City of Cambridge

PURCHASING DEPARTMENT

795 Massachusetts Ave. • Cambridge, Massachusetts 02139-3219

Amy L. Witts
Purchasing Agent

TO: **All Bidders**

FROM: **City of Cambridge**

DATE: **April 21, 2016**

RE: **File No. 7221 – Request for Qualifications for Design Services of Multi-Building Department Relocation Master Plan- Addendum No. 2**

This addendum is comprised of:

1. **Sign-in sheet from the Pre-proposal meeting**
2. **Feasibility study for 795 Massachusetts Ave, 831 Massachusetts Ave and 3 Bigelow Street**

All other details remain the same.

Amy L. Witts

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Purchasing Agent

Addendum No. 2

Multi-Phased Design and Renovation of Existing City Buildings

Pre-proposal walkthrough 4/20/16

Name	Company	Phone	Email
REBECCA BERRY	FK Architects	617.227.9272	rberry@faaine.com
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Dana Kelly	Brewer-Cott Arch.	617-492-9400	dkelly@brwercott-com
Ed Rice	Ann Beha Arch	617 226 1600	er@annbeha.com
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Memorandum

To: Lisa Peterson, Commissioner, Cambridge Dept. of Public Works

From: Alan Pemstein

Date: May 2, 2013

Re: Feasibility Study for Implementation of
IT Security Measures and Improvements to the
Mechanical Attic Space in Cambridge City Hall

The intent of this feasibility study was to determine the requirements for providing an uninterruptable power source for the IT Department, review IT cooling, determine the issues with the HVAC equipment in the attic and bell tower, review insulation and ventilation concerns in the attic and provide possible solutions to these problems along with cost estimates, in order to better define a realistic scope or scopes of work for budgeting, final design and implementation.

Alternative approaches are described in this memo. In the course of this study, the following three issues arose that are included in the proposed work:

- The proposed work requires the creation of a separate main electric room in the basement to isolate the existing electric service panels. The current panel space is a code violation.
- The insulation of the attic triggers a requirement in the IBC 1203.2 code for ventilating the entire attic space. This ventilation is in addition to what we are proposing to more effectively exhaust heat from the existing chiller equipment currently located in the attic.
- During the study, we were asked to consider the possibility of adding life safety systems to the emergency generator. Accordingly the uninterruptible power includes an option for a larger, diesel -fired generator with capacity to power emergency lighting and exit signage.

The work required to provide adequate ventilation and uninterruptible power for the Data Center on the third floor of City Hall is particularly expensive due to the complexity of working within the historic building. In the light of a currently underway long range study of the City's IT needs, the decision to keep the data center in this location should be affirmed before these significant monies are authorized for this work.

AC Systems and Ventilation

The Mechanical engineering analysis of attic ventilation and air conditioning system efficiency includes the following recommended improvements:

1. Reconfigure the three Liebert AC units in the Data Center to have only two running continuously with the third as back up. Changes to the equipment orientation and raised floor configuration, and insulating the south facing windows will improve system efficiency and reduce the cooling and ventilation load.

2. Replacing the AC units for the Law Department with more efficient units and reconfiguring the condensing units in the bell tower will improve overall operation and reliability.
3. Modifications to isolate the tower room in the attic and increase fresh air access will improve efficiency and eliminate heat discharge to the general attic area.

Emergency Power and related Electrical work

The Electrical report includes 3 options for an emergency generator.

1. A gas generator serving only for emergency power to the Data Center and located within a retaining wall enclosure across Doyle Way on north lot line.
2. A gas generator serving only for emergency power to the Data Center and located on the earth bank outside the north wall of the Council Chamber.
3. A diesel generator to provide emergency power to the Data Center and support emergency egress and lighting, located in either of the above locations.

With the addition of generator capacity to include life safety systems – item 3 above – a load assumption has been made, but a detailed design of the required life safety systems is not part of this study or project. This study assumes that inclusion of life safety systems will require a diesel-fired emergency generator, which is a less expensive machine and eliminates the need for a new gas service, but will have greater acoustic and smell impacts.

Major issues with all 3 emergency power options include noise, combustion exhaust, aesthetic impact of the exhaust stack, and impacts on neighbors and passersby. If the generator is located alongside the building, the exhaust stack will extend approximately 10' above the roof eave and be secured to the building and roof. If the generator is placed across Doyle Way, the stack will need to be carefully located and tall enough so minimize the impact of exhaust on the abutting properties.

Attic Insulation

Attic insulation is fairly straight forward but the HVAC analysis indicates that the additional insulation will trigger code requirements for adding general attic ventilation. Related to that issue, concurrent plans to upgrade the AV environment in the Council Chamber and other meeting rooms, including reactivating the ventilation at the top of the chamber, should avoid using the attic to exhaust heat load from those spaces.

Other Considerations

Major architectural issues include the following:

- Designing historically compatible ventilation louvers in dormer windows and tower openings
- Adding additional fresh air access for general attic ventilation
- Closing window openings in the Data Center in a historically compatible manner.
- Locating and supporting the emergency generator stack in a historically acceptable manner
- Interior modifications include: electrical service spaces, space for a UPS, and conceal emergency power conduit to the third floor Data Center.

There are opportunities for energy savings and rebates/incentives, for which the architect and engineers will assist the City during the next design phase.

It is possible that the work in the Data Center could be done with minimal or no interruption of service, but equipment will need to be carefully protected. Coordinating the UPS will require the shutdown of the Data Center for up to a full day. Replacement of AC equipment may best occur during the cooler months to insure that the installation can be phased with minimal negative impact in the space conditions.

Cost Options

The attached cost report provides conceptual detail for the probable cost of different elements of the project, based on public construction. The following is a summary of projected construction cost, project "soft cost" (fees, contingency, testing, utility backcharges, and other owner costs) and total project cost for the major components of the work. For the purpose of this comparison soft costs are included at 25% of construction costs.

1. Uninterruptible power supply to Data Center

   a. With gas-fired emergency generator on north lot line

Estimated construction cost	505,000
Soft costs	126,000
Total project cost	$631,000
Adjust for larger, diesel-fired generator	-$48,000

   b. With gas-fired emergency generator alongside building

Estimated construction cost	439,000
Soft costs	110,000
Total project cost	$549,000
Adjust for larger, diesel-fired generator	-$48,000

2. Attic ventilation and AC equipment upgrades

Estimated construction cost	346,000
Soft costs	87,000
Total project cost	$433,000

3. Attic Insulation

Estimated construction cost	69,000
Soft costs	17,000
Total project cost	$86,000

Implementation

- All of the work could be managed in a single construction contract. This would put responsibility for all work under one general contractor. Because of the intricacies of the work, aggregate value, and schedule sensitivity due to continued operations, the utilization of CM at Risk should be considered.
- Conversely, because each of the three project components involves different trades, equipment lead times, and distinct areas of work in the building, each could be a separate construction project, but in that case utilization of CM at Risk may not be as appropriate.
- As a third alternative, because the work in the attic for both ventilation and insulation could be done concurrently, these two components could be bid as one project.

Naturally, funds available will play into how the projects are implemented.

Attachments:
Cost Estimate, HVAC Report, Electrical Systems Narrative, Generator Location Plan

HMFH Architects

Alan Pemstein, AIA, LEED BD+C

Preliminary Design Submission

Cambridge City Hall
Emergency Generator & Mechanical Upgrades

Cambridge, MA

Prepared for:

HMFH Architects, Inc.

April 22, 2013

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MAIN CONSTRUCTION COST SUMMARY

		Estimated Cost
EMERGENCY GENERATOR OPTION ONE		
NEW EMERGENCY GENERATOR OPTION 1 (Across Dorothy Doyle Way)		$366,245
GENERAL CONDITIONS	10.00%	$36,625
BONDS	0.65%	$2,381
INSURANCE	1.25%	$4,578
PERMIT (Assumed Waived)		NIC
OVERHEAD AND FEE	10%	$36,625
ESCALATION TO MID-POINT	4%	$14,650
DESIGN AND PRICING CONTINGENCY	12.0%	$43,949
TOTAL OF ALL CONSTRUCTION OPTION 1		**$505,053**

EMERGENCY GENERATOR OPTION TWO		
NEW EMERGENCY GENERATOR OPTION 2 - Next to Building		$318,083
GENERAL CONDITIONS	10.00%	$31,808
BONDS	0.65%	$2,068
INSURANCE	1.25%	$3,976
PERMIT (Assumed Waived)		NIC
OVERHEAD AND FEE	10%	$31,808
ESCALATION TO MID-POINT	4%	$12,723
DESIGN AND PRICING CONTINGENCY	12.0%	$38,170
TOTAL OF ALL CONSTRUCTION OPTION 2		**$438,636**

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EMERGENCY GENERATOR OPTION THREE

NEW DIESEL EMERGENCY GENERATOR OPTION 3 (Life Safety)		$299,098
GENERAL CONDITIONS	10.00%	$29,910
BONDS	0.65%	$1,944
INSURANCE	1.25%	$3,739
PERMIT (Assumed Waived)		NIC
OVERHEAD AND FEE	10%	$29,910
ESCALATION TO MID-POINT	4%	$11,964
DESIGN AND PRICING CONTINGENCY	12.0%	$35,892
TOTAL OF ALL CONSTRUCTION OPTION 3		**$412,457**

INSULATION UPGRADES

INSULATION UPGRADES		$49,816
GENERAL CONDITIONS	10.00%	$4,982
BONDS	0.65%	$324
INSURANCE	1.25%	$623
PERMIT (Assumed Waived)		NIC
OVERHEAD AND FEE	10%	$4,982
ESCALATION TO MID-POINT	4%	$1,993
DESIGN AND PRICING CONTINGENCY	12.0%	$5,978
TOTAL OF ALL CONSTRUCTION INSULATION UPGRADES		**$68,698**

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VENTILATION UPGRADES

VENTILATION UPGRADES		$250,660
GENERAL CONDITIONS	10.00%	$25,066
BONDS	0.65%	$1,629
INSURANCE	1.25%	$3,133
PERMIT (Assumed Waived)		NIC
OVERHEAD AND FEE	10%	$25,066
ESCALATION TO MID-POINT	4%	$10,026
DESIGN AND PRICING CONTINGENCY	12.0%	$30,079
TOTAL OF ALL CONSTRUCTION INSULATION UPGRADES		**$345,659**

ADD Alternate to Rebuild existing staircase	**ADD**	$30,000

This preliminary cost estimate was produced from drawings, outline specifications and other documentation prepared by HMFH Architects and their design team dated April 4th, 2013. Design and engineering changes occurring subsequent to the issue of these documents have not been incorporated in this estimate.

This estimate includes all direct construction costs, general contractor's overhead and profit and design contingency. Cost escalation assumes start dates indicated.

Bidding conditions are expected to be public bidding to general contractors, and sub-contractors, open specifications for materials and manufactures.

The estimate is based on prevailing wage rates for construction in this market and represents a reasonable opinion of cost. It is not a prediction of the successful bid from a contractor as bids will vary due to fluctuating market conditions, errors and omissions, proprietary specifications, lack or surplus of bidders, perception of risk, etc. Consequently the estimate is expected to fall within the range of bids from a number of competitive contractors or subcontractors, however we do not warrant that bids or negotiated prices will not vary from the final construction cost estimate.

ITEMS NOT CONSIDERED IN THIS ESTIMATE

Items not included in this estimate are:

- All professional fees and insurance
- Building Permit costs
- Land acquisition, feasibility, and financing costs
- All Furnishings, Fixtures and Equipment
- Items identified in the design as Not In Contract (NIC)
- Items identified in the design as by others
- Owner supplied and/or installed items (e.g. draperies, furniture and equipment)
- Rock excavation; special foundations (unless indicated by design engineers)
- Work to City streets and sidewalks, (except as noted in this estimate)
- Construction or occupancy phasing or off hours' work, (except as noted in this estimate)

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CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
NEW EMERGENCY GENERATOR OPTION 1 (Across Dorothy Doyle Way)							
A10	***FOUNDATIONS***						
A1010	**STANDARD FOUNDATIONS**						
	Allowance to core foundation wall for new emergency generator feed	**1**	ls	750.00	750		
	SUBTOTAL					750	
	TOTAL - FOUNDATIONS						**$750**
C10	***INTERIOR CONSTRUCTION***						
C1010	**PARTITIONS**						
	New partition at electric room	**450**	sf	14.00	6,300		
	Sealants & caulking at partitions	**1**	ls	150.00	150		
	Rough blocking	**38**	lf	1.50	57		
	SUBTOTAL					$6,507	
C1020	**INTERIOR DOORS**						
	HM Doors, frames and panic Hardware- single	**2**	ea	2,500.00	5,000		
	Paint doors and frames	**2**	ea	150.00	300		
	Sealants & caulking	**2**	ea	90.00	180		
	SUBTOTAL					$5,480	
C1030	**SPECIALTIES / MILLWORK**						
	Plywood for electrical equipment	**1**	loc	500.00	500		
	Room Signs	**1**	loc	100.00	100		
	SUBTOTAL					$600	
	TOTAL - INTERIOR CONSTRUCTION						**$12,587**
C30	***INTERIOR FINISHES***						
C3010	**WALL FINISHES**						
	Paint to GWB	**900**	sf	1.00	900		
	SUBTOTAL					$900	
C3020	**FLOOR FINISHES**						
	No items in this section						
	SUBTOTAL					-	
C3030	**CEILING FINISHES**						
	Allowance to remove existing ceilings and patching etc. to run new feeds	**1**	ls	15,000.00	15,000		
	SUBTOTAL					$15,000	
	TOTAL - INTERIOR FINISHES						**$15,900**
D30	***HVAC***						
D30	**HVAC, GENERALLY**						
	Emergency generator exhaust	**1**	ls	4,000.00	4,000		
	Generator sound enclosure - allow	**1**	ls	15,000.00	15,000		

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	NEW EMERGENCY GENERATOR OPTION 1 (Across Dorothy Doyle Way)						
	SUBTOTAL					$19,000	
	TOTAL - HVAC						**$19,000**
D50	***ELECTRICAL***						
D5010	**SERVICE & DISTRIBUTION**						
	30kW UPS (assumed with a with static by-pass switch)	**1**	ls	40,000.00	40,000		
	150kW natural gas generator	**1**	ea	90,000.00	90,000		
	600A ATS, allow	**1**	ea	10,200.00	10,200		
	600A 208/120V panelboard, allow	**1**	ea	6,500.00	6,500		
	225A panelboard serving IT circuits	**1**	ea	2,500.00	2,500		
	600A feed, allow	**250**	lf	135.00	33,750		
	225A feed, allow	**200**	lf	50.00	10,000		
	Modifications to existing gear and distribution	**1**	ls	10,000.00	10,000		
	SUBTOTAL					$202,950	
D5020	**LIGHTING & POWER**						
	Lighting						
	New lighting in electrical room	**4**	ea	220.00	880		
	Lighting Control						
	Single pole low voltage switch	**1**	ea	50.00	50		
	Single pole switch WP	**1**	ea	28.00	28		
	Occupancy sensor, ceiling mount	**1**	ea	120.00	120		
	Small Power Devices						
	Duplex receptacle	**2**	ea	20.00	40		
	Double duplex receptacle	**2**	ea	40.00	80		
	Branch Circuitry						
	Device plate	**4**	ea	3.55	14		
	Device box	**4**	ea	21.00	84		
	Wiring	**1**	ls	500.00	500		
	SUBTOTAL					$1,796	
D5030	**COMMUNICATION & SECURITY SYSTEMS**						
	Fire Alarm						
	Smoke detector	**1**	ea	300.00	300		
	FA cable	**1**	ls	750.00	750		
	SUBTOTAL					$1,050	
D5040	**OTHER ELECTRICAL SYSTEMS**						
	Premium for work in occupied space	**1**	ls	5,000.00	5,000		
	Demo/make safe	**1**	ls	2,500.00	2,500		
	Fees and permits	**1**	ls	1,800.00	1,800		
	SUBTOTAL					9,300	
	TOTAL - ELECTRICAL						**$215,096**
F20	***SELECTIVE BUILDING DEMOLITION***						
F2010	**BUILDING ELEMENTS DEMOLITION**						
	Miscellaneous demolition	**1**	ls	1,000.00	1,000		
	SUBTOTAL					$1,000	

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	NEW EMERGENCY GENERATOR OPTION 1 (Across Dorothy Doyle Way)						
F2020	**HAZARDOUS COMPONENTS ABATEMENT**						
	No items in this section						
	SUBTOTAL						
	TOTAL - SELECTIVE BUILDING DEMOLITION						**$1,000**
G	***SITEWORK***						
G10	**SITE PREPARATION & DEMOLITION**						
	Site Demolitions and Relocations						
	Curbing removal	**50**	lf	4.00	200		
	Sawcut asphalt	**50**	lf	15.00	750		
	Remove existing grass, plants etc.	**1**	ls	500.00	500		
	Remove and dispose Bituminous Paving;	**200**	sf	2.00	400		
	Site Earthwork						
	Strip topsoil, store on-site and re-use	**13**	cy	50.00	650		
	Regrading	**1**	ls	1,500.00	1,500		
	Cut into slope and remove off-site	**78**	cy	100.00	7,800		
	SUBTOTAL					11,800	
G20	**SITE IMPROVEMENTS**						
	Roadways and Parking Lots						
	Patch bituminous concrete for new trench	**200**	sf	5.00	1,000		
	Granite curb	**50**	lf	35.00	1,750		
	Generator pad	**550**	sf	12.00	6,600		
	Bollards	**7**	loc	600.00	4,200		
	Concrete retaining wall for generator closure						
	Footing to walls - 3' x 1'-6"						
	Excavation	**91**	cy	15.00	1,365		
	Store on site for reuse	**91**	cy	10.00	910		
	Backfill with existing fill	**79**	cy	12.00	948		
	Formwork	**210**	sf	12.00	2,520		
	Re-bar	**1,800**	lbs	1.50	2,700		
	Concrete material; 3,000 psi	**12**	cy	120.00	1,440		
	Placing concrete	**12**	cy	100.00	1,200		
	Architectural concrete wall 12" thick						
	Formwork	**1,540**	sf	12.00	18,480		
	Re-bar	**999**	lbs	1.50	1,499		
	Concrete material; 4,000 psi	**30**	cy	130.00	3,900		
	Placing concrete	**30**	cy	100.00	3,000		
	Allowance to finish exposed face	**770**	sf	5.00	3,850		
	New Gas Service						
	Cut and demolish paving for new gas service	**75**	lf	40.00	3,000		
	Patch paving for new gas service	**150**	sf	10.00	1,500		
	Connection at Inman Street; including police details	**1**	ls	10,000.00	10,000		
	New gas service	**75**	lf	100.00	7,500		
	Landscaping & Plantings:						
	Planting allowance	**1**	ls	1,000.00	1,000		
	SUBTOTAL					78,362	
G40	**ELECTRICAL UTILITIES**						
	600A feed	**50**	lf	235.00	11,750		

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	NEW EMERGENCY GENERATOR OPTION 1 (Across Dorothy Doyle Way)						
165	SUBTOTAL					11,750	
166							
167	**TOTAL - SITE DEVELOPMENT**						**$101,912**
168							
169							
170	**TOTAL TRADE COSTS - Emergency Generator Option 1**						**$366,245**

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	NEW EMERGENCY GENERATOR OPTION 2 - Next to Building						
	A10 FOUNDATIONS						
	A1010 STANDARD FOUNDATIONS						
033000	Allowance to core foundation wall for new emergency generator feed	**1**	ls	750.00	750		
	SUBTOTAL					750	
	TOTAL - FOUNDATIONS						**$750**
	C10 INTERIOR CONSTRUCTION						
	C1010 PARTITIONS						
092900	New partition at electric room	**450**	sf	14.00	6,300		
079200	Sealants & caulking at partitions	**1**	ls	150.00	150		
061000	Rough blocking	**38**	lf	1.50	57		
	SUBTOTAL					$6,507	
	C1020 INTERIOR DOORS						
081400	HM Doors, frames and panic Hardware- single	**2**	ea	2,500.00	5,000		
099100	Paint doors and frames	**2**	ea	150.00	300		
079200	Sealants & caulking	**2**	ea	90.00	180		
	SUBTOTAL					$5,480	
	C1030 SPECIALTIES / MILLWORK						
061000	Plywood for electrical equipment	**1**	loc	500.00	500		
101400	Room Signs	**1**	loc	100.00	100		
	SUBTOTAL					$600	
	TOTAL - INTERIOR CONSTRUCTION						**$12,587**
	C30 INTERIOR FINISHES						
	C3010 WALL FINISHES						
099100	Paint to GWB	**900**	sf	1.00	900		
	SUBTOTAL					$900	
	C3020 FLOOR FINISHES						
	No items in this section						
	SUBTOTAL					-	
	C3030 CEILING FINISHES						
	Allowance to remove existing ceilings and patching etc. to run new feeds	**1**	ls	15,000.00	15,000		
	SUBTOTAL					$15,000	
	TOTAL - INTERIOR FINISHES						**$15,900**
	D30 HVAC						
	D30 HVAC, GENERALLY						
	Emergency generator exhaust	**1**	ls	12,000.00	12,000		
	Generator sound enclosure - allow	**1**	ls	15,000.00	15,000		

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	NEW EMERGENCY GENERATOR OPTION 2 - Next to Building						
	SUBTOTAL					$27,000	
	TOTAL - HVAC						**$27,000**
	D50 ELECTRICAL						
	D5010 SERVICE & DISTRIBUTION						
260000	30kW UPS (assumed with a with static by-pass switch)	**1**	ls	40,000.00	40,000		
260000	150kW natural gas generator in sound attenuated weather proof enclosure	**1**	ea	90,000.00	90,000		
260000	600A ATS, allow	**1**	ea	10,200.00	10,200		
260000	600A 208/120V panelboard, allow	**1**	ea	6,500.00	6,500		
260000	225A panelboard serving IT circuits	**1**	ea	2,500.00	2,500		
260000	600A feed, allow	**250**	lf	135.00	33,750		
260000	225A feed, allow	**200**	lf	50.00	10,000		
260000	Modifications to existing gear and distribution	**1**	ls	10,000.00	10,000		
	SUBTOTAL					$202,950	
	D5020 LIGHTING & POWER						
	Lighting						
260000	New lighting in electrical room	**4**	ea	220.00	880		
	Lighting Control						
260000	Single pole low voltage switch	**1**	ea	50.00	50		
260000	Single pole switch WP	**1**	ea	28.00	28		
260000	Occupancy sensor, ceiling mount	**1**	ea	120.00	120		
	Small Power Devices						
260000	Duplex receptacle	**2**	ea	20.00	40		
260000	Double duplex receptacle	**2**	ea	40.00	80		
	Branch Circuitry						
260000	Device plate	**4**	ea	3.55	14		
260000	Device box	**4**	ea	21.00	84		
260000	Wiring	**1**	ls	500.00	500		
	SUBTOTAL					$1,796	
	D5030 COMMUNICATION & SECURITY SYSTEMS						
	Fire Alarm						
260000	Smoke detector	**1**	ea	300.00	300		
260000	FA cable	**1**	ls	500.00	500		
	SUBTOTAL					$800	
	D5040 OTHER ELECTRICAL SYSTEMS						
	Premium for work in occupied space	**1**	ls	5,000.00	5,000		
	Demo/make safe	**1**	ls	2,500.00	2,500		
	Fees and permits	**1**	ls	1,800.00	1,800		
	SUBTOTAL					9,300	
	TOTAL - ELECTRICAL						**$214,846**
	F20 SELECTIVE BUILDING DEMOLITION						
	F2010 BUILDING ELEMENTS DEMOLITION						
024100	Miscellaneous demolition	**1**	ls	1,000.00	1,000		
	SUBTOTAL					$1,000	

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	NEW EMERGENCY GENERATOR OPTION 2 - Next to Building						
	F2020 HAZARDOUS COMPONENTS ABATEMENT						
028000	No items in this section						
	SUBTOTAL						
	TOTAL - SELECTIVE BUILDING DEMOLITION						**$1,000**
	G SITEWORK						
	G10 SITE PREPARATION & DEMOLITION						
	Site Demolitions and Relocations						
311000	Remove existing grass, plants etc.	**1**	ls	1,000.00	1,000		
	Site Earthwork						
312000	Strip topsoil, store on-site and re-use	**13**	cy	50.00	650		
312000	Regrading	**1**	ls	2,000.00	2,000		
312000	Cut into slope and remove off-site	**52**	cy	100.00	5,200		
	SUBTOTAL					8,850	
	G20 SITE IMPROVEMENTS						
033000	Generator pad	**550**	sf	12.00	6,600		
033000	Bollards	**7**	loc	600.00	4,200		
	New Gas Service						
	Cut and demolish paving for new gas service	**75**	lf	40.00	3,000		
	Patch paving for new gas service	**150**	sf	10.00	1,500		
	Connection at Inman Street; including police details	**1**	ls	10,000.00	10,000		
	New gas service	**75**	lf	100.00	7,500		
	Landscaping & Plantings:						
329200	Planting allowance	**1**	ls	2,000.00	2,000		
	SUBTOTAL					34,800	
	G40 ELECTRICAL UTILITIES						
260000	600A feed	**10**	lf	235.00	2,350		
	SUBTOTAL					2,350	
	TOTAL - SITE DEVELOPMENT						**$46,000**
	TOTAL TRADE COSTS - Emergency Generator Option 2						**$318,083**

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	NEW DIESEL EMERGENCY GENERATOR OPTION 3 (Life Safety)						
	A10 FOUNDATIONS						
	A1010 STANDARD FOUNDATIONS						
033000	Allowance to core foundation wall for new emergency generator feed	**1**	ls	750.00	750		
	SUBTOTAL					750	
	TOTAL - FOUNDATIONS						**$750**
	C10 INTERIOR CONSTRUCTION						
	C1010 PARTITIONS						
092900	New partition at electric room	**450**	sf	14.00	6,300		
092900	New life safety emergency electric closet	**1**	ls	5,000.00	5,000		
079200	Sealants & caulking at partitions	**1**	ls	150.00	150		
061000	Rough blocking	**38**	lf	1.50	57		
	SUBTOTAL					$11,507	
	C1020 INTERIOR DOORS						
081400	HM Doors, frames and panic Hardware- single	**2**	ea	2,500.00	5,000		
081400	HM Doors, frames and Hardware- double	**1**	pr	2,200.00	2,200		
099100	Paint doors and frames	**4**	ea	150.00	600		
079200	Sealants & caulking	**4**	ea	90.00	360		
	SUBTOTAL					$8,160	
	C1030 SPECIALTIES / MILLWORK						
061000	Plywood for electrical equipment	**1**	loc	1,000.00	1,000		
101400	Room Signs	**2**	loc	100.00	200		
	SUBTOTAL					$1,200	
	TOTAL - INTERIOR CONSTRUCTION						**$20,867**
	C30 INTERIOR FINISHES						
	C3010 WALL FINISHES						
099100	Other painting	**1**	ls	500.00	500		
099100	Paint to GWB	**900**	sf	1.00	900		
	SUBTOTAL					$1,400	
	C3020 FLOOR FINISHES						
	No items in this section						
	SUBTOTAL					-	
	C3030 CEILING FINISHES						
	Allowance to remove existing ceilings and patching etc. to run new feeds	**1**	ls	15,000.00	15,000		
	SUBTOTAL					$15,000	
	TOTAL - INTERIOR FINISHES						**$16,400**
	D30 HVAC						

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		NEW DIESEL EMERGENCY GENERATOR OPTION 3 (Life Safety)						
55		**D30 HVAC, GENERALLY**						
56		Emergency generator exhaust	**1**	ls	12,000.00	12,000		
57		Generator sound enclosure - allow	**1**	ls	15,000.00	15,000		
58		SUBTOTAL					$27,000	
59								
60		***TOTAL - HVAC***						**$27,000**
61								
62								
63		***D50 ELECTRICAL***						
64								
65		**D5010 SERVICE & DISTRIBUTION**						
66	260000	30kW UPS (assumed with a with static by-pass switch)	**1**	ls	40,000.00	40,000		
67	260000	200kW diesel generator in sound attenuated weather proof enclosure	**1**	ea	68,000.00	68,000		
68	260000	800A ATS, allow	**1**	ea	12,150.00	12,150		
69	260000	800A 208/120V panelboard, allow	**1**	ea	8,000.00	8,000		
70	260000	225A panelboard serving IT circuits	**1**	ea	2,500.00	2,500		
71	260000	800A feed, allow	**250**	lf	180.00	45,000		
72	260000	225A feed, allow	**200**	lf	50.00	10,000		
73	260000	Modifications to existing gear and distribution	**1**	ls	10,000.00	10,000		
74		SUBTOTAL					$195,650	
75								
76		**D5020 LIGHTING & POWER**						
77		Lighting						
78	260000	New lighting in electrical room	**4**	ea	220.00	880		
79	260000	New lighting in electrical closet	**2**	ea	220.00	440		
80		Lighting Control						
81	260000	Single pole low voltage switch	**2**	ea	50.00	100		
82	260000	Single pole switch WP	**2**	ea	28.00	56		
83	260000	Occupancy sensor, ceiling mount	**2**	ea	120.00	240		
84		Small Power Devices						
85	260000	Duplex receptacle	**4**	ea	20.00	80		
86	260000	Double duplex receptacle	**2**	ea	40.00	80		
87		Branch Circuitry						
88	260000	Device plate	**6**	ea	3.55	21		
89	260000	Device box	**4**	ea	21.00	84		
90	260000	Wiring	**1**	ls	900.00	900		
91		SUBTOTAL					$2,881	
92								
93		**D5030 COMMUNICATION & SECURITY SYSTEMS**						
94		Fire Alarm						
95	260000	Smoke detector	**1**	ea	300.00	300		
96	260000	FA cable	**1**	ls	500.00	500		
97		SUBTOTAL					$800	
98								
99		**D5040 OTHER ELECTRICAL SYSTEMS**						
100		Premium for work in occupied space	**1**	ls	5,000.00	5,000		
101		Demo/make safe	**1**	ls	2,500.00	2,500		
102		Fees and permits	**1**	ls	1,800.00	1,800		
103		SUBTOTAL					9,300	
104								
105		***TOTAL - ELECTRICAL***						**$208,631**
106								
107								
108		***F20 SELECTIVE BUILDING DEMOLITION***						
109								

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CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	NEW DIESEL EMERGENCY GENERATOR OPTION 3 (Life Safety)						
	F2010 BUILDING ELEMENTS DEMOLITION						
024100	Miscellaneous demolition	**1**	ls	1,000.00	1,000		
	SUBTOTAL					$1,000	
	F2020 HAZARDOUS COMPONENTS ABATEMENT						
028000	No items in this section						
	SUBTOTAL						
	TOTAL - SELECTIVE BUILDING DEMOLITION						**$1,000**
	G SITEWORK						
	G10 SITE PREPARATION & DEMOLITION						
	Site Demolitions and Relocations						
311000	Remove existing grass, plants etc.	**1**	ls	1,000.00	1,000		
	Site Earthwork						
312000	Strip topsoil, store on-site and re-use	**13**	cy	50.00	650		
312000	Regrading	**1**	ls	2,000.00	2,000		
312000	Cut into slope and remove off-site	**52**	cy	100.00	5,200		
	SUBTOTAL					8,850	
	G20 SITE IMPROVEMENTS						
033000	Generator pad	**550**	sf	12.00	6,600		
033000	Bollards	**7**	loc	600.00	4,200		
	Landscaping & Plantings:						
329200	Planting allowance	**1**	ls	2,000.00	2,000		
	SUBTOTAL					12,800	
	G40 ELECTRICAL UTILITIES						
260000	New emergency generator conduit and cables	**10**	lf	280.00	2,800		
	SUBTOTAL					2,800	
	TOTAL - SITE DEVELOPMENT						**$24,450**
	TOTAL TRADE COSTS - Emergency Generator Option 3						**$299,098**

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INSULATION UPGRADES

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	B10 SUPERSTRUCTURE						
	B1020 ROOF CONSTRUCTION						
078400	R30 cellulose Insulation at previous floored areas and R13 3-1/2" x 15 Kraft faced fiberglass batts	**6,100**	sf	4.14	25,254		
078400	R38 cellulose Insulation at previous floored areas and vaulted areas	**6,600**	sf	1.97	13,002		
078400	Air sealing	**1**	ls	2,360.00	2,360		
078400	Allowance for prep work	**1**	ls	5,700.00	5,700		
078400	Seal 6 foot shaft	**1**	ls	3,500.00	3,500		
	SUBTOTAL					$49,816	
	TOTAL - SUPERSTRUCTURE						**$49,816**
	TOTAL TRADE COSTS - Insulation Upgrades						**$49,816**

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CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
VENTILATION UPGRADES							
	C10 INTERIOR CONSTRUCTION						
	C1010 PARTITIONS						
092900	New GWB partitions	**450**	sf	12.00	5,400		
	SUBTOTAL					$5,400	
	C1020 INTERIOR DOORS						
081400	New double doors	**1**	pr	3,000.00	3,000		
	SUBTOTAL					$3,000	
	C1030 SPECIALTIES / MILLWORK						
079200	Remove existing wire mesh screens and rework to provide maximum free area	**16**	sf	40.00	640		
079200	Block the inside of the exterior windows with insulated panels	**64**	sf	55.00	3,520		
079200	Replace dormer windows with new louvers	**16**	sf	120.00	1,920		
079200	Replace lower dormer windows with new louvers	**15**	sf	120.00	1,800		
079200	Infill data center windows with new spandrel glass, insulation and GWB	**48**	sf	80.00	3,840		
	SUBTOTAL					$11,720	
	TOTAL - INTERIOR CONSTRUCTION						**$20,120**
	C30 INTERIOR FINISHES						
	C3010 WALL FINISHES						
099100	Paint to GWB	**900**	sf	0.65	585		
	SUBTOTAL					$585	
	TOTAL - INTERIOR FINISHES						**$585**
	D20 PLUMBING						
	D20 PLUMBING, GENERALLY						
	No work required						
	SUBTOTAL						
	TOTAL - PLUMBING						
	D30 HVAC						
	D30 HVAC, GENERALLY						
	Supply fan, 4,000 cfm	**3**	ea	3,000.00	9,000		
	Exhaust fan, 12,000 cfm	**1**	ea	8,000.00	8,000		
	Split system AC unit, 3.5 ton	**1**	ea	5,250.00	5,250		
	Split system AC unit, 2.5 ton	**2**	ea	3,750.00	7,500		
	Variable speed drive	**4**	ea	2,500.00	10,000		
	Raise existing condensors	**3**	ea	500.00	1,500		
	Piping						
	Refrigerant piping	**1**	ls	7,500.00	7,500		
	Condensate drain piping	**1**	lb	1,500.00	1,500		
	Pipe insulation	**1**	lb	2,000.00	2,000		

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CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
VENTILATION UPGRADES							
	Sheet Metal						
	(2) 42x12 lined ducts at Data Room	**665**	lb	13.00	8,645		
	(2) 32x18 ducts at condensing units	**516**	lb	10.00	5,160		
	Gravity intake ductwork - allow	**2,500**	lb	10.00	25,000		
	Exhaust ductwork at Attic	**1,250**	lb	10.00	12,500		
	Attic ventilation ductwork	**3,000**	lb	10.00	30,000		
	Misc. duct repairs and sealing	**1**	ls	5,000.00	5,000		
	Misc. duct insulation repairs	**1**	ls	7,500.00	7,500		
	Controls						
	DDC controls for data room units	**1**	ls	10,000.00	10,000		
	Automatic dampers at Data Room	**3**	ea	2,500.00	7,500		
	Automatic damper at Attic	**7**	ea	2,500.00	17,500		
	Fan interlock	**4**	ea	2,000.00	8,000		
	AC unit	**3**	ea	2,000.00	6,000		
	Miscellaneous						
	Coordination & management	**1**	ls	12,500.00	12,500		
	Equipment start up and inspection	**1**	ls	3,000.00	3,000		
	Demolition	**1**	ls	7,500.00	7,500		
	SUBTOTAL					$218,055	
	TOTAL - HVAC						**$218,055**
D40	***FIRE PROTECTION***						
D40	**FIRE PROTECTION, GENERALLY**						
	No work required						
	SUBTOTAL						
	TOTAL - FIRE PROTECTION						
D50	***ELECTRICAL***						
D5010	**SERVICE & DISTRIBUTION**						
	Equipment Wiring						
	Supply fan feed and connection	**3**	ea	1,200.00	3,600		
	Exhaust fan feed and connection	**1**	ea	1,200.00	1,200		
	Split system AC unit feed and connection	**3**	ea	1,500.00	4,500		
	Variable speed drive feed and connection	**4**	ea	650.00	2,600		
	SUBTOTAL					$11,900	
	TOTAL - ELECTRICAL						**$11,900**
	TOTAL TRADE COSTS - Ventilation Upgrades						**$250,660**

CAMBRIDGE CITY HALL

HEATING, VENTILATING, AND AIR CONDITIONING REPORT

I. EXECUTIVE SUMMARY

The purpose of this report is to review problems occurring with the existing air conditioning systems for the data/IT Room and the law offices. AC systems serving both of these areas experience problems with system operation during hot weather. Since the location of the IT Room air-cooled condensing units relates to the attic ventilation, this is also addressed.

The location of the IT Room air cooled condensing units is unusual since they are essentially located indoors. They are located on the attic floor at the base of the clock/bell tower. The volume of the space is large and is surrounded by masonry walls. The primary issue is that this area space cannot be sufficiently relieved by natural ventilation. The proximity of the general attic space also results has relatively small openings to the outdoors and the heat buildup in the space cannot be sufficiently relieved by natural ventilation. The proximity of the general attic space also results in a transfer of heat into the tower. The proposed solution is to isolate the tower space from the attic and provide a mechanical ventilation system. Since this will also isolate the attic, a separate attic ventilation system is also recommended.

The conditions in the IT Room itself were also reviewed, resulting in a number of recommendations to improve system efficiency and operation.

The location of the air-cooled condensing units for the law offices is also somewhat unusual, although they are located outdoors. They are located in the bell area at the top of the tower, installed in a close arrangement. The exact cause of the issues with these units is not known, but can be a combination of a number of conditions including; recirculation of the condensing unit heat back into the condensing unit, intake of heat from the gooseneck vent that serves the tower mechanical space, insufficient refrigerant oil return to the compressors, and the height of the condensing unit above the indoor fan coil units. The primary recommendation is to replace these units with new efficient air conditioning systems.

A separate evaluation was conducted on the feasibility of the installation of a standby generator to serve the IT Room and its associated air conditioning systems. This is primarily an electrical evaluation which is included separately.

II. EXISTING CONDITIONS DESCRIPTION

A. IT Room Air Conditioning Systems:

1. IT Room

a. Air conditioning for the IT room is provided by three DX split system computer room air conditioning (CRAC) units. The interior units are downflow type that discharge supply air into the raised floor plenum. The units are provided with humidifiers to maintain a minimum relative humidity in the space. They do not have reheat coils, so it appears that they are not set up to provide dehumidification control, only cooling and humidification.

b. All three CRAC units were observed to be in operation at the time of our observations and it is our understanding that this is typical. Supply air from the CRAC units is delivered into a raised floor system and then supplied to the space through perforated floor tiles. The arrangement of the units in the room has two units in the near left corner (AC-1 and 2) and one unit in the near right corner (AC-3). AC-1 and AC-2 in the left corner appeared to be operating in cooling mode, while AC-3 in the right corner was operating in humidification mode. Therefore the unit controls do not appear to be synchronized through a central controller. While AC-3 was blowing room temperature humidified air into the raised floor, the other two units were blowing cool dehumidified air.

c. The space temperature in general appeared to be controlling and maintaining 70 degrees F. There are temperature variations in front of the data racks depending on both the air flow direction through the racks and the placement of the floor grilles, which is to be expected.

d. Although space temperature is being controlled and maintaining set point, the server racks are not arranged ideally to provide efficient air conditioning. The furthest rack has the highest air temperature supplied from the rack and discharges the warm air towards the far wall. Therefore the warm air must travel back along the ceiling over both large racks before it reaches the return air opening on the top of the units. With all three units running, and with AC-1 and 2 located on the same side of the room as the server racks, they appear to receive most of the warm air, so they tend to run in cooling mode, while AC-3 sees less warm air or near room temperature air. AC-3 seems to provide little to no cooling. With AC-1 and 2 running in the cooling mode, they tend to extract humidity from the space. AC-3 then sees that the room humidity is being reduced so the humidifier tends to operate to maintain the humidity set point. The humidity set point appears to be 50% RH.

e. Another effect of the operation of AC-1 and 2 at the same time is that there is a higher pressure being created under the raised floor in the left corner of the room, so there is excess leakage of supply

air through openings in the floor, i.e. where the refrigerant piping penetrates the floor. This leakage air returns to the AC units and is essentially bypassed from being supplied through floor grilles where it is needed. In addition, since AC-1 and 2 provide cooled air and AC-3 tends to provide room temperature air, the temperature of the supply air through the floor grilles can be cold on one side of the room and warm on the other side.

f. Due to the uncoordinated control of the AC units, imbalance of warm return air to AC-1 and 2, variations in the supply air temperature through the raised floor system across the room, and the existing rack arrangement, the AC units are not being operated efficiently and electrical energy is being wasted by excessive operation of the humidifier in AC-3.

2. IT Room Air-Cooled Condensing Units

a. The air-cooled condensing units (ACCU) for each CRAC unit are located on the floor of an attic space inside the clock tower structure. This space is separated from the general attic space except through a double door opening. In the front exterior surface of the tower there are six (6) nominal 1 foot x 4 foot wall openings that are open to outdoors. The openings are arranged in pairs located at three different heights. They help to provide some ventilation for the tower mechanical space, but the small area of the openings, which are somewhat restricted by wood framing for wire mesh screens over the openings, are not sufficient to relieve the heat that builds up in the space.

b. The air-cooled condensing units located in the space draw surrounding air from near the floor where they are located and recirculate the air back to the space at an elevated temperature about 30 degrees higher than the surroundings. There are radius duct elbows installed on the discharge of the condensing units that help to deflect the discharge air upward.

c. There is a large old air cooled condenser located in the tower mechanical space in addition to the condensing units. The discharge of this unit is ducted up through the tower where it terminates in the bell tower with a gooseneck. Although this unit no longer provides any heat rejection function for cooling within the building, it was noted that the fan on the unit is sometimes operated to draw air through the space and exhaust it outdoors. The operation of this unit does not provide adequate relief of the heat build-up in the room with it reported that the ACCU's fail on high head when the space temperature is elevated.

3. Law Office AC Units

a. There are three split system AC units that serve the law offices in city hall. The fan coil units with DX cooling coils are located in the attic space on a mezzanine level above storage space. The three

air-cooled condensing units (ACCU) associated with the interior fan coil units are locate outdoors in the bell tower area. The bell tower has large openings to the outdoors but has low, approximately 3 feet high walls that make it a well area. The units are located close together and draw air in horizontally from the front and sides, essentially from within the well and discharge air upward. As we understand, these units cut out during warm weather, which suggests that one reason for the failures could be that the air being drawn into the units is too warm for the condensing units to operate. Excess heat could be caused by several factors including:

1) A build-up of heat due to absorption of solar radiation within the bell tower.

2) Possible recirculation of the condensing unit discharge air caused by prevailing winds.

3) Hot air being discharged through the gooseneck that ventilates the tower mechanical space into the bell tower area.

b. The sizing of the refrigerant piping appears to be per manufacturer's recommendations, however the vertical separation (approximately 40 feet) between the indoor and outdoor units in combination with the length of the refrigerant piping, which is near the published maximum length for the piping, could be preventing sufficient oil return in the suction lines up to the ACCU's.

III. RECOMMENDATIONS

A. IT Room:

1. Reorganize the perforated floor tiles to provide better air supply in front of the data racks, where it is most needed.

2. Provide one 42 x 16 return air duct serving AC-1 and AC-2 and one 42 x 12 return air duct serving AC-3 installed along the ceiling or above the ceiling from the far end of the room to the intakes on the top of each AC unit, approximately 18 foot length each. Ducts shall be open ended at the far end with wire mesh screens.

3. The capacity of two units is sufficient to handle the existing and future projected cooling load for the room. We strongly recommend that only two units be operated at one time. With the current operation of three units, AC-3 does not contribute to cooling the room and consumes excess energy for humidification. We recommend that one unit in the near left corner, AC-1 or AC-2, be in operation at one time along with the unit in the right corner, AC-3. This will provide a more even air distribution under the floor and allow two units to run efficiently. The third unit that is not in operation will be available as a back-up.

4. Provide a new digital control system to monitor and control the units with two in operation and one on stand-by. System shall be capable of energizing the stand-by unit whenever one of the operating units fails. System shall monitor compressor status, fan status, humidifier status, space temperature, space humidity, filter status and provide alarm indications for each. System shall be provided with a web graphics interface for remote monitoring and shall be capable of sending email alerts and text messages.

5. Install automatic dampers in the return air intake of the three AC units to prevent backflow through a unit when it is not in operation. Damper shall be interlocked to the AC unit fan operation.

6. It is highly recommended that the temperature and humidity control be adjusted to provide more efficient operation. Once the air distribution measures have been implemented, the air supply to the racks will be cooler and the warm return air will be drawn more directly to the units. It is recommended that the cooling set point be increased to 74 or 75 degrees F and the humidity control set point be reduced to 40% or 45% RH. This also has the benefit of increasing the efficiency of the AC units.

7. Seal any grommet openings and floor openings at the piping penetrations to prevent air leakage to parts of the room where it will not be effective.

8. There are three exterior windows in the IT room allowing solar heat gain to enter the room in the afternoon. Generally, data rooms are not provided with windows due to the additional cooling energy and added complication to the room temperature control. It is recommended that the inside of the exterior windows be blocked with insulated panels to eliminate solar heat gains.

B. IT Room Air-Cooled Condensing Units:

1. Provide new long radius 90 degree elbows and extended vertical discharge ducts from each of the three condensing units to 8 feet above the attic floor. Ducts shall be open ended with wire mesh screens. Support on wood sleepers and brace ducts to walls or with angle bracing to the floor. Ducts shall be 32 x 18.

2. Provide gravity intake ducts from each of the six 1 foot x 4 foot exterior masonry wall openings to two vertical header ducts with openings near the floor.

   a. The existing wood framing with wire mesh screens installed in the exterior openings shall be removed and the wire mesh screens shall be reinstalled to provide maximum free area to the openings.

   b. Provide a 20 inch wide x 40 inch high x 20 inch deep sheetmetal plenum with sloped bottom for drainage over each opening to match the interior brick opening.

   c. Provide a 2 foot long, 32 inch high x 18 inch deep horizontal intake duct mounted on the exterior brick wall connected to the side of

each plenum, which shall connect to a vertical header duct, also wall mounted.

d. Provide two 72 inch x 24 inch vertical header ducts, mounted on the brick wall and supported from the floor. Each header duct shall connect to three of the wall openings. Each header duct shall terminate with an open end (with wire mesh screen) at 18 inch above the floor.

3. The feasibility of using all six exterior wall openings needs to be determined. Access to the top two openings is blocked by the wooden stairs that go up to the clock tower. If it is not feasible to use the top openings, then two of the lower window openings in one of the attic dormers will be needed for intake air. This option can replace the need to reconfigure the wooden stairs and may prove to be less expensive. If this approach is used, the two upper wall openings should be blocked. The dormer windows will need to be replaced with intake louvers and a full sized louver plenum. A 32 inch x 16 inch supply duct with automatic damper and a 4,000 CFM, 1 HP supply fan shall run approximately 70 feet to the mechanical space. Provide a variable speed drive to be controlled from a DDC controller noted in Item #4 below and operate as a second stage to the room ventilation when needed.

4. The existing Larkin condenser in the attic mechanical space is proposed to be removed. In its place, provide a 12,000 CFM, 2 HP single inlet utility exhaust fan mounted on wooden sleepers with spring vibration isolators. The fan shall be provided with a variable speed drive for energy efficiency and better control. Provide a space temperature sensor with a DDC controller to control the fan. The fan discharge shall be connected to the existing Larkin system discharge duct (approx. 62 inch x 30 inch) at about 10 feet above the floor. The existing exhaust ductwork shall be used to exhaust outdoors through the gooseneck in the bell tower. A vertical intake duct shall be provided to draw air from high in the space. The duct shall be 60 inch x 24 inch and shall terminate at 24 feet above the mechanical space floor with an open end and wire mesh screen.

5. The existing double door opening to the tower mechanical space from the general attic space has no permanent separation. In order for the air distribution scheme to work properly, the attic must be isolated from the tower space. Provide a partition separation with double doors to prevent hot attic air from entering the tower mechanical space. The open transom above the doors must also be sealed.

6. Provide a partition separation to block-off the 5 foot diameter gravity ventilation duct opening at the tower/ attic wall to prevent migration of building air into the tower area and eliminate the heat gain from the attic space through the duct surface.

7. There is an existing ventilation opening under the bell at the top of the tower, which can provide ventilation for the clock level below. There are currently no ducts connected to the vent on the inside so it appears to provide ventilation for the top of the tower. Leaving this vent open will be

detrimental to the proposed venting of the mechanical space. Therefore any openings should be sealed. However, the clock level should be provided with ventilation since it is at the top of the tower where heat will collect and also to protect the clock. We recommend that a supply fan and an exhaust fan be provided to vent the clock level with ductwork connecting to a portion of the vent for intake and exhaust. This will isolate the vent from the mechanical space ventilation and provide better ventilation for the clock level.

C. Attic Ventilation:

1. The ability to properly ventilate the tower mechanical space will depend on isolating the tower space from the attic space. This will cause the attic space to be sealed off from its current, although inadequate means of ventilation. In addition, the proposed installation of new insulation in the floor of the attic will require the attic space to be ventilated to meet code. It is recommended that a mechanical attic ventilation system be provided with fan-forced supply air and a gravity roof vent.

2. Replace the two lower dormer windows (7.5 square foot each) in the attic dormers at both the east end and west end of the attic with exterior louvers. Provide a full size 16 inch deep louver plenum for each louver.

3. Provide a 50 foot long 24 inch x 22 inch duct connected to each pair of louver plenums with an automatic damper.

4. Provide an in-line 4,000 CFM, 3/4 HP supply fan for each of the two supply ducts.

5. Provide variable speed drives for each fan with a temperature control.

6. Provide a 20 square foot roof exhaust vent with automatic damper.

7. Provide two space thermostats to control each supply fan with automatic damper and interlock to the roof vent automatic damper.

D. Law Office AC Units:

1. There are a number of possible issues that could be affecting the performance and reliability of the AC systems serving the law offices. Although heat dissipation issues may contribute to the causes, the height of the condensing units above the fan evaporator coil may be the primary issue, leading to lack of oil return to the compressor. It is recommended that all three AC systems be replaced with new more efficient systems. These systems would be specifically designed for the installation conditions.

   a. Replace the AC systems with new, more efficient horizontal ducted split systems. Provide two 2.5 ton split systems and one 3.5 ton split system. Systems shall be Daikin, LG, Sanyo, or Mitsubishi.

   b. Remove existing horizontal fan coil units and provide new fan coil units reconnected to existing ductwork.

c. Remove existing exterior condensing units and install new condensing units.

d. Remove existing refrigerant suction and liquid lines and replace with new between fan coil units and condensing units.

e. Provide liquid line and suction line pipe insulation.

f. Provide a 3 foot metal frame raised platform for installation of the condensing units above the roof surface.

g. Provide a baffle in the bell tower between the gooseneck vent and the condensing units to prevent recirculation of hot gooseneck air into the condensing units.

E. Stand-by Generator:

1. Provide related mechanical and acoustical scope to support stand-by generator installation.

a. Provide 6 inch factory fabricated emergency generator exhaust system complete with exhaust cap, backfire arrestor, wall supports, and base drain. Exhaust system shall run to 10 feet above surrounding grade or 13 ft. eave height if installed on the building.

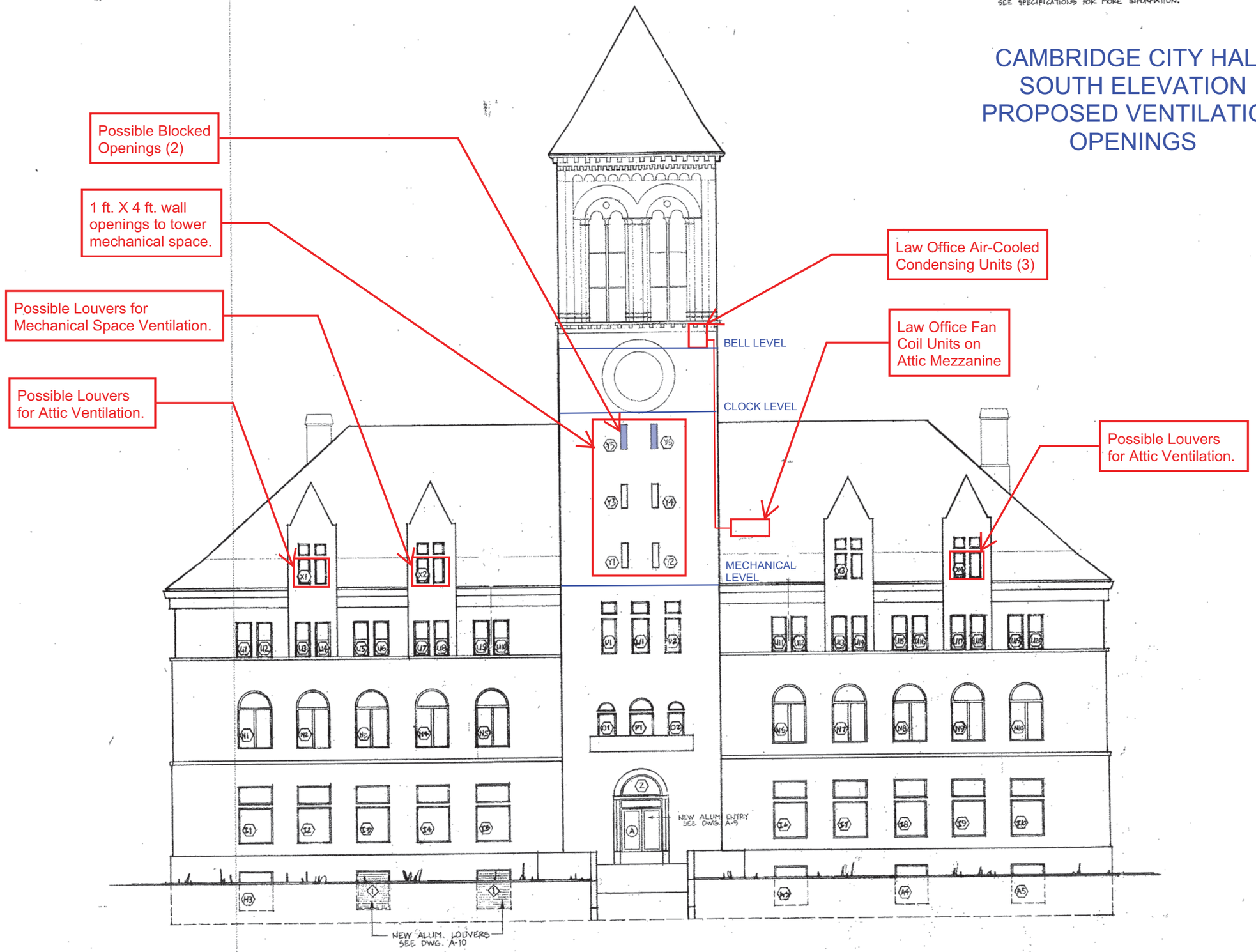
b. Provide 10 foot. high vertical sound enclosure extension above generator or as required to provide 60 bB (daytime) at the property line.

NOTES:

1) FOR EXTERIOR REPAIRS REQUIRED, SEE **EX** SERIES DRAWINGS.

2) ALL BASEMENT WINDOWS & LOUVERS IN WINDOW WELLS SHALL HAVE FIXED SECURITY SCREENS (NOT SHOWN FOR CLARITY). INSTALL 6" FROM FACE OF EXTERIOR WALL. SEE SPECIFICATIONS FOR MORE INFORMATION.

CAMBRIDGE CITY HALL SOUTH ELEVATION PROPOSED VENTILATION OPENINGS



4/12/13

Existing Conditions Evaluations:

Electrical Service

City Hall is currently served by a 1200A, 120/208V switchboard located in the basement. The electric service emanates from a utility transformer located in a manhole along Massachusetts Avenue. There is a 70A circuit breaker in the switchboard that serves the thrid floor IT server room power distribution unit.

The switchboard is located in what appears to be an office and not an electric room. This is a code visolation per NFPA 70 and 70E in addition to the MA Electrical Code. We strongly recommend that a room be built to isolated the switchboard from employees and to protect employees from any arc fault occurence.

The building does not have an emergency generator. Emergency lighting is provided by emergency battery lights. TEC did not review the emergency lighting during our visits.

Server Room Electrical Distribution

The server room power requirements is served by an Exide power distribution unit (PDU). The PDU is located in the left rear of the room behind the servers. The PDU is served from a 70A feeder from the switchboard. The existing PDU capacity is 20 KW. There is a 225A circuit breaker in the PDU that acts as a disconnect switch only for the 70A feeder from the switchboard. Currently, there are eight (8) 20A-3P and eighteen (18) 20A-1P distribution circuit breakers in the panelboard. There are eight (8) server cabinets in the room. Each cabinet is served by an APC 20A-3P power strip from the PDU. Of the eighteen 20A-1P circuit breakers, approximately half are in use.

There is presently no uninterrutible power supply (UPS) or emergency power for the server room. Currently, if there is a loss of normal power, the entire server network goes down. IT staff indicated that it can take up to 48 to 72 hours to get all servers back on line and functioning properly. In addition, there is no power conditioning equipment to protect the servers from spikes, surges and brown outs. An UPS system would provide battery back to bridge the servers from normal to emeregncy power and back. In addition, the UPS would provide power conditioning and protection from spikes, surges and brown outs.

Recomendations:

Electric room

Construct two walls to enclose the switchboard and other electrical panels. Rooms will require two doors with panic hardward at each end of the switchboard. This is a life safety issue and should be corrected immediately.

Server Room

Remove the existing PDU and provide a 30 KW UPS system. UPS batteries to be sized to provide 15 minutes of battery back up power and provide power conditioning.

Emergency Generator

Provide a natural gas driven 150 KW emeregncy generator to serve the following loads

1. UPS for servers – 30 KW
2. Server room and server room office - lighting and receptacles.
3. Three Liebert units and associated condensors providing AC to server room.
4. New exhaust HVAC equipment in attic to vent IT consensors.

Note: The existing server load is approximately 20 KW. It was mutually agreed with the IT staff to provide 25% future spare capacity for future server needs. TEC rounded this up to 30 KW. This generator sizing does not include any other loads including life safety emergency lighting.

Generator would be located at grade, behind the building. The generator would be installed in a custom sound attenuating houseing that would lower generator noise to approximately 63 dBa at 23 feet. Refer to attached sketch.

Furnish and install an emergency standby power system. The system shall consist of generator, sound attentuating housing, auto transfer switch, panelboards and conduit and wire. Emergency standby system shall be installed in accordance MEC Article 702.

The UPS would be located in the server room. If the UPS is locate in another room, a 225A panel will be added to serve the IT circuits. Panel to be fed from UPS.

The automatic transfer switch and panel should be located in a newly constructed electric room adjacent to the foundation wall. Refer to attached sketch. Room to include lighting, receptacles and a fire alarm smoke detector.

If this generator needs to be designed for life safety lighting the following revisions would be required:

1. Change the generator from natural gas driven to diesel driven.

2. Add a double wall sub base tank to generator. Tank to provide a minumium run time of 24 hours.

3. Construct a separate life saftery emergency electric closet adjacent to the found ation wall. Furnish and install an emergency life safety light and power system consisting of an automatic transfer switch, panelboard in the new closet. Life safety emergency system shall be installed in accordance MEC Article 700.

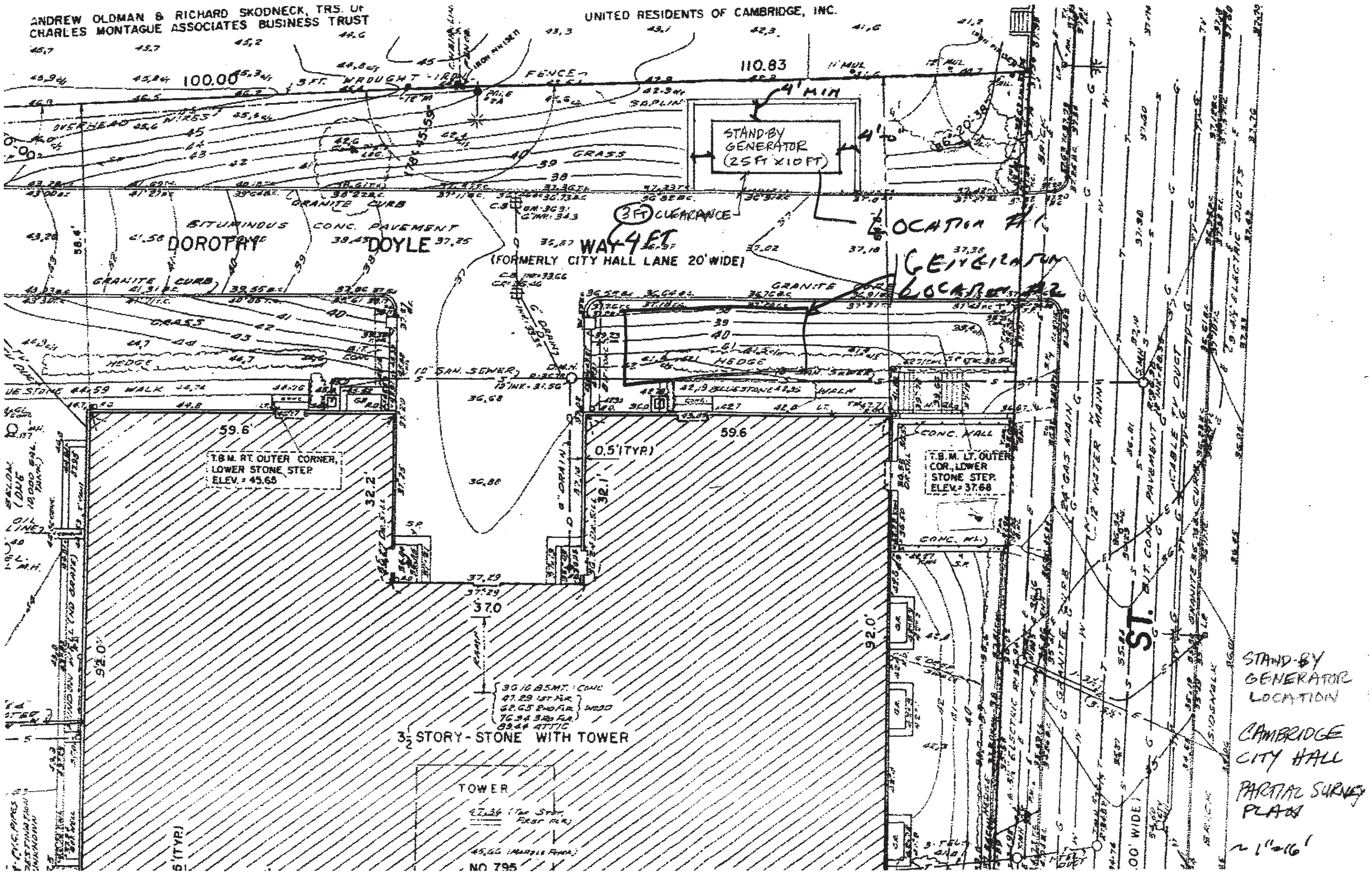
4. Change generator size from 150 KW to 200 KW depending on the new loads being added.

5. This option oncly provide power to emergency lighting and exit sign only. No heating, air conditioing, elevator, or any receptacles.

HVAC SCOPE OF WORK

Provide the required feeders/branch circuits from the nearest third floor power panel to each new attic HVAC equipment.

END OF SECTION


ANDREW OLDMAN & RICHARD SKODNECK, TRS. OF
CHARLES MONTAGUE ASSOCIATES BUSINESS TRUST
UNITED RESIDENTS OF CAMBRIDGE, INC.
100.00
110.83
3 FT. WROUGHT IRON FENCE
OVERHEAD WIRES
GRASS
GRANITE CURB
BITUMINOUS CONC. PAVEMENT
DOROTHY
DOYLE
WAY
(FORMERLY CITY HALL LANE 20' WIDE)
4' MIN
STAND-BY GENERATOR (25 FT X 10 FT)
4'
3 FT CLEARANCE
4 FT
LOCATION #1
GENERATOR LOCATION #2
HEDGE
WALK
10" SAN. SEWER
59.6'
T.B.M. RT. OUTER CORNER, LOWER STONE STEP ELEV. = 45.68
0.5' (TYP.)
32.2'
32.1'
37.29
37.0'
92.0'
CONC. WALL
T.B.M. LT. OUTER COR., LOWER STONE STEP ELEV. = 37.68
CONC. WL.
ST.
3½ STORY - STONE WITH TOWER
TOWER
NO. 795
STAND-BY GENERATOR LOCATION
CAMBRIDGE CITY HALL
PARTIAL SURVEY PLAN
~ 1"=16'

Information Technology Space Planning

Lombardi Building
831 Massachusetts Ave.
Cambridge, Massachusetts

October 16, 2013

HMFH Architects, Inc.

130 Bishop Allen Drive

Cambridge, MA 02139

t 617 432 2200

f 617 876 9775

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Memorandum

To: Lisa Peterson, Deputy City Manager

From: Alan Pemstein

Date: October 16, 2013

Re: IT Space Planning

The intent of this study was to:

- Review the space requirements of the Information Technology Department.
- Determine whether the existing space could accommodate the planned future expansion of the department.
- Determine whether the Data Center could move from City Hall to the existing IT space in the Lombardi Building.
- Determine whether an emergency generator could be placed on the roof of the Lombardi Building.
- Provide a preliminary budget estimate that would include Lombardi Building renovations, an emergency generator placed on the roof and preparation of the room for the Data Center but not relocation of the servers.

The Information Technology Department is housed on the first and second floors of the Lombardi Building with the Data Center on the third floor of City Hall. After meetings with Lisa Peterson, Mary Hart and Mike Dugas, HMFH is proposing a reorganization of the second floor of Lombardi and moving the Data Center from the 3rd floor of City Hall to the 1st floor of Lombardi.
Currently there are 23 employees in IT; 4 interns on the 1st floor of Lombardi, 18 employees on the 2nd floor (including 2 GIS) and 1 employee on the 3rd floor of City Hall.
The proposed plan provides a more flexible work area, allowing for the planned future expansion of the department.
It has been determined that the structure of the Lombardi Building can support an emergency generator on the roof. Further study is required to determine noise and vibration constraints but the Lombardi roof is a more viable location than the grounds of City Hall.

In this proposed reorganization plan:

1. The Historical Commission's Dark room on the 2nd floor will be relocated to the first floor.
2. The backup server room on the first floor of Lombardi will need to be relocated to another building. (Perhaps space in City Hall).
3. Most of the interior walls and doors in the current IT space on the 2nd floor will be demolished.
4. HVAC, lighting, power & data will need to be reconfigured and all new interior finishes will be required.

5. Discussions with IT determined that all work stations should be the same. A Steelcase 8'-0" x 6'-0" unit was used for planning purposes. The unit can be customized depending on job responsibility. The work stations are included in the estimate breakdown. Loose furniture and equipment such as office desks, chairs, file cabinets, and conference room tables and chairs are not included. Office technology and equipment like copiers and plotters are assumed to exist and are not included.
6. There is no security separation between the Historical Commission and Information Technology. Currently this is not a problem for either department.
7. For the server spaces there is one Liebert unit in the server room on the first floor of Lombardi and three units in the server room in City Hall. The estimate provided reuse of the Lombardi unit and adds a new unit to that space.
8. Installation on the roof of a gas fired emergency generator as specified in the City Hall IT Study with sound enclosure along with acoustic screens and associated requirements is carried in the estimate.
9. Soft costs (FF & E, legal, designer/consultant fees, moving, project contingency etc.) should be figured at 25% of the cost estimate. The project budget for the work described herein is approximately $1,300,000.00.

The existing and the proposed plans for the first and second floors of Lombardi, a spreadsheet identifying existing and proposed spaces and square footages, and a project cost estimate are attached.

The next steps would be to develop schematic drawings in order to finalize design and determine a more accurate project cost estimate, address the issues surrounding placing a generator on the roof, confirm that relocation of the Department during construction can be resolved and determine what zoning permits and other regulatory approvals are needed.

Please do not hesitate to contact me for additional information or any clarifications.

HMFH Architects

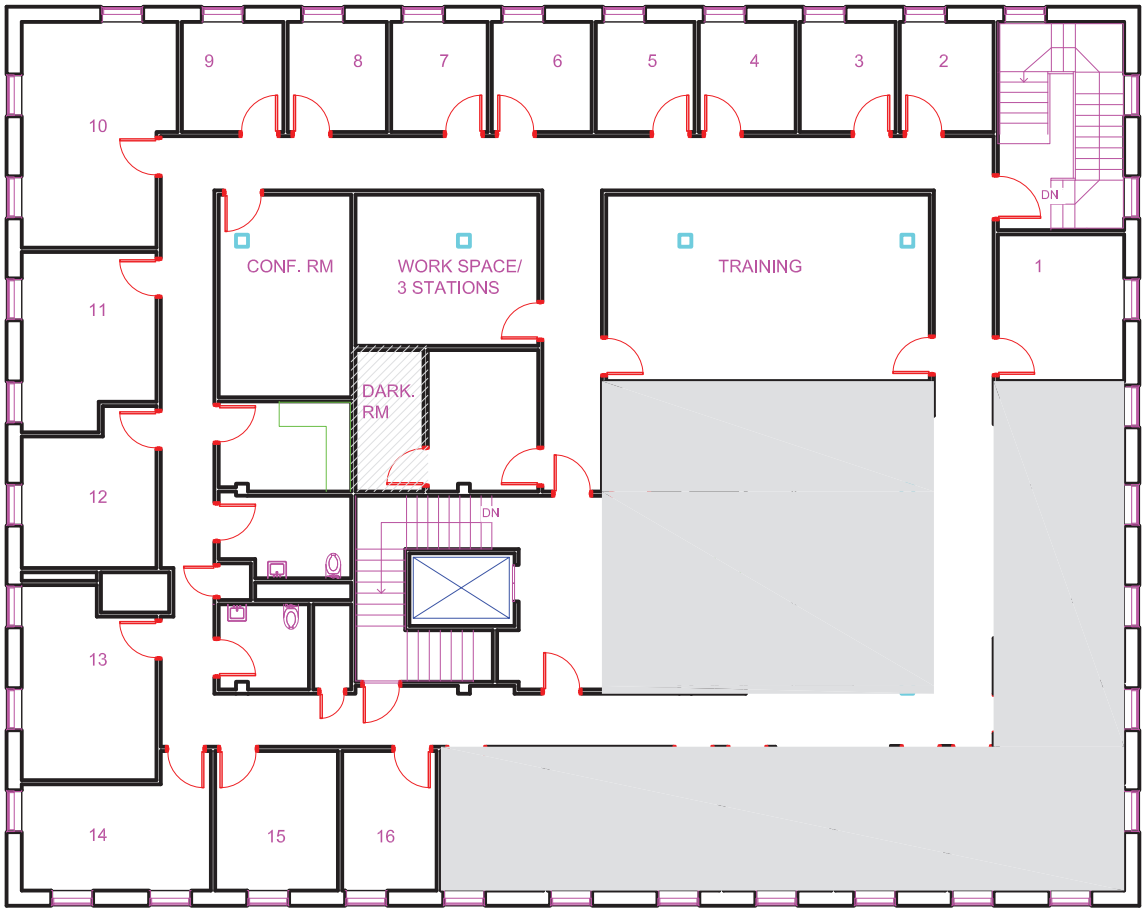
Alan Pemstein, AIA, LEED BD+C

cc. G. Metzger, File

IT STUDY
HMFH ARCHITECTS
EXISTING CONDITIONS
09/12/13

EXISTING IT PLAN
2ND FLOOR LOMBARDI

16 OFFICES (18 STATIONS) 225-70 SF
1 OCCUPIED STATION CITY HALL
TRAINING ROOM - 420 SF
CONFERENCE ROOM - 185 SF
PLOTTER/WORK AREA - 192 SF
KITCHEN - 80 SF
HISTORICAL DARK ROOM - 80 SF

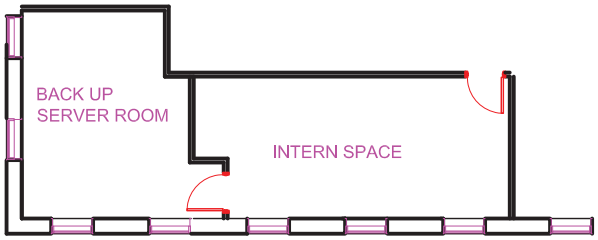


BIGELOW STREET

MASS AVE

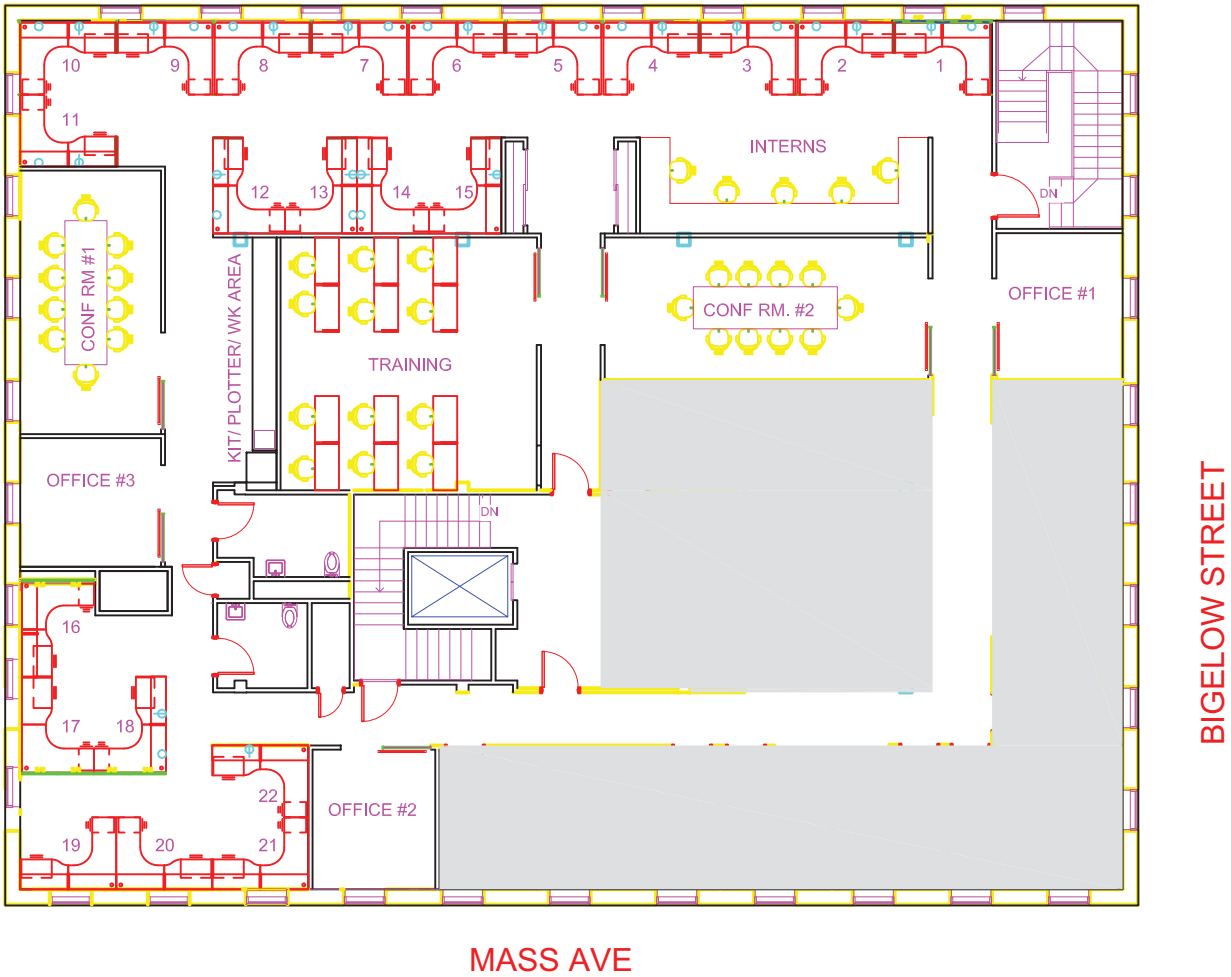
IT STUDY
HMFH ARCHITECTS
09/12/13
FIRST FLOOR LOMBARDI

BACK UP SERVER ROOM - 245 SF
INTERN SPACE - 300 SF



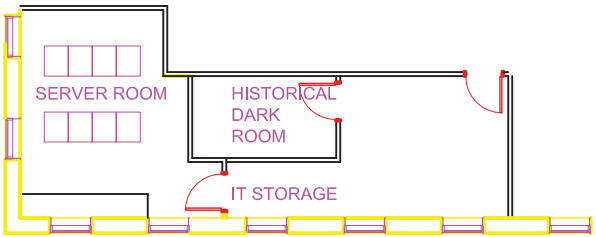
IT STUDY
HMFH ARCHITECTS
09/12/13
SECOND FLOOR LOMBARDI

22 WORK STATIONS - 50 SF EACH
INTERN AREA - 190 SF
3 OFFICES - 120 SF EACH
TRAINING ROOM - 450 SF
CONFERENCE ROOM #1 - 250 SF
CONFERENCE ROOM #2 - 320 SF
PLOTTER/KITCHEN AREA - 110 SF



IT STUDY
HMFH ARCHITECTS
09/12/13
FIRST FLOOR LOMBARDI

SERVER ROOM - 245 SF
HISTORICAL SPACE - 80 SF
IT STORAGE - 210 SF



	EXISTING						PROPOSED IN EXISTING LOMBARDI SPACE				
	CH & Lombardi						Lombardi				
Space	**Square Footage**	**Number**	**Total SF**	**Staff**	**Seats**		**Square Footage**	**Number**	**Total SF**	**Staff**	**Seats**
3rd Floor City Hall			**590**								
1st Floor Lombardi			**550**						**550**		
2nd Floor Lombardi			**4000**						**4000**		
Totals (Gross)			**5140**						**4550**		
Data Ctr	432	1	432				250	1	250		
Data Ctr Work Rm	307	1	307	1	4						
Backup Server Rm	250	1	250								
Office #1 IT Director	227	1	227	1	1		120	1	120	1	1
Office #2		1		1	1		120	1	120	1	1
Office #3							120	1	120	1	1
Intern Space	300	1	300	4	4		190	1	190	5	5
IT Staff Offices	72 - 151	17	1340	14	19		50	20	1000	20	20
GIS Staff Offices	92-120	2	212	2	2		50	2	100	2	2
Plotter/Work Area	192	1	192		4		70	1	70		
Conference Room #1	185	1	185		8		255	1	255		10
Conference Room #2							320	1	320		10
Training Room	420	1	420		10		450	1	450		10
Kitchen	80	1	80				65		65		
Historical Dark Room	80	1	80				40	1	40		
Storage	20	1	20				220	1	220		
Totals (Net)			**4045**	**23**	**53**				**3320**	**30**	**60**

Preliminary Design Submission

Cambridge City

Lombardi Building IT Space Fitout & Emergency Generator

Cambridge, MA

Prepared for:

HMFH Architects, Inc.

September 18, 2013

PM&C

Cambridge City
Lombardi Building IT Space Fitout & Emergency Generator
Cambridge, MA

18-Sep-13

Preliminary Design Submission

MAIN CONSTRUCTION COST SUMMARY

		Bid Date	GSF	Cost per SF	Estimated Cost
ESTIMATED CONSTRUCTION COSTS					
NEW EMERGENCY GENERATOR ON ROOF					$285,600
IT SPACE FIT-OUT COSTS			4,550	$103.21	$469,589
SubTotal		Sep-14	4,550		$755,189
GENERAL CONDITIONS	10.00%				$75,519
BONDS	0.65%				$4,909
INSURANCE	1.25%				$9,440
PERMIT (Assumed Waived)					NIC
OVERHEAD AND FEE	10%				$75,519
ESCALATION TO MID-POINT	4%				$30,208
DESIGN AND PRICING CONTINGENCY	12.0%				$90,623
TOTAL COST OF ALL CONSTRUCTION					**$1,041,407**

Cambridge City
Lombardi Building IT Space Fitout & Emergency Generator 18-Sep-13
Cambridge, MA

Preliminary Design Submission

This preliminary cost estimate was produced from drawings, outline specifications and other documentation prepared by HMFH Architects and their design team dated September 12th, 2013. Design and engineering changes occurring subsequent to the issue of these documents have not been incorporated in this estimate.

This estimate includes all direct construction costs, general contractor's overhead and profit and design contingency. Cost escalation assumes start dates indicated.

Bidding conditions are expected to be public bidding to general contractors, and sub-contractors, open specifications for materials and manufacturers.

The estimate is based on prevailing wage rates for construction in this market and represents a reasonable opinion of cost. It is not a prediction of the successful bid from a contractor as bids will vary due to fluctuating market conditions, errors and omissions, proprietary specifications, lack or surplus of bidders, perception of risk, etc. Consequently the estimate is expected to fall within the range of bids from a number of competitive contractors or subcontractors, however we do not warrant that bids or negotiated prices will not vary from the final construction cost estimate.

ITEMS NOT CONSIDERED IN THIS ESTIMATE

Items not included in this estimate are:

- All professional fees and insurance
- Building Permit costs
- Land acquisition, feasibility, and financing costs
- All Furnishings, Fixtures and Equipment
- Items identified in the design as Not In Contract (NIC)
- Items identified in the design as by others
- Owner supplied and/or installed items (e.g. draperies, furniture and equipment)
- Rock excavation; special foundations (unless indicated by design engineers)
- Work to City streets and sidewalks, (except as noted in this estimate)
- Construction or occupancy phasing or off hours' work, (except as noted in this estimate)

PM&C

Cambridge City
Lombardi Building IT Space Fitout & Emergency Generator
Cambridge, MA

18-Sep-13

Preliminary Design Submission

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
NEW EMERGENCY GENERATOR ON ROOF							
B10	***SUPERSTRUCTURE***						
B1010	**FLOOR CONSTRUCTION**						
	Allowance for floor penetrations	**1**	loc	2,000.00	2,000		
	Fire stopping floors	**1**	ls	500.00	500		
	SUBTOTAL					2,500	
B1020	**ROOF CONSTRUCTION**						
	Roof Structure - Steel:						
	New steel support structure for emergency generator	**1**	ls	15,000.00	15,000		
	Steel support framing for roof screen; 8ft high	**400**	sf	30.00	12,000		
	Acosutic roof screen; 8ft high	**400**	sf	55.00	22,000		
	Allowance for roof penetrations	**1**	loc	3,000.00	3,000		
	SUBTOTAL					52,000	
	TOTAL - SUPERSTRUCTURE						**$54,500**
B30	***ROOFING***						
B3010	**ROOF COVERINGS**						
	Patch existing roof membrane	**1**	ls	5,000.00	5,000		
	Walk pads	**1**	ls	2,500.00	2,500		
	SUBTOTAL					$7,500	
	TOTAL - ROOFING						**$7,500**
C10	***INTERIOR CONSTRUCTION***						
C1010	**PARTITIONS**						
	Patching at walls for new feeders	**1**	ls	2,000.00	2,000		
	Sealants & caulking	**1**	ls	500.00	500		
	SUBTOTAL					$2,500	
C1030	**SPECIALTIES / MILLWORK**						
	Plywood for electrical equipment	**1**	loc	500.00	500		
	Room Signs	**1**	loc	100.00	100		
	SUBTOTAL					$600	
	TOTAL - INTERIOR CONSTRUCTION						**$3,100**

PM&C

Cambridge City
Lombardi Building IT Space Fitout & Emergency Generator
Cambridge, MA

18-Sep-13

Preliminary Design Submission

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
NEW EMERGENCY GENERATOR ON ROOF							
C30	***INTERIOR FINISHES***						
C3010	**WALL FINISHES**						
	Paint/patching to GWB	**1**	ls	1,500.00	1,500		
	SUBTOTAL					$1,500	
C3030	**CEILING FINISHES**						
	Allowance to remove existing ceilings and patching etc. to run new feeds	**1**	ls	5,000.00	5,000		
	SUBTOTAL					$5,000	
	TOTAL - INTERIOR FINISHES						**$6,500**
D30	***HVAC***						
D30	**HVAC, GENERALLY**						
	Emergency generator exhaust	**1**	ls	12,000.00	12,000		
	New gas connections/feeders	**1**	ls	10,000.00	10,000		
	SUBTOTAL					$22,000	
	TOTAL - HVAC						**$22,000**
D50	***ELECTRICAL***						
D5010	**SERVICE & DISTRIBUTION**						
	30kW UPS (assumed with a with static by-pass switch)	**1**	ls	40,000.00	40,000		
	150kW natural gas generator in sound attenuated weather proof enclosure	**1**	ea	90,000.00	90,000		
	600A ATS, allow	**1**	ea	10,200.00	10,200		
	600A 208/120V panelboard, allow	**1**	ea	6,500.00	6,500		
	225A panelboard serving IT circuits	**1**	ea	2,500.00	2,500		
	600A feed, allow	**100**	lf	135.00	13,500		
	225A feed, allow	**60**	lf	50.00	3,000		
	Modifications to existing gear and distribution	**1**	ls	10,000.00	10,000		
	SUBTOTAL					$175,700	
D5040	**OTHER ELECTRICAL SYSTEMS**						
	Premium for work in occupied space	**1**	ls	5,000.00	5,000		
	Crane/Rigging	**1**	ls	4,000.00	4,000		
	Police details/Permits	**1**	ls	2,000.00	2,000		
	Demo/make safe	**1**	ls	2,500.00	2,500		
	Fees and permits	**1**	ls	1,800.00	1,800		
	SUBTOTAL					15,300	
	TOTAL - ELECTRICAL						**$191,000**

PM&C

Cambridge City
Lombardi Building IT Space Fitout & Emergency Generator
Cambridge, MA

18-Sep-13

Preliminary Design Submission

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
NEW EMERGENCY GENERATOR ON ROOF							
94	***F20 SELECTIVE BUILDING DEMOLITION***						
95							
96	**F2010 BUILDING ELEMENTS DEMOLITION**						
97	Miscellaneous demolition	**1**	ls	1,000.00	1,000		
98	SUBTOTAL					$1,000	
99							
100	**F2020 HAZARDOUS COMPONENTS ABATEMENT**						
101	No items in this section						
102	SUBTOTAL						
103							
104	***TOTAL - SELECTIVE BUILDING DEMOLITION***						**$1,000**
105							
106							
107							
108	**TOTAL TRADE COSTS - Emergency Generator**						**$285,600**

PM&C

Cambridge City
Lombardi Building IT Space Fitout & Emergency Generator
Cambridge, MA

18-Sep-13

Preliminary Design Submission

GFA 4,550

CONSTRUCTION COST SUMMARY

	BUILDING SYSTEM		*SUB-TOTAL*	*TOTAL*	*$/SF*	*%*
IT SPACE FIT-OUT						
C10	**INTERIOR CONSTRUCTION**					
	C1010	Partitions	$88,693			
	C1020	Interior Doors	$28,710			
	C1030	Specialties/Millwork	$32,488	**$149,891**	$32.94	31.9%
C20	**STAIRCASES**					
	C2010	Stair Construction	$0			
	C2020	Stair Finishes	$0	**$0**	$0.00	0.0%
C30	**INTERIOR FINISHES**					
	C3010	Wall Finishes	$14,494			
	C3020	Floor Finishes	$34,462			
	C3030	Ceiling Finishes	$23,760	**$72,716**	$15.98	15.5%
D10	**CONVEYING SYSTEMS**					
	D1010	Elevator	$0	**$0**	$0.00	0.0%
D20	**PLUMBING**					
	D20	Plumbing	$2,750	**$2,750**	$0.60	0.6%
D30	**HVAC**					
	D30	HVAC	$96,162	**$96,162**	$21.13	20.5%
D40	**FIRE PROTECTION**					
	D40	Fire Protection	$10,010	**$10,010**	$2.20	2.1%
D50	**ELECTRICAL**					
	D5010	Electrical Systems	$85,919	**$85,919**	$18.88	18.3%
E10	**EQUIPMENT**					
	E10	Equipment	$1,500	**$1,500**	$0.33	0.3%
E20	**FURNISHINGS**					
	E2010	Fixed Furnishings	$8,105			
	E2020	Movable Furnishings	NIC	**$8,105**	$1.78	1.7%
F20	**SELECTIVE BUILDING DEMOLITION**					
	F2010	Building Elements Demolition	$42,536			
	F2020	Hazardous Components Abatement	$0	**$42,536**	$9.35	9.1%
TOTAL DIRECT COST (Trade Costs)				**$469,589**	$103.21	100.0%

PM&C

Cambridge City 18-Sep-13

Lombardi Building IT Space Fitout & Emergency Generator

Cambridge, MA

Preliminary Design Submission **GFA** 4,550

	DESCRIPTION	QTY	UNIT	UNIT COST	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	IT SPACE FIT-OUT							
	GROSS FLOOR AREA CALCULATION							
	Fit out area				4,550			
	TOTAL GROSS FLOOR AREA (GFA)					**4,550**	***sf***	
	C10 INTERIOR CONSTRUCTION							
	C1010 PARTITIONS							
	Partition; 3 5/8" metal stud w/ 1 layer gwb each side, insulation	**3,892**	sf	10.50	11.55	44,953		
	Patch existing walls	**1**	ls	1,500.00	1,500.00	1,500		
	New glazed walls	**640**	sf	60.00	66.00	42,240		
	SUBTOTAL						**88,693**	
	C1020 INTERIOR DOORS							
	Closet doors	**2**	pr	1,100.00	1,210.00	2,420		
	New door, frame and hardware	**1**	ea	1,500.00	1,650.00	1,650		
	Sliding glazed doors including sliding track hardware	**7**	ea	3,200.00	3,520.00	24,640		
	Paint to new doors	**3**	loc	150.00	165.00	495		
	Paint existing doors to remain	**8**	ea	120.00	132.00	1,056		
	SUBTOTAL						**28,710**	
	C1030 SPECIALTIES / MILLWORK							
	Millwork							
	Kitchen/Plotter/Wk Area							
	Counter top with base cabinets	**18**	lf	360.00	396.00	7,128		
	Wall cabinets	**18**	lf	210.00	231.00	4,158		
	Interns							
	Work counter	**35**	lf	260.00	286.00	10,010		
	Closet shelving	**16**	lf	35.00	38.50	616		
	Room Signs	**16**	ea	150.00	165.00	2,640		
	Fire extinguisher cabinets	**3**	ea	350.00	385.00	1,155		
	Miscellaneous accessories - Marberboards, coat hooks, tackboards etc	**4,550**	sf	0.50	0.55	2,503		
	Miscellaneous blocking	**4,550**	sf	0.50	0.55	2,503		
	Miscellaneous sealants	**4,550**	sf	0.35	0.39	1,775		
	SUBTOTAL						**32,488**	
	TOTAL - INTERIOR CONSTRUCTION							**$149,891**
	C20 STAIRCASES							
	C2010 STAIR CONSTRUCTION							
	No work in this section							
	SUBTOTAL							
	C2020 STAIR FINISHES							
	No work in this section							
	SUBTOTAL							
	TOTAL - STAIRCASES							
	C30 INTERIOR FINISHES							
	C3010 WALL FINISHES							

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Cambridge City 18-Sep-13

Lombardi Building IT Space Fitout & Emergency Generator

Cambridge, MA

Preliminary Design Submission **GFA** 4,550

		DESCRIPTION	QTY	UNIT	UNIT COST	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
		IT SPACE FIT-OUT							
59		Paint to new GWB walls	**7,784**	sf	1.00	1.10	8,562		
60		Paint existing walls	**3,210**	sf	1.25	1.38	4,430		
61		Miscellaneous painting throughout	**4,550**	sf	0.30	0.33	1,502		
62		SUBTOTAL						**14,494**	
63									
64	**C3020**	**FLOOR FINISHES**							
65		Carpet	**4,550**	sf	5.00	5.50	25,025		
66		Floor prep	**4,550**	sf	1.50	1.65	7,508		
67		Vinyl base	**877**	lf	2.00	2.20	1,929		
68		SUBTOTAL						**34,462**	
69									
70	**C3030**	**CEILING FINISHES**							
71		ACT 2X2	**4,550**	sf	4.00	4.40	20,020		
72		GWB soffits	**100**	lf	30.00	33.00	3,300		
73		Paint to soffits	**200**	sf	2.00	2.20	440		
74		SUBTOTAL						**23,760**	
75									
76		***TOTAL - INTERIOR FINISHES***							**$72,716**
77									
78									
79	***D10***	***CONVEYING SYSTEMS***							
80									
81		No work in this section							
82		SUBTOTAL						**-**	
83									
84		***TOTAL - CONVEYING SYSTEMS***							
85									
86									
87	***D20***	***PLUMBING***							
88									
89	**D20**	**PLUMBING, GENERALLY**							
90		Equipment							
91		New kitchen sink; connect to existing plumbing	**1**	ea	2,500.00	2,750.00	2,750		
92		SUBTOTAL						**2,750**	
93									
94		***TOTAL - PLUMBING***							**$2,750**
95									
96									
97	***D30***	***HVAC***							
98									
99	**D30**	**HVAC, GENERALLY**							
100		New HVAC distribution; connections to existing systems	**4,550**	sf	10.00	11.00	50,050		
101		New perimeter fin tube	**188**	lf	90.00	99.00	18,612		
102		New Liebert unit	**1**	ea	25,000.00	27,500.00	27,500		
103		SUBTOTAL						**96,162**	
104									
105		***TOTAL - HVAC***							**$96,162**
106									
107									
108	***D40***	***FIRE PROTECTION***							
109									
110	**D40**	**FIRE PROTECTION, GENERALLY**							
111		Modify existing sprinkler system for new layouts	**4,550**	sf	2.00	2.20	10,010		
112		SUBTOTAL						**10,010**	
113									
114		***TOTAL - FIRE PROTECTION***							**$10,010**
115									
116									
117	***D50***	***ELECTRICAL***							
118									

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Cambridge City 18-Sep-13

Lombardi Building IT Space Fitout & Emergency Generator

Cambridge, MA

Preliminary Design Submission **GFA** 4,550

	DESCRIPTION	QTY	UNIT	UNIT COST	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	IT SPACE FIT-OUT							
	D5010 SERVICE & DISTRIBUTION							
	Service and distribution gear							
	Install breaker in existing main distribution switchboard	**1**	ea	2,500.00	2,750.00	2,750		
	New distribution panelboard	**1**	ea	3,000.00	3,300.00	3,300		
	Allowance for feeders	**4,550**	sf	1.50	1.65	6,825		
	SUBTOTAL						**$12,875**	
	D5020 LIGHTING & POWER							
	Lighting							
	Exit sign	**2**	ea	160.00	176.00	352		
	Lighting allowance	**4,550**	sf	3.00	3.30	15,015		
	Lighting control	**4,550**	sf	0.75	0.83	3,777		
	Occupancy sensor	**7**	ea	200.00	220.00	1,540		
	Power receptacles and branch circuitry	**4,550**	sf	1.50	1.65	7,508		
	Wiremold	**206**	lf	16.00	17.60	3,626		
	Connections to cubicles	**22**	ea	250.00	275.00	6,050		
	SUBTOTAL						**$37,868**	
	D5030 COMMUNICATION & SECURITY SYSTEMS							
	Fire alarm							
	Modifications to existing fire alarm control panel	**1**	ls	2,000.00	2,000.00	2,000		
	New FA system	**4,550**	sf	2.50	2.75	12,513		
	Telephone/CATV/Data System							
	Modifications to existing MDF/IDF	**1**	ls	1,500.00	1,650.00	1,650		
	New Tele/Data rough-in and distribution	**4,550**	sf	2.50	2.75	12,513		
	Paging System							
	Paging system					NIC		
	Security system							
	Security system					NIC		
	SUBTOTAL						**$28,676**	
	D5040 OTHER ELECTRICAL SYSTEMS							
	Miscellaneous							
	Temporary power and lights	**1**	ls	1,500.00	1,500	1,500		
	Demo/make safe	**1**	ls	2,000.00	2,000	2,000		
	Fees & permits	**1**	ls	3,000.00	3,000	3,000		
	SUBTOTAL						**$6,500**	
	TOTAL - ELECTRICAL							**$85,919**
	E10 EQUIPMENT							
	E10 EQUIPMENT, GENERALLY							
	New refrigerator	**1**	ls	1,500.00	1,500	1,500		
	SUBTOTAL						**1,500**	
	TOTAL - EQUIPMENT							**$1,500**
	E20 FURNISHINGS							
	E2010 FIXED FURNISHINGS							
	Shades typ at exterior windows	**21**	wdws	168.00	184.80	3,881		

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Cambridge City 18-Sep-13

Lombardi Building IT Space Fitout & Emergency Generator

Cambridge, MA

Preliminary Design Submission **GFA** 4,550

		DESCRIPTION	QTY	UNIT	UNIT COST	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	IT SPACE FIT-OUT								
174		Shades at interior glazing	**640**	sf	6.00	6.60	4,224		
175		SUBTOTAL						**8,105**	
176									
177	**E2020**	**MOVABLE FURNISHINGS**							
178		Office cubicles; Based on Steel Case Kick Solutions; Material	**22**	ea	2,500.00	2,750.00	60,500		
179		Office cubicles; delivery to floor	**22**	ea	180.00	198.00	4,356		
180		Office cubicles; Installation	**22**	ea	720.00	792.00	17,424		
181		All other movable furnishings to be provided and installed by owner							
182		SUBTOTAL						**NIC**	
183									
184		***TOTAL - FURNISHINGS***							**$8,105**
185									
186									
187	***F20***	***SELECTIVE BUILDING DEMOLITION***							
188									
189	**F2010**	**BUILDING ELEMENTS DEMOLITION**							
190		Demolish existing walls	**7,140**	sf	2.00	2.20	15,708		
191		Demolish existing doors/frames	**23**	ea	120.00	132.00	3,036		
192		Demolish existing floor finishes	**4,550**	sf	1.50	1.65	7,508		
193		Demolish existing ceiling finishes	**4,550**	sf	1.00	1.10	5,005		
194		Demolish existing MEP	**4,550**	sf	1.25	1.38	6,279		
195		Miscellaneous protection dust control etc.	**1**	ls	5,000.00	5,000.00	5,000		
196		SUBTOTAL						**$42,536**	
197									
198	**F2020**	**HAZARDOUS COMPONENTS ABATEMENT**							
199		Assumed not required							
200		SUBTOTAL							
201									
202		***TOTAL - SELECTIVE BUILDING DEMOLITION***							**$42,536**

YWCA Family Shelter
3 Bigelow Street
Cambridge, MA

Condition Assessment Report

City of Cambridge, MA
September 2014

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- C3 - Existing & Conceptual Floor Plans

I. EXECUTIVE SUMMARY

PROPERTY AND STREET CONTEXT

The City of Cambridge-owned building at 3 Bigelow Street is an 1869 Second Empire-style 3-story residential structure with a full basement. It is a wood-framed building that was originally finished with painted wood siding and Italianate exterior detailing including dentiled cornices, decorative brackets, hooded window casings, painted wood quoining and a front entry porch with painted arches and spiral columns.

The building is very similar to a number of other structures along Bigelow Street that exhibit many features common to the Second Empire style, including slate mansard roofs, elaborate molded cornices, and embellished window casings and porch details. Bigelow Street was laid out in 1868 and was mostly built out by 1874, by different builders but with a notable consistency of style and materials. Three Bigelow Street is very similar to houses nearby on Bigelow that were added to the National Register of Historic Places in 1982.

One known photograph of the building, provided by the Cambridge Historical Commission, shows the building at 3 Bigelow in 1965, with its historic details and materials intact. This photo was colorized by LDa to suggest a palette that would have been in keeping with its neighborhood context. However, after 1965 the wood siding and corner detailing was covered over by vinyl siding and much of the additional architectural woodworking at the cornices and porch was removed.

YWCA PROGRAM

The City of Cambridge leases 3 Bigelow to the YWCA Cambridge, which uses the building to provide emergency housing for ten homeless families. YWCA Cambridge staff members provide assistance and supervision to the residents of the Family Shelter 24 hours a day, 7 days a week. Staff members help resident adults achieve work- and school-oriented goals that will support their recovery from homelessness, while supporting their efforts to provide a safe environment for their children, some as young as a few weeks old. Currently, the resident families use a combination of private and shared bathrooms and kitchens. Four evenings a week, volunteers host a 2-hour playtime for the children in the basement playroom.

CONDITION ASSESSMENT GOAL

This condition assessment is performed in the context of a goal to achieve:

- A high level of safety and well-being for occupants as dictated by the YWCA Family Shelter program and applicable building codes;
- Integrity of the building structure, finishes and systems; and
- An investment in a component of the City's service infrastructure that is intended to be relatively maintenance-free for 50 years and operationally efficient (high-efficiency systems for lower operating costs) for 20 years before requiring further investment in systems upgrades.

SUMMARY OF SITE VISITS AND MEETINGS

The assessment team convened for an initial walk-through of 3 Bigelow on June 20, 2014. The team viewed the existing conditions of the building, made photo documentation and took measurements to create basic building plans. On July 10, 2014, LDa met with the City and members of the YWCA leadership for a detailed discussion of the YWCA family shelter program. During the week of July 14, hazardous materials testing took place. On July 18, LDa, RSE (structural engineer), BER (mechanical engineer), and Infrared Diagnostic (thermal image scanning and building assessment) reviewed multiple small areas of exploratory demolition of interior and exterior finishes that was performed in order to reveal the presence and condition of concealed framing and mechanical elements. Finally, LDa met with the City on August 5, 2014, to review the initial cost estimate for the project from VJ Associates.

SUMMARY OF EXISTING CONDITIONS AND REMEDIATION RECOMMENDATIONS

Recommendations provided in this report are informed by a series of conditions that cannot effectively be remediated without extensive repair and in most places outright replacement. Generally the interdependent nature of building structure, interior and exterior finishes and building systems require that a complete renovation – inside and out -- will be necessary to effectively remediate failing elements. The cost estimate performed for this assessment includes as base scope the essential work, with alternate scope itemized separately.

Life safety systems throughout the building are generally functional but in many instances fall below a level required by current building codes. UL Listed fire-rated separations throughout the building including wall and floor assemblies and doors are non-existent. Fire alarm systems, emergency lighting and exit signs are functional but should be updated to current building code standards, and the building must be fully sprinkled. Horizontal and vertical egress pathways in many cases are constrained, confused and substandard and must be

improved to the greatest extent possible without replacing existing stairways.

Program changes and associated plan adjustments are necessary on Level 0 and 1 to achieve a reasonable level of universal accessibility. A limited use elevator will likely be required to connect shared program elements on levels 0 and 1. The recommended approach to accessibility on an extremely constrained site is to work almost entirely within the existing building footprint; however site work is necessary to establish an accessible route to the building entrance. Additional plan changes are recommended to address essential YWCA Family Shelter program functions and for occupant comfort and security.

The extent of materials containing hazardous substances and interior environmental conditions recorded by Fuss & O'Neill essentially dictate substantial removal of interior finish materials and either stripping or encapsulation of the remainder. Removal of these materials is not feasible while the building is occupied.

A legacy of roof, plumbing and foundation leaks has compromised both structural and finish integrity of the building. The full extent of water-related deterioration is unknown. Many specific locations of structural deterioration have been recorded but a complete survey is not possible without substantial demolition of finishes which is beyond the scope of this report and not feasible in an occupied building.

The age and poor functional performance of building systems including heating, air conditioning, electrical and plumbing systems indicate a clear need for complete replacement. It is likely that some new services must be added or existing ones replaced to street connections including a new fire protection water line, building waste, and storm drain. The design for new high-efficiency heating and air-conditioning systems is necessarily linked to a well-insulated and water-, moisture- and air-tight envelope. Expanding air conditioning capacity beyond staff areas to include bedrooms is recommended to address basic occupant comfort concerns.

The condition and grading of existing paved surfaces and the over-grown condition of landscape plantings may all be contributing to water intrusion through foundation walls. Mitigation of water and moisture intrusion will be essential for structural integrity of the foundation, occupancy of Level 0 and to achieve habitable indoor air quality.

Over years of neglect and deferred maintenance, several important historical elements have been removed from the building exterior or damaged. Recommendations in this report include a prioritized restoration of these elements to the original appearance. Much of this work should be eligible for CPA funding.

ASSESSMENT STRUCTURE & LIMITATIONS

The following sections of this Report provide detail on the existing conditions at 3 Bigelow Street and the assessment team's remediation recommendations, organized according to building component. Each section contains a recommendation summary narrative, a recommendation summary list, and photos of existing conditions that are relevant to the recommendation items. The recommendations are categorized according to a ranking hierarchy:

- *Essential*, describing remediation recommendations that must be executed immediately to avoid additional risk to the health and safety of the occupants and further degradation of the building;
- *Best Interest,* describing those recommendations that the assessment team regards best serve the City of Cambridge as the owner and steward of this building and occupant program, in view of the significant investment the City is planning to make in this project; and
- *Elective*, describing primarily aesthetic recommendations regarding restoring 3 Bigelow to its original architectural and civic character.

No survey of the property at 3 Bigelow was performed as part of the Condition Assessment. Upon commencement of the schematic design of the renovation, a complete survey should be completed to confirm setbacks and property limits, zoning compliance, location of utilities, etc.

The code-compliance approach for the renovation project, as outlined in the report by Howe Engineering, will be negotiated in meetings with the Building Inspector and with the Massachusetts Architectural Access Board (MAAB). These meetings have not yet occurred. Given the constrained site and historical nature of the building, the assessment team expects some variances will required with regard to MAAB compliance.

Both a site survey and work to approve the code-compliance strategy would typically occur during the design phase of the renovation project.

II. CONDITION ASSESSMENT AND REMEDIATION RECOMMENDATIONS BY CATEGORY

SITE

Recommendation Summary Narrative

In its current condition, the site presents an unwelcoming appearance to the public, residents and staff, and is in need of immediate intervention from the point of view of safety, utility, and durability. Front yard plantings are overgrown and should be replaced. Accessibility and stormwater management issues must be addressed, and the driveway and parking area need to be replaced. Recommendations a-g are ranked *Essential*, recommendations h-j are ranked *Best Interest*.

Recommendation Summary List

a. Install new bituminous asphalt paving, concrete curbs, line painting and signage.
b. Regrade new paving for surface drainage.
c. Reset existing wheel stops or install new concrete curbs.
d. Install new planting at front and side yard.
e. Install new condenser unit associated with staff offices air conditioning.
f. Install new accessible route to entrance/egress (back entrance).
g. Install new retaining walls at northeast and northwest property lines.
h. Replace wheel stop curb at Lombardi Building with cast-in-place concrete curb. (Alternate-4)
i. Replace cast iron storm drain piping to street connection. (Alternate-5)
j. Site new condenser unit locations associated with bedroom air conditioning. (Alternate-9)

Relevant Photos

Front Yard, Driveway

Photo 9392

Entry Steps and Landings

Photo 9359

SITE

Front Entry

Photo 9356

Stormwater Management

Photo 9360

Parking Access Driveway

Photo 9392

Photo 9363

SITE

Parking

Photo 9366

Photo 9369

Photo 9367

Photo 9370

SITE

Side Yard

Photo 9386

Level 1 Egress (Back Door)

Photo 3624

STRUCTURE

Recommendation Summary Narrative

Much of the structure of 3 Bigelow appears to be in fair condition; however, evidence of rot caused by water penetration from the roof and exterior walls was discovered in multiple locations. Removal of all interior finishes is recommended to assess and remediate the full extent of deteriorated structural elements (both wood framing and masonry foundation walls) in order to prevent further degradation of the building. Further, structural renovations will be required by the recommended plan changes described later in this Report. Recommendation a is ranked *Essential*; recommendations b-d are ranked *Best Interest*, and recommendation e is ranked *Elective*.

Recommendation Summary List

a. Repair or replace deteriorating structural elements.
b. Patch existing Play Room Stair 0-1 floor opening.
c. Cut and frame new Level 0 Stair 0-1 opening.
d. Patch floor framing and subfloor at fireplace and hearth openings. (Alternate-8)
e. Frame upper high roof to original low-slope configuration. (Alternate-11)

Relevant Photos

Roof Framing

Photo 9352

Photo 9348

Photo 9350

STRUCTURE

Roof Framing

Photo 9352

Deteriorated Wall Framing, Level 2

Photo 09.05.39

Level 1 Floor Framing Cavity

Photo 0001

Basement Beam

Photo 0023

Rubble Foundation Wall

Photo 9221

Exterior Wall Sheathing

Photo 09.53.25

ENVELOPE

Recommendation Summary Narrative

The building's envelope is in need of immediate and substantial remediation, to prevent further degradation, to address occupant health concerns such as mold due to water infiltration and emergency, and to meet life safety code requirements. Further, envelope remediation and upgrades are required in order to meet energy code requirements and for the appropriate engineering of new building systems. Envelope upgrades will yield significant operational savings via energy cost reductions. Recommendations a-q are ranked *Essential*. Recommendations r-t are ranked *Best Interest*.

Recommendation Summary List

a. Repair framing and sheathing where deteriorating.
b. Insulate main roof sheathing and framing cavities (warm attic).
c. Insulate back porch roof sheathing and framing cavities (warm attic).
d. Install new asphalt shingle and PVC roofing and underlayment.
e. Remove and reinstall slate roofing and associated copper flashing.
f. Install new fiberglass gutters and galvanized steel downspouts.
g. Remove lead paint at siding and trim.
h. Repair & refinish siding and trim – historic colors.
i. Insulate wall framing and floor rim joist cavities (from interior).
j. Repair foundation and install dampproofing.
k. Insulate and install vapor retarder at existing brick and stone foundation.
l. Install new interior slab-on-grade.
m. Install new slab-on-grade drain to sump.
n. Insulate and install vapor retarder at new slab-on-grade.
o. Install new window sash in existing window frames, match historic sash.
p. Install new window units at Level 2 and 3 egress door locations, match historic windows.
q. Relocate and install new egress door and canopy at Level 1.
r. Reconstruct eave soffit brackets. (Alternate-1)
s. Reconstruct porch detailing and arched exterior doors in lieu of repair and refinish existing. (Alternate-2)
t. Install PVC roof membrane or metal roof in lieu of asphalt shingles. (Alternate-3)

Relevant Photos (following pages)

ENVELOPE

Front Building Elevation

Photo 3631

Rear Building Elevation

Photo 3612

c.-1965 Photo showing original exterior elements

Photo HIST

Slate & Built-up Roofing

Photo 9377

Photo 9379

Membrane Roofing Below

Photo 9307

ENVELOPE

Exterior Siding, Trim and Soffits

Photo 9389

Photo 9384

Photo 9383

Photo 9380

Photo 0124

Photo 9375

Photo 9358

ENVELOPE

Windows and Doors

Photo 3626

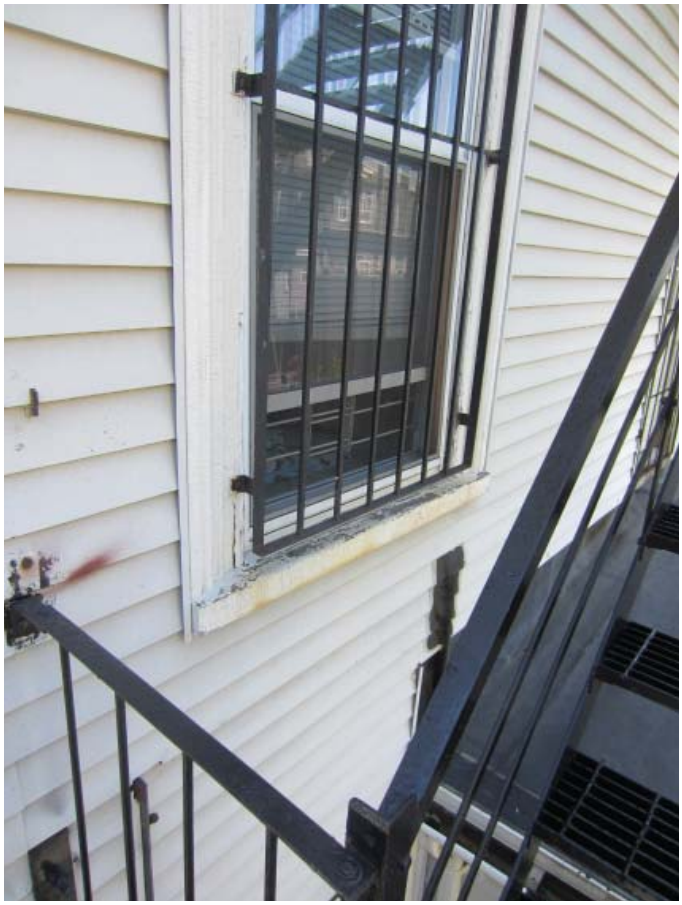


Photo 3624

Photo 9363

Photo 9362

Photo 9359

Photo 3624

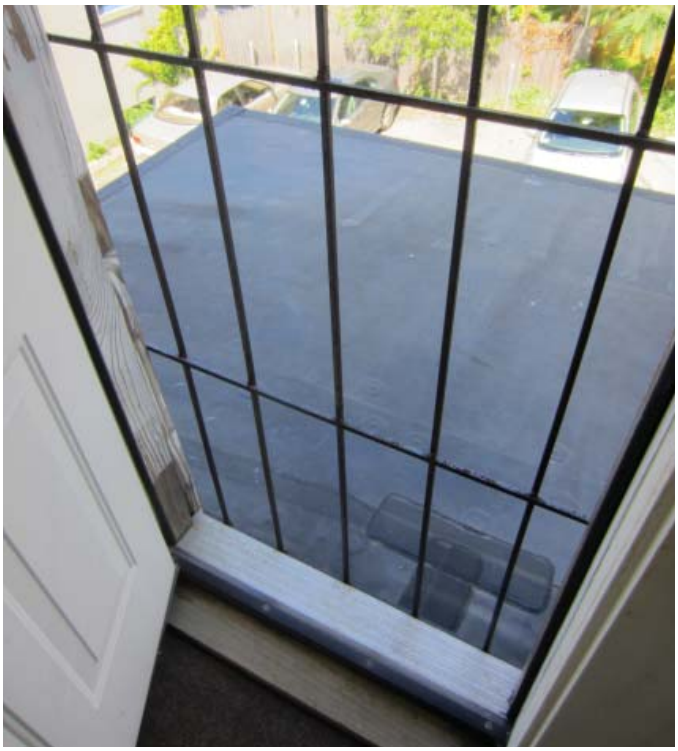


Photo 9306

ENVELOPE

Foundation Exterior

Photo 9360

Photo 9391

Photo 9365

Photo 0120

Photo 0121

PLANNING

Recommendation Summary Narrative

The building interventions required to remediate the problems associated with 3 Bigelow's envelope, structure, hazardous materials and life safety issues present an opportunity to examine and improve the building's floor plan layouts. The following recommendations improve the efficiency and quality of the interior spaces in light of the program requirements of the YWCA Family Shelter. Recommendations a-e are ranked *Essential* to maximize the practical use of the building and to support achieving the goal of accessibility on Level 1 and Level 0.

Recommendation Summary List

a. Reorganize Level 0
   i. Relocate Level 0-1 stair.
   ii. Restore existing main stair.
   iii. Expand Play Room.
   iv. Relocate laundry, mechanical, storage.
   v. Install new 2-stop elevator from Level 0 to Level 1.
b. Reorganize Level 1
   i. Relocate Level 0-1 stair (open stair?).
   ii. Relocate Director's Office from Level 2 to Level 1, adjacent to Staff Office.
   iii. Reconfigure Staff Toilet (bathroom?) and Staff Kitchenette.
   iv. Omit private kitchens in lieu of one shared kitchen.
   v. Relocate back egress door.
   vi. Reconfigure plan for accessible route to all spaces on Level 1.
   vii. Reconfigure plan for accessible dwelling unit and bathroom.
   viii. Reconfigure plan for accessible shared kitchen.
   ix. Install new 2-stop elevator from Level 1 to Level 0.
c. Reorganize Level 2
   i. Relocate Director's Office to Level 1, relocate Level 1 bedroom to Level 2.
   ii. Reconfigure plan for private bathrooms for each bedroom.
   iii. Install new built-in closets for each bedroom.
   iv. Combine private kitchens into one shared kitchen.
   v. Replace exterior egress door with a window to match historic windows.
d. Reorganize Level 3
   i. Reconfigure plan for private bathrooms for each bedroom.
   ii. Install built-in closets for each bedroom.
   iii. Relocate shared kitchen.
   iv. Reconfigure common hall for shared lounge space.
e. Planning Alternates
   i. Omit fireplaces and associated masonry chimney mass above Level 0 ceiling, patch floor construction and finishes. (Alternate-8)
   ii. Add a public toilet at Level 0. (Alternate-10)
   iii. Remove fire escape and replace egress door with a window to match existing. (Alternate-12)

See Conceptual Floor Plans, Appendix C-3

LIFE SAFETY

Recommendation Summary Narrative

The building's life safety systems, while functional, are incomplete and in many cases fail to meet the requirements mandated by current building codes. There are no required fire-rated separations or a building sprinkler system. Substandard horizontal and egress pathways pose a further risk to occupant safety. All recommendations in this category are ranked *Essential*.

Recommendation Summary List

a. Install fire-rated enclosure and doors at Back Stair and Back Hall.
b. Install fire-rated walls, doors and floor/ceiling separations at dwelling units.
c. Install fire-rated walls and doors at corridors.
d. Reconfigure plan for accessible egress.
e. Remove Level 3 fire escape.
f. Install new fire alarm system.
g. Install new sprinkler system.

Relevant Photos (also see Conceptual Floor Plans, Appendix C-3)

Fire/Smoke Detection/Alarm Systems

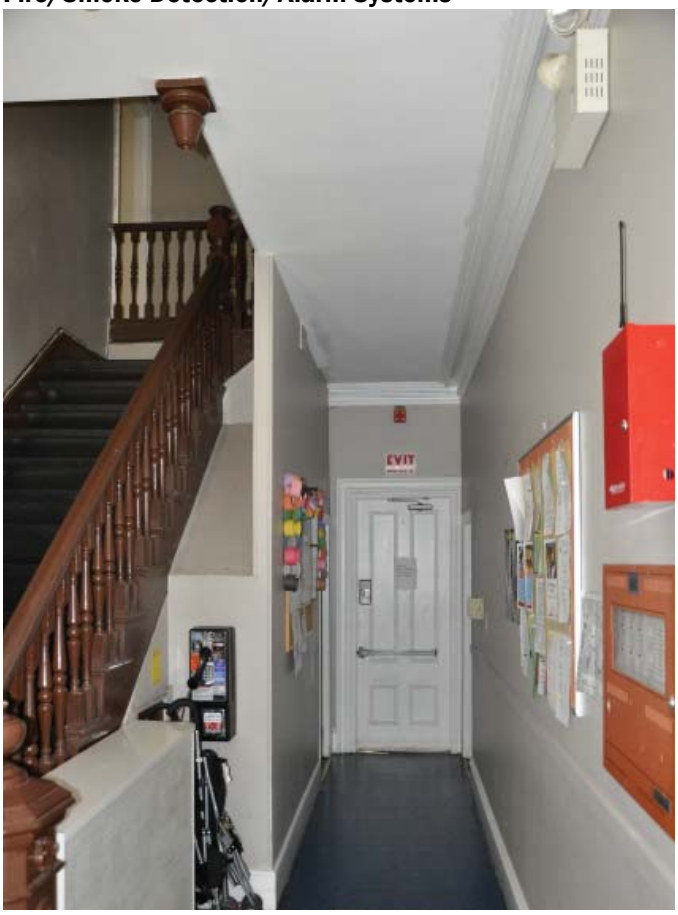


Photo 0041

Photo 0044

LIFE SAFETY

Egress Path

Photo 0051

Photo 0052

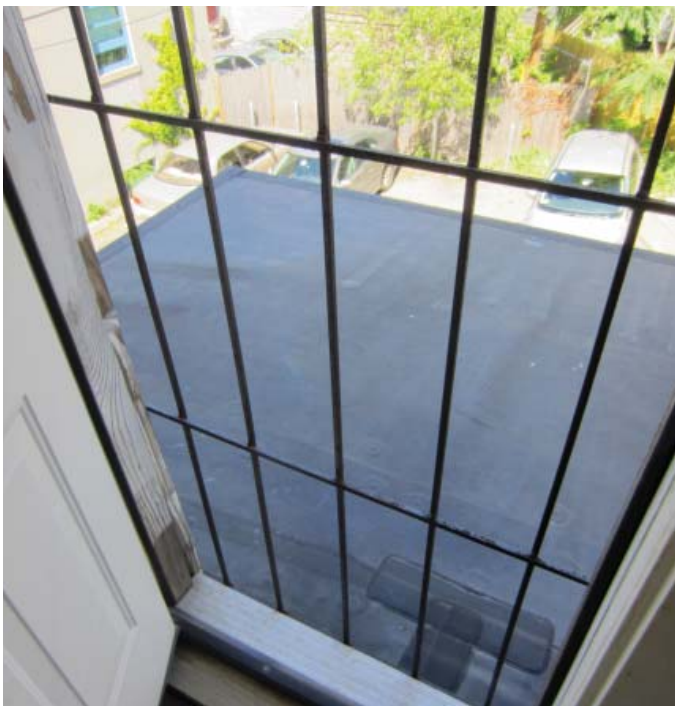


Photo 0052

Fire Escape (Note conflict with overhead wires)

Photo 0116

UNIVERSAL ACCESS

Recommendation Summary Narrative

Building and site plan modifications are necessary to provide universal access as required by MAAB to the building entrance and within the building to common spaces on Level 0 and Level 1, including a kitchen, and to create one accessible residence with a bathroom. A two-stop elevator will likely be required to provide access to Level 0 and to Level 1 from grade at the rear entrance. It is recommended but not required to also reconfigure the landscape design at the front entrance to accommodate an accessible path with chair lift from the front sidewalk to the front door. This would provide both an accessible entrance from the public way and an accessible secondary path of egress. Recommendations a-j are ranked *Essential*, and recommendation k is ranked *Elective*.

Recommendation Summary List

a. Reconfigure site plan for accessible route and building entrance (back door).
b. Reconfigure plan for accessible egress (back door).
c. Reconfigure plan for accessible Bedroom.
d. Reconfigure plan for accessible Bathroom.
e. Reconfigure plan for accessible Shared Kitchen.
f. Reconfigure plan for accessible Play Room.
g. Reconfigure plan for accessible Laundry.
h. Reconfigure plan for accessible Staff Office and Director's Office.
i. Install new wall-mounted handrails at existing stairs.
j. Replace handrails at entrance steps.
k. Install new accessible route to main entry. (Alternate-13)

Relevant Photos

Steps at Main (Front) Entrance from Sidewalk

Photo 9359

Steps at Back Entrance

Photo 3624

UNIVERSAL ACCESS

Stairs down to Level 0 Playroom, Laundry & Storage

Photo 9211

Typical Level 1 Unit (non-accessible kitchen and bathroom)

Photo 0043

INTERIOR

Recommendation Summary Narrative

The interior finishes are generally worn and in many instances degraded. Plaster at ceilings and walls has been patched multiple times in multiple areas due to water infiltration and damage. Hazardous materials testing revealed the presence of asbestos in plaster skim and rough coats, in sink undercoatings, and in floors and mastics. In addition, toxic levels of lead in paint were found on baseboards, interior doors, bathroom walls, ceramic tile and foundation walls. The presence of mold was revealed on concealed elements in ceilings damaged by water and by testing in Level 0. The quality of interior finishes also contributes to occupant well-being and this should be considered given the Family Shelter program. Recommendations a-c, f, h-m, p-q are ranked *Essential*. Recommendations d-e, g, n-o, and r-s are ranked *Best Interest* for the level of quality, durability, and low maintenance requirements of the recommended materials.

Recommendation Summary List

a. Remove wall and ceiling finishes entirely including plaster crown and wood wall base.
b. Remove VCT, carpet, tile and associated underlayment entirely.
c. Install new sound attenuation insulation at interior walls and floor/ceiling cavities.
d. Restore Main Stair 1-2 with historic finishes and detailing.
e. Restore Main Stair Hall 1 and 2 with historic finishes and detailing.
f. Install new gypsum board wall finish throughout.
g. Install new 2-piece wood wall base throughout.
h. Install new gypsum board ceiling finish – 2-layers 5/8”-thick on resilient channels.
i. Remove and reinstall historic window and door casing.
j. Install new 4-panel doors and historic casing.
k. Replace bedroom closet construction with built-in closets.
l. Reconfigure and renovate bathrooms, replace plumbing fixtures and accessories.
m. Replace light fixtures throughout.
n. Common areas
   i. Repair and refinish hardwood flooring at Level 1 and 2.
   ii. Install rubber tile flooring at Level 3.
o. Bedrooms
   i. Repair and refinish hardwood flooring at Level 1 and 2.
   ii. Install rubber tile flooring at Level 3.
   iii. Restore fireplace fronts (see Alternate 8).
p. Bathrooms
   i. Install ceramic tile floor and wainscot with waterproof membrane.
   ii. Install full height tile at tubs and showers with waterproof membrane.
q. Shared Kitchens
   i. Install base and wall cabinets and solid surface countertops with backsplash.
   ii. Install new appliances and sink.
   iii. Install rubber tile flooring.

r. Level 0
   i. Install rubber tile flooring throughout.
s. Install new wood crown molding to match existing plaster moldings. (Alternate-6)

Relevant Photos

Level 0 Laundry Room

Photo 0013

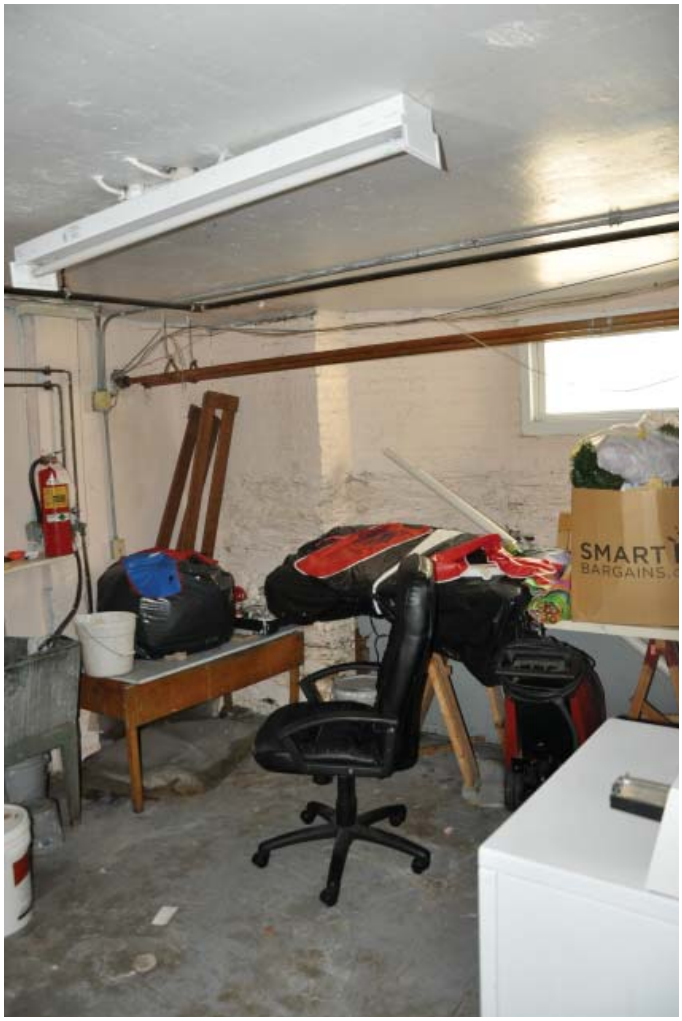


Photo 0012

INTERIOR

Mechanical Room/Storage

Photo 9221

Photo 9222

Back Storage

Photo 0021

Photo 0022

Back Hall 0/Back Stair 0-1

Photo 9230

Photo 9229

Playroom

Photo 0003

Photo 0005

Photo 0004

Play Room Stair 0-1

Photo 9208

Photo 9211

INTERIOR

Entry and Stair Hall 1 / Main Stair 1-2

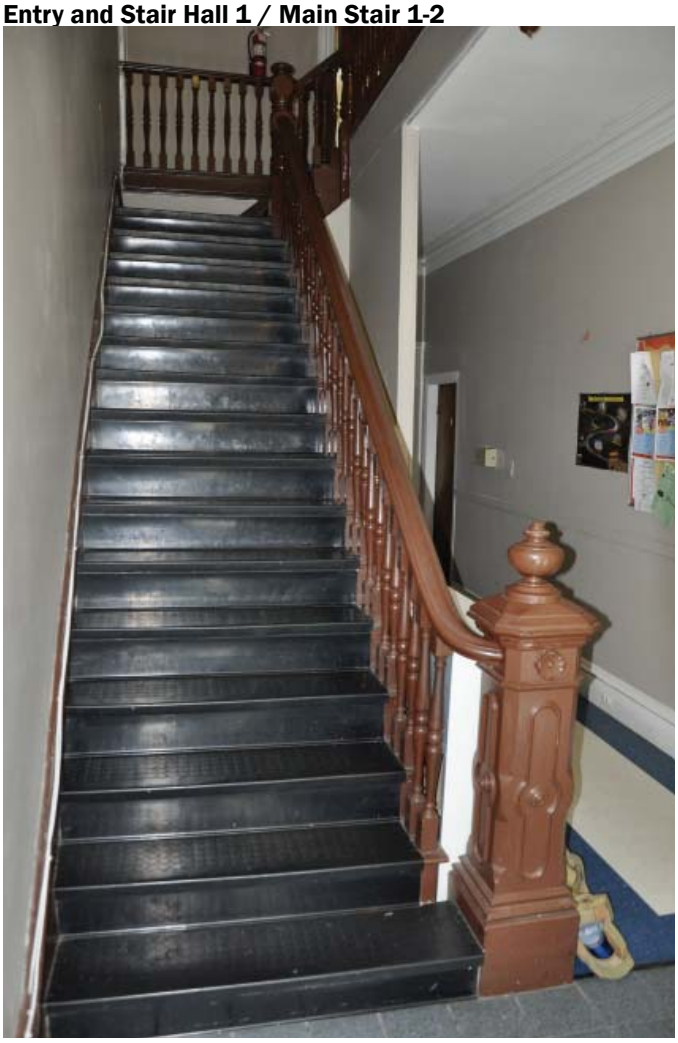


Photo 0040

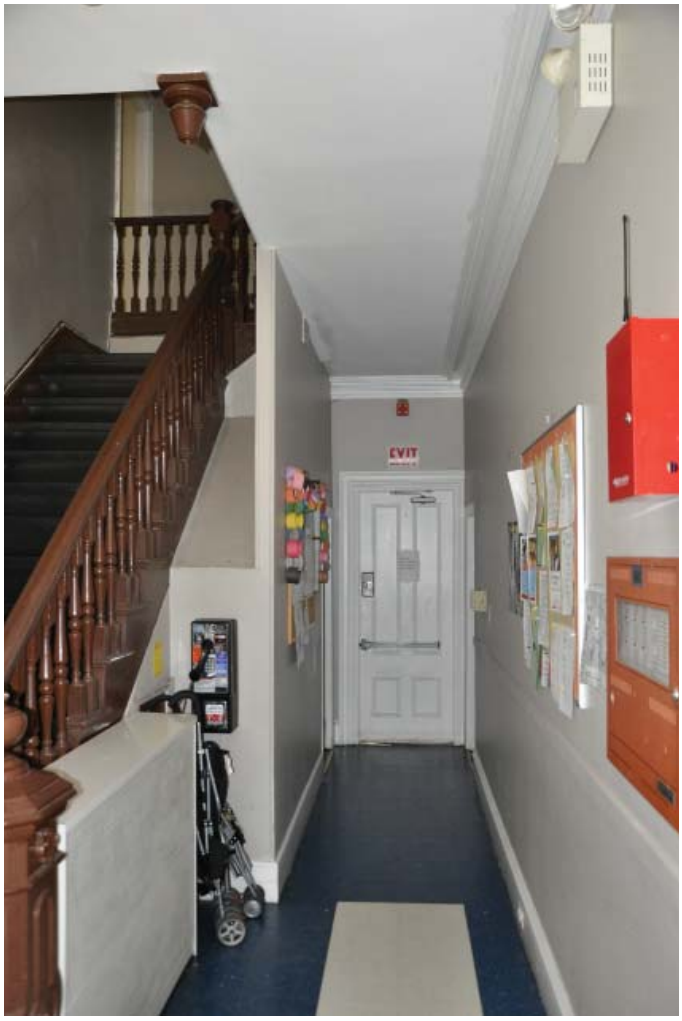


Photo 0041

Main Stair 1-2

Photo 9264

Photo 9280

Photo 0098

INTERIOR

Back Hall 1

Photo 0051

Photo 0052

Back Stair 1-2

Photo 0053

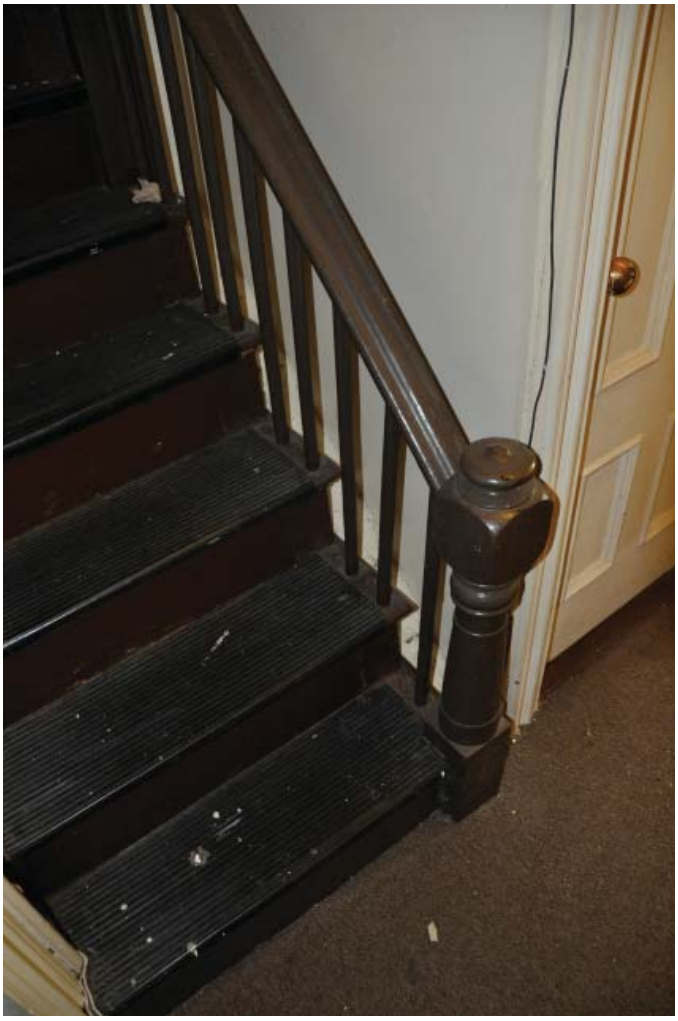


Photo 0054

Photo 0055

Photo 0056

INTERIOR

Staff Office

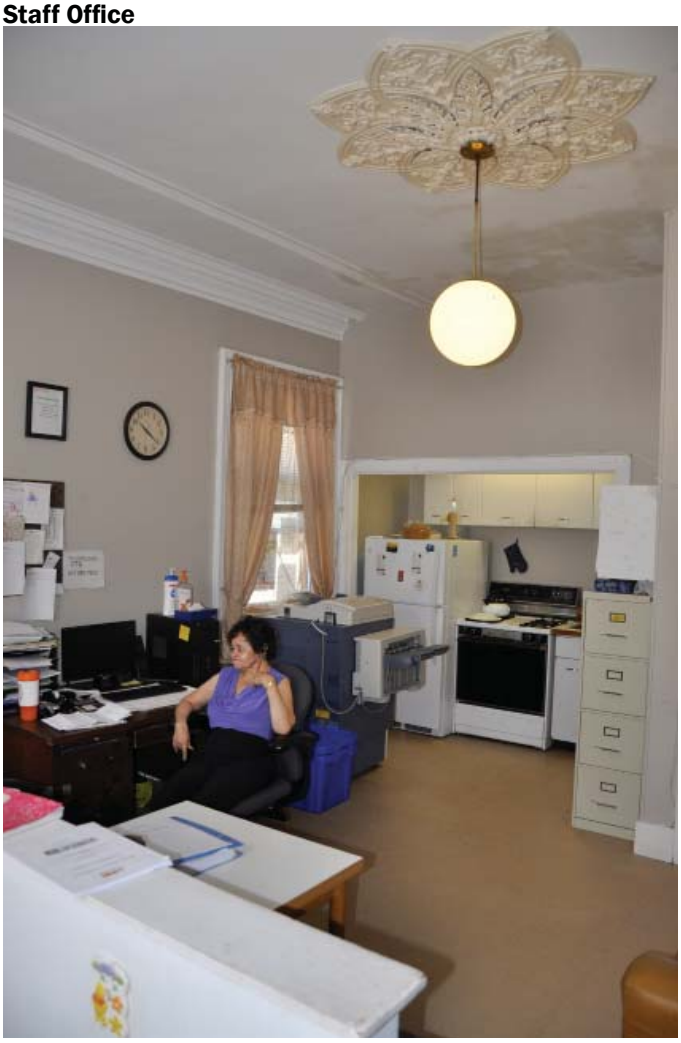


Photo 0032

Photo 0034

Staff Kitchen Niche

Photo 0036

Staff Office

Photo 0029

Staff Kitchen Niche

Photo 0037

Bedroom 1-1

Photo 0063

Photo 0065

Photo 0066

INTERIOR

Bedroom 1-2

Photo 0058

Photo 0059

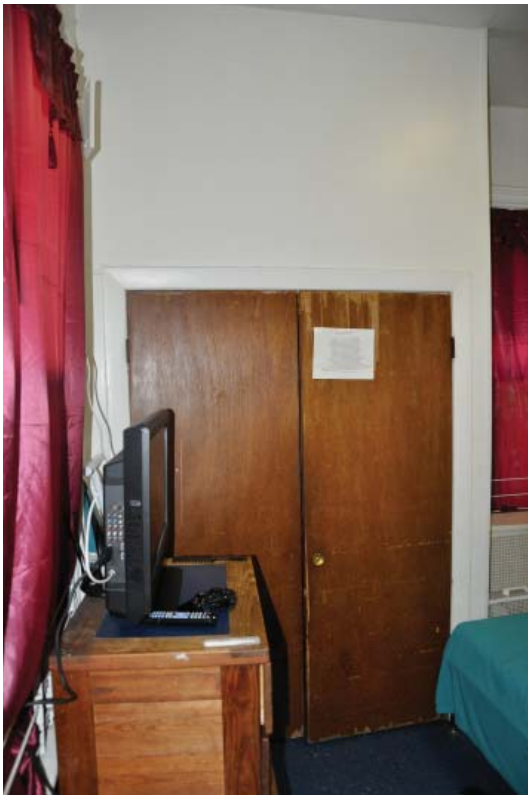


Photo 0060

Bathroom 1-2

Photo 0061

Kitchen 1-2

Photo 0057

INTERIOR

Bedroom 1-3

Photo 0044

Photo 0043

Photo 0046

Photo 0045

Bedroom 1-3

Photo 9262

Bathroom Vestibule 1-3

Photo 0042

Bathroom 1-3

Photo 0049

Photo 9261

INTERIOR

Kitchen 1-3

Photo 9254

Photo 9255

Photo 9256

Stair Hall 2

Photo 0098

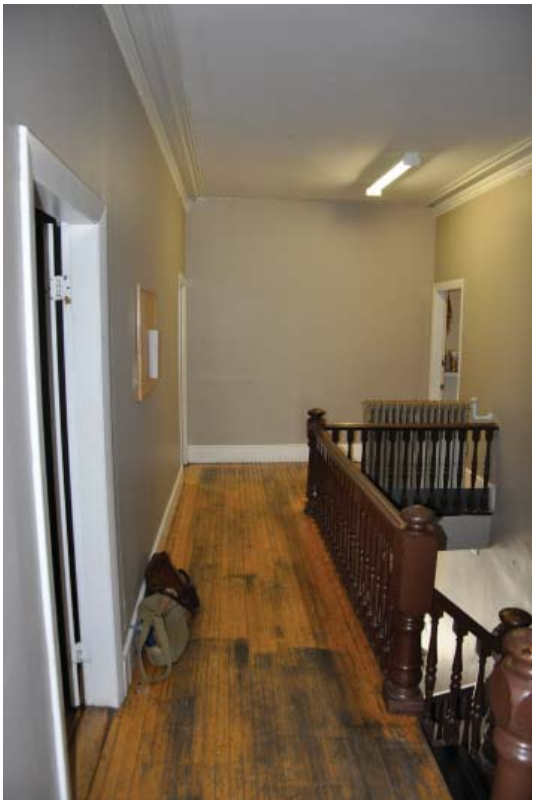


Photo 0075

Photo 9265

Photo 9280

INTERIOR

Back Hall 2

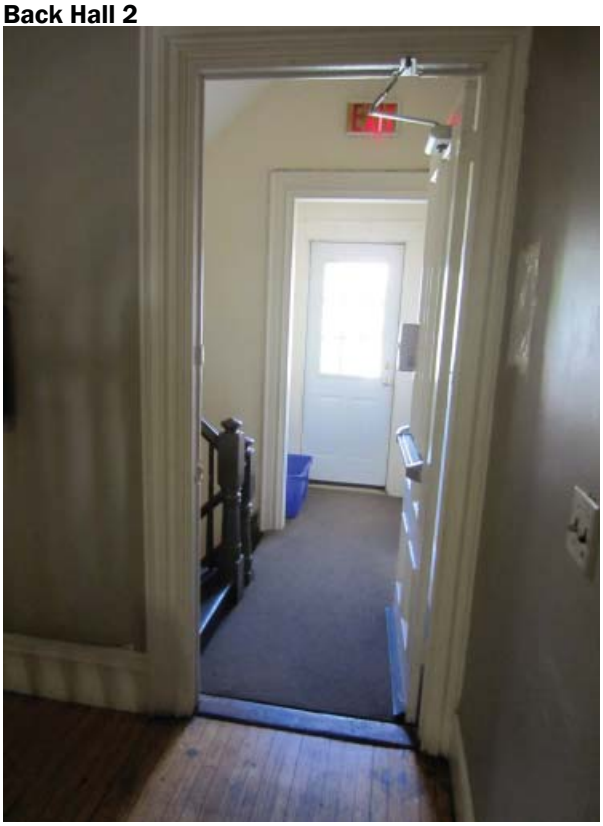


Photo 9267

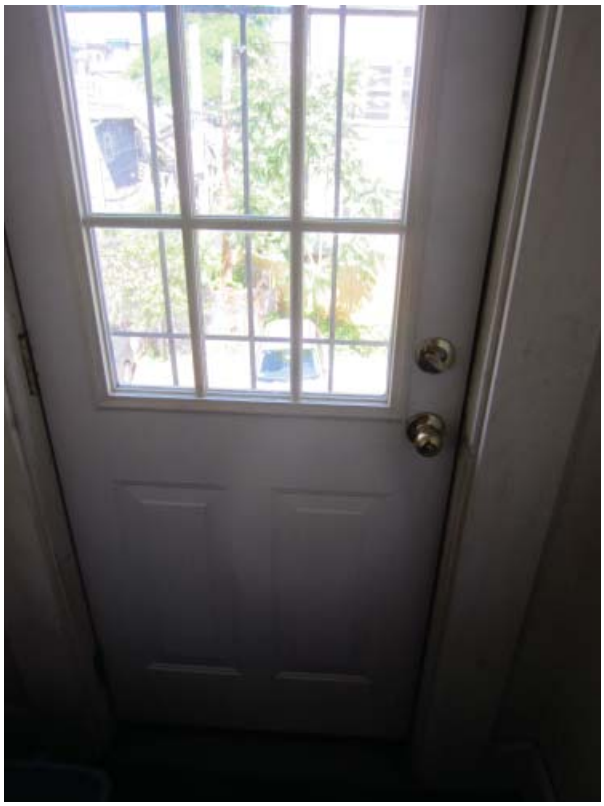


Photo 9304

Back Stair 2-3

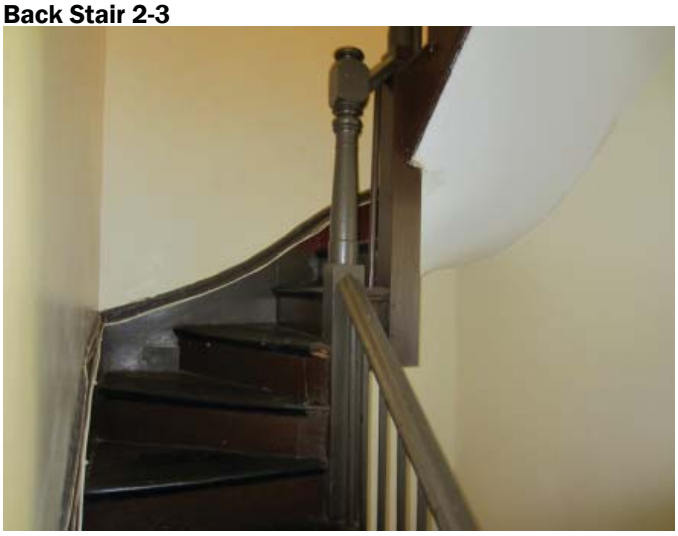


Photo 9301

Photo 9302

Photo 9309

INTERIOR

Bedroom 2-4

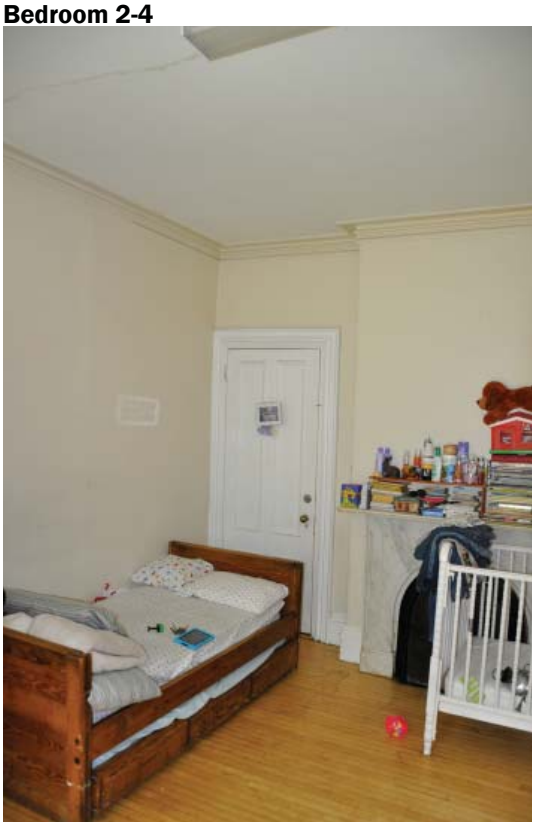


Photo 0086

Photo 0087

Photo 0088

Photo 0089

Kitchen 2-4

Photo 0090

INTERIOR

Bedroom 2-5

Photo 0082

Photo 0083

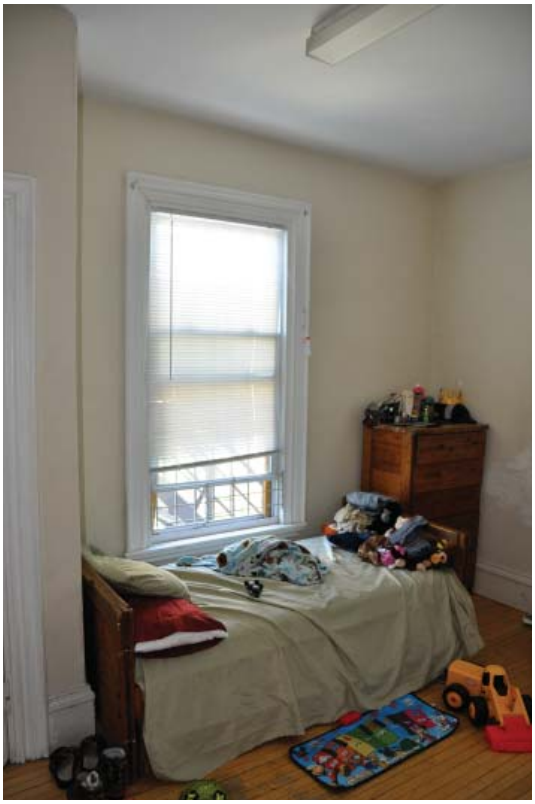


Photo 0084

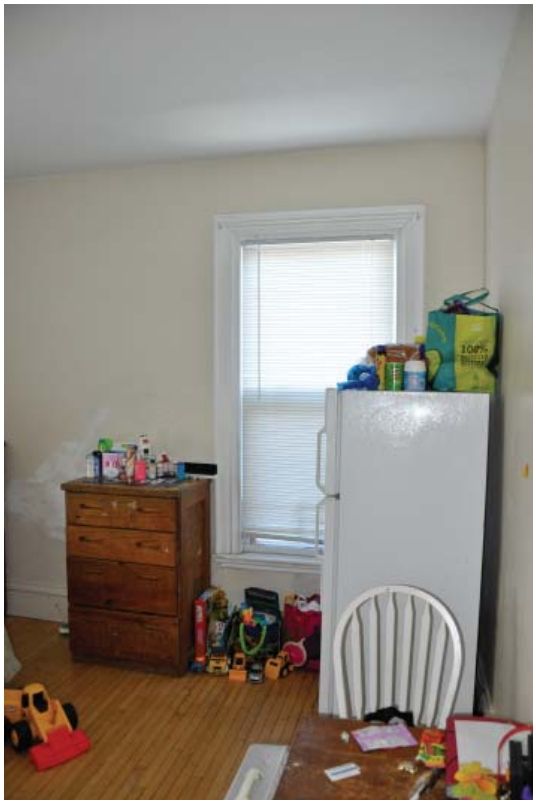


Photo 0085

Bathroom 2-4/5

Photo 0078

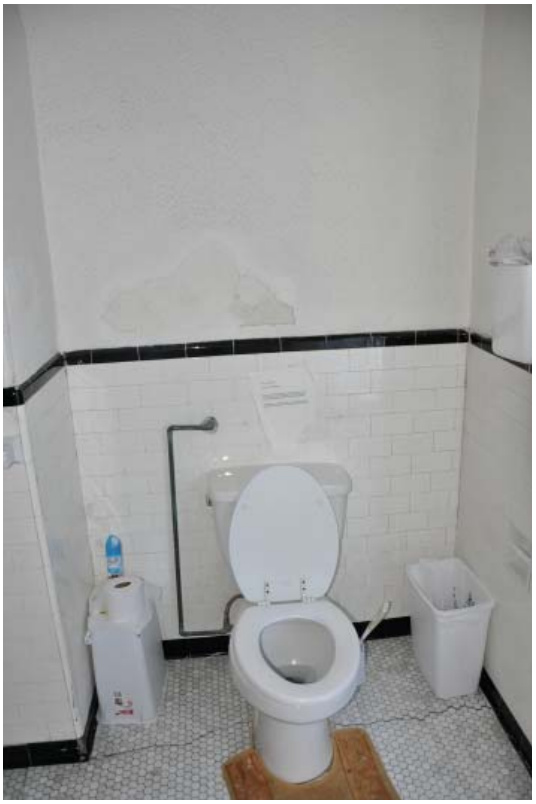


Photo 0079

INTERIOR

Director's Office

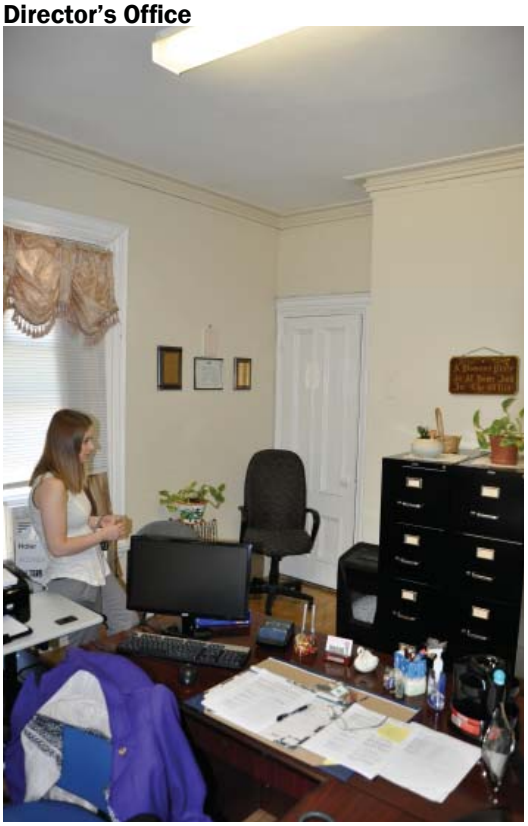


Photo 0069

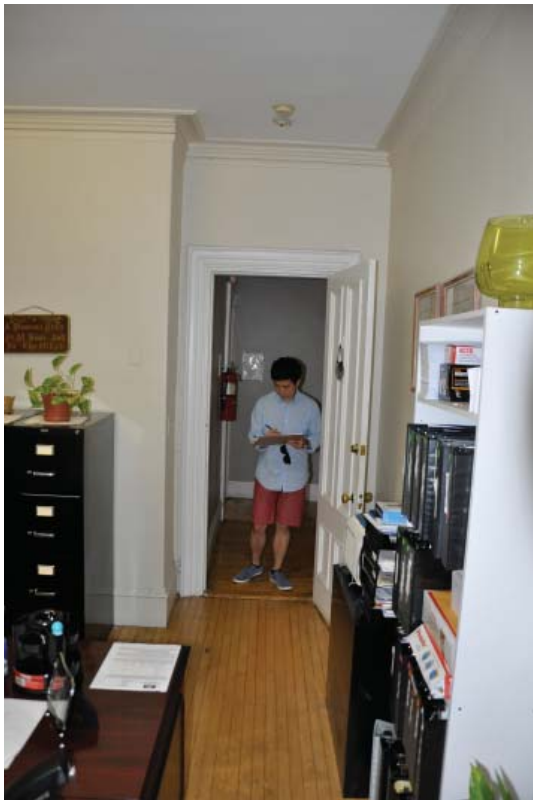


Photo 0070

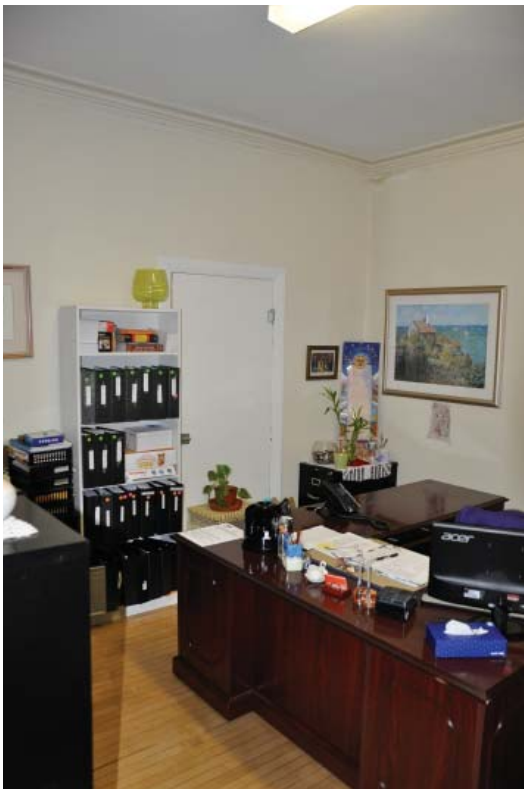


Photo 0071

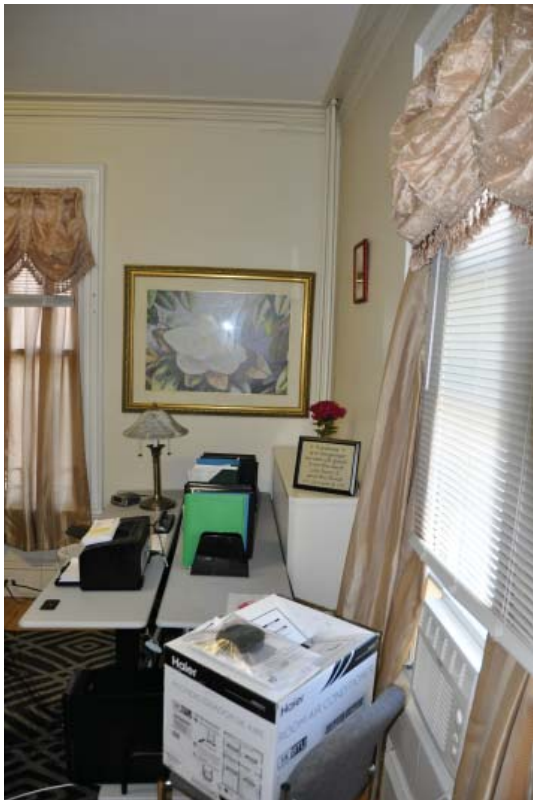


Photo 0073

INTERIOR

Bedroom 2-6

Photo 0091

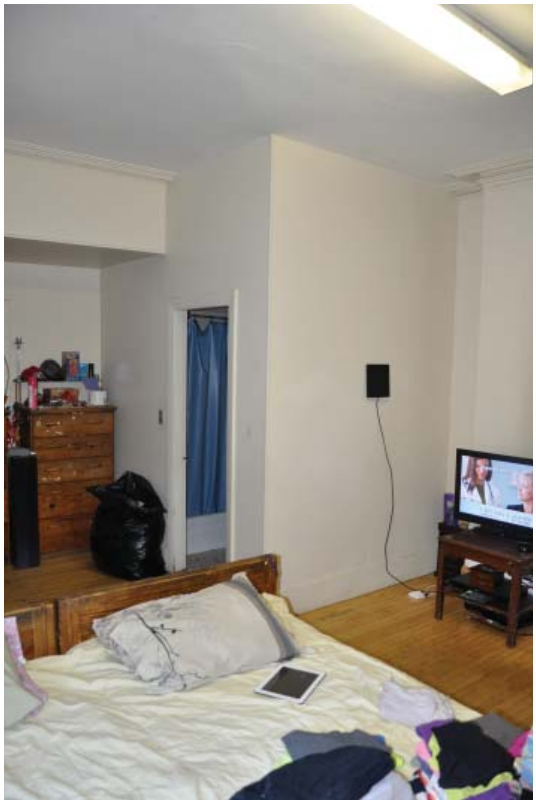


Photo 0092

Photo 0093

Photo 0094

Bathroom 2-6

Photo 0095

Kitchen 2-6

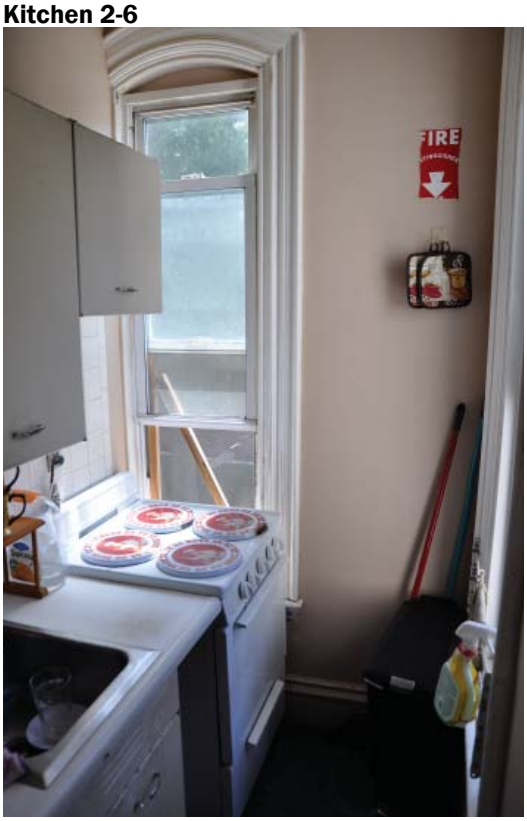


Photo 0097

INTERIOR

Back Stair Landing 3

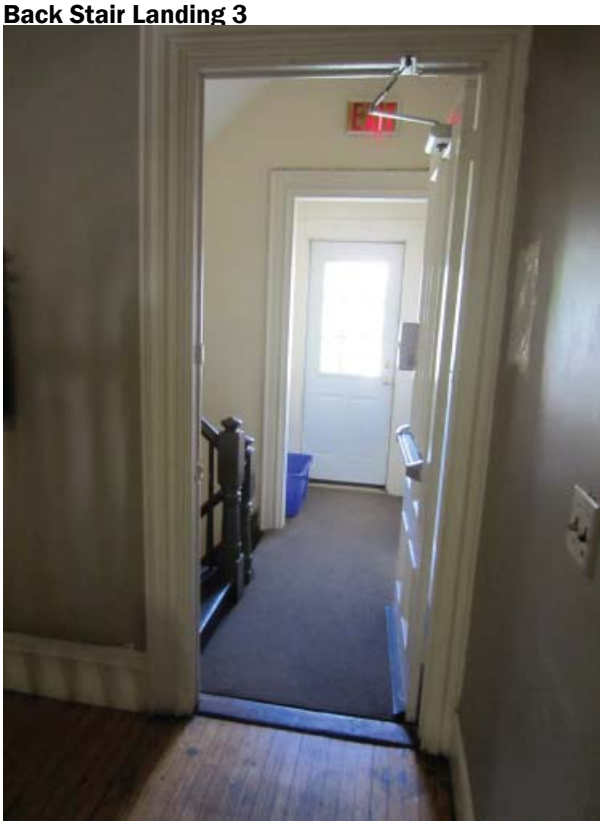


Photo 9267

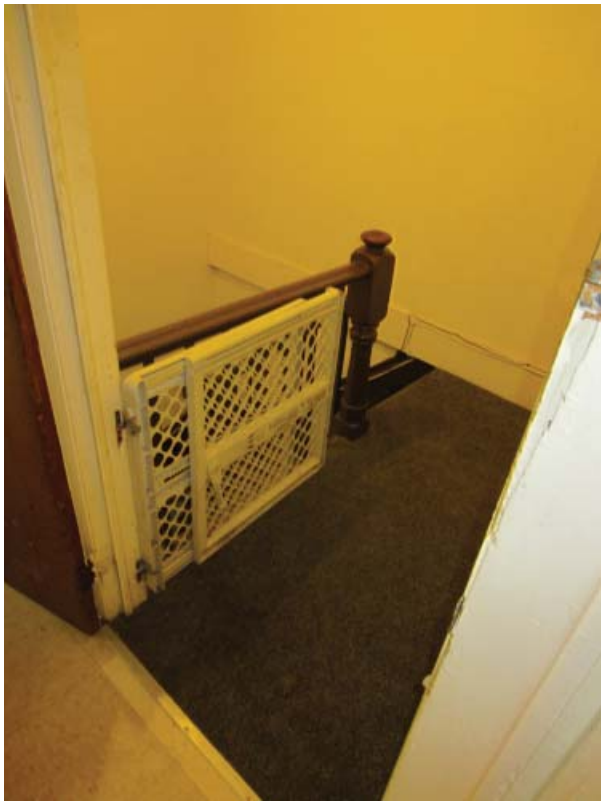


Photo 9315

Photo 9309

Common Hall 3

Photo 0102

Photo 0103

Back Hall 3

Photo 9326

INTERIOR

Back Hall 3

Photo 0104

Photo 0105

Bedroom 3-7

Photo 0111

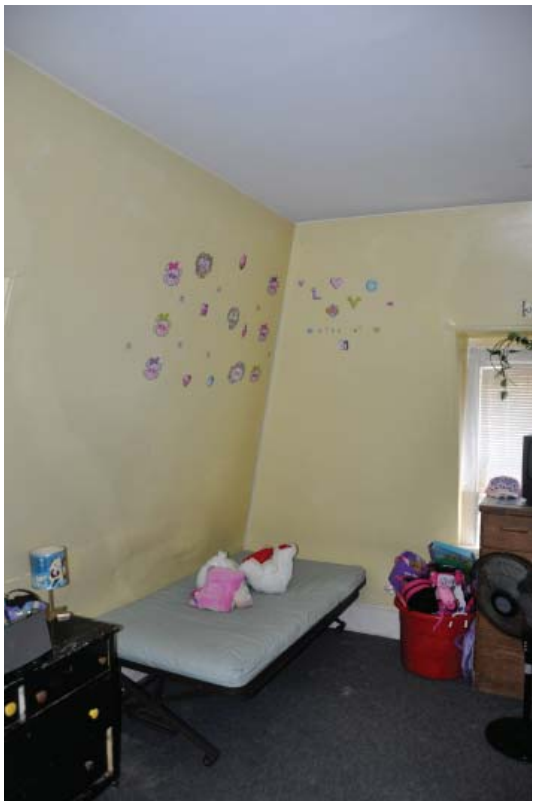


Photo 0112

Bedroom 3-7

Photo 0113

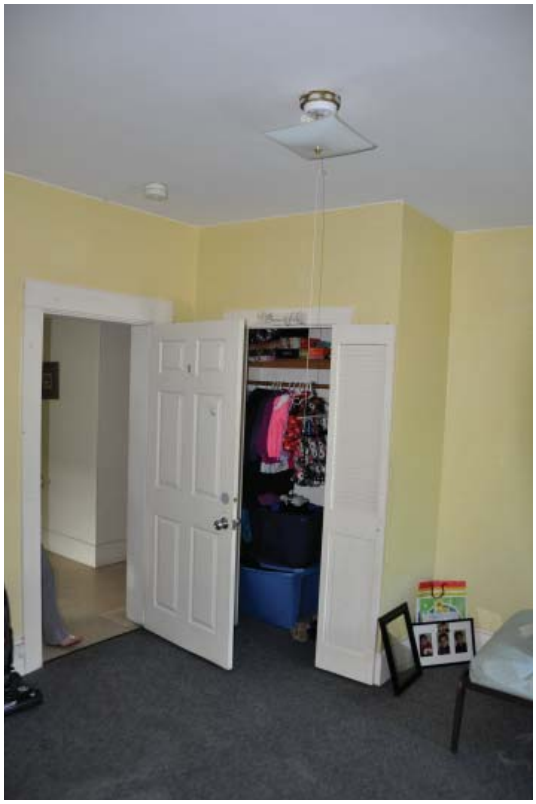


Photo 0114

Photo 0115

INTERIOR

Shared Bath 3

Photo 0099

Photo 0100

Photo 0101

INTERIOR

Shared Kitchen 3

Photo 0106

Photo 0107

Photo 9317

Bedroom 3-10

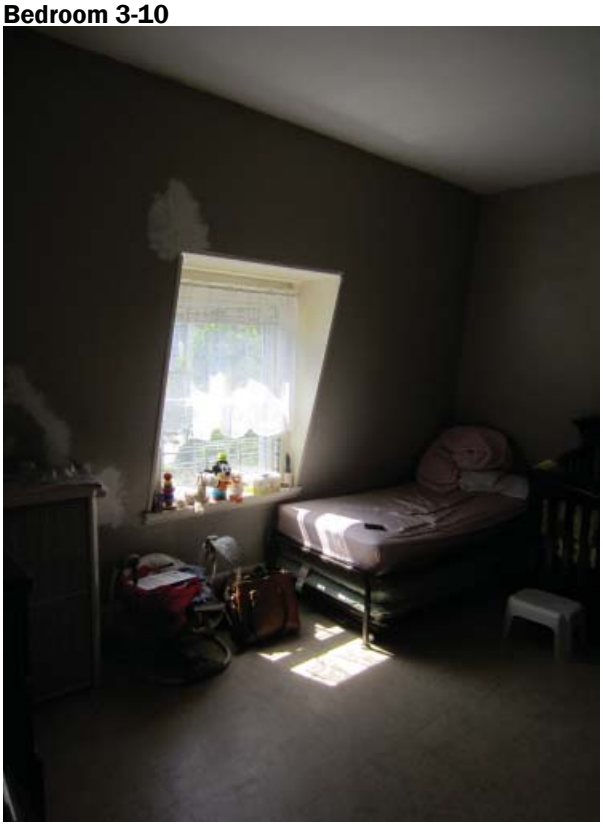


Photo 9327

Photo 9330

Photo 9329

Photo 9328

INTERIOR

Attic Access Panel

Photo 9325

HVAC

Recommendation Summary Narrative

The building's heating and air conditioning systems (where present) are outdated, inefficient, and, in the case of the atmospheric boiler and water heater adjacent to the Playroom, contribute to creating unsafe indoor air quality conditions. Kitchen hoods and bathrooms lack mechanical ventilation as required by current codes. Heating distribution is uneven and unable to be controlled on a room basis, yielding a highly inefficient system. While air conditioning is not currently provided in the living units, adding it should be strongly considered give the typical length of occupants' residency and the presence of young children and babies, particularly in the Level 3 bedrooms. Recommendations a-f are ranked *Essential*, and recommendation g is ranked *Best Interest*.

Recommendation Summary List

a. Install new boiler, flue and combustion air.
b. Install new convectors and associate piping.
c. Install new HVAC control.
d. Install new bathroom exhaust.
e. Install new kitchen exhaust.
f. Install new air conditioning at Staff Office and Director's Office.
g. Install new air conditioning system (individual wall-mounted split systems) at bedrooms. (Alternate-9)

Relevant Photos

Boiler and Water Heater in Level 0 Mechanical Room

Photo 9223

Baseboard Convectors at Level 0

Photo 9216

HVAC

Level 0 Control

Photo 9226

Boiler Room Vent into Playroom

Photo 9227

Dryer Venting

Photo 0009

Radiator Cover

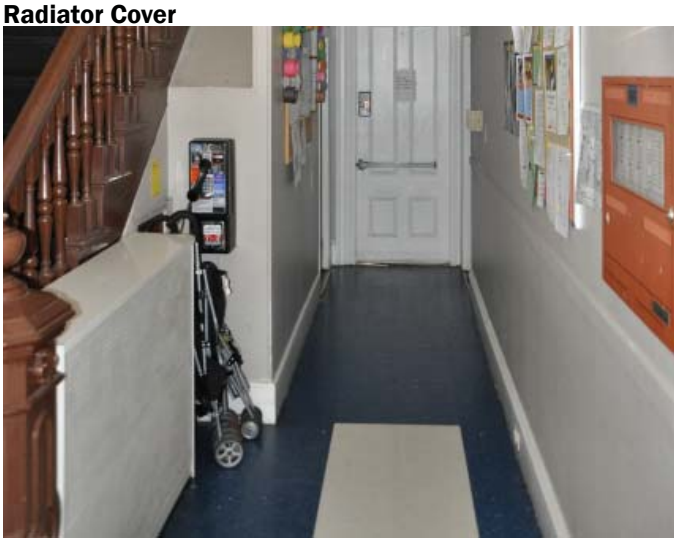


Photo 0041

Exposed Radiator

Photo 9280

Unvented Range

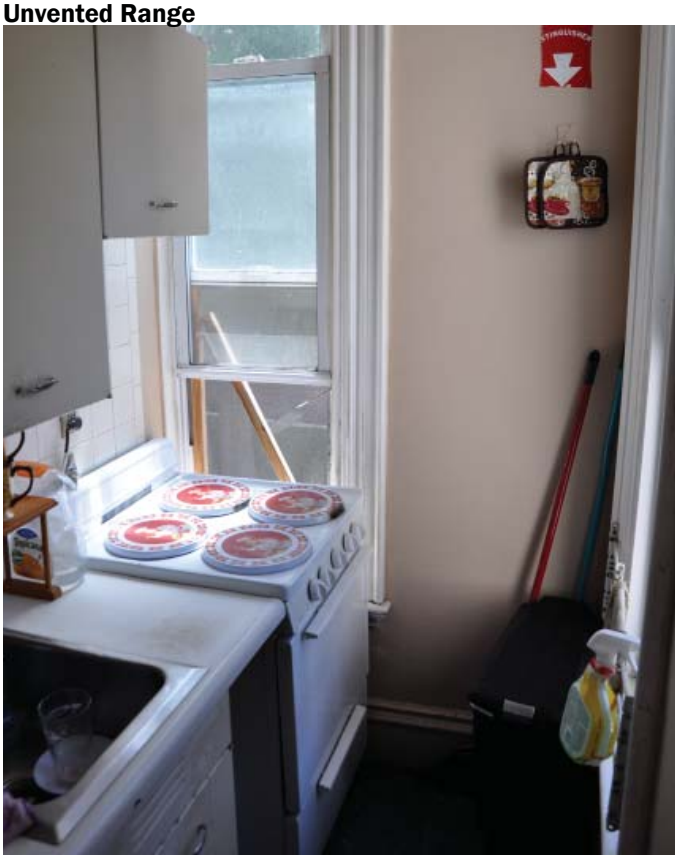


Photo 0097

Shared Kitchen 3 (No windows)

Photo 0107

Interior Bathroom (No Windows)

Photo 0095

Window AC at Level 3 Common Space

Photo 0102

PLUMBING

Recommendation Summary Narrative

The YWCA's first concern upon meeting with the assessment team was the severely degraded condition of the sanitary waste piping at Level 0, which is very old, shows signs of rusting out, and frequently admits sewer gas to the building. Replacement of the sanitary waste line and further scoping to determine the nature of its connection at the street are recommended as an immediate priority. Further, other pipes in the basement show signs of leakage. Plumbing fixtures are generally old and in poor repair, in addition to being inefficient. Piping throughout the building should be repaired as needed and insulated to meet code standard, and the water heater should be replaced with a high efficiency, sealed combustion boiler with sidewall venting. All recommendations in this category are ranked *Essential*.

Recommendation Summary List

a. Install new hot water heater and hot water storage tank.
b. Install new insulated supply piping.
c. Install new waste piping.
d. Install new plumbing fixtures.

Relevant Photos

Sanitary Waste Line

Photo 0024

Supply Piping

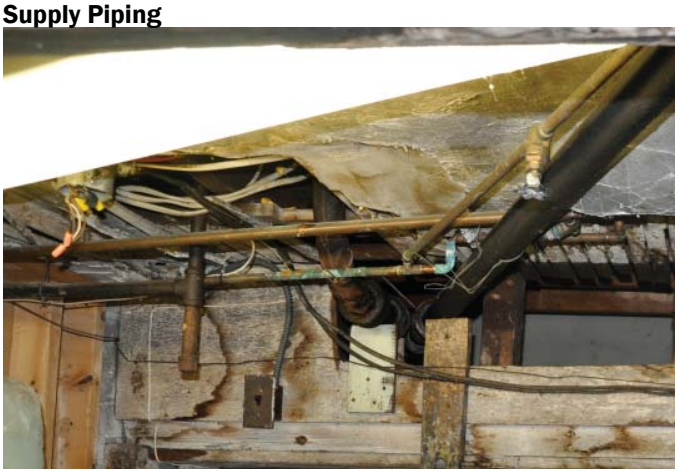


Photo 0022

PLUMBING

Sanitary Waste Line

Photo 0024

Supply Piping

Photo 0022

Piping and Water Heater

Photo 0022

Typical Bathroom Fixtures

Photo 0095

Photo 0099

ELECTRICAL

Recommendation Summary Narrative

The existing electric service to 3 Bigelow is not adequate for the increased loads of an elevator, which will most likely be required to provide code-mandated universal access to the building, and air conditioning, which is a *Best Interest* recommendation of this condition assessment. The existing romex wiring is allowable per current codes, but it is advisable to install all-new wiring when the service, distribution panel, devices and fixtures are all upgraded. The number and placement of outlets throughout is not code-compliant. Lighting should be provided that is both energy-efficient and properly designed for the various types of living spaces in the building. The electrical components of the building's life safety systems need improvement. Recommendations a-b and d-f are ranked *Essential*, and recommendation c is ranked *Best Interest*.

Recommendation Summary List

a. Increase electric service capacity.
b. Install new distribution panel.
c. Install new wiring throughout.
d. Install new devices.
e. Install new lighting and light control throughout.
f. Install new emergency and exit lighting.

Relevant Photos

Distribution Panel

Photo 0027

Playroom Fluorescent Fixtures

Photo 9214

ELECTRICAL

Stair 0-1

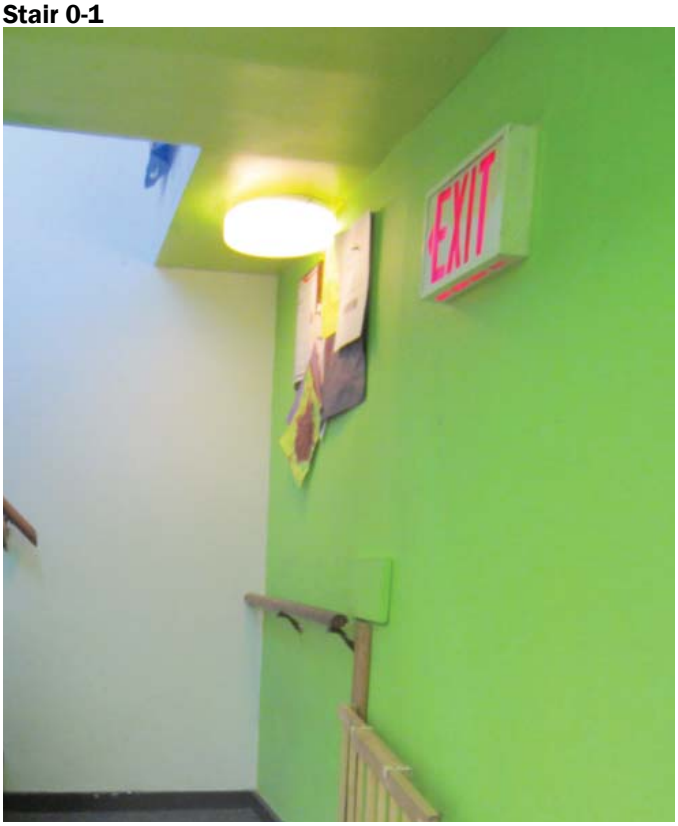


Photo 9208

Distribution Panel

Photo 0027

Photo 9234

Staff Office Fixtures

Photo 0034

Level 1 Bedroom Fixture

Photo 0066

Level 1 Kitchen Fixture

Photo 0057

Back Hall 1 Fixture

Photo 0052

ELECTRICAL

Back Hall 1 Exit Lighting

Photo 0076

Level 2 Bedroom Fixture

Photo 0088

Level 2 Main Stair Hall

Photo 0075

Level 3 Bathroom Fixtures

Photo 0099

FIRE ALARM

Recommendation Summary Narrative

The building's Firelite hard wired alarm system is no longer manufactured, and replacement parts are hard to find. There is a panel in the main corridor, horn strobe units in corridors, pull stations near the Exit doors and system ceiling mounted heat detectors in the bedrooms. Bedrooms have three, two or one detectors in a cluster by the entry door, with the extra detectors satisfying the code requirement for smoke/CO detection. The fire alarm system and devices should be replaced with a fully addressable system that also interfaces appropriately with the new building sprinkler system; all recommendations in this category are ranked *Essential*.

Recommendation Summary List

a. Install new annunciator panel.
b. Install new smoke detectors.
c. Install new horn/strobes.
d. Install new pull stations.

Relevant Photos

Level 0 Strobe and Alarm

Photo 9237

Level 1 Panel, Strobe and Alarm

Photo 9237

FIRE ALARM

Back Hall 1 System Components

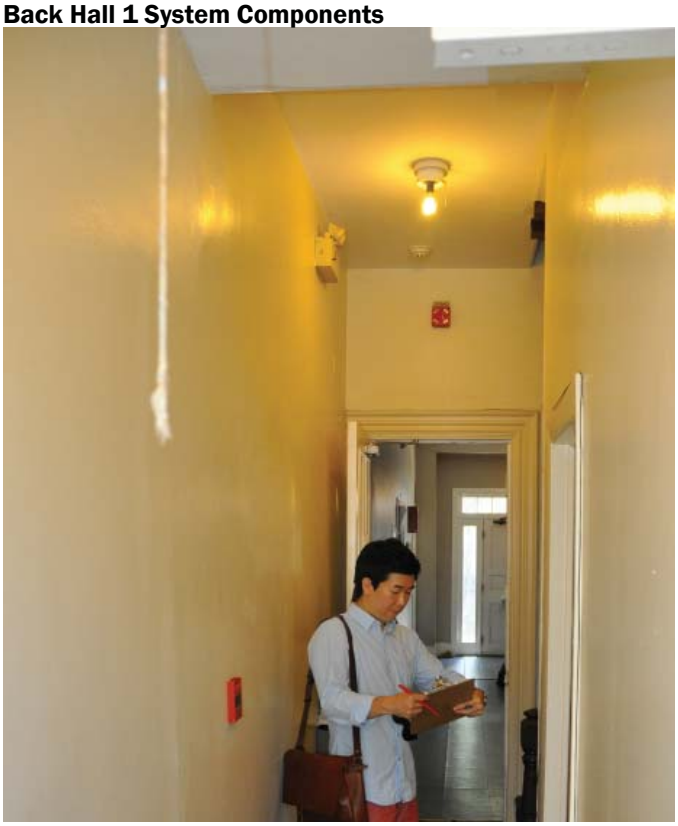


Photo 0052

Typical Bedroom Ceiling Detectors

Photo 0044

FIRE PROTECTION

Recommendation Summary Narrative

No building fire protection system currently exists. As the work area of the recommended renovation will exceed 50% of the building's floor area, a sprinkler system will be required as part of the renovation. All recommendations in this category are ranked *Essential*.

Recommendation Summary List

a. Install new NFPA 13 sprinkler system.
b. Install fire department connection.
c. Install new water line from street to sprinkler apparatus.

Relevant Photos (Not Applicable)

SECURITY

Recommendation Summary Narrative

The main entry door has a mechanical lock. A YWCA staff member opens the door for each entry request (persons standing on the exterior landing are visible through door sidelites). There are egress alarms on the rear Level 1 and level 3 doors, and a security grate on the Level 2 egress door. Windows at Level 0 have security grates. Increased security and access control is desired by the YWCA, as is a video monitoring system, which does not currently exist. Both would greatly improve the safety of both residents and staff. Recommendations a-b are ranked *Essential*, and recommendation c is ranked *Best Interest*.

Recommendation Summary List

a. Reinstall interior and exterior door alarms.
b. Install new interior and exterior door position contacts.
c. Install new cameras and an on-site video monitoring system. (Alternate-7)

Relevant Photos

Main Entry Door

Photo 9359

Level 1 Exit Door

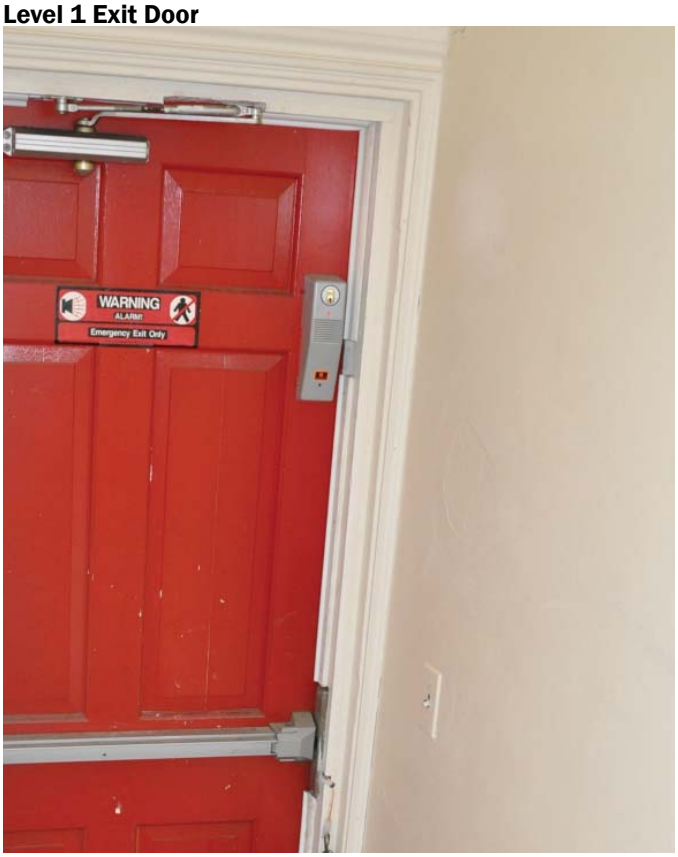


Photo 0051

SECURITY

Level 0 Window Grates

Photo 0052

Photo 0120

Level 2 Egress Door

Photo 9307

III. IMPLEMENTATION & PHASING

ESTIMATED COSTS

The estimate of probable construction cost prepared for this assessment and included as Appendix A-8 is based on our recommendation that nearly all of the work is essential and must be done as one project. See Executive Summary. Alternate scope that can either be deferred or omitted altogether is listed separately but included in project cost totals. Refer to Appendix A-8 for a summary of alternates and of scope that should be eligible for CPA funding.

In addition to the construction cost estimate, amounts for project costs including design fees for schematic design phase through construction administration phase services and other project related costs should be considered for full funding of the project. Operating and maintenance costs are not included in the project cost budgets outlined below.

Estimated Construction Cost (VJ Associates 8/11/2014)		
Direct Cost		$1,875,261
General Conditions		$168,800
General Requirements		$75,100
Insurance & Bonds		$61,000
Permits		$28,200
General Contractor Fee		$88,400
Subtotal		$2,296,761
Design Contingency	15%	$344,600
Escalation Contingency	5%	$114,900
Construction Contingency		$0
Estimated Construction Cost Total		**$2,756,261**

Estimated Construction Alternates Cost	
Alternate 1 - Reconstruct eave soffit brackets	$10,500
Alternate 2 - Reconstruct porch detailing & arched exterior doors	$12,000
Alternate 3 - Install PVC roof membrane or metal roof	$19,480
Alternate 4 - Replace Lombardi bldg wheel stop w/ concrete curb	$12,000
Alternate 5 - Replace cast iron storm drain connection to street	$35,040
Alternate 6 - Install new wood crown mold in bedrooms & offices	$35,040
Alternate 7 - Install new cameras & video monitoring	$119,700
Alternate 8 - Remove fireplaces & chimney masses	$9,514
Alternate 9 - Install new air conditioning at bedrooms	$75,700
Alternate 10 - Add Level 0 public toilet	$49,870
Alternate 11 - Frame upper high roof to original low-slope	$37,400
Alternate 12 - Remove fire escape & replace egress door with window	$13,090
Alternate 13 - Install new accessible route to front entry	$70,700
Estimated Construction Alternates Cost Total	**$500,034**

Total Estimated Construction Cost (with alternates)	**$3,256,295**

Estimated Design Fees
Schematic Design Through Construction Phase

Estimated Architect's Fee	7.5%	$244,222
Estimated Architect's Consultants Fee	4.5%	$146,533
Structural Engineering		
MEP/FP Engineering & Energy Modeling		
Civil Engineering		
Landscape		
IR Scanning		
Code Consulting		
Cost Estimating		
Environmental and Material Testing		
Reimbursable Expenses		$5,000
Estimated Design Fees Total		**$395,755**

Estimated Project Costs
Schematic Design Through Construction Phase

Estimated Project Costs	*15%*	*$413,439*
FF&E (Fixtures, Furnishings & Equipment)		
Project Management and Clerk of the Work		
Site Survey		
HERS Rater		
Legal and Zoning		
Insurance (Builder's Risk)		
Testing and Inspections Services		
Utility Charges		
Moving		
Estimated Project Cost Total		**$413,439**

Total Estimated Project Cost	**$3,565,456**

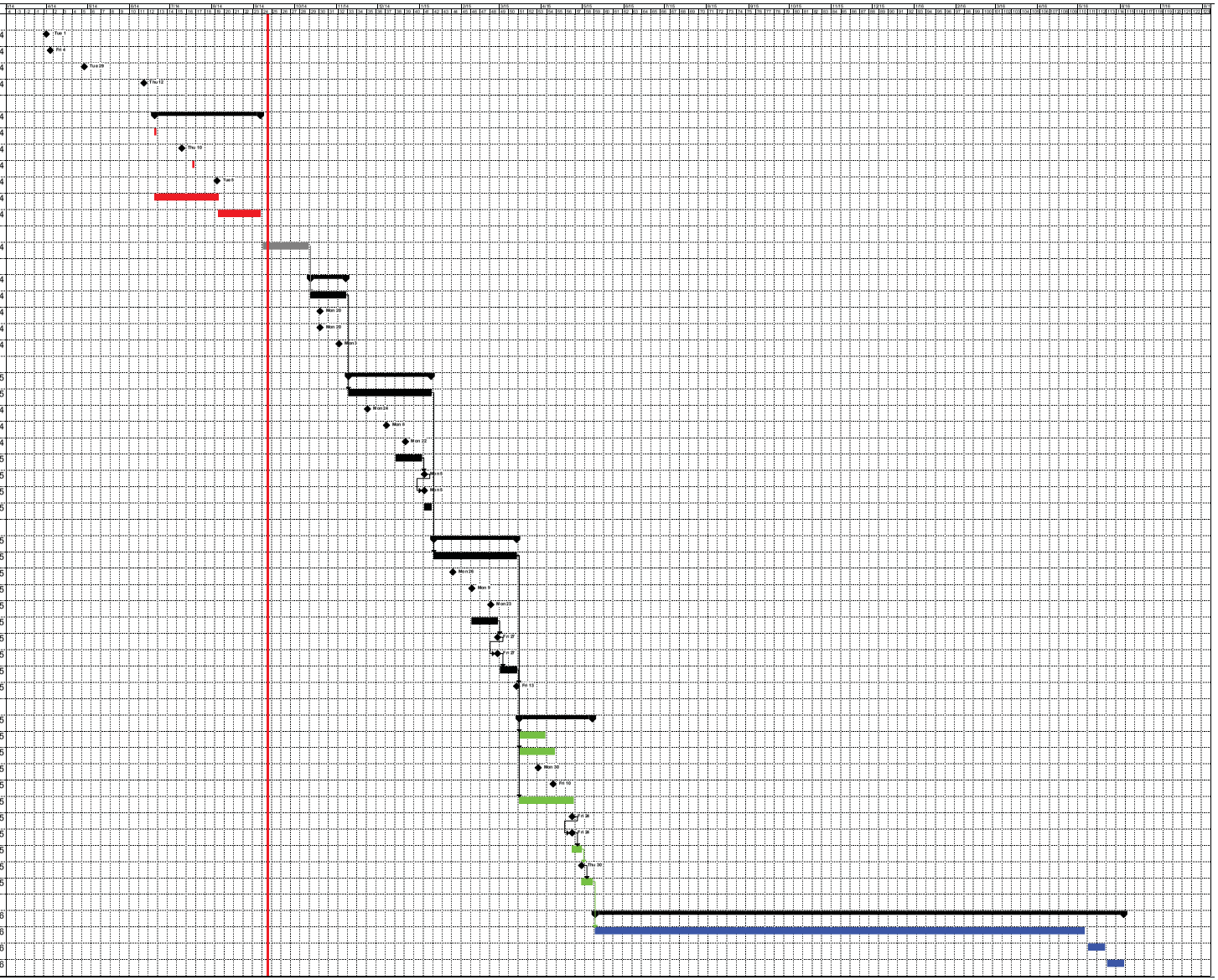
IMPLEMENTATION STRATEGY & SCHEDULE

Due to the overall poor condition of the building and the presence of hazardous materials throughout we do not believe it is realistic to perform any level of work while the building is occupied. Additionally, the extensive scope of the work required for renovation offers little or no opportunity for construction phasing. A conventional design phase through construction phase schedule is outlined on the following page.

LDa ARCHITECTURE & INTERIORS

City of Cambridge
3 Bigelow Street Renovation

ID	Task Name	Duration	Start	Finish
1				
2	Initial Walk Through	0 days	Tue 4/1/14	Tue 4/1/14
3	Condition Assessment Services Proposal	0 days	Fri 4/4/14	Fri 4/4/14
4	Interview	0 days	Tue 4/29/14	Tue 4/29/14
5	Kick Off Meeting	0 days	Thu 6/12/14	Thu 6/12/14
6				
7	Condition Survey & Assessment Report	56 days?	Fri 6/20/14	Fri 9/5/14
8	Existing Conditions Survey	1 day	Fri 6/20/14	Fri 6/20/14
9	Program Meeting	0 days	Thu 7/10/14	Thu 7/10/14
10	Existing Conditions Survey Followup	1 day?	Fri 7/18/14	Fri 7/18/14
11	Draft Report Review Meeting	0 days	Tue 8/5/14	Tue 8/5/14
12	Existing Conditions Documentation & Report Draft	33 days	Fri 6/20/14	Tue 8/5/14
13	Final Report	23 days?	Wed 8/6/14	Fri 9/5/14
14				
15	Design Services Proposal & Authorization	25 days?	Mon 9/8/14	Fri 10/10/14
16				
17	Schematic Design Phase	20 days	Mon 10/13/14	Fri 11/7/14
18	Schematic Documents Preparation	20 days	Mon 10/13/14	Fri 11/7/14
19	Meeting - Historical, Accessibility & Building Code	0 days	Mon 10/20/14	Mon 10/20/14
20	Progress Meeting	0 days	Mon 10/20/14	Mon 10/20/14
21	Progress Meeting	0 days	Mon 11/3/14	Mon 11/3/14
22				
23	Design Development Phase	45 days	Mon 11/10/14	Fri 1/9/15
24	Design Development Documents Preparation	45 days	Mon 11/10/14	Fri 1/9/15
25	Progress Meeting	0 days	Mon 11/24/14	Mon 11/24/14
26	Progress Meeting	0 days	Mon 12/8/14	Mon 12/8/14
27	Progress Meeting	0 days	Mon 12/22/14	Mon 12/22/14
28	DD Cost Estimate	15 days	Mon 12/15/14	Fri 1/2/15
29	DD Submittal	0 days	Mon 1/5/15	Mon 1/5/15
30	DD Review Work Session Meeting	0 days	Mon 1/5/15	Mon 1/5/15
31	DD Review Period	5 days	Mon 1/5/15	Fri 1/9/15
32				
33	Construction Documents Phase	45 days	Mon 1/12/15	Fri 3/13/15
34	Construction Documents Preparation	45 days	Mon 1/12/15	Fri 3/13/15
35	Progress Meeting	0 days	Mon 1/26/15	Mon 1/26/15
36	Progress Meeting	0 days	Mon 2/9/15	Mon 2/9/15
37	Progress Meeting	0 days	Mon 2/23/15	Mon 2/23/15
38	50% CD Cost Estimate	15 days	Mon 2/9/15	Fri 2/27/15
39	50% CD Submittal	0 days	Fri 2/27/15	Fri 2/27/15
40	50% CD Review Work Session Meeting	0 days	Fri 2/27/15	Fri 2/27/15
41	Construction Documents Final	10 days	Mon 3/2/15	Fri 3/13/15
42	Bid Document Submittal	0 days	Fri 3/13/15	Fri 3/13/15
43				
44	Bidding Phase	40 days?	Mon 3/16/15	Fri 5/8/15
45	Publish and Advertise	15 days	Mon 3/16/15	Fri 4/3/15
46	Filed Sub-Bid Period	20 days?	Mon 3/16/15	Fri 4/10/15
47	Bidder Walk-Through	0 days	Mon 3/30/15	Mon 3/30/15
48	Filed Sub-Bids Due	0 days	Fri 4/10/15	Fri 4/10/15
49	General bid Period	30 days?	Mon 3/16/15	Fri 4/24/15
50	General Bids Due	0 days	Fri 4/24/15	Fri 4/24/15
51	Public Bid Opening	0 days	Fri 4/24/15	Fri 4/24/15
52	Bid Evaluation	5 days	Fri 4/24/15	Thu 4/30/15
53	Bid Award	0 days	Thu 4/30/15	Thu 4/30/15
54	Contract for Construction	6 days	Fri 5/1/15	Fri 5/8/15
55				
56	Construction Phase	281 days	Mon 5/11/15	Fri 6/3/16
57	Construction	52 wks	Mon 5/11/15	Thu 5/5/16
58	Punchlist & Closeout	2 wks	Mon 5/9/16	Fri 5/20/16
59	Move In & Occupancy	2 wks	Mon 5/23/16	Fri 6/3/16



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City of Cambridge
3 Bigelow Street Condition Assessment Project

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Submitted: July 3, 2014

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INTRODUCTION & PROJECT DESCRIPTION

Howe Engineers has prepared this document for LDa Architect for the study of the City of Cambridge 3 Bigelow Street Building in Cambridge, MA. The project entails studying potential "gut" renovations of the First, Second, and Third Floors as well as upgrades to the Basement Level.

The building primarily consists of Group R-1 Residential Occupancies (Shelter), Group B Business Use (Offices on the First Floor), Day Care, and Group S-2 (Storage in the Basement). A change in occupancy of any of the levels is not currently anticipated.

This narrative addresses requirements contained in the 8th edition of the Massachusetts State Building Code (MSBC) and specifically addresses Chapter 34, which addresses the International Existing Building Code, 2009 Edition.

In addition, 521 CMR, the Massachusetts Architectural Access Board (MAAB) served as the basis for our review.

APPLICABLE CODES AND REQUIREMENTS

The following codes are presently adopted in the State of Massachusetts:

- **Building** — Massachusetts State Building Code (MSBC), 8th Edition, which is an amended version of the 2009 International Building Code and the 2009 International Existing Building Code (IEBC).
- **Accessibility** — Massachusetts Architectural Access Board (MAAB), 521-CMR.
- **Electrical** — Massachusetts Electrical Code, 527-CMR, 12.00. The Massachusetts Electrical Code is an amended version of the 2008 National Electrical Code (NFPA 70).
- **Elevators** — Massachusetts Elevator Regulations, 524-CMR.
- **Fire Prevention** — Massachusetts Fire Prevention Regulations (MFPR), 527-CMR.
- **Mechanical** — International Mechanical Code, 2009, as adopted and amended by the MSBC (Chapter 28).
- **Plumbing** — Massachusetts Fuel Gas and Plumbing Codes, 248-CMR.
- **Other** — National Fire Protection Association (NFPA) Standards, as referenced by the MSBC and the MFPR.

CHAPTER 34 SCOPING REQUIREMENTS

COMPLIANCE METHODS

Section 101.5 of Chapter 34 of the MSBC presents the various options available to evaluate the code requirements applicable to repair, alteration, change of occupancy, addition, or relocation projects to existing buildings. Users elect one of the available compliance methods to evaluate the existing building based on the proposed scope of work of the project. The three compliance options available are as follows:

a. Prescriptive Compliance Method:

Users electing to use this compliance method should follow the requirements outlined in Section 3 of Chapter 34 to perform the existing building evaluation. This section has vague requirements that would require multiple complex discussions with local officials. Although, Howe Engineers anticipates that some issues will be required to be discussed, it is our opinion that this option leaves to much discretion to the building official and does not provide enough guidance.

b. Work Area Compliance Method:

Users electing to use this compliance method should follow the requirements of Sections 4 through 12 of the MSBC Chapter 34 to perform the existing building evaluation.

c. Performance Compliance Method:

Users electing to use this compliance method should follow the requirements of Section 13 of Chapter 34 of the MSBC to perform the existing building evaluation. This method generally requires more upgrades than the work area method would require and thus has not been chosen.

The work area compliance method has been selected for use on this project based on the clear requirements and the ability to limit upgrades largely to the work area. The exact work area is not yet known. A gut renovation is anticipated, which would mean the entire building is the work area.

GENERAL REQUIREMENTS

Construction Type:

Based on review of the drawings and prior knowledge of the building, it appears that the building is constructed of combustible materials. As such, it is considered Type VB, Wood Framed Construction.

Section 102.2.1 Fire Protection Systems:

This section stipulates that the requirements of the Massachusetts General Laws Chapter 148 Section 26G may apply with respect to automatic sprinkler system requirements. In general, this section of the Massachusetts General Laws requires sprinkler protection to be provided in occupancies where the altered area exceeds 7,500 square feet. The requirements of this statute are subject to the enforcement of the Cambridge Fire Department.

The requirement to fully sprinkler a building considers if the alterations are major in nature and if the cost of the renovation exceeds 33% of the assessed value of the building or the work area exceeds 33% of the building area. The formal law does not put a specific time table over how long renovation work area and cost should be considered, but commentary from the sprinkler appeals board suggest that five (5) years should be considered. **It should be noted that this requirement is not applicable to residential occupancies.**

Given that the predominant use of the building is residential, it is the opinion of Howe Engineers that this requirement is not applicable to the project.

Section 102.2.2.1 Nonconforming Means of Egress

These special provisions address means of egress in all buildings and are designed to ensure a minimum acceptable level is maintained. The specifics of these provisions must be satisfied regardless of any project work. The requirements are enforced at the discretion of the approving authorities. The specifics of these requirements are as follows:

> The number of means of egress serving every space and/or story as required by Chapter 10 of the MSBC should be evaluated. Table 1021.1 requires that the following number of exits be provided per floor based on the occupant load:

Occupant Load Per Story	Minimum Number of Exits
1-500	2
501-1000	3
More than 1000	4

The occupant load of each floor is less than 500. As such, the two (2) means of egress provided via the main entrance, main stair serving the second floor, the back stair, and the fire escape are more than sufficient. Refer to the occupant load table below for more information.

1. The capacity of means of egress provided from each story and space must satisfy the criteria of Section 1005.1 of the MSBC.

Section 1005.1 gives requirements for the proper sizing of egress components. Components are given a capacity factor that determines based on their size, what occupant load they are individually capable of handling. So long as the capacity is in excess of the occupant load, the means of egress are in compliance with the code. For a non-sprinklered building, the total width of means of egress should not be less than the total occupant load served by the means of egress multiplied by 0.30 inches per occupant for stairways and by 0.20 inches per occupant for other egress components.

The following table shows the occupant load calculations and the Egress Capacity per floor.

Occupant Load Calculations - Basement			
Function of Space	**Area (ft^2)**	**Load Factor (ft^2/occ)**	**Load (occ)**
MECH/Storage	863	300 gross	3
Daycare	552	35 net	16
Total	**1,415**	**--**	**19**

Egress Capacity Calculations for Basement				
Area	**Exit Description**	**Clear Width of Limiting Component (in)**	**Capacity Factor (in / occ)**	**Exit Capacity (people)**
Stairs Serving Basement	Stair 1	36	0.3	120
	Stair 2 (Back Stair)	35	0.3	116
			Total	**236 > 19**

Occupant Load Calculations – First Floor			
Function of Space	**Area (ft^2)**	**Load Factor (ft^2/occ)**	**Load (occ)**
Business	323	100 gross	4
Residential	1,230	200 gross	7
Total	**1,553**	**--**	**11**

Egress Capacity Calculations for First Floor				
Area	**Exit Description**	**Clear Width of Limiting Component (in)**	**Capacity Factor (in / occ)**	**Exit Capacity (people)**
Exits Serving First Floor	Door 1 (Main Exit)	33	0.2	165
	Door 2 (Emergency Exit)	29	0.2	145
			Total	**310 > 11**

Occupant Load Calculations – Second Floor			
Function of Space	**Area (ft²)**	**Load Factor (ft²/occ)**	**Load (occ)**
Residential	1,460	200 gross	8*
Total	**1,460**	**--**	**8**

Egress Capacity Calculations for Second Floor				
Area	**Exit Description**	**Clear Width of Limiting Component (in)**	**Capacity Factor (in / occ)**	**Exit Capacity (people)**
Stairs Serving Second Floor	Stair 2 (Back Stair)	32	0.3	106
	Stair 3(Main Stair)	46	0.3	153
			Total	**259 > 8**

Occupant Load Calculations – Third Floor			
Function of Space	**Area (ft²)**	**Load Factor (ft²/occ)**	**Load (occ)**
Residential	1,460	200 gross	8*
Total	**1,460**	**--**	**8**

Egress Capacity Calculations for Third Floor				
Area	**Exit Description**	**Clear Width of Limiting Component (in)**	**Capacity Factor (in / occ)**	**Exit Capacity (people)**
Exits Serving Third Floor	Stair 2 (Back Stair)	32	0.3	106
	Fire Escape Door	32	0.2	160
			Total	**266 > 8**

***Note: The occupant loads for the Second and Third Floors were calculated using the Occupant Load Factors presented in Table 1004.1.1 of the MSBC for Residential Areas. Based on the calculated occupant load of 8 (e.g. less than 10), only one means of egress is required. However, if an occupant load of more than 10 occupants is expected/desired for each of these floors, than a second means of egress is required and should meet the requirements of a means of egress or exit.**

As shown in the tables above, the egress capacity exceeds the occupant load calculated within the spaces and is compliant with the requirements of the building code for egress capacity.

2. Any means of egress which is not so arranged as to provide safe and adequate means of egress, including exit signage and emergency lighting in accordance with Chapter 10 of the MSBC.

   Currently the path of egress travel to exits is not marked by permanent Exit Signs (paper exits sign are provided) and Exit signage is not in compliance with Section 1011 of the MSBC. This would likely be deemed hazardous.

3. Any means of egress which is not so arranged as to provide safe adequate means of egress, including exit signage and emergency lighting in accordance with Chapter 10 of the International Building Code 2009 with Massachusetts Amendments (780 CMR 10.00).

   The Back Stair is provided with Winder Treads. Winder Treads are not permitted in a new building's means of egress stairways by MSBC Section 1009.4.3, except within a dwelling unit. It is in the opinion of Howe Engineers that this does not present a hazardous condition and should be allowed to remain, but it must be discussed with the City of Cambridge.

102.2.2.2 Exit Order for Hazardous Means of Egress

This section states that any existing building or structure not provided with exit facilities as herein prescribed for new buildings and in which the exits are deemed hazardous or dangerous to life and limb, the building official can declare the building as unsafe in accordance with 780 CMR 116.

This language allows the building official discretion on what may be considered unsafe. Based on our review of the drawings, and our walkthrough of the building, we did not observe any conditions that would be cited as hazardous other than those stated elsewhere in this report.

EXISTING BUILDING EVALUATION – MSBC WORK AREA METHOD

GENERAL

A MSBC Chapter 34 evaluation of the existing building is required to determine the required fire protection and life safety improvements when any alteration or renovation work is undertaken.

Each of the following classes of work has an associated chapter within the MSBC Chapter 34 which outlines the provisions for that type of work on an existing building.

Repairs:

Repairs are defined as measures taken to restore the building to good or sound condition for general maintenance purposes. These include the restoration of materials, elements, equipment or fixtures for the purpose of maintaining a good or sound condition.

Alteration Level 1:

Alterations are defined as "any construction or renovation to an existing structure other than repair or addition." Level 1 alterations include, "removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose."

Alteration Level 2:

A Level 2 alteration consists of the reconfiguration of space, addition or subtraction of a door or window, the reconfiguration of any system, or adding any equipment to the building. Level 2 alterations should also comply with the provisions for a Level 1 alteration.

Alteration Level 3:

A Level 3 alteration consists of the reconfiguration of space, addition or subtraction of a door or window, the reconfiguration of any system, or adding any equipment to the building to 50% or more of the area of the building. Level 3 Alterations should also comply with Level 2 and 1 Alterations.

Based on discussions with LDa Architecture, the renovation work should be considered Level 2 Alterations or Level 3 Alterations. As previously discussed, the work area will limit where upgrades are required to be made.

REQUIREMENTS FOR REPAIRS & ALTERATIONS – LEVEL 1, 2 & 3 ALTERATIONS

ALTERATIONS LEVEL 1

A gut renovation will trigger the following requirements that are applicable to a Level 2 or Level 3 Alteration. If this work will likely be considered a Level 2 or Level 3 alteration than the provisions of Level 1 Alteration must also be complied with.

Interior Finish:

All newly installed interior finishes should comply with the flame spread requirements of the MSBC Chapter 8 (MA IEBC 702.1). New carpeting used as an interior floor finish material should comply with the radiant flux requirements of Section 804 of the MSBC (MSBC 602.2).

New interior finishes proposed in renovation work, should comply with the requirements of the MSBC as to allow finish types in a non- sprinklered Residential occupancy. As per MSBC Table 803.9, the following interior finish ratings are required at a minimum (assumes a non-sprinklered building):

- **Exit Enclosures and Exit Passageways: Class A or B**
- **Corridors: Class A or B**
- **Rooms and Enclosed Spaces: Class A, B, or C**

If the Renovation will include installment of a sprinkler system the following interior finish ratings are required at a minimum:

- **Exit Enclosures and Exit Passageways: Class A, B, or C**
- **Corridors: Class A, B, or C**
- **Rooms and Enclosed Spaces: Class A, B, or C**

Classification of interior finishes will be provided in accordance with ASTM E 84 / UL 723.

Accessibility:

Refer to the accessibility section of this report for specific requirements.

ALTERATIONS LEVEL 2

Section MSBC 34 701.2 of Level 2 alterations requires that alterations categorized as Level 2 comply both with the requirements of Chapter 6, Alterations Level 1, and Chapter 7, Alterations Level 2.

Vertical Openings:

In Group R-1 occupancies, all vertical openings not exceeding three (3) stories should be enclosed with 1-hour rated enclosures (MA IEBC 703.2.1 Exception 10). This enclosure, or the enclosure shall not be required if the building is protected throughout by an approved automatic sprinkler system, a fire alarm system, and have the two (2) means of egress stairs separated from one another by 1-hour rated separation assembly.

The stairs in the building are currently not enclosed. These stairs will need to be enclosed to meet this requirement, or the renovation must include the installation of an approved automatic sprinkler system, fire alarm system, and separation of the exit stairs.

Fire Protection Systems:

Section 704.2.2 addresses fire protection requirements for Level 2 alterations. This section requires that Use Group R-1, Residential Occupancies be sprinklered when the work area exceeds 50% of the floor area. In addition, standpipes are required if the work area is at levels more than 50-feet above the lowest level of fire department vehicle access (MSBC 34 704.2.2).

If the Work Area exceeds 50% of the floor area, a sprinkler system will be required as part of the renovation.

Fire Alarm Systems:

Section 704.4.1.5 requires that Group R-1 Occupancies be provided with a fire alarm system in accordance with MSBC/IBC Chapter 9. MSBC/ IBC Chapter 9 requires that a manual fire alarm system complete with manual pull stations at exits, horn/strobe devices and smoke detection throughout corridors be provided. Further, smoke alarms (e.g. local 110 volt device) should be provided in all bedrooms and outside of bedrooms.

A fire alarm system should be provided within the work areas based on the above requirements. An existing fire alarm panel and fire alarm system is present but the condition of the system is unknown to Howe Engineers. It is also unknown if the current system has the capability to allow additional fire alarm devices such as the waterflows and tamper switches of the sprinkler system to be incorporated into the system or if a new fire alarm system will be required.

Means of Egress - General:

The means of egress within work areas are required to comply with the following requirements of this section if the following conditions exist: (MSBC 34 705.2).

Number of Means of Egress:

The minimum number of exits is required to be in accordance with Section 102.2.2.1 (see report section above).

As previously described, the renovation spaces meet the means of egress requirements. Two (2) means of egress are provided from each floor which meets the minimum required by MSBC 34 705.4.1. One means of egress would be permitted from the second and third floor if it was enclosed.

Door Swing:

In the work area and in the egress path from the work area to the exit discharge, all egress doors serving an occupant load greater than 50 should swing in the direction of exit travel (MSBC 34 705.4.2). Where the work area exceeds 50 percent of the floor area, all doors on the floor of the work area are required to swing in the direction of egress where serving an occupant load that is greater than 50 (MSBC 34 705.4.2).

All doors that serve more than 50 people are required to swing in the direction of travel. All doors are correctly shown to swing in the direction of travel.

Door Closing:

In any work area, all doors opening onto an exit passageway at grade or an exit stair should be self-closing or automatically closing by listed closing devices. This requirement applies unless the exit enclosure is not required by the MSBC or if the means of egress are not within the work area (MSBC 34 705.4.3).

The means of egress stairs are not provided with self-closing or automatically closing devices. If the stairs are within the work area, they will be required to be upgraded.

Panic Hardware:

In any *work area*, and in the egress path from any *work area* to the exit discharge, in buildings or portions thereof of Group A assembly occupancies with an occupant load greater than 100, all required exit doors equipped with latching devices should be equipped with approved panic hardware. Where the *work area* exceeds 50 percent of the floor area, panic hardware should comply with Section 705.4.4 throughout the floor.

This section is not applicable as the space does not have Group A occupancies that exceed 100 occupants.

Dead Ends:

Dead-end corridors in any work area should not exceed 35-feet (MSBC 34 705.6).

No dead-ends exist and thus the building is in compliance with this section.

Openings in Corridor Walls:

MSBC IEBC 705.5.1 requires rated Group R-1 Occupancies be provided with Corridor doors that are minimally 1 3/8" thick within the work area. If the work area exceeds 50% of any floor area, then all doors opening onto the corridor should comply with the above criteria.

The corridor doors do not comply with the above requirements, and will need to be replaced as a portion of the renovations.

Means of Egress Lighting:

The means of egress lighting in all work areas should conform to the requirements of the MSBC for new construction. Where the work area on any floor exceeds 50 percent of that floor area, the entire floor is subject to the new construction requirements of the MSBC for means of egress lighting (MSBC 34 705.7).

It is unknown if the means of egress lighting is currently tied to backup power.

Exit Signs:

The exit signs in all work areas should conform to the requirements of the MSBC for new construction. Where the work area on any floor exceeds 50 percent of that floor area, the entire floor is subject to the new construction requirements of the MSBC for exit signage (MSBC 34 705.8).

Compliant exit signage is required to be provided and comply with this section. Currently, exit signage is provided with paper signage on Levels 1 through 3.

Accessibility:

The requirements of 521 CMR apply to the project. Refer to the Accessibility portion of this report.

Energy Conservation:

Level 2 alterations to existing buildings or structures are permitted without requiring the entire building or structure to comply with the energy requirements of the International Energy Conservation Code. The alterations (e.g. new work) should conform to the energy requirements of the International Energy Conservation Code as they relate to new construction only.

ALTERATIONS LEVEL 3

Section MSBC 34 801.2 of Level 3 alterations requires that alterations categorized as Level 3 comply both with the requirements of Chapter 6, Alterations Level 1, and Chapter 7, Alterations Level 2.

Existing Shafts and Vertical Openings:

Existing stairways that are part of the means of egress should be enclosed in accordance with Section 703.2.1 from the highest *work area* floor to, and including, the level of exit discharge and all floors below.

The existing stair will be enclosed with 1-hour rated construction if connecting more than three (3) stories. The enclosure shall not be required if the building is protected throughout by an approved automatic sprinkler system, fire alarm system, and the 2 exits are separated from one another. Another option is to have a single means of egress serving the Second and Third Floors that is enclosed, which would comply with the new construction requirements of the code.

Interior Finish:

Interior finish in exits serving the *work area* shall comply with Section 703.4 between the highest floor on which there is a *work area* to the floor of exit discharge.

Interior finish compliant with the MSBC, and as noted in the Alteration Level 1 requirements should be provided.

Automatic Sprinkler Systems:

Automatic sprinkler systems should be provided in all work areas when required by Section 704.2 or this section.

The building, assuming a gut renovation occurs, will be required to be fully sprinklered to comply with this section.

Fire Alarm and Detection Systems:

Fire alarm and detection systems complying with Sections 704.4.1 and 704.4.3 should be provided throughout the building in accordance with the MSBC.

Manual Fire Alarm Systems:

Where required by MSBC Chapter 9, a manual fire alarm system shall be provided throughout the *work area*. Alarm notification appliances shall be provided on such floors and shall be automatically activated as required by the MSBC.

If a Level 3 Alteration is performed a new fire alarm system will be provided throughout the building. The system will include manual pull stations at exits, horn/strobe devices, as well as smoke detectors in rooms and corridors.

Means-Of-Egress Lighting:

Means of egress from the highest *work area* floor to the floor of exit discharge shall be provided with artificial lighting within the exit enclosure in accordance with the requirements of the MSBC.

Means of egress lighting must be provided throughout the building to comply with this section.

Exit Signs:

Means of egress from the highest *work area* floor to the floor of exit discharge shall be provided with exit signs in accordance with the requirements of the *International Building Code*.

Compliant exit signage is required to be provided and comply with this section. Currently, exit signage is provided with paper signage on Levels 1 through 3.

Energy Conservation:

Level 3 alterations to existing buildings or structures are permitted without requiring the entire building or structure to comply with the energy requirements of the *International Energy Conservation Code*. The alterations should conform to the energy requirements of the *International Energy Conservation Code* as they relate to new construction only.

Structural:

MA IEBC Section 707.4.1 requires an engineering evaluation and analysis that establishes the structural adequacy of the altered structure to be prepared by a registered design professional and submitted to the *code official*. Any work will be required to comply with this section of the code and evaluated by a structural engineer.

Mechanical:

All reconfigured spaces intended for human occupancy should comply with the International Mechanical Code. Further, any mechanical systems that are altered, extended, or reconfigured should provide a minimum of 5 cubic feet per minute per person of outdoor air and lot less than 15 cfm of ventilation air per person, or not less than the amount of ventilation air determined by the Indoor Air Quality procedure of ASHRAE 62 (MA IEBC 709.2).

ACCESSIBILITY REQUIREMENTS – 521 CMR SCOPING LANGUAGE

For each level of Alteration defined above, The Massachusetts Architectural Access Board (MAAB) separately governs accessibility requirements. The MAAB requirements are only applicable to public spaces in a building. In a building such as 3 Bigelow Street, MAAB requirements are applicable to most spaces with the exception of employee only spaces.

MAAB application criteria for existing buildings are identified in MAAB Section 3.3. There are three (3) thresholds used to determine the extent of compliance required with MAAB provisions. These thresholds are as follows:

1. If the work being performed costs less than $100,000, then only the work being performed must comply with MAAB.

2. If the working being performed costs more than $100,000 but less than 30% of the full and fair cash value of the building, then the work being performed must comply with MAAB and the following features must be provided:

   a. An accessible public entrance **(Currently not provided);**

   b. A public accessible toilet room **(Currently not provided);**

   c. An accessible telephone **(payphones are currently provided but are not accessible)** and

   d. An accessible drinking fountain **(Not provided in the building)**

   Exception: Whether performed alone or in combination with each other, the following types of *alterations* are not subject to **521 CMR 3.3.1**, unless the cost of the work exceeds $500,000 or unless work is being performed on the entrance or toilet. (When performing exempted work, a memo stating the exempted work and its costs is required)

   Alteration work which is limited solely to electrical mechanical, or plumbing systems; to abatement of hazardous materials; or retrofit of automatic sprinklers **and** does not involve the *alteration* of any *elements* or *spaces* required to be *accessible* under 521 CMR. Where electrical outlets and controls are altered, they must comply with 521 CMR.

3. If the work being performed costs more than 30% of the full and fair cash value of the building, then the entire building must be made to comply with MAAB. Work performed that is limited solely to electrical, mechanical, or plumbing systems and that does not involve the alteration of any elements or spaces required to be accessible by MAAB, and has a total value of less than $500,000 are excluded from this threshold review [MAAB 3.3.2 (b)]. However, if any non-exempt work is permitted within the 3 year period, all exempt work must be included.

When determining the appropriate level of work as described above, the cost of the work to be used in the calculation for item 3 is all permitted work over a 3 year period.

The projected cost of the renovation versus the assessed value of the building should be provided to Howe Engineers. If the cost of the renovation exceeds 30% of the assessed value, the entire building would be required to be accessible including entrances, parking, elevator/lift, common areas and at least one accessible unit. Current deficiencies include not having an accessible toilet room, kitchen, guest room, accessible public entrances, an accessible payphone (if provided), elevator and most doors within the facility are not accessible (e.g. less than 32-inches clear and push/pull clearance issues).

Please contact of our office if you have any questions regarding the items addressed in this letter.

Prepared by,

Thomas Cucinotta, E.I.T
Fire Protection Consultant

Reviewed by,

Jeremy A. Mason, P.E
Project Director

3 Bigelow Street
Structural Condition Assessment Summary -- RSE Associates, Inc.

Issue Characterization

LS	Life Safety/Building Code Compliance
AS	Access & Security
OC	Occupant Comfort
UA	Universal Access
ER	Envelope Remediation
PF	Program Function
FP	Functional Performance
HR	Historical Repair/Restoration
ZO	Zoning Ordinance Compliance

Remediation Priority

1	Immediate Renovation
2	Moderate Renovation
3	Extensive Renovation

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Condition Characterization*	*Remediation Priority*	*Alternate Construction*	*Notes*
Site						
Structure						
High roof - attic						
sheathing	wood plank sheathing was observed to be in good condition	a more thorough investigation of the roof structure to be conducted	FP			
framing	2x6 roof joists at approx. 20" o.c.; hip and roof beams were observed to be bearing on wood posts; some water staining was observed	if the roof framing is proposed to be altered, a code investigation needs to be conducted to clarify if the roof framing needs to be upgraded to comply with the current MA Building Code	FP			
Mansard roof						
sheathing/framing	framing members covered with finishes; the roof was reported to leak during rain storms; water damage around the dormer windows was observed	leaks in the roof to be repaired to avoid further damage to the substructure; drywall to be removed to investigate condition of roof joists and sheathing; damaged wood members to be replaced	FP/HR			
Exterior Load-Bearing Walls						
sheathing	wall sheathing is covered with siding		FP			
framing	wall framing is assumed to consist of 2x_ wood framing members;		FP			
1st floor walls	damage to the corner of the exterior wall of the 1st floor bay window in bedroom 3 was observed	damage to the wood and masonry wall at the bay window on the first floor to be repaired	FP			
2nd floor walls	exterior wall at pantry of bedroom 1: drywall cracks were observed and water leaking into the building on a regular basis was reported - upon investigation it was observed that the 2x4 walls studs in this area were wet and molded	extent of deterioration needs to be verified from roof to first floor; all deteriorated framing to be replaced	FP			

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Condition Characterization*	*Remediation Priority*	*Alternate Construction*	*Notes*
	exterior wall in office: dryrot of wood framing was observed; damage is believed to be caused by leaks in the roof around the dormer windows	extent of deterioration needs to be verified; all deteriorated framing to be replaced; wall/floor framing at all exterior walls under dormers above to be investigated	FP			
Interior Load-Bearing Walls						
framing	framing members covered with finishes; framing is assumed to consist of 2x_ wood framing members; cracks and bulges were observed in the drywall of several interior walls	drywall in cracked areas to be removed to investigate if there is an underlying structural cause to the cracking and bulging	FP			
Attic Floor						
framing	2x_ wood joists		FP			
Floors						
sheathing	floor sheathing was observed to consist of wood planks		FP			
framing	floor framing covered with finishes; finishes in selected areas were removed to confirm floor framing; floor joists were observed to span between the exterior and hallway walls on all floors		FP			
1st floor framing	floor joists in basement were observed to be ranging from 2"x6"s to 2"x9.5"		FP			
2nd floor framing	cracks in the finishes of the 2nd floor bathroom were observed - upon further investigation 3.5"x_ joists at 16"-20" o.c. were observed under second floor bathroom; joists span from exterior wall to hallway wall; some deterioration of the floor sheathing was observed	capacity of second floor framing under bathroom to be investigated; strengthening of the floor framing may be required in order to minimize deflection of the joists in the bathroom; deflection criteria will depend on criteria for proposed finishes	FP			
3rd floor framing	water damage and cracks were observed in the office and bedroom 2 on the second floor - upon further investigation 2"x7.5" floor joists were observed in the third floor framing above the office; severe deterioration of the wood members at the exterior wall/floor interchange was observed	extent of deterioration needs to be verified; all deteriorated framing to be replaced; wall/floor framing at all exterior walls under dormer windows above to be checked for damages caused by the leak in the roof	FP			
beams	beams in basement were observed to be wood beams of the same depth as the floor joists; some basement beams showed signs of water damage; beams on other floors concealed behind finishes		FP			
columns	masonry columns along grid lines E.3 and E.4 were observed in the basement		FP			
Foundation						

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Condition Characterization*	*Remediation Priority*	*Alternate Construction*	*Notes*
foundation walls	conventional masonry foundation walls on conventional stone basement walls; unfinished walls observed to be damp or showing signs of water infiltration; water infiltration was reported at the street side of the mechanical room (under window); no mayor cracks in the foundation walls; mortar joints were observed to be deteriorating	water infiltration to be remediated; damaged bricks to be replaced; walls to be repointed; wood members in contact with wet foundation wall to be investigated and replaced if necessary	FP			
interior basement walls	basement walls constructed out of brick masonry; some bricks significantly eroded due to water infiltration; mortar joints were observed to be deteriorating	water infiltration into interior basement walls to be remediated; damaged bricks to be replaced; walls to be repointed	FP			
Basement						
slab-on-grade	some cracks were observed in basement slab on grade in areas that were unfinished		FP			

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BUILDING ENGINEERING RESOURCES, INC.

MEP SYSTEMS REPORT
3 BIGELOW STREET
CAMBRIDGE, MASSACHUSETTS
July 25, 2014

MECHANICAL

1. Boilers:

   Condition Description: The existing boiler is an atmospheric gas boiler, Peerless Model G-1261-WS-1. The boiler has an input rating of 440,000btu with an output of 352,000btu. The boiler is estimated to be 26 years old (1988). The boiler system is estimated to have an efficiency of 75%. The building contains one (1) gas boiler for heating with no redundancy.

   Recommendation: Replace the boiler with new high efficient (95%) gas boilers, sealed combustion, with individual combustion air and flue vents. The recommendation is for two (2) high efficiency wall pack boilers to allow for same redundancy if one (1) boiler should fail, to guarantee heating. Flue vents to discharge sidewall along the side of the building to avoid having to line the chimney, and allows for removal of the chimney.

2. Boiler Flue:

   Condition Description: The boiler and domestic hot water heater share a common chimney. The condition of the chimney and chimney liner is unknown, but based on building of this age, the chimney would be a candidate for a new liner.

   Recommendation: Reline the chimney or utilize sealed combustion heaters to avoid the need for the chimney liner. The recommended option is the use of the high efficiency boiler and water heater to allow for abandoning the chimney if it is decided to eliminate the chimney.

3. Combustion Air:

   Condition Description: The Boiler Room does not have the Code required combustion air.

   Recommendation: Replace the boiler and hot water heater with sealed combustion, high-efficiency units. The location of the Boiler Room does not allow for a Code required combustion air duct system without louvers, ductwork and controls. Large louvered openings will be required on the exterior of the building.

4. Piping and Pipe Insulation:

   Condition Description: The piping in the Boiler Room and above the basement ceiling was not insulated. This leads us to believe that none of the hot water piping is not insulated. There is visible corrosion at the boiler pump. There was no chemical treatment system in the Boiler Room. The hot water pipes most likely have fouling and corrosion built up due to the age of the system.

   Recommendation: The piping system is required to be insulated by the MA State Energy Code. Due to the age of the system and visible corrosion, the piping system would be recommended for replacement.

5. Radiators and Baseboard:

   Condition Description: The heat is provided by baseboard radiation in the basement Play Room and by individual radiators in each apartment. The radiators were most likely installed when the building was a steam system, and used for hot water when the building was converted to hot water heat. The convectors are located in a single spot in the room, and do not provide uniform heat.

   Recommendation: The radiators are large within the small rooms. The radiators should be replaced with heavy duty baseboard radiation to allow for more even heat. With a new boiler and boiler controls for a lower temperature water, for energy savings with a reset schedule, the radiators would need to be replaced to provide uniform heat distribution at the lower temperature water.

6. Heating Controls:

   Condition Description: There did not appear to be any thermostat control in the bedrooms. The heat is on in each apartment when the system is turned on. The boiler will provide a single temperature water to all rooms in the house.

   Recommendation: Individual room control, boiler reset control and zone valves/pumps are recommended to provide a more efficient system at a lower operating cost. This recommendation for individual apartment control would require re-piping the house, which would allow for insulation on the pipes and allow for a new system without out fouling and corrosion with proper chemical treatment.

7. Air Conditioning:

   Condition Description: Air conditioning is provided to the first floor office, second floor office and third floor corridor by window air conditioning units.

   Recommendation: The entire house can be air conditioned by a central Mitsubishi City-Multi System, if the City of Cambridge decides to add air conditioning. An option for the

air conditioning for the entire house is to provide one (1) air handling unit for each floor (2-ton in basement play area), 5-ton per floor (first, second, third), with condensing units located in the rear of the building, under the fire escape. If only office areas are to be air conditioned, the window air conditioning units can be removed and individual split system air conditioners, ductless split system, can be added, with air cooled condensers in rear of the building.

8. Ventilation:

   Condition Description: The house is ventilated by natural ventilation. The basement should be calculated to ensure that the operable window portion meets the Code.

   Recommendation: The apartment rooms and office areas will meet the Natural Ventilation Code. The basement most likely will not meet the Natural Ventilation Code and will need a ventilation system, as small ERV, with ductwork to louvers in basement windows.

9. Bathroom Exhaust:

   Condition Description: Most bathrooms have ceiling exhaust fans which vents to wall caps. Some bathrooms with exterior windows did not have an exhaust fan.

   Recommendation: Bathrooms require mechanical ventilation by Code. The house can have a central exhaust fan located in the attic with an exhaust grille in each bathroom. The use of a central system, ducted up to the attic, would eliminate the wall exhaust caps.

10. Kitchen Hoods:

    Condition Description: Kitchens are not currently exhausted, which would be required by current Code for a three story residential building. If the building undergoes a major renovation, the kitchens will be required to be vented to the exterior.

11. Dryer Exhaust:

    Condition Description: The dryers are gas and ducted to an exterior vent, located in a basement window.

ELECTRICAL:

1. Electric Service Capacity:

   Condition Description: The house is fed by a 200amp, 120V, 240V servicing 6 phase. The service is fed overhead from a pole across Bigelow Street to a conduit which runs down the exterior of the building, to the interior meter. The utility transformer is located on the pole across from Bigelow Street.

   Recommendation: The existing service will be adequate for the house. If air conditioning or an elevator is recommended, the existing service most likely will need to be upgraded.

2. Power (Outlets):

   Condition Description: The building does not contain enough power outlets and does not meet Code for a residential application. The spacing of the outlets is such that there are only two (2) or three (3) outlets in each main room of the apartments. Outlets are overloaded. There are GRI outlets in each kitchen but not in each bathroom.

   Recommendation: Add Code required outlets in each apartment. Add GFI outlets where required by Code. Add tamper proof outlets and arc fault breakers per today's Code.

3. Lighting:

   Condition Description: In general, the facility is poorly lit. Each apartment contains one (1) ceiling fixture in the General Room and one (1) in the Kitchen. All lighting is surface mount except for the basement which has recessed fluorescent fixtures in the Play Room. Corridors have very little light, in most cases one strip fluorescent fixture.

   Recommendation: Provide energy efficient lighting in each apartment, fluorescent or LED lights. Provide better lighting in each corridor and stairwell.

4. Emergency and Exterior Lighting:

   Condition Description: Emergency lighting is by battery units located in the corridors and stairwells. The building has exterior lighting at each door and wall pack lights for the parking lot.

5. Fire Alarm:

   Condition Description: The building contains a Firelite hard wired alarm system with a panel in the main corridor. This system is no longer manufactured and replacement parts are hard to find. There are horn strobe units in corridors and pull stations near the Exit

doors. The apartments contain system ceiling heat mounted detectors, some have three (3) detectors, some two (2) detectors and a few with one (1) detector, all located in a cluster in the Main Room, near the entry door. The extra detectors appear to be single detection smoke/CO detectors, which are required by Code.

Recommendation: Replace the fire alarm system and devices with a fully addressable system.

6. Exit Signage:

   Condition Description: There is a mix of illuminated and non-illuminated Exit signs throughout the building. The third floor is not properly covered by Exit signage especially for the main stair and fire escape rear door.

   Recommendation: Review Exit sign locations and add signage where needed on the third floor. Replace non-illuminated signs with illuminated.

7. Telephone and Cable:

   Condition Description: The telephone and Cable TV enter the building in the rear off of a telephone pole at the rear property line. The wires run overhead and enter the building in the basement Laundry Room.

8. Wiring:

   Condition Description: The wiring in the building is romex, which is allowable by Code.

PLUMBING:

1. Domestic Water Service:

   Condition Description: The domestic water meter is located in a closet in the basement, in the Play Area. The meter is an opening in the wall of the closet. There is a main water shut-off at the meter.

2. Domestic Water Heater:

   Condition Description: The building contains a gas-fired A.O. Smith, 100 gallon water heater, 275,000btu, Model BTC275A. The water heater is in good condition for its age. There did not appear to be a hot water recirculation pump on the system.

   Recommendation: The domestic water heater shares the chimney with the HVAC boiler. The water heater is in the same room as the HVAC boiler and does not have proper combustion air. Replace the water heater with a high efficiency boiler with sealed combustion and sidewall vents.

3. Domestic Water Piping:

   Condition Description: The domestic water piping is copper, un-insulated throughout the house.

   Recommendation: Insulate the hot and cold water piping throughout.

4. Plumbing Fixtures:

   Condition Description: The plumbing fixtures in the facility are old. Toilets are all tank type. Sinks are wall hung except the common bathrooms on the third floor. All the piping to the fixtures is run in the drywall with little to no access for local shut-off.

5. Gas:

   Condition Description: A large gas meter is located outside on the left side of the building. Gas piping is concealed above dry wall, with service to the Boiler Room, dryer and apartment stoves.

6. Sanitary Waste:

   Condition Description: The sanitary waste piping is old and has signs of corrosion. There are old pipes in the basement which have had leaks due to age. Some PVC piping is located in the basement, most likely due to replacement from a leak. The system is reported to have had sanitary back-ups, which may be caused by either blockage in the system, cracked or broken pipe, or is part of a combined sanitary/storm system. Further scoping of the underground piping is required to determine the condition of the line from the building to the street.

B | E | R

BUILDING ENGINEERING RESOURCES, INC.

Engineering Economic Analysis

3 Bigelow Street
Cambridge, MA

BER Project #14112

September 11, 2014

Prepared by:
Geraldo Alba

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Building & System Design Parameters

Options	System	Wall Insulation R-Value	Roof Insulation R-Value	Window U-Value	Cooling Efficiency	Heating Efficiency
Baseline	Existing Condition - Hot Water Boiler with Window A/C	5.36	14.8	0.982	10 EER	75%
Option-1	Proposed Upgraded Boiler & Insulation - High Efficiency Hot Water Boiler with Split System A/C	21.46 (Code Minimum = 20)	50.86 (Code Minimum = 49)	0.315 (Code Minimum = .32)	11 EER	92%
Option-2	Proposed Upgraded Variable Refrigerant Flow System & Insulation	21.46 (Code Minimum = 20)	50.86 (Code Minimum = 49)	0.315 (Code Minimum = .32)	12.9 EER	3.3 COP

Building & System Design Utility Cost

Options	System	Annual Electric Consumption (kWh)	Annual Gas Consumption (Therm)	Annual Electric Cost	Annual Gas Cost	Combined Utility Cost	Combined Annual Savings - From Baseline
Baseline	Existing Condition - Hot Water Boiler with Window A/C	6,576	4,020	$921	$5,628	$6,549	-
Option-1	Proposed Upgraded Boiler & Insulation - High Efficiency Hot Water Boiler with Split System A/C	4,811	350	$674	$490	$1,164	$5,385
Option-2	Proposed Upgraded Variable Refrigerant Flow System & Insulation	7,503	0	$1,050	$0	$1,050	$5,499

Annual Cost Summary

14112- 3 Bigelow ST. Cambridge, MA 09/11/2014
BER 01:50PM

Table 1. Annual Costs

Component	Base Line - Exisiting Condition ($)	Option 1 - Upgraded Boiler & envelope ($)	Option 2 - VRF & Upgraded Envelope ($)
Air System Fans	0	0	0
Cooling	830	659	564
Heating	5,628	490	486
Pumps	91	14	0
Heat Rejection Fans	0	0	0
HVAC Sub-Total	**6,549**	**1,164**	**1,050**
Lights	1,383	1,383	1,383
Electric Equipment	988	988	988
Misc. Electric	0	0	0
Misc. Fuel Use	0	0	0
Non-HVAC Sub-Total	**2,371**	**2,371**	**2,371**
Grand Total	**8,920**	**3,535**	**3,422**

Table 2. Annual Cost per Unit Floor Area

Component	Base Line - Exisiting Condition ($/ft²)	Option 1 - Upgraded Boiler & envelope ($/ft²)	Option 2 - VRF & Upgraded Envelope ($/ft²)
Air System Fans	0.000	0.000	0.000
Cooling	0.172	0.137	0.117
Heating	1.165	0.102	0.101
Pumps	0.019	0.003	0.000
Heat Rejection Fans	0.000	0.000	0.000
HVAC Sub-Total	**1.356**	**0.241**	**0.218**
Lights	0.286	0.286	0.286
Electric Equipment	0.205	0.205	0.205
Misc. Electric	0.000	0.000	0.000
Misc. Fuel Use	0.000	0.000	0.000
Non-HVAC Sub-Total	**0.491**	**0.491**	**0.491**
Grand Total	**1.847**	**0.732**	**0.709**
Gross Floor Area (ft²)	4830.0	4830.0	4830.0
Conditioned Floor Area (ft²)	4830.0	4830.0	4830.0

Note: Values in this table are calculated using the Gross Floor Area.

Table 3. Component Cost as a Percentage of Total Cost

Component	Base Line - Exisiting Condition (%)	Option 1 - Upgraded Boiler & envelope (%)	Option 2 - VRF & Upgraded Envelope (%)
Air System Fans	0.0	0.0	0.0
Cooling	9.3	18.6	16.5
Heating	63.1	13.9	14.2
Pumps	1.0	0.4	0.0
Heat Rejection Fans	0.0	0.0	0.0
HVAC Sub-Total	**73.4**	**32.9**	**30.7**
Lights	15.5	39.1	40.4
Electric Equipment	11.1	27.9	28.9
Misc. Electric	0.0	0.0	0.0
Misc. Fuel Use	0.0	0.0	0.0
Non-HVAC Sub-Total	**26.6**	**67.1**	**69.3**
Grand Total	**100.0**	**100.0**	**100.0**

Table 1. Annual Costs

Component	Base Line - Exisiting Condition ($)	Option 1 - Upgraded Boiler & envelope ($)	Option 2 - VRF & Upgraded Envelope ($)
HVAC Components			
Electric	921	674	1,050
Natural Gas	5,628	490	0
Fuel Oil	0	0	0
Propane	0	0	0
Remote HW	0	0	0
Remote Steam	0	0	0
Remote CW	0	0	0
HVAC Sub-Total	**6,549**	**1,164**	**1,050**
Non-HVAC Components			
Electric	2,371	2,371	2,371
Natural Gas	0	0	0
Fuel Oil	0	0	0
Propane	0	0	0
Remote HW	0	0	0
Remote Steam	0	0	0
Non-HVAC Sub-Total	**2,371**	**2,371**	**2,371**
Grand Total	**8,920**	**3,535**	**3,422**

Table 2. Annual Energy Consumption

Component	Base Line - Exisiting Condition	Option 1 - Upgraded Boiler & envelope	Option 2 - VRF & Upgraded Envelope
HVAC Components			
Electric (kWh)	6,576	4,811	7,503
Natural Gas (*)	4,020	350	0
Fuel Oil (na)	0	0	0
Propane (na)	0	0	0
Remote HW (na)	0	0	0
Remote Steam (na)	0	0	0
Remote CW (na)	0	0	0
Non-HVAC Components			
Electric (kWh)	16,938	16,938	16,938
Natural Gas (*)	0	0	0
Fuel Oil (na)	0	0	0
Propane (na)	0	0	0
Remote HW (na)	0	0	0
Remote Steam (na)	0	0	0
Totals			
Electric (kWh)	23,515	21,749	24,441
Natural Gas (*)	4,020	350	0
Fuel Oil (na)	0	0	0
Propane (na)	0	0	0
Remote HW (na)	0	0	0
Remote Steam (na)	0	0	0
Remote CW (na)	0	0	0

(*) Energy Units differ among Buildings.

Table 3. Annual Emissions

Component	Base Line - Exisiting Condition	Option 1 - Upgraded Boiler & envelope	Option 2 - VRF & Upgraded Envelope
CO2 Equivalent (lb)	0	0	0

Table 4. Annual Cost per Unit Floor Area

Component	Base Line - Exisiting Condition ($/ft²)	Option 1 - Upgraded Boiler & envelope ($/ft²)	Option 2 - VRF & Upgraded Envelope ($/ft²)
HVAC Components			
Electric	0.191	0.140	0.218
Natural Gas	1.165	0.102	0.000
Fuel Oil	0.000	0.000	0.000
Propane	0.000	0.000	0.000
Remote HW	0.000	0.000	0.000
Remote Steam	0.000	0.000	0.000
Remote CW	0.000	0.000	0.000
HVAC Sub-Total	**1.356**	**0.241**	**0.218**
Non-HVAC Components			
Electric	0.491	0.491	0.491
Natural Gas	0.000	0.000	0.000
Fuel Oil	0.000	0.000	0.000
Propane	0.000	0.000	0.000
Remote HW	0.000	0.000	0.000
Remote Steam	0.000	0.000	0.000
Non-HVAC Sub-Total	**0.491**	**0.491**	**0.491**
Grand Total	**1.847**	**0.732**	**0.709**
Gross Floor Area (ft²)	4830.0	4830.0	4830.0
Conditioned Floor Area (ft²)	4830.0	4830.0	4830.0

Note: Values in this table are calculated using the Gross Floor Area.

Table 5. Component Cost as a Percentage of Total Cost

Component	Base Line - Exisiting Condition (%)	Option 1 - Upgraded Boiler & envelope (%)	Option 2 - VRF & Upgraded Envelope (%)
HVAC Components			
Electric	10.3	19.1	30.7
Natural Gas	63.1	13.9	0.0
Fuel Oil	0.0	0.0	0.0
Propane	0.0	0.0	0.0
Remote HW	0.0	0.0	0.0
Remote Steam	0.0	0.0	0.0
Remote CW	0.0	0.0	0.0
HVAC Sub-Total	**73.4**	**32.9**	**30.7**
Non-HVAC Components			
Electric	26.6	67.1	69.3
Natural Gas	0.0	0.0	0.0
Fuel Oil	0.0	0.0	0.0
Propane	0.0	0.0	0.0
Remote HW	0.0	0.0	0.0
Remote Steam	0.0	0.0	0.0
Non-HVAC Sub-Total	**26.6**	**67.1**	**69.3**
Grand Total	**100.0**	**100.0**	**100.0**

Air System Design Load Summary for Base Line - Existing

Project Name: 14112- 3 Bigelow ST. Cambridge, MA 09/11/2014
Prepared by: BER 01:51PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1700 COOLING OA DB / WB 89.5 °F / 72.6 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 7.0 °F / 4.9 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	630 ft²	28589	-	630 ft²	-	-
Wall Transmission	5202 ft²	36658	-	5202 ft²	61101	-
Roof Transmission	2400 ft²	7242	-	2400 ft²	10214	-
Window Transmission	630 ft²	7768	-	630 ft²	38978	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	1610 ft²	0	-	1610 ft²	8870	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	3381 W	11031	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	2415 W	7951	-	0	0	-
People	18	3479	2108	0	0	0
Infiltration	-	11729	12098	-	51065	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	11445	1421	20%	34046	0
>> Total Zone Loads	**-**	**125892**	**15627**	**-**	**204274**	**0**
Zone Conditioning	-	167660	15627	-	201591	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	7021 CFM	0	-	7021 CFM	0	-
Ventilation Load	0 CFM	0	0	0 CFM	0	0
Supply Fan Load	7021 CFM	0	-	7021 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**167660**	**15627**	**-**	**201591**	**0**
Central Cooling Coil	-	167660	15627	-	0	0
Zone Heating Unit Coils	-	0	-	-	201590	-
>> Total Conditioning	**-**	**167660**	**15627**	**-**	**201590**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

Air System Design Load Summary for Option 1 - Upgraded Boiler

Project Name: 14112- 3 Bigelow ST. Cambridge, MA 09/11/2014
Prepared by: BER 01:51PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1700 COOLING OA DB / WB 89.5 °F / 72.6 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 7.0 °F / 4.9 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	630 ft²	20188	-	630 ft²	-	-
Wall Transmission	5202 ft²	9098	-	5202 ft²	15271	-
Roof Transmission	2400 ft²	2411	-	2400 ft²	2973	-
Window Transmission	630 ft²	2492	-	630 ft²	12502	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	1610 ft²	0	-	1610 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	3381 W	11031	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	2415 W	7951	-	0	0	-
People	18	3479	2108	0	0	0
Infiltration	-	4552	4809	-	19819	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	6120	692	20%	10113	0
>> Total Zone Loads	**-**	**67321**	**7609**	**-**	**60679**	**0**
Zone Conditioning	-	93039	7609	-	59953	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	3722 CFM	0	-	3722 CFM	0	-
Ventilation Load	0 CFM	0	0	0 CFM	0	0
Supply Fan Load	3722 CFM	0	-	3722 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**93039**	**7609**	**-**	**59953**	**0**
Central Cooling Coil	-	93039	7609	-	0	0
Zone Heating Unit Coils	-	0	-	-	59953	-
>> Total Conditioning	**-**	**93039**	**7609**	**-**	**59953**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

Air System Design Load Summary for Option 2 - VRF

Project Name: 14112- 3 Bigelow ST. Cambridge, MA 09/11/2014
Prepared by: BER 01:51PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1700 COOLING OA DB / WB 89.5 °F / 72.6 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 7.0 °F / 4.9 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	630 ft²	20188	-	630 ft²	-	-
Wall Transmission	5202 ft²	9098	-	5202 ft²	15271	-
Roof Transmission	2400 ft²	2411	-	2400 ft²	2973	-
Window Transmission	630 ft²	2492	-	630 ft²	12502	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	1610 ft²	0	-	1610 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	3381 W	11031	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	2415 W	7951	-	0	0	-
People	18	3479	2108	0	0	0
Infiltration	-	4552	4638	-	19819	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	6120	675	20%	10113	0
>> Total Zone Loads	**-**	**67321**	**7420**	**-**	**60679**	**0**
Zone Conditioning	-	78908	7420	-	60332	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Exhaust Fan Load	0 CFM	0	-	0 CFM	0	-
Ventilation Load	0 CFM	0	0	0 CFM	0	0
Ventilation Fan Load	0 CFM	0	-	0 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	**-**	**78908**	**7420**	**-**	**60332**	**0**
Terminal Unit Cooling	-	78908	7454	-	0	0
Terminal Unit Heating	-	0	-	-	60332	-
>> Total Conditioning	**-**	**78908**	**7454**	**-**	**60332**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

Infrared Diagnostic LLC

Customer Name: YWCA Cambridge Family Shelter

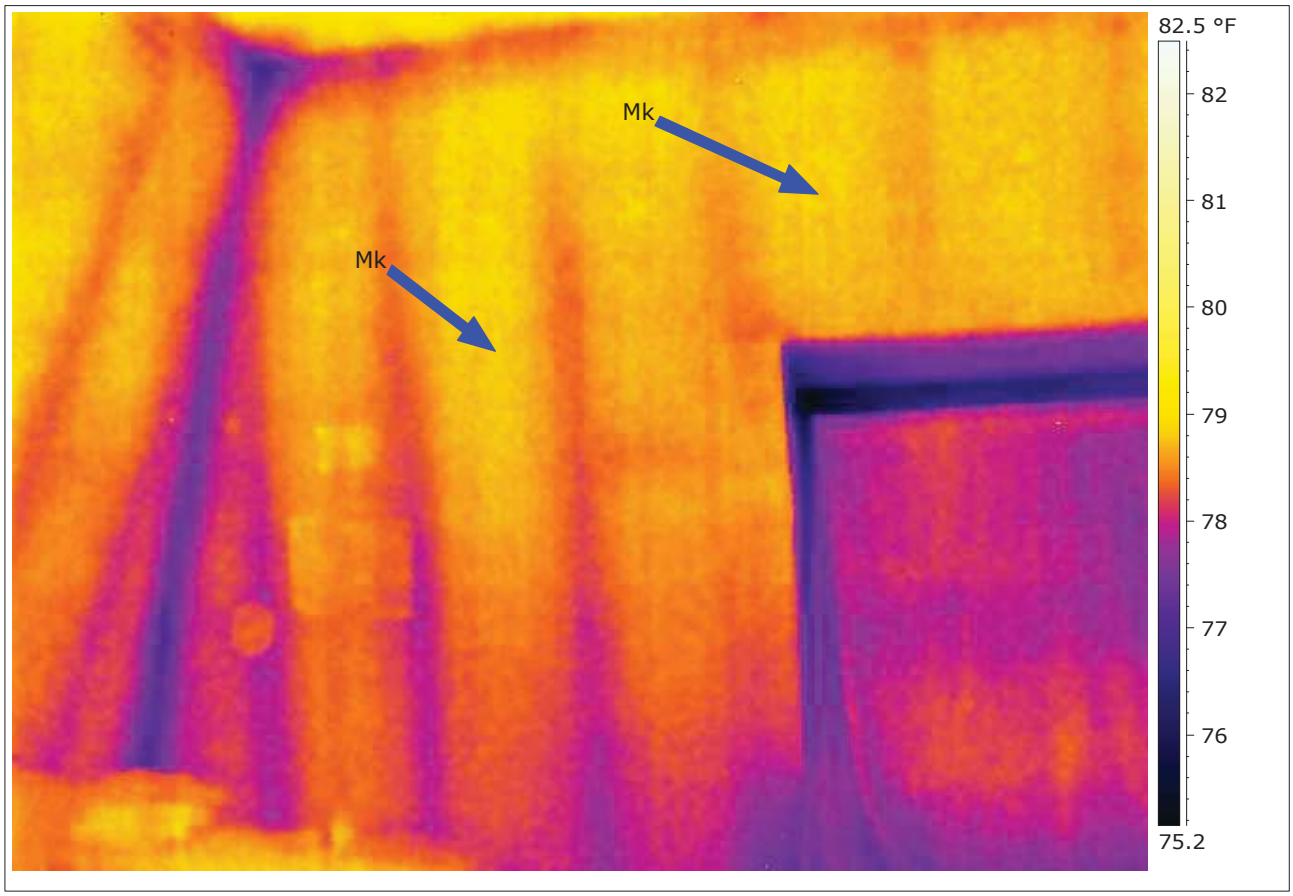
Address: 3 Bigelow Road Cambridge MA **Date:** July 18, 2014

Infrared Diagnostic Report

The infrared diagnostic service provided are limited to areas that can be accessed safely without moving storage, furniture, window treatments and other objects. Building panels and electrical panels will not be removed. Any questions or concerns with this report must be forwarded in writing to Infrared Diagnostic LLC within 7 days of receiving this report. The Infrared Diagnostic Report does not provide any warranties or guarantees. Any recommendations in this report must be further evaluated by a licensed contractor prior to making any improvements or alterations to the structure.

The infrared image on the top represents the surface temperatures at the time of taking the infrared image. The white and yellow colours represent warmer surfaces and the blue and black colours represent the colder surfaces.

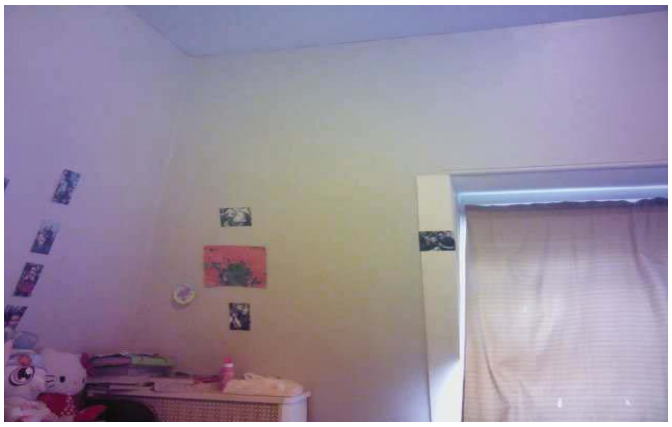
Saturday, 19 July 2014



Location: 3rd fl. Bedroom #7

Date	7/18/2014
Image Time	10:36:05 AM
Image Camera Type	FLIR T640
Image Serial Number	55900767
Image Camera Lens	FOL13

Severity: (1 = High - 5 = Low) : 2

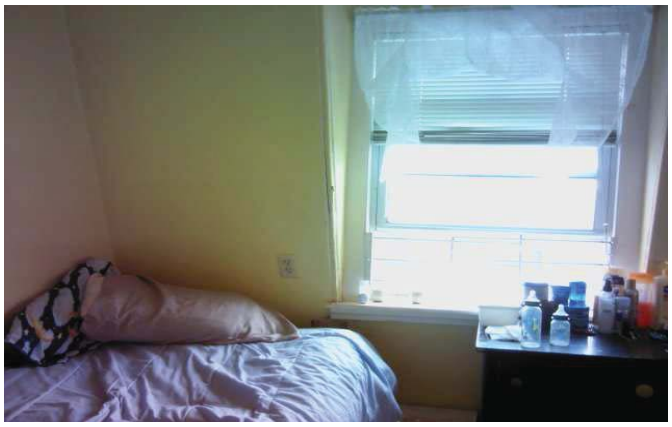


Comments: Infrared image shows warmer wall surface between framing studs. This indicates no insulation present in walls causing the solar heat to warm up the interior wall surface more between the studs.

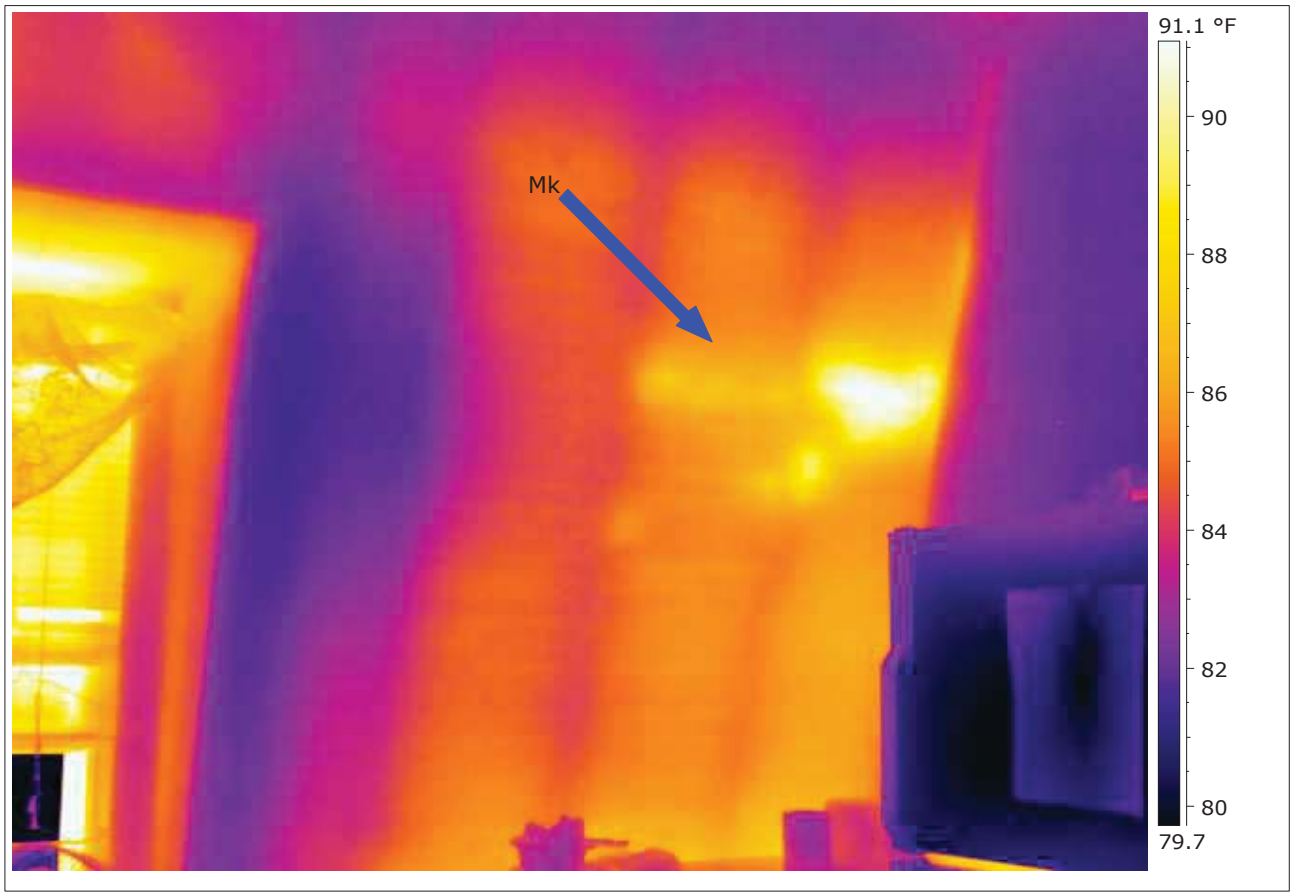
Location: 3rd fl. Room #9

Date	7/18/2014
Image Time	10:46:46 AM
Image Camera Type	FLIR T640
Image Serial Number	55900767
Image Camera Lens	FOL13

Severity: (1 = High - 5 = Low) : 1



Comments: Cooler wall surface at window where moisture penetration is present. Window flashing needs further evaluation.

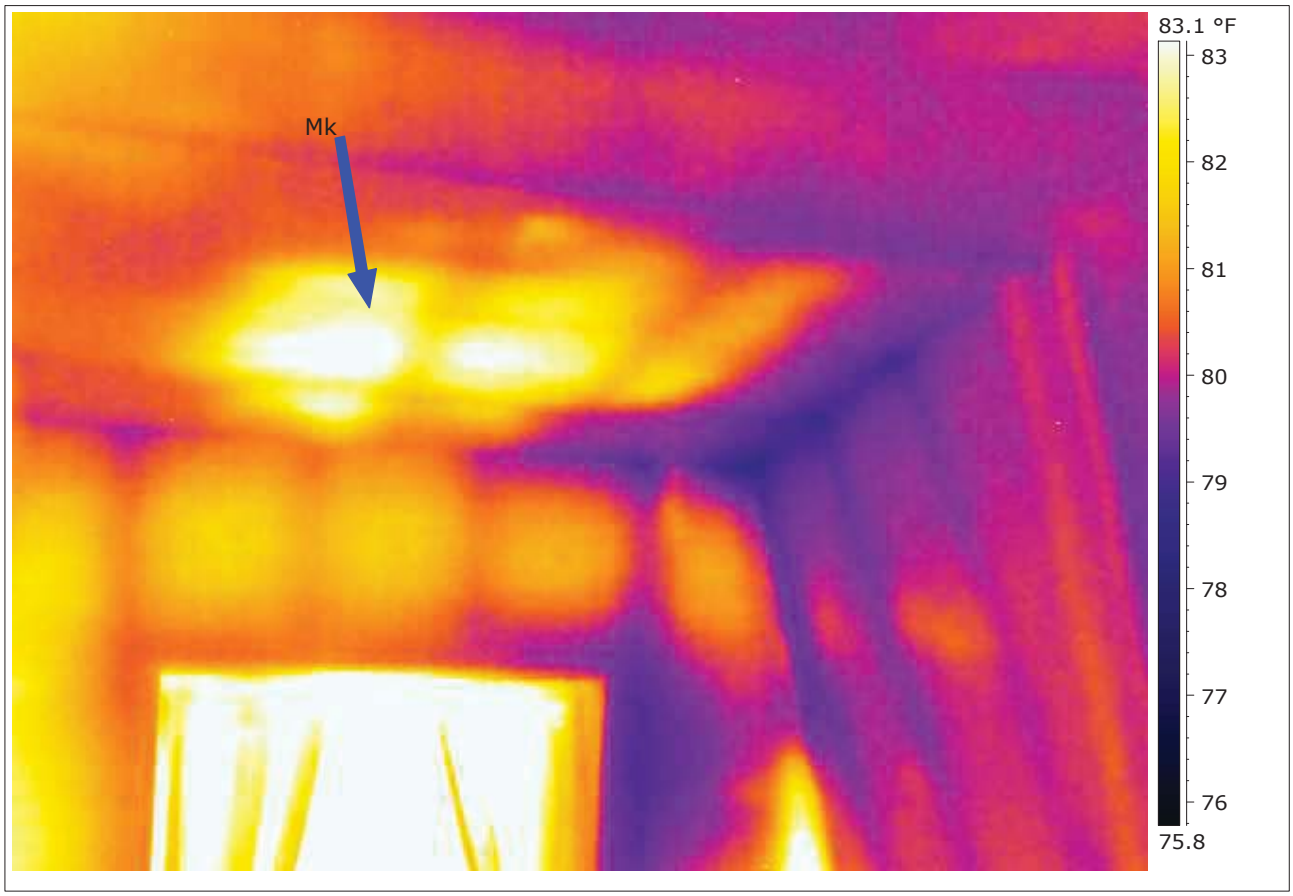


Location: 3rd fl. kitchen

Date	7/18/2014
Image Time	10:47:46 AM
Image Camera Type	FLIR T640
Image Serial Number	55900767
Image Camera Lens	FOL13

Severity: (1 = High - 5 = Low) : 2

Comments: Infrared image shows warmer wall surface between framing studs. This indicates no insulation present in walls causing the solar heat to warm up the interior wall surface more between the studs.

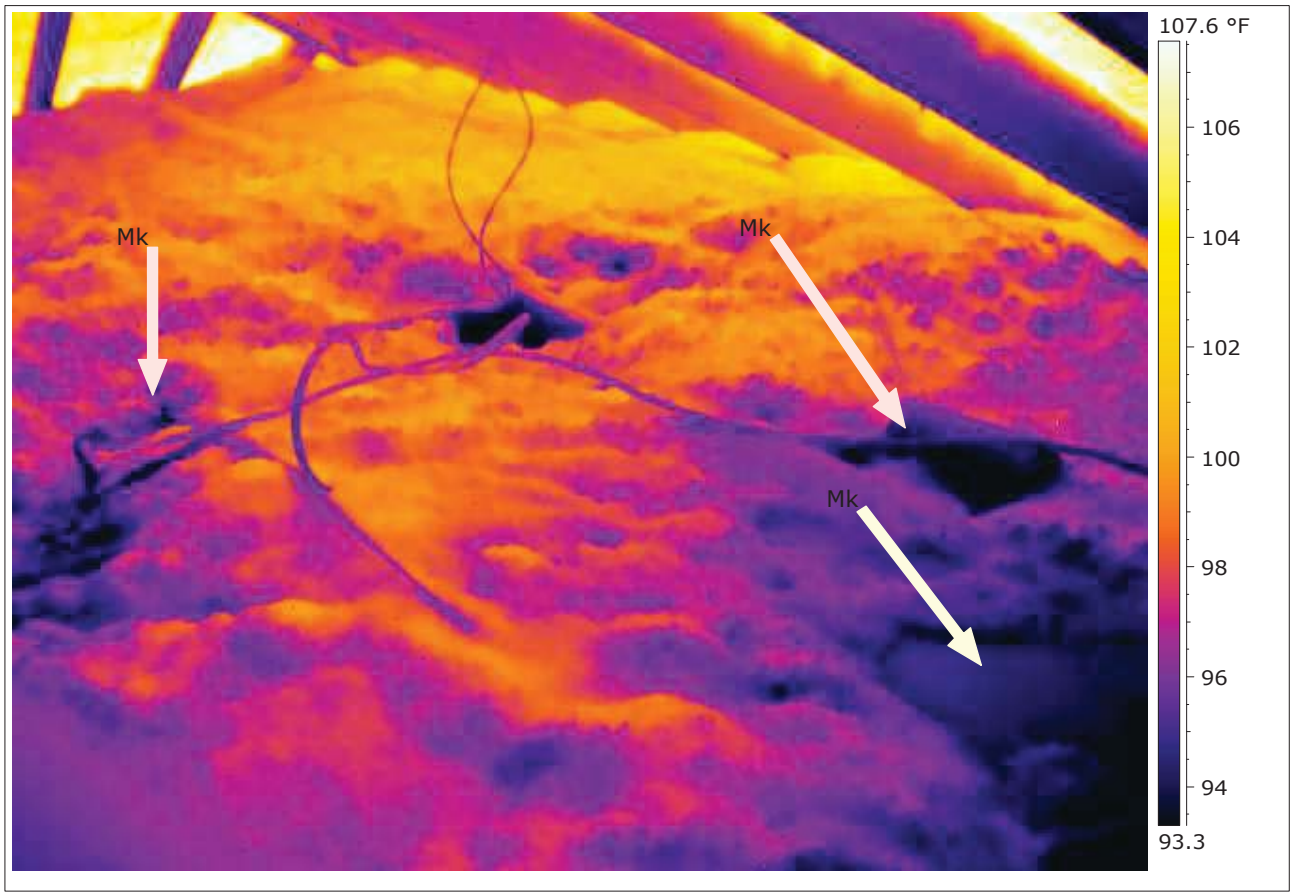


Location: 3rd floor sitting room, bump out

Date	7/18/2014
Image Time	10:48:28 AM
Image Camera Type	FLIR T640
Image Serial Number	55900767
Image Camera Lens	FOL13

Severity: (1 = High - 5 = Low) : 2

Comments: Warmer ceiling indicates inadequate insulation in attic.

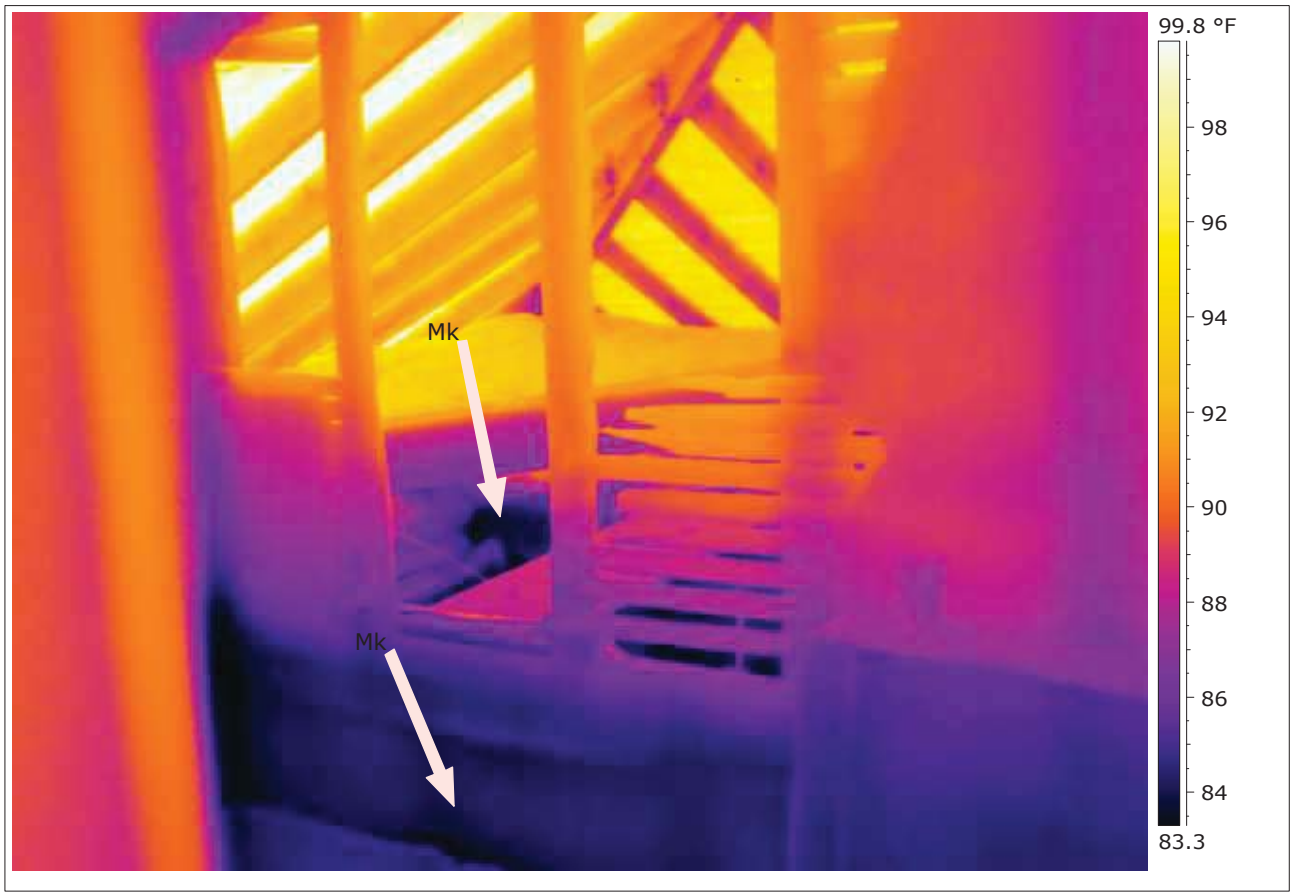


Location: Attic

Date	7/18/2014
Image Time	10:51:31 AM
Image Camera Type	FLIR T640
Image Serial Number	55900767
Image Camera Lens	FOL13

Severity: (1 = High - 5 = Low) : 2

Comments: Uneven insulation in attic. Inadequate air sealing between conditioned space and the attic. Recommend insulating and air sealing using closed cell spray foam insulation.

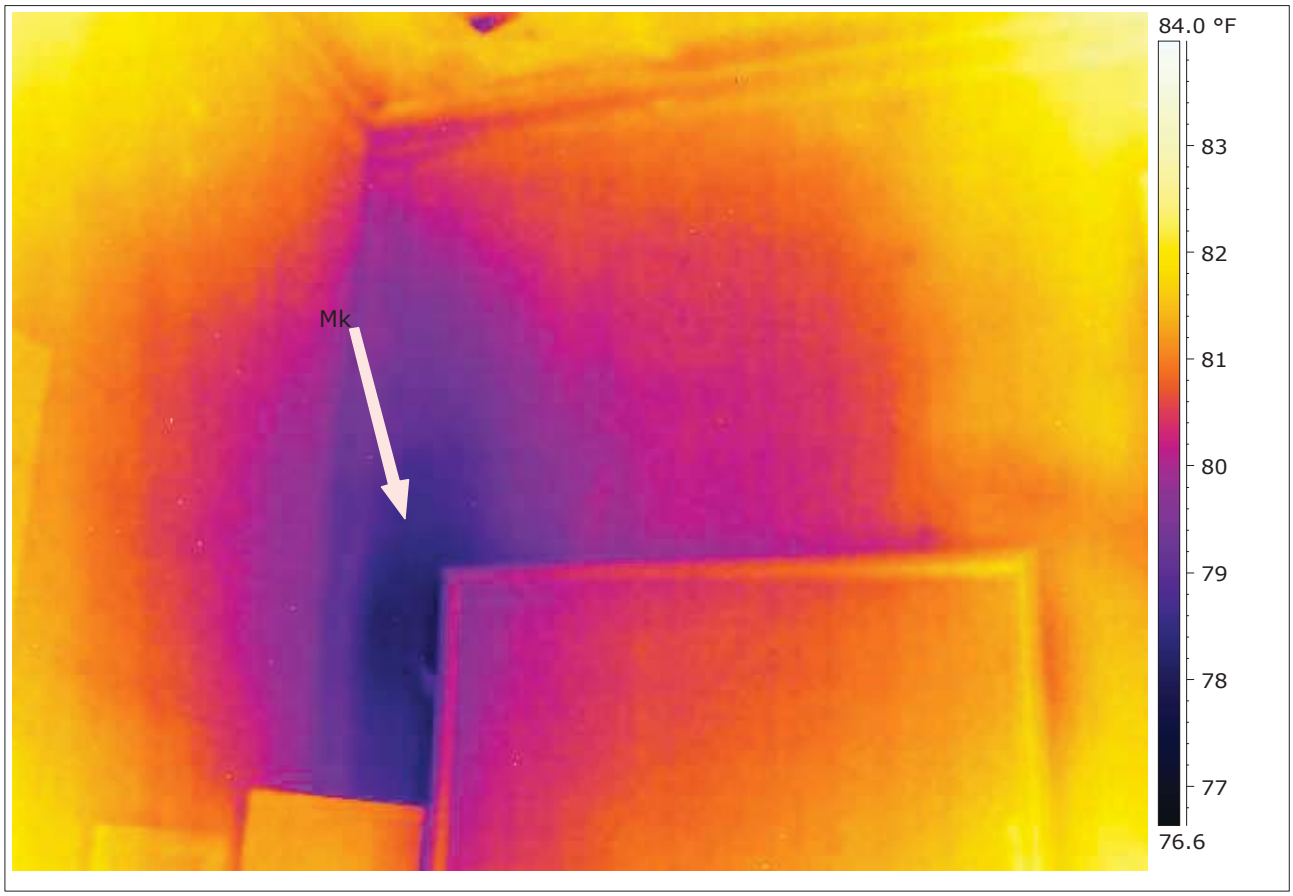


Location: Attic

Date	7/18/2014
Image Time	10:52:32 AM
Image Camera Type	FLIR T640
Image Serial Number	55900767
Image Camera Lens	FOL13

Severity: (1 = High - 5 = Low) : 2

Comments: Uneven insulation in attic. Inadequate air sealing between conditioned space and the attic. Recommend insulating and air sealing using closed cell spray foam insulation.



Location: 2nd floor office

Date	7/18/2014
Image Time	11:04:26 AM
Image Camera Type	FLIR T640
Image Serial Number	55900767
Image Camera Lens	FOL13

Severity: (1 = High - 5 = Low) : 3

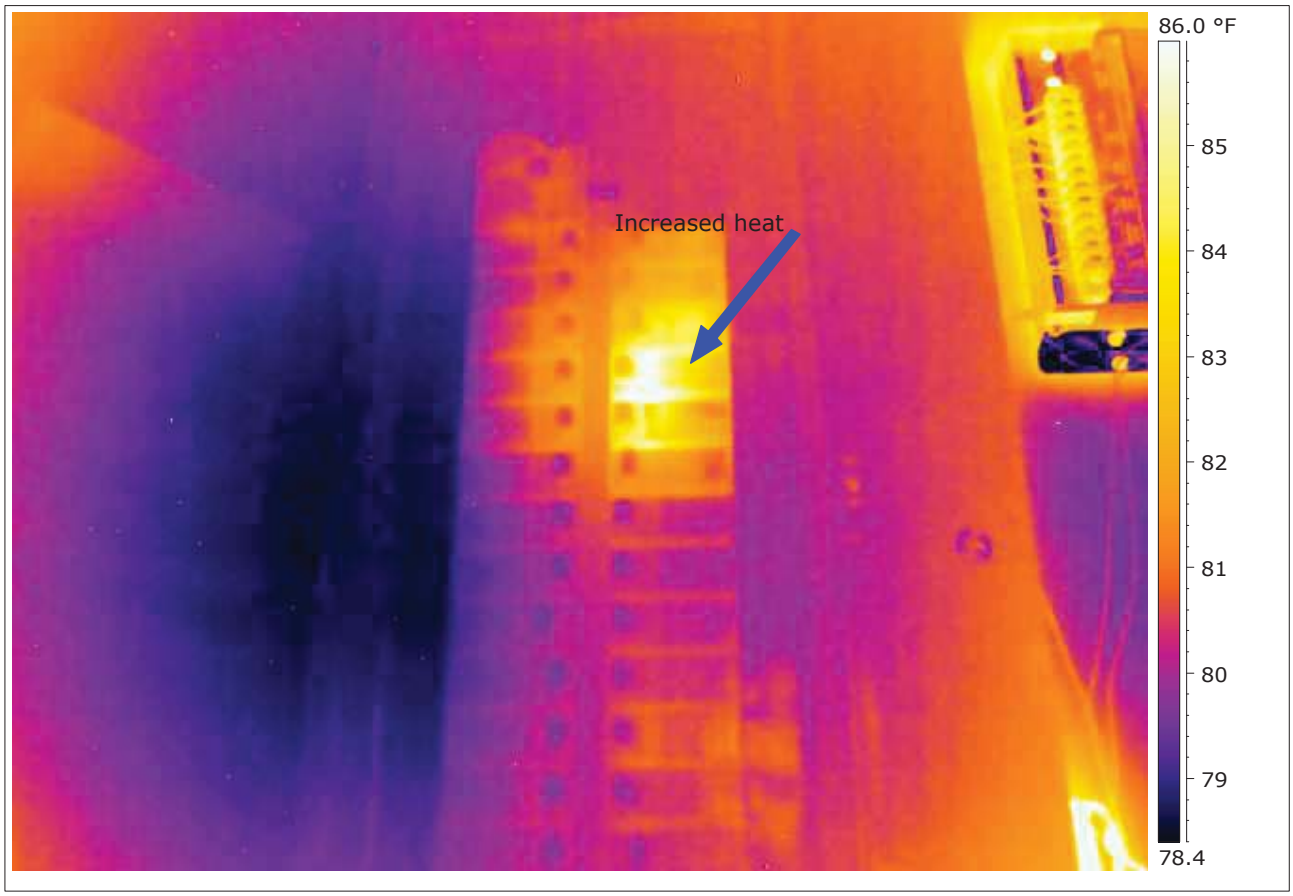
Comments: Colder area on wall indicates moisture on wall. Possible caused by window or flashing defect above.

Location: 1st. Fl. Room #3

Date	7/18/2014
Image Time	11:13:31 AM
Image Camera Type	FLIR T640
Image Serial Number	55900767
Image Camera Lens	FOL13

Severity: (1 = High - 5 = Low) : 2

Comments: Colder area on wall indicates moisture on wall. Possible caused by window or flashing defect above.



Location: Basement

Date	7/18/2014
Image Time	11:22:24 AM
Image Camera Type	FLIR T640
Image Serial Number	55900767
Image Camera Lens	FOL13

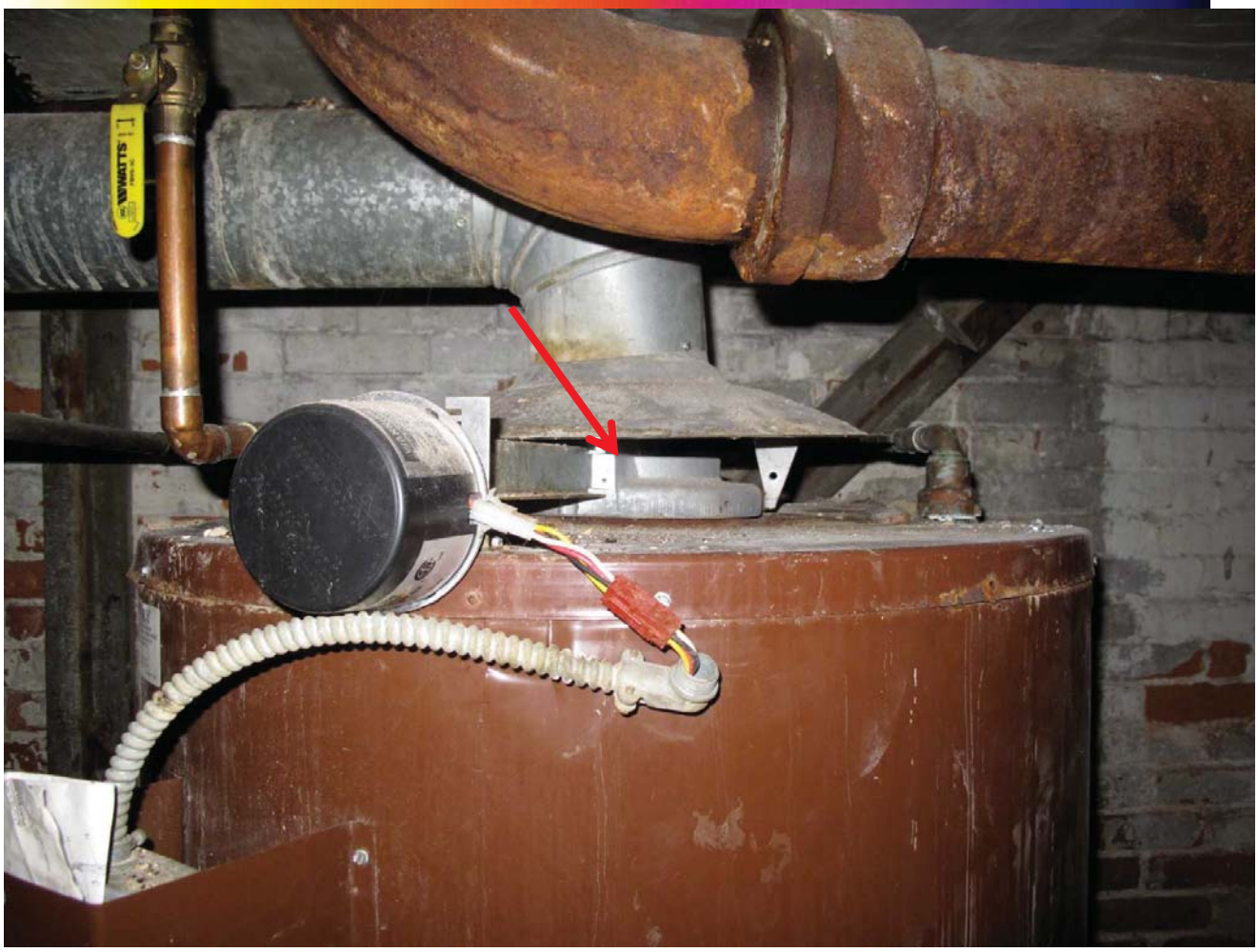
Severity: (1 = High - 5 = Low) : 3

Comments: Increased heat on circuit breakers are either cost by slight overload or improper connections such as loose wire or corrosion.

Damage to exterior building envelope causes increased heat loss and air infiltration.

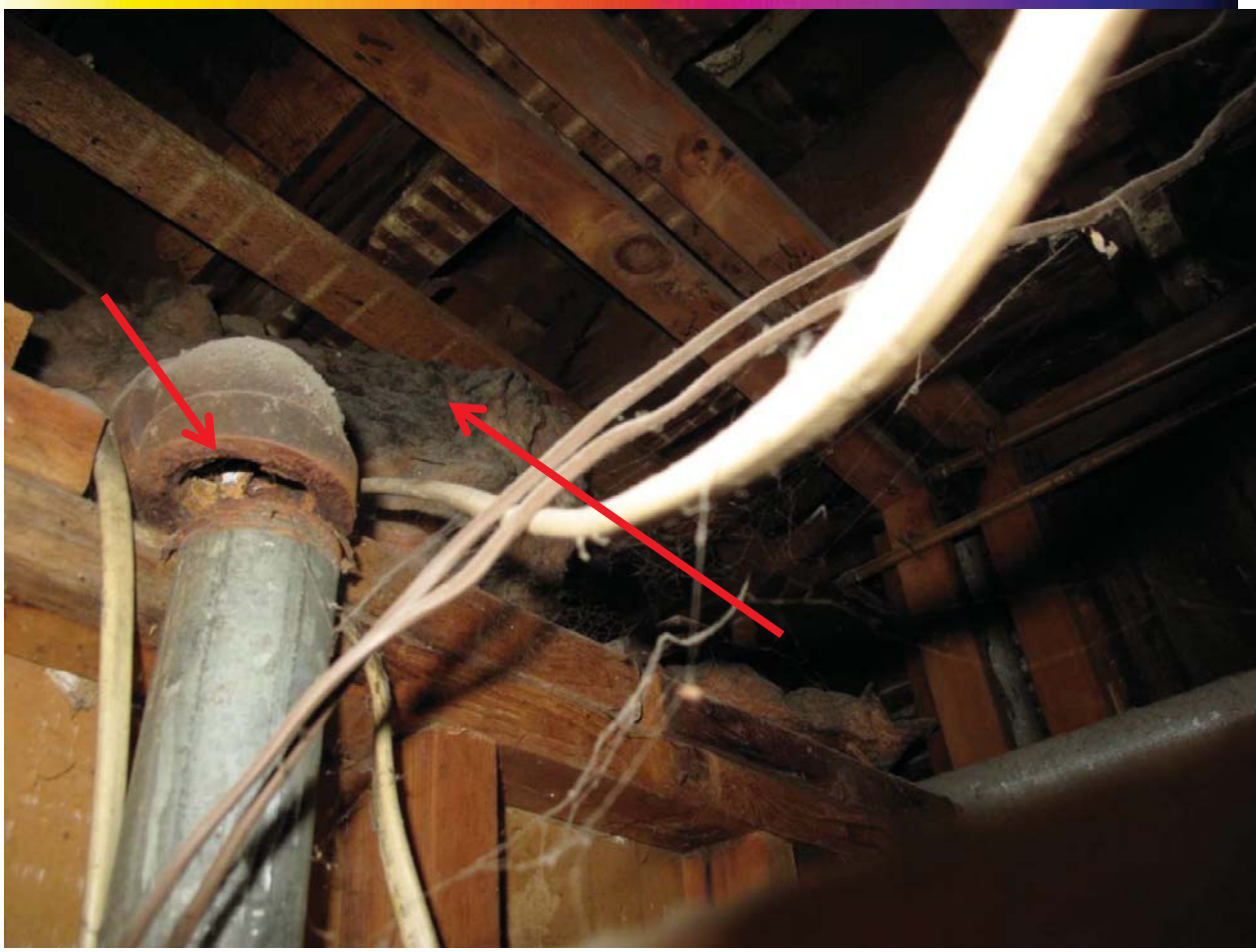
Playroom in the basement is located right next to the improperly vented boiler and water heater.

Moisture stain on basement floor caused by leaks from the foundation.



Older atmospheric vented water heater is not safe. Inadequate supply of combustion air for the size of the water heater. Water heater should be replaced with a sealed combustion system.

Older atmospheric vented boiler and water heater in confined space is not safe because of inadequate combustion air supply. System should be replaced with sealed combustion systems.

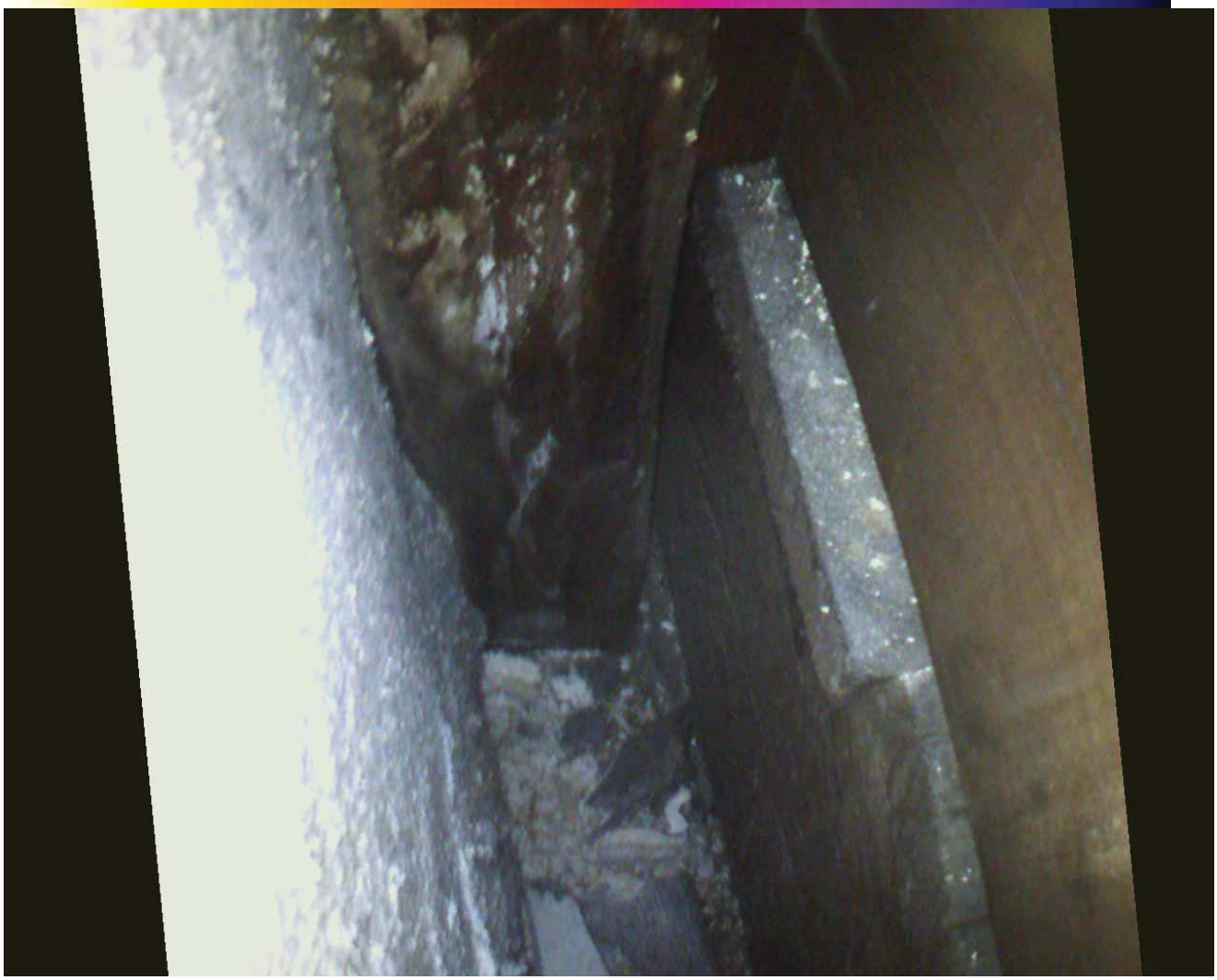


Room 4, first-floor bathroom
Plumbing pipe is disconnected in the ceiling, rusted out. Inadequate insulation and air sealing between floors causes increased draft, condensation and heat loss.

Room 4, first-floor bathroom
Inadequate insulation and air sealing between floors causes increased draft, condensation and heat loss.

Second-floor office
the view from the cut hole in the ceiling to it's the exterior walls indicates moisture damage and rot to the framing members. Some structural repairs may be needed.

View of wall cavity on the third-floor with video scope camera indicates no insulation installed.



View of wall cavity on the third-floor with video scope camera indicates no insulation installed.

Conclusion:

Unfortunately with the temperature difference between the outside and the interior about the same it was not possible to do an extensive infrared scan of the building envelope. However from the limited inspection performed today it is clear that both thermal issues, moisture issues and safety issues such as the current heating and domestic hot water systems are in badly need of improvements and replacement.

With the current window installation and the proposed window replacement extra care should be taken to make sure that the current window flashing is working properly and capable of keeping moisture out from the building envelope. As interior walls are opened up it will be more evident if any of the windows have had passed leaking problems. It is critical to determine whether the leak is coming from the actual window or from window flashing since some of the window flashing may not be scheduled for replacement or improvement.

Concerning the upgrade of the building envelope thermal capacity is recommended that close cell spray foam be used because of the limited space for insulation. Close cell spray foam insulation should be used the entire way from the basement slab to the underside of the roof.

The moisture issues in the basement should be addressed prior to insulating the basement. Some of the moisture issues should be addressed from the exterior by installing proper gutter and downspout drainage systems as well as making sure that any surface water is drained away from the foundation. In terms of the interior of the basement foundation a drainage mat system should be installed on the foundation with a connection to a French drain and sump pump system.

Please call me at 978-440-9900 or email me at info@infrareddiagnostic.com with any questions.

Thank you,

Flemming Lund
Infrared Diagnostic LLC

Limited Hazardous Building Materials Inspection

3 Bigelow Street
Cambridge, Massachusetts
June 20 & July 18, 2014

LDa Architecture & Interiors

Cambridge, MA

August 01, 2014

FUSS & O'NEILL
EnviroScience, LLC

Fuss & O'Neill EnviroScience, LLC
50 Redfield Street, Suite 100
Boston, Massachusetts 02122

Project No. 20140371.A1E

FUSS & O'NEILL
EnviroScience, LLC

August 1, 2014

Mr. Michael Waters, AIA
Principal
LDa Architecture & Interiors
222 Third Street, Suite 3212
Cambridge, MA 02142

RE: Limited Hazardous Building Materials Inspection
3 Bigelow Street
Cambridge, MA
Fuss & O'Neill EnviroScience, LLC No. 20140371.A1E

Dear Mr. Waters:

Enclosed is the limited hazardous building materials inspection summary report for 3 Bigelow Street located in Cambridge, Massachusetts.

On June 20 and July 18, 2014, Fuss & O'Neill EnviroScience, LLC (EnviroScience) Commonwealth of Massachusetts-certified Asbestos Inspectors performed a limited asbestos inspection, a lead-based paint screening, radon gas sampling, a limited indoor air quality assessment and sampling, and an inventory of fluorescent light ballasts and mercury-containing equipment prior to proposed renovations.

The information summarized in this report is solely for the abovementioned materials. The work was performed in accordance with our written scope of services dated April 8, 2014.

If you have any questions regarding the contents of this report, please do not hesitate to contact me at 617-282-4375, extension 4703. Thank you for this opportunity to have served your environmental needs.

Sincerely,

Dustin Diedricksen
Project Manager

DD/ftc

Enclosure

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Connecticut
Massachusetts
Rhode Island
South Carolina

FUSS & O'NEILL EnviroScience, LLC

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LDa Architecture & Interiors

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1 Introduction

On June 20 and July 18, 2014, Fuss & O'Neill EnviroScience, LLC (EnviroScience) representatives, Mr. Jonathan Hand and Mr. Robert Mallett, performed a limited hazardous building materials inspection prior to proposed renovations to the apartment building located at 3 Bigelow Street in Cambridge, Massachusetts (the "Site").

The work was performed for LDa Architecture & Interiors (the "Client") in accordance with our written scope of services dated April 8, 2014. This inspection report is subject to the limitations presented in *Appendix A*. The scope of work included the following:

- Limited Asbestos-Containing Materials (ACM) inspection;
- Lead-Based Paint (LBP) determination;
- Radon gas sampling;
- Indoor air quality assessment and sampling; and
- Inventory of fluorescent light ballasts and mercury-containing equipment.

The building structure includes three stories with a full basement, and was reportedly constructed in 1869. The building cumulatively contains approximately 6,983 square feet (SF) of total floor area. The inspection was limited to non-invasive and discrete sampling techniques. Specific areas that were not inspected include the following:

- The main roof;
- The bump-out roof;
- The slate roof; and
- Underneath wood and raised floors.

The scope of work excluded the collection and analysis of building materials for Polychlorinated biphenyls (PCB). Sampling for PCBs is presently not mandated by the United States (US) Environmental Protection Agency (EPA); however, significant liability risk for disposing of PCB-containing wastes exists. Recent knowledge of PCBs within these matrices has become more prevalent, especially with remediation contractors, waste haulers, and disposal facilities. Many property owners have been subject to large changes in schedule, scope, and costs as a result of failure to identify this possible contaminant prior to renovation or demolition activities.

2 Asbestos Inspection

A property owner must ensure that a thorough ACM inspection is performed prior to possible disturbance of suspect ACM during renovation or demolition activities. This is a requirement of the United States Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation located at Title 40 CFR, Part 61, Subpart M.

On June 20 and July 18, 2014, Mr. Jonathan Hand and Mr. Robert Mallett of EnviroScience conducted the inspection. Mr. Hand and Mr. Mallett are both Commonwealth of Massachusetts Department of Labor Standards (MADLS)-certified Asbestos Inspectors. Refer to *Appendix B* for a copy of the Asbestos Inspector's Commonwealth of Massachusetts certification and accreditation.

2.1 Methodology

The inspection was conducted by visually inspecting for suspect ACM and touching each of the suspect materials. The suspect materials were categorized into three groups EPA NESHAP groups: friable and non-friable Category I and Category II type ACM.

- A Friable Material is defined as material that contains greater than 1 percent asbestos, that when dry **can** be crumbled, pulverized, or reduced to powder by hand pressure.
- A Category I Non-Friable Material refers to material that contains greater than 1 percent asbestos (i.e., packings, gaskets, resilient floor coverings, and asphalt roofing products) that when dry **cannot** be crumbled, pulverized, or reduced to powder by hand pressure.
- A Category II Non-Friable Material refers to any non-friable material excluding Category I materials that contain greater than 1 percent asbestos that when dry **cannot** be crumbled, pulverized, or reduced to powder by hand pressure.

The suspect ACMs were also categorized into their applications including, Thermal System Insulation (TSI), Surfacing ACM, and Miscellaneous ACM. TSI includes those materials used to prevent heat loss/gain or water condensation on mechanical systems. Examples of TSI are pipe insulation, boiler insulation, duct insulation, and mudded pipe fitting insulations. Surfacing ACM includes those ACM that are applied by spray, trowel, or otherwise applied to an existing surface. Surfacing ACM is commonly used for fireproofing, decorative, and acoustical applications. Miscellaneous materials include those ACM not listed as thermal or surfacing, such as linoleum, vinyl asbestos flooring, ceiling tiles, caulks, glues, construction adhesives, etc.

The EPA recommends collecting suspect ACM samples in a manner sufficient to determine asbestos content and to segregate each suspect type of homogenous (similar in color, texture, and date of application) materials. The EPA NESHAP regulation does not specifically identify a minimum number of samples to be collected for each homogeneous material (HM), but the NESHAP regulation does recommend the use of sampling protocols included in Title 40 CFR, Part 763, Subpart E: Asbestos Hazard Emergency Response Act (AHERA).

The EPA AHERA regulation requires a specific number of samples be collected based on the type of material and quantity present. This regulation includes the following protocol:

1. Surfacing Materials (i.e., plasters, spray-applied fireproofings, etc.) must be collected in a randomly distributed manner representing each homogenous area based on the overall quantity represented by the sampling as follows:
    a. Three (3) samples collected from each homogenous area that is less than or equal to 1,000 square feet.
    b. Five (5) samples collected from each homogenous area that is greater than 1,000 square feet but less than or equal to 5,000 square feet.
    c. Seven (7) samples collected from each homogenous area that is greater than 5,000 square feet.

2. Thermal System Insulation (i.e., pipe insulations, tank insulations, etc.) must be collected in a randomly distributed manner representing each homogenous area. Three (3) samples must be collected from

each material. Also, a minimum of one (1) sample of any patching materials applied to TSI presuming the patched area is less than 6 linear or square feet should be collected.

3. Miscellaneous materials (i.e., floor tile, gaskets, construction mastics, etc.) should have a minimum of two (2) samples collected for each type of homogenous material. Sample collection was conducted in a manner sufficient to determine asbestos content of the homogenous material as determined by the inspector.

The inspectors collected samples of suspect ACM, and prepared proper chain of custody forms for transmission of the samples collected to EMSL Analytical Inc. (EMSL) for analysis. EMSL is a Commonwealth of Massachusetts-licensed and American Industrial Hygiene Association (AIHA)-accredited asbestos laboratory. The sample locations, material type, sample identification, and asbestos content are identified by bulk sample analysis in **Table 1** attached hereto. Suspect ACM not listed in the table that may be identified at a later date at the Site, should be assumed to be ACM until sample collection and analysis indicate otherwise. Initial asbestos sample analysis was conducted using the EPA Interim Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R-93/116) via Polarized Light Microscopy with Dispersion Staining (PLM/DS).

If samples of suspect materials could not be collected or were inaccessible but observed elsewhere, these materials were assumed to contain asbestos and the inspector approximated quantities. The roof area was included in the scope of work for this inspection. Also, intrusive or destructive investigative techniques were not performed at the Site to access and observe concealed areas that may have contain suspect ACMs that were hidden or obstructed from normal view. Hard enclosures or obstructed areas typically include, but are not limited to, the following:

- wall cavities;
- pipe chases;
- spaces above fixed ceilings;
- underneath wooden or raised flooring;
- spaces behind the brick façade;
- areas behind and within mechanical equipment (including freezers and refrigeration units);
- behind mirrors and signage; and
- vapor/moisture barrier under floors or on concrete foundations.

2.2 Results

The Massachusetts Department of Environmental Protection (MassDEP) further defines an ACM as any material containing equal to or greater than 1 percent (≥ 1%) asbestos to be an ACM.

Utilizing the EPA protocol and criteria, the following materials were determined to be **ACM**:

- Plaster Skim and Rough Coats;
- Black Roof Patching Compound;
- Black Roof Flashing Sealant;
- Gray Rolled Roofing;
- Tan Flue Cement;

- Gray Sink Undercoating;
- Brown Mastic Associated with Brown with White Specks Linoleum Flooring;
- 9" x 9" Gray with Black Streaks Floor Tile;
- Black Mastic Associated with Both Floor Tiles; and
- White Exterior? Interior? Window Glazing Compound.

Refer to **Table 1** attached hereto for the complete list of ACM and non-ACM identified as part of this inspection. Refer to **Table 2** attached hereto for the ACM inventory.

Refer to *Appendix C* for the asbestos laboratory analytical reports and chain of custody forms.

2.3 Conclusions and Recommendations

Prior to disturbance, ACM that would likely be impacted by the proposed renovation/demolition activities must first be abated by a Commonwealth of Massachusetts-licensed Asbestos Abatement Contractor. This is a requirement of MADLS, MassDEP, EPA NESHAP, and AHERA regulations governing asbestos abatement.

EnviroScience recommends that if any ACMs are to remain in the building following renovation/demolition activities, the ACM should be managed in-place under a written Operations and Maintenance Program.

Due to the inability to effectively separate some types of multi-layered ACMs (i.e., floor tile/mastic, gypsum board/joint compound, mastic/plywood, etc.) from non-ACMs, these materials are considered asbestos-contaminated for the purposes of removal and disposal, and should be managed as ACM (e.g., floor tile and mastic, two layers of floor tile, gypsum board and joint compound, etc.).

If suspect materials should be encountered during renovation/demolition activities that are not identified in this report as being non-ACM, they should be assumed to be ACM unless sample collection and analysis indicate otherwise.

<u>This report is not intended to be utilized as a bidding document or as a project specification document</u>. The report is designed to aid the building owner, architect, construction manager, general contractors, and asbestos abatement contractors in locating ACM. Quantities and locations of identified ACMs should be confirmed and observed by the abatement contractors during the bidding process.

3 Lead-Based Paint Screening

On July 18, 2014, Mr. Jonathan Hand and Mr. Robert Mallett of EnviroScience performed an LBP screening associated with painted building components at the Site that may be disturbed during renovation/demolition activities. An X-ray fluorescence (XRF) spectrum analyzer was used to perform the LBP screening. The screening was conducted in accordance with generally-accepted industry standards for non-residential (i.e., not child-occupied) buildings.

3.1 Methodology

A Radiation Monitoring Device Model LPA-1 (Serial Number 1395) was utilized for the LBP screening. The instrument was calibrated according to the manufacturer's Performance Characteristic Sheet (PCS) prior to each use.

For the purpose of this LBP screening, representative, coated building components were screened for lead paint. Individual repainting efforts are not always discoverable in such a limited program. LBP issues involving properties that are not residential are only regulated to a limited degree for worker protection relating to paint-disturbing work activities and waste disposal.

Worker protection is regulated by OSHA regulations, as well as MADLS regulations. These regulations involve air monitoring of workers to determine exposure levels when disturbing lead-containing paint (LCP). An LBP screening cannot determine a safe level of lead, but is intended to provide guidance for implementing industry standards for lead in paint at identified locations. Contractors may better determine worker exposure to airborne lead by understanding the different concentrations of LBP on representative components and surfaces. Air monitoring can then be performed during activities that disturb paint on representative surfaces.

The EPA Resource Conservation and Recovery Act (RCRA) and MassDEP regulate lead-containing waste disposal. Representative samples of waste materials containing lead that will be impacted during renovation or demolition and result in waste for disposal must be analyzed using the Toxicity Characteristic Leaching Procedure (TCLP), if lead is determined to be present in non-residential buildings. A TCLP sample is a representative sample of the intended waste stream. The results are compared to a threshold value of 5.0 milligrams per liter (mg/L). If TCLP sample analytical results exceed this value, the waste is considered hazardous lead waste. If the result is below the established level, the waste material is <u>not</u> considered hazardous and may be disposed as construction and demolition debris.

A level of paint exceeding 1.0 milligrams of lead per square centimeter (mg/cm^2) of surface area is considered toxic or dangerous by EPA and the Massachusetts Department of Public Health (MADPH) residential standards. For purpose of this screening, the level of 1.0 mg/cm^2 has been utilized as a toxic level of lead in paint.

3.2 XRF Screening Results

The LBP determination indicated consistent painting trends associated with representative areas screened. The following building components were determined to contain toxic levels of lead in paint:

- Baseboards
- Interior and Exterior Doors
- Bathroom Walls
- Ceramic Tile
- Foundation Wall

Refer to *Appendix D* for the lead-based paint determination data sheets.

3.3 Discussion

OSHA published a Lead in Construction Standard (OSHA Lead Standard) Title 29 CFR, Part 1926.62 in May of 1993. The OSHA Lead Standard set no limits for the content of lead in paint below which the OSHA standards do not apply. The OSHA Lead Standards are task-based, and are also based on airborne exposures and blood lead levels.

The results of this LBP screening are intended to provide guidance to contractors for occupational lead exposure controls. Building components coated with lead levels above industry standards may cause exposures to lead above OSHA standards during proposed demolition and renovation activities. The results of this screening are intended to provide insight into waste disposal requirements, in accordance with EPA RCRA regulations.

3.4 Conclusions and Recommendations

LBP was identified on building components located on and in the building. If disturbed by renovation or demolition activities, LBP-coated building components should be segregated from the general waste stream for sample collection and analysis by TCLP to determine a proper waste management facility for disposal. If disturbed and managed off-site, non-porous LBP-coated building materials (i.e., metals) may be segregated and recycled as scrap metal. Metal LBP-coated building components cannot be subject to grinding, sawing, drilling, sanding, or torch cutting.

Note that the information contained in this report concerning the presence or absence of lead in paint, does not constitute a comprehensive lead inspection in accordance with Commonwealth of Massachusetts regulations 105 CMR 460.000. The screened painted surfaces represent only a portion of those surfaces that would be screened to determine whether the premises are in compliance with the aforementioned regulations, which are specific to a child-occupied residence only, and not applicable to a building of this type and use.

4 Radon Gas Sampling

4.1 Methodology

Radon is a naturally-occurring radioactive gas produced by the natural breakdown (decay) of uranium, which migrates through soil and rock. Radon enters buildings through cracks and other penetrations (e.g., sump pumps, drainage systems, etc.) in foundations. Eventually, the gas decays into radioactive particles (decay products) that may become trapped in the human lungs during respiration. As these particles decay over time, they release small bursts of radiation that is damaging to lung tissue and may lead to lung cancer.

EPA studies have determined that average radon gas concentrations in outdoor air average approximately 0.4 picoCuries per liter of air (pCi/L). However, radon gas and its decay products can accumulate to a much higher concentrations inside a building. The EPA has adopted a recommended **action level of 4.0 pCi/L**. If analytical results of radon gas sampling are equal to or above 4.0 pCi/L, the EPA *recommends* that mitigation action(s) be conducted to reduce indoor radon gas levels.

Sample collection and analysis is required to determine interior radon gas concentrations (radon is a colorless, odorless and tasteless gas). Sample collection in representative rooms that are frequently occupied at the lowest living space should be collected. Note that concentrations of radon gas may significantly vary for each interior space.

Radon is a known human carcinogen. Prolonged exposure to elevated radon gas concentrations increases the lung cancer risk. However, there is some uncertainty about the magnitude of radon health risks as similarly observed in other environmental pollutants. Scientists are more certain about radon risks than most other cancer-causing environmental pollutants risks. Estimates of radon risk are based on studies of cancer in humans (underground miners). Additional studies on more typical, non-occupationally exposed, populations are underway.

EPA estimates that radon may cause about 14,000 lung cancer deaths in the United States each year, with a range of from 7,000 to 30,000. The US Surgeon General has warned that radon gas is the second-leading cause of lung cancer deaths (after smoking), and is the leading cause of death by lung cancer among non-smokers.

According to the EPA *Map of Radon Zones*, the property location in Cambridge, Massachusetts is in Suffolk County (Zone 3), which has average predicted radon gas levels less than 2.0 pCi/L.

4.2 Sampling

On July 16, 2014, Mr. Dustin Diedricksen deployed passive radon canisters in the basement of the Site building. Mr. Jonathan Hand retrieved the canisters on July 18, 2014 after a minimum collection period of 48-hours. The canisters were supplied and analyzed by Radon Testing Corporation of America (RTCA).

The canisters were placed at least 20-inches above the floor and 12-inches away from exterior walls. Canisters were not placed in proximity to Heating Ventilating and Air Conditioning (HVAC) air intakes and returns, doorways, and away from windows. To the best of EnviroScience's understanding, the canisters were not exposed to direct sunlight, covered, or otherwise disturbed during the sampling period.

4.3 Results

A total of four canisters were placed in target locations in the basement. The sample analytical results indicate radon gas concentrations that ranged from 1.4 pCi/L to 2.0 pCi/L. These radon gas concentrations are below the EPA *recommended* action level of 4.0 pCi/L. Refer to *Appendix E* for the locations of the canisters detailed in the chain of custody form and laboratory analytical report.

4.4 Conclusion

During the course of the initial radon gas sampling, four sampling canisters were placed on the lowest livable levels of the Site building. Each canister was in-place and undisturbed when EnviroScience returned to retrieve the tests.

The laboratory analytical results indicate radon gas concentrations below the average EPA recommended action level of 4.0 piC/L. No further action is required.

5 Indoor Air Quality Assessment and Sampling

On July 18, 2014, EnviroScience performed limited Indoor Air Quality (IAQ) assessment of environmental conditions within representative areas of the building. The assessment was conducted by Mr. Jonathan Hand and Mr. Robert Mallett of EnviroScience and included collection of five bio-aerosol air samples for quantitative spore count analysis.

The IAQ assessment also included collecting measurements with a hand-held air quality meter for temperature, relative humidity (RH), carbon monoxide (CO), and carbon dioxide (CO_2). A TSI Q-Trak Model 7565, serial number 7565X070004, was used to measure these parameters. Readings were taken inside the building in representative rooms and of the ambient outdoor air. The instrument was checked for proper calibration by using a known standard and zero standard calibration gas.

5.1 Methodology

5.1.1 Temperature and Relative Humidity

Temperature and relative humidity levels are indicators of thermal comfort. The American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) recommends that wintertime indoor temperature be maintained between 68°F and 74°F and summertime indoor temperature be maintained between 73°F and 79°F. ASHRAE also recommends that humidity be maintained in the range of 30 percent to 60 percent. Humidity below this range may cause stress through the drying of mucous membranes and skin. Humidity above this range may promote the growth of mold spores with resultant contamination of the building and/or ventilation system.

According to its Standard 55-1992, Thermal Environmental Conditions for Human Occupancy, ASHRAE has defined the operative temperature (68°F to 79°F) as that temperature range at which at least 80 percent of the sedentary or near sedentary occupants will find the environment thermally acceptable.

The Massachusetts Department of Public Health (MADPH) recommends that indoor temperature be maintained between 70°F and 78°F. MADPH also recommends that relative humidity be maintained in the range of 40% to 60%.

5.1.2 Carbon Monoxide (CO)

Carbon monoxide is a colorless and odorless toxic gas that most often occurs as a by-product of incomplete hydrocarbon fuel combustion. The most likely sources of CO are from incomplete hydrocarbon fuel combustion inside the building, and from air intakes placed in, at, or near driveways, streets, parking lots, or street level that may entrain automotive exhaust gases into the air handling system. Back drafts from boiler flues may also provide a pathway for CO infiltration. In absence of any formal IAQ standard, EnviroScience uses the more conservative National Ambient Air Quality Standard (NAAQS) of 9 parts per million (ppm) for CO. The OSHA Permissible Exposure Limit (PEL) for carbon monoxide is 50 ppm as an eight-hour time-weighted-average (8-hour TWA).

The MADPH has not established a specific recommendation other than to follow the above and indicate that "Carbon Monoxide should not be present in a typical, indoor environment, and that if CO is present should be less than or equal to outdoor levels".

5.1.3 Carbon Dioxide (CO_2)

Carbon dioxide (CO_2) is a product of human respiration. CO_2 concentrations in a building are used as a primary indicator of outside air exchange. CO2 at very high concentrations (e.g., greater than 5,000 parts per million [ppm]) can pose a health risk. However, in most buildings, concentrations rarely rise to these levels and CO_2 at the concentrations commonly identified in buildings is not a direct health risk. At the activity levels in typical office buildings, steady CO_2 concentrations of about 700 ppm above outdoor air measurements indicate an outdoor air ventilation rate of about 15 cubic feet per minute (cfm) per person. CO_2 concentrations in outdoor air typically range from 300 to 500 ppm.

ASHRAE Standard 62.1-2010, Ventilation for Acceptable Indoor Air Quality, suggests an indoor CO_2 concentration of between 1,000 to 1,200 ppm in spaces housing sedentary people is acceptable and an indicator of adequate outside air exchange. The MADPH has established a specific guideline for Carbon Dioxide CO_2 and uses 800 ppm for publicly occupied buildings.

5.1.4 Bioaerosol

Air-dispersed fungal particles are common in indoor and outdoor environments. The particles can include spores (air-disseminated "seeds" of fungi), yeasts, and other particles. The particles of many fungi can produce allergic reactions in susceptible members of the population.

The possible sources for the growth of fungi are varied and numerous, including stagnant water, water-soaked building materials (i.e., ceiling tiles, drywall, carpets, etc.), soiled ducting and filters in air handling units, and plants and landscaping inside a building.

Air samples were collected for Quantitative Spore Count analysis (QSC), representing concentrations of both viable and non-viable spores, as the latter can also have an influence on occupants as well as viable spores.

Five air samples were collected during this assessment. Four of these were collected from the following representative areas within the building:

- Basement Playroom;
- Basement Mechanical Room;
- 1st Floor Hallway; and
- 3rd Floor Common Area

In addition, one air sample was collected outside (ambient) as a control for the type and amount of particulate gathered in the above rooms.

Air samples were collected by means of Air-O-Cell® air sampling cassettes at 15.0 liters per minute (lpm) for ten minutes each. Vacuum is provided by standard high-volume air pumps calibrated on-site with a calibrated rotometer. Samples were then submitted for quantitative spore count analysis to a Massachusetts-certified

laboratory, EMSL Analytical, Inc. (EMSL) of Woburn, Massachusetts. Air sampling associated with this method enables the rapid collection and analysis of fungal spores. Air enters the cassette, the fungal spores become impacted on the adhesive strip within the cassette, and the air leaves through the exit orifice. Particulate impacted onto the adhesive strip within the cassette is visually examined by a properly trained analyst by microscope to determine the quantitative spore count of the sample.

5.2 Environmental Conditions Results

The indoor air quality data sheet is included in *Appendix F*.

5.2.1 Temperature and Relative Humidity

Temperature readings ranged from 76.0°F to 81.8°F. Interior measurements taken from the 3rd Floor were outside the ASHRAE and MADPH recommended summertime indoor temperature of between 68°F and 78°F.

Relative Humidity readings ranged from 35.0% to 63.4%. Most measurements within the building interior were within the ASHRAE recommended range (30% to 60%). Note that comfort standards are typically acceptable for 80% of the population performing mostly sedentary activities, but will vary by individual based on age, activity level, and/or physiology.

5.2.2 Carbon Dioxide (CO_2)

Carbon Dioxide concentrations ranged from 169 ppm to 675 ppm. These measurements were within the ASHRAE recommended range, and below the MADPH recommended level of 800 ppm. This indicates that the interior areas have adequate air exchange for the number of people occupying them.

5.2.3 Carbon Monoxide (CO)

Within the limitation of instrumental accuracy, no concentration of carbon monoxide was detected in any of the sampling locations.

5.3 Bio-Aerosol (Fungi) Results

In all four sample locations, airborne concentrations of *Aspergillus/Penicillium* were greater than exterior concentrations. Laboratory results indicated that the maximum concentration of *Aspergillus/Penicillium* in the basement mechanical room was roughly 7.5 times that of the exterior level. The remaining sampled areas were determined to have concentrations approximately 2.5 times that of the exterior. This may be an indication of mold amplification and an issue within the assessed area as compared to the outside air. *Aspergillus* grows on indoor organic materials subject to elevated humidity and/or water damage. *Penicillium* is also a common indoor contaminant noted on water damaged cellulose, fibers and carpets.

The 1st floor hallway and the 3rd floor common area were determined to have concentrations of *Cladosporium* above that of the exterior sample. This type of fungi can grow on many moist substrates including textiles, wood, and wallboard.

Two tertiary mold types, *Stachybotrys* and *Chaetomium*, were found in relatively low concentrations above the exterior in the two basement areas and the first floor hallway. *Stachybotrys* (commonly referred to as black mold) and *Chaetomium* are slow growing as compared to *Penicillium* and other common mold genera, and may not compete well in the presence of other fungi. However, when water availability is high for prolonged periods on environmental material, *Stachybotrys* and *Chaetomium* may gradually become the predominating mold, especially on cellulose-containing materials.

Certain species of *Stachybotrys* and *Chaetomium* are known to produce mycotoxins; therefore, they are commonly referred to as "toxic molds". For that reason, the presence of a few spores of this type of mold should be considered with caution. Research on the effects of mycotoxins in humans is ongoing and no formal conclusions have been drawn; however, it is generally agreed that Stachybotrys and Chaetomium are not acceptable in the indoor environment thus; areas displaying mold growth and exhibiting airborne concentrations of these types of mold should be remediated.

Summary of air sample results including mold/fungi type are summarized in **Table 3**. The dominate mold/fungi spore types for each sample are highlighted in bold.

Table 3
Summary of Elevated/Abnormal Detected Mold Spores and Airborne Particulates (Counts/m^3)

Location	Basement Play Area	Basement Mechanical Room	1st Floor Hallway	3rd Floor Common Area	Exterior (Control)
Sample Number	**718JH-A-01**	**718JH-A-02**	**718JH-A-03**	**718JH-A-05**	**718JH-A-04**
Alternaria	-	-	-	-	-
Ascospores	230	100	200	230	550
Aspergillus/ Penicillium	290	720	270	270	100
Basidiospores	2110	1300	2480	1500	3240
Bipolaris++	-	-	-	-	-
Chaetomium	40	10*	-	-	-
Cladosporium	100	100	230	200	100
Curvularia	20	-	20	-	-
Epicoccum	-	-	-	-	10*
Fusarium	-	-	-	-	-
Ganoderma	60	40	200	100	200
Myxomycetes++	40	-	-	-	20
Pithomyces	-	-	-	-	10*
Rust	-	-	-	-	-
Scopulariopsis	-	-	-	-	-
Stachybotrys	20	20	10*	-	-
Torula	-	-	-	-	-
Ulocladium	7*	-	-	-	-
Botrytis	-	-	-	-	-
Cercospora	-	-	-	-	20
Oidium	-	-	-	-	20

Location	Basement Play Area	Basement Mechanical Room	1st Floor Hallway	3rd Floor Common Area	Exterior (Control)
Sample Number	**718JH-A-01**	**718JH-A-02**	**718JH-A-03**	**718JH-A-05**	**718JH-A-04**
Polythrincium	-	-	-	-	20
Total Fungi	**2917**	**2290**	**3410**	**2300**	**4290**
Hyphal Fragment	40	40	7*	-	-
Insect Fragment	40	40	-	-	-
Pollen	7*	-	10*	-	7*

Bipolaris++ = Bipolaris/Drechslera/Exserohilum

Myxomycetes++ = Myxomycetes/Periconia/Smut

"*" Denotes particles found at 300X

"-" Denotes not detected

Refer to *Appendix G* for the bio-aerosol lab report(s) and chain of custody forms.

5.4 Bioaerosol Discussion

Molds are ubiquitous in the environment. As such, there are no regulatory standards regarding exposures to mold spores or even consistent guidelines for interpreting indoor mold concentrations. Most industry sources agree that it is not possible to recommend limits for mold concentrations due to the lack of data from which the concentrations can be linked to the onset of disease. Also, airborne mold concentrations may change according to spatial and temporal variations. Numerical standards and guidelines for mold; therefore, are not likely to be available in the near future.

Without standards and guidelines, the current approach to interpretation of results of mold samples relies on comparison of indoor vs. outdoor results and complaint vs. non-complaint area results. In general, indoor airborne mold counts should be significantly lower than those on a building exterior. Airborne mold counts in non-complaint areas should be significantly lower than those in complaint areas. In addition, the genus/species identified indoors should be similar to those identified in exterior samples. However, this may not always be consistent. Occupied buildings with many entrances and operable windows may have indoor mold airborne concentrations higher than or as high as those from the exterior. Also, the concentrations of exterior mold genus/species are likely to be lower on a cold or rainy day compared to the expected concentrations on a warm, sunny day when the spores may be abundant. A situation may be considered unusual when the airborne mold concentrations in the indoor/complaint area are significantly higher than those in the exterior/non-complaint area. Interpretation of these results requires considerable professional judgment.

Visible mold was not observed during this limited IAQ assessment of the Site building. However, a musty odor was noticeable throughout the basement, and at areas where water damage was observed. Slightly elevated concentrations of fungal spores were detected in the air samples. This is determined by referencing the indoor samples against the exterior control sample. There is always some mold presence in the air; the question then becomes whether or not there are similar species and/or elevated concentrations of mold/fungi detected indoors in comparison to exterior control sample(s).

5.5 Conclusions

Based on visual inspection, information shared by the Client, sample analytical results, and real-time (indoor air quality) measurements, EnviroScience concludes and recommends the following:

- Visible mold was not observed during the site investigation.
- Repaired water damage was observed on ceiling plaster in bedrooms 1 and 2.
- A noticeable musty odor in the basement areas may warrant a dehumidifier and foundation waterproofing.
- The majority of temperature readings were within the ASHRAE and MADPH recommended summertime comfort ranges while the 3rd floor temperature readings were above. No HVAC system is installed in the building.
- Average relative humidity levels throughout most areas of the Site building were below the MADPH recommended maximum of 60% for the building interior. Note that comfort standards are typically acceptable for 80% of the population performing mostly sedentary activities, but will vary by individual based on age, activity level, and/or physiology. No HVAC system is installed in the building.
- Carbon monoxide was not detected within the limitation of the sampling equipment.
- The concentrations of carbon dioxide detected within representative locations of the Site building were within the ASHRAE recommended range and the MADPH recommended maximum concentration of 800 ppm.

6 Fluorescent Light Ballasts and Mercury-Containing Equipment

6.1 Fluorescent Light Ballasts

Fluorescent light ballasts manufactured prior to 1979 may contain capacitors that contain PCBs. Ballasts installed as late as 1985 may contain PCB capacitors. Fluorescent light ballasts that are not labeled as "No PCBs" must be assumed to contain PCBs unless proven otherwise by quantitative analysis. Capacitors in fluorescent light ballasts labeled as non-PCB-containing may contain diethylhexl phthalate (DEHP). DEHP was the primary substitute to replace PCBs for small capacitors in fluorescent lighting ballasts in use until 1991. DEHP is a toxic substance, a suspected carcinogen, and is listed under RCRA and the Superfund law as a hazardous waste. Therefore, Superfund liability exists for landfilling both PCB and DEHP-containing light ballasts. These listed materials are considered hazardous waste under RCRA, and require special handling and disposal considerations.

On July 18, 2014, Mr. Jonathan Hand and Mr. Robert Mallett of EnviroScience performed a visual inspection of representative fluorescent light fixtures to identify possible PCB-containing ballasts. The inspection involved visually inspecting labels on representative light ballasts to identify dates of manufacture and labels indicating "No PCBs". Ballasts manufactured after 1991 were not listed as PCB or DEHP-containing ballasts, and were not quantified for disposal. Refer to **Table 4** below for a complete inventory of fluorescent light ballasts.

6.2 Mercury-Containing Equipment

Fluorescent lamps/tubes are presumed to contain mercury vapor, which is a hazardous substance to both human health and the environment. Thermostatic controls and electrical switch gear may contain a vial or bulb of liquid mercury associated with the control. Mercury-containing equipment is regulated for proper disposal by the EPA RCRA regulations. According to the EPA, mercury lamps/tubes are characterized as a Universal Waste. Therefore, all fluorescent lamps/tubes must either be recycled, or disposed as hazardous waste.

On July 18, 2014, Mr. Jonathan Hand and Mr. Robert Mallett of EnviroScience inventoried the in-place light fixtures and other mercury-containing equipment. Refer to **Table 4** below for a complete inventory of mercury-containing equipment identified.

Table 4
Inventory of Light Ballasts and Mercury-Containing Equipment

Fluorescent Light Ballasts	
Type	**Estimated Quantity**
DEHP Ballasts	5
TOTAL	**5**
Mercury-Containing Equipment	
Type	**Estimated Quantity**
4' Bulbs	10

6.3 Conclusions

Light ballasts without a label indicating "No PCBs" are presumed to be PCB waste and must be segregated for proper removal, packaging, transport, and disposal as PCB waste. Ballasts marked as "No PCBs" with date labels indicating manufacture prior to 1991 are presumed to contain DEHP. DEHP-containing ballasts must be segregated for proper removing, packaging, transporting, and disposing as non-PCB hazardous waste. Note that disposal requirements for DEHP-containing ballasts are slightly varied, and disposal costs are slightly less than PCB-containing light ballasts.

Mercury-containing equipment is regulated for proper disposal by the EPA RCRA regulations. According to the EPA, mercury lamps/tubes are characterized as a Universal Waste. All fluorescent lamps/tubes must either be recycled, or disposed as hazardous waste.

Report prepared by Environmental Analyst, Jonathan Hand.

Reviewed by:

Dustin A. Diedricksen
Project Manager

Timothy M. Downey
Senior Project Manager

FUSS & O'NEILL
EnviroScience, LLC

Table 1
Summary of Suspect Asbestos-Containing Materials Data
3 Bigelow Street
Cambridge, Massachusetts

Prepared for LDa Architecture and Interiors
July 2014

Sample No.	Material Type	NESHAP Category	Sample Location(s)	Asbestos Content	Point Count/TEM?	Comments
620JH-01	12" x 12" Beige Floor Tile	Cat 1 NF	Basement	ND		
01B-JH-718	12" x 12" Beige Floor Tile	Cat 1 NF	Reception	ND	TEM	
620JH-02	Yellow Mastic Associated with 12" x 12" Beige Floor Tile	Cat 1 NF	Basement	ND		
02B-JH-718	Yellow Mastic Associated with 12" x 12" Beige Floor Tile	Cat 1 NF	Reception	ND	TEM	
620JH-03	Gray Rough Coat Ceiling Plaster	Cat 2 NF	Mechanical Room	ND		
03B-JH-718	Gray Rough Coat Ceiling Plaster	Cat 2 NF	Mechanical Room	ND		
03C-JH-718	Gray Rough Coat Ceiling Plaster	Cat 2 NF	Basement Storage	ND		
620JH-04	Gray Flue Cement	Cat 2 NF	Boiler Room	ND		
04B-JH-718	Gray Flue Cement	Cat 2 NF	Boiler Room	ND		
620JH-05	2' x 4' White Fissure/Dot Ceiling Tile	Cat 2 NF	Basement	ND		
05B-JH-718	2' x 4' White Fissure/Dot Ceiling Tile	Cat 2 NF	Basement Play Area	ND		
620JH-06	White Ceiling Plaster Skim Coat	Cat 2 NF	Basement	ND		
06B-JH-718	White Wall Plaster Skim Coat	Cat 2 NF	Reception	2% Chrysotile		
06C-JH-718	White Ceiling Plaster Skim Coat	Cat 2 NF	Room 2	ND		
06D-JH-718	White Wall Plaster Skim Coat	Cat 2 NF	Room 6	ND		
06E-JH-718	White Ceiling Plaster Skim Coat	Cat 2 NF	2nd Floor Office	ND		
06F-JH-718	White Wall Plaster Skim Coat	Cat 2 NF	Room 11	ND		
06G-JH-718	White Ceiling Plaster Skim Coat	Cat 2 NF	Room 10	ND		
620JH-07	Gray Ceiling Plaster Rough Coat	Cat 2 NF	Basement	ND		
07B-JH-718	Gray Wall Plaster Rough Coat	Cat 2 NF	Reception	2% Chrysotile		
07C-JH-718	Gray Ceiling Plaster Rough Coat	Cat 2 NF	Room 2	ND		
07D-JH-718	Gray Wall Plaster Rough Coat	Cat 2 NF	Room 6	ND		
07E-JH-718	Gray Ceiling Plaster Rough Coat	Cat 2 NF	2nd Floor Office	ND		
07F-JH-718	Gray Wall Plaster Rough Coat	Cat 2 NF	Room 11	ND		
07G-JH-718	Gray Ceiling Plaster Rough Coat	Cat 2 NF	Room 10	ND		
620JH-08	Black Roof Patching Compound	Cat 1 NF	Exterior Dormer Ledge Roof	3% Chrysotile		
620JH-09	Black Flashing Sealant	Cat 1 NF	Exterior Dormer Ledge Roof	7% Chrysotile		
620JH-10	Gray Rolled Roofing	Cat 1 NF	Exterior Dormer Ledge Roof	ND		
10B-JH-718	Gray Rolled Roofing	Cat 1 NF	Exterior Dormer Ledge Roof	2.5% Chrysotile	TEM	
620JH-11	12" x 12" Beige Mottled Floor Tile	Cat 1 NF	3rd Floor Hallway	ND		
11B-JH-718	12" x 12" Beige Mottled Floor Tile	Cat 1 NF	Room 9	ND	TEM	
620JH-12	Tan Joint Compound	Cat 2 NF	3rd Floor Back Hall	ND		Determined to be white with water damage
12B-JH-718	Tan Joint Compound	Cat 2 NF	3rd Floor Back Hall	ND		Determined to be white with water damage

Sample No.	Material Type	NESHAP Category	Sample Location(s)	Asbestos Content	Point Count/TEM?	Comments
620JH-13	Tan Drywall	Cat 2 NF	3rd Floor Back Hall	ND		Determined to be white with water damage
13B-JH-718	Tan Drywall	Cat 2 NF	3rd Floor Back Hall	ND		Determined to be white with water damage
620JH-14	12" x 12" Blue with White Splotches Floor Tile	Cat 1 NF	2nd floor Stair Landing	ND		
14B-JH-718	12" x 12" Blue with White Splotches Floor Tile	Cat 1 NF	1st Floor Hall	ND	TEM	
15A-JH-718	Tan Flue Cement	Cat 2 NF	Mechanical Area	3% Chrysotile		
15B-JH-718	Tan Flue Cement	Cat 2 NF	Mechanical Area	Pos Stop		
16A-JH-718	White Joint Compound	Cat 2 NF	Basement Play Area	ND		
16B-JH-718	White Joint Compound	Cat 2 NF	Basement Hallway	ND		
16C-JH-718	White Joint Compound	Cat 2 NF	Room 9	ND		
17A-JH-718	White Drywall	Cat 2 NF	Basement Play Area	ND		
17B-JH-718	White Drywall	Cat 2 NF	Basement Hallway	ND		
17C-JH-718	White Drywall	Cat 2 NF	Room 9	ND		
18A-JH-718	White Ceiling Patch Compound	Cat 2 NF	Basement Mechanical Room	ND		
18B-JH-718	White Ceiling Patch Compound	Cat 2 NF	Basement Mechanical Room	ND		
18C-JH-718	White Ceiling Patch Compound	Cat 2 NF	Basement Storage	ND		
19A-JH-718	4" White Vinyl Baseboard	Cat 2 NF	Basement Play Area	ND		
19B-JH-718	4" White Vinyl Baseboard	Cat 2 NF	Basement Hallway	ND		
20A-JH-718	Tan Mastic Associated with 4" White Vinyl Baseboard	Cat 2 NF	Basement Play Area	ND	TEM	
20B-JH-718	Tan Mastic Associated with 4" White Vinyl Baseboard	Cat 2 NF	Basement Hallway	ND		
21A-JH-718	Tan Foundation Mortar	Cat 2 NF	Basement Laundry Room	ND		
21B-JH-718	Tan Foundation Mortar	Cat 2 NF	Basement Mechanical Room	ND		
22A-JH-718	12" x 12" Brown Mottled Floor Tile	Cat 1 NF	Basement Play Area	ND	TEM	
22B-JH-718	12" x 12" Brown Mottled Floor Tile	Cat 1 NF	Basement Play Area	ND		
23A-JH-718	Residual Yellow Mastic under Carpet	Cat 2 NF	Basement to 1st Fl Stairs	ND		
23B-JH-718	Residual Yellow Mastic under Carpet	Cat 2 NF	Basement to 1st Fl Stairs	ND		
24A-JH-718	White Leveling Compound beneath 12" x 12" Blue Floor Tiles	Cat 2 NF	1st Floor Hall	ND		
25A-JH-718	12" x 12" White with Gray Splotches Floor Tile	Cat 1 NF	1st Floor Hall	ND		
25B-JH-718	12" x 12" White with Gray Splotches Floor Tile	Cat 1 NF	1st Floor Hall	ND		
26A-JH-718	Gray Mastic Associated with 12" x 12" White with Gray Splotches Floor Tile	Cat 1 NF	1st Floor Hall	ND		
26B-JH-718	Gray Mastic Associated with 12" x 12" White with Gray Splotches Floor Tile	Cat 1 NF	1st Floor Hall	ND		
27A-JH-718	Gray Sink Undercoating	Cat 2 NF	Reception	5% Chrysotile		
27B-JH-718	Gray Sink Undercoating	Cat 2 NF	Room 6	Pos Stop		
28A-JH-718	Brown with White Specks Linoleum Flooring	Cat 1 NF	Staff Bathroom	ND		
28B-JH-718	Brown with White Specks Linoleum Flooring	Cat 1 NF	Staff Bathroom	ND		
29A-JH-718	Brown Mastic Associated with Brown with White Specks Linoleum Flooring	Cat 1 NF	Staff Bathroom	8% Chrysotile		
29B-JH-718	Brown Mastic Associated with Brown with White Specks Linoleum Flooring	Cat 1 NF	Staff Bathroom	Pos Stop		
30A-JH-718	Brown Ceramic Wall Tile Adhesive	Cat 2 NF	Staff Bathroom	ND	TEM	
30B-JH-718	Brown Ceramic Wall Tile Adhesive	Cat 2 NF	Staff Bathroom	ND		
31A-JH-718	White Caulking Associated with Sink and Tub	Cat 2 NF	3rd Floor Bathroom	ND		
31B-JH-718	White Caulking Associated with Sink and Tub	Cat 2 NF	2nd Floor Bathroom	ND		
32A-JH-718	Gray Ceramic Floor Tile Grout	Cat 2 NF	3rd Floor Bathroom	ND		

Sample No.	Material Type	NESHAP Category	Sample Location(s)	Asbestos Content	Point Count/TEM?	Comments
32B-JH-718	Gray Ceramic Floor Tile Grout	Cat 2 NF	3rd Floor Bathroom	ND		
33A-JH-718	Gray Ceramic Floor Tile Thin Set	Cat 2 NF	3rd Floor Bathroom	ND		
33B-JH-718	Gray Ceramic Floor Tile Thin Set	Cat 2 NF	3rd Floor Bathroom	ND		
34A-JH-718	Yellow Ceramic Wall Tile Adhesive	Cat 2 NF	3rd Floor Bathroom	ND		
34B-JH-718	Yellow Ceramic Wall Tile Adhesive	Cat 2 NF	3rd Floor Bathroom	ND		
35A-JH-718	Off-White Ceramic Wall Tile Grout	Cat 2 NF	3rd Floor Bathroom	ND		
35B-JH-718	Off-White Ceramic Wall Tile Grout	Cat 2 NF	3rd Floor Bathroom	ND		
36A-JH-718	White Sink Undercoating	Cat 2 NF	3rd Floor Kitchen	ND		
36B-JH-718	White Sink Undercoating	Cat 2 NF	3rd Floor Kitchen	ND		
37A-JH-718	9" x 9" Gray with Black Streaks Floor Tile	Cat 1 NF	Room 6	6% Chrysotile		
37B-JH-718	9" x 9" Gray with Black Streaks Floor Tile	Cat 1 NF	Room 4	Pos Stop		
38A-JH-718	Black Mastic Associated with 9" x 9" Gray with Black Streaks Floor Tile	Cat 1 NF	Room 6	3.3% Chrysotile	TEM	
38B-JH-718	Black Mastic Associated with 12" x 12" Blue Floor Tile	Cat 1 NF	Room 5 Kitchen	ND		
39A-JCH-718	Tan Textured Wall Material on Plaster	Cat 2 NF	2nd Floor Bathroom	ND		
39B-JCH-718	Tan Textured Wall Material on Plaster	Cat 2 NF	2nd Floor Bathroom	ND		
39C-JCH-718	Tan Textured Wall Material on Plaster	Cat 2 NF	2nd Floor Bathroom	ND		
40A-JH-718	Gray Ceramic Wall Tile Thin Set	Cat 2 NF	2nd Floor Bathroom	ND		
40B-JH-718	Gray Ceramic Wall Tile Thin Set	Cat 2 NF	2nd Floor Bathroom	ND		
41A-JH-718	White Ceramic Wall Tile Grout	Cat 2 NF	2nd Floor Bathroom	ND		
41B-JH-718	White Ceramic Wall Tile Grout	Cat 2 NF	2nd Floor Bathroom	ND		
42A-JH-718	White with Black Squares Linoleum Flooring	Cat 1 NF	Room 2 Bath	ND		
42B-JH-718	White with Black Squares Linoleum Flooring	Cat 1 NF	Room 2 Bath	ND		
43A-JH-718	Yellow Mastic Associated with White with Black Squares Linoleum Flooring	Cat 1 NF	Room 2 Bath	ND		
43B-JH-718	Yellow Mastic Associated with White with Black Squares Linoleum Flooring	Cat 1 NF	Room 2 Bath	ND		
44A-JH-718	Black Sink Undercoating	Cat 2 NF	Room 2	ND		
44B-JH-718	Black Sink Undercoating	Cat 2 NF	Room 2	ND		
45A-JH-718	White Window Glazing Compound	Cat 2 NF	Front Entry	2% Chrysotile		
45B-JH-718	White Window Glazing Compound	Cat 2 NF	Front Entry	Pos Stop		
46A-JH-718	Gray Pargining Cement on Brick Foundation	Cat 2 NF	Exterior Side B	ND		
46B-JH-718	Gray Pargining Cement on Brick Foundation	Cat 2 NF	Exterior Side B	ND		
46C-JH-718	Gray Pargining Cement on Brick Foundation	Cat 2 NF	Exterior Side C	ND		

Cat 1 NF=Category I Non-Friable Material

Cat 2 NF=Category II Non-Friable Material

Pos Stop=Not Analyzed/ Positive Stop

ND=None Detected

FUSS & O'NEILL
EnviroScience, LLC

Table 2
Summary of Asbestos-Containing Materials Inventory
3 Bigelow Street
Cambridge, Massachusetts

Prepared for LDa Architecture and Interiors
July 2014

Material Type	Homogeneous Material Location(s)	Asbestos Content	Estimated Total Quantity	Comments
Wall and Ceiling Plaster	Basement & 1st - 3rd Floors	2% Chrysotile	All Plaster	
Black Roof Patching Compound	Exterior Dormer Ledge Roof	3% Chrysotile	300 SF	
Gray Rolled Roofing	Exterior Dormer Ledge Roof	2.5% Chrysotile		
Black Flashing Sealant	Exterior Dormer Ledge Roof	7% Chrysotile	150 LF	
Tan Flue Cement	Mechanical Area	3% Chrysotile	4 SF	
Gray Sink Undercoating	Reception, 1st Floor Pantry 1 & 2; 2nd Floor Pantry 1 & 2	5% Chrysotile	5 EA	
Brown Mastic Associated with Brown with White Specks Linoleum Flooring	Staff Bathroom	8% Chrysotile	25 SF	Linoleum Considered Asbestos-Contaminated for Purposes of Removal & Disposal
9" x 9" Gray with Black Streak Floor Tile and Associated Black Mastic	1st Floor Pantry 1 & 2 and 2nd Floor Pantry 1	3.3% - 6% Chrysotile	250 SF	
Black Mastic Associated with 12" x 12" Blue Floor Tile	2nd Floor Pantry 2	3.3% Chrysotile	75 SF	Floor Tile Considered Asbestos-Contaminated for Purposes of Removal & Disposal
White Window Glazing Compound	Front Entry	2% Chrysotile	3 EA @ 1' x 6'	~ 45 LF

LF = Linear Feet, SF = Square Feet,

EA = Each, CY = Cubic Yard

Appendix A

Limitations

3 Bigelow Street
Cambridge, MA

1. This environmental report has been prepared for the exclusive use of the Client, and is subject to, and is issued in connection with, the terms and conditions of the original Agreement (April 8, 2014) and all of its provisions. Any use or reliance upon information provided in this report, without the specific written authorization of the Client and EnviroScience, shall be at the User's individual risk. This report should not be used as an abatement specification. All quantities of materials identified during this inspection are approximate.
2. EnviroScience has obtained and relied upon information from multiple sources to form certain conclusions regarding likely environmental issues at and in the vicinity of the subject property in conducting this inspection. Except as otherwise noted, no attempt has been made to verify the accuracy or completeness of such information or verify compliance by any party with federal, state, or local laws or regulations.
3. EnviroScience has obtained and relied upon laboratory analytical results in conducting the inspection. This information was used to form conclusions regarding the types and quantities of ACM, LBP, and mold/fungi that must be managed prior to renovation or demolition activities that may disturb these materials at the subject property(ies). EnviroScience has not performed an independent review of the reliability of this laboratory data.
4. Unless otherwise noted, only suspect hazardous materials associated within or located on the building (aboveground) were included in this inspection. Suspect hazardous materials may exist below the ground surfaces that were not included in the scope of work of this inspection. EnviroScience cannot guarantee all asbestos or suspect hazardous materials were identified within the areas included in the scope of work. Only visible and accessible areas were included in the scope of work for this inspection.
5. The findings, observations, and conclusions presented in this report are limited by the scope of services outlined in our original Agreement, which reflects schedule and budgetary constraints imposed by the Client. Furthermore, the assessment has been conducted in accordance with generally accepted environmental practices. No other warranty, expressed or implied, is made.
6. The conclusions presented in this report are based solely upon information gathered by EnviroScience to date. Should further environmental or other relevant information be discovered at a later date, the Client should immediately bring the information to the EnviroScience's attention. Based upon an evaluation and assessment of relevant information, EnviroScience may modify the letter report and its conclusions.

Appendix B

Asbestos Inspector State Certifications and Accreditations

Commonwealth of Massachusetts
Department of Labor Standards
Heather E. Rowe, Director

Asbestos Inspector

JONATHAN L. HAND

Eff. Date 03/14/14
Exp. Date 03/14/15
AI041945
Member of C.O.N.E.S.
WBR WB-RENEW

15

Fuss & O'Neill EnviroScience, LLC

146 Hartford Road, Manchester, CT 06040 – (860) 646-2469

This is to certify that

Jonathan Hand

xxx-xx-8836

has successfully completed the

4 Hr. Asbestos Inspector Refresher

Asbestos Accreditation under TSCA Title II

40 CFR Part 763

John Rowinski, Principal Instructor

Robert L. May, Jr., Training Manager

January 6, 2014

Date of Course

AI-R-01/14-1

Certificate Number

January 6, 2014

Examination Date

January 6, 2015

Expiration Date

Commonwealth of Massachusetts
Department of Labor Standards
Heather E. Rowe, Director

Asbestos Inspector

ROBERT C. MALLETT

Eff. Date 06/02/14
Exp. Date 06/02/15
AI900557
Member of C.O.N.E.S.
BOSN BOS-NEW

15

This is to certify that

Robert Mallett

has completed the requisite training, and has passed an examination for accreditation as:

Asbestos Inspector

pursuant to Title II of the Toxic Substance Control Act, 15 U.S.C. 2646

Course Location

Institute for Environmental Education, Inc.
16 Upton Drive Wilmington, MA 01887

February 24-26, 2014
Course Dates

14-8947-102-260110
Certificate Number

February 26, 2014
Examination Date

February 26, 2015
Expiration Date

Training Director

16 Upton Drive, Wilmington, MA 01887 Telephone 978.658.5272 www.ieetrains.com

INSTITUTE FOR ENVIRONMENTAL EDUCATION

Appendix C

Asbestos Analytical Laboratory Report and Chain of Custody Forms

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com bostonlab@emsl.com

EMSL Order:	131402412
CustomerID:	ENVI54
CustomerPO:	20140371.A1E
ProjectID:	

Attn: **Dustin Diedricksen**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Received:	06/23/14 8:30 AM
Analysis Date:	6/25/2014
Collected:	6/20/2014

Project: **20140371.A1E / 3 Bigelow St. Cambridge, MA**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos	
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**%**	**Type**
620JH-01 *131402412-0001*	Basement - 12x12 Beige Floor Tile	Tan Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
620JH-02 *131402412-0002*	Basement - Yellow Mastic a/w 01	Yellow Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
620JH-03 *131402412-0003*	Boiler Room - Grey Rough Plaster Ceiling	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
620JH-04 *131402412-0004*	Boiler Room - Grey Flue Cement	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
620JH-05 *131402412-0005*	Basement - 2x4 Fissure/Dot Ceiling Tile	Tan Fibrous Homogeneous	40% 30%	Cellulose Min. Wool	30%	Non-fibrous (other)		**None Detected**
620JH-06 *131402412-0006*	Basement - White Plaster Skim Coat	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
620JH-07 *131402412-0007*	Basement - Grey Plaster Rough Coat	Gray Non-Fibrous Homogeneous	2% 2%	Cellulose Hair	96%	Non-fibrous (other)		**None Detected**
620JH-08 *131402412-0008*	Roof - Black Roof Patching Compound	Silver Non-Fibrous Homogeneous			93%	Non-fibrous (other)	**7%**	**Chrysotile**

Analyst(s)
Sean Ryan (14)

Steve Grise, Laboratory Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. Woburn, MA NVLAP Lab Code 101147-0, CT PH-0315, MA AA000188, RI AAL-107T3 and VT AL357102

Initial report from 06/25/2014 14:27:11

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com bostonlab@emsl.com

EMSL Order:	131402412
CustomerID:	ENVI54
CustomerPO:	20140371.A1E
ProjectID:	

Attn: **Dustin Diedricksen**
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Received:	06/23/14 8:30 AM
Analysis Date:	6/25/2014
Collected:	6/20/2014

Project: **20140371.A1E / 3 Bigelow St. Cambridge, MA**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos	
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**%**	**Type**
620JH-09 *131402412-0009*	Roof - Black Flashing Sealant	Black Non-Fibrous Homogeneous	5%	Cellulose	92%	Non-fibrous (other)	**3%**	**Chrysotile**
620JH-10 *131402412-0010*	Roof around Dormers - Grey Rolled Roofing	Black Non-Fibrous Homogeneous	65%	Cellulose	35%	Non-fibrous (other)		**None Detected**
620JH-11 *131402412-0011*	3rd Floor Hallway - 12x12 Beige Mottled Floor Tile	Beige Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
620JH-12 *131402412-0012*	3rd Fl near Emergency Exit - Tan Joint Compound	Tan Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
620JH-13 *131402412-0013*	3rd Fl near Emergency Exit - Tan Drywall	Tan Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
620JH-14 *131402412-0014*	2nd Fl Stair Landing - 12x12 Blue/White Splotch Floor Tile	White/Blue Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**

Analyst(s)
Sean Ryan (14)

Steve Grise, Laboratory Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. Woburn, MA NVLAP Lab Code 101147-0, CT PH-0315, MA AA000188, RI AAL-107T3 and VT AL357102

Initial report from 06/25/2014 14:27:11

THIS IS THE LAST PAGE OF THE REPORT.

OrderID: 131402412

131402412

FUSS & O'NEILL
EnviroScience, LLC

www.fando.com

50 Redfield Street, Suite 100, Boston, MA 02122 Phone (617) 282-4675 Fax (617) 282-8253

SAMPLE LOG FOR ASBESTOS BULKS

Sheet 1 of __

Project Name: 3 Bigelow St. Cambride, MA Project No. 20140371.A1E

Building: 3 Bigelow ST. Project Manager: Duston D.

	Sample ID	Sample Location	Material	Comments
1	620JH -01	Basement	12"x12" Beige Floor tile	
2	-02	↓	Yellow mastic A/w -01	
3	-03	Boiler Room	Gray Rough Plaster Ceiling	(no Skim)
4	-04	↓	Gray Flue cement	
5	-05	Basement	2'x4' Fissure + Dot Ceiling Tile	
6	-06	↓	white Plaster Skim Coat	(ceiling)
7	-07	↓	Gray Plaster Rough Coat	↓
8	-08	Roof	Black Roof Patching Compound	
9	-09	↓	Black Flashing sealant	
10	-10	↓ around Dormers	Gray Rolled Roofing	
11	-11	3rd Floor Hallway	12"x12" Beige Mottled Floor Tile	
12	-12	3rd Floor near Emergency Exit	Tan Joint Compound	
13	-13	↓	Tan Drywall	
14	-14	2nd Floor Stair Landing	12"x12" Blue w/ white Splotches Floor tile	
X				

Analysis Method: ☒ PLM ☐ TEM ☐ Other

Turnaround Time 48 hr

SW 6/23/14

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: _____. Please call the EnviroScience Laboratory if analyses will be late at (617) 282-4675.

Fax Results to the EnviroScience Laboratory at: 888-838-1160.

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. **Do not point count.**

Samples collected by: Jon Hand **Date:** 6/20/14 **Time:** AM

Samples Sent by: Jon Hand **Date:** 6/20/14 **Time:** PM

Samples Received by: _____ **Date:** _____ **Time:** _____

Shipped To: ☒ EMSL State MA ☐ Other _____

Method of Shipment: ☒ Fed Ex ☐ Lab Drop Off ☐ Other _____

RECEIVED
JUN 23 2014
By SU 08:30

C:\Users\JHAND\Desktop\Jon - Mass Forms\Asbestos Bulks Chain of Custody .docx

FedEx# 7959 3117 [illegible]

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com bostonlab@emsl.com

EMSL Order:	131402962
CustomerID:	ENVI54
CustomerPO:	20140371.A1E
ProjectID:	

Attn: **Dustin Diedricksen**
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Collected:	7/18/2014

Project: **20140371.A1E / LDa - 3 Bigelow Street; Cambridge, MA**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
01B-JH-718 *131402962-0001*	Reception - 12x12 Beige Floor Tile	Beige Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
02B-JH-718 *131402962-0002*	Reception - Yellow Mastic a/w 01B	Yellow Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
03B-JH-718 *131402962-0003*	Mechanical Room - Grey Rough Ceiling Plaster	Gray Fibrous Homogeneous	5%	Hair	95%	Non-fibrous (other)	**None Detected**
03C-JH-718 *131402962-0004*	Basement Storage - Grey Rough Ceiling Plaster	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
04B-JH-718 *131402962-0005*	Basement Storage - Grey Flue Cement	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
05B-JH-718 *131402962-0006*	Basement Play Area - 2x4 White Fissure/Dot Ceiling Tile	Gray Fibrous Homogeneous	40% 40%	Cellulose Min. Wool	20%	Non-fibrous (other)	**None Detected**
06B-JH-718 *131402962-0007*	Reception - White Plaster Skim Coat	Tan/White Non-Fibrous Homogeneous			98%	Non-fibrous (other)	**2% Chrysotile**
06C-JH-718 *131402962-0008*	Room 2 - White Plaster Skim Coat						**Stop Positive (Not Analyzed)**

Analyst(s)
Fievel Lam (76)
Steve Grise (10)

Steve Grise, Laboratory Manager
or other approved signatory

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
06C-JH-718.1 *131402962-0008A*	Room 2 - REQUESTED ANALYSIS	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
06D-JH-718 *131402962-0009*	Room 6 - White Plaster Skim Coat						**Stop Positive (Not Analyzed)**
06D-JH-718.1 *131402962-0009A*	Room 6 - REQUESTED ANALYSIS	Gray/White Fibrous Homogeneous	2%	Hair	98%	Non-fibrous (other)	**None Detected**
06E-JH-718 *131402962-0010*	2nd Floor Office - White Plaster Skim Coat						**Stop Positive (Not Analyzed)**
06E-JH-718.1 *131402962-0010A*	2nd Floor Office - REQUESTED ANALYSIS	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
06F-JH-718 *131402962-0011*	Room 11 - White Plaster Skim Coat						**Stop Positive (Not Analyzed)**
06F-JH-718.1 *131402962-0011A*	Room 11 - REQUESTED ANALYSIS	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
06G-JH-718 *131402962-0012*	Room 10 - White Plaster Skim Coat						**Stop Positive (Not Analyzed)**
06G-JH-718.1 *131402962-0012A*	Room 10 - REQUESTED ANALYSIS	White Non-Fibrous Heterogeneous	<1%	Hair	100%	Non-fibrous (other)	**None Detected**

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos	
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**%**	**Type**
07B-JH-718 *131402962-0013*	Reception - Grey Plaster Rough Coat	Gray/Tan Fibrous Homogeneous			98%	Non-fibrous (other)	**2%**	**Chrysotile**
07C-JH-718 *131402962-0014*	Room 2 - Grey Plaster Rough Coat						**Stop Positive (Not Analyzed)**	
07C-JH-718.1 *131402962-0014A*	Room 2 - REQUESTED ANALYSIS	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**	
07D-JH-718 *131402962-0015*	Room 6 - Grey Plaster Rough Coat						**Stop Positive (Not Analyzed)**	
07D-JH-718.1 *131402962-0015A*	Room 6 - REQUESTED ANALYSIS	White Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**	
07E-JH-718 *131402962-0016*	2nd Floor Office - Grey Plaster Rough Coat						**Stop Positive (Not Analyzed)**	
07E-JH-718.1 *131402962-0016A*	2nd Floor Office - REQUESTED ANALYSIS	Gray Fibrous Homogeneous	2%	Hair	98%	Non-fibrous (other)	**None Detected**	
07F-JH-718 *131402962-0017*	Room 11 - Grey Plaster Rough Coat						**Stop Positive (Not Analyzed)**	
07F-JH-718.1 *131402962-0017A*	Room 11 - REQUESTED ANALYSIS	White Non-Fibrous Homogeneous	<1%	Hair	100%	Non-fibrous (other)	**None Detected**	

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Steve Grise (10)

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
07G-JH-718 *131402962-0018*	Room 10 - Grey Plaster Rough Coat						**Stop Positive (Not Analyzed)**
07G-JH-718.1 *131402962-0018A*	Room 10 - REQUESTED ANALYSIS	Gray Fibrous Homogeneous	<1%	Hair	100%	Non-fibrous (other)	**None Detected**
10B-JH-718 *131402962-0019*	Exterior Roof - Grey Rolled Roofing	Black Fibrous Homogeneous	45%	Cellulose	55%	Non-fibrous (other)	**None Detected**
11B-JH-718 *131402962-0020*	Room 9 - 12x12 Beige Mottled Floor Tile	Beige Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
12B-JH-718 *131402962-0021*	3rd Floor Back Hall - Tan Joint Compound	Tan/White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
13B-JH-718 *131402962-0022*	3rd Floor Back Hall - Tan Drywall	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
14B-JH-718 *131402962-0023*	1st Floor Hall - 12x12 Blue/White Splotch Floor Tile	Blue Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
15A-JH-718 *131402962-0024*	Mechanical Area - Tan Flue Cement	Gray Fibrous Homogeneous			97%	Non-fibrous (other)	**3% Chrysotile**
15B-JH-718 *131402962-0025*	Mechanical Area - Tan Flue Cement						**Stop Positive (Not Analyzed)**

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			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
16A-JH-718 *131402962-0026*	Basement Play Area - White Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
16B-JH-718 *131402962-0027*	Basement Hallway - White Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
16C-JH-718 *131402962-0028*	Room 9 - White Joint Compound	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
17A-JH-718 *131402962-0029*	Basement Play Area - White Drywall	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
17B-JH-718 *131402962-0030*	Basement Hallway - White Drywall	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
17C-JH-718 *131402962-0031*	Room 9 - White Drywall	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
18A-JH-718 *131402962-0032*	Basement Mechanical Room - White Ceiling Patch Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
18B-JH-718 *131402962-0033*	Basement Mechanical Room - White Ceiling Patch Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
18C-JH-718 *131402962-0034*	Basement Storage - White Ceiling Patch Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
19A-JH-718 *131402962-0035*	Basement Play Area - 4" White Vinyl Base Board	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
19B-JH-718 *131402962-0036*	Basement Hallway - 4" White Vinyl Base Board	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
20A-JH-718 *131402962-0037*	Basement Play Area - Tan Mastic a/w 19	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
20B-JH-718 *131402962-0038*	Basement Hallway - Tan Mastic a/w 19	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
21A-JH-718 *131402962-0039*	Basement Laundry Room - Tan Foundation Mortar	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
21B-JH-718 *131402962-0040*	Basement Mechanical Room - Tan Foundation Mortar	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
22A-JH-718 *131402962-0041*	Basement Play Area - 12x12 Brown Mottled Floor Tile	Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

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			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
22B-JH-718 *131402962-0042*	Basement Play Area - 12x12 Brown Mottled Floor Tile	Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
23A-JH-718 *131402962-0043*	Basement to 1st Fl Stairs - Residual Yellow Mastic under Carpet	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
23B-JH-718 *131402962-0044*	Basement to 1st Fl Stairs - Residual Yellow Mastic under Carpet	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
24A-JH-718 *131402962-0045*	1st Floor Hall - White Leveling Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
24B-JH-718 *131402962-0046*	1st Floor Hall - White Leveling Compound				**Not Submitted**
25A-JH-718 *131402962-0047*	1st Floor Hall - 12x12 White/Grey Splotch Floor Tile	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
25B-JH-718 *131402962-0048*	1st Floor Hall - 12x12 White/Grey Splotch Floor Tile	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
26A-JH-718 *131402962-0049*	1st Floor Hall - Grey Mastic a/w 25	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

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			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
26B-JH-718 *131402962-0050*	1st Floor Hall - Grey Mastic a/w 25	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
27A-JH-718 *131402962-0051*	Reception - Grey Sink Undercoating	Gray Non-Fibrous Homogeneous			95%	Non-fibrous (other)	**5% Chrysotile**
27B-JH-718 *131402962-0052*	Room 6 - Grey Sink Undercoating						**Stop Positive (Not Analyzed)**
28A-JH-718 *131402962-0053*	Staff Bathroom - Brown/White Speck Linoleum Flooring	Brown Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
28B-JH-718 *131402962-0054*	Staff Bathroom - Brown/White Speck Linoleum Flooring	Brown Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
29A-JH-718 *131402962-0055*	Staff Bathroom - Brown Mastic a/w 28	Tan Non-Fibrous Homogeneous			92%	Non-fibrous (other)	**8% Chrysotile**
29B-JH-718 *131402962-0056*	Staff Bathroom - Brown Mastic a/w 28						**Stop Positive (Not Analyzed)**
30A-JH-718 *131402962-0057*	Staff Bathroom - Brown Ceramic Wall Tile Adhesive	Brown Fibrous Homogeneous	10%	Cellulose	90%	Non-fibrous (other)	**None Detected**

Analyst(s)

Fievel Lam (76)
Steve Grise (10)

Steve Grise, Laboratory Manager
or other approved signatory

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Manchester, CT 06040

Phone:	(860) 646-2469
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Project: **20140371.A1E / LDa - 3 Bigelow Street; Cambridge, MA**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
30B-JH-718 *131402962-0058*	Staff Bathroom - Brown Ceramic Wall Tile Adhesive	Brown Fibrous Homogeneous	10%	Cellulose	90%	Non-fibrous (other)	**None Detected**
31A-JH-718 *131402962-0059*	3rd Floor Bathroom - White Caulking	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
31B-JH-718 *131402962-0060*	2nd Floor Bathroom - White Caulking	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
32A-JH-718 *131402962-0061*	3rd Floor Bathroom - Grey Ceramic Floor Tile Grout	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
32B-JH-718 *131402962-0062*	3rd Floor Bathroom - Grey Ceramic Floor Tile Grout	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
33A-JH-718 *131402962-0063*	3rd Floor Bathroom - Grey Ceramic Floor Tile Thin Set	Gray Fibrous Homogeneous	10%	Glass	90%	Non-fibrous (other)	**None Detected**
33B-JH-718 *131402962-0064*	3rd Floor Bathroom - Grey Ceramic Floor Tile Thin Set	Gray Fibrous Homogeneous	10%	Glass	90%	Non-fibrous (other)	**None Detected**

Analyst(s)

Fievel Lam (76)
Steve Grise (10)

Steve Grise, Laboratory Manager
or other approved signatory

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Project: **20140371.A1E / LDa - 3 Bigelow Street; Cambridge, MA**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos	
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**%**	**Type**
34A-JH-718 *131402962-0065*	3rd Floor Bathroom - Yellow Ceramic Wall Tile Adhesive	Yellow Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
34B-JH-718 *131402962-0066*	3rd Floor Bathroom - Yellow Ceramic Wall Tile Adhesive	Yellow Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
35A-JH-718 *131402962-0067*	3rd Floor Bathroom - Off-White Ceramic Wall Tile Grout	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
35B-JH-718 *131402962-0068*	3rd Floor Bathroom - Off-White Ceramic Wall Tile Grout	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)		**None Detected**
36A-JH-718 *131402962-0069*	3rd Floor Kitchen - White Sink Undercoating	White Non-Fibrous Homogeneous	15%	Cellulose	85%	Non-fibrous (other)		**None Detected**
36B-JH-718 *131402962-0070*	3rd Floor Kitchen - White Sink Undercoating	White Non-Fibrous Homogeneous	15%	Cellulose	85%	Non-fibrous (other)		**None Detected**
37A-JH-718 *131402962-0071*	Room 6 - 9x9 Grey/Black Streak Floor Tile	Gray Non-Fibrous Homogeneous			94%	Non-fibrous (other)	**6%**	**Chrysotile**
37B-JH-718 *131402962-0072*	Room 4 - 9x9 Grey/Black Streak Floor Tile							**Stop Positive (Not Analyzed)**

Analyst(s)

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Steve Grise (10)

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or other approved signatory

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Project: **20140371.A1E / LDa - 3 Bigelow Street; Cambridge, MA**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
38A-JH-718 *131402962-0073*	Room 6 - Black Mastic a/w 37	Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
39A-JCH-718 *131402962-0074*	2nd Floor Bathroom - Tan Textured Wall Material	Tan Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
39B-JCH-718 *131402962-0075*	2nd Floor Bathroom - Tan Textured Wall Material	Tan Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
39C-JCH-718 *131402962-0076*	2nd Floor Bathroom - Tan Textured Wall Material	Tan Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
40A-JH-718 *131402962-0077*	2nd Floor Bathroom - Grey Ceramic Wall Tile Thin Set	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
40B-JH-718 *131402962-0078*	2nd Floor Bathroom - Grey Ceramic Wall Tile Thin Set	Gray Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
41A-JH-718 *131402962-0079*	2nd Floor Bathroom - White Ceramic Wall Tile Grout	White Non-Fibrous Homogeneous	5%	Cellulose	95%	Non-fibrous (other)	**None Detected**

Analyst(s)

Fievel Lam (76)
Steve Grise (10)

Steve Grise, Laboratory Manager
or other approved signatory

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Project: **20140371.A1E / LDa - 3 Bigelow Street; Cambridge, MA**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
41B-JH-718 *131402962-0080*	2nd Floor Bathroom - White Ceramic Wall Tile Grout	White Non-Fibrous Homogeneous	5%	Cellulose	95%	Non-fibrous (other)	**None Detected**
38B-JH-718 *131402962-0081*	Room 5 Kitchen - Black Mastic a/w Floor Tile	Brown Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
42A-JH-718 *131402962-0082*	Room 2 Bath - White/Black Square Linoleum Flooring	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
42B-JH-718 *131402962-0083*	Room 2 Bath - White/Black Square Linoleum Flooring	White Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
43A-JH-718 *131402962-0084*	Room 2 Bath - Yellow Mastic a/w 42	Yellow Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
43B-JH-718 *131402962-0085*	Room 2 Bath - Yellow Mastic a/w 42	Yellow Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
44A-JH-718 *131402962-0086*	Room 2 - Black Sink Undercoating	Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**
44B-JH-718 *131402962-0087*	Room 2 - Black Sink Undercoating	Black Non-Fibrous Homogeneous			100%	Non-fibrous (other)	**None Detected**

Analyst(s)

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Project: **20140371.A1E / LDa - 3 Bigelow Street; Cambridge, MA**

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
45A-JH-718 *131402962-0088*	Front Entry Exterior - White Window Glazing Compound	Gray Non-Fibrous Homogeneous		98% Non-fibrous (other)	**2% Chrysotile**
45B-JH-718 *131402962-0089*	Front Entry Exterior - White Window Glazing Compound				**Stop Positive (Not Analyzed)**
46A-JH-718 *131402962-0090*	Exterior Side B - Grey Pargining Cement on Brick Foundation	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
46B-JH-718 *131402962-0091*	Exterior Side B - Grey Pargining Cement on Brick Foundation	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**
46C-JH-718 *131402962-0092*	Exterior Side C - Grey Pargining Cement on Brick Foundation	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	**None Detected**

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Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES
01B-JH-718 *131402962-0001*	Reception - 12x12 Beige Floor Tile	Beige Non-Fibrous Homogeneous	100	None	No Asbestos Detected
02B-JH-718 *131402962-0002*	Reception - Yellow Mastic a/w 01B	Yellow Non-Fibrous Homogeneous	100	None	No Asbestos Detected
10B-JH-718 *131402962-0019*	Exterior Roof - Grey Rolled Roofing	Black Fibrous Homogeneous	97.5	None	2.5% Chrysotile
11B-JH-718 *131402962-0020*	Room 9 - 12x12 Beige Mottled Floor Tile	Beige Non-Fibrous Homogeneous	100	None	No Asbestos Detected
14B-JH-718 *131402962-0023*	1st Floor Hall - 12x12 Blue/White Splotch Floor Tile	Gray/Blue Non-Fibrous Homogeneous	100	None	No Asbestos Detected
20A-JH-718 *131402962-0037*	Basement Play Area - Tan Mastic a/w 19	Tan Non-Fibrous Homogeneous	100	None	No Asbestos Detected
22A-JH-718 *131402962-0041*	Basement Play Area - 12x12 Brown Mottled Floor Tile	Beige Non-Fibrous Homogeneous	100	None	No Asbestos Detected
30A-JH-718 *131402962-0057*	Staff Bathroom - Brown Ceramic Wall Tile Adhesive	Brown Fibrous Heterogeneous	100	None	No Asbestos Detected
38A-JH-718 *131402962-0073*	Room 6 - Black Mastic a/w 37	Black Non-Fibrous Homogeneous	96.7	None	3.3% Chrysotile

Analyst(s)
Steve Grise (10)

Steve Grise, Laboratory Manager
or other approved signatory

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Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES
42A-JH-718 *131402962-0082*	Room 2 Bath - White/Black Square Linoleum Flooring	White Non-Fibrous Heterogeneous	100	None	No Asbestos Detected

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EnviroScience, LLC

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50 Redfield Street, Suite 100, Boston, MA 02122

Phone (617) 282-4675 Fax (617) 282-8253

ASBESTOS BULK SAMPLE CHAIN OF CUSTODY

Sheet 1 of 7

Project Name: LDa – 3 Bigelow Street, Cambridge, MA Project No. 20140371.A1E

Site Address: 3 Bigelow Street, Cambridge, MA Project Manager: Dustin D

Building Name/Number: 3 Bigelow Street Total # of Samples:

	Sample ID (01A-Initials-Date)	Material Type	Sample Location	Comments/ Quantities
1	01B-JH-7/8	12"x12" Beige Floor Tile	~~Study Area~~ Reception	
2	02B-	Yellow mastic ATW 01B	↓	
3	03B-	Grey Rough Plaster ceiling	mechanical Room	
4	03C-	↓	Basement Storage	
5	04B-	Grey Flue Cement	↓	2sf
6	05B-	2'x4' White Fissure or Dot Ceiling Tile	Basement Play Area	
7	06B	white Plaster Skim Coat	Reception	wall
8	06C		Room 2	ceiling
9	06D		Room 6	wall
10	06E		2nd Floor Office	ceiling
11	06F		Room 11	wall
12	06G	↓	Room 10	ceiling
13	07B	Grey Plaster Rough coat	Reception	wall
14	07C	↓	Room 2	ceiling
15	07D		Room 6	wall

SU 7/22/14

Analysis Method: [X] PLM [X] TEM [ ] Other Turnaround Time 48 Hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: _____. Please call EnviroScience if analyses will not be completed for requested t/a/t at (617) 282-4675.

Email Results to: ddiedricksen **@fando.com** **Do Not Mail Hard Copy Report** **FAX Results to: 888-838-1160.**

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do not point count. If NOB group samples are all negative by PLM, analyze only "A" group sample (as noted by asterisk [*]above) by TEM NOB, **per group on a** 48 Hour **t/a/t.**

Samples Collected by: JH + RM **Date:**

Samples Sent by: **Date:** **Time:**

Shipped To: [X] EMSL [ ] Other

Method of Shipment: [X] Fed Ex [ ] Lab Drop Off [ ] Other

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ASBESTOS BULK SAMPLE CHAIN OF CUSTODY

Sheet 2 of 7

Project Name: LDa – 3 Bigelow Street, Cambridge, MA Project No. 20140371.A1E

Site Address: 3 Bigelow Street, Cambridge, MA Project Manager: Dustin D

Building Name/Number: 3 Bigelow Street Total # of Samples:

	Sample ID (01A-Initials-Date)	Material Type	Sample Location	Comments/ Quantities
16	07E-JH-7/8	↓	2nd Floor ~~Room~~ Office	ceiling
17	07F-	↓	Room 11	wall
18	07G-	↓	Room 10	ceiling
19	10B-	Grey Rolled Roofing	Exterior - Roof	
20	11B-	12"x12" Beigh Mottled Floor Tile	Room 9	
21	12B-	Tan Joint Compound	3rd Floor Back Hall	note: water Damaged white
~~x~~	~~12C~~	↓		
22	13B-	Tan Drywall	3rd Floor Back Hall	water Damaged Grey
~~x~~	~~13C~~	↓		
23	14B-	12"x12" Blue w/ white Splotches Floor Tile	1st Floor Hall	
24	15A-	Tan Flue cement	Mechanical Area	2sf
25	15B-	↓	↓	
26	16A-	white Joint compound	Basement Play Area	
27	16B-	↓	Basement Hallway	
28	16C-	↓	Room 9	closets

Analysis Method: ☒ PLM ☒ TEM ☐ Other Turnaround Time 48 Hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: _____. Please call EnviroScience if analyses will not be completed for requested t/a/t at (617) 282-4675.

Email Results to: ddiedricksen **@fando.com** **Do Not Mail Hard Copy Report** **FAX Results to: 888-838-1160.**

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do not point count. If NOB group samples are all negative by PLM, analyze only "A" group sample (as noted by asterisk (*)above) by TEM NOB, **per group on a 48 Hour t/a/t.**

Samples Collected by: JH & RM **Date:** 7/18/14

Samples Sent by: _____ **Date:** _____ **Time:** _____

Shipped To: ☒ EMSL ☐ Other

Method of Shipment: ☒ Fed Ex ☐ Lab Drop Off ☐ Other

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ASBESTOS BULK SAMPLE CHAIN OF CUSTODY

Sheet 3 of 7

Project Name: LDa – 3 Bigelow Street, Cambridge, MA Project No. 20140371.A1E

Site Address: 3 Bigelow Street, Cambridge, MA Project Manager: Dustin D

Building Name/Number: 3 Bigelow Street Total # of Samples:

	Sample ID (01A-Initials-Date)	Material Type	Sample Location	Comments/ Quantities
29	17A-JH-718	Basement Play Area	White Drywall	
30	17B-	Basement Hallway	↓	
31	17C-	Room 9	↓	
32	18A-	White Ceiling Patch Compound	Basement Mechanical Room	½ Area
33	18B-	↓	↓	
34	18C-	↓	Basement Storage	
35	19A-	4" white vinyl Baseboard	Basement Play Area	
36	19B-	↓	↓ Hallway	
37	20A-	Tan Mastic A/W 19	↓ Play Area	
38	20B-	↓	↓ Hallway	
39	21A-	Tan Foundation mortar	↓ Laundry Room	stone
40	21B-	↓	↓ Mechanical Room	
41	22A-	12"x12" Brown mottled Floor Tile	Basement Play Area	patches 10sf
42	22B-	↓	↓	
43	23A-	Residual Yellow Mastic under carpet	Basement to 1st Floor Stairs	55sf

Analysis Method: ☒ PLM ☒ TEM ☐ Other Turnaround Time 48 Hour

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Samples Collected by: JH + RM **Date:** 7/18/14

Samples Sent by: _____ **Date:** _____ **Time:** _____

Shipped To: ☒ EMSL ☐ Other

Method of Shipment: ☒ Fed Ex ☐ Lab Drop Off ☐ Other

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ASBESTOS BULK SAMPLE CHAIN OF CUSTODY

Sheet 4 of 7

Project Name: LDa – 3 Bigelow Street, Cambridge, MA Project No. 20140371.A1E

Site Address: 3 Bigelow Street, Cambridge, MA Project Manager: Dustin D

Building Name/Number: 3 Bigelow Street Total # of Samples:

	Sample ID (01A-Initials-Date)	Material Type	Sample Location		Comments/ Quantities
44	23B-JH-7/8	↓	↓		
45	24A -	white leveling Compound	1st Floor Hall		Blue Tile
46	24B -	↓			
47	25A -	12"x12" white w/ gray splotches Floor Tile	1st Floor Hall		
48	25B -	↓	↓		
49	26A -	Grey Mastic A/w 25	1st Floor Hall		
50	26B -	↓	↓		
51	27A	Grey Sink ~~Damp~~ undercoating	Reception		
52	27B	↓	Room 6		
53	28A	Brown w/ white specks Linoleum Flooring	Staff bathroom		
54	28B	↓	↓		
55	29A	Brown mastic A/w 28	↓		
56	29B	↓	↓		
57	30A	Brown Ceramic wall Tile Adhesive	↓		
58	30B	↓	↓		

Analysis Method: ☒ PLM ☒ TEM ☐ Other Turnaround Time 48 Hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: _____. Please call EnviroScience if analyses will not be completed for requested t/a/t at (617) 282-4675.

Email Results to: ddiedricksen @fando.com **Do Not Mail Hard Copy Report** **FAX Results to: 888-838-1160.**

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do not point count. If NOB group samples are all negative by PLM, analyze only "A" group sample (as noted by asterisk (*) above) by TEM NOB, **per group on a 48 Hour t/a/t.**

Samples Collected by: JH & RM **Date:** 7/18/14

Samples Sent by: _____ **Date:** _____ **Time:** _____

Shipped To: ☒ EMSL ☐ Other

Method of Shipment: ☒ Fed Ex ☐ Lab Drop Off ☐ Other

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ASBESTOS BULK SAMPLE CHAIN OF CUSTODY

Sheet 5 of 7

Project Name: LDa – 3 Bigelow Street, Cambridge, MA Project No. 20140371.A1E

Site Address: 3 Bigelow Street, Cambridge, MA Project Manager: Dustin D

Building Name/Number: 3 Bigelow Street Total # of Samples:

	Sample ID (01A-Initials-Date)	Material Type	Sample Location	Comments/ Quantities
59	31A-JH-7/8	white caulking	3rd Floor Bathroom	Tub & sink 50lf
60	31B-	↓	2nd Floor Bathroom	
61	32A-	Grey ~~Ceramic~~ Floor Tile Grout	3rd Floor Bathroom	
62	32B-	↓	↓	
63	33A-	Grey Ceramic Floor Tile Thin-Set	↓	
64	33B-	↓	↓	
65	34A-	Yellow Ceramic wall Tile Adhesive	↓	12x8
66	34B-	↓	↓	
67	35A-	Off-white Ceramic wall Tile Grout	↓	12x8
68	35B-	↓	↓	
69	36A-	white Sand undercoating	3rd Floor kitchen	1ea
70	36B-	↓	↓	
71	37A-	9"x9" Gray w/ Black streaks Floor tile	Room 6	75sf ~~75~~ 150sf
72	37B-	↓	Room 4	75sf
73	38A-	Black Mastic A/w 37	Room 6	150sf

Analysis Method: ☒ PLM ☒ TEM ☐ Other Turnaround Time 48 Hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: _____. Please call EnviroScience if analyses will not be completed for requested t/a/t at (617) 282-4675.

Email Results to: ddiedricksen **@fando.com** **Do Not Mail Hard Copy Report** **FAX Results to: 888-838-1160.**

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do not point count. If NOB group samples are all negative by PLM, analyze only "A" group sample (as noted by asterisk [*]above) by TEM NOB, **per group on a** 48 Hour **t/a/t.**

Samples Collected by: Jon Hand & Ron **Date:** 7/18/14

Samples Sent by: JH **Date:** 7/18/14 **Time:**

Shipped To: ☒ EMSL ☐ Other

Method of Shipment: ☒ Fed Ex ☐ Lab Drop Off ☐ Other

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ASBESTOS BULK SAMPLE CHAIN OF CUSTODY

Sheet 6 of 7

Project Name: LDa – 3 Bigelow Street, Cambridge, MA Project No. 20140371.A1E

Site Address: 3 Bigelow Street, Cambridge, MA Project Manager: Dustin D

Building Name/Number: 3 Bigelow Street Total # of Samples:

	Sample ID (01A-Initials-Date)	Material Type	Sample Location	Comments/ Quantities
74	39A - JLH - 7/8	Tan textured wall material	2nd Floor Bathroom	
75	39B - JLH - 7/8	↓	↓	
76	39C JLH - 7/8	↓	↓	
77	40A - JH - 7/8	Gray ceramic wall tile thinset	↓	
78	40B JH 7/8	↓	↓	
79	41A - JH - 7/8	white ceramic wall tile grout	↓	
80	41B - JH 7/8	↓	↓	
81	38B –	Black mastic Also Floor Tile	Room 5 kitchen	Residual
82	42A -	white w/ Black squares Linoleum Flooring	Room 7 Bath	
83	42B -	↓	↓	
84	43A -	Yellow mastic Also 42	↓	
85	43B -	↓	↓	
86	44A	Black sink undercoating	Room 2	
87	44B -	↓	↓	
88	45A -	white Front Entry window Glazing compound	Front Entry - Exterior	3ea @ 1'x6'

Analysis Method: ☐ PLM ☐ TEM ☐ Other Turnaround Time 48 Hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: _____. Please call EnviroScience if analyses will not be completed for requested t/a/t at (617) 282-4675.

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Samples Collected by: **Date:**

Samples Sent by: **Date:** **Time:**

Shipped To: ☐ EMSL ☐ Other

Method of Shipment: ☐ Fed Ex ☐ Lab Drop Off ☐ Other

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ASBESTOS BULK SAMPLE CHAIN OF CUSTODY

Sheet 7 of 7

Project Name: LDa – 3 Bigelow Street, Cambridge, MA Project No. 20140371.A1E

Site Address: 3 Bigelow Street, Cambridge, MA Project Manager: Dustin D

Building Name/Number: 3 Bigelow Street Total # of Samples:

	Sample ID (01A-Initials-Date)	Material Type	Sample Location	Comments/ Quantities
89	45B-JH-7/8	↓	↓	
90	46A	Grey Parging cement on brick foundation	Exterior - Side B	300 SF
91	46B	↓	↓ ↓	
92	46C	↓	↓ - Side C	

Analysis Method: ☐ PLM ☐ TEM ☐ Other _____ Turnaround Time 48 Hour

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Samples Collected by: _____ **Date:** _____

Samples Sent by: _____ **Date:** _____ **Time:** _____

Shipped To: ☐ EMSL ☐ Other _____

Method of Shipment: ☐ Fed Ex ☐ Lab Drop Off ☐ Other _____

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Appendix D

Lead-Based Paint Determination Data Sheets

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(617) 282-4675 Fax (617) 282-8253

XRF LEAD SCREENING FIELD DATA SHEET

Inspector: Jon Hand **Date:** 7/18/14 **XRF Model:** RMD – LPA-1 **Serial:** 1395

Project Name: LDa – 3 Bigelow St. Cambridge, MA **Project Number:** 20140371.A1E

Address: 3 Bigelow St. Cambridge, MA **Project PM:** Duston D.

XRF Calibration Check - RMD (0.7 to 1.3 mg/cm² inclusive)

	First Reading	Second Reading	Third Reading	Average
Start Check	1.0	1.0	1.0	1.0
Finish Check	1.0	1.0	1.0	1.0

Room	Side	Surface/Component	Color	Substrate*	XRF Reading	Positive
Basement Play Area	ABCD	wall	Green	D	0.0	
		ceiling	white	P	-0.0	
		Columns	Green	B	0.0	
	D2	Door	Red	M	0.0	
	D2	↓ Frame	↓	M	-0.1	
Basement Mechanical Room		Ceiling	Grey	P	-0.2	
	B	wall	white	D	0.0	
Laundry Room	ABCD	walls	Pink	B	-0.1	
		Ceiling	white	P	-0.1	
	C	window Frame	↓	W	0.0	
	C	↓ components	↓	W	0.0	
	D	Door	Pink	W	>9.9	Y
	D	↓ Frame	↓	W	0.2	
Basement Storage Rm	D	Door	Green	W	>9.9	Y
	↓	↓ Frame	↓	↓	>9.9	Y
	AB	wall	white	B	-0.1	
		Ceiling	Grey	P	-0.1	
Room 11	ABCD	walls	Gray	P	0.0	
		window sill	white	W	0.0	
		↓ casing	↓	W	0.0	
		window	↓	VR	—	
		Door	↓	W	-0.1	

* Substrate Type: Metal = M, Wood = W, Plaster = P, Drywall = D, Concrete = C, Brick = B, Aluminum = A
N/A: Not Accessible; N/C: Not Coated; COV: Covered; VR – Vinyl Replacement, POS = Positive

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Project Name: LDa - 3 Bigelow St. **Project Number:** 20140371.A1E

Room	Side	Surface/Component	Color	Substrate*	XRF Reading	Positive
Room 11 cont	D2	Door Casing	white	W	0.0	
	ABCD	Baseboard	white	W	>9.9	Y
Room 9	ABCD	wall	Yellow	P	-0.1	
	A1	window sill	white	W	0.0	
	A1	↓ casing	↓	W	0.0	
	A	Radiator	↓	M	-0.0	
	ABCD	baseboard	↓	W	>9.9	Y
		Closet	Yellow	D	-0.1	
	B	Door	white	W	-0.1	
	B	↓ Casing	↓	W	-0.1	
Room 10	ABCD	wall	Gray	P	-0.1	
		window sill	white	W	0.0	
		↓ casing	↓	W	-0.0	
		Ceiling	↓	P	-0.1	
	ABCD	baseboard	↓	W	>9.9	Y
	D	Door	↓	W	-0.0	
	D	↓ casing	↓	W	0.0	
Exterior Dormer Room	A	window casing	↓	W	1.7	Y
Room 8	ABCD	wall	Gray	P	-0.1	
		ceiling	white	P	0.0	
	D	window sill	↓	W	-0.1	
	D	↓ casing	↓	W	0.1	
	B	Door	↓	W	>9.9	Y
	B	↓ Casing	↓	W	-0.1	
	ABCD	Baseboard	↓	W	>9.9	Y
3rd Floor Back Hall	ABCD	wall	Yellow	D	0.0	
	↓	Baseboard	white	W	>9.9	Y
	B	Door casing	Yellow	W	0.1	
3rd Floor Bathroom	ABCD	wall	white	D	-0.1	
		Ceiling	white	D	-0.0	
		Door Casing	white	W	0.0	

* Substrate Type: Metal = M, Wood = W, Plaster = P, Drywall = D, Concrete = C, Brick = B
N/A: Not Accessible; N/C: Not Coated; COV: Covered; VR – Vinyl Replacement, POS = Positive

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Project Name: LDa-3 Bigelow St. Cambridge, MA **Project Number:** 20140371.A1E

Room	Side	Surface/Component	Color	Substrate*	XRF Reading	Positive
3rd Flor Bathroom	A	Ceramic tile	white	CT	-0.1	
3rd Floor Common Area	ABCD	wall	↓	D	-0.1	
		window components	↓	W	0.1	
	ABCD	Baseboard	↓	W	9.8	Y
		Ceiling	↓	P	-0.1	
Kitchen	ABCD	walls	↓	D	0.0	
		ceiling	↓	D	0.0	
		Cabinets	↓	W	-0.2	
		Baseboard	↓	W	0.0	
2nd Floor Room 6	ABCD	wall	white	P	-0.2	
	C	Door	white	W	0.1	
	C	Door Casing	↓	W	0.0	
	ABCD	Baseboard	↓	W	-0.1	
	A	window sill	↓	W	-0.1	
	A	↓ casing	↓	W	0.0	
Room 7	ABCD	wall	Beige	P	-0.2	
	D	window sill	white	W	-0.0	
	ABCD	Baseboard	↓	W	3.8	Y
		Ceiling	↓	P	0.0	
		Radiator cover	↓	M	0.2	
	A	Door	↓	W	3.3	Y
	A	↓ casing	↓	W	0.0	
2nd Floor Bathroom	ABCD	upper wall	↓	P	7.3	Y
	↓	lower ↓	↓	Ceramic	4.8	Y
		Floor	↓	↓	-0.2	
		Ceiling	↓	P	-0.1	
		window casing	↓	W	-0.0	
	B	Door	↓	W	8.7	Y
	B	↓ Casing	↓	W	0.1	
2nd Floor Office	ABCD	Wall	Beige	P	0.1	
		window casing	white	W	0.0	

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N/A: Not Accessible; N/C: Not Coated; COV: Covered; VR – Vinyl Replacement, POS = Positive

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Project Name: LDa - 3 Bigelow St. Cambridge, MA **Project Number:** 20140371.A1E

Room	Side	Surface/Component	Color	Substrate*	XRF Reading	Positive
Office (Cont.)		ceiling	white	P	0.0	
	ABCD	Baseboard	↓	W	>9.9	Y
	D2	Door	↓	W	3.8	Y
	D2	↓ Frame	↓	W	0.0	
Room 5	ABCD	wall	Beige	P	-0.1	
	B	window casing	white	W	0.0	
	D	Door Casing	↓	W	0.0	
	ABCD	Baseboard	↓	W	>9.9	Y
		Ceiling	↓	P	0.1	
Room 2	ABCD	wall	Beige	P	-0.1	
	A	window casing	white	W	-0.1	
	B	Door	↓	↓	0.0	
	B	↓ casing	↓	↓	-0.0	
Room 4	ABCD	wall	↓	P	-0.1	
	BC	Chair Rail	↓	W	0.3	
		window casing	↓	W	0.0	
		wall	↓	Ceramic	-0.1	
	A	Door	↓	W	9.1	Y
		Bathroom walls	Yellow	P	-0.1	
		↓ ceiling	↓	D	0.1	
Room 3		Bathroom wall	white	Ceramic	4.3	Y
	ABCD	wall	Beige	P	-0.2	
		window casing	white	W	0.3	
		ceiling	↓	P	0.1	
	D	Door Casing	↓	W	-0.3	
Main Stairs		Stringer	Brown	W	-0.1	
		Newel Post	↓	↓	-0.0	
		Balusters	↓	↓	-0.0	
		Handrail	↓	↓	-0.1	
		wall	↓	P	-0.2	

* Substrate Type: Metal = M, Wood = W, Plaster = P, Drywall = D, Concrete = C, Brick = B
N/A: Not Accessible; N/C: Not Coated; COV: Covered; VR – Vinyl Replacement, POS = Positive

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(617) 282-4675 Fax (617) 282-8253

Project Name: LDa-3 Bigelow St. Cambridge, MA **Project Number:** 20120371.A1E

Room	Side	Surface/Component	Color	Substrate*	XRF Reading	Positive
Exterior Porch	A	Column	white	W	-0.0	
		Door Casing	↓	↓	0.3	
		Threshold	↓	↓	-0.1	
		Door	Brown	↓	-0.0	
Exterior	ABCD	walls	Grey	↓	>9.9	Y
		window sill	white	↓	>9.9	Y
		+ casing	↓	↓	>9.9	Y
		Foundation	Red	B	>9.9	Y
		Rear Door	Red	W	0.1	
		↓ Frame	white	W	0.2->9.9	Y
		Fire escape	Black	M	0.3	

* Substrate Type: Metal = M, Wood = W, Plaster = P, Drywall = D, Concrete = C, Brick = B
N/A: Not Accessible; N/C: Not Coated; COV: Covered; VR – Vinyl Replacement, POS = Positive

Appendix E

Radon Gas Analytical Report and Chain of Custody Forms

RICA RADON TESTING CORPORATION OF AMERICA

PC1407220103

Site Radon Inspection Report

Date : 07/22/2014

Ms. Karron Redfield
Fuss & O'Neill Enviroscience, LLC
146 Hartford Road
Manchester, CT 06040-

Client: Unknown

Test Location 3 Bigelow St
Cambridge, MA 02139-

Individual Canister Results

Canister ID# :	2159793	Test Start :	07/16/2014 @ 09:05
Canister Type :	Charcoal Canister 3 inch	Test Stop :	07/18/2014 @ 10:50
Location :	Mechanic Rm	Received:	07/22/2014 @ 16:31
Radon Level :	**1.6 pCi/L**	Analyzed:	07/22/2014 @ 15:12

Error for Measurement is: ± 0.4 pCi/L

Canister ID# :	2160158	Test Start :	07/16/2014 @ 09:05
Canister Type :	Charcoal Canister 3 inch	Test Stop :	07/18/2014 @ 10:50
Location :	Mechanic Rm	Received:	07/22/2014 @ 16:31
Radon Level :	**1.4 pCi/L**	Analyzed:	07/22/2014 @ 15:12

Average of Side by Side Canisters 1.5 pCi/L
Error for Measurement is: ± 0.4 pCi/L

Canister ID# :	2160257	Test Start :	07/16/2014 @ 09:09
Canister Type :	Charcoal Canister 3 inch	Test Stop :	07/18/2014 @ 11:13
Location :	Basement-Ldry Rm	Received:	07/22/2014 @ 16:36
Radon Level :	**1.7 pCi/L**	Analyzed:	07/22/2014 @ 15:12

Error for Measurement is: ± 0.4 pCi/L

Canister ID# :	2160218	Test Start :	07/16/2014 @ 09:07
Canister Type :	Charcoal Canister 3 inch	Test Stop :	07/18/2014 @ 10:51
Location :	Basement-Hwy Stairs	Received:	07/22/2014 @ 16:31
Radon Level :	**2.0 pCi/L**	Analyzed:	07/22/2014 @ 15:12

Error for Measurement is: ± 0.4 pCi/L

National Radon Safety Board NRSB Certified Radon Professionals

Andreas C. George
Radon Measurement Specialist
NJ MES 11089

Dante Galan
Laboratory Director

NRSB ARL0001
NYS ELAP ID: 10806
PADEP ID: 0346
NJDEP ID: NY933
NJ MEB 90036
FL DOH RB1609

(914)345-3380
FAX (914)345-8546

2 Hayes Street, Elmsford, NY 10523
www.rtca.com

RICA RADON TESTING CORPORATION OF AMERICA

Site Radon Inspection Report

Date :07/22/2014

The reported results indicate that radon levels in the building are below the United States Environmental Protection Agency (EPA) action level of 4.0 picoCuries per liter of air (pCi/L). The EPA recommends retesting if your living patterns change and you begin occupying a lower level of the building, such as a basement or if major remodeling is done.

General radon information may be obtained by consulting the EPA booklet: A Citizen's Guide to Radon (www.epa.gov/radon/pubs/citguide.html). To request a copy or for further information, please contact your state health department. The EPA maintains a radon information website, including copies of its publications, at www.epa.gov/iaq/radon.

For New Jersey clients: Please see the attached guidance document entitled Radon Testing and Mitigation: The Basics for further information.

For New York clients: If the radon level of one or more testing devices is equal to or exceeds 20 pCi/L please contact the New York State Department of Health, Bureau of Environmental Radiation Protection, for technical advice and assistance at 518-402-7556 or toll free1-800-458-1158.

PLEDGE OF ASSURED QUALITY

All procedures used for generating this report are in complete accordance with the current EPA protocols for the analysis of radon in air (EPA 402-R-92-004). The analytical results relate only to the samples tested, in the condition received by the lab, and that calculations were based upon the information supplied by client. RTCA and its personnel do not assume responsibility or liability, collectively and individually, for analysis results when detectors have been improperly handled or placed by the consumer, nor does RTCA and its personnel accept responsibility for any financial or health consequences of subsequent action or lack of action, taken by the customer or it's consultants based on RTCA-provided results.

National Radon Safety Board NRSB Certified Radon Professionals

Andreas C. George
Radon Measurement Specialist
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www.rtca.com

Appendix F

Indoor Air Quality Data Sheet

FUSS & O'NEILL
EnviroScience, LLC

www.fando.com

50 Redfield Street, Suite 100 Boston, MA 02122 (617) 282-4675 Fax: (617) 282-8253

Indoor Air Quality Data Sheet

Project Name: LDa-3 Bigelow St. Cambridge, MA Date: 7/18/14

Project Number: 20140371.A1E Sampler: Jon Hand Manager: Dustin D.

Instrument: Q-Trak Model Number: 7565 Serial Number: 0720004

Instrument: Model Number: Serial Number:

Instrument: Model Number: Serial Number:

Location	Temp (°F)	Relative Humidity (%)	CO_2 (ppm)	CO (ppm)	TVOCs (ppm)	$PM_{2.5}$ PM_{10} (mg/m³)	Comments
Basement - Playroom	77.0	59.2	575	0.0	—	—	—
Laundry	77.0	63.4	620	0.0	—	—	—
Storage	76.0	62.8	675	0.0	—	—	—
Mech.	76.1	62.5	558	0.0	—	—	—
1st Floor Reception	81.0	39.6	374	0.0	—	—	
Hall	80.9	39.9	345	0.0	—	—	
Room 11	80.1	40.4	552	0.0	—	—	—
Room 9	81.3	39.9	485	0.0	—	—	—
Room 10	80.4	37.8	322	0.0	—	—	wall Damage
Room 8	81.8	43.0	556	0.0	—	—	—
3rd Floor Hall	81.4	41.0	660	0.0	—	—	—
↓ Bath	79.4	41.2	380	0.0	—	—	—
↓ Common Area	78.5	42.5	475	0.0	—	—	—
Room 6	79.5	39.1	297	0.0	—	—	—
Room 7	80.8	35.0	194	0.0	—	—	—
2nd Floor Bath	80.9	38.3	263	0.0	—	—	—
↓ Office	80.9	39.6	375	0.0	—	—	ceiling Damage
Room 5	79.9	38.8	169	0.0	—	—	—
Room 2	79.2	41.1	204	0.0	—	—	—
Room 4	79.4	42.1	426	0.0	—	—	—
Room 3	80.0	38.8	251	0.0	—	—	Damaged closet
Exterior	80.8	35.0	164	0.0	—	—	—

Appendix G

Bioaerosol Laboratory Analytical Report and Chain of Custody Forms

EMSL Analytical, Inc.

7 Constitution Way, Suite 107 Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com / bostonlab@emsl.com

Order ID:	131402973
Customer ID:	ENVI54
Customer PO:	20140371.A1E
Project ID:	

Attn: Dustin Diedricksen
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Collected:	07/18/2014
Received:	07/22/2014
Analyzed:	07/24/2014

Proj: 20140371.A1E / LDa - 3 Bigelow St. Cambridge, MA

Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods EMSL 05-TP-003, ASTM D7391)

Lab Sample Number:	131402973-0001			131402973-0002			131402973-0003		
Client Sample ID:	718JH-A-01			718JH-A-02			718JH-A-03		
Volume (L):	150			150			150		
Sample Location:	Basement Play Area			Basement Mechanical Room			1st Floor Hallway		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria	-	-	-	-	-	-	-	-	-
Ascospores	11	230	7.9	6	100	4.4	9	200	5.9
Aspergillus/Penicillium	14	290	9.9	35	720	31.4	13	270	7.9
Basidiospores	103	2110	72.3	64	1300	56.8	121	2480	72.7
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	2	40	1.4	2*	10*	0.4	-	-	-
Cladosporium	7	100	3.4	6	100	4.4	11	230	6.7
Curvularia	1	20	0.7	-	-	-	1	20	0.6
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	3	60	2.1	2	40	1.8	9	200	5.9
Myxomycetes++	2	40	1.4	-	-	-	-	-	-
Pithomyces	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	1	20	0.7	1	20	0.9	2*	10*	0.3
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	1*	7*	0.2	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Oidium	-	-	-	-	-	-	-	-	-
Polythrincium	-	-	-	-	-	-	-	-	-
Pyricularia	-	-	-	-	-	-	-	-	-
Total Fungi	**145**	**2917**	**100**	**116**	**2290**	**100**	**166**	**3410**	**100**
Hyphal Fragment	2	40	1.4	2	40	1.8	1*	7*	0.2
Insect Fragment	2	40	1.4	2	40	1.8	-	-	-
Pollen	1*	7*	0.2	-	-	-	2*	10*	0.3
Analyt. Sensitivity 600x	-	21	-	-	21	-	-	21	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	2	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	2	-	-	1	-

Bipolaris++ = Bipolaris/Drechslera/Exserohilum
Myxomycetes++ = Myxomycetes/Periconia/Smut

No discernable field blank was submitted with this group of samples.

Sean Ryan, Microbiolgy Technical Manager
or Other Approved Signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA AIHA-LAP, LLC --EMLAP Accredited #180179

Initial report from: 07/24/2014 11:09:50

For Information on the fungi listed in this report please visit the Resources section at www.emsl.com

EMSL Analytical, Inc.

7 Constitution Way, Suite 107 Woburn, MA 01801
Phone/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com / bostonlab@emsl.com

Order ID:	131402973
Customer ID:	ENVI54
Customer PO:	20140371.A1E
Project ID:	

Attn: Dustin Diedricksen
Fuss & O'Neill EnviroScience, LLC
146 Hartford Road
Manchester, CT 06040

Phone:	(860) 646-2469
Fax:	(888) 838-1160
Collected:	07/18/2014
Received:	07/22/2014
Analyzed:	07/24/2014

Proj: 20140371.A1E / LDa - 3 Bigelow St. Cambridge, MA

Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods EMSL 05-TP-003, ASTM D7391)

Lab Sample Number:	131402973-0004			131402973-0005		
Client Sample ID:	718JH-A-04			718JH-A-05		
Volume (L):	150			150		
Sample Location:	Exterior			3rd Floor Common Area		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria	-	-	-	-	-	-
Ascospores	27	550	12.8	11	230	10
Aspergillus/Penicillium	6	100	2.3	13	270	11.7
Basidiospores	158	3240	75.5	75	1500	65.2
Bipolaris++	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-
Cladosporium	6	100	2.3	9	200	8.7
Curvularia	-	-	-	-	-	-
Epicoccum	2*	10*	0.2	-	-	-
Fusarium	-	-	-	-	-	-
Ganoderma	9	200	4.7	7	100	4.3
Myxomycetes++	1	20	0.5	-	-	-
Pithomyces	2*	10*	0.2	-	-	-
Rust	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-
Torula	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-
Oidium	1	20	0.5	-	-	-
Polythrincium	1	20	0.5	-	-	-
Pyricularia	1	20	0.5	-	-	-
Total Fungi	**214**	**4290**	**100**	**115**	**2300**	**100**
Hyphal Fragment	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-
Pollen	1*	7*	0.2	-	-	-
Analyt. Sensitivity 600x	-	21	-	-	21	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	1	-	-	2	-
Fibrous Particulate (1-4)	-	1	-	-	1	-
Background (1-5)	-	1	-	-	2	-

Bipolaris++ = Bipolaris/Drechslera/Exserohilum
Myxomycetes++ = Myxomycetes/Periconia/Smut

No discernable field blank was submitted with this group of samples.

Sean Ryan, Microbiolgy Technical Manager
or Other Approved Signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA AIHA-LAP, LLC --EMLAP Accredited #180179

Initial report from: 07/24/2014 11:09:50

For Information on the fungi listed in this report please visit the Resources section at www.emsl.com

OrderID: 131402973

131402973

FUSS & O'NEILL
EnviroScience, LLC

www.fando.com

50 Redfield St, Suite 100, Boston, MA 02122

(617) 282-4675 Fax (617) 282-8253

Sample Log for Microbiology

Sheet 1 of 1

Project Name: LDa - 3 Bigelow St. Cambridge, MA Project No. 20140371.A1E

Building: 3 Bigelow St. Cambridge, MA Project Manager: Dustin D

	Sample ID	Sample Location	Media Type	Volume (L or mL)	Comments
1	718JH-A-01	Basement Play Area	Air-O-cell	150L	
2	-02	↓ Mechanical Room	↓	↓	
3	-03	1st Floor Hallway	↓	↓	
4	-04	Exterior	↓	↓	
5	-05	3rd Floor Common Area	↓	↓	

JW 7/22/14

Analysis Method: ☒ M001 (Air-O-Cell) ☐ M041 (Tape Lift/Swab) ☐ Other _____ Turnaround Time: 48 hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: _____. Please call the EnviroScience Laboratory if analyses will be late at (860) 646-2469.

Fax Results to the EnviroScience Laboratory at: 888-838-1160.

Special Instruction: _____

Samples Collected By: Jon Hand **Date:** 7/18/14 **Time:** AM/PM

Samples Sent By: Jon Hand **Date:** 7/18/14 **Time:** PM

Samples Received by: _____ **Date:** _____ **Time:** _____

Shipped To: ☒ EMSL State MA ☐ Other _____

Method of Shipment: ☒ Fed Ex ☐ UPS Overnight ☐ UPS Ground ☐ Lab Drop Off

FedEx# 7959 0730 6120

RECEIVED
JUL 22 2014
By JU 09:12

C:\Users\JHAND\Desktop\Jon - Mass Forms\Microbiology Chain of Custody docx

FUSS & O'NEILL
EnviroScience, LLC

July 31, 2014

Mr. Michael Waters, AIA
Principal
LDa Architecture & Interiors
222 Third Street, Suite 3212
Cambridge, MA 02142

RE: Hazardous Materials Abatement Cost Estimate
3 Bigelow Street in Cambridge, MA
Fuss & O'Neill EnviroScience, LLC No. 20140371.A1E

Dear Mr. Walters:

Fuss & O'Neill EnviroScience, LLC has prepared the hazardous building materials abatement cost estimates provided below (for the abovementioned Site). These cost estimates are for visible and accessible areas only, and are based on our Limited Hazardous Building Materials Inspection report prepared for the Site, dated August 1, 2014. Unit costs are based on current industry rates and are inclusive of typical contractor costs for a normal work schedule (1 shift/day), Monday to Friday. They do not include costs for an expedited work schedule (double shifts/weekends/holidays), project design, construction monitoring, air sampling, and other consultant-based fees.

Material Type	Estimated Quantity	Estimated Unit Cost	Total Estimated Cost
Wall and Ceiling Plaster	24,000 SF	$6/SF	$144,000
Black Roof Patching Compound	300 SF	$10/SF	$3,000
Gray Rolled Roofing			
Black Flashing Sealant	150 LF	$10/SF	$1,500
Tan Flue Cement	4 SF	Lump Sum	$250
Gray Sink Undercoating	5 EA	$125/EA	$625
Brown Mastic Associated with Brown with White Specks Linoleum Flooring	25 SF	Lump Sum	$500
9" x 9" Gray with Black Streak Floor Tile and Associated Mastic	250 SF	$4/SF	$1,000
Black Mastic Associated with 12" x 12" Blue Floor Tile	75 SF	$4/SF	$300

50 Redfield Street
Suite 100
Boston, MA
02122
t 617.282.4675
800.286.2469
f 617.282.8253
www.fando.com
Connecticut
Massachusetts
Rhode Island
South Carolina

Material Type	Estimated Quantity	Estimated Unit Cost	Total Estimated Cost
White Window Glazing Compound	3 EA @ 1' x 6'	$250/Each	$750
Disposal of lighting ballasts, fluorescent lamps, and mercury-containing equipment		Lump Sum	$500
Lead-Based Paint Work Practices & Limited Disposal		Lump Sum	$5,000
		Subtotal	**$157,425.00**
		(~10%) Contingency	**$16,000.00**
		Total	**$173,425.00**

Estimated unit costs are based on assumption that above-listed ACM will be removed, disposed, and transported by asbestos abatement contractor during one phase.

3 Bigelow Street
Landscape Condition Assessment Summary - Michael Wasser Associates: Landscape Architecture

Issue Characterization

LS	Life Safety/Building Code Compliance
AS	Access & Security
OC	Occupant Comfort
UA	Universal Access
ER	Envelope Remediation
PF	Program Function
FP	Functional Performance
HR	Historical Repair/Restoration
ZO	Zoning Ordinance Compliance

Remediation Priority

1	Immediate Renovation
2	Moderate Renovation
3	Extensive Renovation

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Condition Characterization*	*Remediation Priority*	*Alternate Construction*	*Notes*
Site						
Accessible Route	see Universal Access		LS/UA			
Storm Water Management						
grading	see Driveway Paving and Parking Paving	see Driveway Paving and Parking Paving	FP			
downspout discharge	downspouts are routed to cast iron subgrade drain piping, drain condition, pipe routing and discharge outlet location is unknown	inspect, clear and test subgrade drains, replace above grade cast iron bell fitting and install new copper downspout connection boots	FP			
Signage						
building number	?	install new building number	LS			
building identification signage	?	install new building identification signage	PF			
Landscape						
Plantings						
plantings	plantings are overgrown and crowded; includes tree too large for space, too close to house; includes invasive plants;	remove all plantings and provide new design				
Parking Access Driveway			PF			
curb cut	curb cut is in good condition	no work required	FP			
bituminous asphalt and subbase	asphalt paving is in poor condition; subbase materials are unknown	remove bituminous paving and excavate for new subbase preparation; install new compacted subbase and new bituminous paving	FP			
grading & drainage	driveway is sloped to drain to the curb cut and street gutter		PF		Alternate-4	confirm water issues in Lombardi Building basement

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Condition Characterization*	*Remediation Priority*	*Alternate Construction*	*Notes*
property line wheel stops (Lombardi Building)	wheel stops are in good condition	remove wheelstops; excavate to expose Lombardi Building foundation to a depth of 4' below finish grade; install dampproofing and backfill; install cast in place concrete curb or granite curb from window sill elevation to 1' below finish grade				"no parking without permission of city manager"
parking access drive space signage	signage is in poor condition and unsightly	install new signage at access driveway				
Parking			FP			verify regrading and stormwater requirements
bituminous asphalt	asphalt paving is in poor condition; subbase materials are unknown	remove bituminous paving and excavate for new subbase preparation; install new compacted subbase and new bituminous paving	FP			
grading & drainage	parking is sloped to drain to the driveway, curb cut and street gutter					
parking space marking	parking space marking lines are in poor condition					
parking space signage	signage is in poor condition	install new signage at designated parking spaces	PF			
wheel stops	wheel stops are in good condition	remove wheel stops and replace with cast in place concrete or granite curb	PF			
bollards	concrete filled steel bollards appear new; one need to be reset.	consider adding granite curb as wheel stop	PF			
fencing	most fencing is in poor condition	replace fencing with new wood privacy fence				
aphalt curb (back porch)	asphalt curb in poor condition	remove asphalt curb and replace with cast-in-place concrete or granite curb				
rear steps and railing	concrete steps in poor condition and railing does not meet universal access code	replace concrete steps/landing and railing for code compliance				
trash enclosure	trash enclosure make shift and in poor condition; too small for number of containers	design options for new efficient enclosure				
Front Yard			HR			
stone curb	curb is in good condition but is stained, out of original alignment and is settling	remove and reset in concrete base/powerwash	HR			
stone bollards	bollards are in good condition/are stained and out of original alignment	remove and reset in concrete base/power wash	HR			
original wrought iron fence	missing	consider replacing based on historic photos.				
Side Yard						
planting/ground cover	side yard consists of weeds and some overgrown plants	remove and provide new low maintenance design for side yard				
fence	wood stockade fence in poor condition and appears to below to neighbor	consider working with neighbor to replace fence.				
Entry Steps and Landings						

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Condition Characterization*	*Remediation Priority*	*Alternate Construction*	*Notes*
entry landing	granite landing is in good condition; step to door threshold is not universal access code compliant	consider options for universal access	HR			AAB Variance
entry steps	granite steps are in good condition; tread and riser geometry is not universal access code compliant	consider options for universal access				
entry steps bottom landing/sidewalk transition	concrete landing is in poor condition; step transition to sloping sidewalk is not universal access code compliant	replace concrete landing; consider options for universal access	LS/UA			AAB Variance
stone step walls			HR			
entry steps handrails	painted steel handrails are not building or universal access code compliant	remove handrails and replace with new code compliant configurations	LS/UA			AAB Variance
entry landing guardrails	painted steelguardrails are not building or universal access code compliant	remove guardrails and replace with new code compliant configurations	LS/UA			AAB Variance
1st Floor Egress						
1st floor door landing & steps			LS/AS			
1st floor door handrails			LS/AS			
Universal Access						
Site						
van parking space	not existing; resident and staff parking is not provided	no work required	UA			
van parking signage	not existing; resident and staff parking is not provided	no work required	UA			
accessible route to main entrance	not existing; building is not currently accessible	designate an accessible route from the pubic sidewalk; install an accessible ramp or a lift to the main entrance at the first first floor level	UA			AAB Variance if the accessible route is not to the street entrance

City of Cambridge, 3 Bigelow Street
Cambridge, MA

Feasibility Estimate

08-11-2014

Architect: LDA

ASSOCIATES
A CONSTRUCTION CONSULTING FIRM

35 Highland Circle, Suite 200, Needham, MA 02494

City of Cambridge, 3 Bigelow Street
Cambridge, MA
Feasibility Estimate

08-11-2014

BASIS OF ESTIMATE

The estimate is based on the feasibility drawings and documents prepared by LDA Architects, LLC dated 07-23-2014.

Qualifications / Clarifications:

1 Labor costs included at non-union, prevailing wage labor rates
2 The following mark ups area used:

Contingency - Unknown Site/Design:	15.00%
General Conditions and Profit incl:	21.75%
Contractor's Supervision	
Scheduling Staff	
Engineer's Office Cleaning and Support	
Contractor's Office and Support	
Internet and Phone Lines	
Permits, Survey, and Signage	
Progress Photos	
Allowance for staging area and Temp Storage	
Site Safety and upkeep	
Site Security	
Escalation to Mid-Point Date, Spring, 2015	5.00%
Construction Contingency	0.00%

3 CPA Value $172,000
* Above CPA value does not represent a stand alone construction cost

4 We assume all required municipal water is available at the property line. The water is to be served from dual services connected to a suitably sized water main that is part of a looped supply system.
5 The estimate assumes all long-lead items can be pre-purchased to meet schedule requirements.
6 The estimate is based on the premise that the design will meet all codes, laws, ordinances, rules, and regulations in effect at the time that the estimate was prepared. The estimate shall be adjusted should any discrepancies between design and the aforementioned codes, laws or ordinances result in, or require, an increase in the Cost of the Work

The estimate excludes the following:

1 A-E Fees.
2 Overtime.
4 Working in contaminated soils.
5 Loose furniture and equipment.
6 Loose technology equipment (i.e. Computers, Printers, Etc.)
7 Builder's Risk Insurance.
8 Special seismic requirements.
9 Third party commissioning costs.
10 Work associated with the removal or remediation of contaminated soils, underpinning of existing foundations, unsuitable soil, unidentified underground obstructions or any other unsuitable materials including the haul in of replacement material.
11 Geotechnical engineering.
12 Utility company back charges and user fees/surcharges.
13 Testing or inspection services, as required by State Building Code or other: concrete, soils, pavement, fireproofing.
14 Costs associated with air monitoring/clearance sampling.
15 Tenant relocation costs

08-11-2014

City of Cambridge, 3 Bigelow Street
Cambridge, MA
Feasibility Estimate

Architect: LDA

Construction Cost Estimate Summary

	Total Program Area		Cost		One line specification or comments
	level 0	1691			
	level 1	1707			
	level 2	1567			
	level 3	1560			
	Total	6525			
024100	Demolition	9.13	59,550		
028100	Abatement	30.65	200,000		
031000	Concrete Formwork	3.60	23,500		
032000	Concrete Flatwork	3.91	25,483		
040000	Masonry	0.00	-		
051000	Structural Steel Framing	0.00	-		
055000	Metal Fabrications	0.87	5,700		
061000	Rough Carpentry	12.73	83,055		
064000	Interior Architectural Woodwork	3.77	24,585		
070000	Waterproofing & Damp-proofing	0.38	2,500		
072000	Insulation system	8.86	57,840		
075000	Roofing	7.55	49,237		
079200	Joint Sealants & Caulking	1.35	8,840		
081000	Doors, Frames and Hardware	13.49	88,000		
088000	Glazing	7.43	48,465		
092000	Gypsum Board Assemblies	30.44	198,648		
093000	Tiling	9.34	60,920		
096400	Wood flooring	2.87	18,756		
095000	Acoustical Panel Ceiling	0.00	-		
096500	Resilient Flooring	3.99	26,030		
096800	Carpet	0.00	-		
099000	Painting	7.47	48,760		
101100	Specialties	1.11	7,270		
110000	Equipment	2.48	16,200		
120000	Furnishings	0.00	-		
130000	Special Construction	0.00	-		
140000	Conveying Equipment	6.13	40,000		
210000	Fire Protection	7.72	50,390		
220000	Plumbing	28.40	185,300		
230000	HVAC	22.91	149,475		
260000	Electrical	28.98	189,101		
310000	Building Sitework	8.12	52,970		
320000	Site Improvements	23.71	154,685		
	Subtotal for Direct Costs	287.40	1,875,261		
	General Conditions		168,800	9.0%	
	General Requirements		75,100	4.0%	
	Insurances & Bonds		61,000	3.3%	
	Permits		28,200	1.5%	
	General Contractor Fee		88,400	4.0%	
	Subtotal ECC Before Contingencies	351.99	**2,296,761**		
	Contingencies				
	Design Contingency		344,600	15.0%	
	Escalation Contingency		114,900	5.0%	Through Spring 2015
	Construction Contingency		-	0.0%	
	Total ECC with Contingencies	422	**2,756,261**		

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CPA Building	$	116,650
CPA Site	$	38,600
CPA Alternates	$	59,900

Alternates # 01	Reconstruction eave soffit brackets	CPA	$	10,500	ADD
Alternates # 02	Reconstruct porch detailing and arched exterior doors ILO repair and refinish (IMG 9359)	CPA	$	12,000	ADD
Alternates # 03	Install PVC roof membrane or metal roof ILO asphalt shingles		$	19,480	ADD
Alternates # 04	Replace wheel stop curb at Lombardi bldg w/ cast in place concrete curb		$	12,000	ADD
Alternates # 05	Replace cast iron storm drain pipong to street connection		$	35,040	ADD
Alternates # 06	Install new wood crown molding to match extg plaster moldings at bedrooms & offices		$	35,040	ADD
Alternates # 07	Install new cameras and an on-site video monitoring system		$	119,700	ADD
Alternates # 08	Omit fireplaces and assoc. masonry chimney mass above level 0 clgs, patch floor construction and finishes		$	9,514	ADD
Alternates # 09	Install new air conditioning system at bedrooms		$	75,700	ADD
Alternates # 10	Add Public Toilet atl Level 0		$	49,870	ADD
Alternates # 11	Frame upper high roof to original low-slope configuration	CPA	$	37,400	ADD
Alternates # 12	Remove fire escape and replace egress door w/ new window unit			13,090.00	ADD
Alternates # 13	Install new accessible route to main entry		$	70,700	ADD

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Construction Cost Estimate Detail

Code	CPA	Description	Quantity	Unit	Rate	Assembly Cost
024100		Demolition				$ 59,550
		Level 0				
		Remove floor finish	1,495	SF	$ 3.00	$ 4,485
		Remove extg slab on grade	1,495	SF	$ 8.00	$ 11,960
		Excavation for new basement slab	1,495	SF	$ 6.00	$ 8,970
		Remove door, 1dr unit	6	EA	$ 150.00	$ 900
		Excacation for elevator pit, hand	1	EA	$ 350.00	$ 350
		Slab cutting/removal for UG plumbing	200	SF	$ 25.00	$ 5,000
		Dumpster	5	EA	$ 750.00	$ 3,750
		Level 1				
		Remove floor finish	1,372	SF	$ 3.00	$ 4,116
		Remove door, 1dr unit	15	EA	$ 150.00	$ 2,250
		Remove equipment	3	EA	$ 150.00	$ 450
		Remove plumbing fixture	15	EA	$ 150.00	$ 2,250
		Level 2				
		Remove floor finish	1,268	SF	$ 3.00	$ 3,804
		Remove door, 1dr unit	15	EA	$ 150.00	$ 2,250
		Remove equipment	3	EA	$ 150.00	$ 450
		Remove plumbing fixture	10	EA	$ 150.00	$ 1,500
		Level 3				
		Remove floor finish	1,255	SF	$ 3.00	$ 3,765
		Remove door, 1dr unit	14	EA	$ 150.00	$ 2,100
		Remove equipment	3	EA	$ 150.00	$ 450
		Remove plumbing fixture	5	EA	$ 150.00	$ 750
028100		Abatement				$ 200,000
		Interior and exterior abatement	1	ALW	$ 200,000.00	$ 200,000
		Scope to be finalized upon field investigation				
031000		Concrete Formwork				$ 23,500
		Exterior				$ -
		New rear entry ramp, slab on grade	1	EA	$ 12,000.00	$ 12,000
		Interior				
		New elevator pit, 10" D	1	EA	$ 2,500.00	$ 2,500
		New int. footings for extg columns.	10	EA	$ 900.00	$ 9,000
		Extg foundation wall repairs				
032000		Concrete Flatwork				$ 25,483
		Interior				$ -
		New replacement slab at basement	1,691	SF	$ 9.00	$ 15,219
		Subgrade materials for slab	1,691	SF	$ 4.00	$ 6,764
		Mech room equipment pads	2	EA	$ 800.00	$ 1,600
		Exterior				$ -
		New front walkway, walk	100	SF	$ 19.00	$ 1,900
040000		Masonry				$ -
		Basement foundation wall, repairs	1	LS		$ -
051000		Structural Steel Framing				$ -
		no work				$ -
055000		Metal Fabrications				$ 5,700
		Exterior				
		railings @ rear ramp entry	1	LS	$ 5,700.00	$ 5,700
061000		Rough Carpentry				$ 83,055
		Interior				
		Restore Main stair 1-2 w/ historic finishes & detailing	1	LS	$ 6,000.00	$ 6,000

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Code	CPA	Description	Quantity	Unit	Rate	Assembly Cost
		Restore Main stair Hall 1-2 w/ historic finishes & detailing	1	LS	$ 6,000.00	$ 6,000
		Reframe floor @ level 1	1	LS	$ 1,500.00	$ 1,500
		Cut openning for elevator from level 0 to level 1	1	LS	$ 1,400.00	$ 1,400
		Misc wall repairs and framing	5	DY	$ 680.00	$ 3,400
		Misc subfloor repairs	4	DY	$ 680.00	$ 2,720
		Capentry support for other trades	15	DY	$ 680.00	$ 10,200
		Exterior				
	CPA	Exterior façade repairs	12	DY	$ 880.00	$ 10,560
	CPA	Exterior facia/trim boards, PVC, replace	1	LS	$ 28,600.00	$ 28,600
	CPA	Siding repairs	845	SF	$ 15.00	$ 12,675
064000		Interior Architectural Woodwork				$ 24,585
		Level 1				
		Wall & base cabinets	7	LF	$ 150.00	$ 1,050
		counter	26	LF	$ 150.00	$ 3,900
		Shelving	12	LF	$ 50.00	$ 600
		wall base, WD	50	LF	$ 35.00	$ 1,750
		Level 2				
		Wall & base cabinets	9	LF	$ 150.00	$ 1,350
		counter	14	LF	$ 150.00	$ 2,100
		Shelving	28	LF	$ 50.00	$ 1,400
		wall base , WD	58	LF	$ 35.00	$ 2,030
		Level 3				
		Wall & base cabinets	8	LF	$ 150.00	$ 1,200
		counter	16	LF	$ 150.00	$ 2,400
		Shelving	29	LF	$ 50.00	$ 1,450
		wall base, WD	53	LF	$ 35.00	$ 1,855
		Dormer window desk units	5	EA	$ 700.00	$ 3,500
070000		Waterproofing & Damp-proofing				$ 2,500
		Elevator pit	1	EA	$ 2,500.00	$ 2,500
072000		Insulation system				$ 57,840
		Roof insulation	1,560	SF	$ 10.00	$ 15,600
		Exterior wall insulation	8,448	SF	$ 5.00	$ 42,240
075000		Roofing				$ 49,237
		Demo extg roof, shingle	1,560	SF	$ 3.00	$ 4,680
		Demo extg roof, slate, salvage for reinstall	800	SF	$ 9.00	$ 7,200
		Demo porch roof	179	SF	$ 3.00	$ 537
		New shingled roof, high	1,560	SF	$ 6.00	$ 9,360
		Reinstall slate	800	SF	$ 13.00	$ 10,400
		New porch roof	179	SF	$ 20.00	$ 3,580
		Flashings/counterflashing	1	LS	$ 7,600.00	$ 7,600
		Gutters, fiberglass	200	LF	$ 15.00	$ 3,000
		Downspouts	192	LF	$ 15.00	$ 2,880
079200		Joint Sealants & Caulking				$ 8,840
		Exterior, dissimiliar materials caulking	1	LS	$ 5,000.00	$ 5,000
		Interior, dissimiliar materials caulking	1	LS	$ 3,840.00	$ 3,840
081000		Doors, Frames and Hardware				$ 88,000
		Level 0				
		Single leaf, wd frame	8	EA	$ 700.00	$ 5,600
		Single leaf, wd door	8	EA	$ 800.00	$ 6,400
		Hardware	8	EA	$ 500.00	$ 4,000
		Level 1				
		Single leaf, wd frame	9	EA	$ 700.00	$ 6,300
		Single leaf, wd door	9	EA	$ 800.00	$ 7,200
		Wood door, closet	3	EA	$ 500.00	$ 1,500
		Hardware	12	EA	$ 500.00	$ 6,000
		Level 2				
		Single leaf, wd frame	10	EA	$ 700.00	$ 7,000

Construction Cost Estimate Detail

Code	CPA	Description	Quantity	Unit	Rate	Assembly Cost
		Single leaf, wd door	10	EA	$ 800.00	$ 8,000
		Wood door, closet	6	EA	$ 500.00	$ 3,000
		Hardware	16	EA	$ 500.00	$ 8,000
		Level 3				
		Single leaf, wd frame	9	EA	$ 700.00	$ 6,300
		Single leaf, wd door	9	EA	$ 800.00	$ 7,200
		Wood door, closet	7	EA	$ 500.00	$ 3,500
		Hardware	16	EA	$ 500.00	$ 8,000
088000		Glazing				$ 48,465
	CPA	Exterior windows, in extg framed opening, furnish	41	EA	$ 900.00	$ 36,900
	CPA	Exterior windows, in extg framed opening, install	41	EA	$ 95.00	$ 3,895
	CPA	Existing window opening, sill and opening repair work, 20% of extg openings	9	EA	$ 580.00	$ 5,220
		Interior sidelight/door/wall glazing, allowance	50	SF	$ 49.00	$ 2,450
092000		Gypsum Board Assemblies				$ 198,648
		Level 0				$ -
		GWB 2S, with sound attenuation	1,446	SF	$ 5.75	$ 8,315
		GWB 2S, with sound attenuation and stud	1,483	SF	$ 9.75	$ 14,459
		GWB 1S, with thermal insulation @ exterior wall	1,696	SF	$ 10.25	$ 17,384
		GWB ceiling	1,384	SF	$ 12.00	$ 16,608
		Level 1				$ -
		GWB 2S, with sound attenuation	1,696	SF	$ 5.75	$ 9,752
		GWB 2S, with sound attenuation and stud	662	SF	$ 9.75	$ 6,455
		GWB 1S, with thermal insulation @ exterior wall	1,726	SF	$ 10.25	$ 17,692
		GWB ceiling	1,355	SF	$ 12.00	$ 16,260
		Level 2				$ -
		GWB 2S, with sound attenuation	1,538	SF	$ 5.75	$ 8,844
		GWB 2S, with sound attenuation and stud	515	SF	$ 9.75	$ 5,021
		GWB 1S, with thermal insulation @ exterior wall	1,616	SF	$ 10.25	$ 16,564
		GWB ceiling	1,262	SF	$ 12.00	$ 15,144
		Level 3				$ -
		GWB 2S, with sound attenuation	1,252	SF	$ 5.75	$ 7,199
		GWB 2S, with sound attenuation and stud	856	SF	$ 9.75	$ 8,346
		GWB 1S, with thermal insulation @ exterior wall	1,539	SF	$ 10.25	$ 15,775
		GWB ceiling	1,236	SF	$ 12.00	$ 14,832
093000		Tiling				$ 60,920
		Level 1				
		Ceramic tile , floor	131	SF	$ 20.00	$ 2,620
		Ceramic tile , walls, 08' AFF	640	SF	$ 20.00	$ 12,800
		Level 2				$ -
		Ceramic tile , floor	223	SF	$ 20.00	$ 4,460
		Ceramic tile , walls, 08' AFF	960	SF	$ 20.00	$ 19,200
		Level 3				$ -
		Ceramic tile , floor	196	SF	$ 20.00	$ 3,920
		Ceramic tile , walls, 08' AFF	896	SF	$ 20.00	$ 17,920
096400		Wood flooring				$ 18,756
		Level 1				
		repair and refinish hardwood flooring	1,138	SF	$ 9.00	$ 10,242
		Level 2	1			
		repair and refinish hardwood flooring	946	SF	$ 9.00	$ 8,514
		Level 3				
		repair and refinish hardwood flooring	-	SF	$ -	$ -
095000		Acoustical Panel Ceiling				$ -
		no work				$ -
096500		Resilient Flooring				$ 26,030

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Code	CPA	Description	Quantity	Unit	Rate	Assembly Cost
		Level 0				
		rubber tile flooring	1,384	SF	$ 10.00	$ 13,840
		Level 1				
		rubber tile flooring	86	SF	$ 10.00	$ 860
		Level 2				
		rubber tile flooring	93	SF	$ 10.00	$ 930
		Level 3				
		rubber tile flooring	1,040	SF	$ 10.00	$ 10,400
096800		Carpet				$ -
		No work				$ -
099000		Painting				$ 48,760
		Interior				
		Level 0				
		GWB wall paint	7,554	SF	$ 0.95	$ 7,176
		GWB ceiling paint	1,384	SF	$ 1.10	$ 1,522
		Level 1				
		GWB wall paint	6,442	SF	$ 0.95	$ 6,120
		GWB ceiling paint	1,355	SF	$ 1.10	$ 1,491
		Level 2				
		GWB wall paint	5,722	SF	$ 0.95	$ 5,436
		GWB ceiling paint	1,262	SF	$ 1.10	$ 1,388
		Level 3				
		GWB wall paint	5,755	SF	$ 0.95	$ 5,467
		GWB ceiling paint	1,236	SF	$ 1.10	$ 1,360
		Exterior	-	SF	$ 1.10	$ -
	CPA	Exterior painting, trimwork	20	DY	$ 940.00	$ 18,800
101100		Specialties				$ 7,270
		Toilet Accessories				
		Grab bars	12	EA	$ 80.00	$ 960
		TP dispensers	12	EA	$ 50.00	$ 600
		PT dispenser, by others	12	EA	$ -	$ -
		Waste receptacle, by others	12	EA	$ -	$ -
		Medicine cabinets	10	EA	$ 250.00	$ 2,500
		Shower rod	10	EA	$ 80.00	$ 800
		Shower curtain	10	EA	$ 100.00	$ 1,000
		Door signage, interior	9	EA	$ 90.00	$ 810
		Directory sign	1	EA	$ 600.00	$ 600
110000		Equipment				$ 16,200
		Washer	1	EA	$ 1,200.00	$ 1,200
		Dryer	1	EA	$ 1,200.00	$ 1,200
		Fridge	4	EA	$ 1,800.00	$ 7,200
		Stove, elec	4	EA	$ 950.00	$ 3,800
		Range hood	4	EA	$ 300.00	$ 1,200
		Microwave	4	EA	$ 400.00	$ 1,600
120000		Furnishings				$ -
		Window treatment @ exterior by YMCA	41	EA	$ -	$ -
130000		Special Construction				$ -
		No Work				$ -
140000		Conveying Equipment				$ 40,000
		Elevator, LULA 2 stop, B-1	1	EA	$ 40,000.00	$ 40,000
210000		Fire Protection				$ 50,390
		New check valve assembly/ BFP	1	EA	$ 8,500.00	$ 8,500
		New sprinkler, heads	109	EA	$ 85.00	$ 9,265
		Piiping systems	6,525	SF	$ 5.00	$ 32,625
220000		Plumbing				$ 185,300
		Level 0				
		Laundry area piping	1	LS	$ 900.00	$ 900

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Code	CPA	Description	Quantity	Unit	Rate	Assembly Cost
		Piping and connections for fixtures, HW/CW/Waste/Vent	1	LS	$ 5,000.00	$ 5,000
		Water heater	1	EA	$ 4,900.00	$ 4,900
		Level 1				$ -
		Toilet	3	EA	$ 500.00	$ 1,500
		Sink	5	EA	$ 300.00	$ 1,500
		Shower valve/head	2	EA	$ 400.00	$ 800
		Shower tub	2	EA	$ 500.00	$ 1,000
		Piping and connections for fixtures, HW/CW/Waste/Vent	1	LS	$ 38,400.00	$ 38,400
		Level 2				$ -
		Toilet	4	EA	$ 500.00	$ 2,000
		Sink	5	EA	$ 300.00	$ 1,500
		Shower valve/head	4	EA	$ 400.00	$ 1,600
		Shower tub	4	EA	$ 500.00	$ 2,000
		Piping and connections for fixtures, HW/CW/Waste/Vent	1	LS	$ 48,000.00	$ 48,000
		Level 3				$ -
		Toilet	4	EA	$ 500.00	$ 2,000
		Sink	5	EA	$ 300.00	$ 1,500
		Shower valve/head	4	EA	$ 400.00	$ 1,600
		Shower tub	4	EA	$ 500.00	$ 2,000
		Piping and connections for fixtures, HW/CW/Waste/Vent	1	LS	$ 54,400.00	$ 54,400
		Gas piping for MEP equipment	1	LS	$ 7,500.00	$ 7,500
		Misc.				$ -
		Shop drawings	1	LS	$ 4,800.00	$ 4,800
		As builts	1	LS	$ 2,400.00	$ 2,400
230000		HVAC				$ 149,475
		Equipment	1			$ -
		Boiler	1	EA	$ 10,000.00	$ 10,000
		Heating vectors, baseboard	6,525	SF	$ 6.00	$ 39,150
		Bathroom exhaust fans	4	EA	$ 800.00	$ 3,200
		Kitchen exhaust fans	4	EA	$ 900.00	$ 3,600
		A/C systems for Offices	2	EA	$ 4,900.00	$ 9,800
		Ductwork	1			$ -
		Exhaust fan ductwork, bathroom	4	EA	$ 200.00	$ 800
		Exhaust fan ductwork, kitchen	4	EA	$ 1,500.00	$ 6,000
		Boiler vent piping, direct vent	1	LS	$ 2,000.00	$ 2,000
		Piping Systems				$ -
		Piping systems	6,525	SF	$ 4.00	$ 26,100
		Controls	1			$ -
		New DDC systems	6,525	SF	$ 5.00	$ 32,625
		Misc.				$ -
		Shop drawings	1	LS	$ 6,000.00	$ 6,000
		As builts	1	LS	$ 4,800.00	$ 4,800
		Testing and balancing	1	LS	$ 5,400.00	$ 5,400
260000		Electrical				$ 189,101
		Service	1			$ -
		Upgrade existing service	1	LS	$ 15,000.00	$ 15,000
		New distribution panel work	1	LS	$ 7,500.00	$ 7,500
		New wiring throughout, labor	160	HRS	$ 90.00	$ 14,400
		New wiring throughout, material	1	LS	$ 7,000.00	$ 7,000
		Devices				$ -
		Outlets, wall mounted	100	EA	$ 120.00	$ 12,000
		Outlets, wall mounted, GFIC	20	EA	$ 120.00	$ 2,400
		Outlets, ceiling mounted	-	EA	$ 140.00	$ -
		Outlets, floor mounted	-	EA	$ 500.00	$ -
		Lighting	1			$ -
		Interior, fixtures, furnish, avg price	100	EA	$ 300.00	$ 30,000
		Interior, fixtures, install	100	EA	$ 130.00	$ 13,000
		Exterior, fixtures, furnish, avg price	8	EA	$ 500.00	$ 4,000
		Exterior, fixtures, install	8	EA	$ 150.00	$ 1,200
		Switches	60	EA	$ 122.00	$ 7,320
		Life Safety				

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Code	CPA	Description	Quantity	Unit	Rate	Assembly Cost
		Fire Alarm System	6,525	SF	$ 8.00	$ 52,200
		Tel/Data				$ -
		IT jacks and wiring	6,525	SF	$ 1.00	$ 6,525
		Cable TV wiring	6,525	SF	$ 1.25	$ 8,156
		Misc.				$ -
		Shop drawings	1	LS	$ 4,800.00	$ 4,800
		As builts	1	LS	$ 3,600.00	$ 3,600
310000		Earthwork				$ 52,970
		Demolition	1			$ -
		Exterior	1			$ -
		Remove site vegetation/plantings	1	LS	$ 4,500.00	$ 4,500
		Remove and salvage stone edging at sidewalk	40	LF	$ 75.00	$ 3,000
		Remove and salvage stone piers	4	EA	$ 400.00	$ 1,600
		Remove asphalt paving	5,500	SF	$ 2.00	$ 11,000
		Remove asphalt paving subgrade materials	5,500	SF	$ 2.10	$ 11,550
		Remove sidewalk, Bigelow Street frontage	400	SF	$ 15.00	$ 6,000
		Front stair landing, remove landing, conc.	40	SF	$ 20.00	$ 800
		Excavation at parking area to 04' below grade for foundation dampproofing	1	LS	$ 4,800.00	$ 4,800
		Dumpsters for debris materials	3	EA	$ 740.00	$ 2,220
		New Work				
		Excavation and backfill for Fire Water service	1	LS	$ 7,500.00	$ 7,500
320000		Site Improvements				$ 154,685
		New Work	1			$ -
		Exterior	1			$ -
	CPA	New sidewalk, Bigelow Street, frontage	400	SF	$ 10.00	$ 4,000
	CPA	Reset stone piers	4	EA	$ 200.00	$ 800
	CPA	Reset stone edge, Bigelow Street frontage	40	LF	$ 80.00	$ 3,200
		New gravel base for asphalt paving	5,500	SF	$ 1.50	$ 8,250
		New asphalt paving	5,500	SF	$ 7.00	$ 38,500
		Pavement markings	1	LS	$ 800.00	$ 800
		General parking post/sign	6	EA	$ 250.00	$ 1,500
		Curbing, granite	350	LF	$ 45.00	$ 15,750
		Curbing, granite, concrete for setting	35	CY	$ 335.00	$ 11,725
		Dumpster pad, trash	240	SF	$ 35.00	$ 8,400
		Dumpster pad trash, enclosure	64	LF	$ 90.00	$ 5,760
	CPA	New plantings, front, allowance	1	ALW	$ 30,000.00	$ 30,000
		New plantings, perimeter, allowance	1	ALW	$ 20,000.00	$ 20,000
	CPA	Front stair landing, replace landing, conc.	40	SF	$ 15.00	$ 600
		Curbing at grade for window wells, allowance	1	LS	$ 5,400.00	$ 5,400
		Perimeter fencing at property edge, by owner	-	LF	$ -	$ -
		Direct Cost For Above Work				$ 1,875,261

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City of Cambridge, 3 Bigelow Street
Cambridge, MA
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Architect: LDA

Alternates

Code	CPA	Description	Quantity	Unit	Rate	Assembly Cost
Alternate 01	CPA	Reconstruction eave soffit brackets				
		Reconstruction eave soffit brackets	1	LS	$ 6,500.00	$ 6,500
		Subtotal for above work				$ 6,500
		General Conditions			9.00%	$ 600
		General Requirements			4.00%	$ 300
		Insurances & Bonds			3.25%	$ 300
		Permits			1.50%	$ 100
		General Contractor Fee			4.00%	$ 400
		Subtotal for construction costs w/out contingencies				$ 8,200
		Design Contingency			15%	$ 1,300
		Escalation Contingency			5%	$ 500
		Construction Contingency			0%	$ -
Alternate 01		Total for construction costs w/ contingencies	ADD			$ 10,500
Alternate 02	CPA	Reconstruct porch detailing and arched exterior doors ILO repair and refinish (IMG 9359)				
		Reconstruct porch detailing and arched exterior doors ILO repair and refinish	1	LS	$ 7,500.00	$ 7,500
						$ -
						$ -
						$ -
		Subtotal for above work				$ 7,500
		General Conditions			9.00%	$ 700
		General Requirements			4.00%	$ 300
		Insurances & Bonds			3.25%	$ 300
		Permits			1.50%	$ 200
		General Contractor Fee			4.00%	$ 400
		Subtotal for construction costs w/out contingencies				$ 9,400
		Design Contingency			15.00%	$ 1,500
		Escalation Contingency			5.00%	$ 500
		Construction Contingency			0.00%	$ -
Alternate 02		Total for construction costs w/ contingencies	ADD			$ 12,000
Alternate 03		Install PVC roof membrane or metal roof ILO asphalt shingles				
		Install PVC roof membrane or metal roof ILO asphalt shingles	1,560	SF	$ 8.00	$ 12,480
						$ -
						$ -
						$ -
		Subtotal for above work				$ 12,480
		General Conditions			9.00%	$ 1,200
		General Requirements			4.00%	$ 500
		Insurances & Bonds			3.25%	$ 500
		Permits			1.50%	$ 200
		General Contractor Fee			4.00%	$ 600
		Subtotal for construction costs w/out contingencies				$ 15,480
		Design Contingency			15.00%	$ 2,400
		Escalation Contingency			5.00%	$ 800
		Construction Contingency			0.00%	$ -
Alternate 03		Total for construction costs w/ contingencies	ADD			$ 19,480

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Alternates

Code	CPA	Description	Quantity	Unit	Rate	Assembly Cost
Alternate 04		Replace wheel stop curb at Lombardi bldg w/ cast in place concrete curb				
		Replace wheel stop curb at Lombardi bldg w/ cast in place concrete curb	60	LF	$ 125.00	$ 7,500
						$ -
						$ -
						$ -
		Subtotal for above work				$ 7,500
		General Conditions			9.00%	$ 700
		General Requirements			4.00%	$ 300
		Insurances & Bonds			3.25%	$ 300
		Permits			1.50%	$ 200
		General Contractor Fee			4.00%	$ 400
		Subtotal for construction costs w/out contingencies				$ 9,400
		Design Contingency			15.00%	$ 1,500
		Escalation Contingency			5.00%	$ 500
		Construction Contingency			0.00%	$ -
Alternate 04		Total for construction costs w/ contingencies	ADD			$ 12,000
Alternate 05		Replace cast iron storm drain pipong to street connection				
		Excavate and remove extg pipe	80	LF	$ 75.00	$ 6,000
		New PVC piping, 06", storm	80	LF	$ 65.00	$ 5,200
		New PVC piping, 06", sewer, 06"	80	LF	$ 65.00	$ 5,200
		Street connection and tie in	1	EA	$ 3,500.00	$ 3,500
		Patch extg surface materials	320	SF	$ 6.00	$ 1,920
		Street opening fee	1	LS	$ 200.00	$ 200
		Police detail	1	DY	$ 520.00	$ 520
						$ -
		Subtotal for above work				$ 22,540
		General Conditions			9.00%	$ 2,100
		General Requirements			4.00%	$ 1,000
		Insurances & Bonds			3.25%	$ 800
		Permits			1.50%	$ 400
		General Contractor Fee			4.00%	$ 1,100
		Subtotal for construction costs w/out contingencies				$ 27,940
		Design Contingency			15.00%	$ 4,200
		Escalation Contingency			5.00%	$ 1,400
		Construction Contingency			0.00%	$ -
Alternate 05		Total for construction costs w/ contingencies	ADD			$ 35,040
Alternate 06		Install new wood crown molding to match extg plaster moldings at bedrooms & offices				
		Install new wood crown molding to match extg plaster moldings	644	LF	$ 35.00	$ 22,540
						$ -
		Subtotal for above work				$ 22,540
		General Conditions			9.00%	$ 2,100
		General Requirements			4.00%	$ 1,000
		Insurances & Bonds			3.25%	$ 800
		Permits			1.50%	$ 400
		General Contractor Fee			4.00%	$ 1,100
		Subtotal for construction costs w/out contingencies				$ 27,940
		Design Contingency			15.00%	$ 4,200

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Architect: LDA

Alternates

Code	CPA	Description	Quantity	Unit	Rate	Assembly Cost
		Escalation Contingency			5.00%	$ 1,400
		Construction Contingency			0.00%	$ -
Alternate 06		Total for construction costs w/ contingencies	ADD			$ 35,040
Alternate 07		Install new cameras and an on-site video monitoring system				
		Install new cameras	6	EA	$ 6,800.00	$ 40,800
		New monitoring equipment	1	ALW	$ 25,000.00	$ 25,000
		Wiring and connections	1	LS	$ 12,000.00	$ 12,000
		Subtotal for above work				$ 77,800
		General Conditions			9.00%	$ 7,100
		General Requirements			4.00%	$ 3,200
		Insurances & Bonds			3.25%	$ 2,600
		Permits			1.50%	$ 1,200
		General Contractor Fee			4.00%	$ 3,700
		Subtotal for construction costs w/out contingencies				$ 95,600
		Design Contingency			15.00%	$ 14,400
		Escalation Contingency			5.00%	$ 4,800
		Construction Contingency			0.00%	$ -
Alternate 07		Total for construction costs w/ contingencies	ADD			$ 119,700
Alternate 08		Omit fireplaces and assoc. masonry chimney mass above level 0 clgs, patch floor construction and finishes				
		Omit fireplaces and assoc. masonry chimney mass above level 0 clgs, patch floor construction and finishes	1	LS	$ 6,014.00	$ 6,014
						$ -
						$ -
						$ -
		Subtotal for above work				$ 6,014
		General Conditions			9.00%	$ 600
		General Requirements			4.00%	$ 300
		Insurances & Bonds			3.25%	$ 200
		Permits			1.50%	$ 100
		General Contractor Fee			4.00%	$ 300
		Subtotal for construction costs w/out contingencies				$ 7,514
		Design Contingency			15.00%	$ 1,200
		Escalation Contingency			5.00%	$ 400
		Construction Contingency			0.00%	$ -
Alternate 08		Total for construction costs w/ contingencies	ADD			$ 9,514
Alternate 09		Install new air conditioning system at bedrooms				
		Install new air conditioning system at bedrooms	10	EA	$ 4,900.00	$ 49,000
						$ -
						$ -
		Subtotal for above work				$ 49,000
		General Conditions			9.00%	$ 4,500
		General Requirements			4.00%	$ 2,000
		Insurances & Bonds			3.25%	$ 1,600
		Permits			1.50%	$ 800
		General Contractor Fee			4.00%	$ 2,400
		Subtotal for construction costs w/out contingencies				$ 60,300
		Design Contingency			15.00%	$ 9,100

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Architect: LDA

Alternates

Code	CPA	Description	Quantity	Unit	Rate	Assembly Cost
		Escalation Contingency			5.00%	$ 3,100
		Construction Contingency			0.00%	$ -
Alternate 09		Total for construction costs w/ contingencies	ADD			$ 75,700
Alternate 10		Add Public Toilet atl Level 0				
		Wall construction	24	LF	$ 200.00	$ 4,800
		Ceramic tile, flooring	56	SF	$ 20.00	$ 1,120
		Ceramic tile, walls	240	SF	$ 20.00	$ 4,800
		Paint	1	LS	$ 500.00	$ 500
		Toilet accessories, grab bars	2	EA	$ 150.00	$ 300
		Toilet accessories, mirror	1	EA	$ 750.00	$ 750
		Toilet accessories, waste receptor	1	EA	$ 600.00	$ 600
		Toilet accessories, hand dryer	1	EA	$ 500.00	$ 500
		Plumbing, lav (fixture/piping/connections)	1	EA	$ 5,600.00	$ 5,600
		Plumbing, toilet (fixture/piping/connections)	1	EA	$ 5,600.00	$ 5,600
		HVAC, exhaust fan and grill	1	LS	$ 4,900.00	$ 4,900
		Elec, lighting, switch, GFIC outlet	1	LS	$ 2,800.00	$ 2,800
						$ -
		Subtotal for above work				$ 32,270
		General Conditions			9.00%	$ 3,000
		General Requirements			4.00%	$ 1,300
		Insurances & Bonds			3.25%	$ 1,100
		Permits			1.50%	$ 500
		General Contractor Fee			4.00%	$ 1,600
		Subtotal for construction costs w/out contingencies				$ 39,770
		Design Contingency			15.00%	$ 6,000
		Escalation Contingency			5.00%	$ 2,000
		Construction Contingency			0.00%	$ -
Alternate 10		Total for construction costs w/ contingencies	ADD			$ 49,870
Alternate 11	CPA	Frame upper high roof to original low-slope configuration				
		Frame upper high roof to original low-slope configuration, labor	160	HRS	$ 95.00	$ 15,200
		Materials for abov work	1	LS	$ 9,000.00	$ 9,000
						$ -
						$ -
		Subtotal for above work				$ 24,200
		General Conditions			9.00%	$ 2,200
		General Requirements			4.00%	$ 1,000
		Insurances & Bonds			3.25%	$ 800
		Permits			1.50%	$ 400
		General Contractor Fee			4.00%	$ 1,200
		Subtotal for construction costs w/out contingencies				$ 29,800
		Design Contingency			15.00%	$ 4,500
		Escalation Contingency			5.00%	$ 1,500
		Construction Contingency			0.00%	$ -
Alternate 11	CPA	Total for construction costs w/ contingencies	ADD			$ 37,400
Alternate 12		Remove fire escape and replace egress door w/ new window unit				
		Remove fire escape	1	LS	$ 3,500.00	$ 3,500
		Exterior wall infill and match finishes	1	LS	$ 3,840.00	$ 3,840
		Window unit	1	EA	$ 850.00	$ 850
						$ -
		Subtotal for above work				$ 8,190

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Cambridge, MA
Feasibility Estimate

Architect: LDA

Alternates

Code	CPA	Description	Quantity	Unit	Rate	Assembly Cost
		General Conditions			9.00%	$ 800
		General Requirements			4.00%	$ 400
		Insurances & Bonds			3.25%	$ 300
		Permits			1.50%	$ 200
		General Contractor Fee			4.00%	$ 400
		Subtotal for construction costs w/out contingencies				$ 10,290
		Design Contingency			15.00%	$ 1,600
		Escalation Contingency			5.00%	$ 600
		Construction Contingency			0.00%	$ -
Alternate 12		Total for construction costs w/ contingencies	ADD			$ 13,090
Alternate 13		Install new accessible route to main entry				
		New front walkway, walls/footings	39	LF	$ 500.00	$ 19,500
		New front walkway, walk	100	SF	$ 19.00	$ 1,900
		Excavation and backfill support	1	LS	$ 6,500.00	$ 6,500
		LULA chair lift, exterior	1	EA	$ 18,000.00	$ 18,000
						$ -
		Subtotal for above work				$ 45,900
		General Conditions			9.00%	$ 4,200
		General Requirements			4.00%	$ 1,900
		Insurances & Bonds			3.25%	$ 1,500
		Permits			1.50%	$ 700
		General Contractor Fee			4.00%	$ 2,200
		Subtotal for construction costs w/out contingencies				$ 56,400
		Design Contingency			15.00%	$ 8,500
		Escalation Contingency			5.00%	$ 2,900
		Construction Contingency			0.00%	$ -
Alternate 13		Total for construction costs w/ contingencies	ADD			$ 70,700

APPENDIX B: STUDY PARTICIPANTS

TEAM MEMBERS

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3 Bigelow Street
Condition Assessment Summary

Issue Characterization

- LS Life Safety/Building Code Compliance
- AS Access & Security
- OC Occupant Comfort
- UA Universal Access
- ER Envelope Remediation
- PF Program Function
- FP Functional Performance
- HR Historical Repair/Restoration

- New Work
- Alternate Construction
- Existing Removed

Remediation Priority

- 0 No Work Required
- 1 Life Safety; unsafe condition
- 1A Life Safety; buildng code compliance
- 1B Life Safety; alternates
- 1C Universal Access; code compliance
- 2 Functional Performance; failing element
- 2A Functional Performance; remediation associated with failing element
- 2B Functional Performance; alternates
- 3 Occupant Comfort; essential environmental remediation
- 3A Occupant Comfort; recommended environmental remediation
- 3B Occupant Comfort; alternates
- 4 Program Function; essential program element
- 4A Program Function; recommended program element or program improvement
- 4B Program Function; program alternates
- 5 Historic Restoration; preservation & restoration of existing historic elements
- 5A Historic Restoration; reconstruction of missing historic elements
- 5B Historic Restoration; alternates
- 6 Security

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Reference Document*	*Condition Characterization*	*CPA*	*Remediation Priority*	*Alternate Construction*	*Notes*
Site				-		-		
Universal Access				-		-		
Accessible Route	not existing; see Universal Access	see Universal Access		UA		1C		
Main Entry Accessibility							Alternate-13	
wheel chair lift	not existing; see Universal Access						Alternate-13	
Storm Water Management				-		-	Alternate-5	
grading	see Driveway Paving and Parking Paving	see Driveway Paving and Parking Paving		FP		2		
downspout discharge	downspouts are routed to cast iron subgrade drain piping, drain condition, pipe routing and discharge outlet location is unknown; occupants report waste piping back up and leaking	video inspect, clear and test subgrade piping, replace above grade cast iron bell fitting and install new copper downspout connection boots	Photo-9360	FP		2		
downspout discharge	see above	replace cast iron storm drain piping to street connection		FP		2B	Alternate-5	separation of storm water and sanitary waste may be required
Signage				-		-		
building number	number is in fair condition	remove existing number and install new building number		LS		1A		
building identification signage	not existing	install new building identification signage		PF		4		
universal access signage	not existing; see Universal Access	see Universal Access		UA		1C		
				-		-		

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Reference Document*	*Condition Characterization*	*CPA*	*Remediation Priority*	*Alternate Construction*	*Notes*
Landscape				-		-		
Plantings				-		-		
plantings	plantings are overgrown and crowded; includes tree too large for space, too close to house; includes invasive plants;	remove all plantings and provide new design		PF		4		
				-		-		
Parking Access Driveway				-		-	Alternate-4	
curb cut	curb cut is in good condition	no work required	Photo-9392	PF		0		
bituminous asphalt and subbase	asphalt paving is in poor condition; subbase materials are unknown	remove bituminous asphalt paving and excavate for new subbase preparation; install and grade new compacted subbase; install new bituminous asphalt paving	Photo-9392	FP		2		
grading & drainage	driveway is sloped to drain to the curb cut and street gutter	regrade for surface stormwater runnoff to street; maximum universal access to Level 1 egress door cross slope 2%; maximum universal access slope 5% maximum		FP		2A		
property line wheel stops (Lombardi Building)	wheel stops are in fair condition; setting is inconsistent	remove and reinstall wheel stops	Photo-9392	PF		2A		
property line wheel stops (Lombardi Building)	see above	remove wheelstops; excavate to expose Lombardi Building foundation to a depth of 4' below finish grade; install dampproofing and backfill; install cast in place concrete curb from window sill elevation to 1' below finish grade		PF		2B	Alternate-4	
parking access drive space signage	signage is in poor condition and unsightly	install new signage at access driveway	Photo-9363	PF		4		"no parking without permission of city manager"
driveway lighting	low efficiency fixture is in fair condition; fixture is likely a glare source for adjacent properties; conduit is exposed to view	replace building-mounted site light fixtures with high-efficiency fixtures and daylight control; conceal electrical feed; connect to emergency power or battery back up	Photo-9360	LS/PF		1A		
snow storage	little or no snow storage is provided	arrange driveway and parking to facilitate snow plowing and snow storage without compromizing universal accessibility		FP		2A		
				-		-		
Parking				-		-		
bituminous asphalt	asphalt paving is in poor condition; subbase materials are unknown	remove bituminous asphalt paving and excavate for new subbase preparation; install and grade new compacted subbase; install new bituminous asphalt paving	Photo-9366/9367	FP		2		
grading & drainage	parking is sloped to drain to the driveway, curb cut and street gutter	regrade for surface stormwater runnoff to street; maximum universal access cross slope 2%; maximum universal access slope 5%.		FP		2A		AAB variance required when accessible route is not to street entrance
property line grade transition	grade transition at northeast and north west property lines is not controled and subject to erosion	install cast-in-place concrete, stone or unit masonry retaining walls	Photo-?	FP		2		
walkway marking	not existing	mark universal access route from public way to accessible entrance		PF		1C		AAB variance required when accessible route is not to street entrance and when route is on grade with vehicle traffic

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Reference Document*	*Condition Characterization*	*CPA*	*Remediation Priority*	*Alternate Construction*	*Notes*
parking space marking	parking space marking lines are in poor condition or non existent	repaint parking space marking lines		PF		4		
parking space signage	not existing	no work required		-		0		maintain parking for 6 vehicles
wheel stops	missing	install wheel stops at north west property line		PF		2A		
bollards	concrete-fillled steel pipe and wood timber bollards are in poor condition	remove bollards		PF		2A		
fencing	fencing condition varies from good to poor	install new fencing at northeast and northwest property lines	Photo-9367	PF		0		
asphalt curb (back porch)	curb is in poor condition	remove curb; install cast in place concrete curb from 6" above finish grade elevation to 1' below finish grade	Photo-9369	PF		2A		
trash enclosure	trash enclosure make shift and in poor condition; too small for number of containers	install new enclosure to fully accommodate trash containers		PF		2		
site lighting	low efficiency fixture is in fair condition; fixture is likely a glare source for adjacent properties; conduit is exposed to view	replace building-mounted site light fixtures with high-efficiency fixtures and daylight control; conceal electrical feed	Photo-9370	PF		1A		
snow storage	little or no snow storage is provided	arrange driveway and parking to facilitate snow plowing and snow storage without compromizing universal accessibility		FP		2A		
				-	-	-		
Front Yard				-	-	-		
stone curb	curb is in good condition but is stained, out of original alignment and is settling	remove and reset in concrete base/powerwash	Photo-9392	HR	CPA	5		
stone bollards	bollards are in good condition/are stained and out of original alignment	remove and reset in concrete base/power wash	Photo-9392	HR	CPA	5		
original wrought iron fence	missing	no work required		HR		0		
				-		-		
Side Yard				-		-		
planting/ground cover	side yard consists of weeds and some overgrown plants	remove and provide new low maintenance design for side yard	Photo-9386	PF		4		
fence	wood stockade fence is in poor condition and appears to belong to neighbor	consider working with neighbor to replace fence.		-		2		
grading	crushed stone installed along the side yard is too close to top of foundation, wood sills and bottom of wood siding possibly contributing to deteriorartion of sills and floor framing members	regrade sideyard for 8" minimum clearance to top of foundation and bottom of wood siding		FP		2		
				-	-	-		
Entry Steps and Landings				-	-	-		
entry landing	granite landing is in good condition; step to door threshold is not universal access code compliant	no work required	Photo-9359	LS/UA/HR	CPA	0		AAB variance required
entry steps	granite steps are in good condition; tread and riser geometry is not universal access code compliant	no work required	Photo-9359	LS/UA/HR	CPA	0		
entry steps bottom landing/sidewalk transition	concrete slab-on-grade landing is in poor condition; step transition to sloping sidewalk is deteriorating and not universal access code compliant	install new concrete slab-on-grade landing	Photo-9392	LS/UA/HR	CPA	0		AAB variance required
stone step walls	walls are in good condition	no work required	Photo-9359	HR	CPA	0		

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Reference Document*	*Condition Characterization*	*CPA*	*Remediation Priority*	*Alternate Construction*	*Notes*
entry steps handrails	painted steel handrails are not building or universal access code compliant	remove handrails and replace with new code compliant configurations	Photo-9359/9356	LS/UA	CPA	1A		AAB variance required
entry landing guardrails	painted steelguardrails are not building or universal access code compliant	remove guardrails and replace with new code compliant configurations	Photo-9356	LS/UA	CPA	1A		AAB variance required
landing and steps lighting	low efficiency light fixture is in poor condition	install a high-efficiency pendant light fixture in porch soffit with daylight control; conceal electrical feed; connect to emergency power or battery back up		LS/PF	CPA	2		
				-		-		
Level 1 Egress (back door)				-		-		
Level 1 door landing & steps	landing and steps are in fair condition	remove landing and steps entirely	Photo-3624	LS/AS		1C		relocate landing and reconfigure for universal access
Level 1 door handrails	handrail is in fair condition	remove handrails entirely	Photo-3624	LS/AS		1C		
landing and steps lighting	low efficiency wall sconce light fixture is in fair condition	relocate building-mounted light fixture and replace with high-efficiency fixture and daylight control; conceal electrical feed; connect to emergency power or battery back up	Photo-3624	LS/PF		1C		
				-	-	-		
Structure				-	-	-		
Roof				-	-	-	Alternate-11	
sheathing				FP		2A		
framing				FP		2A		
original upper high roof framing and sheathing	missing			HR	CPA	5B	Alternate-11	
Exterior Load-Bearing Walls				-		-		
sheathing				FP		2A		
framing				FP		2A		
opening headers				FP		2A		
Interior Load-Bearing Walls				-		-		
framing				FP		2A		
opening headers				FP		2A		
Attic Floor				-		-		
framing				FP		2A		
Floors				-		-		
subfloor				FP		2A		
framing				FP		2A		
beams				FP		2A		
columns				FP		2A		
Foundation				-	-	-		
brick				FP	CPA	2A		
stone				FP	CPA	2A		
granite				FP	CPA	2A		
Footings				-		-		
assumed stone	condition unkown	no work required		FP		0		
				-		-		
level 0				-		-		
slab-on-grade				FP		2		
topping slab				FP		2		
				-	-	-		
Architecture				-	-	-		
Envelope				-	-	-		
Roof Construction				-	-	-		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
sheathing	see structural assessment	see structural assessment		FP		2		
framing	see structural assessment	see structural assessment		FP		2		
roofing underlayment	unknown condition	replace underlayment associated with new roofing system; see Roofing		ER	CPA	2A		
air barrier	not existing	see roof insulation		ER		2		
roof/attic insulation	loose blown cellulose at attic floor, inconsistent thickness and incomplete coverage, insulation missing at entry porch bay	remove existing cellulose insulation; install closed-cell spray foam insulation full depth of existing roof framing cavity on underside of roof sheathing, approximately 6"-thick; overspray 2" minimum at roof framing interior edges for continuous insulation coverage		ER/FP		2		
vapor retarder	not existing	see roof insulation		ER/FP		2		
original upper high roof framing and sheathing	missing; new framing does not follow the line of high roof framing	remove existing upper high roof framing; to expose existing original low-slope framing and sheathing; see Structural		HR	CPA	5B	Alternate-11	
original upper high roof roofing	missing	install new welded PVC roofing membrane, associated underlayment and copper slope transition flashing; see Roofing		HR	CPA	5B	Alternate-11	
				-	-	-		
Roofing				-	-	-	Alternate-3	
high roof - asphalt shingles	shingles are in poor condition, installation is not water or weather-tight; leaks appear to be contributing to degradation of underlying construction	remove existing attic ventilation caps and patch wood board sheathing; install new underlayment, new asphalt shingles and copper flashing at mansard eave cornice, chimney and roof penetrations; install soldered flat-seam copper cricket at chimney; install ice and water membrane at roof slope transitions, roof penetrations and entire mansart eave cornice perimeter; see Alternate-3	Photo-3631	ER	CPA	2		
high roof	see above	install welded PVC membrane roofing, new underlayment and copper flashing at mansard eave cornice; light gray color		ER	CPA	2B	Alternate-3	
mansard roof - slate shingles	shingles are in fair condition, installation is not water or weather-tight; leaks appear to be contributing to degradation of underlying construction	remove, salvage and reinstall existing slate shingles, with new underlayment and new copper flashing at mansard eave cornice, mansard hips and dormer walls; replace shingles found to be damaged or unsound; install ice and water membrane at roof slope transitions, mansard apron and dormer walls	Photo-9374/9375/9376/9377	ER/HR	CPA	2		
mansard apron - built-up roofing	built-up roofing is in poor condition, not properly secured and not weather or water-tight; leaks appear to be contributing to degradation of underlying construction	remove built-up roofing and replace with flat soldered-seam copper flashing; install ice and water membrane at roof slope transitions and entire eave perimeter	Photo-9331/9379	ER	CPA	2		
dormer roof - built-up roofing	built-up roofing is in poor condition, not properly secured and not weather or water-tight; leaks may be contributing to degradation of underlying construction	remove built-up roofing and replace with flat soldered-seam copper panels and flashing; install ice and water membrane at roof slope transitions		ER	CPA	2		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
porch bay high roof - asphalt shingles	shingles are in poor condition, installation is not water or weather-tight; leaks appear to be contributing to degradation of underlying construction	install new asphalt shingles, new underlayment and copper flashing at high roof eave and mansard cornice; install ice and water membrane at roof slope transitions; see Alternate-3		ER	CPA	2		
porch bay high roof - asphalt shingles	see above	install welded PVC membrane roofing, new underlayment and copper flashing at high roof eave and mansard cornice; light gray color		ER	CPA	2B	Alternate-3	
back porch roof - EPDM membrane	EPDM membrane appears to be in good condition; condition of roof sheathing is unknown but appears to be sound	install new copper flashings and EPDM terminations at entire perimeter	Photo-9307	ER		2A		
original copper or lead flashing	missing	see flashing		ER/HR	CPA	2		
flashing	aluminum flashing is poorly installed and is not water or weather-tight	remove aluminum flashing and replace with copper flashing		ER	CPA	2		
original wood gutters	missing	see gutters		HR	CPA	5A		historic restoration priority
gutters	aluminum gutters are functional but not integrated well with historic detailing of eave and profile is not historically accurate	remove gutters and replace with fiberglass section profiles to match original wood gutters	Photo-9379	FP/HR	CPA	2		
original copper downspouts	missing	see downspouts		HR	CPA	5A		historic restoration priority
downspouts	aluminum downspouts are functional but not well secured; locations and profile are not historically accurate; original collectors and brackets are missing	remove downspouts and replace with galvanized steel downspouts to match original profiles and locations; install collectors and brackets matching original		FP/HR	CPA	2		
downspout discharge	downspouts are routed to cast iron subgrade drain piping, drain condition, pipe routing and discharge outlet location is unknown; below grade piping may be leaking into level 0	inspect, clear and test subgrade drains, replace above grade cast iron bell fitting and install new galvanized downspout connection boots	Photo-9360	FP	CPA	2		
attic vent caps	aluminum vent caps are functional but not air, weather or water tight; leaks may be contributing to degradation of underlying construction	remove attic vents entirely		ER	CPA	2		
plumbing waste vents	cast iron vents are functional; flashing boots are in poor condition and not weather or water-tight; leaks may be contributing to degradation of underlying construction	see plumbing scope for waste vent replacement; install new flashing boots and copper cladding on new waste vents		ER	CPA	2		
bay window roof - built-up roofing	roofing and associated flashing is in poor condition and not weather or water-tight; leaks appear to be contributing to degradation of underlying construction	replace roofing with soldered flat-seam copper panels and wall flashing		ER/HR	CPA	2		
level 1 egress door canopy roof	roofing and associated flashing is in poor condition and not weather or water-tight; leaks may be contributing to degradation of underlying construction	replace roofing with soldered flat-seam copper panels and flashing	Photo-3624	ER/HR	CPA	1C		relocate canopy roof associated with accessible route
				-		-		
Exterior Wall Construction				-		-		
sheathing	see structural assessment	see structural assessment		FP		2A		
framing	see structural assessment	see structural assessment		FP		2A		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
weather barrier	not existing	seal, flash and repaint existing siding and trim; see Exterior Carpentry		ER		2		
air barrier	not existing	see framing cavity insulation		ER		2		
framing cavity insulation	not existing at Level 3, condition and continuity of cellulose insulation at Level 1 & 2 walls is unkown, insulation at rim joist location is unkown	remove cellulose insulation entirely, install closed-cell spray foam insulation full depth of existing framing cavity, approximately 4"-thick and rim joists at floor framing cavity; see Interior, Floor/Ceiling Construction		ER		2		
vapor retarder	not existing	see framing cavity insulation		ER		2		
				-	-	-		
Exterior Carpentry				-	-	-	Alternate-1 Alternate-2	
original exterior siding and trim paint color	missing			HR	CPA	5		analyze paint or research for historic color
vinyl siding & siding insulation	vinyl siding finish is aging, in poor condition and unsightly in appearance; individual pieces are cracked and damaged in numerous locations; the siding is likely not an effective weather or water barrier and may be contributing to degradation of underlying wall construction	remove vinyl siding entirely	Photo-9383	ER	CPA	2		
vinyl soffit	vinyl soffit finish is aging, in poor condition and unsightly in appearance; individual pieces are cracked and damaged in numerous locations	remove vinyl soffit entirely	Photo-9380	ER	CPA	2		
vinyl trim	vinyl trim is aging, in poor condition and unsightly in appearance; individual pieces are cracked and damaged in numerous locations; the trim is likely not an effective weather or water barrier and may be contributing to degradation of underlying wall construction	remove vinyl trim entirely	Photo-9389	ER	CPA	2		
original soffit board finish	missing	install new eave soffit board finish and eave facia trim to match original finish profile; replace deteriorated support framing, blocking and roof sheathing at eave and facia; field paint historic color finish	Photo-9389	ER/HR	CPA	5A		historic restoration priority
original soffit brackets	missing	install new eave brackets to match original brackets; field paint historic color finish	Photo-HIST	ER/HR	CPA	5B	Alternate-1	historic restoration priority
eave frieze trim	frieze trim is in fair condition, pieces are missing at the NE elevation	repair trim; replace damaged or missing pieces to restore original profile; strip finishes, seal joints; field paint historic color finish	Photo-9384	ER/HR	CPA	2A		see material tesing report for existing paint finishes
flat board siding	condition of original flat board siding is unknown, siding and finish is assumed to be in poor condition; scope of flat board siding is assumed to be the street elevation and porch bay	repair siding; replace damaged or missing pieces to restore original profile; replace boards with holes for insulation installation; strip finishes, patch fastener holes, seal joints; field paint historic color finish	Photo-HIST	ER/HR	CPA	2A		see material tesing report for existing paint finishes; anticipate insulation holes at 4 locations vertically - top and bottom of every wall framing cavity - Level 1 and 2 walls only

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
corner quoin trim	missing, underlying blocking is in poor condition	repair underlying blocking; install new trim to match original; field paint historic color finish	Photo-HIST	ER/HR	CPA	5		historic restoration priority
clapboard siding	condition of original clapboard siding is unknown, siding and finish is assumed to be in poor condition; scope of clapboard siding is assumed to be building sides and rear, including 3 back porch walls	repair siding; replace damaged or missing pieces to restore original profile; replace boards with holes for insulation installation; strip finishes, patch fastener holes, seal joints; field paint historic color finish	Photo-HIST	ER/HR	CPA	2A		see material tesing report for existing paint finishes; anticipate insulation holes at 4 locations vertically - top and bottom of every wall framing cavity - Level 1 and 2 walls only
clapboard corner trim	condition of original corner trim is unknown, trim is assumed to be in poor condition; scope of corner trim is assumed to be 2 back porch corners	repair trim; replace damaged or missing pieces to restore original profile; strip finishes, patch fastener holes, seal joints; field paint historic color finish	Photo-HIST	ER/HR	CPA	2A		
flat board and clapboard siding base trim	condition of original base trim is unknown, trim is assumed to be in poor condition; base trim is assumed to occur at entire building perimeter	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joint; field paint historic color finish; install copper drip flashing at top of projecting base trim	Photo-HIST	ER/HR	CPA	2A		
window casing & sill	casing and sill trim is in fair condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; install copper drip flashing at head casing	Photo-HIST	ER/HR	CPA	2A		see material tesing report for existing paint finishes
original window sill brackets (level 1)	missing	install new sill brackets to match original brackets; field paint historic color finish	Photo-HIST	ER/HR	CPA	5A		historic restoration priority
original window sill brackets (level 2 front)	missing	install new sill brackets to match original brackets; field paint historic color finish	Photo-HIST	ER/HR	CPA	5A		historic restoration priority
window head apron casing (level 2 front)	casing trim is in fair condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; install copper drip flashing at head casing	Photo-HIST	ER/HR	CPA	2A		
window head cornice & brackets (level 1)	cornice trim and brackets are in fair condition; associated flashing is in poor condition and not weather or water-tight; leaks may be contributing to degradation of underlying construction	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; replace cornice flashing with soldered flat-seam copper panels and wall flashing	Photo-HIST/0124	ER/HR	CPA	2A		
entry door casing	casing is not original to the buidling; casing trim is in fair condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; install copper drip flashing at head casing; see Alternate-2	Photo-9357/9359	ER/HR	CPA	2A		
original arched-top entry door casing	missing	remove existing casing, install new casing to match original; field paint historic color finish	Photo-HIST	ER/HR	CPA	5B	Alternate-2	historic restoration priority
original porch columns & pedestals	missing	remove existing columns & pedestals, install new column pairs and associated pedestals to match original; field paint historic color finish	Photo-HIST	ER/HR	CPA	5B	Alternate-2	historic restoration priority

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
original porch arches	missing	install porch decorative arch trim to match original; field paint historic color finish	Photo-HIST	ER/HR	CPA	5B	Alternate-2	historic restoration priority
original porch pilasters	missing	install porch pilasters to match original; field paint historic color finish	Photo-HIST	ER/HR	CPA	5B	Alternate-2	historic restoration priority
original porch guardrails	missing	see Landscape/Entry/entry landing guardrails		-		0		
original porch cornice brackets	missing	install new eave brackets to match original brackets; field paint historic color finish	Photo-HIST	ER/HR	CPA	5A		historic restoration priority
porch columns	columns are not original to the building; columns and associated pedestal and trim is in fair condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; see Alternate-2	Photo-9359	ER/HR	CPA	2A		
porch beams	beams are not original to the building; beam trim is in fair condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; see Alternate-2	Photo-9358/9359	ER/HR	CPA	2A		
porch soffit board finish	board finish is in fair condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; see Interior, Floor/Ceiling Construction for Level 2 framing cavity insulation	Photo-9358	ER/HR	CPA	2A		
porch cornice	cornice trim is in fair condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; replace cornice flashing with soldered flat-seam copper panels and wall flashing; see porch bay base trim	Photo-3630	ER/HR	CPA	2A		
mansard cornice	cornice trim is in fair condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; see high roof work for associated eave flashing	Photo-9375	ER/HR	CPA	2A		
porch bay base trim	condition of original base trim is unknown, trim is assumed to be missing or in poor condition; scope of base trim is assumed 3 sides of porch bay	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; install copper flashing at top and bottom of projecting base trim; see porch cornice for associated flashing	Photo-HIST	ER/HR	CPA	2A		
porch bay mansard cornice	cornice trim is in fair condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints and repaint; see high roof work for associated eave flashing	Photo-9375	ER/HR	CPA	2A		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
mansard hip corners	hip trim is in fair to poor condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; see mansard roof for associated flashing	Photo-9331	ER/HR	CPA	2A		
dormer eave cornice & brackets	cornice trim and brackets are in fair condition	repair trim and brackets; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; see dormer roof for associated eave & roof flashing	Photo-9377	ER/HR	CPA	2A		
dormer side & face trim	side & face trim is in fair condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; see mansard roof for associated step flashing	Photo-9377	ER/HR	CPA	2A		
dormer window casing & sills	casing and sill trim is in fair condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; install copper drip flashing at head casing; see mansard roof for associated sill flashing	Photo-9377	ER/HR	CPA	2A		
bay window cornice & brackets	cornice trim and brackets are in fair condition	repair trim and brackets; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; see bay window roof for associated flashing	Photo-3626	ER/HR	CPA	2A		
bay window casing & sills	casing and sill trim is in fair condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; install copper drip flashing at head casing	Photo-3626	ER/HR	CPA	2A		
level 1 egress door casing	casing trim is in fair condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; install copper drip flashing at head casing	Photo-3624	ER/HR	CPA	1C		relocate door associated with accessible route
level 1 egress door canopy cornice, soffit & brackets	cornice trim, soffit and brackets are in fair condition	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints; field paint historic color finish; see canopy roofing for additional work	Photo-3624	ER/HR	CPA	1C		relocate canopy associated with accessible route
exhaust vent caps	aluminum vent caps are functional but not air, weather or water tight; leaks may be contributing to degradation of underlying construction	remove and replace aluminum vent caps with copper vent caps with back-draft flaps; mount on wood mounting blocks where installed in clapboard siding		ER/FP	CPA	2A		
				-	-	-		
Windows				-	-	-		
original window sash	missing			HR	CPA	5A		historic restoration priority
original window sash color	missing			HR	CPA	5A		analyze paint or research for historic color

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
dormer window sash	aluminum replacement windows are in fair condition; both thermal and infiltration performance are poor; water leaks reported by occupants may be due to installation detailing; condition of window frames and underlying wall sheating and framing is unkown; window appearance is not historically correct	remove aluminum windows to expose existing original window frame and sill; modify frame and sill to receive new historically correct double hung sash and associated weatherstripping; 2 over 2 lite muntin pattern; install arched-top sash to match original at Entry Bay window; field paint historic color finish	Photo-9377	ER/HR	CPA	2		historic restoration priority; further inspection of sheathing and framing member is necessary to evaluate water and air penetration; repair of wall sheathing and framing may be required
level 2 window sash	aluminum replacement windows are in fair condition; both thermal and infiltration performance are poor; water leaks reported by occupants may be due to installation detailing; condition of window frames and underlying wall sheating and framing is unkown; window appearance is not historically correct	remove aluminum windows to expose existing original window frame and sill; modify frame and sill to receive new historically correct double hung sash and associated weatherstripping; 2 over 2 lite muntin pattern; field paint historic color finish	Photo-9372	ER/HR	CPA	2		historic restoration priority; further inspection of sheathing and framing member is necessary to evaluate water and air penetration; repair of wall sheathing and framing may be required
level 2 window sash & security grate	aluminum replacement windows are in fair condition; both thermal and infiltration performance are poor; water leaks reported by occupants may be due to installation detailing; condition of window frames and underlying wall sheating and framing is unkown; window appearance is not historically correct; grating is in fair condition	remove aluminum windows and security grate to expose existing original window frame and sill; modify frame and sill to receive new historically correct double hung sash and associated weatherstripping; 2 over 2 lite muntin pattern; field paint finish historic color	Photo-9372	ER/HR/AS	CPA	2		one location; further inspection of sheathing and framing member is necessary to evaluate water and air penetration; repair of wall sheathing and framing may be required
level 1 windows	aluminum replacement windows are in fair condition; both thermal and infiltration performance are poor; water leaks reported by occupants may be due to installation detailing; condition of window frames and underlying wall sheating and framing is unkown; window appearance is not historically correct	remove aluminum windows to expose existing original window frame and sill; modify frame and sill to receive new historically correct double hung sash and associated weatherstripping; 2 over 2 lite muntin pattern; field paint finish historic color	Photo-0124	ER/HR	CPA	2		historic restoration priority; further inspection of sheathing and framing member is necessary to evaluate water and air penetration; repair of wall sheathing and framing may be required
level 0 windows & security grates	aluminum replacement windows are in fair condition; both thermal and infiltration performance are poor; water leaks reported by occupants may be due to installation detailing; window appearance is not historically correct; grating is in fair condition	remove security grates and aluminum windows to expose existing original window frame and sill; install new historically correct fixed wood window sash; field paint historic color finish; install new security grates	Photo-9362/9363	ER/HR/AS	CPA	2		
porch bay windows	aluminum replacement windows are in fair condition; both thermal and infiltration performance are poor; water leaks reported by occupants may be due to installation detailing; condition of window frames and underlying wall sheating and framing is unkown; window appearance is not historically correct	remove aluminum windows to expose existing original window frame and sill; modify frame and sill to receive new historically correct double hung sash and associated weatherstripping; 2 over 2 lite muntin pattern; field paint historic color finish	Photo-3630	ER/HR	CPA	2		historic restoration priority; further inspection of sheathing and framing member is necessary to evaluate water and air penetration; repair of wall sheathing and framing may be required

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
bay windows	aluminum replacement windows are in fair condition; both thermal and infiltration performance are poor; water leaks reported by occupants may be due to installation detailing; condition of window frames and underlying wall sheating and framing is unkown; window appearance is not historically correct	remove aluminum windows to expose existing original window frame and sill; modify frame and sill to receive new historically correct double hung sash and associated weatherstripping; 2 over 2 lite muntin pattern; field paint historic color finish	Photo-3626	ER/HR	CPA	2		historic restoration priority; further inspection of sheathing and framing member is necessary to evaluate water and air penetration; repair of wall sheathing and framing may be required
				-	-	-		
Exterior Doors				-	-	-	Alternate-2	
original door color	missing			HR	CPA	5A		analyze paint or research for historic color
entry door	door is not original to the building; door, frame and hardware are in fair condition; raised threshold is not universal access code compliant	repair trim; replace damaged or missing pieces to restore original profiles; strip finishes, patch fastener holes, seal joints and repaint; see Alternate-1; coordinate with security system	Photo-9359	LS/ER/AS	CPA	1A		
entry door hardware	door hardware is in poor condition	replace door hardware and gasketing; see Interior, Door Hardware for hardware sets		LS/AS/UA	CPA	1A		
entry door intercom	not existing	install intercom system		PF	CPA	6		coordinate with security
entry sidelites	sidelites are not original to the building; sidelite sash is in good condition	repaint sash; see entry door casing; see Alternate-2	Photo-9359/9357	ER/AS	CPA	2A		
entry transom lite	transom lite is not original to the building; transom lite sash is in good condition	repaint sash; see entry door casing; see Alternate-2	Photo-9359	ER	CPA	2A		
original arched-top entry doors (pair)	missing	remove existing door, sidelites, transom lites and associated frame to expose original rough opening; install new arched-top door and sidelite panels to replicate original door pair, door frame and hardware to match original; field paint historic color finish; see Exterior Carpentry and Interior Carpentry for new casing		HR	CPA	5B	Alternate-2	historic restoration priority
level 3 egress door	door is not original to the building; door and door hardware are in poor condition; height and width are not code compliant	install new door/frame assembly; modify rough opening as required for new door size; door style to be historically correct	Photo-3612	LS/ER/AS		1B		
level 2 egress door	door is not original to the building; door and door hardware are in poor condition, width is not code compliant; door is operable but security grate and absence of exterior landing or fire escape prevents direct egress to the exterior from the level 2	remove door/frame assembly; modify rough opening for new window installation; install new window unit and associated interior and exterior casing and trim to match existing level 2 historical windows; repair siding to match existing	Photo-3612	LS/ER/AS		1C		
level 2 egress door security grate	security grate is not original to the building, grate is in fair condition; grate is fixed in place preventing egress	remove security grating; install new grating at new level 2 window; security grating to match existing adjacent grating	Photo-3612/9306	LS/AS		1		
level 1 access/egress door	door is not original to the building;	install new door/frame assembly; door style to be historically correct; coordinate with security system	Photo-3624	LS/ER/AS		1A		
level 1 access/egress door hardware	egress door hardware is in poor condition	replace door hardware and gasketing; see Interior, Door Hardware for hardware sets		LS/AS/UA		1A		
level 1 access/egress door intercom	not existing	install intercom system		PF		6		coordinate with security
				-	-	-		
Foundation Construction				-	-	-		

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Reference Document*	*Condition Characterization*	*CPA*	*Remediation Priority*	*Alternate Construction*	*Notes*
brick foundation	brick is in good condition; paint finish is not original to the building; brick at one bay window corner is damaged	strip paint; repair or replace damaged brick, excavate to top of stone foundation; repoint mortar joints from top of stone foundation or concrete encasement to top of foundation	Photo-9360	ER/HR	CPA	2		
stucco parging	stucco parging is not original to the building and is in poor condition	remove stucco parging entirely	Photo-9360	ER	CPA	2		
granite foundation	granite is in good condition	repoint mortar joints from top of stone foundation to top of foundation wall	Photo-9391	ER/HR	CPA	2A		
stone foundation	above grade foundation stone is in fair condition; mortar is deteriorating but the foundation appears to remain structurally sound; below grade and concrete concealed conditions are unknown; mortar is deteriorating at exposed-to-view interior locations; foundation is contributing to unmitigated moisture-related issues	excavate to 1' below finish grade; repoint mortar joints to brick and granite foundation	Photo-9365	ER	CPA	2		
stone foundation concrete encasement and retaining wall	concrete encasement and retaining wall is not original to the building; concrete is in fair condition; below grade condition is unknown	expose concret to 1' below finish grade, see brick foundation and stone foundation for additional work at exposed foundation	Photo-0120/0121	ER		2A		
foundation dampproofing	not existing	see foundation insulation		ER		2		
foundation waterproofing	not existing	see foundation insulation		ER		2		
foundation insulation	not existing	remove interior finishes and framing entirely to expose foundation wall from bottom of new slab-on-grade to top of foundation; install new closed-cell spray foam insulation on drainage matt continuously from subgrade to bottom of level 1 subfloor		ER		2		
level 0 slab-on-grade	concrete slab is in poor condition; below slab conditions are unknown; vapor retarder and insulation are assumed to be not existing; slab is contributing to unmitigated moisture-related issues	remove topping slab and slab-on-grade entirely, excavate to bottom of foundation walls, see underslab drain & sump; see level 0 slab-on-grade insulation; install 4"-thick reinforced concrete slab-on-grade		ER		2		
level 0 slab-on-grade insulation	not existing	install new closed-cell spray foam insulation on draingage stone course continuously under slab-on-grade; maintain 2"-minimum slab-on-grade/foundation wall separation; see foundation insulation		ER		2		
level 0 slab-on-grade vapor barrier	not existing	see level 0 slab-on-grade insulation		ER		2		
foundation perimeter drain	not existing	see underslab drain & sump		FP		2		
underslab drain & sump	not existing	install new perforated piping grid in 8"-thick drainage stone course; route piping to sump; make provisions for future installation of duplex sump pumps including power to future pumps & piping to storm drain		FP		2		
				-	-	-		
Exterior Elements				-	-	-		
Chimney-1				-	-	-		see Alternate-8

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
brick chimney	chimney is not original to the building; chimney appears to have been reconstructed recently and is assumed to be in good condition	no work required		ER/HR	CPA	0		
mortar wash	condition of mortar wash is unkown but assumed to be in good condition; see brick chimney	no work required		ER/HR	CPA	0		
flue	condition of flue is unknown but assumed to be in good condition; see brick chimney; flue is currently in use for the boiler and hot water heater	see mechanical scope for new flue liner associated with new boiler and hot water heater installation		FP	CPA	2A		
flue cap	not existing	see mechanical scope for new flue cap associated with new boiler and hot water heater installation		FP/HR	CPA	2A		
flashing	condition of step and counterflashing and cricket is unknown but assumed to be in good condition; see brick chimney	install new flashing and cricket associated with new roofing installation; see high roof - asphalt shingles and Alternate-3		ER	CPA	2		
Chimney-1	see above	remove chimney and associated fireplaces and hearths entirely to below new Level 0 concrete slab-on-grade; patch roof and Levels 1, 2 and 3 floor/ceiling construction and finishes to match existing		PF		5B	Alternate-8	assume no floor framing re-support is is necessary
				-		-		
Chimney-2				-		-		see Alternate-8
original chimney	terminated below high roof construction	no work required; see Alternate-8		-		0		
Chimney-2	see above	remove chimney and associated fireplaces and hearths entirely to below new Level 0 concrete slab-on-grade; patch roof and Levels 1, 2 and 3 floor/ceiling construction and finishes to match existing		PF		5B	Alternate-8	assume no floor framing re-support is is necessary
				-		-		
Chimney-3				-		-		see Alternate-8
original chimney	missing above level 3	no work required; see Alternate-8		-		0		
Chimney-3	see above	remove chimney and associated fireplaces and hearths entirely to below new Level 0 concrete slab-on-grade; patch roof and Levels 1, 2 and 3 floor/ceiling construction and finishes to match existing		PF		5B	Alternate-8	assume no floor framing re-support is is necessary
				-		-		
Chimney-4				-		-		see Alternate-8
original chimney	missing above level 3	no work required; see Alternate-8		-		0		
Chimney-4	see above	remove chimney and associated fireplaces and hearths entirely to below new Level 0 concrete slab-on-grade; patch roof and Levels 1, 2 and 3 floor/ceiling construction and finishes to match existing		PF		5B	Alternate-8	assume no floor framing re-support is is necessary
				-		-		

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Reference Document*	*Condition Characterization*	*CPA*	*Remediation Priority*	*Alternate Construction*	*Notes*
Mailbox	mailbox is in poor condition	remove mailbox; install a gasketed mail slot in the existing entrance door; see Alternate-2	Photo-9359	PF		4		
				-		-		
Fire Escape				-		-		
abandoned fire escape anchors	steel anchors are no longer in use	remove anchors entirely; patch siding to match existing		ER		2A		
tread grating and flight stingers	components of steel fire escape are in good condition	refinish fire escape components; paint finish		LS		1A		
landing grating and landing framing	components of steel fire escape are in good condition	refinish fire escape components; paint finish		LS		1A		
landing and flight support brackets	components of steel fire escape are in good condition	refinish fire escape components; paint finish		LS		1A		
handrails and guardrails	components of steel fire escape are in good condition	refinish fire escape components; paint finish		LS		1A		
overhead wires	communication service wires to the adjacent property are sag supported by a mast with yoke anchored to and extending above the fire escape	relocate communication service to adjacent property		LS		1A		
egress lighting	not existing	install new egress lighting to meet minimum illumination levels for egress		LS		1		
Fire Escape	see above	remove fire escape and associated brackets and anchors entirely; patch siding to match existing		PF/LS		1B	Alternate-12	
				-	-	-		
Hazardous Material				-	-	-		
lead paint	see material testing report	see material testing report	report	LS	CPA	2A		
asbestos	see material testing report	see material testing report	report	LS	CPA	2A		
				-		-		
Interior				-		-		
Floor/Ceiling Construction				-		-		
existing subfloor	see structural	see structural		FP		1A		
existing framing	see structural	see structural		FP		1A		
new ceiling	new work	install 2-layers 5//8"-thick gypsum board on metal resilient channels; moisture resistant at bathrooms; paint finish		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
ceiling sound attenuation insulation	not existing	install 2-1/2"-thick mineral wool sound attenuation batt insulation at existing and new floor/ceiling framing cavities		OC		3		
entry porch soffit/floor insulation	not existing	install new closed cell spray foam insulation full depth of existing framing cavity		ER		2		
				-		-		
Wall Construction				-		-		
existing load-bearing walls	see structural; plaster is generally in fair to poor condition	existing wood framing; 5/8"-thick gypsum board each side; cementitious backer board at ceramic tile; moisture resistant at bathrooms		LS/FP/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated; stair enclosure walls 1-hour fire-rated
existing non load-bearing walls	framing condition is unknown; plaster is generally in fair to poor condition	existing wood framing; 5/8"-thick gypsum board each side; cementitious backer board at ceramic tile; moisture resistant at bathrooms		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated; stair enclosure walls 1-hour fire-rated

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
new non load-bearing walls	new work	1x4 wood framing at 1'-4"o.c.; 5/8"-thick gypsum board each side; cementitious backer board at ceramic tile; moisture resistant at bathrooms		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated; stair enclosure walls 1-hour fire-rated
new non load-bearing walls - plumbing walls	new work	1x6 wood framing at 1'-4"o.c.; 5/8"-thick gypsum board each side; cementitious backer board at ceramic tile; moisture resistant at bathrooms		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated; stair enclosure walls 1-hour fire-rated
wall sound attenuation insulation	not existing	install 2-1/2"-thick mineral wool sound attenuation batt insulation at existing and new framing cavities		OC		3		
new foundation wall furring	new work	2x4 flat wood framing at 1'-4"o.c.; 5/8"-thick gypsum board one side; see Envelope, Foundation Construction for insulation and dampproofing		PF		4		
				-		-		
Laundry Room			Photo-0011/0012/0013, Plan	-		-		relocate and reconfigure Laundry Room
floor	concrete slab-on-grade is in poor condition; unfinished	remove existing slab-on-grade; install new slab-on-grade; new rubber tile finish; see Envelope, Foundation Construction, level 0 slab-on-grade		ER/FP/PF		2		
foundation walls	brick and stone foundation walls are exposed and in fair condition, paint finish	see Envelope, Foundation Construction; install new foundation wall furring; paint finish; see Interior, Wall Construction		ER/FP/PF		2		
load-bearing walls	brick is in good condition; paint finish	excavate to top of stone foundation; install dampproofing at top of stone to top of slab-on-grade; paint finish		FP/PF		2		
non load-bearing walls	plaster is in poor condition; paint finish	remove plaster and lath and non load-bearing wood wall framing entirely; install new non load-bearing walls; see Interior, Wall Construction; paint finish		ER/FP/PF		4		
wall base	not existing	install new wood wall base		PF		4		
fireplace foundation	brick is in good condition; paint finish	excavate to top of stone foundation; install dampproofing at top of stone to top of slab-on-grade; paint finish		ER/FP		2		
ceiling	plaster is in poor condition; paint finish	remove plaster and lath entirely to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
windows	aluminum replacement windows are in fair condition; both thermal and infiltration performance are poor; water leaks reported by occupants may be due to installation detailing and aging weatherstripping; window appearance is not historically correct	remove existing aluminum windows and original wood frame and sill to expose existing masonry opening; install new wood windows; 2 locations		ER/PF		2		
doors	door is in poor condition; paint finish	remove door, door frame & casing entirely; install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF		4		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
clothes washer and dryer	existing coin-operated washer and dryer are functional	install new washer and electric dryer connections; remove and reinstall washer and dryer; see Mechanical, Plumbing and Electrical		FP/PF		4		
utility sink	original soapstone sink	remove sink and associated piping; install new sink and associated piping; see Plumbing		FP/PF		4		
lighting	existing light fixtures are low-efficiency fixtures and are in poor condition	remove existing fixtures and install new high-efficiency utility fixtures		FP/PF		4		
				-		-		
Mechanical Room			Photo-9221/9222/9223, Plan	-		-		relocate and reconfigure Mechanical Room
floor	concrete slab-on-grade is in poor condition; unfinished	remove existing slab-on-grade; install new slab-on-grade; new rubber tile; see Envelope, Foundation Construction, level 0 slab-on-grade		ER/FP/PF		2		
foundation walls	brick and stone foundation walls are exposed and in poor condition; unfinished	see Envelope, Foundation Construction; install new foundation wall furring; paint finish; see Interior, Wall Construction		ER/FP/PF		2		
load-bearing walls	brick is in good condition; unfinished	excavate to top of stone foundation; install dampproofing at top of stone to top of slab-on-grade; paint finish		ER/FP/PF		2		
non load-bearing walls	exposed wood framing is in fair condition; unfinished	remove plaster and lath and non load-bearing wood wall framing entirely; install new non load-bearing walls; see Interior, Wall Construction; paint finish		PF		4		
wall base	not existing	install new wood wall base		PF		4A		
fireplace foundation	brick is in good condition; unfinished	excavate to top of stone foundation; install dampproofing at top of stone to top of slab-on-grade; paint finish		ER/FP/PF		2		
ceiling	plaster is in poor condition; unfinished	remove plaster and lath entirely to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
windows	aluminum replacement windows are in fair condition; both thermal and infiltration performance are poor; water leaks reported by occupants may be due to installation detailing and aging weatherstripping; window appearance is not historically correct	remove existing aluminum windows and original wood frame and sill to expose existing masonry opening; install new wood windows		ER/PF		2		
doors	door is in poor condition; paint finish	remove door, door frame & casing entirely; install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF		4		
mechanical and electrical equipment	see Mechanical and Electrical	see Mechanical and Electrical		-		2		
lighting	existing light fixtures are low-efficiency fixtures and are in poor condition	remove existing fixtures and install new high-efficiency utility fixtures		FP/PF		4		
				-		-		

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Reference Document*	*Condition Characterization*	*CPA*	*Remediation Priority*	*Alternate Construction*	*Notes*
Back Storage			Photo-0021/0022, Plan	-		-		relocate and reconfigure Back Storage
floor	concrete slab-on-grade is in poor condition; unfinished	remove existing slab-on-grade; install new slab-on-grade; new rubber tile; see Envelope, Foundation Construction, level 0 slab-on-grade		ER/FP/PF		2		
foundation walls	brick and stone foundation walls are exposed and in poor condition; unfinished	see Envelope, Foundation Construction; install new foundation wall furring; paint finish; see Interior, Wall Construction		ER/FP/PF		2		
load-bearing walls	brick is in good condition; unfinished	excavate to top of stone foundation; install dampproofing at top of stone to top of slab-on-grade; paint finish		ER/FP/PF		2		
non load-bearing walls	exposed woor framing is in fair condition; unfinished	remove plaster and lath and non load-bearing wood wall framing entirely; install new non load-bearing walls; see Interior, Wall Construction; paint finish		PF		4		
wall base	not existing	install new wood wall base		PF		4A		
ceiling	plaster ceiling is in poor condition; unfinished	remove plaster and lath entirely to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
windows	aluminum replacement windows are in fair condition; both thermal and infiltration performance are poor; water leaks reported by occupants may be due to installation detailing and aging weatherstripping; window appearance is not historically correct	remove existing aluminum windows and original wood frame and sill to expose existing masonry opening; install new wood windows		ER/PF		2		
door	door is in poor condition; paint finish	remove door, door frame & casing entirely; install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF		4		
abandoned stair	stair is abandoned	remove stair and associated framing and finish entirely	Photo-?	PF		4		
lighting	existing light fixtures are low-efficiency fixtures and are in poor condition	remove existing fixtures and install new high-efficiency utility fixtures		FP/PF		4		
				-		-		
Storage			Photo-0024/0025, Plan	-		-		relocate and reconfigure Storage
floor	concrete slab-on-grade is in poor condition; unfinished	remove existing slab-on-grade; install new slab-on-grade; new rubber tile; see Envelope, Foundation Construction, level 0 slab-on-grade		ER/FP/PF		2		
foundation walls	brick and stone foundation walls are exposed and in poor condition; unfinished	see Envelope, Foundation Construction; install new foundation wall furring; paint finish; see Interior, Wall Construction		ER/FP/PF		2		
load-bearing walls	brick is in good condition; unfinished	excavate to top of stone foundation; install dampproofing at top of stone to top of slab-on-grade; paint finish		ER/FP/PF		2		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
non load-bearing walls	exposed woor framing is in fair condition; unfinished	remove plaster and lath and non load-bearing wood wall framing entirely; install new non load-bearing walls; see Interior, Wall Construction; paint finish		PF		4		
wall base	not existing	install new wood wall base		PF		4A		
fireplace foundation	brick is in good condition; unfinished	excavate to top of stone foundation; install dampproofing at top of stone to top of slab-on-grade; paint finish		ER/FP/PF		2		
ceiling	plaster ceiling is in poor condition; unfinished	remove plaster and lath entirely to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
windows	aluminum replacement windows are in fair condition; both thermal and infiltration performance are poor; water leaks reported by occupants may be due to installation detailing and aging weatherstripping; window appearance is not historically correct	remove existing aluminum windows and original wood frame and sill to expose existing masonry opening; install new wood windows		ER/PF		2		
doors	door is in poor condition; paint finish	remove door, door frame & casing entirely; install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF		4		
lighting	existing light fixtures are low-efficiency fixtures and are in poor condition	remove existing fixtures and install new high-efficiency utility fixtures		FP/PF		4		
				-		-		
Back Hall 0			Photo-9229/9230, Plan	-		-		reconfigure Back Hall 0
floor	concrete topping slab and VCT finish is in good condition	remove existing slab-on-grade; install new slab-on-grade; new rubber tile; see Envelope, Foundation Construction, level 0 slab-on-grade		ER/FP/PF		2		
load-bearing walls	brick is in good condition; paint finish	excavate to top of stone foundation; install dampproofing at top of stone to top of slab-on-grade; paint finish		ER/FP/PF		1A		
non load-bearing walls	gypsum board is in fair condition; paint finish	remove plaster and lath and non load-bearing wood wall framing entirely; install new non load-bearing walls; see Interior, Wall Construction; paint finish		PF		1A		
wall base	not existing	install new wood wall base		PF		4		
ceiling	suspended acoustical tile system is in poor condition; gypsum board soffits are in poor condition; paint finish	remove plaster and lath and suspended ACT ceiling system entirely to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
lighting	existing light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency ceiling-mounted fixture		FP/PF		4		
				-		-		
Back Stair 0-1			Photo-9229/9230, Plan	-		-		construct 1-hour fire-rated enclosure; reconfigure enclosure walls

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
treads and risers	rubber tread finish is in poor condition; wood tread, riser and scotia condition is good where visible; paint finish	remove rubber tread finish and associated adhesive residue; strip paint finish from treads, repair and refinish wood treads and risers, stain and clear finish treads; paint risers; install new carpet runner		LS/HR		1A		historic restoration priority; AAB variance for tread width, depth, riser height and nosing geometry
stair flight ballustrade	wood ballusters, railing and newels are in good condition; paint finish; handrail profile, end terminations and height are not universal access code compliant	refinish wood ballustrade components, paint finish		LS/HR		1A		historic restoration priority; AAB variance for handrail profile, end terminations and height
stringer apron and stair wall base	wood stringer apron and stair wall base are in good condition; paint finish	remove, reinstall and refinish wood apron and wall base, paint finish		LS/HR		5		historic restoration priority
wall-mounted handrail	not existing	install new wall-mounted handrail		LS		1		
walls	brick is in good condition; paint finish; gypsum board is in fair condition; paint finish	remove gypsum board; install new 5/8"-thick gypsum board for 1-hour fire-rated enclosure; paint finish		LS/HR		1A		stair enclosure walls 1-hour fire-rated
ceiling (under flight)	plaster is in fair condition; paint finish	remove and reinstall plaster at Back Stair 1-2 underflight; paint finish		PF		4		
level 0 stair door	not existing; access to stair is blocked with stored items	install new 4-panel door/frame assembly; paint finish; install new hardware; 45-minute fire-rated		LS/HR		1A		
level 1 stair door	4-panel door and casing are in fair condition; paint finish; door hardware is in poor condition; no landing is provided at stair side of the door	remove door and frame to expose existing rough opening; install new 4-panel door/frame assembly; paint finish; install new hardware; 45-minute fire-rated; reinstall access alarm device		LS/HR		1A		no resident access to level 0 from level 1; door must swing away from stair
lighting	not existing	install new wall-mounted high-efficiency fixture at mid-flight		FP/PF		4		
				-		-		
Play Room			Photo-0003/0004/0005, Plan	-		-		relocate, expand and reconfigure Play Room; add Public Toilet
floor	carpet is in poor condition; concrete topping slab condition is unkown	remove topping slab and existing slab-on-grade; install new slab-on-grade; new rubber tile; see Envelope, Foundation Construction, level 0 slab-on-grade		ER/FP/PF		2		
foundation wall furring	gypsum board is in fair condition; paint finish	see Envelope, Foundation Construction; install new foundation wall furring; paint finish; see Interior, Wall Construction		PF		4		
load-bearing walls	brick is in good condition; paint finish	excavate to top of stone foundation; install dampproofing at top of stone to top of slab-on-grade; paint finish		ER/FP/PF		2		
non load-bearing walls	gypsum board is in fair condition; paint finish	remove non load-bearing walls entirely; install new non load-bearing walls; see Interior, Wall Construction		PF		4		
wall base	vinyl wall base is in fair condition	remove wall base; install new wood wall base; paint finish		PF		4		
ceiling	suspended acoustical tile ceiling is in poor condition; gypsum board soffits are in poor condition; paint finish	remove plaster and lath and suspended ACT ceiling system entirely to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		1A		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
window	aluminum replacement windows are in fair condition; both thermal and infiltration performance are poor; water leaks reported by occupants may be due to installation detailing and aging weatherstripping; window appearance is not historically correct	remove existing aluminum windows and original wood frame and sill to expose existing masonry opening; install new wood windows; paint finish		ER/PF		2		
lighting	existing light fixtures are low-efficiency fixtures and are in poor condition	remove existing fixtures and install new abuse-resistant high-efficiency fixtures		FP/PF		4		
				-		-		
Public Toilet			Plan	-		-	Alternate-10	reconfigure plan for accessible Public Toilet
floor	new work	install new thin-set tile on waterproof membrane on cementitious backer board underlayment - thickness as required for flush finish transitions		PF		4A	Alternate-10	
existing load-bearing and non load-bearing walls	new work	remove wall framing as required for plan reconfiguration; install new 1/2"-thick cementitious backer board and thin-set tile on existing and new framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction		PF		4A	Alternate-10	
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; see Interior, Wall construction		PF		4A	Alternate-10	
ceiling	new work	install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		4A	Alternate-10	
toilet door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF		4A	Alternate-10	
plumbing fixtures	new work	install new plumbing fixtures and associated supply and waste piping; see Plumbing		PF		4A	Alternate-10	
lighting	new work	install one new wet-area ceiling-mounted high-efficiency light fixture and one wall sconce light fixture at mirror location		PF		4A	Alternate-10	
				-		-		
Play Room Stair 0-1	-	remove stair finish, handrail and framing entirely; frame and patch level 1 opening; patch floor finishes; stain and clear finish	Photo-9208/9211, Plan	PF		4A		relocate and reconfigure Play Room Stair 0-1
treads and risers	carpet is in poor condition; substrate condition is unknown; tread and riser geometry is not building code compliant and not universal access code compliant	-		-		-		
handrail	wood handrail is in poor condition; railing terminations are not universal access code compliant			-		-		
gate	gate and gate hardware is in poor condition; no landing is provided at stair side of the gate	-		-		-		
				-		-		
Level 0 Stair 0-1			Plan	-		-		install a stair from Level 0 to Level 1

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
structure	new work	cut new opening in Level 1 floor structure; frame new stair flight from Level 0 to Level 1		FP		4A		
treads and risers	new work	hardwood treads; stain and clear finish; wood risers; paint finish; wood stringer base; paint finish		LS/PF		4A		
handrails	new work	new wall-mounted handrails both sides		LS/PF		4A		
stringer base	new work	install new base to match original profile; paint finish		PF/HR		4A		historic restoration priority
walls	new work	install new wood-framed non load-bearing stair enclosure walls, 1-hour fire-rated; 5/8" gypsum board each side; paint finish		LS/PF		4A		
ceiling	new work	install new 5/8" gypsum board at underside of Stair 1-2 flight; paint finish		PF		4A		
door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; 45-minute fire-rated; paint finish; install new door hardware		PF		4A		historic restoration priority
lighting	new work	install two new high-efficiency fixtures		FP/PF		4		
				-		-		
~~Play Room Stair Storage~~	~~finishes are in poor condition~~	~~see Play Room Stair 0-1~~	~~Plan~~	~~PF~~		~~4A~~		~~relocate and reconfigure Play Room Stair 0-1~~
				-		-		
Entry and Stair Hall 1			Photo-0040/0041	-		-		
floor	tile is in fair condition; VCT is in poor condition; underlayment condition is unknown; original hardwood flooring condition is unknown	remove tile, VCT & associated underlayment to expose original hardwood flooring; refinish hardwood flooring; stain and clear finish		PF/HR		5		historic restoration priority
wall base	wall base at Bathroom 1-3 construction is not original to the building; wood wall base is in poor condition; paint finish	remove wood wall base; install new base to match original profile; paint finish		PF/HR		5		historic restoration priority
walls	plaster is in poor condition; paint finish; wood chair rail is in poor condition; paint finish	remove plaster and lath; install new 5/8"-thick gypsum board; paint finish; see Interior, Wall Construction, existing load-bearing and non load-bearing walls		FP/PF		1A		
ceiling	plaster is in poor condition; plaster crown molding is in fair condition; paint finish	remove plaster and lath entirely including crown and ceiling moldings to expose existing floor/ceiling framing; install new ceiling; paint finish; install new wood crown and ceiling moldings to match original profile; paint finish; see Interior, Floor/Ceiling Construction		PF/HR		5		historic restoration priority
lighting	existing pendant light fixture is a low-efficiency fixture and is in poor condition; light levels are inadequate	remove existing fixture and install two new high-efficiency recessed fixtures and one high-efficiency decorative pendant fixture		FP/PF		4		
				-		-		
Custodial Closet 1				-		-		reconfigure plan for Custodial Closet
floor	new work	install new rubber tile on underlayment		PF		4A		
wall base	new work	install new 2-piece wood wall base to match original profile; paint finish		PF		4A		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
existing load-bearing and non load-bearing walls	new work	remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing and new framing; paint finish; see Interior, Wall Construction and Envelope, Exterior Wall Construction		PF		4A		dwelling unit wall separation 1/2-hour fire-rated
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; paint finish; see Interior, Wall construction		PF		4A		dwelling unit wall separation 1/2-hour fire-rated
ceiling	new work	install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		4A		
closet door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		4A		historic restoration priority
mop sink	new work	install new floor-mounted mop sink; install wall-mounted utility faucet with bucket hook		PF		4A		
				-		-		
Main Stair 1-2			Photo-0040/9264	-		-		
treads and risers	rubber tread and riser finish is not original to the building; rubber is in fair condition; VCT mid-landing finish is miss-matched to tread finish; wood tread, riser and scotia condition is good where visible; paint finish	remove rubber tread and riser finish and associated adhesive residue; strip paint finish from treads, repair and refinish wood treads and risers, stain and clear finish treads; paint risers; install new carpet runner		LS/PF/HR		5		historic restoration priority; AAB variance required for tread width, depth, riser height and nosing geometry
stair flight ballustrade	wood ballusters, railing and newels are in good condition; paint finish; handrail profile, end terminations and height are not universal access code compliant	strip paint and refinish wood ballustrade components, stain and clear finish		LS/PF/HR		5		historic restoration priority; AAB variance required for handrail profile, end terminations and height
stair opening ballustrade (level 2)	wood ballusters, railing and newels are in good condition; paint finish; guardrail height is not universal access code compliant	strip paint and refinish wood ballustrade components, stain and clear finish	Photo-0098/9280	LS/PF/HR		5		historic restoration priority; AAB variance required for railing height
stringer apron and stair wall base	wood stringer apron and stair wall base are in good condition; paint finish	refinish wood apron and wall base, paint finish		LS/PF/HR		5		historic restoration priority
wall-mounted handrail	not existing	install new wall-mounted handrail		LS		1		
				-		-		
Back Hall 1			Photo-0051/0052, Plan	-		-		combine with Kitchen 1-2 and 1-3 for New Shared Kitchen 1 and New Back Hall; construct 1-hour fire rated enclosure; accessible route
floor	carpet is in poor condition; underlayment condition is unknown; original hardwood flooring condition is unknown	remove carpet and underlayment to expose existing subfloor; install new hardwood flooring; stain and clear finish		LS/PF		1A		stair enclosure floor/ceiling 1-hour fire-rated
wall base	wood wall base is not original to the building; base is in poor condition; paint finish	remove wall base entirely; install new 2-piece wood wall base to match original profile; paint finish		PF		4		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
walls	plaster is in poor condition; paint finish	remove plaster; install new 5/8"-thick gypsum board on existing and new wood framing for 1-hour fire-rated enclosure; paint finish; see Interior, Wall Construction		LS/PF		1A		stair enclosure walls 1-hour fire-rated
ceiling	plaster is in poor condition; paint finish	remove plaster and lath entirely to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		stair enclosure floor/ceiling 1-hour fire-rated
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		
~~kitchen door~~	~~flush door and flat door casing are not original to the building; casing and door are in poor condition; paint finish; door hardware is in poor condition; door is not fire rated~~	~~remove door/frame assembly and associated wall construction entirely~~		~~LS/PF~~		~~1A~~		
egress door	6-panel door is not original to the building; door is in fair condition; paint finish; door hardware is in poor condition; casing is in fair condition; paint finish	remove door/frame assembly to expose existing rough opening; remove and salvage canopy, brackets and exterior casing for reinstallation; patch rough opening with new exterior wall construction and finish to match existing; install new rough opening; install new 4-panel door/frame assembly and interior casing to match original; paint finish; reinstall canopy, brackets and casing; paint finish; install new door hardware		LS/PF		1A		relocate
lighting	existing pendant light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency pendant fixture		FP/PF		4		
				-		-		
Back Stair 1-2			Photo-0053/0054/0055/0056	-		-		construct 1-hour fire-rated enclosure; accessible route at Level 1
Level 1 floor/landing	carpet is in poor condition; underlayment condition is unknown; original hardwood flooring condition is unknown	remove carpet and underlayment to expose existing subfloor; install new hardwood flooring; stain and clear finish		LS/HR		1A		stair enclosure floor/ceiling 1-hour fire-rated
treads and risers	rubber tread finish is in poor condition; wood tread, riser and scotia condition is good where visible; paint finish	remove rubber tread finish and associated adhesive residue; strip paint finish from treads, repair and refinish wood treads and risers, stain and clear finish treads; paint risers; install new carpet runner		LS/HR		1A		historic restoration priority; AAB variance required for tread width, depth, riser height and nosing geometry
stair flight ballustrade	wood ballusters, railing and newels are in good condition; paint finish; handrail profile, end terminations and height are not universal access code compliant	strip paint and refinish wood ballustrade components, stain and clear finish		LS/HR		1A		historic restoration priority; AAB variance required for handrail profile, end terminations and height
wall-mounted handrail	not existing	install new wall-mounted handrail		LS		1		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
stringer apron and stair wall base	wood stringer apron and stair wall base are in good condition; paint finish	remove, reinstall and refinish wood apron and wall base, paint finish		PF/HR		5		historic restoration priority
walls	plaster is in fair condition; paint finish; walls are not fire rated	remove plaster; install new 5/8"-thick gypsum board on existing and new wood framing for 1-hour fire-rated enclosure; paint finish; see Interior, Wall Construction		LS/PF		1A		stair enclosure walls 1-hour fire-rated
ceiling (under flight)	plaster is in fair condition; paint finish	remove and reinstall plaster at Back Stair 1-2 underflight; paint finish		PF		4		
stair door	4-panel door and casing are in fair condition; paint finish; door hardware is in poor condition; door is not fire rated	install new 4-panel door/frame assembly; paint finish; install new hardware; 45-minute fire-rated		LS/HR		1A		historic restoration priority; 45-minute fire-rated
lighting	existing pendant light fixture at landing is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency pendant fixture; install new wall-mounted fixture at mid-flight		FP/PF		4		
				-		-		
Staff Office			Photo-0029/0032/0034, Plan	-		-	Alternate-6 Alternate-8	reconfigure for level 0 Stair 0-1 access, Director's Office location, Staff Toilet location and Staff Kitchenette location
floor	VCT is in fair condition; underlayment condition is unknown; original hardwood flooring condition is unknown	remove VCT and underlayment entirely to expose existing hardwood flooring; repair and refinish hardwood flooring; stain and clear finish		PF/HR		1A		historic restoration priority
wall base	wood wall base at bathroom & kitchen niche construction is not original to the building; base is in fair condition; paint finish	remove wall base entirely; install new 2-piece wood wall base to match original profile; paint finish		PF/HR		5		historic restoration priority
existing load-bearing and non load-bearing walls	plaster is in poor condition; paint finish	remove plaster and lath entirely to expose existing wall framing; install new 5/8"-thick gypsum board; see Interior, Wall Construction and Envelope, Exterior Wall Construction; paint finish		FP/PF		1A		
new non load-bearing walls	new work	install new non load-bearing wall construction; see Interior, Wall construction		PF		1A		
ceiling	plaster is in poor condition; plaster crown molding is in fair condition; plaster ceiling panel molding and medalion are in fair condition; paint finish	remove plaster and lath entirely including crown and ceiling moldings to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		1A		
ceiling	new work	install new wood crown and ceiling moldings to match existing; paint finish		PF/HR		5B	Alternate-6	
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		historic restoration priority

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
staff office door	flush door and flat door casing is not original to the building; paint finish; hardware is in poor condition	remove door, door frame & casing entirely to expose existing rough opening; install new 4-panel door pair to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		1A		historic restoration priority
fireplace	stone fireplace front and mantel is in good condition; decorative metal fireplace cover is in good condition; condition of hearth, firebox, damper and flue is unkown	protect fireplace and mantel from damage; block flue opening; clean visible surfaces	Photo-9244	PF/HR		5		historic restoration priority
fireplace	see above	remove fireplace and fireplace front entirely; remove brick masonry fireplace mass, chimney and associated flues entirely; in-fill wall and floor construction and finish to match existing; see Interior, Wall Construction, Floor/Ceiling Construction and individual rooms	Plan	PF		5B	Alternate-8	
lighting	existing pendant light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency pendant fixture		FP/PF		4		
				-		-		
Staff Kitchen Niche	-	remove kitchen construction entirely including walls, cabinets and countertops, sink and appliances	Photo-0036; Plan	PF		4A		relocate and reconfigure Staff Kitchen
floor	VCT is in fair condition; underlayment condition is unknown; original hardwood flooring condition is unknown	-		-		-		
wall base	wood wall base is not original to the building; base is in fair condition; paint finish	-		-		-		
walls	niche wall construction and cased opening are not original to the building; wall and ceiling obscure original crown and ceiling panel moldings; plaster is in poor condition; paint finish	-		-		-		
ceiling	plaster is in poor condition; paint finish	-		-		-		
cabinets and countertop	cabinets and countertop are in poor condition	-		-		-		
appliances and sink	appliances and sink are in poor condition	-		-		-		
				-		-		
Staff Bathroom	-	remove bathroom construction entirely including walls, doors and plumbing fixtures	Photo-0037; Plan	PF		4A		relocate and reconfigure Staff Bathroom
floor	VCT is in fair condition; underlayment condition is unknown; original hardwood flooring condition is unknown	-		-		-		
walls	bathroom wall construction is not original to the building; walls and ceiling obscure original crown and ceiling panel moldings; tile wainscot is in fair condition; plaster is in poor condition; paint finish	-		-		-		
ceiling	plaster is in poor condition; paint finish	-		-		-		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
bathroom door	flush door and flat door casing is not original to the building; door and casing are in poor condition; paint finish; door hardware is in poor condition	-		-		-		
plumbing fixtures	toilet, lavatory and tub fixtures are in fair condition; fixtures are not compliant with low flow plumbing code requirements; see Plumbing	-		-		-		
				-		-		
Staff Toilet			Plan	-		-		reconfigure plan for Staff Toilet
floor	new work	install new thin-set tile on waterproof membrane on cementitious backer board underlayment - thickness as required for flush finish transitions		PF		4A		
existing load-bearing and non load-bearing walls	new work	remove wall framing as required for plan reconfiguration; install new 1/2"-thick cementitious backer board and thin-set tile on existing and new framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction		PF		4A		
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; see Interior, Wall construction		PF		4A		
ceiling	new work	install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		4A		
toilet door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF		4A		
plumbing fixtures	new work	install new plumbing fixtures and associated supply and waste piping; see Plumbing		PF		4A		
accessories	new work	install new bathroom accessories including one medicine cabinet, one robe hook, one towel bar, one toilet paper dispenser		PF		4A		
lighting	new work	install one new wet-area ceiling-mounted high-efficiency light fixture and one wall sconce light fixture at mirror location		PF		4A		
				-		-		
Staff Kitchenette			Plan	-		-		reconfigure plan for Staff Kitchenette
cabinets and countertops	new work	install new base and wall cabinets and solid-surface countertop with backsplash		PF		4A		
appliances and sink	new work	install new refrigerator, range with recirculating hood, microwave oven and sink		PF		4A		
lighting	new work	install one new ceiling-mounted high-efficiency light fixture		PF		4A		
				-		-		
Bedroom 1-1			Photo-0063/0065/0066, Plan	-		-	Alternate-6 Alternate-8	reconfigure plan layout for an accessible bedroom

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
floor	VCT is in fair condition; underlayment condition is unknown; original hardwood flooring condition is unknown	remove VCT and underlayment entirely to expose existing hardwood flooring; repair and refinish hardwood flooring; stain and clear finish		LS/PF/HR		1A		historic restoration priority; dwelling unit floor/ceiling separation 1/2-hour fire-rated
wall base	wood wall base is in fair condition; base at kitchen niche and closet is not original to the building; paint finish	remove wall base entirely; install new 2-piece wood wall base to match original profile; paint finish		PF/HR		5		historic restoration priority
existing load-bearing and non load-bearing walls	plaster is in poor condition; walls are not fire rated; paint finish	remove plaster and lath entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction; paint finish		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing wall construction; see Interior, Wall construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	plaster is in poor condition; plaster crown molding is in fair condition; plaster medalion is in fair condition; paint finish	remove plaster and lath entirely including crown and ceiling moldings to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
ceiling	new work	install new wood crown and ceiling moldings to match existing; paint finish		PF/HR		5B	Alternate-6	
windows	see Envelope, Windows; casing, stool and apron trim are in good condition	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		historic restoration priority
bedroom door	flush door and flat door casing is not original to the building; door and casing are in poor condition; door/frame assembly is not fire rated; paint finish; door hardware is in poor condition	remove door, door frame & casing entirely to expose existing rough opening; relocate rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; 20-minute fire-rated; paint finish; install new door hardware		PF/HR		1A		historic restoration priority; 20-minute fire-rated
closet and closet doors	closet construction and doors are not original to the building, flush door and flat door casing are in poor condition; paint finish; closet construction obscures crown moldings	remove closet construction and doors entirely; install new built-in closets and closet doors		PF		4A		
kitchen niche	cabinets and countertop are in poor condition; appliances and sink are in poor condition; tile wall and backsplash finish is in poor condition	remove cabinets, countertops, sink and appliances entirely		PF		4A		
fireplace	stone fireplace front and mantel is in good condition; decorative metal fireplace cover is in good condition; condition of hearth, firebox, damper and flue is unkown	protect fireplace and mantel from damage; block flue opening; clean visible surfaces	Photo-0066	PF/HR		5		historic restoration priority

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Reference Document*	*Condition Characterization*	*CPA*	*Remediation Priority*	*Alternate Construction*	*Notes*
fireplace	see above	remove fireplace and fireplace front entirely; remove brick masonry fireplace mass, chimney and associated flues entirely; in-fill wall and floor construction and finish to match existing; see Interior, Wall Construction, Floor/Ceiling Construction and individual rooms	Plan	PF		5B	Alternate-8	
accessibility accomodations	not existing	install universal access accomodations including door light, accessible communications, bed shaker outlet, door viewer, door and floor maneuvering clearances thoughout	Plan	UA		1C		
lighting	existing pendant light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency pendant fixture		FP/PF		4		
				-		-		
Bathroom 1-1			Photo-?, Plan	-		-		reconfigure plan layout for an accessible bathroom
floor	tile is in fair condition; underlayment condition is unknown; original hardwood flooring condition is unknown	remove tile and underlayment to expose existing board subfloor; install new thin-set tile on waterproof membrane on cementitious backer board underlayment - thickness as required for flush finish transitions		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
existing load-bearing and non load-bearing walls	tile wainscot is in fair condition; plaster is in poor condition; walls are not fire rated; paint finish	remove tile and gypsum board or plaster and lath entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 1/1"-thick cementitious backer board and thin-set tile on existing and new framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; see Interior, Wall construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	plaster is in poor condition; paint finish	remove plaster and lath or gypsum board and associated ceiling framing entirely to expose existing floor/ceiling framing above; install new ceiling; epoxy paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
windows	see Envelope, Windows; casing, stool and apron trim are in good condition	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; limit window operation to 4"-maximum		PF/HR		2		historic restoration priority

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
bathroom door	4-panel door and casing are in fair condition; paint finish; door hardware is in poor condition	remove door, door frame & casing entirely to expose existing rough opening; relocate rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		4		historic restoration priority, confirm finishes
accessories	bathroom accessories are in poor condition or missing	install new bathroom accessories including one medicine cabinet, two robe hooks, two towel bars, one toilet paper dispenser		PF		4		
plumbing fixtures	toilet, lavatory and tub fixtures are in fair condition; fixtures are not compliant with low flow plumbing code requirements; see Plumbing	install new plumbing fixtures and associated supply and waste piping; see Plumbing		PF		4		
accessibility accomodations	not existing	install accessible plumbing fixtures, maneuvering clearances for door, floor and plumbing fixtures, accessible shower or tub	Plan	UA		1C		
lighting	existing ceiling-mounted lighting is a low efficiency fixture and is in poor condition	install one new wet-area ceiling-mounted high-efficiency light fixture and one wall sconce light fixture at mirror location		FP/PF		4		
				-		-		
Bedroom 1-2			Photo-0058/0059/0060, Plan	-		-	Alternate-6	reconfigure plan layout
floor	VCT tile is in fair condition; underlayment condition is unknown; original hardwood flooring condition is unknown	remove VCT and underlayment entirely to expose existing hardwood flooring; repair and refinish hardwood flooring; stain and clear finish		LS/PF/HR		1A		historic restoration priority; dwelling unit floor/ceiling separation 1/2-hour fire-rated
wall base	wood wall base is in fair condition	remove wall base entirely; install new 2-piece wood wall base to match original profile; paint finish		PF/HR		5		historic restoration priority
existing load-bearing and non load-bearing walls	plaster is in poor condition; walls are not fire rated; paint finish; chair rail molding is not complete; paint finish	remove chair rail, plaster and lath entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction; paint finish		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing wall construction; see Interior, Wall construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	plaster is in poor condition; paint finish	remove plaster and lath entirely to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
ceiling	new work	install new wood crown and ceiling moldings to match existing; paint finish		PF/HR		5B	Alternate-6	

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
windows	see Envelope, Windows; casing, stool and apron trim are in good condition	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		historic restoration priority
bedroom door	flush door and flat door casing is not original to the building; door and casing are in poor condition; door/frame assembly is not fire rated; door hardware is in poor condition	remove door, door frame & casing entirely to expose existing rough opening; relocate rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; 20-minute fire-rated; paint finish; install new door hardware		PF/HR		1A		historic restoration priority; 20-minute fire-rated
closet and closet doors	closet construction and doors are not original to the building, flush door and flat door casing are in poor condition; paint finish; closet construction obscures crown moldings	remove closet construction and doors entirely; install new built-in closets and closet doors		PF		4A		
lighting	existing pendant light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency pendant fixture		FP/PF		4		
				-		-		
Bathroom 1-2			Photo-0061, Plan	-		-		reconfigure plan layout
floor	tile is in fair condition; underlayment condition is unknown; original hardwood flooring condition is unknown	remove tile and underlayment to expose existing board subfloor; install new thin-set tile on waterproof membrane on cementitious backer board underlayment - thickness as required for flush finish transitions		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
existing load-bearing and non load-bearing walls	tile wainscot is in fair condition; walls are not fire rated; plaster is in poor condition; paint finish	remove tile and gypsum board or plaster and lath entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 1/1"-thick cementitious backer board and thin-set tile on existing and new framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; see Interior, Wall construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	plaster is in poor condition; paint finish	remove plaster and lath or gypsum board and associated ceiling framing entirely to expose existing floor/ceiling framing above; install new ceiling; epoxy paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
bathroom door	4-panel door and casing are in fair condition; paint finish; door hardware is in poor condition	remove door, door frame & casing entirely to expose existing rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		5		historic restoration priority, confirm finishes
accessories	bathroom accessories are in poor condition or missing	install new bathroom accessories including one medicine cabinet, two robe hooks, two towel bars, one toilet paper dispenser		PF		4		
plumbing fixtures	toilet, lavatory and tub fixtures are in fair condition; fixtures are not compliant with low flow plumbing code requirements; see Plumbing	install new plumbing fixtures and associated supply and waste piping; see Plumbing		PF		4		
lighting	existing ceiling-mounted lighting is a low efficiency fixture and is in poor condition	install one new wet-area ceiling-mounted high-efficiency light fixture and one wall sconce light fixture at mirror location		FP/PF		4		
				-		-		
Kitchen 1-2		remove kitchen construction entirely including walls, doors, cabinets, countertops, sink and appliances	Photo-0057, Plan	PF		4A		combine with Kitchen 1-3 and Back Hall for Shared Kitchen 1 and New Back Hall
floor	VCT is in fair condition; underlayment condition is unknown; original hardwood flooring condition is unknown	-		-		-		
wall base	wood wall base is not original to the building; base is in fair condition; paint finish	-		-		-		
walls	plaster is in poor condition; paint finish	-		-		-		
ceiling	plaster is in poor condition; paint finish	-		-		-		
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	-		-		-		
cabinets and countertop	cabinets and countertop are in poor condition	-		-		-		
appliances and sink	appliances and sink are in poor condition	remove and dispose of refrigerator, range, range hood and sink; ?		-		-		
				-		-		
Shared Kitchen 1			Plan	-		-		reconfigure plan for accessible Shared Kitchen 1
floor	new work	install new rubber tile on underlayment		PF		4A		
wall base	new work	install new 2-piece wood wall base to match original profile; paint finish		PF		4A		
existing load-bearing and non load-bearing walls		remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing and new framing; paint finish; see Interior, Wall Construction and Envelope, Exterior Wall Construction		PF		4A		
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; paint finish; see Interior, Wall construction		PF		4A		
ceiling	new work	install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		4A		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
window	new work	remove and salvage window/frame assembly with exterior casing and sill and interior casing, stool and apron for reinstallation; fill rough opening with new exterior wall construction to match existing; patch exterior and interior finishes to match existing; install new rough opening; reinstall existing window/frame assembly with exterior casing and sill and interior casing, stool and apron; paint finish		PF/HR		4A		historic restoration priority
kitchen door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; 45-minute fire-rated; paint finish; install new door hardware		LS/PF/HR		4A		historic restoration priority; confirm egress through kitchen; 45-minute fire-rated
cabinets and countertop	new work	install new base and wall cabinets and solid-surface countertop with backsplash		PF		4A		
appliances and sink	new work	install new refrigerator, range with recirculating hood, microwave oven and sink		PF		4A		
lighting	new work	install new ceiling-mounted high efficiency light fixture		PF		4A		
				-		-		
Bedroom 1-3 (Director's Office)			Photo-0043/0044/0045/0046, Plan	-		-	Alternate-6 Alternate-8	reconfigure plan for Director's Office, relocate Bedroom 1-3 to existing Level 2 Director's Office location
floor	VCT is in fair condition; underlayment condition is unknown; original hardwood flooring condition is unknown	remove VCT and underlayment entirely to expose existing hardwood flooring; repair and refinish hardwood flooring; stain and clear finish		PF/HR		1A		historic restoration priority
wall base	wood wall base at closet is not original to the building; base is in fair condition; paint finish	remove wall base entirely; install new 2-piece wood wall base to match original profile; paint finish		PF/HR		5		historic restoration priority
existing load-bearing and non load-bearing walls	plaster is in poor condition; paint finish; chair rail molding is not complete; paint finish	remove chair rail, plaster and lath entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction; paint finish		PF		1A		
new non load-bearing walls	new work	install new non load-bearing wall construction; see Interior, Wall construction		PF		1A		
ceiling	plaster is in poor condition; plaster crown molding is in fair condition; plaster medalion is in fair condition; paint finish	remove plaster and lath entirely including crown and ceiling moldings to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
ceiling	new work	install new wood crown and ceiling moldings to match existing; paint finish		PF/HR		5B	Alternate-6	

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		historic restoration priority
closet and closet doors	closet construction and doors are not orignal to the building; flush door and flat door casing are in poor condition; paint finish; closet construction obscures crown moldings	remove closet construction and doors entirely		PF		4A		
kitchen cased opening	casing is in fair condition; paint finish	remove cased opening entirely to expose existing rough opening; install new wall construction as required to close opening		PF		4A		
bedroom cased opening	casing is in fair condition; paint finish	remove cased opening entirely to expose existing rough opening; install new wall construction as required to close opening		PF		4A		
new office door	new work	install new rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		5		historic restoration priority
fireplace	brick fireplace front and hearth is in fair condition; wood mantel is in good condition; paint finish; condition of hearth, firebox, damper and flue is unkown	protect fireplace and mantel from damage; block flue opening; clean visible surfaces	Photo-9262	PF/HR		5		historic restoration priority
fireplace	see above	remove fireplace and fireplace front entirely; remove brick masonry fireplace mass, chimney and associated flues entirely; in-fill wall and floor construction and finish to match existing; see Interior, Wall Construction, Floor/Ceiling Construction and individual rooms	Plan	PF		5B	Alternate-8	
lighting	existing pendant light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency pendant fixture		FP/PF		4		
				-		-		
Bedroom Vestibule 1-3	-	remove vestibule construction entirely including walls and doors	Photo-0042, Plan	PF		4A		remove and reconfigure plan for Office, relocate Bedroom 1-3 to existing Level 2 Office location
floor	tile is in fair condition; underlayment condition is unknown; original hardwood flooring condition is unknown	-		-		-		
walls	bathroom and bedroom wall construction is not original to the building; plaster is in poor condition; paint finish	-		-		-		
wall base	wood wall base at bathroom is not original to the building; base is in fair condition; paint finish	-		-		-		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
ceiling	plaster is in poor condition; plaster crown molding is in fair condition; paint finish; crown molding is obscured by bathroom and bedroom wall construction	-		-		-		
bedroom door	flush door and flat door casing is not original to the building; door and casing are in poor condition; door/frame assembly is not fire rated; paint finish; door hardware is in poor condition	-		-		-		
				-		-		
Bathroom 1-3	-	remove bathroom construction entirely, including walls, doors and plumbing fixtures	Photo-0049//9261 Plan	PF		4A		remove bathroom entirely; reconfigure plan for New level 0 Stair 0-1
floor	tile is in fair condition; underlayment condition is unknown; original hardwood flooring condition is unknown	-		-		-		
walls	bathroom wall construction is not original to the building; tile is in fair condition; plaster is in poor condition; paint finish	-		-		-		
ceiling	plaster is in poor condition; paint finish	-		-		-		
bathroom door	flush door and flat door casing is not original to the building; door and casing are in poor condition; paint finish; door hardware is in poor condition	-		-		-		
plumbing fixtures	toilet, lavatory and tub fixtures are in fair condition; fixtures are not compliant with low flow plumbing code requirements; see Plumbing	-		-		-		
				-		-		
Kitchen 1-3		remove kitchen construction entirely, including walls, doors, cabinets, countertops, sink and appliances	Photo-9254/9255/9256, Plan	PF		4A		reconfigure plan and combine Kitchen 1-2 and Back Hall for Shared Kitchen 1 and New Back Hall
floor	VCT is in poor condition; underlayment condition is unknown; original hardwood flooring condition is unknown	-		-		-		
wall base	wood wall base is not original to the building; base is in fair condition; paint finish	-		-		-		
walls	plaster is in poor condition; paint finish	-		-		-		
ceiling	plaster is in poor condition; paint finish	-		-		-		
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	-		-		-		
hall door	flush door and flat door casing is not original to the building; door and casing are in poor condition; paint finish; door hardware is in poor condition	-		-		-		
cabinets and countertop	cabinets and countertop are in poor condition	-		-		-		
appliances and sink	appliances and sink are in poor condition	-		-		-		
				-		-		

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Reference Document*	*Condition Characterization*	*CPA*	*Remediation Priority*	*Alternate Construction*	*Notes*
Stair Hall 2			Photo-0098/9265/9280/0075	-		-		
floor	hardwood flooring is in fair condition; clear finish is in poor condition	refinish hardwood flooring; stain and clear finish		PF/HR		5		historic restoration priority
wall base	wood wall base at bedroom wall is not original to the building; base is in fair condition; paint finish	remove wood wall base; install new base to match original profile; paint finish		PF/HR		5		historic restoration priority
walls	plaster is in poor condition; paint finish; wood chair rail is in poor condition; paint finish	remove plaster and lath; install new 5/8"-thick gypsum board; paint finish; see Interior, Wall Construction, existing load-bearing and non load-bearing walls		PF		1A		
ceiling	plaster is in poor condition; plaster crown molding is in fair condition; crown molding is obsured by Kitchen 2-4 and 2-6 wall construction; paint finish	remove plaster and lath entirely including crown and ceiling moldings to expose existing floor/ceiling framing; install new ceiling; paint finish; install new wood crown and ceiling moldings to match original profile; paint finish; see Interior, Floor/Ceiling Construction		PF/HR		5		historic restoration priority
stair opening ballustrade	see Main Stair 1-2	see Main Stair 1-2		-		-		
lighting	existing pendant light fixture is a low-efficiency fixture and is in poor condition; light levels are inadequate	remove existing fixture and install two new high-efficiency decorative pendant fixtures		FP/PF		4		
				-		-		
Custodial Closet 2				-		-		reconfigure plan for Custodial Closet
floor	new work	install new rubber tile on underlayment		PF		4A		
wall base	new work	install new 2-piece wood wall base to match original profile; paint finish		PF		4A		
existing load-bearing and non load-bearing walls	new work	remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing and new framing; paint finish; see Interior, Wall Construction and Envelope, Exterior Wall Construction		PF		4A		dwelling unit wall separation 1/2-hour fire-rated
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; paint finish; see Interior, Wall construction		PF		4A		dwelling unit wall separation 1/2-hour fire-rated
ceiling	new work	install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		4A		
closet door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		4A		historic restoration priority
mop sink	new work	install new floor-mounted mop sink; install wall-mounted utility faucet with bucket hook		PF		4A		
				-		-		
Back Hall 2			Photo-9267/9304, Plan	-		-		reconfigure plan to combine with Back Stair 2-3 and closet at adjacent bedroom
floor	carpet is in poor condition; underlayment condition is unknown; original hardwood flooring condition is unknown	install new hardwood flooring; stain and clear finish		LS/PF		1A		stair enclosure floor/ceiling 1/2-hour fire-rated

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
wall base	wood wall base is in fair condition; paint finish	remove wall base entirely; install new 2-piece wood wall base to match original profile; paint finish		PF/HR		5		historic restoration priority
walls	plaster is in poor condition; paint finish	remove plaster; install new 5/8"-thick gypsum board on existing and new wood framing for 1-hour fire-rated enclosure; paint finish; see Interior, Wall Construction		LS/PF		1A		stair enclosure walls 1/2-hour fire-rated
ceiling	plaster is in poor condition; paint finish	remove plaster and lath entirely to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		stair enclosure floor/ceiling 1/2-hour fire-rated
egress door	metal half lite door and flat casing are not original to the building; door and casing are in fair condition; paint finish; door hardware is in poor condition; security grate is fixed and is in fair condition; paint finish	remove door, frame and security grate; restore original window rough opening; install new window frame and sash to match original windows with exterior casing and sill and interior casing, stool and apron to match original		PF/HR		5A		historic restoration priority
lighting	existing pendant light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency pendant fixture		FP/PF		4		
				-		-		
Back Stair 2-3			Photo-9399/9301/9302	-		-		
Level 1 floor/landing	carpet is in poor condition; underlayment condition is unknown; original hardwood flooring condition is unknown	install new hardwood flooring; stain and clear finish		LS/HR		1A		historic restoration priority; stair enclosure floor/ceiling 1/2-hour fire-rated
treads and risers	rubber tread finish is in poor condition; wood tread, riser and scotia condition is good where visible; paint finish	remove rubber tread finish and associated adhesive residue; strip paint finish from treads, repair and refinish wood treads and risers, stain and clear finish treads; paint risers; install new carpet runner		LS/HR		1A		historic restoration priority; AAB variance required for tread width, depth, riser height and nosing geometry
stair flight ballustrade	wood ballusters, railing and newels are in good condition; paint finish; handrail profile, end terminations and height are not universal access code compliant	refinish wood ballustrade components, paint finish		LS/HR		1A		historic restoration priority; AAB variance required for handrail profile, end terminations and height
wall-mounted handrail	not existing	install new wall-mounted handrail		LS		1		
stair opening ballustrade (level 3)	wood ballusters, railing and newels are in good condition; paint finish; guardrail height is not universal access code compliant	strip paint and refinish wood ballustrade components, stain and clear finish	Photo-9309	LS/HR		1A		historic restoration priority; AAB variance required for railing height
stringer apron and stair wall base	wood stringer apron and stair wall base are in good condition; paint finish	remove, reinstall and refinish wood apron and wall base, paint finish		LS/HR		5		historic restoration priority
walls	plaster is in fair condition; paint finish	remove plaster; install new 5/8"-thick gypsum board on existing and new wood framing for 1-hour fire-rated enclosure; paint finish; see Interior, Wall Construction		LS/PF		1A		stair enclosure walls 1/2-hour fire-rated
ceiling (under flight)	plaster is in fair condition; paint finish	remove and reinstall plaster at Back Stair 1-2 underflight; paint finish		PF		4		
stair door	4-panel door and casing are in fair condition; paint finish; door hardware is in poor condition	install new 4-panel door/frame assembly; paint finish; install new hardware; 45-minute fire-rated		LS/HR		1A		historic restoration priority; 45-minute fire-rated

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
lighting	existing pendant light fixture at landing is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency pendant fixture; install new wall-mounted fixture at mid-flight		FP/PF		4		
				-		-		
Bedroom 2-4 (2-3)			Photo-0086/0087/0088/0089, Plan	-		-	Alternate-6 Alternate-8	reconfigure plan layout
floor	hardwood flooring is in fair condition; clear finish is in poor condition	refinish hardwood flooring; stain and clear finish		LS/PF/HR		1A		historic restoration priority; dwelling unit floor/ceiling separation 1/2-hour fire-rated
wall base	wood wall base is in fair condition; paint finish	remove wall base entirely; install new 2-piece wood wall base to match original profile; paint finish		PF/HR		5		historic restoration priority
existing load-bearing and non load-bearing walls	plaster is in poor condition; walls are not fire rated; paint finish	remove plaster and lath entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction; paint finish		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing wall construction; see Interior, Wall construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	plaster is in poor condition; plaster crown molding is in fair condition; paint finish	remove plaster and lath entirely including crown moldings to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF/HR		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
ceiling	new work	install new wood crown and ceiling moldings to match existing; paint finish		PF/HR		5B	Alternate-6	
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		historic restoration priority
closet and closet doors	closet construction and doors are not original to the building, flush door and flat door casing are in poor condition; paint finish; closet construction obscures crown moldings	remove closet construction and doors entirely; install new built-in closets and closet doors		PF		4A		
bedroom door	flush door and flat door casing is not original to the building; door and casing are in poor condition; door/frame assembly is not fire rated; paint finish; door hardware is in poor condition	remove door, door frame & casing entirely to expose existing rough opening; relocate rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; 20-minute fire-rated; paint finish; install new door hardware		LS/PF/HR		1A		historic restoration priority; 20-minute fire-rated

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
fireplace	stone fireplace front and mantel is in good condition; decorative metal fireplace cover is in good condition; condition of hearth, firebox, damper and flue is unkown	protect fireplace and mantel from damage; block flue opening; clean visible surfaces		PF/HR		5		historic restoration priority
fireplace	see above	remove fireplace and fireplace front entirely; remove brick masonry fireplace mass, chimney and associated flues entirely; in-fill wall and floor construction and finish to match existing; see Interior, Wall Construction, Floor/Ceiling Construction and individual rooms	Plan	PF		5B	Alternate-8	
lighting	existing pendant light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency pendant fixture		FP/PF		4		
				-		-		
Bathroom 2-3			Plan	-		-		reconfigure plan for Bathroom 2-3
floor	new work	install new thin-set tile on waterproof membrane on cementitious backer board underlayment - thickness as required for flush finish transitions		LS/PF		4A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
existing load-bearing and non load-bearing walls	new work	remove wall framing as required for plan reconfiguration; install new 1/1"-thick cementitious backer board and thin-set tile on existing and new framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction		LS/PF		4A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; see Interior, Wall construction		LS/PF		4A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	new work	install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		4A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
bathroom door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		4A		historic restoration priority
accessories	new work	install new bathroom accessories including one medicine cabinet, two robe hooks, two towel bars, one toilet paper dispenser		PF		4A		
plumbing fixtures	new work	install new plumbing fixtures and associated supply and waste piping; see Plumbing		PF		4A		
lighting	new work	install one new wet-area ceiling-mounted high-efficiency light fixture and one wall sconce light fixture at mirror location		PF		4A		
				-		-		
Bedroom Vestibule 2-4/5		remove vestibule construction entirely including walls and doors	Photo, Plan	PF		4A		reconfigure for Bathrooms 2-4 and 2-5
floor	hardwood flooring is in fair condition; clear finish is in poor condition	-		-		-		
wall base	wood wall base is in fair condition; paint finish	-		-		-		
walls	plaster is in fair condition; paint finish	-		-		-		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
ceiling	plaster is in fair condition; plaster crown molding is in fair condition; paint finish	-		-		-		
stair hall door	flush door and flat door casing are not original to the building; door and casing are in fair condition; paint finish	-		-		-		
				-		-		
Kitchen 2-4		remove kitchen construction entirely including walls, doors, cabinets, countertops, sink and appliances	Photo 0090, Plan	PF		4A		reconfigure combine with Kitchen 2-6 and expand for Shared Kitchen 2
floor	VCT is in poor condition; underlayment condition is unknown; original hardwood flooring condition is unknown	-		-		-		
wall base	wood wall base is in fair condition; paint finish	-		-		-		
walls	plaster is in poor condition; paint finish	-		-		-		
ceiling	plaster is in poor condition; paint finish	-		-		-		
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish; casing is partially obscured by kitchen wall construction	-		-		-		
kitchen door	flush door and flat door casing are not original to the building; door and casing are in fair condition; paint finish	-		-		-		
cabinets and countertop	cabinets and countertop are in poor condition	-		-		-		
appliances and sink	appliances and sink are in poor condition	-		-		-		
				-		-		
Shared Kitchen 2			Plan	-		-		reconfigure plan for Shared Kitchen 3
floor	new work	install new rubber tile on underlayment		PF		4A		
wall base	new work	install new 2-piece wood wall base to match original profile; paint finish		PF		4A		
existing load-bearing and non load-bearing walls	new work	remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing and new framing; paint finish; see Interior, Wall Construction and Envelope, Exterior Wall Construction		PF		4A		
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; paint finish; see Interior, Wall construction		PF		4A		
ceiling	new work	install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		4A		
window	new work	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		4A		historic restoration priority

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
kitchen door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		4A		historic restoration priority
cabinets and countertop	new work	install new base and wall cabinets and solid-surface countertop with backsplash		PF		4A		
appliances and sink	new work	install new refrigerator, range with recirculating hood, microwave oven and sink		PF		4A		
lighting	new work	install new ceiling-mounted high efficiency light fixture		PF		4A		
				-		-		
Bedroom 2-5 (2-4)			Photo-0082/0083/0084/0085, Plan	-		-	Alternate-6	reconfigure plan layout
floor	hardwood flooring is in fair condition; clear finish is in poor condition	refinish hardwood flooring; stain and clear finish		LS/PF/HR		1A		historic restoration priority; dwelling unit floor/ceiling separation 1/2-hour fire-rated
wall base	wood wall base is in fair condition; paint finish	remove wall base entirely; install new 2-piece wood wall base to match original profile; paint finish		PF/HR		5		historic restoration priority
existing load-bearing and non load-bearing walls	plaster is in poor condition; walls are not fire rated; paint finish	remove plaster and lath entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction; paint finish		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing wall construction; see Interior, Wall construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	plaster is in fair condition; plaster crown molding is missing; paint finish	remove plaster and lath entirely including crown moldings to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
ceiling	new work	install new wood crown and ceiling moldings to match existing; paint finish		PF/HR		5B	Alternate-6	
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		historic restoration priority
closet doors	4-panel doors and casing are in fair condition; paint finish; door hardware is in poor condition	remove closet construction and doors entirely; install new built-in closets and closet doors		PF		4A		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
bedroom door	4-panel doors and casing are in fair condition; door/frame assembly is not fire rated; paint finish; door hardware is in poor condition	remove door, door frame & casing entirely to expose existing rough opening; relocate rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; 20-minute fire-rated; paint finish; install new door hardware		PF/HR		1A		historic restoration priority; 20-minute fire-rated
lighting	existing pendant light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency pendant fixture		FP/PF		4		
				-		-		
Bathroom 2-4/5 (2-4)			Photo-0078/0079, Plan	-		-		reconfigure plan for Bathrooms 2-4 and 2-5
floor	mosaic tile is in poor condition; mortar bed condition is unknown	remove tile and mortar bed to expose existing board subfloor; install new thin-set tile on waterproof membrane on cementitious backer board underlayment - thickness as required for flush finish transitions		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
existing load-bearing and non load-bearing walls	tile wainscot is in fair condition; walls are not fire rated; plaster is in poor condition; paint finish	remove tile and gypsum board or plaster and lath entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 1/1"-thick cementitious backer board and thin-set tile on existing and new framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; see Interior, Wall construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	plaster is in fair condition; plaster crown molding is in poor condition; paint finish	remove plaster and lath entirely including crown moldings to expose existing floor/ceiling framing; install new ceiling; epoxy paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
window	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		historic restoration priority
bathroom door	4-panel doors and casing are in fair condition; paint finish; door hardware is in poor condition	remove door, door frame & casing entirely to expose existing rough opening; relocate rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; 20-minute fire-rated; paint finish; install new door hardware		PF/HR		5		historic restoration priority; 20-minute fire-rated

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
accessories	bathroom accessories are in poor condition or missing	install new bathroom accessories including one medicine cabinet, two robe hooks, two towel bars, one toilet paper dispenser		PF		4		
plumbing fixtures	toilet, lavatory and tub fixtures are in fair condition; fixtures are not compliant with low flow plumbing code requirements; see Plumbing	install new plumbing fixtures and associated supply and waste piping; see Plumbing		PF		4		
lighting	existing ceiling-mounted lighting is a low efficiency fixture and is in poor condition	install one new wet-area ceiling-mounted high-efficiency light fixture and one wall sconce light fixture at mirror location		FP/PF		4		
				-		-		
Director's Office (Bedroom 2-5)			Photo-0069/0070/0071/0073/0074, Plan	-		-	Alternate-6 Alternate-8	reconfigure plan for Bedroom 1-3 from Level 1
floor	hardwood flooring is in fair condition; clear finish is in poor condition	refinish hardwood flooring; stain and clear finish		LS/PF/HR		1A		historic restoration priority; dwelling unit floor/ceiling separation 1/2-hour fire-rated
wall base	wood wall base is in fair condition; paint finish	remove wall base entirely; install new 2-piece wood wall base to match original profile; paint finish		PF/HR		5		historic restoration priority
existing load-bearing and non load-bearing walls	plaster is in poor condition; walls are not fire rated; paint finish	remove plaster and lath entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction; paint finish		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	plaster is in fair condition; plaster crown molding is in fair condition; paint finish	remove plaster and lath entirely including crown moldings to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
ceiling	new work	install new wood crown and ceiling moldings to match existing; paint finish		PF/HR		5B	Alternate-6	
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		historic restoration priority
communicating door	flush door and flat door casing are not original to the building; door and casing are in fair condition; paint finish	remove door, door frame & casing entirely to expose existing rough opening; install new wall construction at rough opening	Plan	PF		4A		
closet doors	4-panel doors and casing are in fair condition; paint finish; door hardware is in poor condition	remove closet construction and door entirely; install new built-in closet and closet door		PF		4A		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
office door (bedroom door)	4-panel doors and casing are in fair condition; paint finish; door hardware is in poor condition	remove door, door frame & casing entirely to expose existing rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		LS/PF		1A		historic restoration priority; 20-minute fire-rated
fireplace	brick fireplace front and hearth is in fair condition; wood mantel is in good condition; paint finish; condition of hearth, firebox, damper and flue is unkown	protect fireplace and mantel from damage; block flue opening; clean visible surfaces		PF/HR		5		historic restoration priority
fireplace	see above	remove fireplace and fireplace front entirely; remove brick masonry fireplace mass, chimney and associated flues entirely; in-fill wall and floor construction and finish to match existing; see Interior, Wall Construction, Floor/Ceiling Construction and individual rooms	Plan	PF		5B	Alternate-8	
lighting	existing pendant light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency pendant fixture		FP/PF		4		
				-		-		
Bathroom 2-5			Plan	-		-		reconfigure plan for Bathroom 2-5
floor	new work	install new thin-set tile on waterproof membrane on cementitious backer board underlayment - thickness as required for flush finish transitions		LS/PF		4A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
existing load-bearing and non load-bearing walls	new work	remove wall framing as required for plan reconfiguration; install new 1/1"-thick cementitious backer board and thin-set tile on existing and new framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction		LS/PF		4A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; see Interior, Wall construction		LS/PF		4A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	new work	install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		4A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
window	new work	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		4A		historic restoration priority
bathroom door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		4A		historic restoration priority
accessories	new work	install new bathroom accessories including one medicine cabinet, two robe hooks, two towel bars, one toilet paper dispenser		PF		4A		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
plumbing fixtures	new work	install new plumbing fixtures and associated supply and waste piping; see Plumbing		PF/HR		4A		
lighting	new work	install one new wet-area ceiling-mounted high-efficiency light fixture and one wall sconce light fixture at mirror location		PF		4A		
				-		-		
Bedroom 2-6			Photo-0091/0092/0093/0094, Plan	-		-	Alternate-6 Alternate-8	reconfigure plan layout
floor	hardwood flooring is in fair condition; clear finish is in poor condition	refinish hardwood flooring; stain and clear finish		LS/PF/HR		1A		historic restoration priority; dwelling unit floor/ceiling separation 1/2-hour fire-rated
wall base	wood wall base is in fair condition; paint finish	remove wall base entirely; install new 2-piece wood wall base to match original profile; paint finish		PF/HR		5		historic restoration priority
existing load-bearing and non load-bearing walls	plaster is in poor condition; walls are not fire rated; paint finish	remove plaster and lath entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction; paint finish		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing wall construction; see Interior, Wall construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	plaster is in fair condition; plaster crown molding is missing; paint finish	remove plaster and lath entirely including crown moldings to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF/HR		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
ceiling	new work	install new wood crown and ceiling moldings to match existing; paint finish		PF/HR		5B	Alternate-6	
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		historic restoration priority
~~communicating door~~	~~flush door and flat door casing are not original to the building; door and casing are in fair condition; paint finish~~	~~see Office (Bedroom 2-5)~~		~~PF~~		~~4A~~		
closet and closet doors	closet construction and doors are not original to the building, flush door and flat door casing are in poor condition; paint finish; closet construction obscures crown moldings	remove closet construction and door entirely; install new built-in closet and closet door		PF		4A		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
bedroom door	flush door and flat door casing are not original to the building; door and casing are in fair condition; door/frame assembly is not fire rated; paint finish	remove door, door frame & casing entirely to expose existing rough opening; relocate rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; 20-minute fire-rated; paint finish; install new door hardware		PF/HR		1A		historic restoration priority; 20-minute fire-rated
fireplace	stone fireplace front and mantel is in good condition; decorative metal fireplace cover is in good condition; condition of hearth, firebox, damper and flue is unkown	protect fireplace and mantel from damage; block flue opening; clean visible surfaces		PF/HR		5		historic restoration priority
fireplace	see above	remove fireplace and fireplace front entirely; remove brick masonry fireplace mass, chimney and associated flues entirely; in-fill wall and floor construction and finish to match existing; see Interior, Wall Construction, Floor/Ceiling Construction and individual rooms	Plan	PF		5B	Alternate-8	
lighting	existing pendant light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency pendant fixture		FP/PF		4		
				-		-		
Bathroom 2-6			Photo-0095, Plan	-		-		reconfigure plan layout
floor	tile is in fair condition; underlayment condition is unknown	remove tile and underlayment to expose existing board subfloor; install new thin-set tile on waterproof membrane on cementitious backer board underlayment - thickness as required for flush finish transitions		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
existing load-bearing and non load-bearing walls	bathroom wall construction is not original to the building; walls and ceiling obscure original crown and ceiling panel moldings; tile wainscot is in fair condition; plaster is in poor condition; walls are not fire rated; paint finish	remove tile and gypsum board or plaster and lath entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 1/1"-thick cementitious backer board and thin-set tile on existing and new framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; see Interior, Wall construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	plaster is in poor condition; paint finish	remove plaster and lath or gypsum board and associated ceiling framing entirely to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
bathroom door	flush door and flat door casing is not original to the building; door and casing are in poor condition; paint finish; door hardware is in poor condition	remove door, door frame & casing entirely to expose existing rough opening; relocate rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		5		historic restoration priority

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
accessories	bathroom accessories are in poor condition or missing	install new bathroom accessories including one medicine cabinet, two robe hooks, two towel bars, one toilet paper dispenser		PF		4		
plumbing fixtures	toilet, lavatory and tub fixtures are in fair condition; fixtures are not compliant with low flow plumbing code requirements; see Plumbing	install new plumbing fixtures and associated supply and waste piping; see Plumbing		PF		4		
lighting	existing ceiling-mounted lighting is a low efficiency fixture and is in poor condition	install one new wet-area ceiling-mounted high-efficiency light fixture and one wall sconce light fixture at mirror location		FP/PF		4		
				-		-		
Kitchen 2-6	-	remove kitchen construction entirely including walls, doors, cabinets, countertops, sink and appliances.	Photo-0097; Plan	PF		4A		reconfigure,combine with Kitchen 2-4 and expand for Shared Kitchen 2
floor	VCT is in poor condition; underlayment condition is unknown; original hardwood flooring condition is unknown	-		-		-		
wall base	wood wall base is in fair condition; paint finish	-		-		-		
walls	plaster is in poor condition; paint finish	-		-		-		
ceiling	plaster is in poor condition; paint finish	-		-		-		
windows	see Envelope. Windows; casing, stool and apron trim are in good condition; paint finish; casing is partially obscured by kitchen wall construction	-		-		-		
kitchen door	flush door and flat door casing are not original to the building; door and casing are in fair condition; paint finish	-		-		-		
cabinets and countertop	cabinets and countertop are in poor condition	-		-		-		
appliances and sink	appliances and sink are in poor condition	-		-		-		
				-		-		
Back Stair Landing 3			Photo-9267/9315/9309	-		-		
floor/landing	carpet is in poor condition; underlayment condition is unknown; original hardwood flooring condition is unknown	install new hardwood flooring; stain and clear finish		LS/HR		1A		historic restoration priority; AAB variance required for tread width, depth, riser height and nosing geometry; stair enclosure floor/ceiling 1-hour fire-rated
stair flight ballustrade	see Back Stair 2-3	see Back Stair 2-3		-		-		
stair opening ballustrade	wood ballusters, railing and newels are in good condition; paint finish; guardrail height is not universal access code compliant	strip paint and refinish wood ballustrade components, stain and clear finish		LS/HR		1A		historic restoration priority; AAB variance required for railing height
wall base	wood wall base is not original to the building; base is in fair condition; paint finish	remove wall base entirely; install new 1-piece wood wall base to match original profile; paint finish		LS/HR		5		historic restoration priority
walls	plaster is in fair condition; paint finish	remove plaster; install new 5/8"-thick gypsum board on existing and new wood framing for 1-hour fire-rated enclosure; paint finish; see Interior, Wall Construction		LS/PF		1A		stair enclosure walls 1-hour fire-rated

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
ceiling	plaster is in fair condition; paint finish	remove plaster and lath entirely to expose existing floor/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		stair enclosure floor/ceiling 1-hour fire-rated
stair door	flush door and flat door casing are not original to the building; door and casing are in fair condition; paint finish	install new 4-panel door/frame assembly; paint finish; install new hardware; 45-minute fire-rated		LS/PF/HR		1A		historic restoration priority
lighting	existing ceiling-mounted light fixture at landing is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency ceiling-mounted fixture		FP/PF		4		
				-		-		
Common Hall 3			Photo-0102/0103, Plan	-		-		reconfigure for Shared Kitchen 3
floor	VCT is in fair condition; underlayment condition is unknown; original hardwood flooring condition is unknown	remove VCT & associated underlayment to expose existing subfloor; install new hardwood flooring; stain and clear finish		PF		1A		
wall base	wood wall base is not original to the building; base is in fair condition; paint finish	remove wood wall base; install new base to match original profile; paint finish		PF/HR		5		historic restoration priority
existing load-bearing and non load-bearing walls	plaster is in poor condition; paint finish	remove plaster and lath entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction; paint finish		PF		1A		
new non load-bearing walls	new work	install new non load-bearing wall construction; see Interior, Wall construction		PF		1A		
ceiling	plaster is in poor condition; paint finish	remove plaster and lath entirely to expose existing attic/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		1A		
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		historic restoration priority
attic access	wood trim and hinged panel are in poor condition; paint finish	install new locking attic access door		LS/FP		1A		
~~closet doors~~	~~flush door and flat door casing are not original to the building; door and casing are in fair condition; paint finish~~	~~remove closet construction and door entirely~~		~~FP~~		~~4A~~		
lighting	existing ceiling-mounted light fixtures are low-efficiency fixtures and are in poor condition; light levels are inadequate	remove existing fixture and install two new high-efficiency ceiling-mounted fixtures		FP/PF		4		
				-		-		
Custodial Closet 3				-		-		reconfigure plan for Custodial Closet

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
floor	new work	install new rubber tile on underlayment		PF		4A		
wall base	new work	install new 2-piece wood wall base to match original profile; paint finish		PF		4A		
existing load-bearing and non load-bearing walls	new work	remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing and new framing; paint finish; see Interior, Wall Construction and Envelope, Exterior Wall Construction		PF		4A		dwelling unit wall separation 1/2-hour fire-rated
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; paint finish; see Interior, Wall construction		PF		4A		dwelling unit wall separation 1/2-hour fire-rated
ceiling	new work	install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		4A		
closet door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		4A		historic restoration priority
mop sink	new work	install new floor-mounted mop sink; install wall-mounted utility faucet with bucket hook		PF		4A		
				-		-		
Shared Kitchen 3			Plan	-		-		reconfigure plan for Shared Kitchen 3
floor	new work	install new rubber tile on underlayment		PF		4A		
wall base	new work	install new 2-piece wood wall base to match original profile; paint finish		PF		4A		
existing load-bearing and non load-bearing walls	new work	remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing and new framing; paint finish; see Interior, Wall Construction and Envelope, Exterior Wall Construction		PF		4A		dwelling unit wall separation 1/2-hour fire-rated
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; paint finish; see Interior, Wall construction		PF		4A		dwelling unit wall separation 1/2-hour fire-rated
ceiling	new work	install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		PF		4A		
window	new work	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		4A		historic restoration priority
kitchen door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		4A		historic restoration priority
cabinets and countertop	new work	install new base and wall cabinets and solid-surface countertop with backsplash		PF		4A		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
appliances and sink	new work	install new refrigerator, range with recirculating hood, microwave oven and sink		PF		4A		
lighting	new work	install new ceiling-mounted high efficiency light fixture		PF		4A		
				-		-		
Back Hall 3	-	remove back hall construction entirely including walls and doors	Photo-9326, Plan	PF		4A		reconfigure plan to remove Back Hall
floor	carpet is in poor condition; underlayment condition is unknown; original hardwood flooring condition is unknown	-		-		-		
wall base	wood wall base is not original to the building; base is in fair condition; paint finish	-		-		-		
walls	plaster is in poor condition; paint finish	-		-		-		
ceiling	plaster is in poor condition; paint finish	-		-		-		
egress door	metal 6-panel door and flat casing are not original to the building; door and casing are in fair condition; paint finish; door hardware is in poor condition	remove door, frame and hardware; install new 4-panel door, frame and hardware		LS		1A		
egress door	see above	remove door and frame; restore original window rough opening; install new window frame and sash to match original windows with exterior casing and sill and interior casing, stool and apron to match original		LS		1B	Alternate-12	
				-		-		
Bedroom Hall 3	-	remove back hall construction entirely including walls and doors	Photo-0104/0105, Plan	PF		4A		reconfigure plan to remove Bedroom Hall entirely and enlarge Bedroom 3-8
floor	VCT is in fair condition; underlayment condition is unknown; original hardwood flooring condition is unknown	-		-		-		
wall base	wood wall base is not original to the building; base is in fair condition; paint finish	-		-		-		
walls	plaster is in poor condition; paint finish	-		-		-		
ceiling	plaster is in poor condition; paint finish	-		-		-		
				-		-		
Bedroom 3-7			Photo-0111/0112/0113/0014/0115, plan	-		-		reconfigure plan layout
floor	VCT is in fair condition; underlayment condition is unknown	remove VCT & associated underlayment to expose existing subfloor; install new underlayment and VCT		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
wall base	wood wall base is not original to the building; base is in fair condition; paint finish	remove wall base entirely; install new 2-piece wood wall base to match original profile; paint finish		PF/HR		5		historic restoration priority

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
existing load-bearing and non load-bearing walls	plaster and gypsum board is in poor condition; walls are not fire rated; paint finish	remove plaster and lath and gypsum board entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction; paint finish		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated
new non load-bearing walls	new work	install new non load-bearing wall construction; see Interior, Wall construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated
ceiling	plaster is in poor condition; paint finish	remove plaster and lath entirely to expose existing attic/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		historic restoration priority
bedroom door	6-panel door and flat door casing are not original to the building; door and casing are in fair condition; door/frame assembly is not fire rated; paint finish	remove door, door frame & casing entirely to expose existing rough opening; relocate rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; 20-minute fire-rated; paint finish; install new door hardware		PF/HR		1A		historic restoration priority; 20-minute fire-rated
closet doors	louvered door and flat door casing are not original to the building; door and casing are in fair condition; paint finish	remove closet construction and door entirely; install new built-in closet and closet door		PF		4A		
lighting	existing ceiling-mounted light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency ceiling-mounted fixture		FP/PF		4		
				-		-		
Bathroom 3-1	-	remove bathroom construction entirely including walls, doors and plumbing fixtures	Photo-0099/0100/0101, Plan	PF		4A		reconfigure plan layout for Bathrooms 3-7 and 3-8
floor	carpet is in poor condition; underlayment condition is unknown	-		-		-		
walls	wainscot and wall base tile is in fair condition; plaster is in poor condition; paint finish	-		-		-		
ceiling	plaster is in fair condition; paint finish	-		-		-		
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	-		-		-		
bathroom door	flush door and flat door casing are not original to the building; door and casing are in fair condition; paint finish	-		-		-		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
closet doors	louvered door and flat door casing are not original to the building; door and casing are in fair condition; paint finish	-		-		-		
cabinets and countertops	cabinets and countertops are in fair condition	-		-		-		
plumbing fixtures	toilet, lavatory and tub fixtures are in fair condition; fixtures are not compliant with low flow plumbing code requirements; see Plumbing	-		-		-		
				-		-		
Bathroom 3-7			Plan	-		-		reconfigure plan for Bathroom 3-7
floor	new work	install new thin-set tile on waterproof membrane on cementitious backer board underlayment - thickness as required for flush finish transitions		LS/PF		4A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
existing load-bearing and non load-bearing walls	new work	remove wall framing as required for plan reconfiguration; install new 1/1"-thick cementitious backer board and thin-set tile on existing and new framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction		LS/PF		4A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; see Interior, Wall construction		LS/PF		4A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	new work	install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		4A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
bathroom door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		4A		historic restoration priority
accessories	new work	install new bathroom accessories including one medicine cabinet, two robe hooks, two towel bars, one toilet paper dispenser		PF		4A		
plumbing fixtures	new work	install new plumbing fixtures and associated supply and waste piping; see Plumbing		FP		4A		
lighting	new work	install one new wet-area ceiling-mounted high-efficiency light fixture and one wall sconce light fixture at mirror location		PF		4A		
				-		-		
Bedroom 3-8			Photo-9327/9328, Plan	-		-		reconfigure plan layout
floor	VCT is in fair condition; underlayment condition is unknown	remove VCT & associated underlayment to expose existing subfloor; install new underlayment and VCT		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
wall base	wood wall base is not original to the building; base is in fair condition; paint finish	remove wall base entirely; install new 2-piece wood wall base to match original profile; paint finish		PF/HR		5		historic restoration priority

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
existing load-bearing and non load-bearing walls	plaster and gypsum board is in poor condition; walls are not fire rated; paint finish	remove plaster and lath and gypsum board entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction; paint finish		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated
new non load-bearing walls	new work	install new non load-bearing wall construction; see Interior, Wall construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated
ceiling	plaster is in poor condition; paint finish	remove plaster and lath entirely to expose existing attic/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		historic restoration priority
bedroom door	6-panel door and flat door casing are not original to the building; door and casing are in fair condition; door/frame assembly is not fire rated; paint finish	remove door, door frame & casing entirely to expose existing rough opening; relocate rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; 20-minute fire-rated; paint finish; install new door hardware		PF/HR		1A		historic restoration priority; 20-minute fire-rated
closet doors	louvered door and flat door casing are not original to the building; door and casing are in fair condition; paint finish	remove closet construction and door entirely; install new built-in closet and closet door		FP		4A		
lighting	existing ceiling-mounted light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency ceiling-mounted fixture		FP/PF		4		
				-		-		
Bathroom 3-8			Plan	-		-		reconfigure plan for Bathroom 3-8
floor	new work	install new thin-set tile on waterproof membrane on cementitious backer board underlayment - thickness as required for flush finish transitions		LS/PF		4A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
existing load-bearing and non load-bearing walls	new work	remove wall framing as required for plan reconfiguration; install new 1/1"-thick cementitious backer board and thin-set tile on existing and new framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction		LS/PF		4A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; see Interior, Wall construction		LS/PF		4A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
ceiling	new work	install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		4A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
bathroom door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		4A		historic restoration priority
accessories	new work	install new bathroom accessories including one medicine cabinet, two robe hooks, two towel bars, one toilet paper dispenser		PF		4A		
plumbing fixtures	new work	install new plumbing fixtures and associated supply and waste piping; see Plumbing		FP		4A		
lighting	new work	install one new wet-area ceiling-mounted high-efficiency light fixture and one wall sconce light fixture at mirror location		PF		4A		
				-		-		
Shared Kitchen 3	-	-	Photo-0106/0107931.7, Plan	FP		4A		remove kitchen entirely; reconfigure plan to incorporate new Shared Kitchen 3 into Common Hall 3 and Bathrooms 3-9 and 3-10
floor	VCT is in fair condition; underlayment condition is unknown	-		-		-		
wall base	wood wall base is not original to the building; base is in fair condition; paint finish	-		-		-		
walls	plaster is in fair condition; paint finish	-		-		-		
ceiling	plaster is in fair condition; paint finish	-		-		-		
kitchen door	6-panel door and flat door casing are not original to the building; door and casing are in fair condition; paint finish	-		-		-		
cabinets and countertop	cabinets and countertop are in fair condition	-		-		-		
appliances and sink	appliances and sink are in fair condition	-		-		-		
				-		-		
Bedroom 3-9			Photo-?, Plan	-		-		reconfigure plan layout
floor	VCT is in fair condition; underlayment condition is unknown	remove VCT & associated underlayment to expose existing subfloor; install new underlayment and VCT		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
wall base	wood wall base is not original to the building; base is in fair condition; paint finish	remove wall base entirely; install new 2-piece wood wall base to match original profile; paint finish		PF/HR		5		historic restoration priority
existing load-bearing and non load-bearing walls	plaster and gypsum board is in poor condition; walls are not fire rated; paint finish	remove plaster and lath and gypsum board entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction; paint finish		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated
new non load-bearing walls	new work	install new non load-bearing wall construction; see Interior, Wall construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
ceiling	plaster is in poor condition; paint finish	remove plaster and lath entirely to expose existing attic/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		historic restoration priority
bedroom door	6-panel door and flat door casing are not original to the building; door and casing are in fair condition; door/frame assembly is not fire rated; paint finish	remove door, door frame & casing entirely to expose existing rough opening; relocate rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; 20-minute fire-rated; paint finish; install new door hardware		PF/HR		1A		historic restoration priority; 20-minute fire-rated
closet doors	louvered door and flat door casing are not original to the building; door and casing are in fair condition; paint finish	remove closet construction and door entirely; install new built-in closet and closet door		FP		4A		
lighting	existing ceiling-mounted light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency ceiling-mounted fixture		FP/PF		4		
				-		-		
Bathroom 3-9			Plan	-		-		reconfigure plan for Bathroom 3-9
floor	new work	install new thin-set tile on waterproof membrane on cementitious backer board underlayment - thickness as required for flush finish transitions		LS/PF		4A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
existing load-bearing and non load-bearing walls	new work	remove wall framing as required for plan reconfiguration; install new 1/1"-thick cementitious backer board and thin-set tile on existing and new framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction		LS/PF		4A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; see Interior, Wall construction		LS/PF		4A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	new work	install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		4A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
bathroom door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		4A		historic restoration priority
accessories	new work	install new bathroom accessories including one medicine cabinet, two robe hooks, two towel bars, one toilet paper dispenser		PF		4A		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
plumbing fixtures	new work	install new plumbing fixtures and associated supply and waste piping; see Plumbing		FP		4A		
lighting	new work	install one new wet-area ceiling-mounted high-efficiency light fixture and one wall sconce light fixture at mirror location		PF		4A		
				-		-		
Bedroom 3-10			Photo-9329/9330, Plan	-		-		reconfigure plan layout
floor	VCT is in fair condition; underlayment condition is unknown	remove VCT & associated underlayment to expose existing subfloor; install new underlayment and VCT		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
wall base	wood wall base is not original to the building; base is in fair condition; paint finish	remove wall base entirely; install new 2-piece wood wall base to match original profile; paint finish		PF/HR		5		historic restoration priority
existing load-bearing and non load-bearing walls	plaster and gypsum board is in poor condition; walls are not fire rated; paint finish	remove plaster and lath and gypsum board entirely to expose existing wall framing; remove wall framing as required for plan reconfiguration; install new 5/8"-thick gypsum board on existing framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction; paint finish		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated
new non load-bearing walls	new work	install new non load-bearing wall construction; see Interior, Wall construction		LS/PF		1A		dwelling unit wall separation 1/2-hour fire-rated
ceiling	plaster is in poor condition; paint finish	remove plaster and lath entirely to expose existing attic/ceiling framing; install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		1A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
windows	see Envelope, Windows; casing, stool and apron trim are in good condition; paint finish	remove casing, stool and apron and salvage for reinstallation; install closed-cell spray-foam insulation at shim spaces & sash weight pocket voids; reinstall casing/stool/apron trim; paint finish; install head jamb-mounted manual rolling shades; install child-safe operable fall protection grilles at 2nd and level 3 windows to 42" AFF		PF/HR		2		historic restoration priority
bedroom door	6-panel door and flat door casing are not original to the building; door and casing are in fair condition; door/frame assembly is not fire rated; paint finish	remove door, door frame & casing entirely to expose existing rough opening; relocate rough opening; install new 4-panel door to match original, wood door frame and casing to match original profile; 20-minute fire-rated; paint finish; install new door hardware		PF/HR		1A		historic restoration priority; 20-minute fire-rated
new built-in closet	new work	install new built-in closet and closet door		FP		4		
lighting	existing ceiling-mounted light fixture is a low-efficiency fixture and is in poor condition	remove existing fixture and install new high-efficiency ceiling-mounted fixture		FP/PF		4		
				-		-		
Bathroom 3-10			Plan	-		-		reconfigure plan for Bathroom 3-9

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
floor	new work	install new thin-set tile on waterproof membrane on cementitious backer board underlayment - thickness as required for flush finish transitions		LS/PF		4A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
existing load-bearing and non load-bearing walls	new work	remove wall framing as required for plan reconfiguration; install new 1/1"-thick cementitious backer board and thin-set tile on existing and new framing; see Interior, Wall Construction and Envelope, Exterior Wall Construction		LS/PF		4A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
new non load-bearing walls	new work	install new non load-bearing and plumbing wall construction; see Interior, Wall construction		LS/PF		4A		dwelling unit wall separation 1/2-hour fire-rated; corridor walls 1/2-hour fire rated
ceiling	new work	install new ceiling; paint finish; see Interior, Floor/Ceiling Construction		LS/PF		4A		dwelling unit floor/ceiling separation 1/2-hour fire-rated
bathroom door	new work	install new 4-panel door to match original, wood door frame and casing to match original profile; paint finish; install new door hardware		PF/HR		4A		historic restoration priority
accessories	new work	install new bathroom accessories including one medicine cabinet, two robe hooks, two towel bars, one toilet paper dispenser		PF		4A		
plumbing fixtures	new work	install new plumbing fixtures and associated supply and waste piping; see Plumbing		PF		4A		
lighting	new work	install one new wet-area ceiling-mounted high-efficiency light fixture and one wall sconce light fixture at mirror location		PF		4A		
				-		-		
Attic			Photo-9325//9339/9352	-		-		
attic access door				LS		1A		
attic partitions				PF		4A		
lighting	not existing	install new high-efficiency surface-mounted utility light fixtures		FP/PF		4		
				-		-		
Hazardous Material & Environmental Conditions			report	-		-		
lead paint	see material testing report	see material testing report	report	LS		1		
radon	see material testing report	see material testing report; install radon underslab vent piping in two locations and route to attic location; install provisions for future installation of vent fan and soffit vent	report	LS		1		
mold/mildew	see material testing report	see material testing report	report	LS		1		
asbestos	see material testing report	see material testing report	report	LS		1A		
				-		-		
Door Hardware				-		-		
entrance	new work	hinges, lockset-keyed entrance lock, closer, security contacts, threshold, gasketing, door stop		LS/PF		1A		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
entrance pair	new work	hinges, lockset-keyed entrance lock, flush bolts-inactive leaf, closer, security contacts, threshold, gasketing, door stop		LS/PF		5B		
egress (back door)	new work	hinges, lockset-keyed entrance lock, closer, motor operator, egress alarm, security contacts, threshold, gasketing, door stop		LS/PF		1A		
egress (Level 3)	new work	hinges, lockset-keyed entrance lock, closer, motor operator, egress alarm, security contacts, threshold, gasketing, door stop, see Alternate-12		LS/PF		1A		see Alternate-12
office	new work	hinges, lockset-office lock, silencers, door stop		PF		1A		
office pair	new work	hinges, lockset-office lock, flush bolts-inactive leaf, silencers, door stop		PF		1A		
bedroom	new work	hinges, lockset-keyed privacy lock, closer, peep hole, silencers, door stop		LS/PF		1A		20-minute fire-rated
accessible bedroom	new work	hinges, lockset-keyed privacy lock, closer, 2 peep holes, silencers, door stop		LS/PF		1A		20-minute fire-rated
bathroom/toilet	new work	hinges, lockset-bathroom privacy lock, silencers, door stop		PF		4		
closets	new work	hinges, catches		PF		4		
laundry	new work	hinges, latchset-passage, closer, silencers, door stop		PF		4		
utility/storage	new work	hinges, lockset-keyed utility lock, silencers, door stop		PF		6		
stair	new work	hinges, latchset-passage, closer, silencers, door stop		LS/PF		1A		45-minute fire-rated
stair access (back stair level 0 access)	new work	hinges, latchset-passage, closer, access alarm, security contacts, silencers, door stop		LS/PF		6		
kitchen 2 and 3	new work	hinges, latchset-passage, closer, silencers, door stop		LS/PF		1A		20-minute fire-rated
kitchen 1	new work	hinges, latchset-passage, closer, silencers, door stop		PF		1A		45-minute fire-rated
attic access	new work	keyed cylinder lock		PF		1A		
				-		-		
Signage				-		-		
evacuation plan signage	signage is in poor condition	update and replace evacuation plan signage		LS		1A		
room identification signage	not existing	install room identification signage		LS		1A		install signage required for building code compliance
				-		-		
Fire Extinguishers				-		-		
Common areas	fire extinguishers are in functional condition	install new semi-recessed fire extinguisher cabinets; remove, salvage and reinstall existing fire extinguishers - one on each floor		LS		1A		
Kitchens	fire extinguishers are in functional condition	remove salvage and reinstall existing bracket-mounted fire extinguishers in each shared kitchen and staff kitchenette		LS		1A		
				-		-		
Security				-		-		

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Reference Document*	*Condition Characterization*	*CPA*	*Remediation Priority*	*Alternate Construction*	*Notes*
Doors				-		-		
main entrance door	mechanical lock	see Interiors, Door Hardware		AS		6		
level 1 egress door	egress alarm	see Interiors, Door Hardware		AS		6		
level 1 stair door (to level 0)	egress alarm	see Interiors, Door Hardware		AS		6		
level 2 egress door	security grate	remove door; see Interiors, Back Hall 2		AS		6		
level 3 egress door	egress alarm	see Interiors, Back Hall 3 and Alternate-12		AS		6		see Alternate-12
Windows				-		-		
level 0 windows at driveway	security grate	install new grating		AS		6		
level 2 window at fire escape	security grate	remove grating; see Exterior, Windows		AS		6		
Video Monitoring				-		-	Alternate-7	
cameras	not existing	install on-permisis video monitoring system; exterior cameras at main entrance and back entrance; interior cameras at Stair Hall 1, Stair Hall 2, Common Hall 3, Back Hall 1, Play Room; monitoring station location at Staff Office		AS		6	Alternate-7	
Door Moniotoring				-		-		
door contacts	not existing	install door contacts at main entrance and back doors; monitoring station location at Staff Office		AS		6		
				-		-		
Universal Access				-		-		
Site				-		-		
van parking space	not existing; resident and staff parking is not provided	no work required		UA		0		
van parking signage	not existing; resident and staff parking is not provided	no work required		UA		0		
accessible route to main entrance	not existing; building is not currently accessible	designate an accessible route from the pubic sidewalk; install an accessible ramp or a lift to the main entrance at the first floor level		UA		1C		AAB variance required if the accessible route is not to the street entrance
accessible route to main entrance	see above	install concrete retaining walls and slab-on-grade access walk from public side walk to new chair lift location; install new chair lift from public side walk elevation to new Level 0 landing elevation; raise top landing to Level 0 elevation; raise associated granite tread stones, side walls, curb and bottom landing; install one new tread stone to match existing	Plan	UA		1C	Alternate-13	AAB variance required for existing non compliant tread stone and landing geometry
				-		-		
Building				-		-		
entry signage	not existing; building is not currently accessible	install universal signage where required by CMR 511		UA		1C		
accessible entrance/egress	not existing; building is not currently accessible	configure main entrance for universal access; install accessible intercom for occupant and visitor access request		UA		1C		AAB variance required if the accessible route is not to the street entrance
accessible route to accessible spaces	not existing; building is not currently accessible	configure circulation for accessible routes to accessible spaces		UA		1C		AAB variance required if entire building is not accessible
accessible bedroom	not existing; building is not currently accessible	configure one level 1 bedroom for universal access and access accomodations		UA		1C		

Element Heading	Condition Description	Condition Remediation Recommendation	Reference Document	Condition Characterization	CPA	Remediation Priority	Alternate Construction	Notes
accessible bathroom	not existing; building is not currently accessible	configure one level 1 bathroom for universal access		UA		1C		
accessible kitchen	not existing; building is not currently accessible	configure one level 1 kitchen for universal access		UA		1C		
accessible play room	not existing; building is not currently accessible	configure the play room for universal access		UA		1C		
accessible public toilet	not existing; building is not currently accessible	configure plan for new accessible toilet location adjacent to play room		UA		1C		
accessible laundry	not existing; building is not currently accessible	configure plan for accessible laundry		UA		1C		
accessible Level 0-1 elevator	not existing; building is not currently accessible	configure plan for new elevator; install new 2-stop elevator connecting level 0 and level 1		UA		1C		
signage	not existing; building is not currently accessible	install universal signage where required by 521 CMR		UA		1C		
				-		-		
Mechanical				-		-		
Heating				-		-		
boiler				FP		2		
boiler flue				FP		2		
combustion air				FP		2		
piping & piping insulation				FP		2		
radiators				FP		2		
heating control				FP/OC		3		
				-		-		
Cooling				-		-	Alternate-9	
office air conditioners	window air conditioners	replace window units with a mini-split system		FP/PF		3		
bedroom air conditioners	not existing	install new mini-split systems for each bedroom		FP		3B	Alternate-9	
				-		-		
Ventilation				-		-		
mechanical ventilation				FP/OC		2		
natural ventilation				FP/OC		3		
				-		-		
Exhaust				-		-		
Bathrooms				FP/OC		2		
Kitchen Hoods				FP/OC		2		
dryers				FP		2		
				-		-		
Electrical				-		-		
Electric Service				-		-		
electric service capacity				FP		2		
service meter				FP		2A		
electric disconnect				FP		2A		
distribution panels				FP		2A		
wiring				FP		2		
				-		-		
Power				-		-		
power circuits				FP		2		
power outlets				FP		1A		
GFCI & AFCI circuits				FP		1		
appliances				FP		4		

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Reference Document*	*Condition Characterization*	*CPA*	*Remediation Priority*	*Alternate Construction*	*Notes*
building systems equipment				FP		2		
				-		-		
Lighting				-		-		
lighting circuits				FP		2		
interior light fixtures				FP		3		
interior lighting control				FP		3		
exterior light fixtures				LS/FP		1A		
exterior light control				LS/FP		1A		
				-		-		
Emergency & Exit Lighting				-		-		
emergency lighting				LS/FP		1		
exit lighting				LS/FP		1A		
				-		-		
Fire Alarm				-		-		
horn/strobes				LS/FP		1A		
pull stations				LS/FP		1A		
annunciator				LS/FP		1A		
smoke detectors				LS/FP		1A		
emergency evacuation plan				LS		1A		
				-		-		
Telephone				-		-		
telephone service				PF		3		
telephone jacks				PF		3		
public pay phone	phone is functional	remove and reinstall pay phones		PF		3		1 per floor
				-		-		
Cable				-		-		
cable service				PF		4		
cable outlets				PF		4		
internet access				PF		4		
				-		-		
Plumbing				-		-		
Domestic Water Service				-		-		
water service capacity				FP		2		
water meter				FP		2A		
water shutoff				FP		2A		
hot & cold water supply piping				FP		2		
piping insulation				FP		2		
hot water heater & storage				FP		2		
				-		-		
Plumbing Fixtures & Appliances				-		-		
Toilets				PF/FP		2		
lavatories & faucets				PF/FP		2		
showers & control				PF/FP		2		
kitchen sinks & faucets				PF/FP		2		
clothes washer				PF/FP		4		
service sink				PF/FP				
mop sinks				PF				
				-		-		
Gas Service				-		-		
gas service capacity				FP		2		
gas meter				FP		2A		
gas shutoff				FP		2A		
gas piping				FP		2		

Element Heading	*Condition Description*	*Condition Remediation Recommendation*	*Reference Document*	*Condition Characterization*	*CPA*	*Remediation Priority*	*Alternate Construction*	*Notes*
				-		-		
Gas-Fired Appliances & Equipment				-		-		
clothes dryers				FP		4		
boiler				FP		2		
hot water heater				FP		2		
				-		-		
Building Waste				-		-		
building waste capacity				FP		2		
building waste piping				FP		2		
building stack & vent piping				FP		2		
				-		-		
Fire Protection				-		-		
Sprinkler System	not existing	NFPA-13		LS		1A		
				-		-		

Photo 0001

Photo 0003

Photo 0004

Photo 0005

Photo 0011

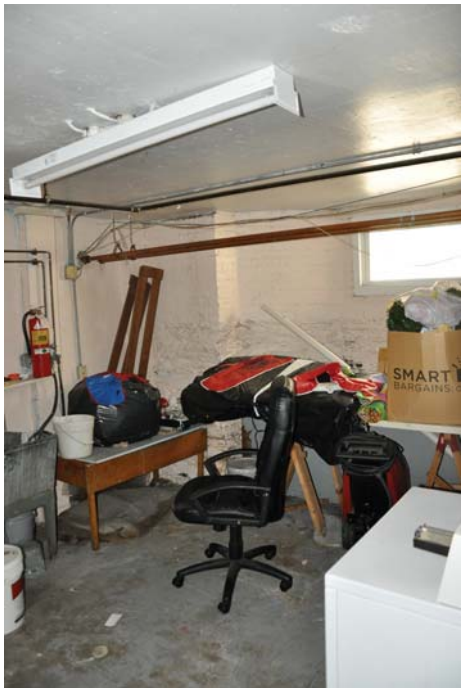


Photo 0012

Photo 0013

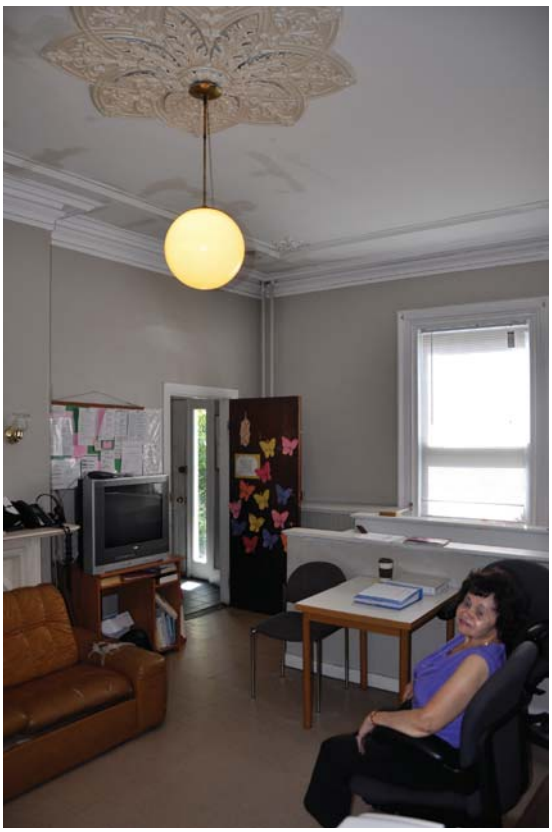
Photo 0021

Photo 0022

Photo 0023

Photo 0024

Photo 0025



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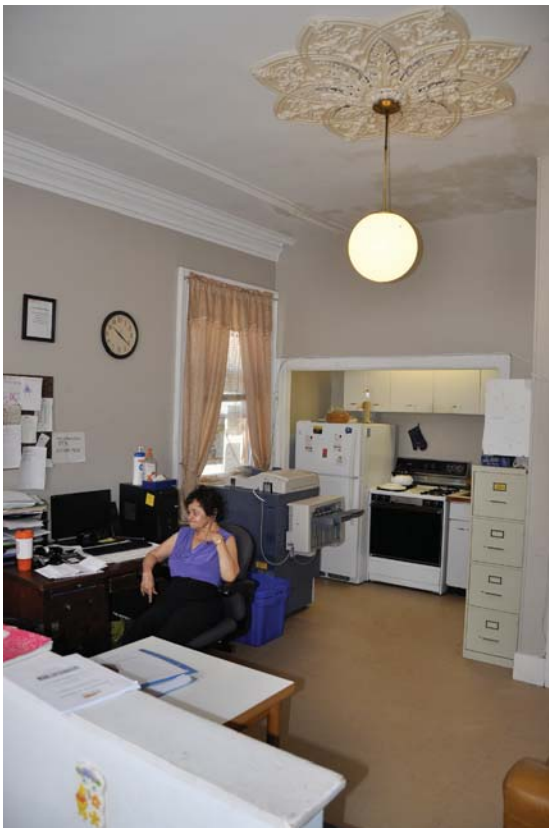


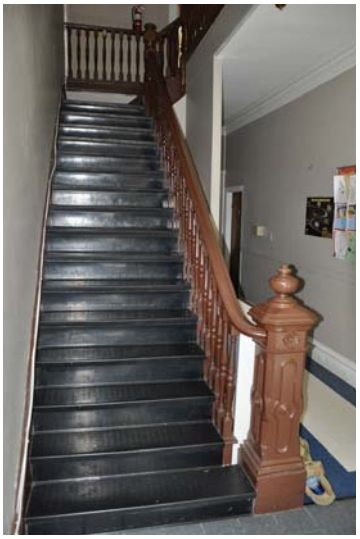
Photo 0032

Photo 0034

Photo 0036

Photo 0037

Photo 0039



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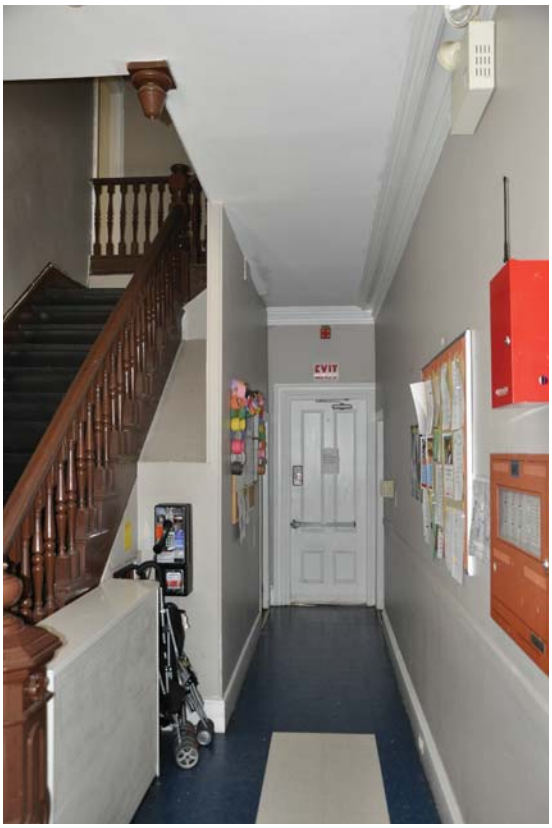


Photo 0041

Photo 0042

Photo 0043

Photo 0044

Photo 0045

Photo 0046

Photo 0049

Photo 0051

Photo 0052

Photo 0053

Photo 0054

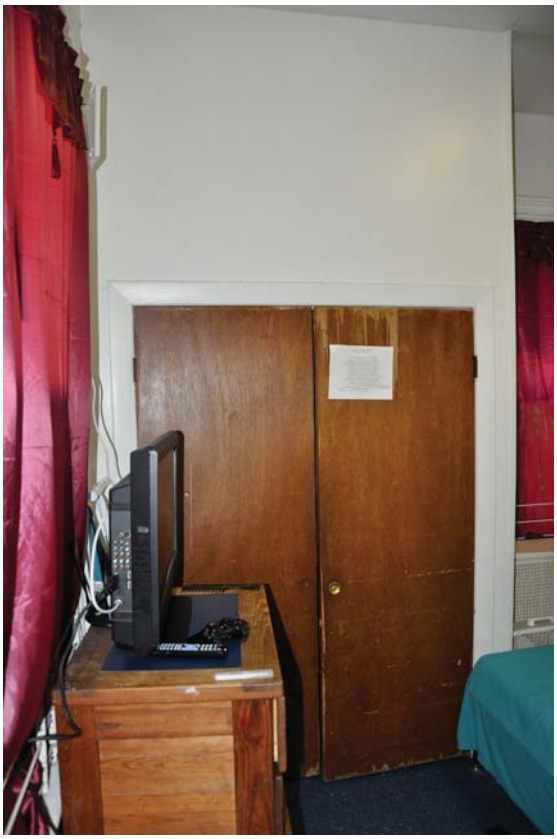
Photo 0056

Photo 0055

Photo 0057

Photo 0058

Photo 0059



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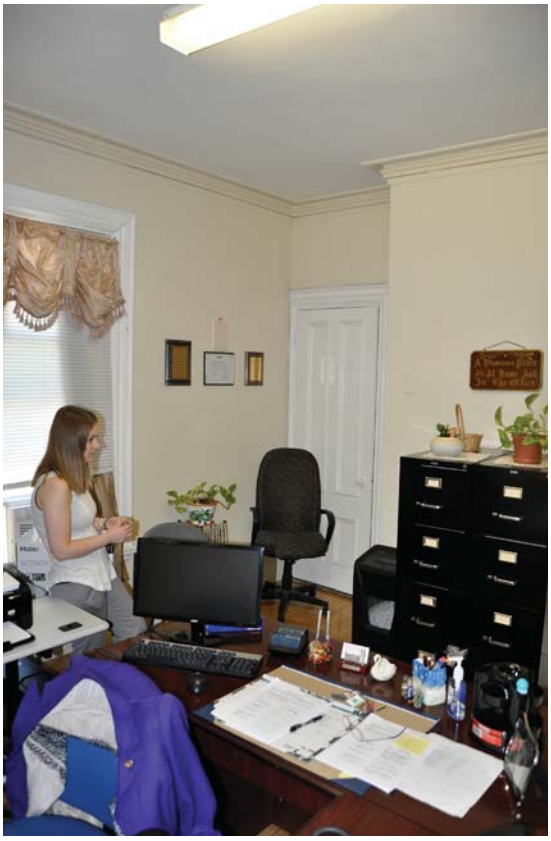

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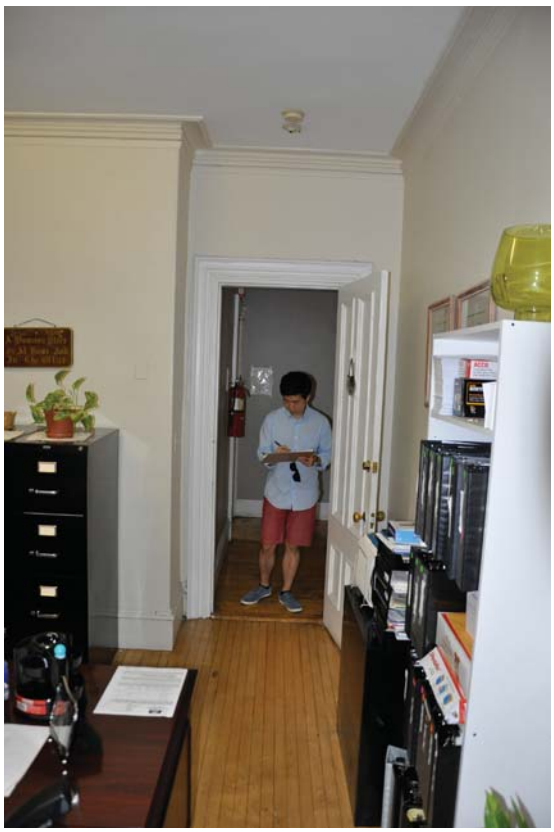

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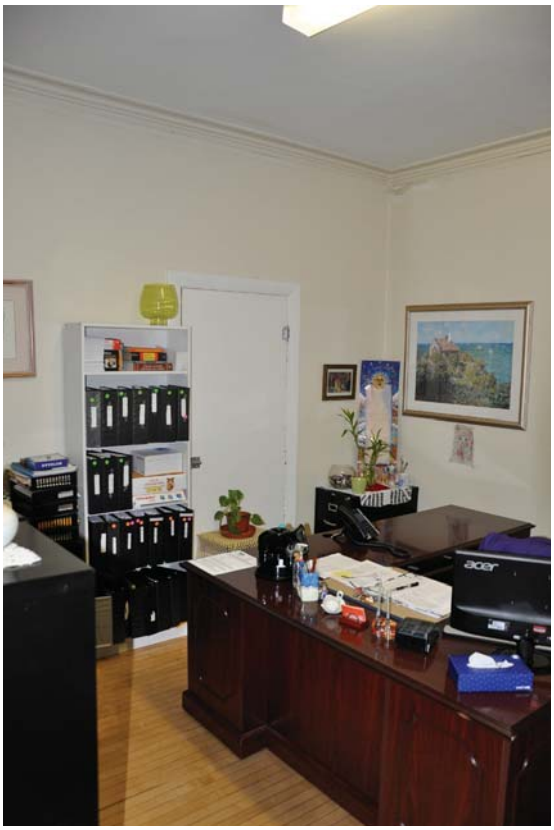

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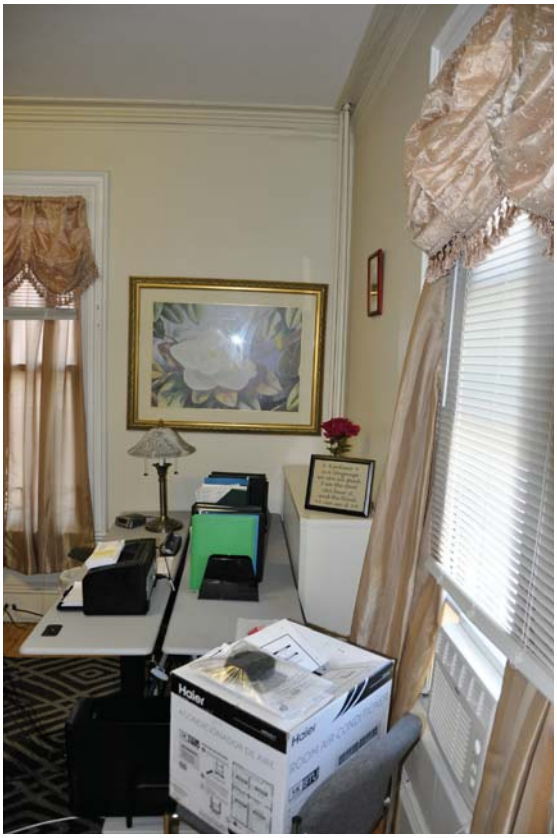

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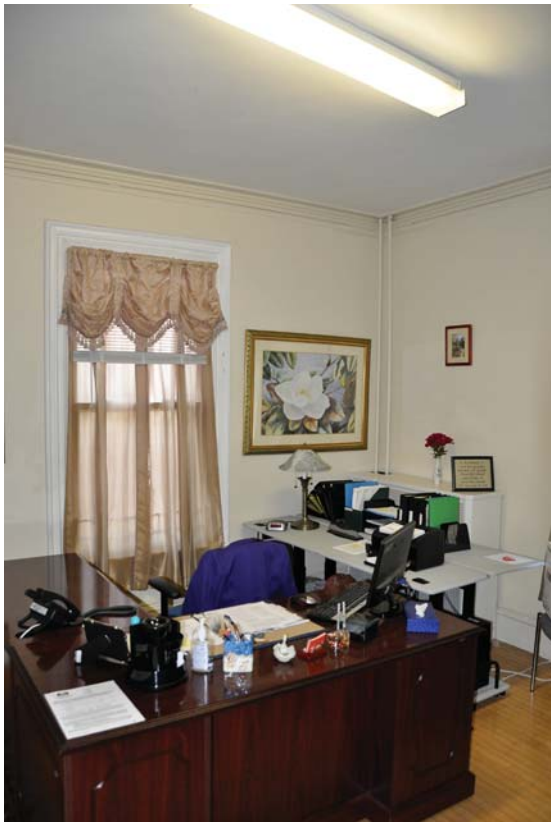

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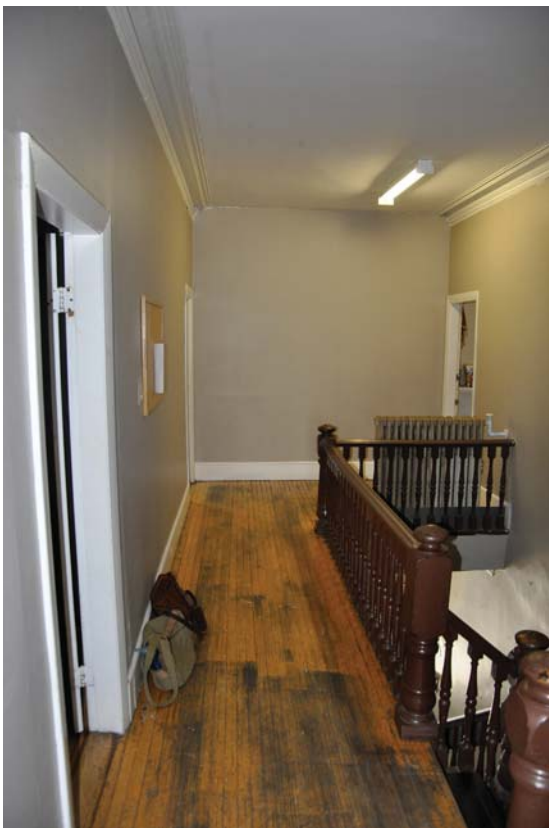

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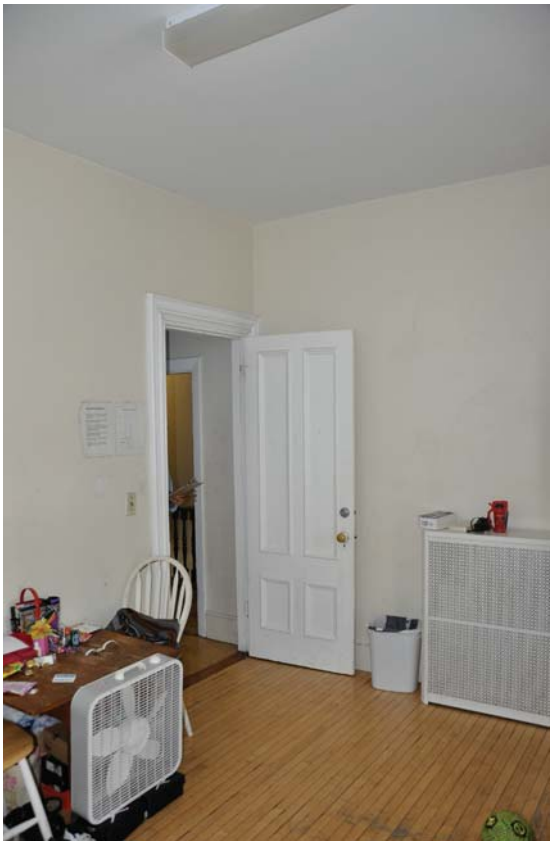
Photo 0077

Photo 0078

Photo 0079



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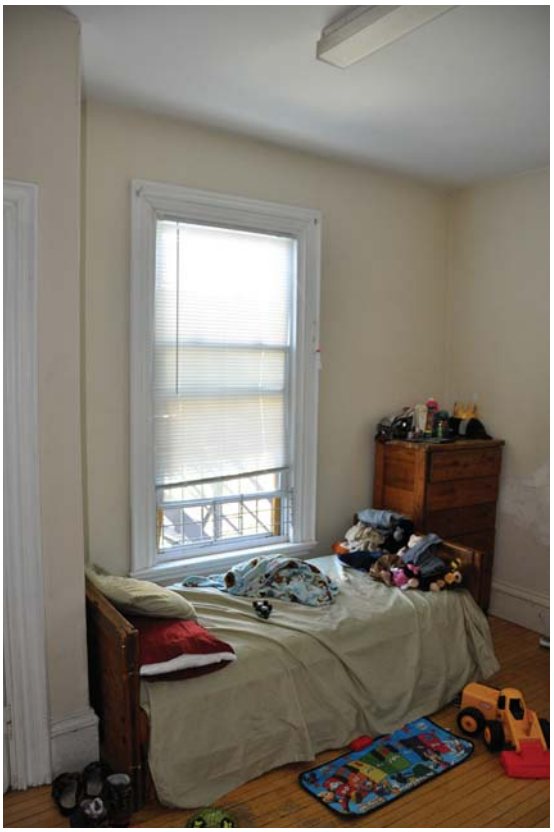

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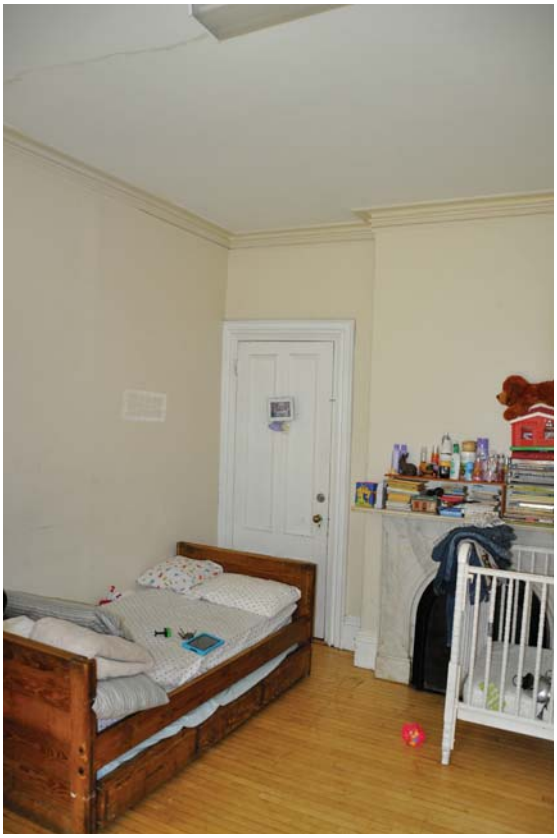

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Photo 0088

Photo 0089

Photo 0090

Photo 0091

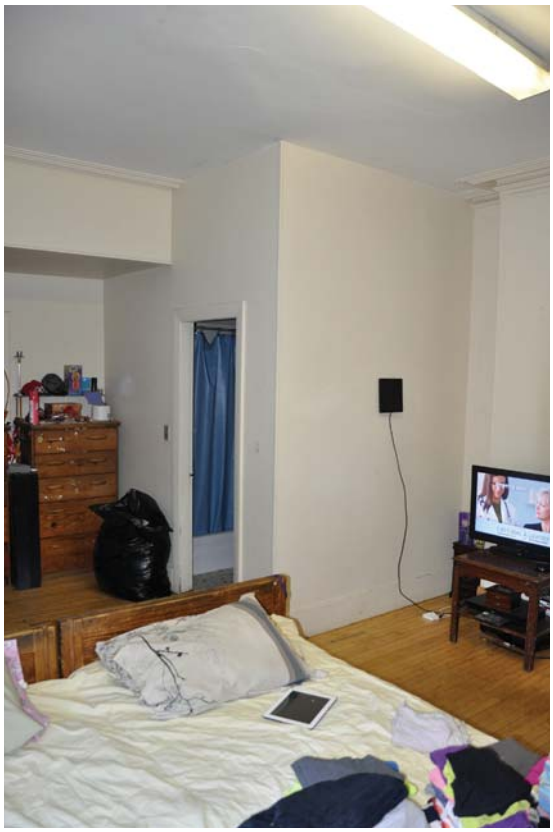

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Photo 0094

Photo 0095

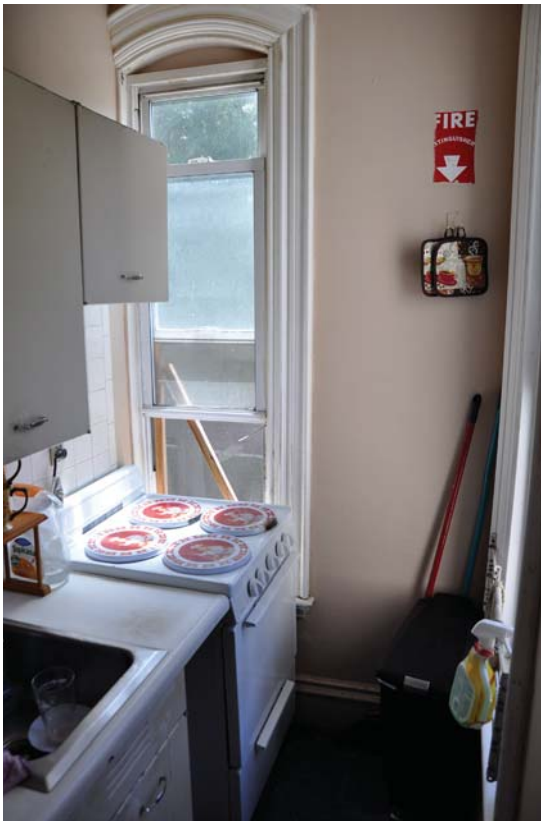

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Photo 0098

Photo 0099

Photo 0100

Photo 0101

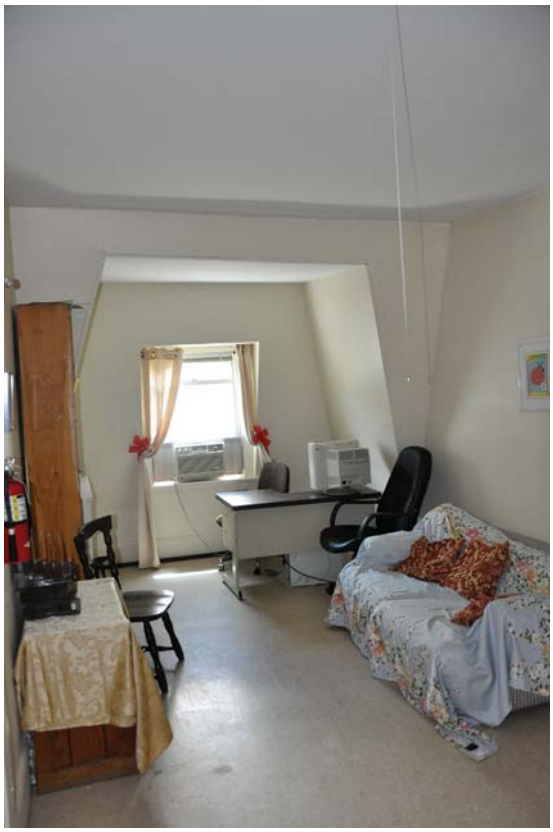

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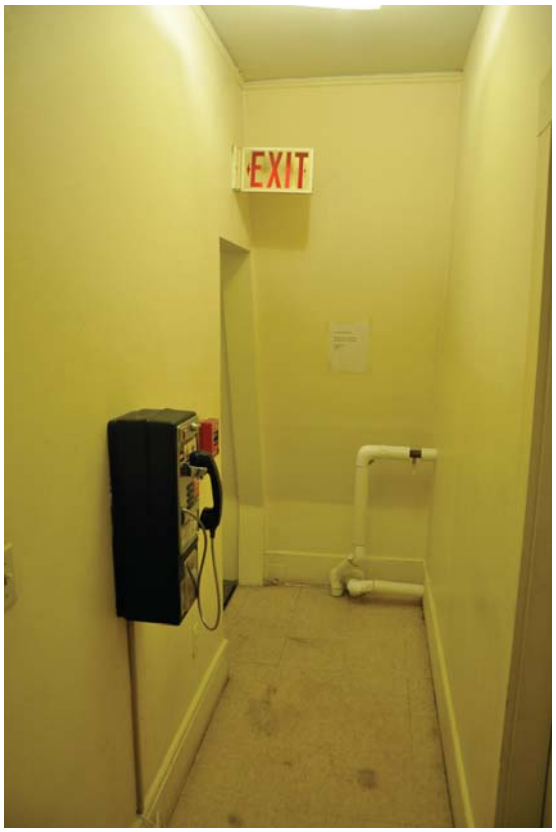
Photo 0103



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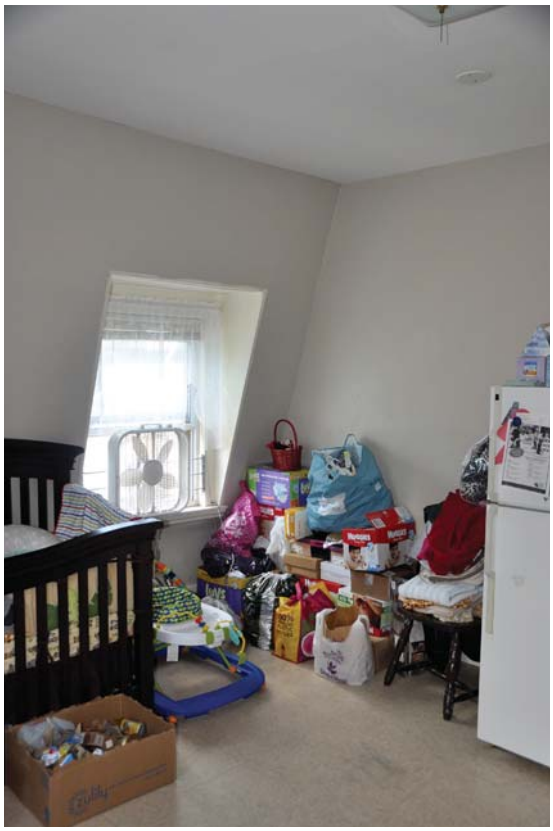

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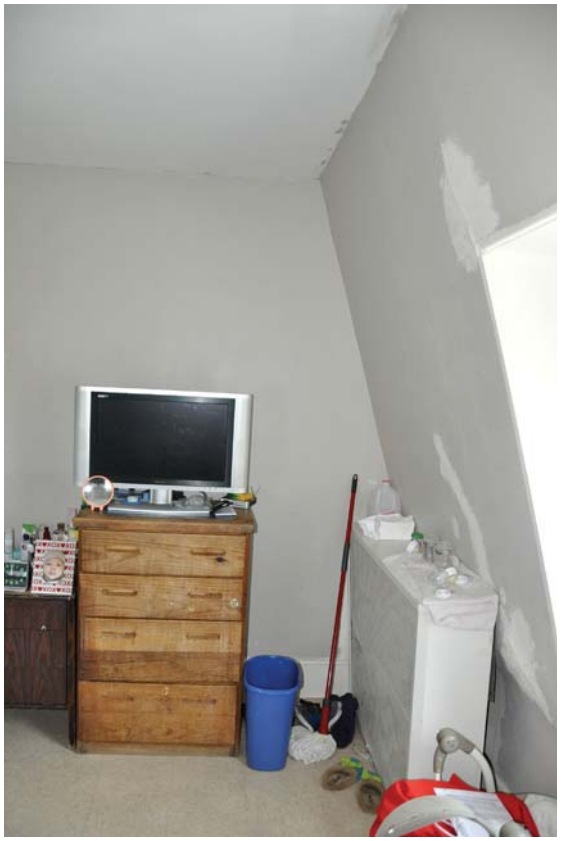
Photo 0109



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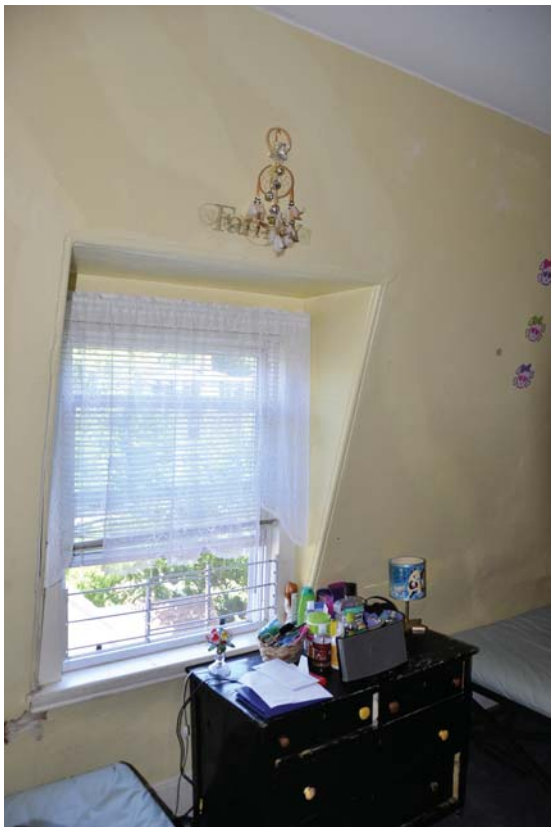

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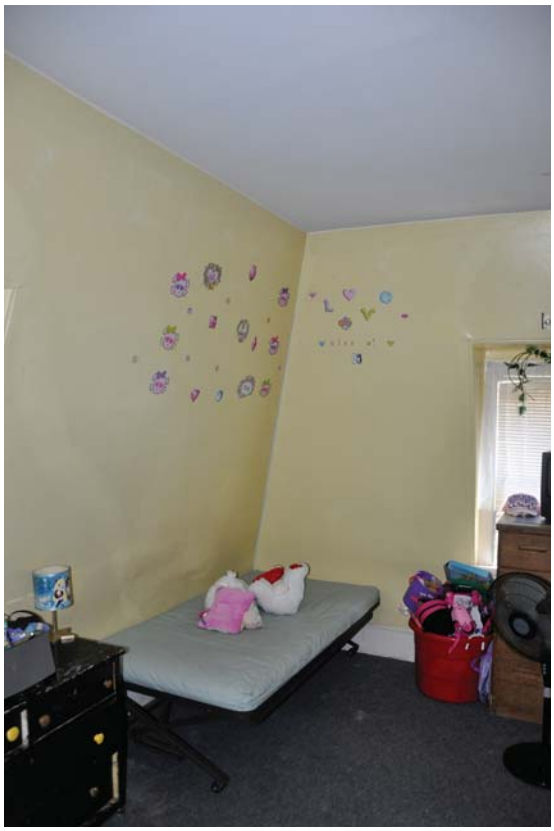

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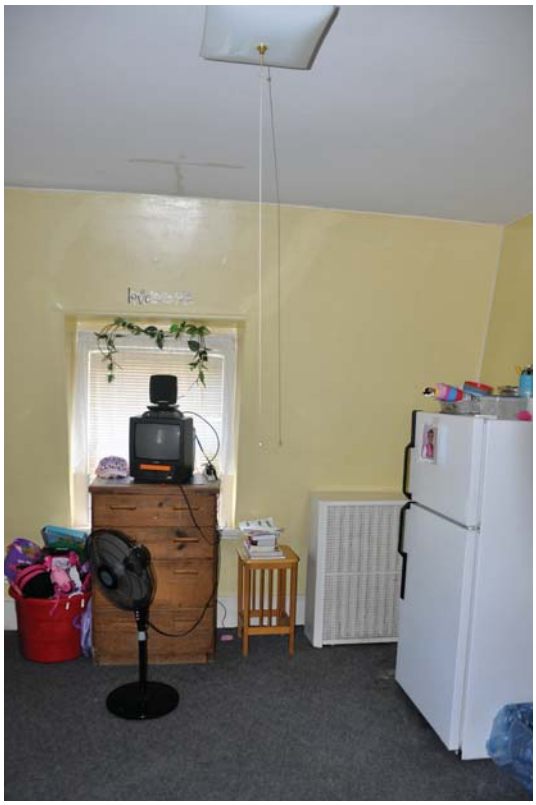

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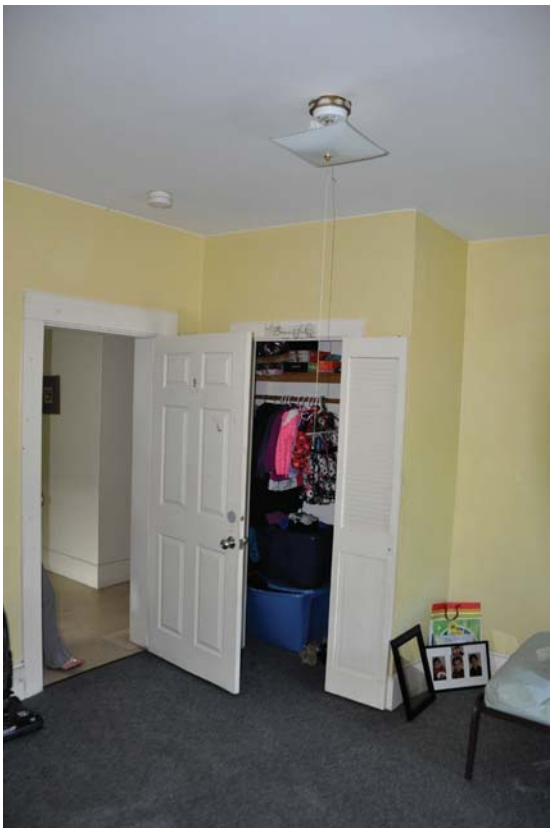

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Photo 0116

Photo 0120

Photo 0121

Photo 0124

Photo 3610

Photo 3612

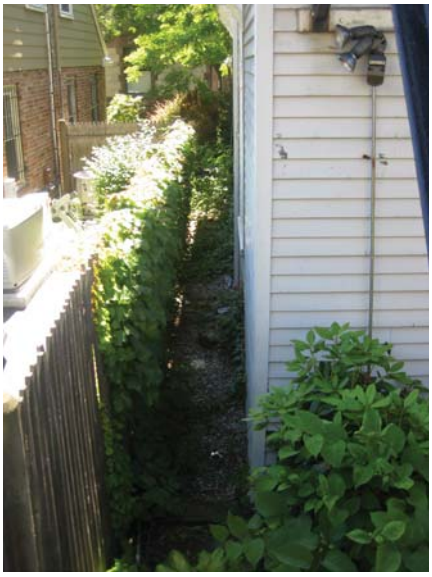
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Photo 3615

Photo 3624

Photo 3626

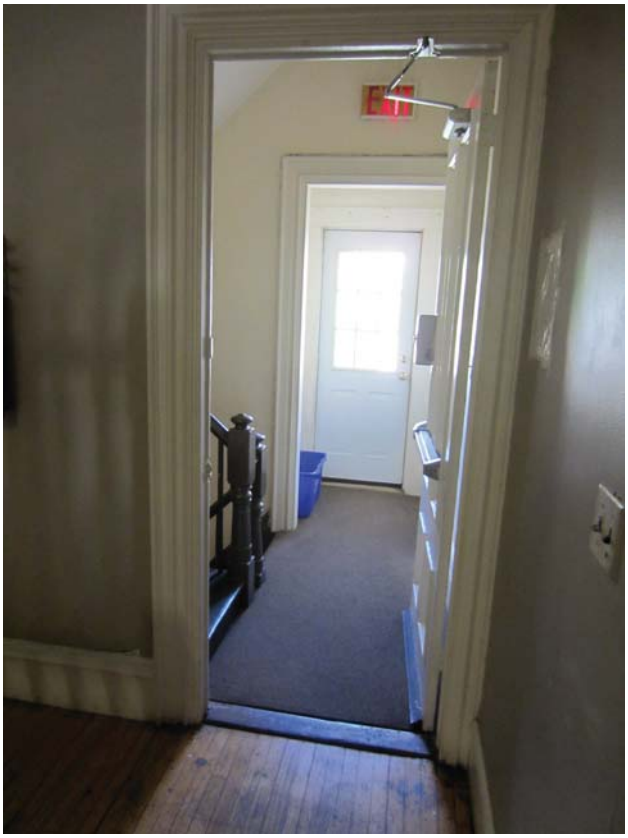
Photo 3627

Photo 3630

Photo 3631

Photo 9264

Photo 9265



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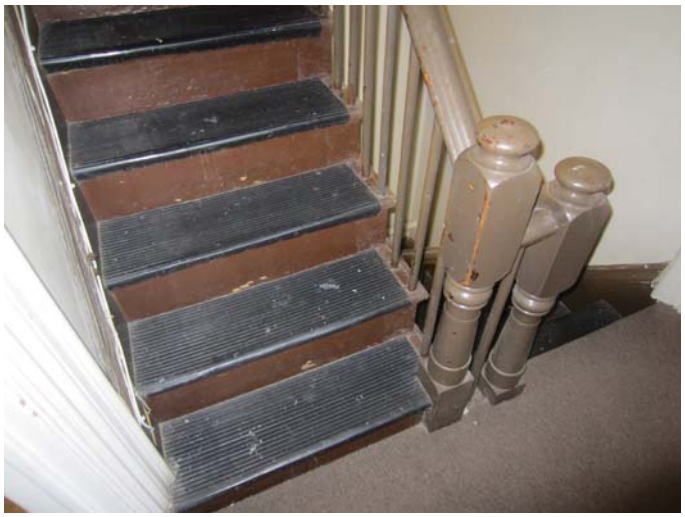

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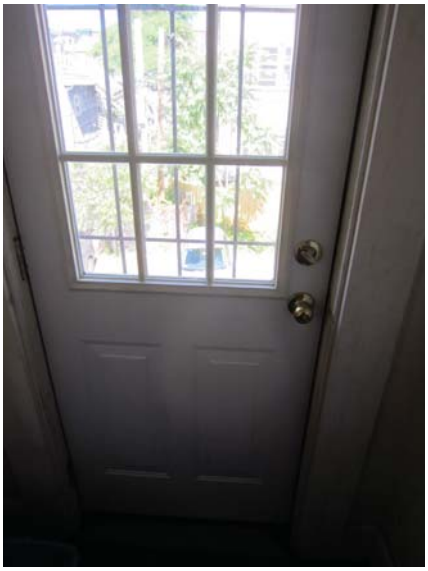
Photo 9301

Photo 9302



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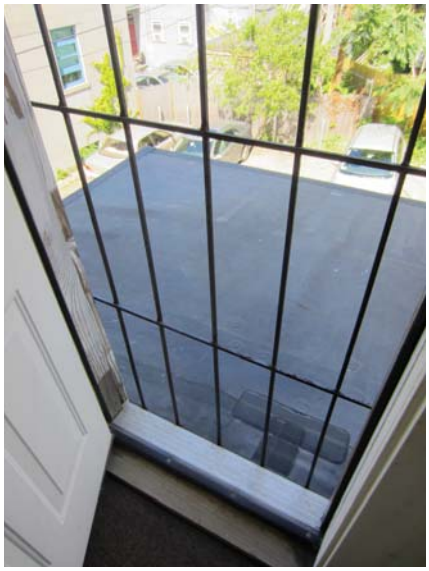

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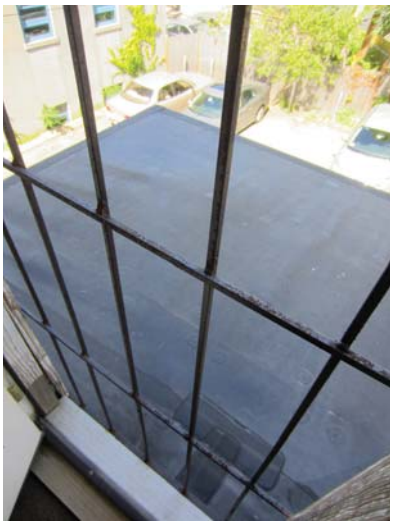

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Photo 9309

Photo 9315

Photo 9317

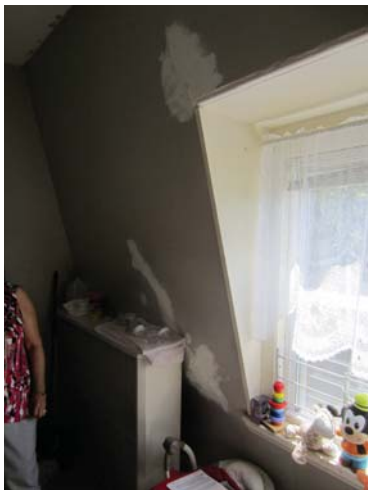
Photo 9325

Photo 9326

Photo 9327

Photo 9328

Photo 9329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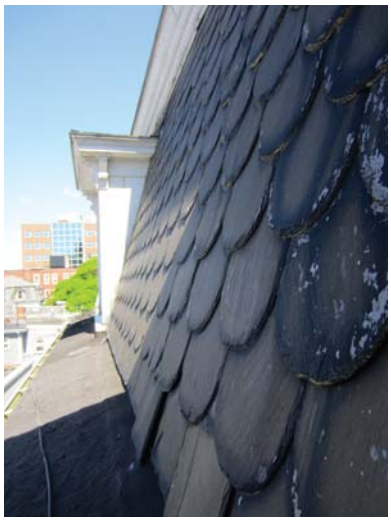
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Photo 9337

Photo 9339

Photo 9352

Photo 9356

Photo 9357

Photo 9358

Photo 9359

Photo 9360

Photo 9362

Photo 9363

Photo 9365

Photo 9366

Photo 9367

Photo 9369

Photo 9370

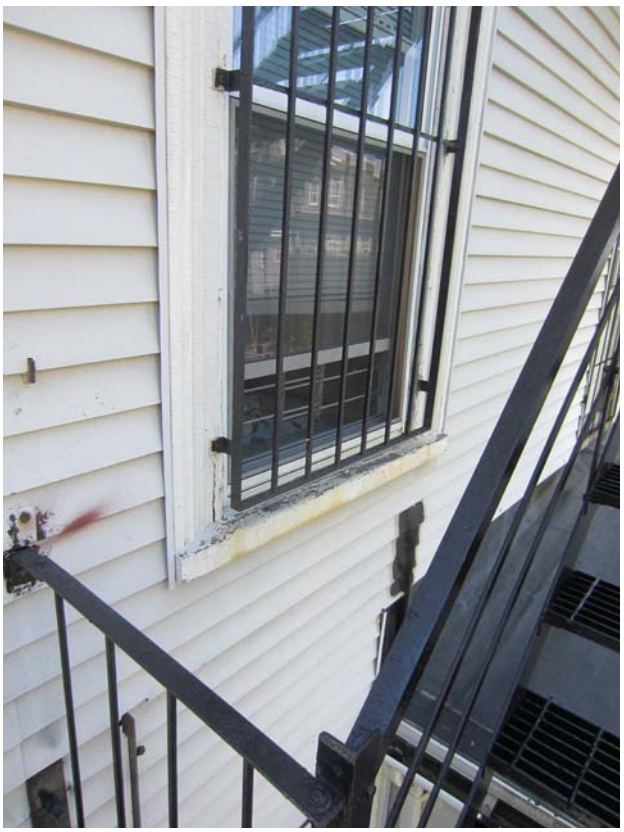


Photo 9372

Photo 9374

Photo 9375

Photo 9377

Photo 9378

Photo 9379

Photo 9380

Photo 9383

Photo 9384

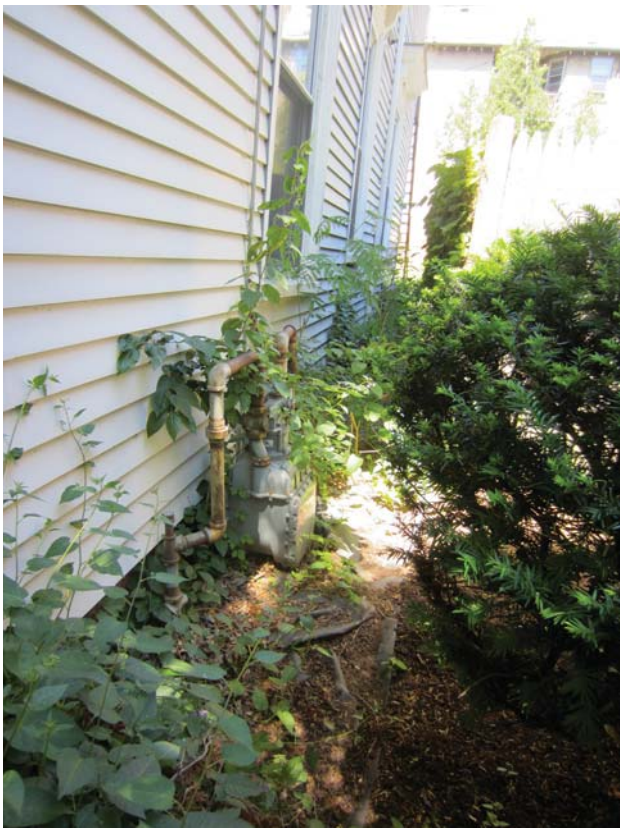
Photo 9386

Photo 9389

Photo 9391

Photo 9392

Photo 9393



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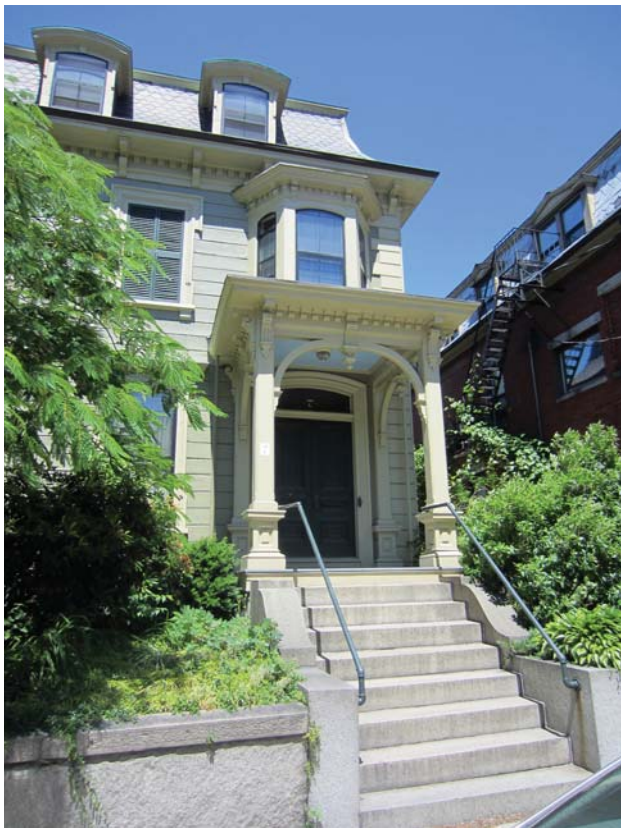
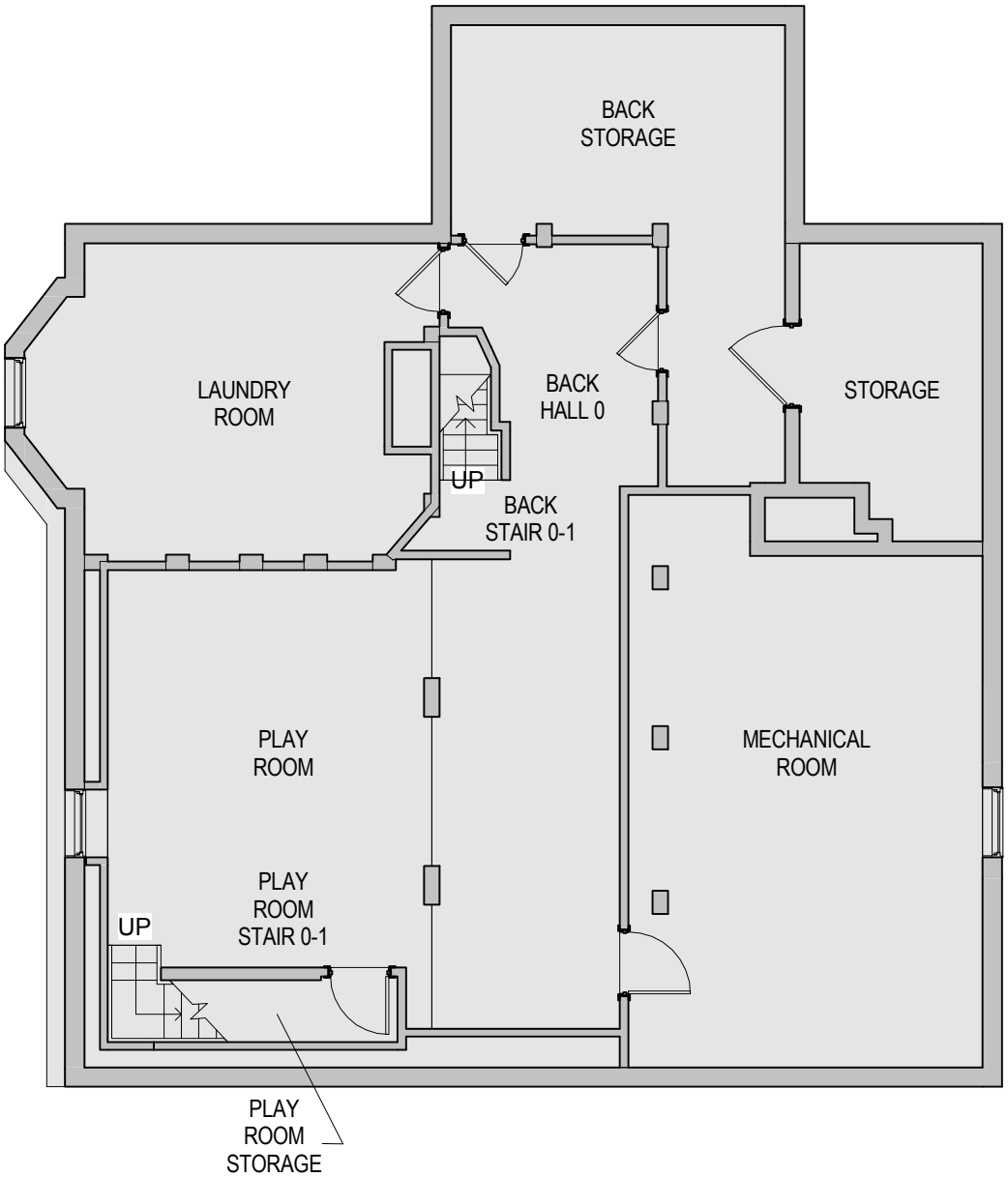


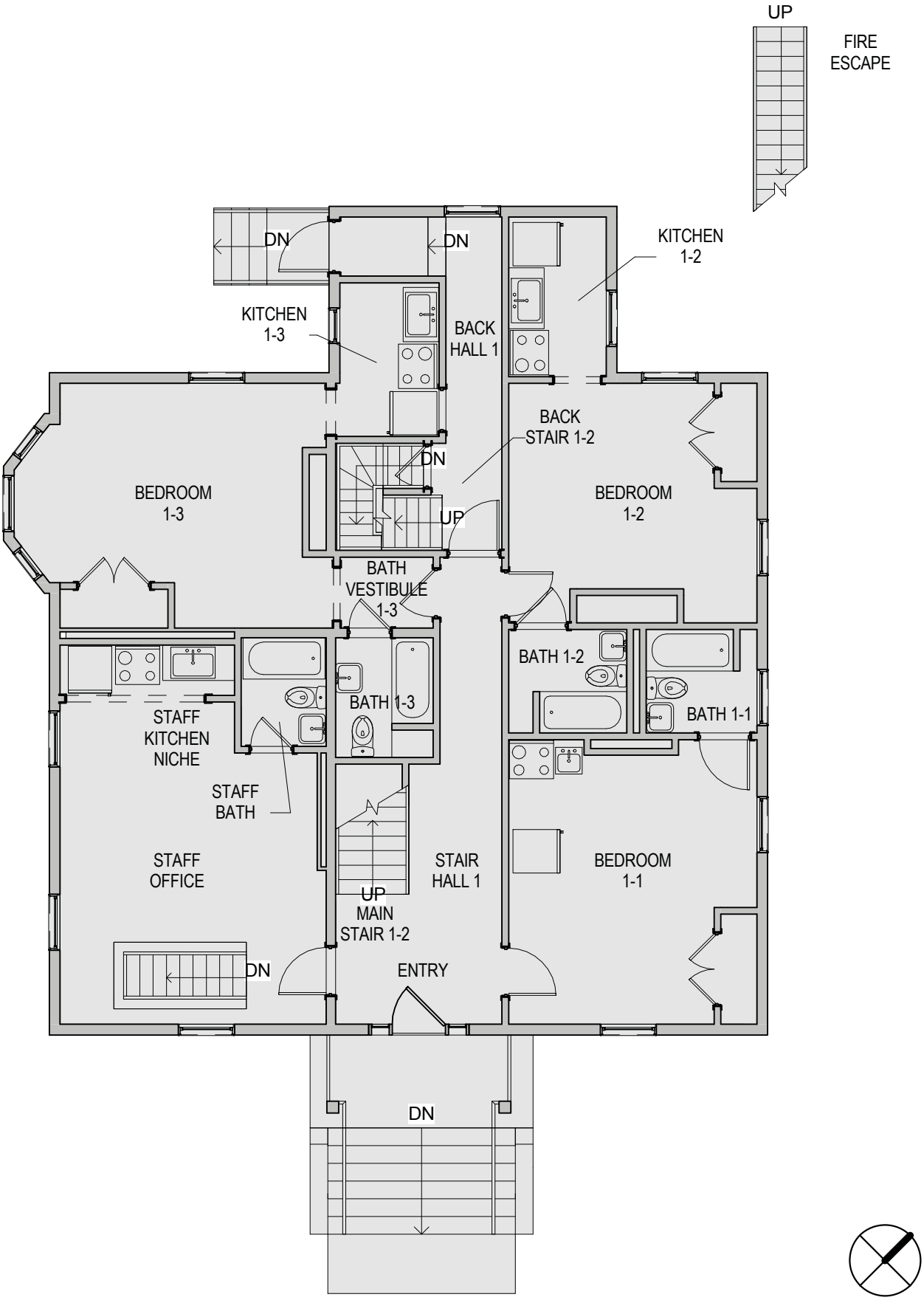
Photo 9399

Photo HIST



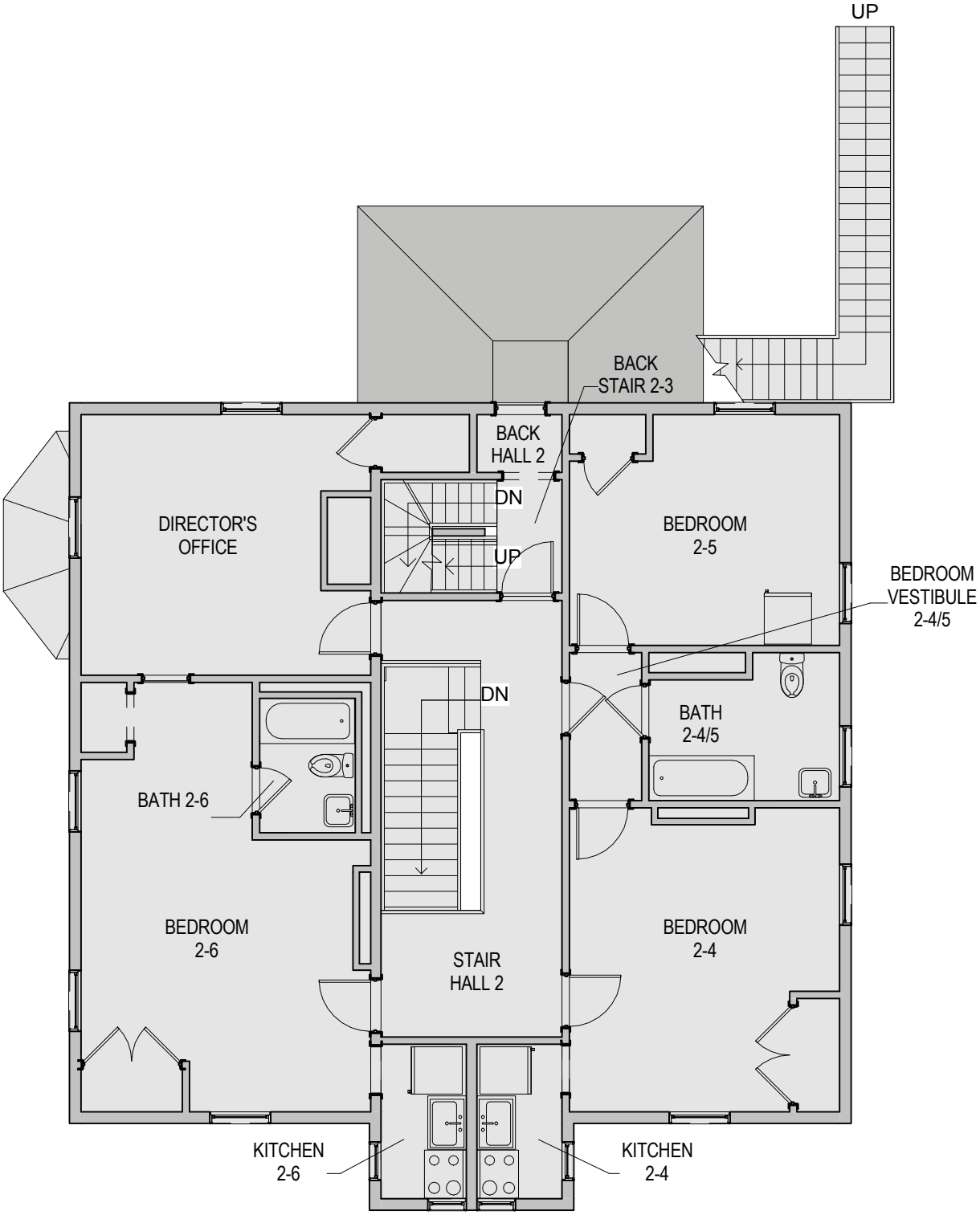
EXISTING CONDITIONS
LEVEL 0

EX100



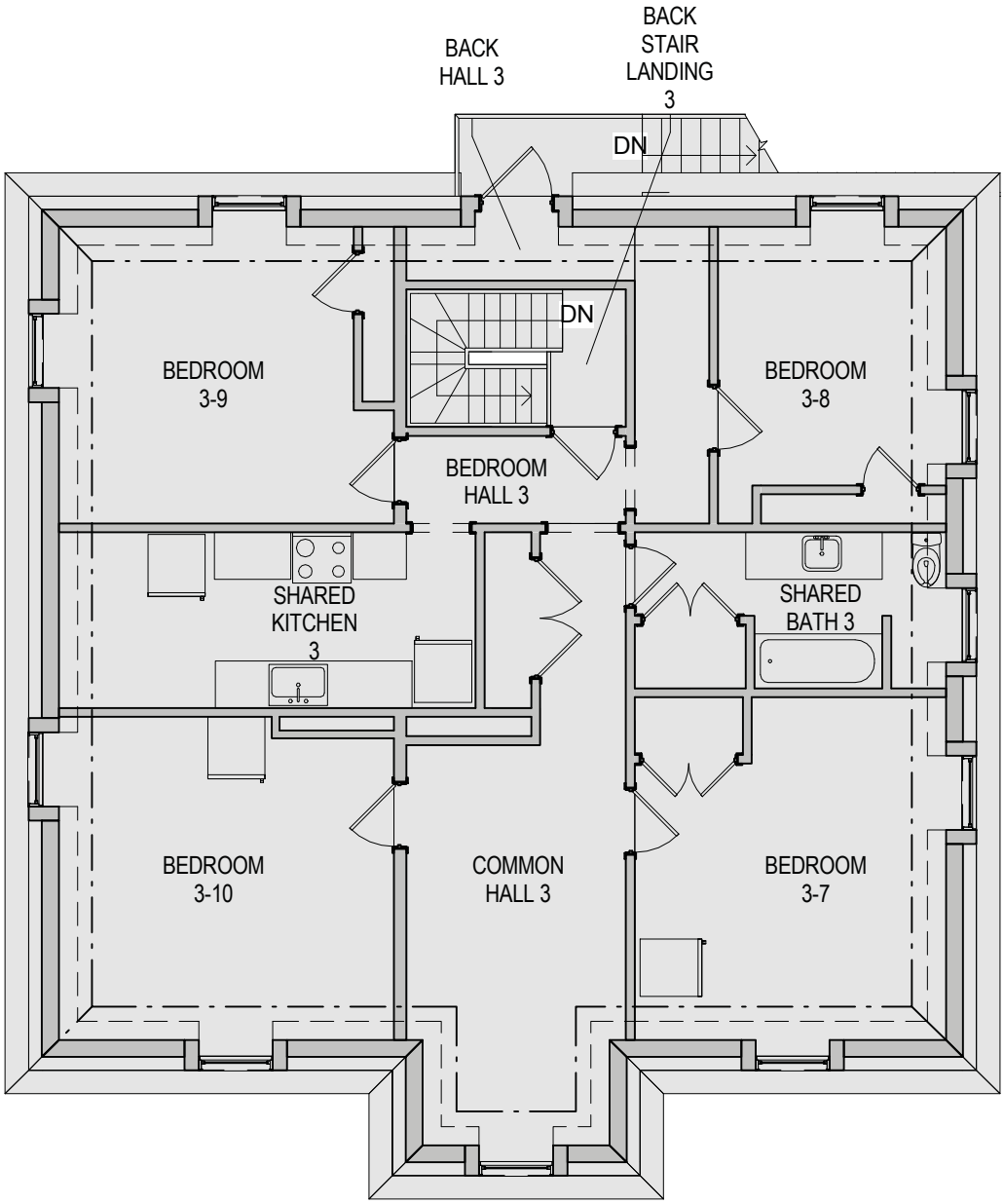
EXISTING CONDITIONS
LEVEL 1

EX101



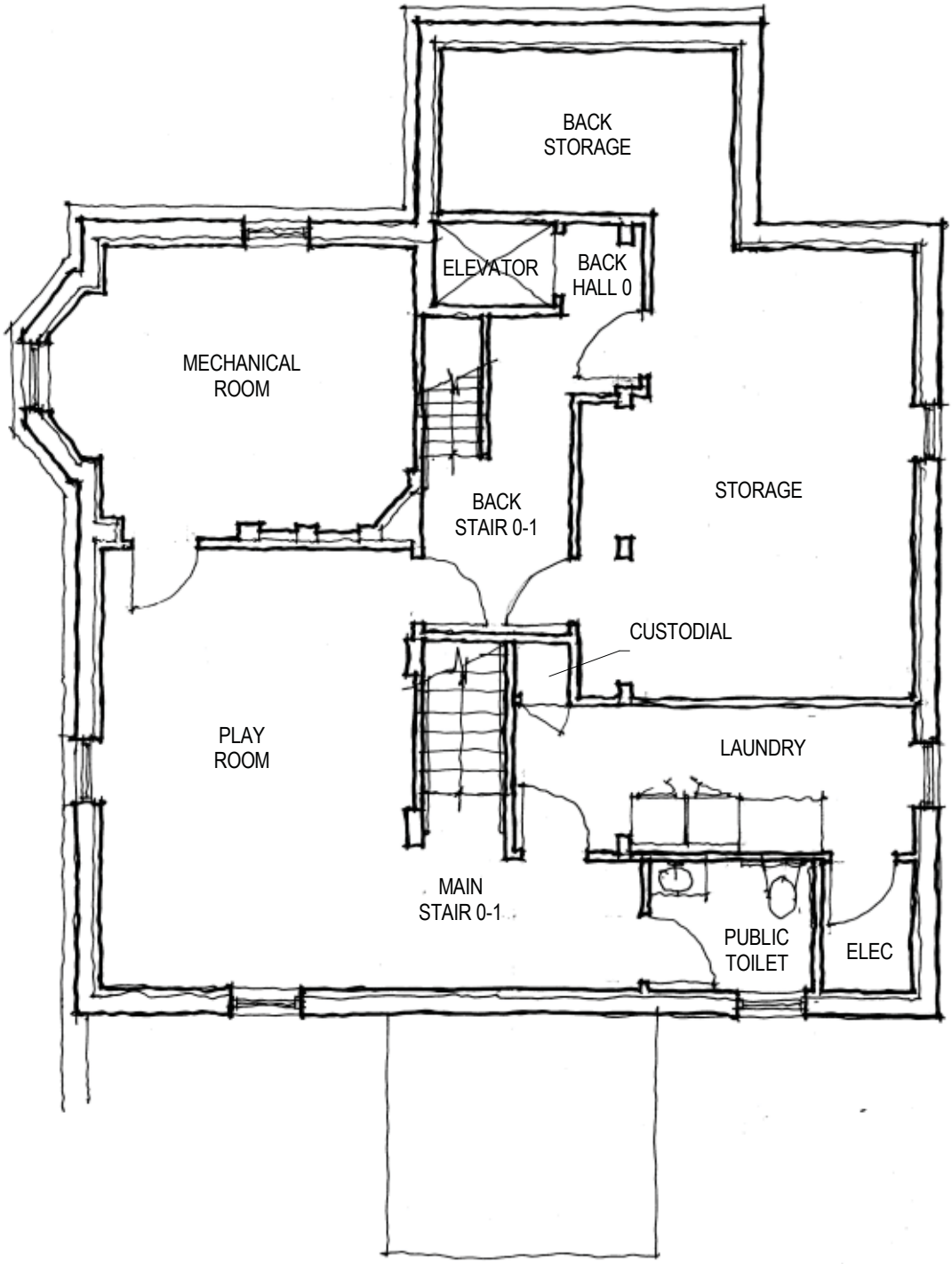
EXISTING CONDITIONS
LEVEL 2

EX102



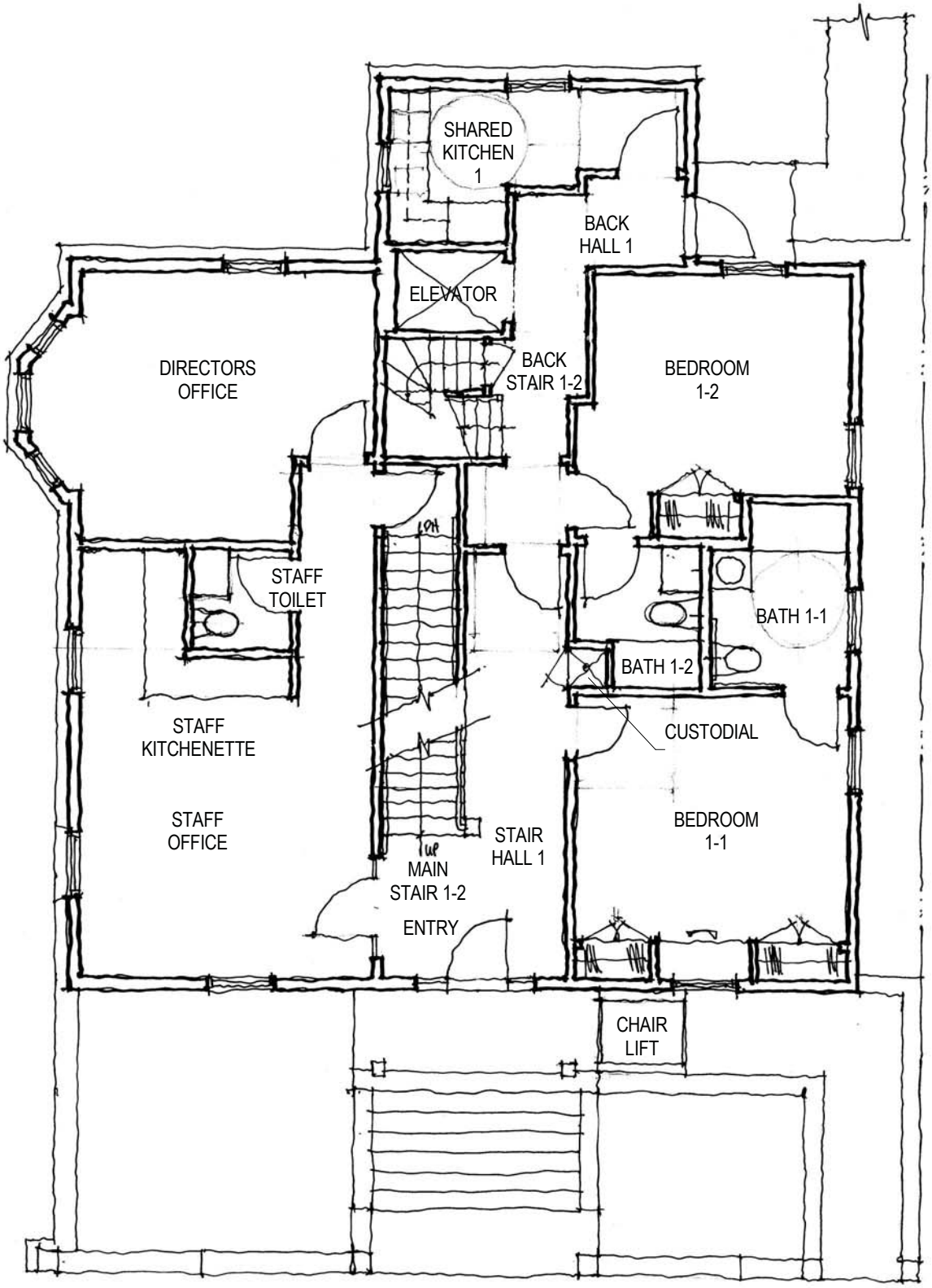
EXISTING CONDITIONS
LEVEL 3

EX103



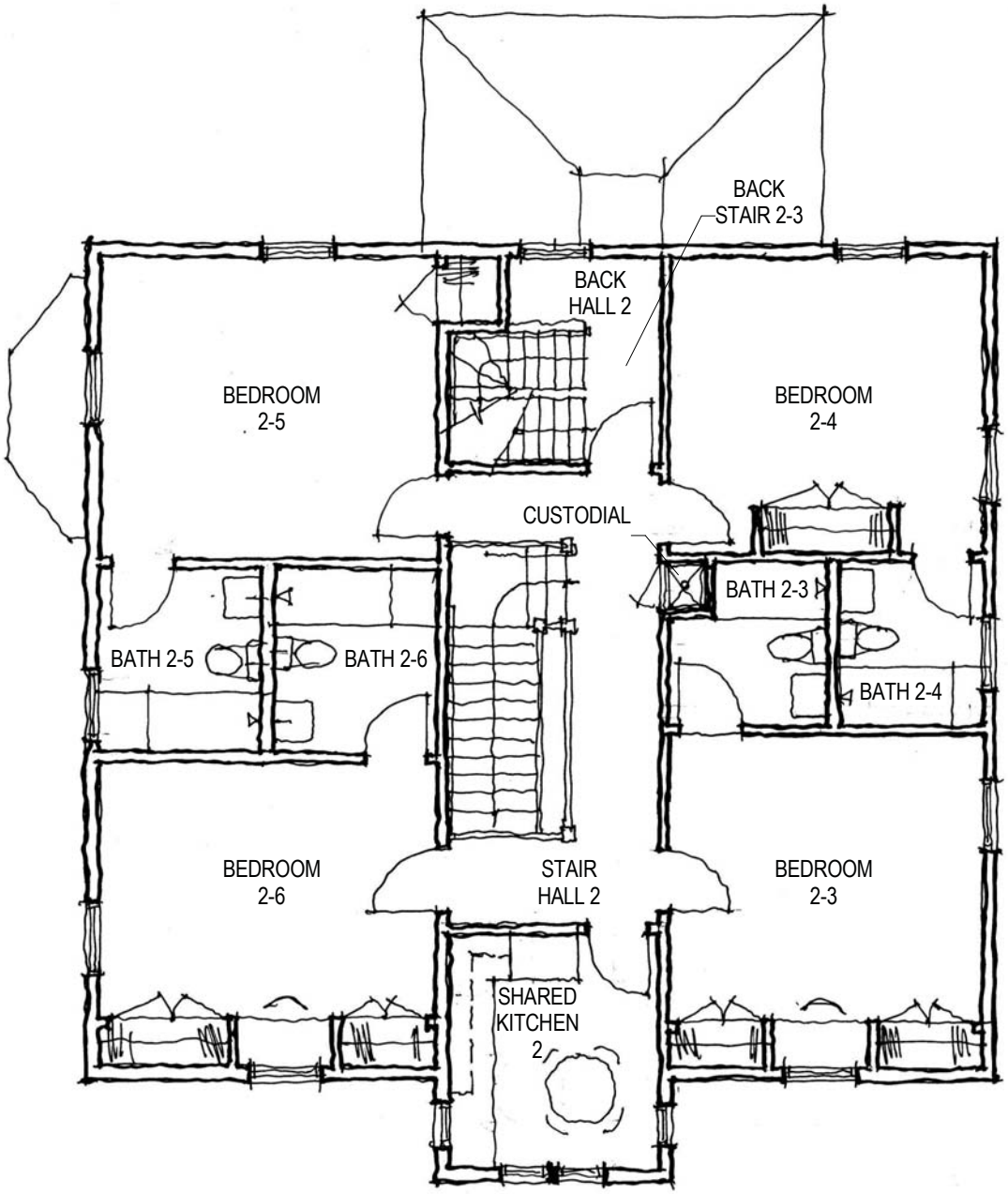
CONCEPTUAL DESIGN
LEVEL 0

A100



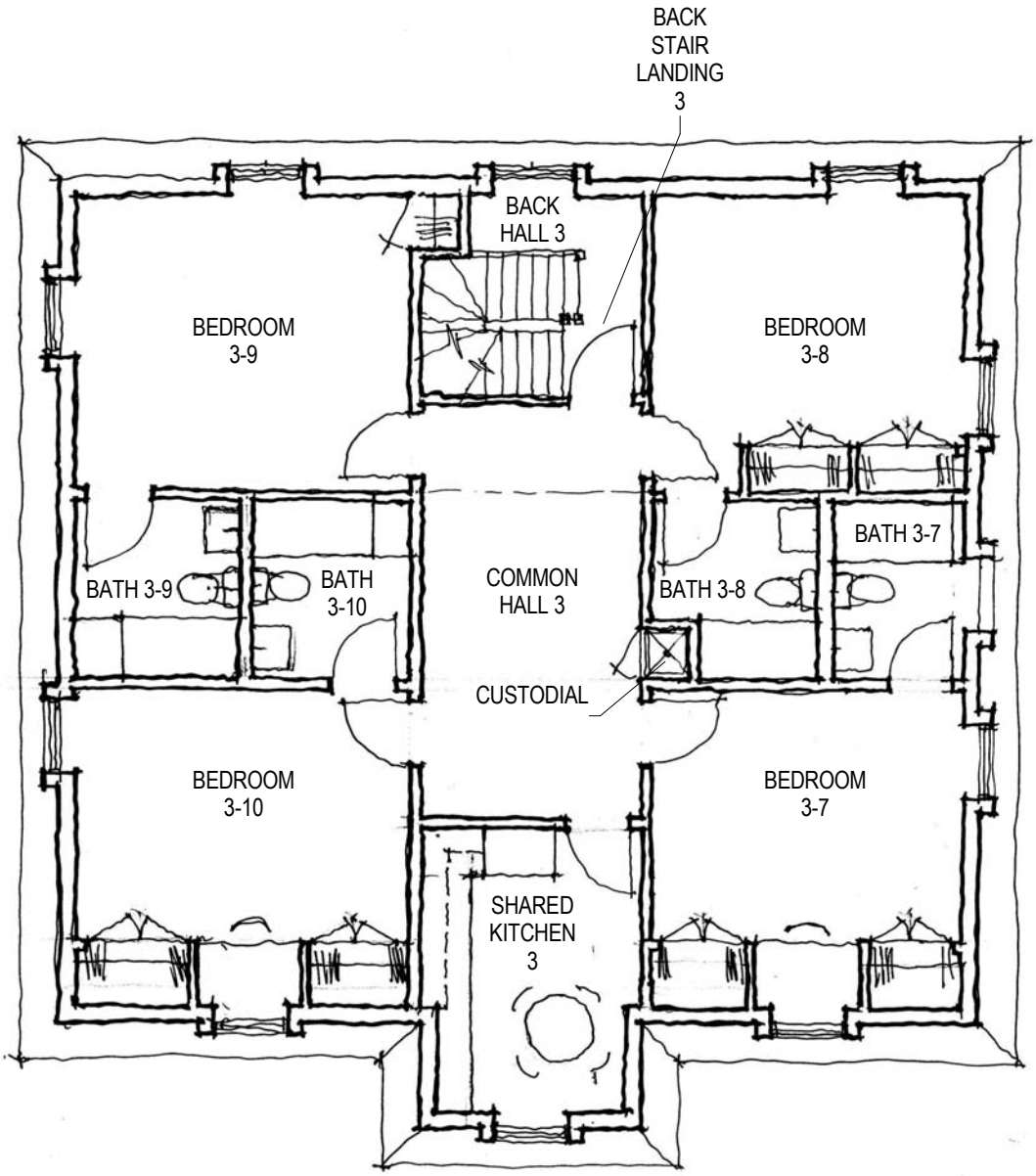
CONCEPTUAL DESIGN
LEVEL 1

A101



CONCEPTUAL DESIGN
LEVEL 2

A102



CONCEPTUAL DESIGN
LEVEL 3

A103

City of Cambridge
3 Bigelow Street
Estimated Project Cost Summary **9/17/2014**

Estimated Construction Cost (VJ Associates 8/11/2014)		
Direct Cost		$1,875,261
General Conditions		$168,800
General Requirements		$75,100
Insurance & Bonds		$61,000
Permits		$28,200
General Contractor Fee		$88,400
Subtotal		$2,296,761
Design Contingency	15%	$344,600
Escalation Contingency	5%	$114,900
Construction Contingency		$0
Estimated Construction Cost Total		**$2,756,261**

Estimated Construction Alternates Cost	
Alternate 1 - Reconstruct eave soffit brackets	$10,500
Alternate 2 - Reconstruct porch detailing & arched exterior doors	$12,000
Alternate 3 - Install PVC roof membrane or metal roof	$19,480
Alternate 4 - Replace Lombardi bldg wheel stop w/ concrete curb	$12,000
Alternate 5 - Replace cast iron storm drain connection to street	$35,040
Alternate 6 - Install new wood crown mold in bedrooms & offices	$35,040
Alternate 7 - Install new cameras & video monitoring	$119,700
Alternate 8 - Remove fireplaces & chimney masses	$9,514
Alternate 9 - Install new air conditioning at bedrooms	$75,700
Alternate 10 - Add Level 0 public toilet	$49,870
Alternate 11 - Frame upper high roof to original low-slope	$37,400
Alternate 12 - Remove fire escape & replace egress door with window	$13,090
Alternate 13 - Install new accessible route to front entry	$70,700
Estimated Construction Alternates Cost Total	**$500,034**

Total Estimated Construction Cost (with alternates)	**$3,256,295**

City of Cambridge
3 Bigelow Street
Estimated Project Cost Summary **9/17/2014**

Estimated Design Fees
Schematic Design Through Construction Phase

Estimated Architect's Fee	7.5%	$244,222
Estimated Architect's Consultants Fee	4.5%	$146,533
Structural Engineering		
MEP/FP Engineering & Energy Modeling		
Civil Engineering		
Landscape		
IR Scanning		
Code Consulting		
Cost Estimating		
Environmental and Material Testing		
Reimbursable Expenses		$5,000
Estimated Design Fees Total		**$395,755**

Estimated Project Costs
Schematic Design Through Construction Phase

Estimated Project Costs	*15%*	*$413,439*
FF&E (Fixtures, Furnishings & Equipment)		
Project Management and Clerk of the Work		
Site Survey		
HERS Rater		
Legal and Zoning		
Insurance (Builder's Risk)		
Testing and Inspections Services		
Utility Charges		
Moving		
Estimated Project Cost Total		**$413,439**

Total Estimated Project Cost	**$4,065,490**