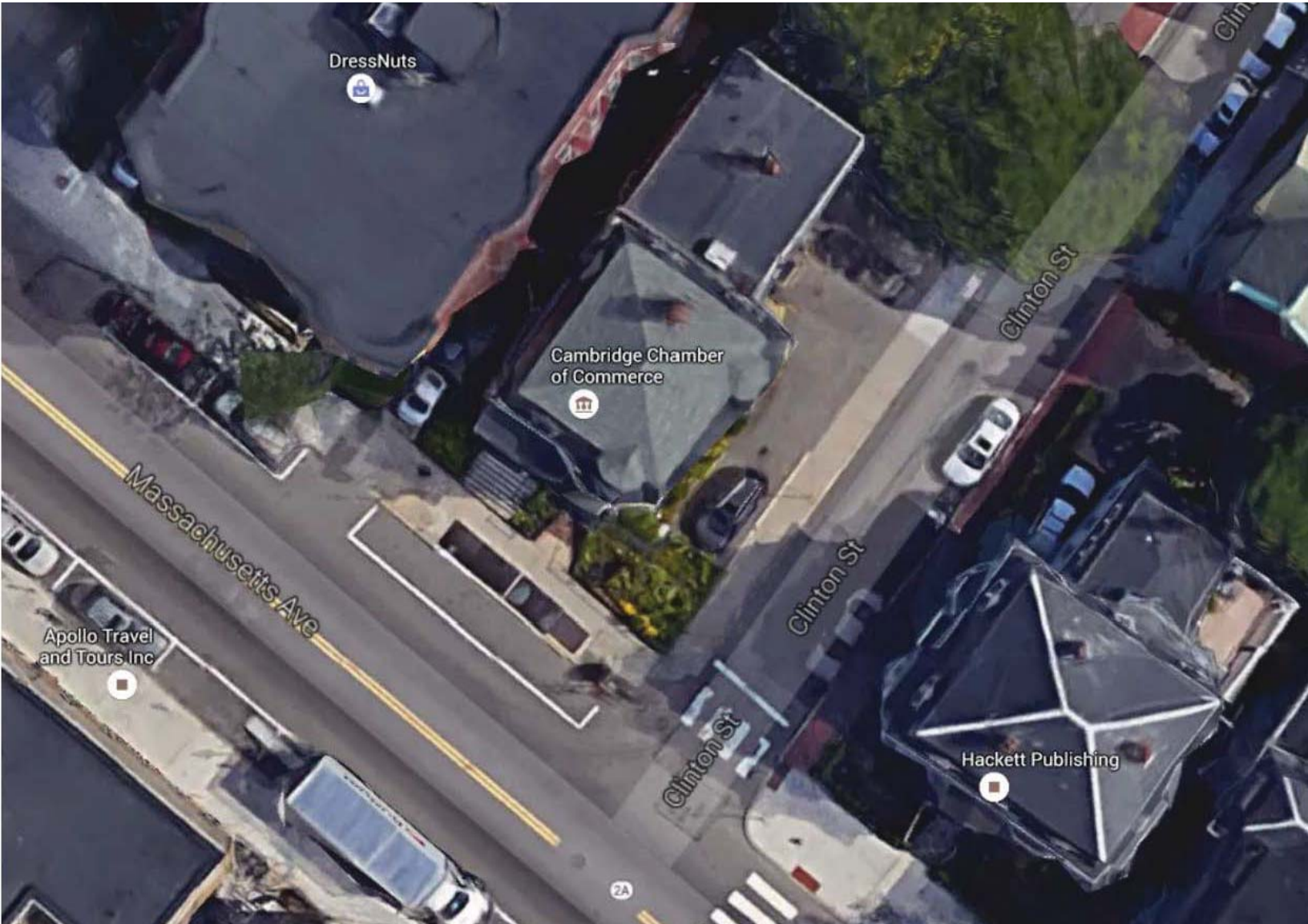




859 MASSACHUSETTS AVENUE
FEASIBILITY STUDY
CAMBRIDGE, MA

JULY 18, 2016



HMFH ARCHITECTS

130 Bishop Allen Drive, Cambridge, MA 02139 617 492 2200 hmfh.com

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Study Team

City of Cambridge:

Ellen Semonoff	Department of Human Services
Janice Alger	Department of Human Services
Eva Martin Blythe	YWCA
Michael Black	Project Manager
Brandon Roy	Assistant Project Manager

HMFH Architects, Inc.:

George Metzger, Study Director
Alan Pemstein, Study Architect

Consultants:

Universal Environmental Consultants Hazardous Materials
Foley Buhl Roberts & Associates, Inc. Structural Engineer
Garcia Galuska DeSousa, Inc. Mechanical Electrical Plumbing Engineers
PM&C, LLC Cost Estimator

Introduction

With the sudden closing of the sheltered housing facility at 3 Bigelow Street due to dilapidated conditions in the building, the need for immediate rehousing is a high priority for the city. While reconstruction of 3 Bigelow is a possibility, the availability of 859 Massachusetts Avenue for sale by the Chamber of Commerce presented another possible and nearby location. HMFH was asked through its house doctor contract to develop a feasibility study for the reconversion of 859 Mass Ave to residential use after 40 years as office space.

The intent of this study is to:

- Determine whether 859 Mass Ave could be used to house a program formerly located at 3 Bigelow Street.
- Assess the building conditions – Site, Envelope, Structural, Mechanical and Hazardous Materials.
- Provide 2 options for renovation. Option 1 is to meet the requirements of the conceptual program for Bigelow Street as envisioned by LDA Architects. Option 2 – determine if an expansion of the program is possible at 859.
- Determine issues with making the building Code compliant.
- Provide a preliminary budget estimate for the two options.

Study summary

859 Mass Avenue is a three story, 19th century, Mansard-style residence, one of three typical houses still remaining on this section of Mass Avenue. Purchased by the Chamber of Commerce in 1976 and converted to office use, the front section of the building is 3.5 stories high at Mass Avenue, with a 2 story extension to the rear. The site slopes up from Mass Avenue so that the rear lot line is at approximately the level of the first floor. The historic character of the building has been unsympathetically altered by the replacement of the front porch and original siding and the excavation for a lower level entrance in the front yard. An MBTA ventilation and emergency exit shaft abuts the property in the Mass Avenue sidewalk.

Another residence at 3 Bigelow Street was recently closed by the city for substandard conditions and these units, managed by the YWCA as emergency housing, would be moved into the 859 building after rehabilitation. The program calls for at least 10 SROs for mothers with 1-2 children, along with shared kitchens and dining, plus supporting office, meeting and activity space for residents and their children.

Two possible reconstruction options were developed. The first option, which does not expand the existing building except for the addition of a stair, provides for 12 units on four levels. The second option replaces the two story addition with three stories of new construction for a total of 17 units.

In both options an outdoor green space, an accessible entrance, two off-street parking spaces for staff, and landscaped yards are provided. In both options, a zoning review and relief process is required for dimensional non-conformance, new openings, and reduction in parking. The total construction cost for these options is estimated to be in the range of \$3,072,966 to \$3,945,587 and the minimum time needed for completion is estimated to be 9-10 months.

Existing Conditions

859 Mass Ave is an 1880s Mansard roofed Victorian residence similar to a pair of adjacent buildings on Mass Ave and others throughout Cambridge. The roof, both slate and asphalt appears to be in

good condition, but all other exterior elements, siding, brick, cornice, windows and doors need to be replaced. It is hoped that through selective demolition clues to the original details can be found which would lead to a more historically accurate exterior renovation. The interior requires a complete demolition, although the redesign options keep bearing walls in the original location. The site will require extensive rework in order to provide a more historically accurate entrance on Mass Ave, including the removal of the basement street entrance, provision of 2 on-site parking spaces, a small playground, a trash area and an accessible approach to the rear entrance.

See the Structural analysis for a complete review of the existing structure. Further analysis will be required to determine suitability of the structure to support a photovoltaic array or other equipment required to meet net-zero goals.

Local Approvals

Historic review

859 Mass Ave is of historic interest but not listed as either a National Register building or a significant building by the Cambridge Historic Commission. The building sits within the Mid-Cambridge Neighborhood Conservation District. Therefore exterior renovation and expansion are both subject to review by the District Commission under the auspices of the Historic Commission. Because by all accounts the renovation and reconstruction are betterments to a building that has suffered from mistreatment over the past several decades, the MCNCD is expected to be supportive of this project.

Zoning

859 Mass Ave sits in a Residence C-2B district in which the proposed uses are allowed. This project will relocate the 10 emergency housing units, which were originally located at 3 Bigelow and defined as a single family dwelling under the Civil Rights Act of 1968, Title VIII, and Fair Housing Amendments. On this basis both Options require zoning relief for modification of or additional window openings along the west side property line and possibly for open space. In Option 2, zoning relief for extension of the existing non-conforming side yard dimension will be required and for parking may be required. Variances if required will be requested due to the size and shape of the site and location of the existing building.

Development Options

The basis of design is the plans developed by LDA for 3 Bigelow Street and as directed by the City at the meeting on 4/13/16.

In the original program at Bigelow Street there were 10 bedrooms which varied in size between 170 sf and 200 sf, the average size being 185 sf. Four bedrooms had private baths and 6 shared baths. Five rooms had their own kitchen and 5 shared a kitchen on the third floor. A laundry and a play room were in the basement. There was a staff and a director's office. The building was not accessible. For a more detailed analysis see LDA's Assessment Report of September 2014.

The LDA study of 3 Bigelow Street proposed an accessible renovation. Bedrooms are an average of 145sf, all with private baths and a shared kitchen on each floor. The laundry room and play area are in the basement and 2 staff offices on the first floor.

HMFH has developed 2 options for 859 Mass Ave:

Option 1: Renovating the entire building with the addition of a stairwell.

Option 2: Renovating the original building, demolishing the rear addition, expanding that footprint and adding a 3rd floor.

In both options the original building has almost the same renovation plan, so the differences between the options are found in how the latter addition is treated.

Option 1 resulted in the creation of 12 bedrooms each with its own bath. Square footage runs between 125 and 220 sf. There is an accessible bedroom and bath on the first floor. Each floor has a shared eat-in kitchen. All floors have laundry facilities. An office/conference room with ½ bath and kitchen are in the basement. An office with a full bath and kitchenette is on the 2nd floor. An office and community room are on the first floor with an accessible ½ bath. The main entrance will be from the rear as the grading allows for it to be easily accessible. A stairwell has been added to the building to provide a second means of egress from all 4 floors. The other stairwell fits within the existing footprint. Plumbing requirements are stacked.

Option 2 resulted in the creation of 17 bedrooms each with its own bath. Square footage runs between 125 and 220 sf. There is an accessible bedroom and bath on the first floor. Each floor has a shared eat-in kitchen. All floors have the opportunity for a laundry closet. An office and community/play room are on the first floor with an accessible ½ bath. An office/conference room with a ½ bath and kitchenette are in the basement. There is a small office on floors 2 & 3. The main entrance will be from the rear as the grading allows for it to be easily accessible. There are two enclosed stairwells for required egress. Plumbing requirements are stacked.

All bedrooms in both options have a closet and the ability to hold 2 twin beds, a crib and a bureau/changing table. At this stage of conceptual planning all dimensional layouts are approximate.

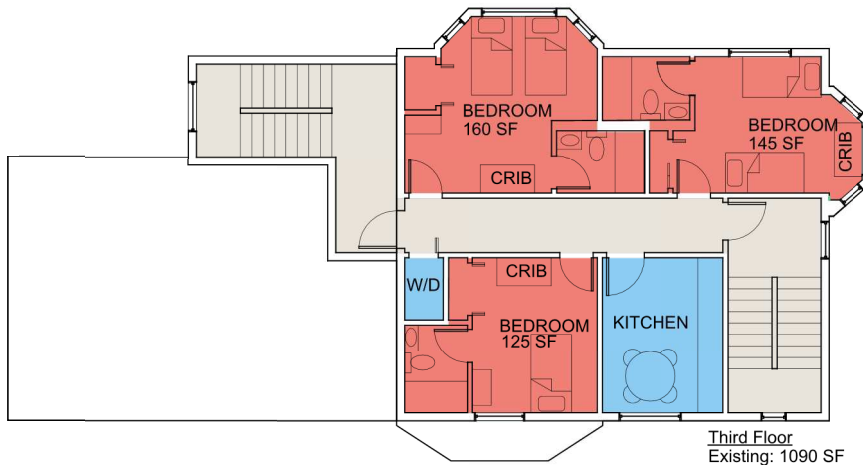
Program	# Bedrooms	# Offices	SF Community Room	SF Kitchen	
Bigelow Street	10 (130-200sf)	2	290 sf	90, 115 & 125 sf	
859 Option 1	12 (125-220sf)	3	300 sf	120 sf (all 4)	
859 Option 2	17 (125-220 sf)	4	495 sf	120 sf (all 4)	

YWCA comments on the Draft Plans with HMFH responses in red italic:

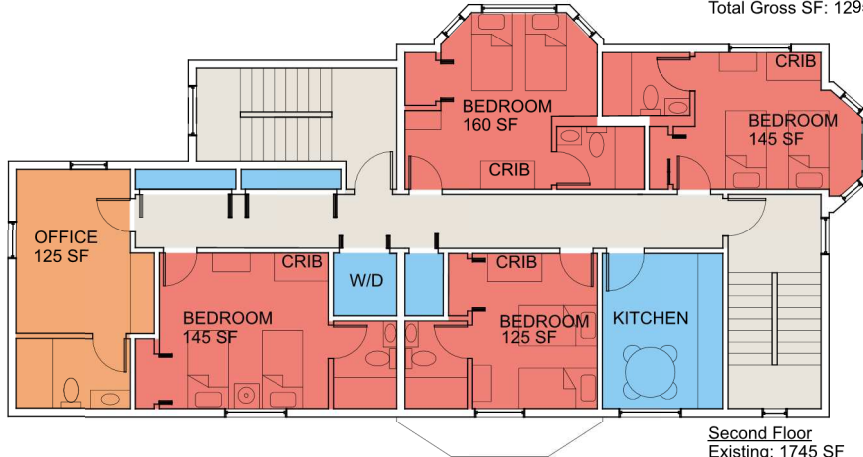
1. The office on the first (ground) floor needs to be closer to, if not immediately adjacent, to the main entrance. Otherwise, staff can't see who is coming and going in and out of the building.
HMFH response: There is an office by the entrance in both options.
2. We can't tell from the schematics whether the kitchens are designed to eat in. They need to be. Otherwise, the families will have to eat in their rooms.
HMFH response: Kitchens are eat-in in both options. A table and chairs are now shown on the plans.
3. There needs to be a laundry room in the building.
HMFH response: There is a laundry closet on each floor with the ability for a laundry room in the basement in both options.
4. There needs to be storage space in the building.
HMFH response: There is room for storage space in the basement in both options.
5. The rooms don't appear to have closets. Each room should have a closet.
HMFH response: All bedrooms have closets in both options.
6. The smallest bedroom on the second floor should be designated as another office.
HMFH response: This was done.
7. The basement office should be designated as a meeting/conference space.
HMFH response: This was done.

Additional YWCA concerns with HMFH responses in red:

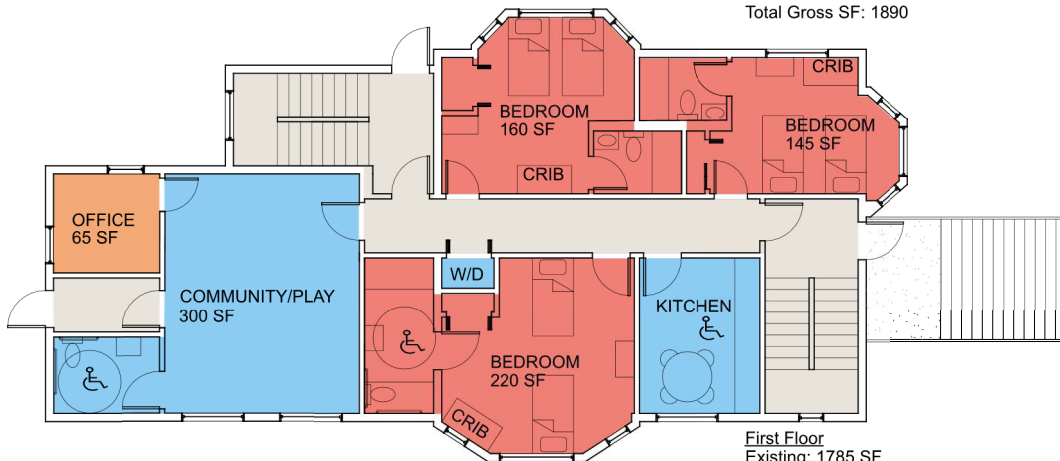
1. The windows on the basement and ground level need bars or some other mechanism that prohibits the residents either from sneaking out of the building or from sneaking "visitors" into the building.
HMFH response: This will be included in the estimate.
2. In addition to the usual alarm systems, we would like an internal system in the offices and common areas that enables staff to signal that they are in trouble/need help.
HMFH response: This will be included in the estimate.
3. Having walked around the building, we are concerned about the amount of outside space available for trash bins. At 3 Bigelow, we maintained six (6) trash bins and two (2) recycling bins.
HMFH response: A trash area will be shown on the site plan.



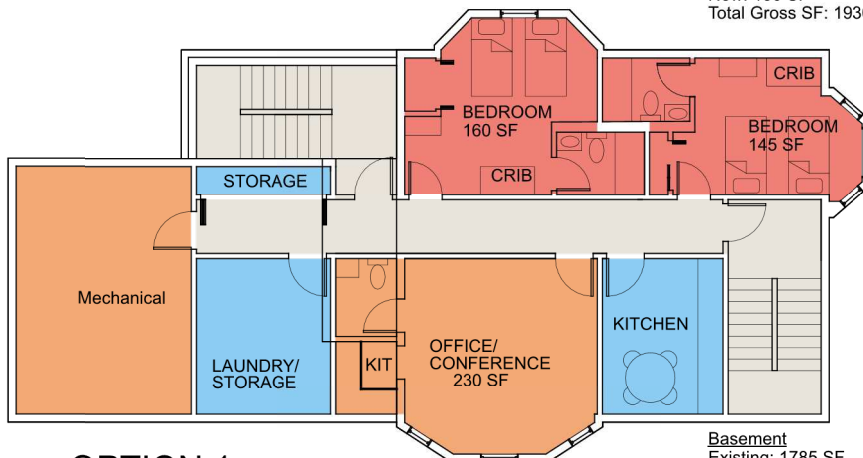
Third Floor
 Existing: 1090 SF
 Renovated: 1090 SF
 New: 205 SF
 Total Gross SF: 1295



Second Floor
 Existing: 1745 SF
 Renovated: 1745 SF
 New: 150 SF
 Total Gross SF: 1890

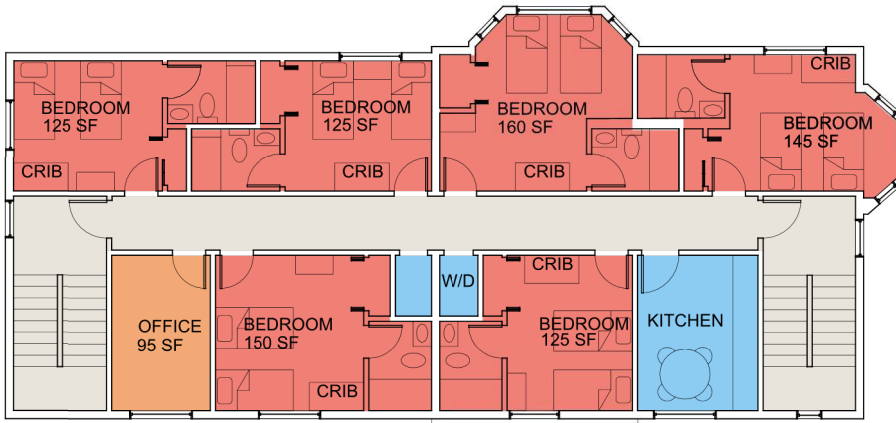


First Floor
 Existing: 1785 SF
 Renovated: 1785 SF
 New: 150 SF
 Total Gross SF: 1930

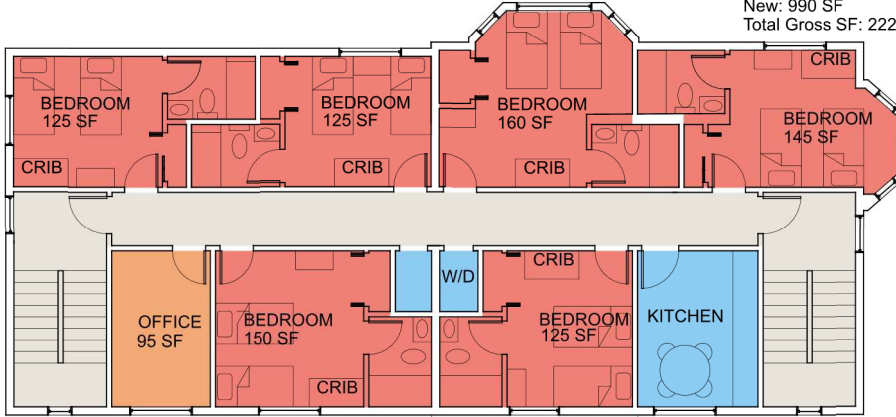


Basement
 Existing: 1785 SF
 Renovated: 1365 SF
 New: 150 SF
 Total Gross SF: 1930

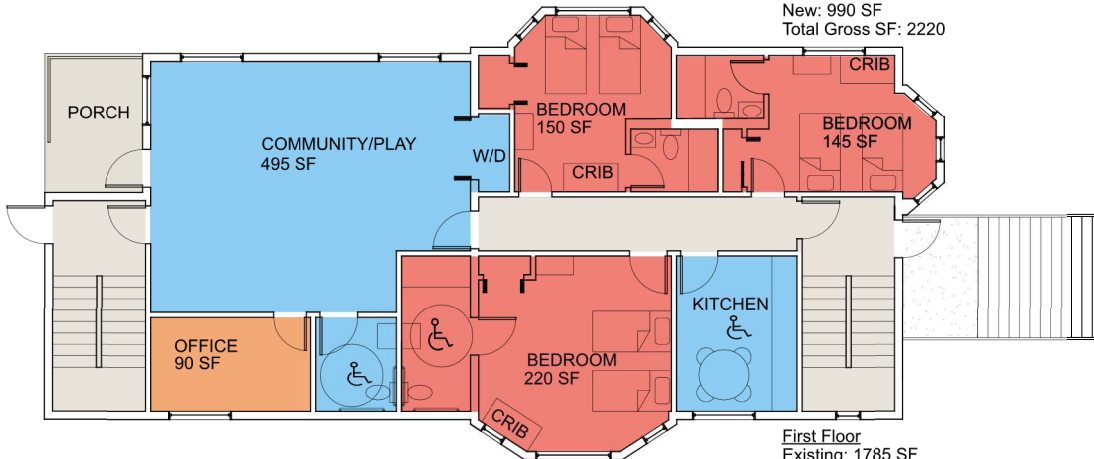
OPTION 1



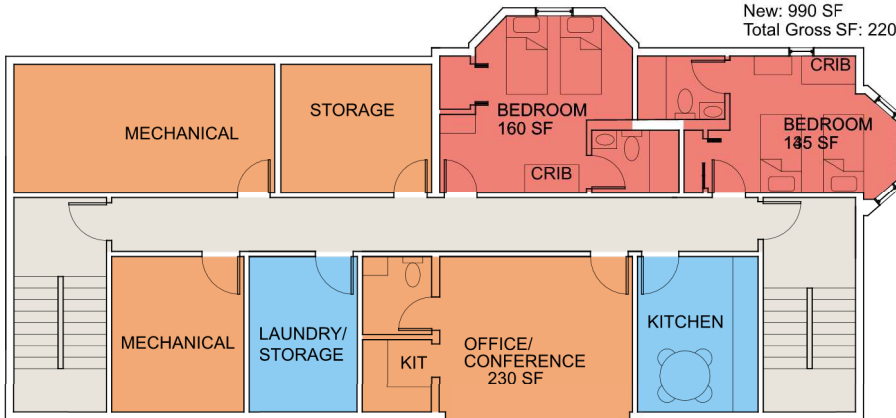
Third Floor
 Existing: 1090 SF
 Renovated: 1090 SF
 Demolition: 0 SF
 New: 990 SF
 Total Gross SF: 2220



Second Floor
 Existing: 1745 SF
 Renovated: 1050 SF
 Demolition: 655 SF
 New: 990 SF
 Total Gross SF: 2220

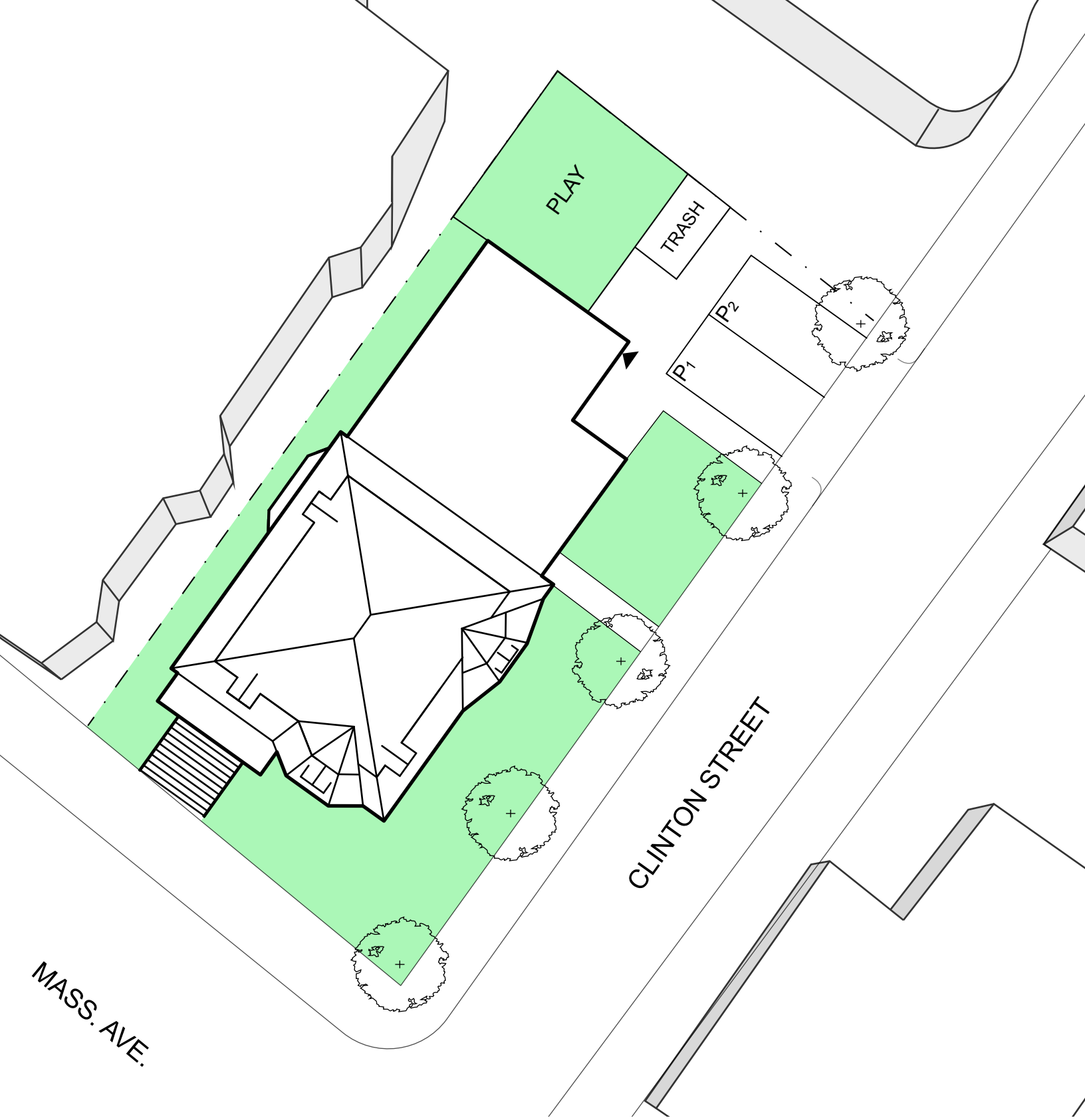


First Floor
 Existing: 1785 SF
 Renovated: 1090 SF
 Demolition: 655 SF
 New: 990 SF
 Total Gross SF: 2200

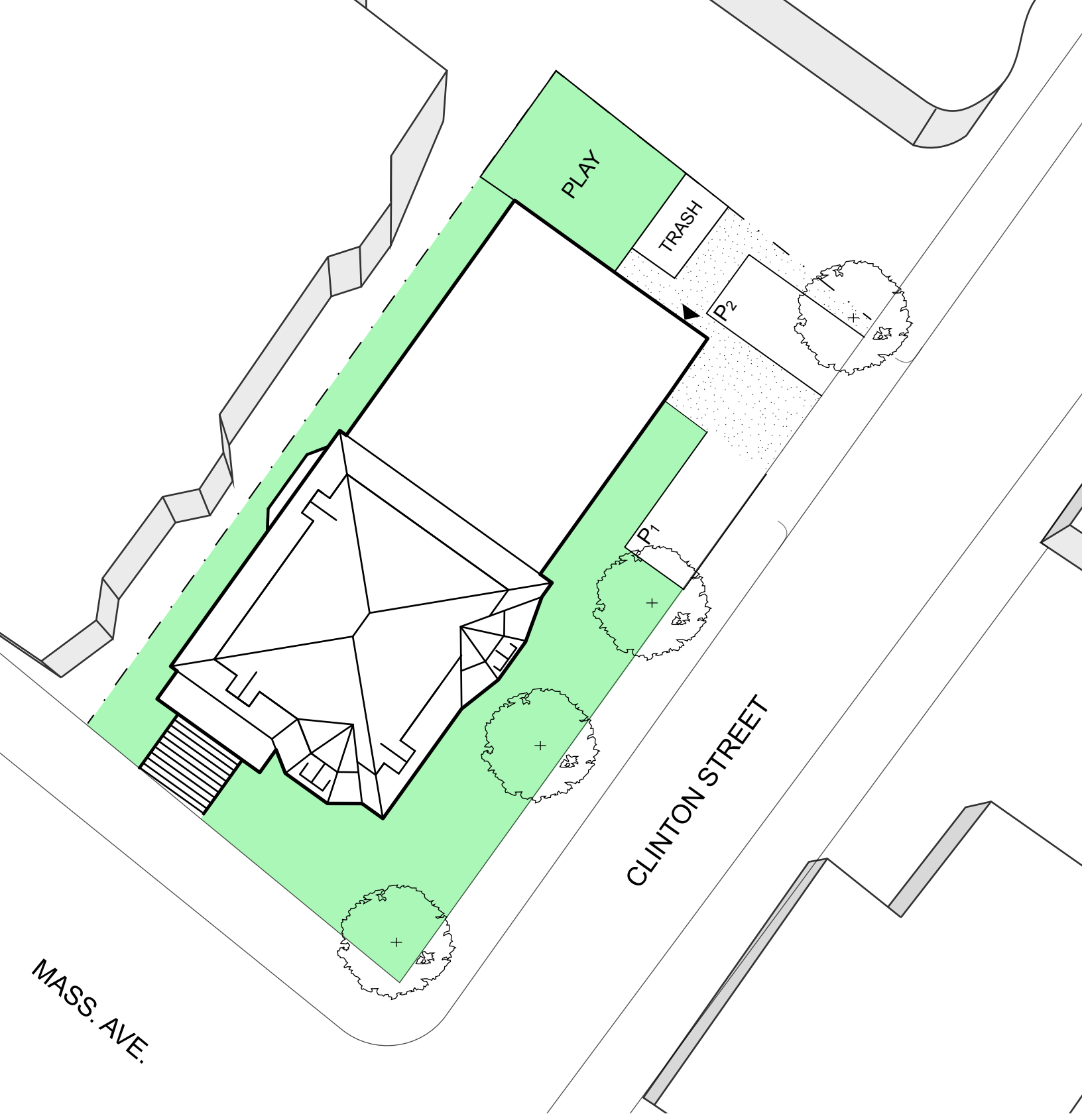


Basement
 Existing: 1785 SF
 Renovated: 1090 SF
 Demolition: 655 SF
 New: 990 SF
 Total Gross SF: 2220

OPTION 2



OPTION 1 SITE PLAN



OPTION 2 SITE PLAN



Early 20th Century
819-859 Mass Ave.





April 14, 2016

Ms. Laura Wernick
HMFH Architects
130 Bishop Allen Drive
Cambridge, MA 02139

Reference: Report for Hazardous Materials Identification Survey
859 Massachusetts Avenue, Cambridge, MA

Dear Ms. Wernick:

Thank you for the opportunity for Universal Environmental Consultants (UEC) to provide professional services.

UEC was contracted to perform an identification survey for accessible Hazardous materials including Asbestos Containing Materials (ACM), Lead Based Paint (LBP) and Polychlorinated Biphenyls (PCB's) at 859 Massachusetts Avenue, Cambridge, MA. The survey was performed on Monday, April 11, 2016. No sampling was performed as part of the identification.

The following is a list of materials suspected to be ACM:

- Exterior window framing caulking;
- Exterior door framing caulking;
- 12" x 12" Ceiling tiles and glue daubs;
- Interior wood doors with windows (caulking);
- 9" x 9" Vinyl floor tile and mastic;
- Carpet glue;
- Ceiling plaster;
- Wall plaster;
- 2' x 2' Ceiling tiles;
- Sinks damproofing;
- Joint compound;
- Duct insulation;
- Roofing materials;
- Roofing caulking;
- Linoleum floor covering.

The following is a list of materials suspected to be LBP:

- Exterior paint on window frames;
- Exterior paint on door frames;

- Ceilings paint;
- Walls paint;
- Interior paint on doors and frames;
- Exterior paint on siding.

The following is a list of materials suspected to contain PCB's:

- Exterior window framing caulking;
- Exterior door framing caulking;
- Interior wood doors with windows (caulking);
- Roofing caulking;
- Ballasts in light fixtures.

A complete survey including the collection of bulk samples would be required prior to any renovation or demolition activities.

Please do not hesitate to call me at (508) 628-5486 if you have questions about our services.

Very truly yours,

Universal Environmental Consultants



Ammar M. Dieb
President

UEC:\216 921\Report.DOC

Enclosure

859 MASSACHUSETTS AVENUE

Cambridge, MA

STRUCTURAL REPORT

May 20, 2016 - Draft

INTRODUCTION

Foley Buhl Roberts & Associates, Inc. (FBRA) is collaborating with *HMFH Architects, Inc. (HMFH)* in the review and evaluation of existing conditions and the proposed, residential re-use of the property located at 859 Massachusetts Avenue in Cambridge. The purpose of this *Structural Report* is to describe the structural systems of the building and to identify structural issues/conditions observed. Comments relating to the anticipated scope of structural work relating to the proposed re-use options are presented as well.

Structural conditions at 859 Massachusetts Avenue were reviewed at the site (to the extent possible) by FBRA personnel on April 11, 2016. Original Structural and/or Architectural Drawings were not available. No exploratory demolition or structural materials testing was performed in conjunction with our review. Accordingly, comments in this preliminary report are primarily based on visual observations. Exploratory openings would be necessary to determine the details and condition of the existing floor and roof structure and to determine if any latent structural deficiencies are present. A further review would be conducted during the demolition phase of a future renovation project.

Subsurface soils information was not available; it is assumed that the building is supported on a shallow spread footing foundation.

STRUCTURAL DESCRIPTION

859 Massachusetts Avenue is a two and three-story, wood framed building with a full basement and a sloped (slate) mansard roof. The building was originally constructed in 1887 as a multi-family home. Presently, it is used as office space (including the Cambridge Chamber of Commerce). The front (Massachusetts Avenue) section of the rectangular-shaped building is three stories high. There are bay windows on the east (Clinton Street) west and south sides of the building at each level. The back section is two stories high, with a flat (membrane) roof at the Third Floor level (the high roof could not be observed). A fire escape is located on the east side of the back wing. The entire building has been clad with vinyl siding. There are two brick chimneys.

The total floor are of the building (including the foundations) is approximately 6,405 square feet. The basement floor is located approximately 3 feet below the south (Mass. Ave.) exterior grade. The First Floor is approximately 12 steps above the exterior grade. Story heights from the First to the Third Floors are approximately 10 feet.

Roof construction (high mansard roof and low flat roof) is wood framed; the details of this framing could not be determined during our site visit. First floor construction at the front section consists of a 1" wood subfloor supported by 2x10 @ 16" o.c. wood joists, spanning in the east-west direction to a central, north-south bearing line. Framing for the back (north) section is similar; however, the joists and supporting beams have been rotated 90 degrees. Upper floor construction was obscured by finishes, but is assumed to be similar.

The basement floor is a concrete slab on grade (thickness unknown). Foundation walls are mortared rubble stone construction up to the exterior grade, then solid brick masonry above-grade. Foundations are assumed to be concrete spread footings.

859 MASSACHUSETTS AVENUE

Cambridge, MA

STRUCTURAL REPORT

May 20, 2016 - Draft

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STRUCTURAL CONDITIONS

Generally speaking, the condition of the structure and the foundations appears to be satisfactory for a building of this age. There was no evidence of failed or overloaded framing, and foundations appear to be performing as intended. Minor cracking was observed in the ceilings throughout; however, these are not structural in nature and can be easily repaired. No major cracking was observed in the interior or perimeter walls; cracks have likely been repaired in the past.

Structural/structurally related conditions observed include the following:

1. First Floor joists have been notched (sometimes extensively) and mortised into the supporting beams. FBRA recommends that joist hangers be provided at all such conditions, in conjunction with future renovations to the building. Similar conditions may exist in certain locations at the upper levels; however, joists at those levels are typically resting on wood stud bearing walls and may not be notched.
2. Several First Floor joist pockets in the masonry walls were observed; joist ends appear to be in satisfactory condition (the exterior grade is lower). Nonetheless, preliminary cost estimates should carry an allowance for limited repairs to First Floor joist at the perimeter foundation walls (sistering, etc.)
3. The existing fire escape is in poor condition. The fire escape should be inspected and repaired/replaced, if continued use is required.
4. FBRA anticipates that additional anchorage of the (low) flat roof and the (high) mansard roof will be required (Simpson Hurricane Anchors or equal).
5. The low roof of the back section was not likely designed for snow drift loading. Further evaluation is recommended; reinforcing this roof will likely be required in conjunction with a future renovation.

PROPOSED RENOVATIONS AND ADDITIONS: STRUCTURAL SCOPE/COMMENTS

Two options are being considered. Two new egress stairs (wood framed) will be constructed under each option. The first (renovation) option maintains and renovates the entire existing building, adding an egress stair on the east side of the back section and constructing an internal egress stair at the southwest corner of the front section. A mechanical room will be located at the basement level in the back wing; the balance of this level will be an apartment. An apartment and a community/play space will be located at the First Floor. The Second and Third Floors will also be apartments. The second (renovation/addition) option calls for the demolition of the back section and the construction of a new, larger, three-story wing. Proposed uses at each level are similar to the renovation option. In each option, the existing bearing lines will be largely preserved.

Structural Scope - Renovation (Each Option U.O.N.)

1. Install joist hangers, as previously noted.
2. Install anchors for rafters, as previously noted.
3. Repair ends of existing First Floor joists at the foundation wall in limited locations.
4. Remove chimney(s) and reframe floors with new $\frac{3}{4}$ " T&G plywood subfloor and $9\frac{1}{2}$ " LVL joists that span between bearing lines.

859 MASSACHUSETTS AVENUE

Cambridge, MA

STRUCTURAL REPORT

May 20, 2016 - Draft

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5. Construct a new, interior wood framed egress stair at the southwest corner of the building. Reframe the floor areas surrounding the new stair (LVL trimmers and headers) to support the stairs, stair walls and landings.
6. Infill existing, abandoned floor and roof openings, as applicable.
7. Frame out new floor and roof openings to accommodate MEP requirements, as applicable.
8. Carry an allowance to replace 15% of the existing roof sheathing (potential water damage over the years).
9. Repair/seal the existing basement slab on grade, as may be required to meet the requirements of the flooring manufacturer.
10. Provide double LVL headers over new openings in the existing wood stud bearing walls, as applicable.
11. Infill existing openings in existing interior wood stud walls scheduled to remain, as applicable.
12. Investigate the low flat roof of the back section for the capacity to support snow drift loading (renovation option only). Preliminary cost estimates should carry an allowance to reinforce this roof with added LVL joists and new plywood roof sheathing.

Structural Scope – Renovation/Addition Option

In addition to the renovation scope noted above (front section only), structural scope for the new addition includes the following:

1. Demolish the existing back wing, including upper level and roof framing, foundations and the slab on grade.
2. Construct new, 10" thick, reinforced concrete cantilever retaining walls around the perimeter of the new addition and place a new, 4" thick concrete slab on grade (with welded wire fabric) on a vapor barrier, 2" of rigid insulation and 4" of compacted crushed stone (Note that similar foundation construction would be required for the new, east egress stair of the renovation option as well). Thicken the slab to 10" deep below interior wood stud bearing walls.
3. Construct new First, Second and Third Floor levels, with ¾" T&G, plywood subfloor, glued and nailed to 9½" deep engineered I-Joists spaced @ 16" o.c. Provide LVL headers over all window/door openings in exterior and interior wood framed walls.
4. Construct new (flat roof) with engineered lumber, similar to the floor construction described above.
5. Exterior wall construction to consist of ½" plywood sheathing on 2x6 @16" o.c. studs.

END OF STRUCTURAL REPORT

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Cambridge, MA
Existing Conditions Systems Report
J#831 057 01.00
L#51790/Page 1/April 20, 2016

PLUMBING

Executive Summary:

Presently, the plumbing systems serving the building are cold water, hot water, sanitary, waste and vent system. Municipal water and sewer systems service the building.

In general, the plumbing systems, including plumbing fixtures, are in poor condition. The existing services are in fair condition.

Fixtures:

The water closets are tank type floor mounted vitreous china. The fixtures are in poor condition.

Lavatories are vitreous china. Faucets are not metering type with manual temperature control faucet.

There is no drinking fountain in the building.



Tank Type Toilet and Typical Lavatory

Water Systems:

The main domestic water service enters the basement a storage closet. The service appears to be 1-1/2" in size and a water meter. The main domestic cold-water distribution is 3/4" in size.

Piping, where exposed, appears to be copper with sweat joints. The majority of the piping is not insulated.

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Domestic hot water is generated through a gas fired tank type water heater. There is a thermostatic mixing valve on the system. Water heater has a 40-gallon storage capacity manufactured by AP Smith. The system is in fair condition.



Domestic Water Service & Meter



Domestic Hot Water System



Gas Service

There is a single gas service present on one meter. The service is in fair condition. The gas meters were originally located in basement but have been removed and now is located outside.

Drainage Systems:

Water closets are tank type. Cast iron is used for waste drainage from lavatories.

Where visible, the drainage pipe appears to be in poor condition. Draining piping has been run surface on basement floor. The sanitary service appears to be 4”.

859 Massachusetts Ave.
Cambridge, MA
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L#51790/Page 3/April 20, 2016

Recommendations:

Renovation scheme will require new plumbing fixtures that are water conserving type. The fixtures will be ultra low flow.

Insulate domestic water piping will be provided with 1” thick fiberglass pipe insulation.

Domestic hot water will consist of solar collectors with 40 gallon tank type electric (supplemental) with heat exchanger. No fossil fuels will be used.

FIRE PROTECTION

The building does not contain an automatic sprinkler system.

A new fire protection system is required per Section 903.2.8 Group “R”.

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HVAC - HEATING, VENTILATION AND AIR CONDITIONING:

The building is presently served by a hydronic heating system. There is one two section boiler located in the basement. The boiler is in poor condition. The boiler is Hydrotherm model 360. The boiler is gas fired.

Ductwork distribution is at the ceiling level and is generally concealed in the spaces. There are two air handling units. One serves the basement and the other serves the chambers on main level.

There are window type air conditioners on the second floor.

Hot water baseboard radiation is controlled by wall-mounted thermostats. One thermostat is provided for each floor.

There are dedicated zone pumps provided for each zone. A total of 7 zones are present.

Water distribution piping is copper with soldered joints.

In the bathroom addition, bathrooms are heated by baseboard. Bathrooms do have ventilation.



Floor Zone Pump



Air Handler

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Cambridge, MA
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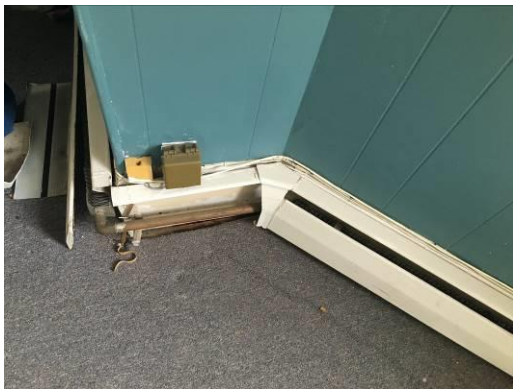
Thermostat



Exterior Condenser



Typical Ductwork Distribution



Typical Baseboard



Typical Window Air Conditioner

859 Massachusetts Ave.
Cambridge, MA
Existing Conditions Systems Report
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Recommendations:

We would recommend a high efficiency geothermal water source heat pump system.

The system would consist of closed system geothermal well per tenant along with associated heat pump. Each well will produce 3.5 tons of cooling and approximately 36,000 BTUs for heating.

No fossil fuel is required with the geothermal heat pump system.

Distribution ductwork will be minimal. The heat pump will be located in a closet adjoining multiple rooms.

A single programmable thermostat will be provided for each tenant space.

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ELECTRICAL

Executive Summary:

In general, the electrical distribution system located in the basement is inadequate in capacity and is in poor condition.

Lighting is generally in poor condition and will require replacement as part of renovation project.

Life safety systems such as new emergency lighting and exit signs will be required as part of renovation project. Exterior emergency lights will be required at building exits.

Life safety systems such as fire alarm will be required as part of renovation.

Electrical Distribution System:

There is one service present at the facility. The service is rated at 200A, 120/240V, 1Ø, 3W. There is a 200 amp main switch in a closet in the basement that feeds a trough with (4) tenant meters near boiler. The equipment is relatively old and in poor condition. The equipment is manufactured by FPE.

Each tenant panel is rated at 10A, 120/240V, 1 phase, 3 wire.

The service is underground from a manhole on Massachusetts Ave.



Main Switch



Sub Panel

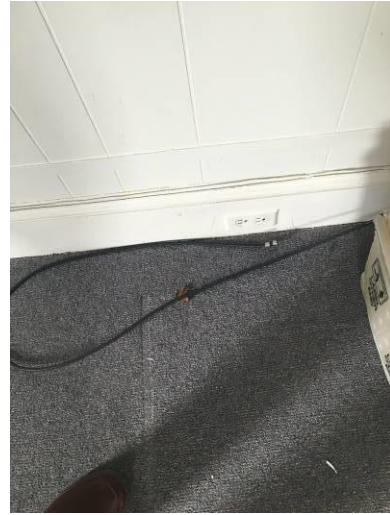
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Branch Circuits:

In the offices there are flush-mounted receptacles on each wall. The quantity of receptacles appears adequate. Some receptacles are mounted below ADA guidelines.



Typical Romex Wiring



Outlets in Baseboard (non-ADA)

Most outlets throughout the building are in poor condition due to age.

Romex wiring has been used throughout.

Interior Lighting System:

Lighting in corridors, stairway, toilets, display area, and office is generally surface-mounted fluorescent fixtures which are 1'x4' - 2 lamp prismatic lenses. The fixtures are in poor condition.

The chambers room consists of recessed incandescent downlights.



Typical Surface Fixtures



Chamber Room Lighting

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Toilet Lighting



Office Lighting

In general, the existing lighting throughout the building is in poor condition.

Telephone/Data/Intercom/Security:

Telephone and data outlets are provided in chamber offices. There is a telephone service located in the basement.



Telephone Service



Data for Chamber

There is presently several security systems in the building. The 3rd floor has a security and intercom system per room.

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Control Panel & Keypad



Intercom System

RECOMMENDATIONS

Electrical Distribution System:

The existing electrical service and distribution equipment is not adequate for dwelling units. A new secondary service and multi-meter bank will be required.

Interior Lighting System:

Lighting throughout the facility is in poor condition. New lighting with more energy efficient LED source should be provided as part of renovation.

Emergency Lighting System:

Emergency lights and LED exit signs will be required as part of renovation.

Site Lighting System:

All exterior lighting should be provided with new energy efficient LED type fixtures and dark sky compliance.

Fire Alarm System:

New fire alarm system should be provided. There is no fire alarm system present.

Telephone/Data:

The existing service is adequate for a renovation. New distribution within building is required for multiple tenant use.

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PV Array:

It is recommended that a PV array sized for NetZero of approximately 30kW be provided.