF

Existing and Proposed elevations are based on 0'-0" being set by average grade at sidewalk around the building.





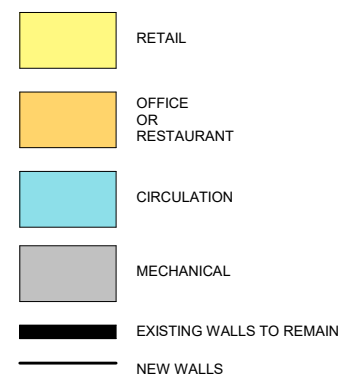
GENERAL NOTE:
CORE, WATER CLOSETS, INTERNAL STAIRS &
CORRIDORS WILL BE ADJUSTED BASED ON FINAL
TENANT LEASE & LAYOUT



REVISED LEVEL 3

Revised Area

Retail:	0 SF
Office:	15,325 SF
Total Building Area:	15,325 SF
Total Zoning Area:	15,094 SF

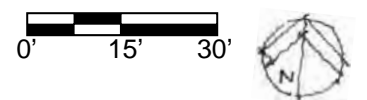


REVISED LEVEL 4

Revised Area

Retail:	0 SF
Office :	8,923 SF
Total Building Area:	8,923 SF
Total Zoning Area:	10,495 SF (Includes 1,662 SF of roof deck)

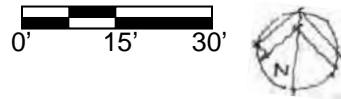
Existing and Proposed elevations are based on 0'-0" being set by average grade at sidewalk around the building.





REVISED ROOF PLAN

Existing and Proposed elevations are based on 0'-0" being set by average grade at sidewalk around the building.



ABBOT ROOF
48'-6"



EXISTING BRATTLE ST. ELEVATION



EXISTING JFK ST ELEVATION



BRATTLE ST. ELEVATION (01.30.2018 PROPOSAL)





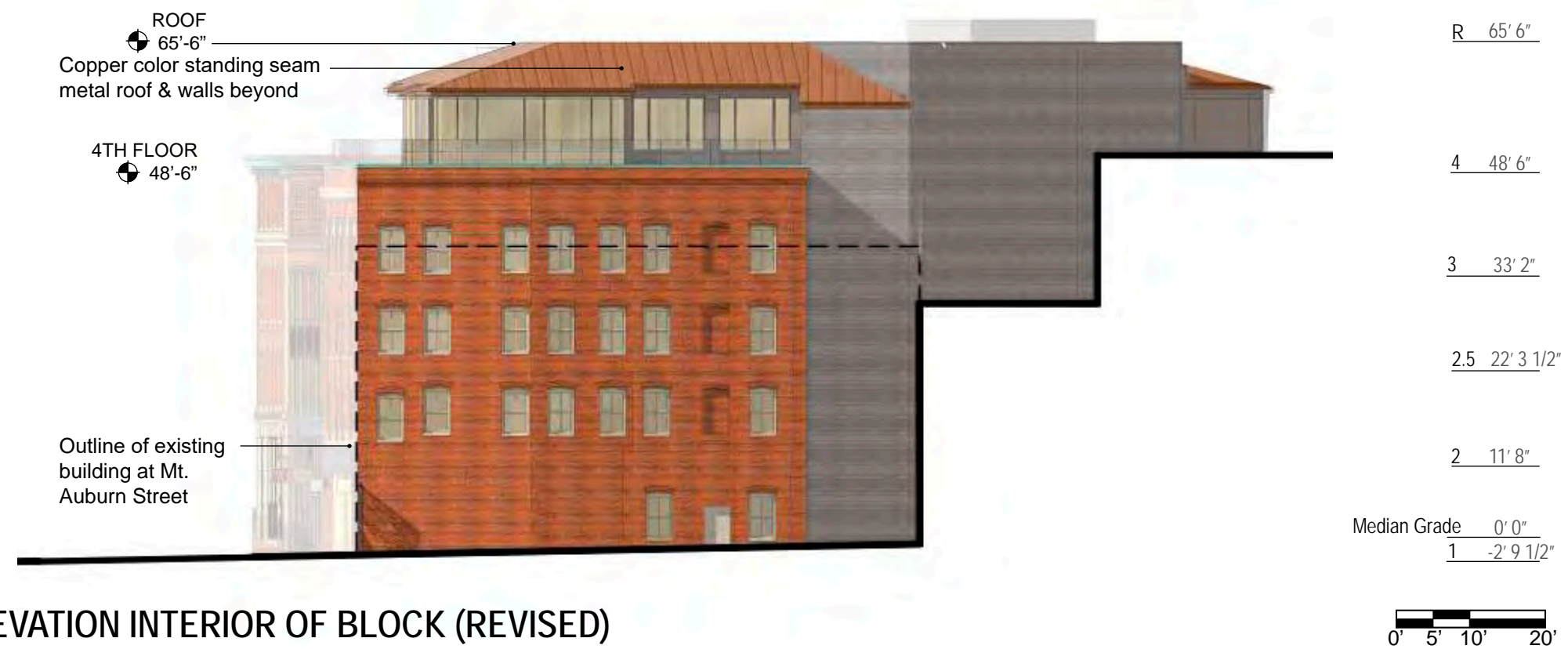
JFK ST. ELEVATION (01.30.2018 PROPOSAL)



JFK ST. ELEVATION (REVISED)



WEST ELEVATION (01.30.2018 PROPOSAL)



WEST ELEVATION INTERIOR OF BLOCK (REVISED)



All-Glass 5th Floor



Slate Roof w/Windows

Copper 6th Floor w/ Windows Grey Metal Penthouse

Upper Floor Materials in Harvard Square



From the National Park Service Federal Historic Preservation Guide

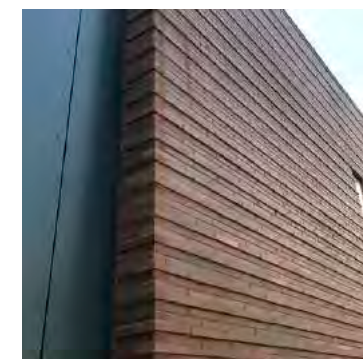


Existing masonry wall is featured through the glazing

New Glass with Existing Masonry



Examples of brick details



Detail in Brick



Existing metalwork details on Massachusetts Avenue

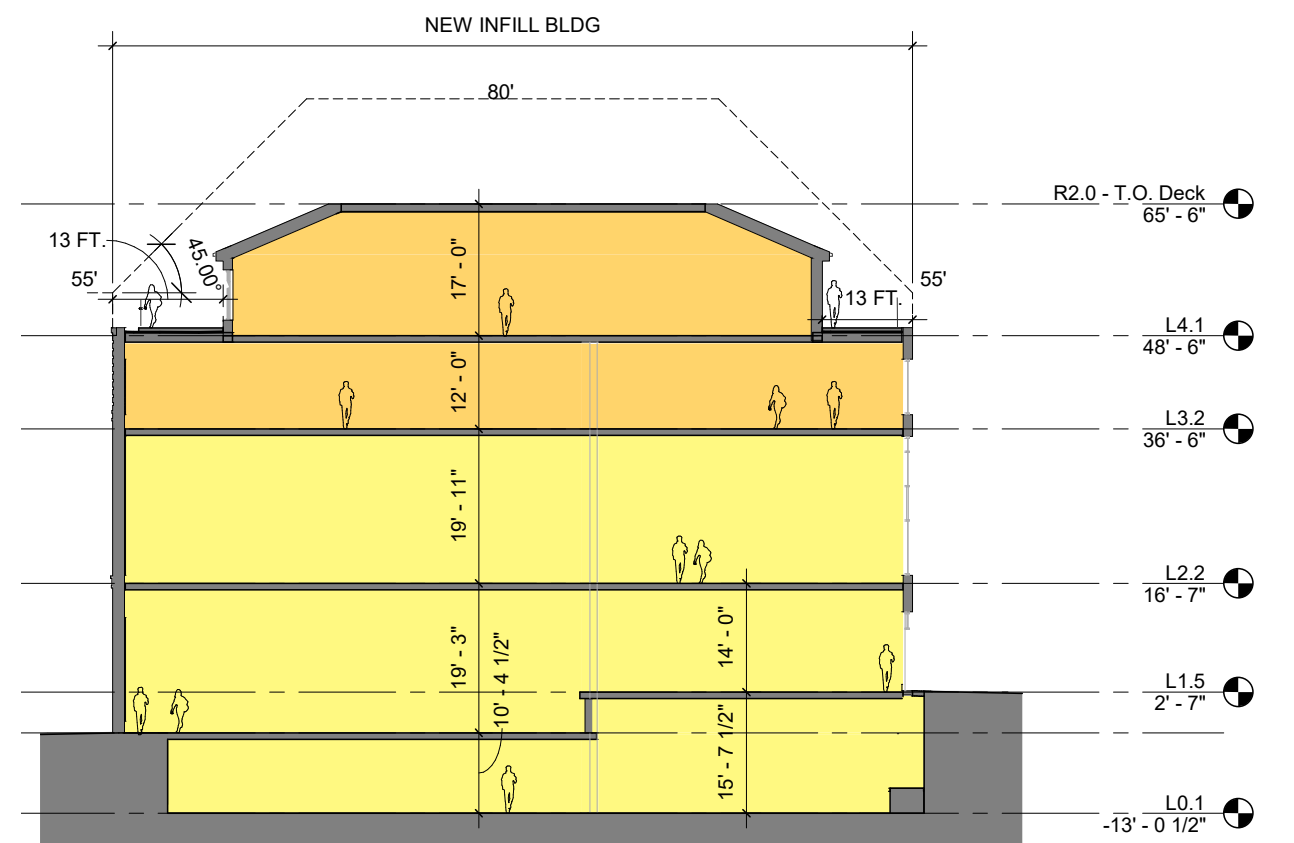
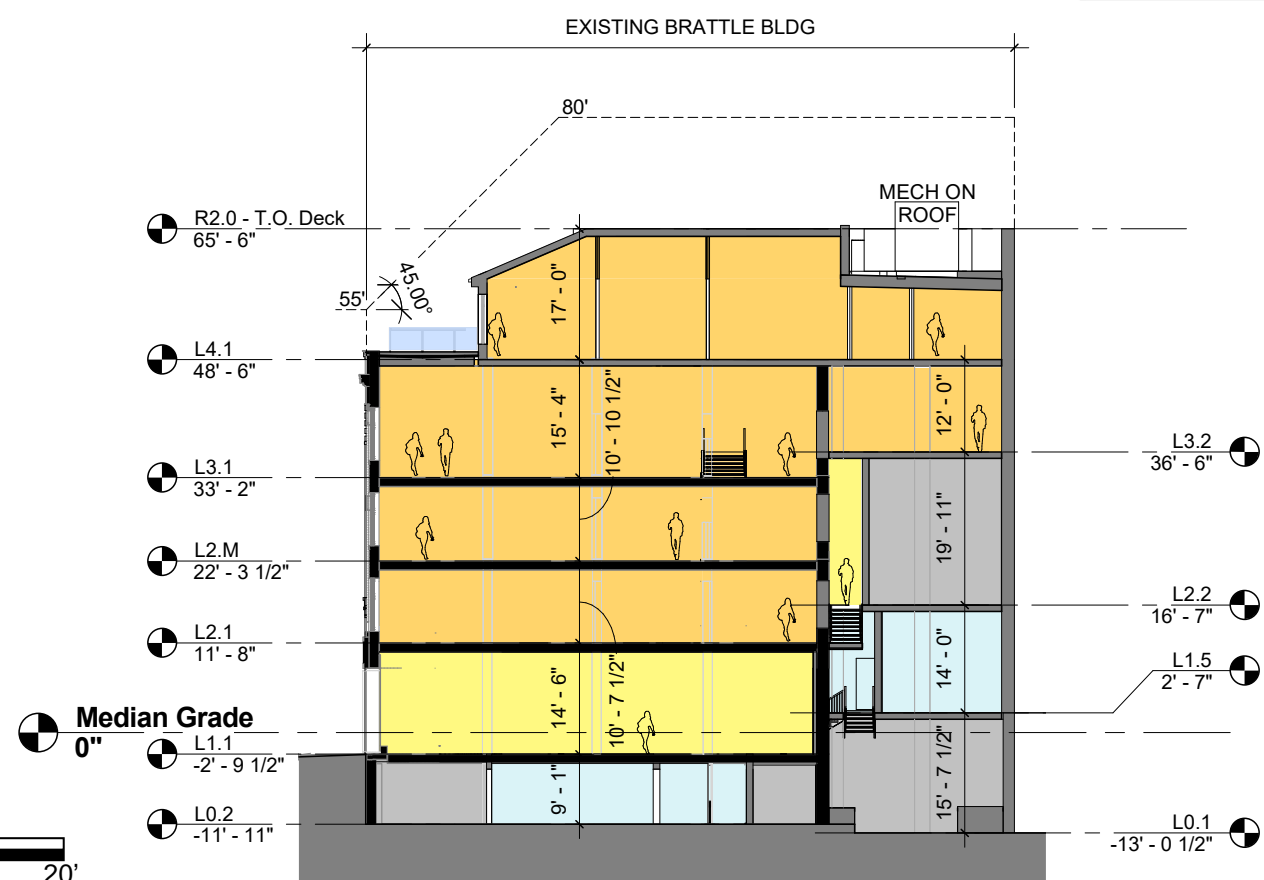
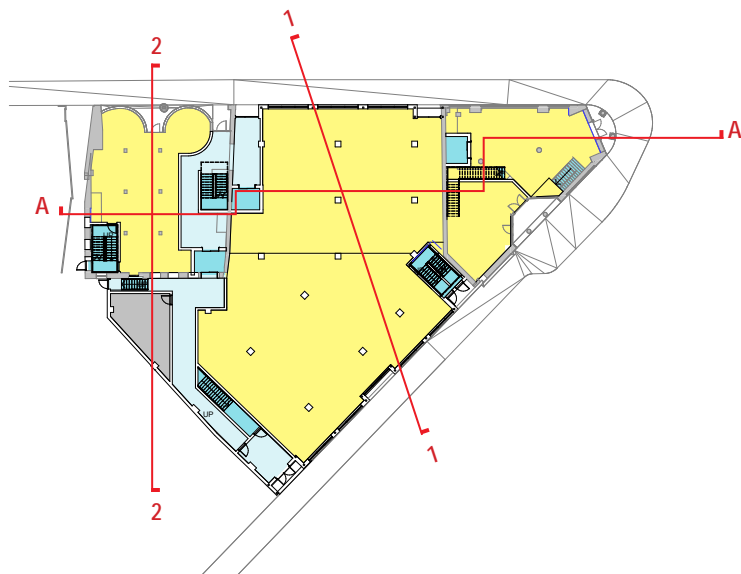


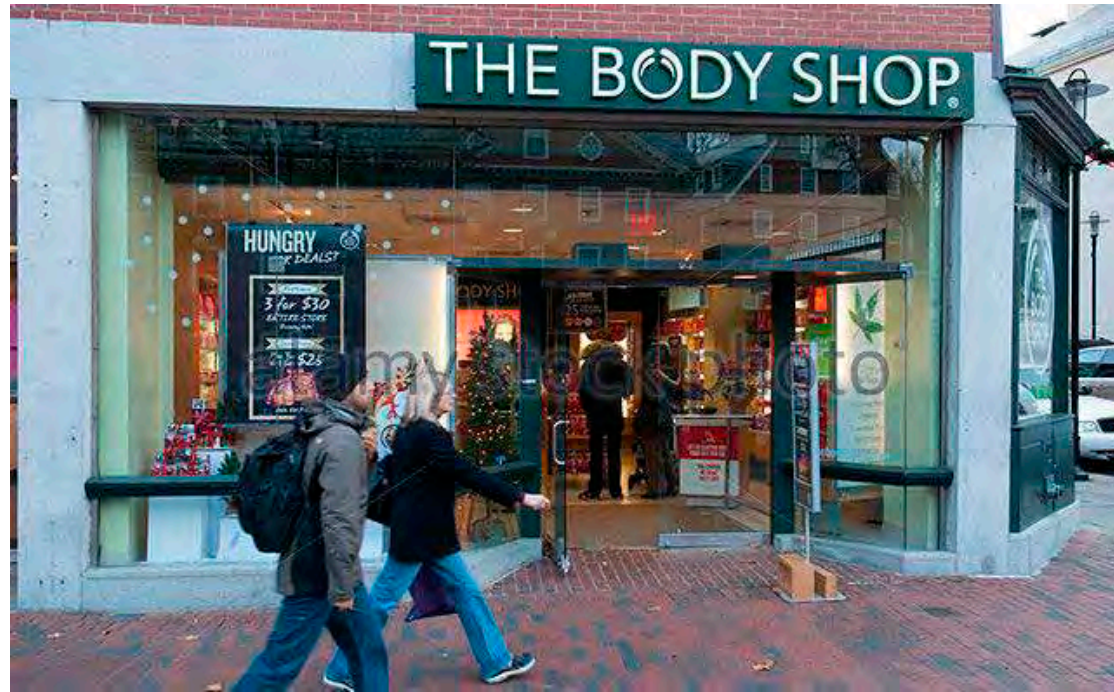
Proposed metalwork is inspired by shape of the Abbot Building

Metalwork Details



Granite Base





RETAIL STOREFRONT PRECEDENTS



POTENTIAL STOREFRONTS WITH INDIVIDUAL EXPRESSION FIT INTO BUILDING FRAMEWORK



EXISTING PERSPECTIVE FROM HARVARD SQUARE



EXISTING PERSPECTIVE FROM HARVARD SQUARE



EXISTING PERSPECTIVE FROM BRATTLE SQUARE



EXISTING PERSPECTIVE FROM JFK STREET



1.30.2018 PROPOSAL





1.30.2018 PROPOSAL



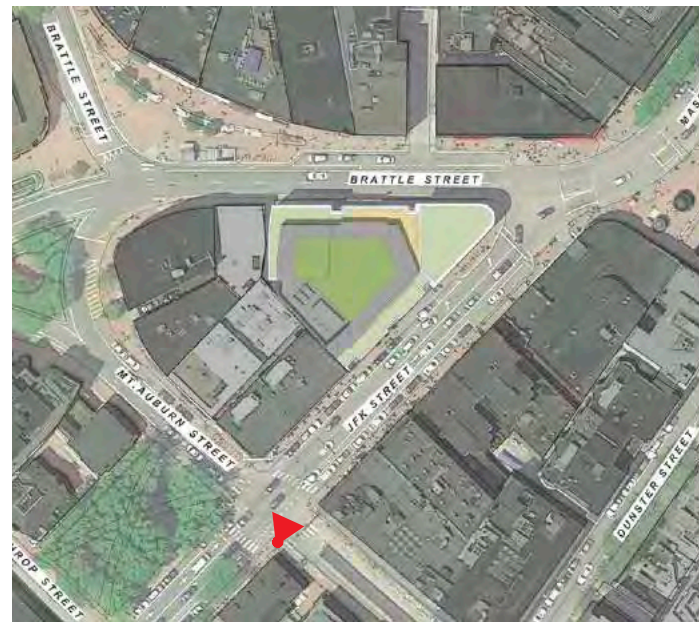


1.30.2018 PROPOSAL





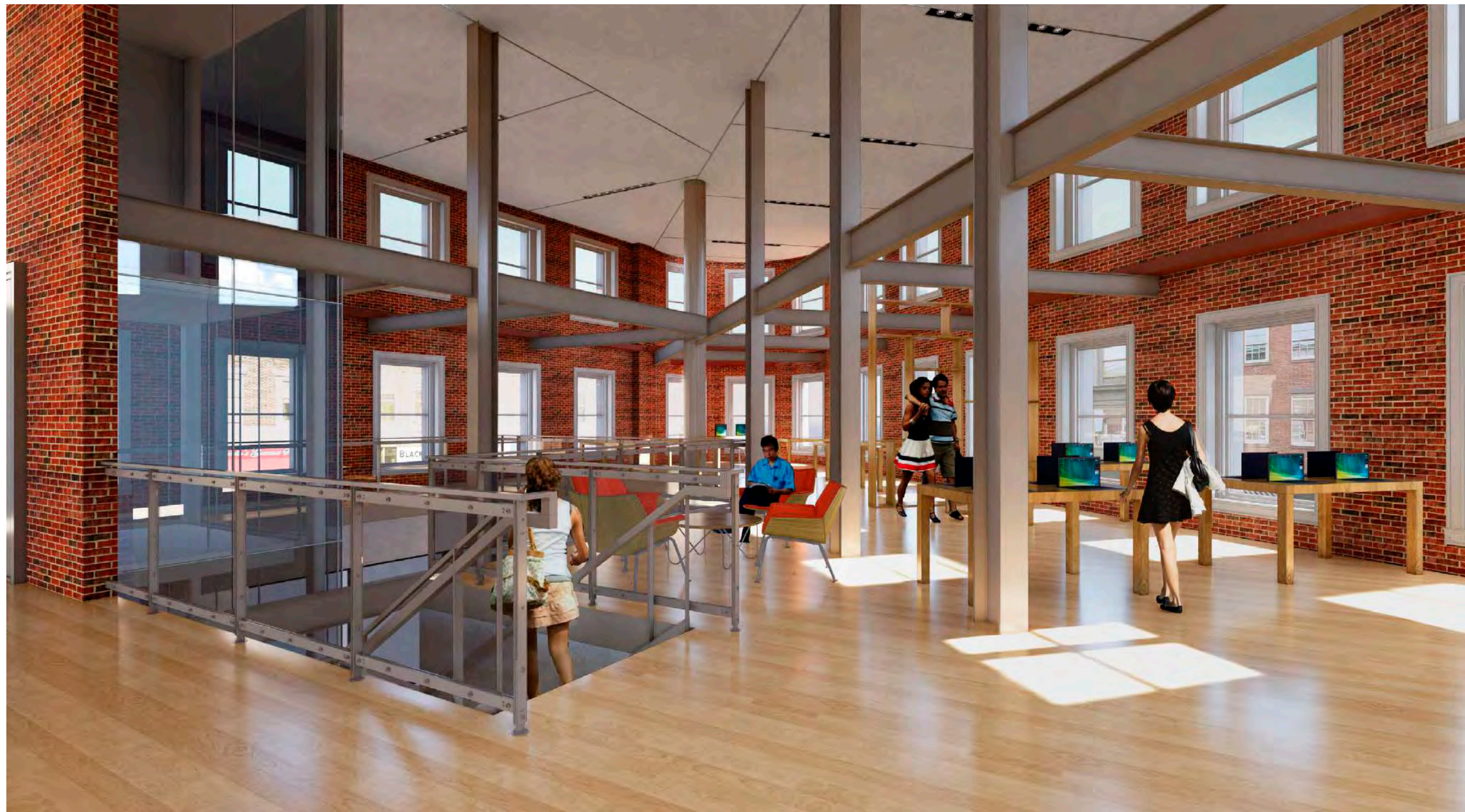
1.30.2018 PROPOSAL





1.30.2018 PROPOSAL







1.30.2018 PROPOSAL







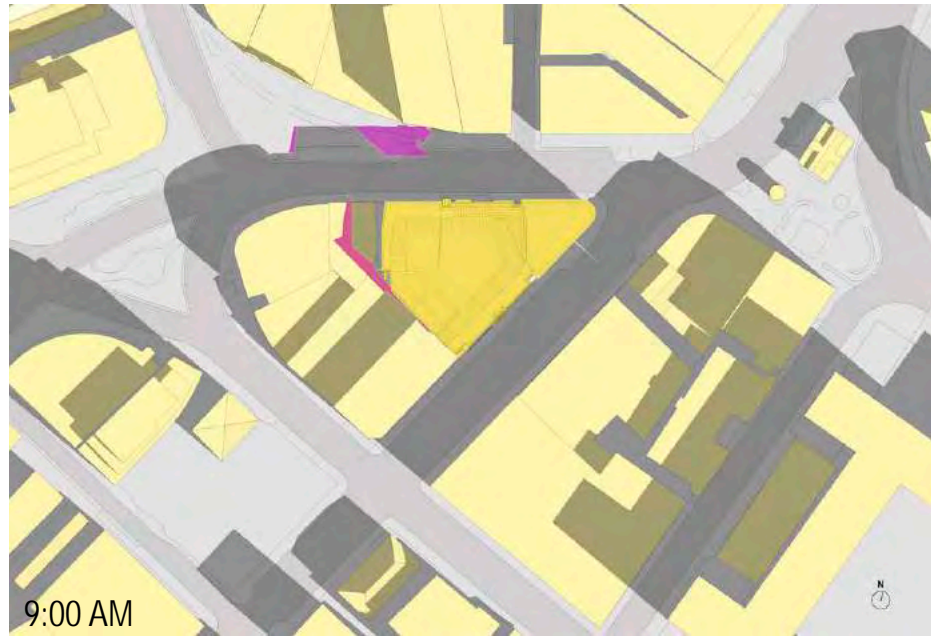
SHADOW STUDY: MARCH 21ST



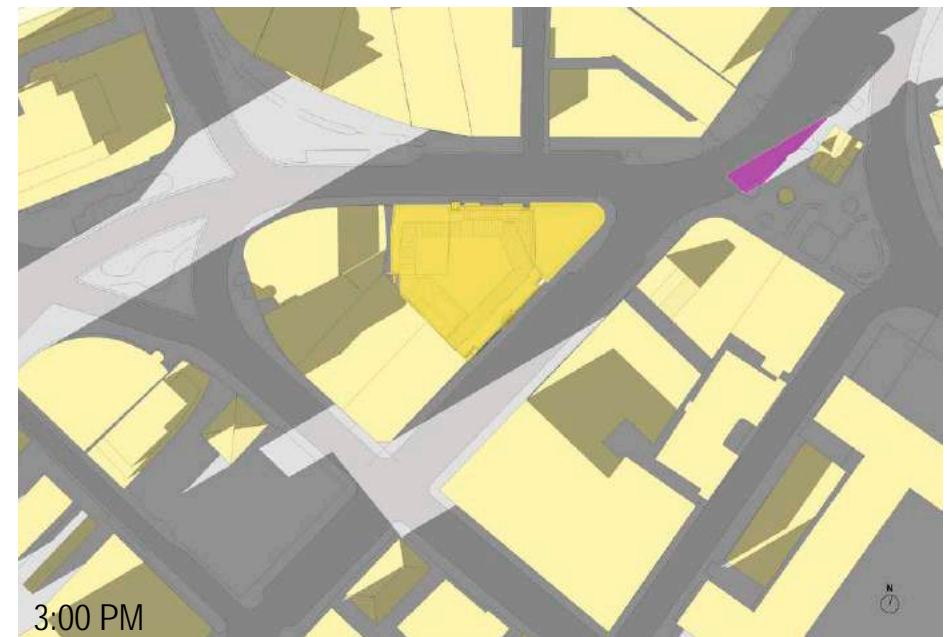
SHADOW STUDY: JUNE 21ST

 Additional shadow cast by proposed addition


 Shadow cast by existing building.




SHADOW STUDY: SEPTEMBER 21ST



SHADOW STUDY: DECEMBER 21ST

 Additional shadow cast by proposed addition

 Shadow cast by existing building.

MEMORANDUM 2

PROJECT: The Abbot Buildings in Harvard Square
PROJECT NO: 17010.00
DATE: February 27, 2018

RE: Response to CDD review on Article 22

TO: Community Development Department, Attn: Liza Paden
344 Broadway
Cambridge, MA 02139

ENCLOSURE: Energy Performance Target, Transitioning to Net Zero narrative

RESPONSE: The Article 22 Green Building report dated October 13, 2017 that was submitted to the City of Cambridge indicates an 8% energy cost savings compared to the LEED v4 (ASHRAE 90.1-2010) baseline, equal to 3 LEED credit points. Since this report was submitted to the City, an updated Energy Performance Report dated October 30, 2017 (attached) has been issued to the team which indicates an estimated 20.8% energy cost savings compared to the LEED v4 (ASHRAE 90.1-2010) baseline, equal to 9 LEED credit points.

Because the design is evolving, the team is not able to commit to achieving a 20.8% energy cost savings as indicated on the latest Energy Performance Report. At this time, the project team can commit to achieving at least a 14% energy cost savings, equal to 6 LEED credit points or a 3 LEED credit point increase from what was indicated on the Article 22 Green Building Report. This update increases the total targeted LEED credit points from 50 to 53. As the design continues to evolve, the team will explore additional strategies to further improve energy cost savings.

The Article 22 Green Building report dated October 13, 2017 indicated that there are an additional 20 'Maybe' points. Achieving LEED Gold 'certifiable' requires the project to attempt 7-10 additional LEED credit points, which will be challenging.

The two metrics being used for energy targeting are percent energy cost saving from baseline (\$/yr) and site EUI (kBtu/sf/yr). It is important to note that these two metrics do not have a linear correlation.

The preliminary EUI (Energy Utilization Index) for the proposed design is estimated at 52 kBtu/sf/yr, as noted on the Integrative Process Work Plan document (Envienergy response and document attached). The estimated EUI represents a 40.6% reduction as compared to the Energy Star Target Finder EUI (89 kBtu/sf/yr) and a 49.7% reduction as compared to the AIA 2030 Zero Tool Baseline EUI (105 kBtu/sf/yr). The team is targeting, but cannot commit to, a final EUI of 44.5 kBtu/sf/yr, equal to a 50% reduction from the Energy Star Target Finder EUI.

Eversource has been engaged and the team has met to discuss energy efficiency and MassSave utility incentives.

The team has also discussed and is considering applying for incentives/rebates through the MA CEC funding program for Commercial Air Source Heat Pump (VRF) installations
<http://www.masscec.com/business/clean-heating-and-cooling>)

Regarding transitioning to Net Zero, see attached Transitioning to Net Zero narrative.

Subject: 24 Brattle Street - Abbot Buildings | Sustainability Memo
Response to Article 22 Energy Performance Review Comments

Date: February 8, 2018

To: Ms. Liza Paden, Assistant Land Use Planner
Community Development Department, Cambridge, MA

From: Samira Ahmadi, BEMP, LEED AP | enviENERGY Studio LLC

Dear Ms. Paden:

This memo provides a response to CDD's sustainability comments regarding the building energy performance benchmarking and analysis.

Comment Represented:

Regarding LEED's *Optimize Energy Performance Credit* – designed to reduce environmental and economic harms associated with excessive energy use through increasing levels of energy performance beyond the prerequisite standard – The Abbot Buildings are targeting an **8% improvement** in savings over the baseline building performance (ASHRAE90.1-2010). This same credit also asks that projects “*establish an energy performance target no later than the schematic design phase... as kBtu/ft²/yr of source energy use.*” **Currently, The Abbot Buildings have not yet complied with this requirement.** CDD Staff that the Project Team establish this energy performance target and submit relevant documents that supports this target prior to the issuance of the Special Permit.

Response:

Thank you for providing the detailed review and technical comments. The project team is pursuing the Integrative Process credit for this project, and therefore, an energy model and energy performance targets were established pre-schematic design phase. enviENERGY Studio obtained the conceptual architectural drawings and generated the baseline and proposed case models to investigate the project's compliance with the LEED v4 Minimum and Optimize Energy Performance criteria and the Massachusetts Energy Code requirements. The energy analysis indicates that the project as designed complies with the Massachusetts Energy Code by showing a 26% reduction in the annual energy consumption as compared to ASHRAE 90-1-2013 Baseline case, and it shows approximately 20% energy cost savings as compared to LEED v4 Baseline Case model. Since the project is in early stage of the design, the project team is targeting a 14% improvement in energy cost savings over the ASHRAE 90.1-2010 baseline case model. The energy modeling assumptions and inputs, simulation methodology and the energy performance for both Baseline and Proposed case models are provided in the attached energy performance report.

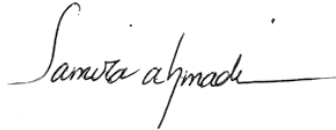
We have also utilized the AIA 2030 Zero Tool to establish an energy performance benchmark which is presented in the attached Integrative Process Work Plan document. Per the Zero Tool, the Baseline Source EUI is estimated at 238 kBtu/SF, and we are targeting a 30% reduction. The proposed Source EUI from the preliminary conceptual energy model is estimated at 119 kBtu/SF which is less than the targeted EUI.

The energy model will be updated throughout the design to reflect the projected savings at each design milestone. As shown in the attached energy modeling report, the design team is exploring additional energy efficiency measures that can assist in achieving higher levels of energy and energy cost savings, and the design and financial feasibility of these measures will be further investigated as design evolves.

We hope this memo and associated reports satisfy the requirements of Article 22. If there are any questions or if additional information is needed, please feel free to contact me at samira.ahmadi@envien-studio.com.

Sincerely yours,

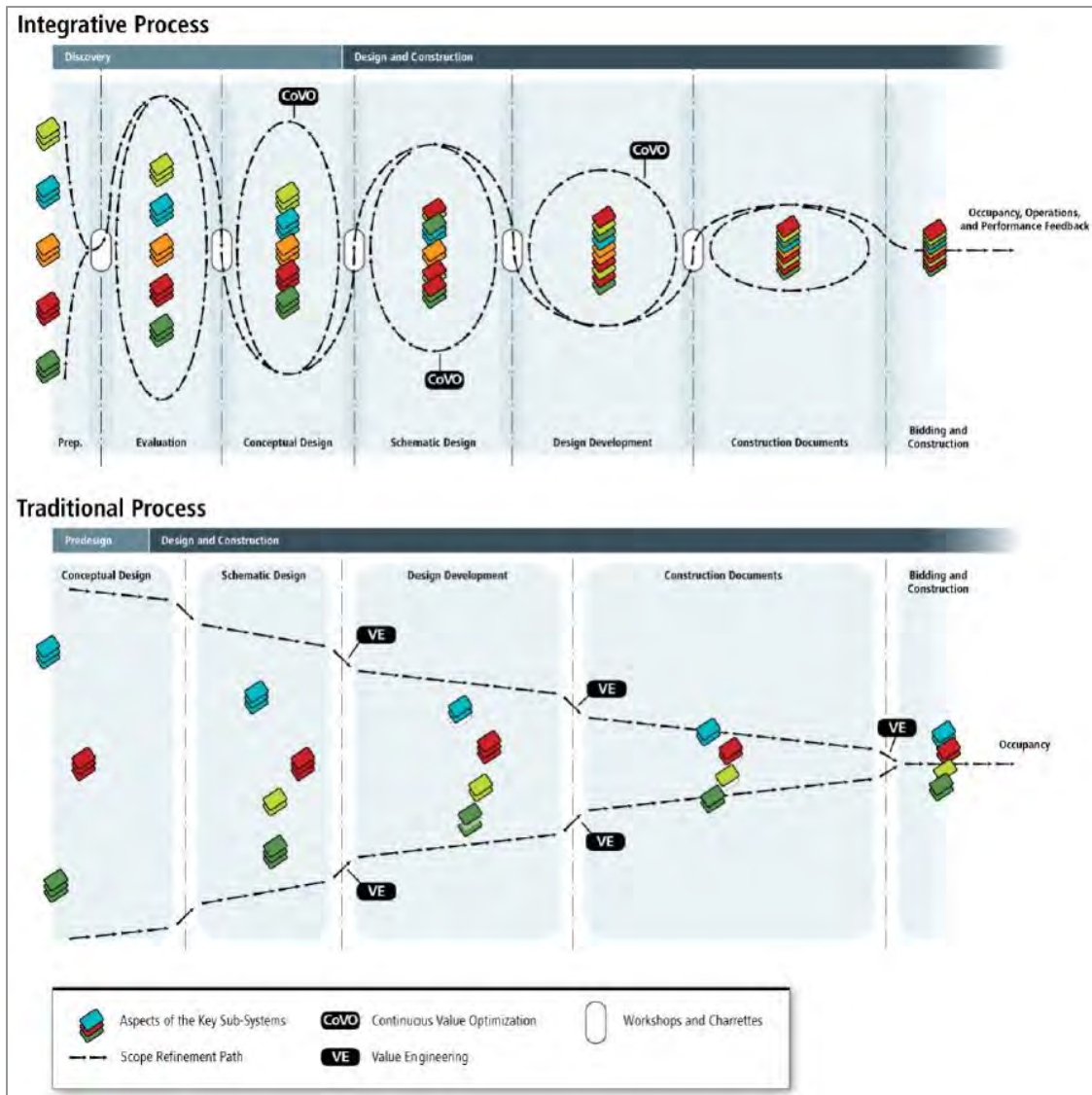
enviENERGY Studio LLC



Samira Ahmadi, BEMP, LEED AP BD+C, ID+C, Homes
Founding Principal

Harvard Square Abbot Bldgs | Cambridge, MA

LEED v4 Integrative Process



Integrative vs traditional process, “ANSI Consensus National Standard Guide© 2.0 for Design and Construction of Sustainable Buildings and Communities.”

Building area and space type:

75,762 GSF, retail and office

Estimated Occupancy:

LEED C&S Default for office + Retail + Restaurant: 520

Building and space operation schedule:

Office: 8-6; Retail: 9-9 PM; Restaurant: 11- 1 AM

Exiting envelope thermal properties:

Refer to the Assumption Table

Window to wall ratio:

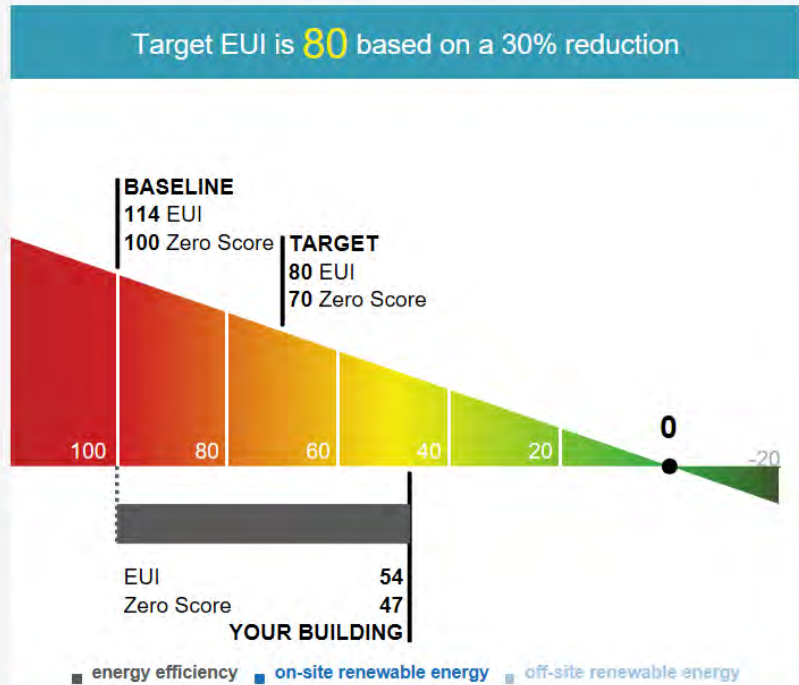
26%

Energy-Related Systems

Local Climate:	Boston, MA TMY2 weather file Heating and cooling degree days:
Site Condition:	Existing building in an urban setting; zero lot line.
Energy Sources:	Gas and electricity
Transportation options:	Subway services via red line, Harvard Square station. Bus services via at least 9 MBTA routes.
Potential building features:	60% retail; 27% office; 13% restaurant
Energy Performance benchmark:	AIA 2030 ZeroTool Baseline EUI: 114 kBtu/SF/Yr Target EUI (30% Reduction): 80 kBtu/SF/Yr Preliminary EUI: 54 kBTU/SF/Yr
Energy Modeling Software:	eQuest 3.65

Harvard Square Abbot & Brattle Block | Energy Modeling Inputs | Baseline Requirements & Proposed Assumptions

	Components	Existing Condition	LEED Baseline ASHRAE 90.1-2010	Proposed Design & ECMs (Energy Conservation Measures)
Envelope	Windows	Abbot: 1970's to 1980's windows; Double Pane; wood interior & vinyl ext. frame. U-0.60 and SHGC-0.59 Brattle (front Elev.): 2-pane vinyl frame U-0.60 and SHGC-0.59 Brattle (sides): 1-pane wood frame U-1.1 and SHGC-0.82	Existing: Existing windows in Abbot & Brattle New: Metal framing (Storefront): U-value 0.45; SHGC-0.4 Metal Framing (all others): U-0.55 and SHGC-0.40	BOD: Double Pane Clear Solarban 60; 451T Frame: U-0.40 & SHGC -0.40 ECM#1a: Double Pane Solarban 60 with Low-e; U-0.38 & SHGC-0.39 ECM#1b: Triple Pane; COG: U-0.22 & SHGC-0.35
	Window-To-Wall Ratio		26%	26%
	Roof	Steel-frame with hollow-core terracotta blocks + thin concrete on the top. No Insulation	Existing Roof in Abbot & Brattle New Roof: Insulation entirely above deck; R-20 c.i.; U-0.048	BOD: R-20; U-0.048 ECM#2a: R-30; U-0.032 ECM#2b: R-35; U-0.028
	Slab-on-grade	6-inch concrete	6-inch concrete	6-inch concrete Only New Walls: BOD: R-13+R-10 c.i.; U-0.055 ECM#3a: 3.1" Continuous insulation; R-16 c.i.; U-0.054 ECM#3a: 3.7" Continuous insulation; R-19 c.i.; U-0.046
	Exterior Walls (steel-framed)	3-wythe Brick wall with no insulation + cementitious materials inside. Brattle: 1.5-2" stud & GWB on interior.	Existing-to-remain: Existing Brick wall New: Steel-framed; R-13 + R-7.5 c.i.; U-0.064	
Interior Loads	Occupancy		Office: 250 SF/ Person Retail: 105 SF/ Person (FTE + Transients) Restaurant: 78 SF/ Person (FTE + Transients)	Office: 250 SF/ Person Retail: 105 SF/ Person (FTE + Transients) Restaurant: 78 SF/ Person (FTE + Transients)
	Interior Lighting		0.98 W/SF Office 1.68 W/SF Retail 1.31 W/ SF Restaurant	ECM#4: Meet Energy Code (Tenant Lease) 0.98 W/SF Office ; 1.44 W/SF Retail 1.07 W/ SF Restaurant
	Office Plug Load		Office: 0.75 W/SF Retail: 0.225 W/SF	Office: 0.75 W/SF Retail: 0.225 W/SF
	Elevator Load		3 cars (15 kW per car)	3 cars (15 kW per car)
DHW	Low-Flow Hot Water Fixtures		LEED v4 Baseline	ECM#5: >30% reduction or >40% reduction with a lease agreement
	Water Heater type & Efficiency		Same energy source as design; Electric Heater	Electric Heaters
Cooling / Heating System	Primary System Type		System #5; Packaged VAV with Reheat (Retail)	4-pipe Fan Coil Units (Tenant Lease) + DOAS for Office Ventilation
	Colling Type & Efficiency		DX Cooling; 9.8 & 11 EER	CHW Chiller; Full Load efficiency of at least 12 EER
	Heating Type & Efficiency		Gas-fired Boiler; 80% efficiency	Gas-fired condensing boilers; 95% EFF
	HW/ CHW Supply Temperature & Control		180° F; OA Temperature Control	150° F / 44° F
	Hot Water / CHW ΔT		50° F	30° F / 14° F ΔT
	HW/ CHW Pump Control		Riding the pump curve	Variable Speed
Secondary System	System Type		System #3; Packaged Single Zone	
	Cooling Type & Efficiency		DX Cooling; 13 SEER	
	Heating Type & Efficiency		Gas-Furnace; 80%	
	Supply Fan Control		Constant Volume	
	Areas Served		Office & Restaurant	
Air-Side HVAC	Ventilation		ASHRAE 62.1-2010	ASHRAE 62.1-2010 / 2013
	Supply Fan Control		Variable Volume/ Constant Volume	Variable Volume; Cycling fans on FCUs



BUILDING SUMMARY

LOCATION	Cambridge, MA	02138
USES	Retail Space	37,600 sq.ft (51.7%)
	Office	24,200 sq.ft (33.3%)
	Restaurant	10,900 sq.ft (15.0%)

RESULTS	BASELINE	TARGET	YOUR BUILDING
EUI % Reduction from Baseline	0%	30%	54%
Zero Score	100	70	47
Site EUI (kBtu/ft ² /yr)	114	80	54
Source EUI (kBtu/ft ² /yr)	238	167	119
Total GHG Emissions (metric tons CO ₂ e/yr)	619	434	301

Energy Performance Benchmarking from AIA 2030 ZeroTool

Potential load reduction strategies:

- 1- Site Condition: It seems that the project has a zero-lot line
 - **Shading:** Assess the shading impact from adjacent buildings.
 - **Exterior lighting:** assess the impact of the new site lighting design on the annual energy performance.
(Should be investigated)
 - Hardscape
 - **Landscaping:** Assess the impact of the green roof on the annual energy performance.
The green roof has minimal impact on the overall energy savings.
 - Adjacent site conditions:



Existing Condition – from Google Map



Proposed Design – PCA Sketchup Model

- 2- Massing and orientation: Assess massing and orientation impact on
 - HVAC sizing
 - Energy consumption
 - Lighting
 - Renewable energy opportunities

*** This section is not required for existing buildings***
- 3- Basic envelope attributes: Please refer to the energy modeling report for further information.
 - **Insulation values:**
 - o No insulation will be added to the existing exterior walls
 - o BOD: New exterior walls should meet the MA Code requirements
 - o Alternative #1: R-16 continuous insulation – only new walls
 - o Alternative #2: R-19 continuous insulation – only new walls
 - o New and Existing roof (BOD): R-20 c.i.
 - o New and Existing roof- Alternative #1: R-30 c.i.
 - o New and Existing roof – Alternative #2: R-35 c.i.
 - **Window-to-wall ratio:** 26% in the proposed design and the baseline
 - **Glazing characteristics:**
 - o Double-pane clear glass

- Double-pane with low-e
- Triple-pane
- Shading
- Window operability

4- Lighting levels:

- Assess interior surface reflectance values: Responsible party?
- **Assess lighting levels in occupied spaces:**
 - Targeted an interior lighting density equivalent to the maximum allowed by ASHRAE 90.1-2013. Lease agreement should be provided.
 - 15% reduction? *Should be investigated*

5- Thermal comfort ranges:

- **Assess thermal comfort range options:** Consider ASHREA 55-2010 criteria as the baseline case and evaluate the impact of +/-1° F on the annual building performance.

6- Plug and process load needs:

- Assess reducing plug and process loads through programmatic solutions (e.g. equipment and purchasing policies, layout options): what requirements can be added to the Tenant Guidelines/ lease in order to reduce the plug loads?

ASHRAE requirements: **8.4.2 Automatic Receptacle Control.** The following shall be automatically controlled:

- a. At least 50% of all 125-volt 15- and 20-amp receptacles in all private offices, conference rooms, rooms used primarily for printing and/or copying functions, break rooms, classrooms, and individual workstations.

Option 1: Consider 50% turndown in the baseline model and 60-70% in the proposed case.

Option 2: Over 50% Energy Star rated equipment for future office spaces.

7- Programmatic and operational parameters: Assess

- Multifunctioning spaces
- Operating schedule
- Space allotment per person
- Teleworking
- Reduction of building area
- Anticipated operations and maintenance



The Abbot Buildings

Transitioning to Net Zero

The Abbot Buildings project consists of three adjacent buildings located on the triangular parcel created at the junction John F Kennedy Street and Brattle Street in the heart of Harvard Square. The buildings shall undergo a collective gut renovation, including the demolition and reconstruction of the 'middle' building. The final configuration will be a single building with

ground floor retail and restaurant and upper level lease office space. The nature of this project poses a challenge for achieving net-zero energy at this time. The proposed design reflects renovation and new construction that will implement the currently available technologies and equipment efficiencies given market and program restraints. The design team will continue to evaluate opportunities to reduce energy consumption and greenhouse gas emissions.

The design team has brainstormed pathways for potential emissions reductions, including analyzing various building envelope properties, lighting and HVAC systems, future greening of the grid, and what it would take to fully electrify the buildings.

In the future, additional energy savings will likely to be seen in the advancement of building controls and active personalization of the interior environment. New technologies have the opportunity to be tested and incorporated as tenant turnover happens over the life of the building bringing spaces up to the most current integrated systems.

The biggest reduction-potential in energy consumption and greenhouse gas emissions for a core and shell retail, restaurant and office building are the glazing, lighting and HVAC performance. In this case, the team has used energy analysis software to show that a significant reduction in building emissions is possible. Fit out program and technology is determined by the tenant and cannot be taken into consideration, this narrative addresses the core and shell building only.

The team discussed where it sees energy supply and decarbonization in the future, particularly with improvements from the grid electricity sources. The makeup of the Massachusetts energy grid is anticipated to shift more towards renewable energy sources in the coming decades. Therefore, the electricity component consumed by the project under the current design could see an improvement in emissions factors over the years, and a correlating reduction the overall emissions from operation of the building.

The project mechanical equipment has the ability to be transitioned to all-electric systems in the future.

MEMORANDUM 3

PROJECT: The Abbot Buildings in Harvard Square
PROJECT NO: 17010.00
DATE: February 27, 2018

RE: Response to Department of Public Works comments dated 01.23.2018

TO: Community Development Department, Attn: Liza Paden
344 Broadway
Cambridge, MA 02139

ENCLOSURE: 1 Memo, Stormwater Calculation summary and Sewer Calculation summary from Beals and Thomas

- October 30, 2017 – Memo after design team meeting with Cambridge DPW regarding Utility Connections and Sidewalk discussion
- Stormwater Calculation summary
- Sewer Calculation summary

RESPONSE: The design team will apply for the Stormwater Control Permit during the design development phase from the DPW. Attached is a memo reflecting discussions that the design team and owner had with the DPW staff on October 30, 2017.

Following are responses to items listed in the DPW letter regarding stormwater management:

Regarding item #1, see attached stormwater calculation summary in memo # 290800CS002 from Beals and Thomas.

Regarding item # 2 and #4, we will submit the requested plans for erosion and sedimentation control and BMP to the DPW prior to construction.

Regarding item #3, there are some different methods that will be incorporated into the design to address these requirements, which will be described in the Stormwater Control Permit.

Following are responses to items listed in the DPW letter regarding sewer mitigation:

Based on calculations in the attached memo, the net increase in sewer flow is not expected to exceed the 15,000 gallons per day limit. The estimated net increase is approximately 10,620 gallons per day. See attached calculation summary in memo # 290800CS001 from Beals and Thomas.

The design team looks forward to working with the Department of Public Works as the project progresses.



BEALS + THOMAS

BEALS AND THOMAS, INC.
Reservoir Corporate Center
144 Turnpike Road
Southborough, MA 01772-2104

MEETING SUMMARY

T 508.366.0560
F 508.366.4391
www.bealsandthomas.com
Regional Office: Plymouth, MA

MEETING DATE: October 30, 2017

ISSUE DATE: November 2, 2017

REFERENCE: Utility Connections and Sidewalk Discussion with Cambridge Department
of Public Works
Abbot Buildings
Cambridge, Massachusetts
B+T Project No. 2908.00

PRESENT: Jim Wilcox, Cambridge DPW
Lou Molthon, Cambridge DPW
Michael Lai, Regency Centers
DiAnn Mroszczak, PCA
John E. Bensley, B+T
David J. LaPointe, B+T

PREPARED BY: David J. LaPointe, B+T

COPIES TO: Attendees

PURPOSE:

To discuss the proposed utility connections to serve the Abbot Buildings, as well as the sidewalk renovation along Brattle Street with representatives from the Cambridge Department of Public Works (CDPW).

DISCUSSION ITEMS:

1. J. Bensley opened the discussion by providing an overview of the complied plans and the existing utility connections (the Project team likely has all plans from DPW via GIS department).
2. Mr. Wilcox stated that any proposed water connections (new or re-used) would need to be reviewed/discussed with Steve Lush of the Cambridge Water Department.
3. The MBTA tunnel was discussed; Mr. Molthon noted that it is 2' below the roadway along Brattle Street and that it is an active bus tunnel. He noted that there are electric line (small steel pipes) right under the curb along Brattle Street. Additionally, CDPW indicated that the steel beams in the breezeway beneath the sidewalk along Brattle Street have been demolished and removed and the breezeway backfilled with flowable fill. Mr. Molthon also noted that the Project team could contact Bill Adamski who was the contractor for the sidewalk re-construction project that occurred along JFK, to gain any insight into what had been performed.
4. Mr. Wilcox confirmed that the Project could tie into the existing (10") drain in Brattle Street and the existing (8") sanitary in Brattle Street. Mr. Wilcox stated the proposed drain and sanitary connections should be a maximum of 8" and 6", respectively. Mr. Wilcox

- noted that the DPW had a video of the sewer that had been performed in 2011, and he will provide this to the Project team. Mr. Wilcox stated that the only requirement for re-use of the existing sanitary pipe from the building is to video the existing pipe to confirm the condition.
5. Mr. Wilcox stated that calculations will need to be provided to document conformance with the sanitary code for the proposed grease trap. The grease trap will need to be inside the building, but the City prefers off-hours pumping.
 6. The proposed storm drain connection will incorporate a tank(s) to detain approximately 2,000 gallons of stormwater. J. Bensley presented Mr. Wilcox a copy of the Stormwater Retention Volume Calculation in accordance with the City of Cambridge Stormwater Management Guidance. This calculation provides an analysis for the proposed 2,000-gallon tank requirements. The Project is proposing that a portion of the roof will consist of a green roof. A storage tank will be located in the basement, while a second (approx. 1,000 gallon) tank may be on the roof to provide irrigation of the green roof. This tank will include UV filtration and may be internal to the building, rather than simply within a well on the roof. Mr. Wilcox stated that the release of the stormwater to the municipal drain in the Brattle Street sidewalk (limit to existing 2-year discharge) could be controlled via a small pipe, and a larger secondary overflow pipe to accommodate larger storms. Mr. Wilcox stated that the irrigation storage tank will need an Operation and Maintenance Plan to require monitoring of weather forecasts and manual draining of the tank prior to rainfall events to ensure that the full 2,000 gallon storage capacity is available at the beginning of rainfall events. He also stated that a backflow preventer should be included and should be accessible. The MEP engineer (AHA) will design the roof drain connection from the building to the drain in Brattle Street. Mr. Wilcox also stated that a Stormwater Control Permit will be required as part of the Planning Board approval.
 7. The MEP engineer will be confirming the size and pressure/flow capacity for the existing fire service connection off the 20" City water main in JFK Street.
 8. It was noted that HDR is currently preparing a design for the reconstruction of the Brattle Street sidewalk. Mr. Wilcox explained that the intent was to perform that work next year; however, it has been pushed back and will likely occur in Spring 2019. That project includes bicycle accommodations throughout Harvard Square (known as the Brattle-Eliot Loop project). The sidewalk project will include wire-cut brick along the full width of the sidewalk. Mr. Wilcox will provide the current plans (85%) for that project to the Abbot team.
 9. M. Lai explained that the anticipated construction schedule for the Abbot Buildings is to start at the end of summer/beginning of fall of 2018.

ACTION ITEMS:

1. Cambridge DPW to provide video of existing sewer in Brattle Street
2. Cambridge DPW to provide 85% plans of Brattle Street sidewalk reconstruction by HDR.

3. Regency to coordinate with Cambridge DPW for assistance with dye testing of the existing sewer pipes from the building(s).

These minutes are accepted as accurate and complete unless corrections and/or additions are received within one week of issue.

DJL/JEB/rgr/290800MT001

**BEALS + THOMAS**

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144 Turnpike Road
Southborough, MA 01772-2104

CALCULATION SUMMARY

T 508.366.0560

F 508.366.4391

www.bealsandthomas.com

Regional Office: Plymouth, MA

JOB NO./LOCATION:

2908.00
Cambridge, MA

CLIENT/PROJECT:

PCA
Abbot Block

SUBJECT/TITLE:

Required Stormwater Retention Volume

OBJECTIVE OF CALCULATION:

- Determine the increase in stormwater volume generated between the pre-development 2-year 24-hour storm discharge and the post development 25-year 24-hour storm, beyond the 2-year peak discharge.

CALCULATION METHOD(S):

- Develop a graph of flow vs time of the pre-development 2-year storm event and the post-development 25-year storm event.
- Calculate the area between the post-development 25-year storm event and the pre-development 2-year storm event.
- Area of triangle = $\frac{1}{2} \times \text{Height} \times \text{Base}$; Area of rectangle = $\text{Height} \times \text{Base}$;
Area of trapezoid = $\text{Height} \times (\text{Base}_1 + \text{Base}_2) / 2$
- CN and time of concentration determined based on TR-55 methodology
- Runoff rates computed using HydroCAD version 10.0

ASSUMPTIONS:

- As indicated by "Figure 3-1: Onsite Retention Requirements" from the Wastewater and Stormwater Management Guidance (page 3-2) required stormwater retention is equal to the difference between the post-development 25-year storm event and the pre-development 2-year peak discharge.
- Use a curve number value of 98 for the typical roof surface, a value of 86 for green roof surface. Source: Massachusetts Department of Environmental Protection Stormwater Handbook.
- Green roof area used was 9,500 square foot. Source: email entitled Re: Harvard Collection Special Permit Submission Process dated 7/26/17 and prepared by DiAnn Mroszczak of PCA

SOURCES OF DATA/EQUATIONS:

- City of Cambridge, Wastewater and Stormwater Management Guidance, Version 1 prepared by Malcolm Pirnie, Inc., Section 3.1.1
- Massachusetts Department of Environmental Protection Stormwater Handbook, 2008; Volume 2, Chapter 2, page 114
- Email entitled Re: Harvard Collection Special Permit Submission Process, dated 7/26/17, prepared by DiAnn Mroszczak of PCA
- TR-55 Urban Hydrology for Small Watersheds, SCS, 1986

REV	CALC. BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
0	KEANUS	9/11/17	JES	9/11/17	JES/Secord	9/11/17

EAE/---290800CS(X)2

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CALCULATION SUMMARY

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Regional Office: Plymouth, MA

CONCLUSIONS:

- The increase in stormwater volume generated between the pre-development 2-year 24-hour storm and the post-development 25-year storm is 1,821 gallons (243 cubic feet).
- Use a tank size of 2,000 gallons to retain stormwater

REV	CALC. BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
0	X Ennis	9/11/17	G/LD	9/11/17	J.S. Densley	9/11/17

EAE/---290800CS002



BEALS + THOMAS

**BEALS + THOMAS**

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CALCULATION SUMMARY

T 508.366.0560
F 508.366.4391

www.bealsandthomas.com
Regional Office: Plymouth, MA

JOB NO./LOCATION:	2908.00 Cambridge, MA
CLIENT/PROJECT:	PCA Abbot Block
SUBJECT/TITLE:	Sewerage Flows
OBJECTIVE OF CALCULATION:	<ul style="list-style-type: none"> To determine the existing sewerage flows from the site. To determine the proposed sewerage flows from the site. To determine the increase in sewerage flows from the site.
CALCULATION METHOD(S):	<ul style="list-style-type: none"> Sewer flow rates per square foot of space, per restaurant seat, and per person determined from Title 5 sewer rates (see attached table).
ASSUMPTIONS:	<ul style="list-style-type: none"> Office space, retail space, mechanical/storage and restaurant square footage values and seat numbers based on "The Collection at Harvard Square" spreadsheet prepared by PCA and dated 8/16/17 & email from DiAnn Mroszczak of PCA dated 8/16/17 (see attached). Based on the email from Nidhi John of PCA dated 9/7/17, the line entitled "Approved Historic Comm. Areas" on the "The Collection at Harvard Square" spreadsheet represents the areas approved by the historic commission for the project. The proposed areas have changed since the historic commission approval and therefore the "Approved Historic Comm. Areas" were not incorporated into the calculations. Assume mechanical/storage area is equivalent to warehouse area in Title 5 table (see attached). Assume one employee works in the mechanical/storage area in the existing and proposed scenario.
SOURCES OF DATA/EQUATIONS:	<ul style="list-style-type: none"> 310 CMR 15.000: The State Environmental Code, Title 5: Standard requirements for the siting, construction, inspection, upgrade and expansion of on-site sewerage treatment and disposal systems and for the transport and disposal of septage.
CONCLUSIONS:	<ul style="list-style-type: none"> Existing Sewerage flow is 3,118 gpd. Proposed sewerage flow is 13,738 gpd. Increase in sewerage flow is 10,620 gpd.

REV	CALC. BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
0	EAE	9/8/17	J.E.D.	9/11/17	J.E. (Sandy)	9/11/17

EAE/---290800CS001

**BEALS + THOMAS**

b. SPECIAL PERMIT APPLICATION – SUMMARY OF APPLICATION

Project Name: Abbott Building
Address of Site: 1-7 & 9-11 JFK St, 18-20 Brattle Street
Applicant: Regency Centers
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)

- Special Permit for height, parking, and basement GFA.
- Historical Commission - Certificate of Appropriateness

Project Description

Brief Narrative: Petitioner seeks to renovate the existing Abbott Building at 1-7 JFK Street and the office building at 18-20 Brattle Street, remove the two story retail building at 9-11 JFK Street and construct a new four story building at that location, construct an upper story addition and roof terrace on new building and portion of 18-20 Brattle Street.

Project Size:

- Total GFA: 61,604 sf (Additional 11,283 sf in lower level)
- Non-residential uses GFA: 61,604 sf
- Site Area (acres and SF): 15,850 sf (.363 acres)
- # of Parking Spaces: 0

Proposed Uses:

- # of Dwelling Units: 0
- Other Uses: retail and office
- Open Space (% of the site and SF) 0

Proposed Dimensions:

- Height: 65.5'
- FAR: 3.89

DIMENSIONAL FORM

Project Address: The Abbot Buildings

Application Date: 11.03.2017

	Existing	Allowed or Required (max/min)	Proposed	Permitted
Lot Area (sq ft)	15,850 sq ft	none	no change	
Lot Width (ft)	151 ft	none	no change	
Total Gross Floor Area (sq ft)		63,400 sf		
Residential Base	-	-	-	
Non-Residential Base	54,747 sq ft	63,400 sq ft	61,604 sq ft*	
Inclusionary Housing Bonus	-	-	-	
Total Floor Area Ratio	-	-	-	
Residential Base	-	-	-	
Non-Residential Base	3.45	4.0	3.89	
Inclusionary Housing Bonus	-	-	-	
Total Dwelling Units	None	-	-	
Base Units	-	-	-	
Inclusionary Bonus Units	-	-	-	
Base Lot Area / Unit (sq ft)	-	-	-	
Total Lot Area / Unit (sq ft)	-	-	-	
Building Height(s) (ft)	Existing & 32 ft	60 ft or 80 ft w/ Special Permit	Existing & 65 ft 6 in	
Front Yard Setback (ft)	0 ft	none	0 ft	
Side Yard Setback (ft)	0 ft	none	0 ft to 7 ft 8 in	
Side Yard Setback (ft)	0 ft	none	0 ft	
Rear Yard Setback (ft)	0 ft	none	N/A	
Open Space (% of Lot Area)	0	none	0	
Private Open Space	-	-	-	
Permeable Open Space	-	-	-	
Other Open Space (Specify)	-	-	-	
Off-Street Parking Spaces	0	43	0	
Long-Term Bicycle Parking	0	13	14	
Short-Term Bicycle Parking	0	29	0	
Loading Bays	0	3	0	

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

* plus additional exempted basement space