



HABEEB & ASSOCIATES
ARCHITECTS

COMPREHENSIVE FACILITIES ASSESSMENT

COTUIT ELEMENTARY SCHOOL

140 Old Oyster Road, Cotuit, MA 02635

January 31, 2020
H&A JN 1827.04



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D E D I C A T E D T O E X C E E D I N G O U R C L I E N T S ' E X P E C T A T I O N S

1) Acknowledgements	3
2) Introduction	5
3) Executive Summary	7
4) How to Read this Assessment	9
5) Assessment	13
6) Photographs	31
7) Appendices	51
Appendix A: H&A Drawings.....	A-1 - A-2
Appendix B: Mechanical, Electrical, Plumbing and Fire Protection Systems Narrative	B-1 - B-9
Appendix C: EFI Global - Asbestos and Hazardous Materials Survey	C-1 - C-44

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Cotuit Elementary School

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Description of scope

Habeeb & Associates Architects was retained to conduct a Comprehensive Facilities Assessment for Cotuit Elementary School.

Purpose of report

The Comprehensive Facilities Assessment was developed to address the physical structure and mechanical, electrical, plumbing, and fire protection systems of Cotuit Elementary School, located in a residential neighborhood on Old Oyster Road. This Assessment describes current conditions and provides priority recommendations and budget estimates for repair or replacement of deficient building components and systems that may be used for short and long term capital planning. It is recommended that this Assessment be used in context with the facilities goals as defined by the Town of Barnstable for the development of a Capital Plan.

Methodology

The Assessment is based upon visual inspection, review of available documents, and interviews with Facilities personnel. Habeeb & Associates Architects and Garcia Galuska DeSousa Consulting Engineers Inc. conducted an interview with David Kanyock, Facilities Director, and his staff over the course of several days in December 2019. Existing deficiencies and concerns were observed, noted and photographed by the design and engineering team.

The team was provided with schematic building floor plan prepared by DRA, July 2017 AHERA report prepared by Fuss & O'Neill EnviroScience, LLC, and July 2003 Existing Conditions Survey prepared by Tams.

The deficiencies observed were related to age of building systems and components, usage, newer code requirements and improvements recommended to provide an environment suitable for 21st Century learning practices.

The spreadsheets and photographs included in the Comprehensive Facilities Assessment detail the recommendations and associated costs for addressing the deficiencies identified. Estimated costs for projects to be completed in future years contain escalation factors to account for inflation.

INTRODUCTION

BUILDING DATA

GENERAL INFORMATION:		ARCHITECTURAL COMPONENTS:	
Building:	Cotuit Elementary School	Foundation:	Reinforced concrete piers and spread footings, partial dirt floor crawl space
Address:	140 Old Oyster Rd. Cotuit, MA	First Floor Structure:	Cast in place concrete structural one way slab and beams
Title of Main Contact:	Mark Marinaccio, Town Architect	Roof Structure:	Wood decking, wood joists, heavy timber trusses bearing on exterior steel frame and interior corridor CMU bearing walls.
Title of Facilities Contact:	David Kanyock, Facilities Director	Exterior Walls:	CMU w/ brick veneer
CODE CLASSIFICATION:		Roofing:	Asphalt shingles and single ply membrane on upper flat roof area
Occupancy:	Group E Educational	Window Systems:	Aluminum clad wood windows
Construction Type:	IIB unprotected	Exterior Doors	Mostly insulated hollow metal doors, some wood
BUILDING HISTORY:		Interior Doors	Mostly wood doors with wood frames
Original Building:	1956 – 15,446 SF	Stairs:	Cast in place concrete to basement
Modular Addition:	1,820 SF	Interior Walls:	CMU walls
SITE / BUILDING AREA:		Ceiling Finishes:	Acoustical tiles attached to ceiling joist framing
Site Area:	13.5 Acres	Conveying Systems:	none
Total Building Area:	18,306 SF		
Basement Area:	1,040 SF		
First Floor Area:	17,266 SF		
SITE COMPONENTS:			
Parking/Driveways:	Bituminous paving- circular driveway (front)		
Walkways:	Bituminous	MECHANICAL / ELECTRICAL COMPONENTS:	
Lighting:	Building mounted mini-sconces; no pole mounted parking area lighting	Water Service:	4" pipe and 2" meter, without backflow preventer
Storm Drainage	Onsite storm drainage system	Domestic Hot Water:	One oil-fired tank, with input of 173,000 btuh
Sanitary System:	Onsite septic system	Fire Supression:	none
Play Areas:	Bituminous paved play area adjacent to cafetorium, open fields behind the school, with playground, and playground to east side of school. Picnic tables in wooded area.	Heating Systems:	One oil-fired low pressure steam plant, 1933 MBH in main building and ductless wall mounted heat pump at modulars
		Cooling Systems:	none
		Electric Service:	600 amp main service

This Summary categorizes the recommended capital improvements for the Cotuit Elementary School, including the school building and site elements based on staff interviews, observations and review of available drawings. The original building consists of approximately 15,446 square feet on one level, with partial basement housing mechanical rooms, and was completed in 1956. A wood-framed modular addition was added to the north end of the building, with a footprint of approximately 1,820 square feet.

Work items identified by this Assessment are assigned a Scope category based on urgency, ongoing maintenance, life cycle costs and other concerns that compromise the teaching environment. In summary, scopes are categorized by the following descriptions:

Scope 1 – Immediately Necessary / Critical

Scope 2 – Necessary/Not Yet Critical (1-5 years)

Scope 3 – Recommended (6-10 years)

Refer to Section 4, How to Read This Assessment for detailed Scope descriptions and calculation methodology.

Scope 1 has been assigned to Work Items that present an immediate safety risk, such as replacement of the existing boiler, piping, fuel oil tank, unit ventilators, controls and ventilation systems, enclosing the opening cut into the attic firewall, and replacement of plumbing fixtures and domestic hot and cold water systems.

In addition, the recommendations include abatement of all asbestos containing materials such as flooring, ceilings, boilers, pipe and tank insulation, caulking and mastics, and removal of other hazardous materials. The replacement of the kitchen is included as Scope 1.

Scope 2 and Scope 3 address other less critical Work Items that are not immediately necessary, but will continue to deteriorate without maintenance, repair or replacement, such as roofs, masonry repairs, joint sealants, painting, fire suppression system, lighting, electrical distribution upgrades, security and data upgrades. Other high priority items are recommended for the interiors, including accessibility modifications, casework replacement, signage, doors and frames.

EXECUTIVE SUMMARY

Category	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Total
Executive Summary				Cotuit Elementary School
1. SITE	0	39,650	0	39,650
2. BUILDING ENVELOPE	325	166,306	0	166,631
3. BUILDING INTERIORS	900,673	93,863	0	994,536
4. MECHANICAL	1,036,653	0	0	1,036,653
5. ELECTRICAL	0	0	656,774	656,774
6. FIRE PROTECTION AND PLUMBING	190,969	253,732	0	444,701
¹Total:	2,128,620	553,551	656,774	3,338,945
¹Total Inflated @ 4% Compounded Annually	2,302,316	673,479	972,186	3,947,981

¹Totals include Soft Costs (30%): Contingency, Administration and A/E Fees.

The option for demolition of the building was evaluated. The estimated construction cost to demolish the building, including disposal of all building materials, asbestos, and other hazardous materials is \$420,840. With soft costs this demolition is estimated to be \$547,092, plus escalation and contingency.

EXECUTIVE SUMMARY

The *Executive Summary* recaps the *Total Inflated* row from the bottom of the Building Summary sheets. These costs are then totaled at the bottom to indicate a combined proposed capital expenditure per scope. This is intended to make it easier for the reader to review and compare the overall costs for each of the scopes.

SUMMARY

The *Summary* recaps the *Total* row from the bottom of each category for the subject building, separated into scopes. This is intended to make it easier for the reader to review and compare the overall costs for each of the categories together with the scopes for the subject building.

FACILITIES ASSESSMENT

The following is a list and brief description of the column and row headings of the Facilities Assessment sheets.

Description

The *Descriptions* are the work items identified during our inspection. They usually consist of the building component and its deficiencies; and a recommendation for correcting the deficiency.

Quantity

The number of items: (For example, if the work item is for "unit ventilators replacement" the building in question may have a *Quantity* of 60 unit ventilators to be replaced).

Unit

The *Units* are identified by a two-letter code. The unit codes are as follows:

- SF – Square Foot
- SY – Square Yard
- LF – Linear Foot
- LS – Lump Sum
- EA – Each

Unit Cost

The *Unit Cost* is the cost of one *Quantity* of a work item. Unit costs are preliminary construction cost estimates only and are generally based on a professional cost estimate performed by North Bay Company Inc.

HOW TO READ THIS ASSESSMENT

Total

The *Total* column is determined by the following equation: $\text{QUANTITY} \times \text{UNIT} = \text{TOTAL}$.

Total with Soft Costs

This assessment provides preliminary construction costs associated with *Soft Costs*. *Soft Costs* generally include a contingency, (typically 10% to 15%) for unforeseen conditions; indirect administrative expenses such as legal costs, printing and advertising (typically 5% to 10%); and architectural and engineering costs (typically 10% to 15%) for a total soft cost estimate. We used a *Soft Cost* of 30% of the *total* cost in this assessment. The *Total with Soft Costs* is determined by the following equation: $\text{TOTAL} \times 1.30 = \text{TOTAL W/ SOFT COST}$.

Some projects may require higher or lower *Soft Costs* depending on the type and extent of project selected. Work items listed are provided as a guide to develop repair and renovation projects with preliminary construction cost estimates. The actual scope of a project could include a combination of work items, i.e. new ceilings and new lighting. Some other projects may require finishes, e.g. painting, which may not necessarily be broken out for that project.

Scope 1 – Immediately Necessary / Critical

- Urgent safety concern.
- Ongoing maintenance issue causing downtime and expense.

Scope 2 – Necessary/Not Yet Critical (1-5 years)

- Predictable deterioration.
- Potential downtime.
- Associated damage or higher costs if deferred further.

Scope 3 – Recommended (6-10 years)

- Sensible improvements that are not required for the basic function of the facility.
- Overall usability improvement.
- Long term maintenance cost reduction.
- Improved efficiency.

Totals Column (work items)

The *Totals* column is the sum of the Scope columns 1, 2, and 3 for each work item. The *Totals* column also shares the sum of the *Total* row and *Total Inflated* rows at the lower right corner.

Total Row (scopes)

The *Total* row is the sum of the Scope columns 1, 2 and 3 and *Totals* column, for each category. The *Total* row and *Total Inflated* rows are totaled at the lower right corner.

Total Inflated Row

The *Total Inflated* row is the sum of the Scope columns 1, 2 and 3 and *Totals* column for each category multiplied by a coefficient to determine the inflated cost at a rate of 4% and compounded annually.

Scope 1 is shown with an inflation factor for work to be performed within a 2 yr period.

Scope 2 is shown with an inflation factor for work to be performed within a 5 yr period.

Scope 3 is shown with an inflation factor for work to be performed within a 10 yr period.

The *Total* row and *Total Inflated* rows are totaled at the lower right corner.

HOW TO READ THIS ASSESSMENT

The Assessment is broken into six categories with specific evaluation concerns in each:

1. Site

- Storm Drainage
- Drives and Walks
- Landscaping
- Site Improvements
- Play Areas
- Accessible Parking and Entrance Approach

2. Building Envelope

- Roofs
- Exterior Walls
- Windows
- Exterior Entrances and Doors
- Building Structural System
- Accessible Egress and Ingress

3. Building Interiors

- Floor Finishes
- Wall Finishes
- Ceiling Finishes
- Interior Doors and Exitways
- Code Compliance Issues
- Accessibility for the Disabled
- Hazardous Material Remediation

4. Mechanical

- Boilers/Heating Plant
- Fuel Oil Tank
- Piping
- Unit Ventilators
- Heating and Ventilation Systems
- Temperature Controls

5. Electrical

- Distribution System
- Interior Lighting
- Exterior Lighting
- Emergency Standby System
- Fire Alarm System
- Branch Circuitry
- Lightning Protection
- Security Intrusion/CCTV/Card Access
- Communications/Clock System
- Tel/Data System

6. Fire Protection and Plumbing

- Plumbing Fixtures
- Domestic Cold Water System
- Domestic Hot Water System
- LP Gas System
- Drainage System
- Sprinkler Systems

Category	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Total
Executive Summary		Cotuit Elementary School		
1. SITE	0	39,650	0	39,650
2. BUILDING ENVELOPE	325	166,306	0	166,631
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4. MECHANICAL	1,036,653	0	0	1,036,653
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¹Totals include Soft Costs (30%): Contingency, Administration and A/E Fees.

ASSESSMENT

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
1. SITE						COTUIT ELEMENTARY SCHOOL			
1.1 Remove old playground equipment.	1	LS	30,000.00	30,000	39,000		39,000		39,000
1.2 Repair cast in place concrete walls at stair to basement.	2	SF	250.00	500	650		650		650
Total						0	39,650	0	39,650
Total Inflated @ 4% Compounded Annually						0	48,240	0	48,240

¹Total includes Soft Costs (30%): Contingency, Administration and A/E Fees.

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
2. BUILDING ENVELOPE									
COTUIT ELEMENTARY SCHOOL									
2.1 Clean stained brick (40 SF) and repoint deteriorated mortar (40 SF) each side of pediment roof at entry.	1	LS	3,520.00	3,520	4,576		4,576		4,576
2.2 Scrape, prime and paint rake and soffit throughout the perimeter.	900	LF	15.00	13,500	17,550		17,550		17,550
2.3 Replace cracked concrete vestibule at main entry.	32	SF	50.00	1,600	2,080		2,080		2,080
2.4 Scrape, prime and paint double steel angle lintel over entry door.	10	LF	30.00	300	390		390		390
2.5 Replace 20 cracked brick and repoint 10 LF of brick masonry at cracked brick corner right of main entrance.	1	LS	1,800.00	1,800	2,340		2,340		2,340
2.6 Replace cracked brick (5) and repoint cracked brick mortar joints (8 LF) from sill to window corner (outside classroom 5).	1	LS	600.00	600	780		780		780
2.7 Replace sealants around unit vent louvers - 10 LF x 12 vents.	120	LF	15.00	1,800	2,340		2,340		2,340
2.8 Scrape, prime and paint wood cupola.	1	LS	5,000.00	5,000	6,500		6,500		6,500
2.9 Repoint brick chimney (200 SF) and replace concrete cap (25 SF).	1	LS	9,500.00	9,500	12,350		12,350		12,350
2.10 Replace cracked brick at SW and SE corners of library at base of wall (10 cracked brick and 4 LF repoint each location).	1	LS	900.00	900	1,170		1,170		1,170

ASSESSMENT

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
2. BUILDING ENVELOPE						COTUIT ELEMENTARY SCHOOL			
2.11 South wall of library, repoint horizontal crack below sills.	20	LF	25.00	500	650		650		650
2.12 At south wall of library, scrape prime and paint window lintels.	15	LF	7.50	113	146		146		146
2.13 Repoint brick masonry joints below sills east wall library.	30	SF	40.00	1,200	1,560		1,560		1,560
2.14 Repoint masonry at base of wall room 8.	30	SF	40.00	1,200	1,560		1,560		1,560
2.15 Replace window and door sealants east vestibule.	40	LF	15.00	600	780		780		780
2.16 Repoint masonry below sill - east wall of room 13.	8	LF	25.00	200	260		260		260
2.17 Repoint masonry below sill - east wall of room 11.	4	LF	25.00	100	130		130		130
2.18 Repoint 6 LF and replace 2 cracked brick at step crack at east wall of toilet room E .	1	LS	300.00	300	390		390		390
2.19 Repoint 4 LF and replace 6 cracked brick at step crack at corner by toilet room F .	1	LS	600.00	600	780		780		780
2.20 Replace deteriorated wood siding and corner trim at modulars.	2,170	SF	15.00	32,550	42,315		42,315		42,315
2.21 Replace deteriorated soffit, eave and rake trim at modulars.	190	LF	30.00	5,700	7,410		7,410		7,410

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
2. BUILDING ENVELOPE					COTUIT ELEMENTARY SCHOOL				
2.22 Repoint mortar joint below window sills, west side of corridor wall.	20	LF	25.00	500	650		650		650
2.23 Clean algae from base of wall west corridor wall through classroom 4.	260	SF	8.00	2,080	2,704		2,704		2,704
2.24 Repoint mortar joint at base of wall from base of wall west corridor wall through classroom 4.	130	LF	25.00	3,250	4,225		4,225		4,225
2.25 Repoint mortar joint below window sill, north wall near classroom 4.	4	LF	25.00	100	130		130		130
2.26 Provide compliant railings at areaway stair to boiler room.	20	LF	200.00	4,000	5,200		5,200		5,200
2.27 Missing downspout at building corner near storage room.	10	LF	25.00	250	325	325			325
2.28 Rebuild displaced brick at bottom corner by storage stoop.	4	SF	90.00	360	468		468		468
2.29 Install complaint railings at exterior stair near stage.	16	LF	280.00	4,480	5,824		5,824		5,824
2.30 At north wall of multipurpose, in various locations, repoint brick mortar joints.	60	SF	40.00	2,400	3,120		3,120		3,120
2.31 At north wall of multipurpose, in various locations, repoint brick mortar joints.	20	LF	25.00	500	650		650		650

ASSESSMENT

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
2. BUILDING ENVELOPE						COTUIT ELEMENTARY SCHOOL			
2.32 At north wall of multipurpose, in various locations, scrape, prime and paint steel lintels.	30	LF	30.00	900	1,170		1,170		1,170
2.33 At north wall of multipurpose, in various locations, clean algae stained brick.	240	SF	8.00	1,920	2,496		2,496		2,496
2.34 At north wall of multipurpose, in various locations, replace wire mesh window screens.	200	SF	15.00	3,000	3,900		3,900		3,900
2.35 At northeast corner of multipurpose, repoint 8 LF of brick mortar joint and replace 20 cracked brick.	1	LS	1,800.00	1,800	2,340		2,340		2,340
2.36 Reseal joints at kitchen toilet room wall vent.	4	LF	10.00	40	52		52		52
2.37 At northwest corner near kitchen, repoint cracked mortar joint (12 LF) and replace 70 cracked bricks.	1	LS	5,700.00	5,700	7,410		7,410		7,410
2.38 At west wall of kitchen in various locations, repoint brick masonry below sills and door threshold.	15	LF	25.00	375	488		488		488
2.39 At west wall of kitchen in various locations, paint window and door lintels.	20	LF	30.00	600	780		780		780
2.40 At west wall of kitchen, replace louver.	20	SF	80.00	1,600	2,080		2,080		2,080
2.41 At southwest corner of multipurpose storage, replace deteriorated metal door with louver and wood frame.	1	EA	3,000.00	3,000	3,900		3,900		3,900

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
2. BUILDING ENVELOPE					COTUIT ELEMENTARY SCHOOL				
2.42 At southwest corner of multipurpose storage room, repoint cracked mortar joint (8 LF) and replace 30 cracked brick.	1	LS	2,000.00	2,000	2,600		2,600		2,600
2.43 At south wall of multipurpose room, remove vines from wall.	60	SF	4.00	240	312		312		312
2.44 At south wall of multipurpose, repoint brick mortar joints.	12	LF	25.00	300	390		390		390
2.45 Abate asbestos containing roofing membrane.	1,200	SF	6.00	7,200	9,360		9,360		9,360
Total						325	166,306	0	166,631
Total Inflated @ 4% Compounded Annually						352	202,336	0	202,688

¹Total includes Soft Costs (30%): Contingency, Administration and A/E Fees.

ASSESSMENT

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
3. BUILDING INTERIORS									
COTUIT ELEMENTARY SCHOOL									
3.1 No accessibility to stage in multipurpose room - provide lift.	1	EA	40,000.00	40,000	52,000	52,000			52,000
3.2 Toilet room near kitchen - replace deteriorated interior door.	1	EA	2,100.00	2,100	2,730	2,730			2,730
3.3 Replace exterior deteriorated door with louver in multipurpose storage room.	1	EA	2,500.00	2,500	3,250	3,250			3,250
3.4 Replace deteriorated asbestos floor tile and replace with new VCT at kitchen entry.	100	SF	12.00	1,200	1,560	1,560			1,560
3.5 Kitchen - only dishwashing and electric stove remain. Provide new equipment.	320	SF	250.00	80,000	104,000	104,000			104,000
3.6 Above stage, roof leak damaged ceiling. Patch and repaint plaster ceiling.	560	SF	20.00	11,200	14,560	14,560			14,560
3.7 Throughout the school - abate ACM floor tile and mastic and replace with new VCT.	12,000	SF	12.00	144,000	187,200	187,200			187,200
3.8 Remove fixtures (toilet and sink) at lobby former toilet room repurposed with shelving.	2	EA	2,000.00	4,000	5,200		5,200		5,200
3.9 Replace ADA noncompliant room signage throughout the building.	32	EA	200.00	6,400	8,320	8,320			8,320
3.10 Reconfigure toilet rooms to provide compliant layout and fixtures. (5 toilet rooms)	960	SF	170.00	163,200	212,160	212,160			212,160
3.11 Repair cracking in CMU wall at toilet room B.	20	LF	20.00	400	520		520		520

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
3. BUILDING INTERIORS					COTUIT ELEMENTARY SCHOOL				
3.12 Refinish water-stained wood sill in toilet room B.	4	LF	10.00	40	52		52		52
3.13 Provide compliant door hardware.	32	EA	800.00	25,600	33,280	33,280			33,280
3.14 Repair step cracking in CMU wall at storage room exterior door jamb and top of stair to basement.	10	LF	20.00	200	260		260		260
3.15 Repair water damaged plaster ceiling in storage room.	10	SF	20.00	200	260	260			260
3.16 The concrete stair from the basement to the crawl space door does not have handrails - install rails.	12	LF	80.00	960	1,248		1,248		1,248
3.17 Replace aged casework and sinks in classrooms. (1 sink and 6 LF casework x 8 classrooms)	8	EA	5,500.00	44,000	57,200		57,200		57,200
3.18 Repair cracked glazed cmu units at exterior wall Toilet E below window sill.	6	EA	50.00	300	390		390		390
3.19 Repair step cracking in glazed cmu at Toilet Room E.	10	LF	20.00	200	260		260		260
3.20 Narrow doors throughout - apply for MAAB variance.				0	0	0			0
3.21 Replace exterior hollow metal library east door with severe rust at base of door.	1	EA	2,400.00	2,400	3,120		3,120		3,120

ASSESSMENT

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
3. BUILDING INTERIORS					COTUIT ELEMENTARY SCHOOL				
3.22 Replace deteriorated west exterior library wood door (#12) and frame.	1	EA	3,000.00	3,000	3,900		3,900		3,900
3.23 Replace step cracked (4 units) and repoint painted cmu (8 LF) library east wall.	1	EA	300.00	300	390		390		390
3.24 Replace unadhered and severely worn VAT floor tile in the vestibule north of Room 8 - included in quantities above.				0	0	0			0
3.25 Replace weather stripping exterior hollow metal double doors at vestibule north of Room 8.	6	LF	12.00	72	94		94		94
3.26 Replace metal lockers in corridor.	40	EA	350.00	14,000	18,200		18,200		18,200
3.27 Replace floor access panel in floor of modular storage room.	1	EA	500.00	500	650		650		650
3.28 Repoint cracked cmu mortar joints in storage closet of Classroom 6.	10	LF	20.00	200	260		260		260
3.29 Install sealant in interior open cmu wall control joints throughout the building.	200	LF	5.00	1,000	1,300		1,300		1,300
3.30 Replace threshold at framed door opening to modulars (trip hazard) at floor transition.	8	LF	50.00	400	520	520			520
3.31 Replace water stained acoustical ceiling tiles at vestibule to modulars and throughout modulars.	1,825	SF	8.00	14,600	18,980	18,980			18,980

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
3. BUILDING INTERIORS					COTUIT ELEMENTARY SCHOOL				
3.32 Replace damaged flooring in modular concrete slab.	1,825	SF	10.00	18,250	23,725	23,725			23,725
3.33 Repair gypsum wall in modulars (30 SF) and wood base trim (10 LF) at previous patch.	1	LS	550.00	550	715		715		715
3.34 Repoint step crack in exterior cmu wall in classroom 6 near sill.	4	LF	20.00	80	104		104		104
3.35 Replace double 30" doors with 3' and 2' doors to meet ADA.	10	EA	2,000.00	20,000	26,000	26,000			26,000
3.36 A large opening has been cut in the firewall in the attic space which should be infilled.	25	SF	20.00	500	650	650			650
3.37 Abate asbestos containing pipe insulation.	3,050	LF	10.00	30,500	39,650	39,650			39,650
3.38 Abate boiler and tank insulation.	500	SF	15.00	7,500	9,750	9,750			9,750
3.39 Abate asbestos containing vinyl baseboard.	200	SF	6.00	1,200	1,560	1,560			1,560
3.40 Abate asbestos containing acoustical ceiling tile and provide new.	8,850	SF	8.00	70,800	92,040	92,040			92,040
3.41 Abate interior seam caulk.	650	LF	10.00	6,500	8,450	8,450			8,450
3.42 Abate black sink undercoat.	75	SF	10.00	750	975	975			975

ASSESSMENT

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
3. BUILDING INTERIORS					COTUIT ELEMENTARY SCHOOL				
3.43 Abate black mastic associated with grey floor tile.	110	SF	3.00	330	429	429			429
3.44 Abate exterior door caulk.	160	LF	10.00	1,600	2,080	2,080			2,080
3.45 Remove and dispose of fluorescent light tubes.	1,100	EA	15.00	16,500	21,450	21,450			21,450
3.46 Remove and dispose of fluorescent light ballasts.	400	EA	25.00	10,000	13,000	13,000			13,000
3.47 Remove and dispose of smoke alarms.	20	EA	75.00	1,500	1,950	1,950			1,950
3.48 Remove and dispose of thermostat switches with mercury.	10	EA	75.00	750	975	975			975
3.49 Remove and dispose of fire extinguishers.	15	EA	50.00	750	975	975			975
3.50 Remove and dispose of emergency lights.	20	EA	75.00	1,500	1,950	1,950			1,950
3.51 Remove and dispose of hydraulic door arms.	15	EA	150.00	2,250	2,925	2,925			2,925
3.52 Remove and dispose of emergency exit signs.	20	EA	75.00	1,500	1,950	1,950			1,950
3.53 Remove and dispose of fire pull stations.	15	EA	75.00	1,125	1,463	1,463			1,463

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
3. BUILDING INTERIORS					COTUIT ELEMENTARY SCHOOL				
3.54 Remove and dispose of 100 gallon above ground storage tank (boiler room).	1	EA	5,000.00	5,000	6,500	6,500			6,500
3.55 Remove and dispose of 15 gallons of misc. paint and thinners.	15	EA	20.00	300	390	390			390
3.56 Remove and dispose of 5 gallons of misc. degreasers.	5	EA	20.00	100	130	130			130
3.57 Remove and dispose of 1 gallon of insecticides.	1	EA	20.00	20	26	26			26
3.58 Remove and dispose of electric motors.	1	EA	100.00	100	130	130			130
3.59 Remove and dispose of compressors.	3	EA	200.00	600	780	780			780
3.60 Remove and dispose of propane tank.	1	EA	1,500.00	1,500	1,950	1,950			1,950
Total						900,673	93,863	0	994,536
Total Inflated @ 4% Compounded Annually						974,168	114,199	0	1,088,367

¹Total includes Soft Costs (30%): Contingency, Administration and A/E Fees.

ASSESSMENT

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
4. MECHANICAL									
COTUIT ELEMENTARY SCHOOL									
4.1 Demolition: Remove existing HVAC system including oil fired steam boiler, steam and condensate piping, terminal heating equipment and controls.	17,266	SF	0.75	12,950	16,834	16,834			16,834
4.2 Boiler Plant: Provide New Hot Water Heating Boiler Plant: Replace existing steam boiler plant with new hot water boiler plant including boilers (min 2), pumps, accessories and appurtanences.	1	LS	125,000	125,000	162,500	162,500			162,500
4.3A Fuel Oil Tank - Underground Type: Estimated @ 10,000 Gallons, condition unknown. Potentially replace existing tank including pumps and monitoring system.	1	LS	65,000	65,000	84,500	84,500			84,500
4.3B Convert from Fuel Oil to Natural Gas: Gas service piping allowance.	1	LS	50,000	50,000	65,000	65,000			65,000
4.4 Piping: Replace hot water piping with new valving and insulation.	17,266	SF	5.50	94,963	123,452	123,452			123,452
4.5 Classroom Unit Ventilators: Remove existing Classroom unit ventilators (CUV) and provide new Classroom HVAC system. Existing CUVs are 50+ years old manufactured by Herman Nelson. Parts are generally unavailable and CUVs are noisy and provide poor temperature and ventilation control.	14	EA	8,000	112,000	145,600	145,600			145,600
4.6 Heating & Ventilation Unit: Replace existing Cafeteria-Auditoium heating and ventilation unit as it is old and in poor condition.	1	LS	34,000	34,000	44,200	44,200			44,200

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
4. MECHANICAL COTUIT ELEMENTARY SCHOOL									
4.7 Convector: Replace existing steam convectors with new HW convectors. Existing convectors are 50+ years old and in poor condition.	12	EA	750.00	9,000	11,700	11,700			11,700
4.8 Unit Heaters (UH): Replace existing steam UH with new HW unit heaters. Existing UHs are 50+ years old and in poor condition.	2	EA	1,100	2,200	2,860	2,860			2,860
4.9 Fintube Radiation: Replace existing steam radiation with new hot water radiation. Existing FTR is generally old and in poor condition.	80	LF	110.00	8,800	11,440	11,440			11,440
4.10 Exhaust air fans and associated exhaust ductwork: Replace existing exhaust air fans and associated exhaust ductwork as EFs are old and in poor condition and ductwork is dirty and in poor condition.	15,446	SF	10.50	162,183	210,838	210,838			210,838
4.11 Modular CR HVAC System: Provide replacement ductless split heat pump AC unit and supplemental electric radiation heating for modular classroom to replace existing.	2	EA	10,000	20,000	26,000	26,000			26,000
4.12 Modular Classroom Ventilation: Provide ventilation air system for modulars as it does not have a mechanical ventilation system.	2	EA	7,500	15,000	19,500	19,500			19,500
4.13 HVAC Controls: Replace existing pneumatic automatic temperature controls with new DDC (direct digital controls).	17,266	SF	5.00	86,330	112,229	112,229			112,229
Total						1,036,653	0	0	1,036,653
Total Inflated @ 4% Compounded Annually						1,121,244	0	0	1,121,244

¹Total includes Soft Costs (30%): Contingency, Administration and A/E Fees.

ASSESSMENT

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
5. ELECTRICAL									
COTUIT ELEMENTARY SCHOOL									
5.1 Main Services and Distribution - Maintain the existing switchboard and panels; add add new panels for computer load.	15,446	SF	2.50	38,615	50,200			50,200	50,200
5.2 Convenience Power - Branch circuitry: Separate computer circuits from general purpose circuits.	15,446	SF	1.50	23,169	30,120			30,120	30,120
5.3 Fire Alarm System: Replace with a current addressable system with voice evacuation.	15,446	SF	3.00	46,338	60,239			60,239	60,239
5.4 Interior Lighting System: The existing lighting should be upgraded with LED fixtures with dimmable drivers with occupancy sensors and dimming photo sensors. An automated lighting control system should be provided throughout.	15,446	SF	10.00	154,460	200,798			200,798	200,798
5.5 Exterior Lighting: Replace existing wall pack lighting and circuitry with dimmable LED fixtures on a one for one basis and provide new where required to cover egresses.	30	EA	1,500	45,000	58,500			58,500	58,500
5.6 Emergency Lighting System: Add emergency battery units to provide proper egress coverage. Add emergency lighting at exterior doors to provide adequate coverage.	15,446	SF	1.00	15,446	20,080			20,080	20,080
5.7 Security Intrusion/CCTV/Card Access: Replace existing security system with an integrated electronic security system consisting of intrusion, card access, and CCTV.	15,446	SF	5.00	77,230	100,399			100,399	100,399
5.8 Lightning Protection: Install a system of lightning preventors.	1	EA	20,000	20,000	26,000			26,000	26,000

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
5. ELECTRICAL									
COTUIT ELEMENTARY SCHOOL									
5.9 Communication/Clock System: Install a new wireless clock and VOIP system should be installed to replace the present system. The paging system will utilize IP speakers which are controlled through software and connected to telephone system.	15,446	SF	3.00	46,338	60,239			60,239	60,239
5.10 Data System: The data system should be updated as a continuing operations program. It appears that is presently in a continuous updating stage. The wireless access points should be provided with (2) CAT 6A Cables. Fiber optic cable from MDF to IDF's should be 50 micron laser optimized cable that can be used for 10 GBPS links. (The construction cost does not include technology equipment or network electronics.)	15,446	SF	2.50	38,615	50,200			50,200	50,200
Total						0	0	656,774	656,774
Total Inflated @ 4% Compounded Annually						0	0	972,186	972,186

¹Total includes Soft Costs (30%): Contingency, Administration and A/E Fees.

ASSESSMENT

Work Item Description	Qty	Unit	Unit Cost	Total	¹ Total w/ Soft Costs	Scope 1 (Immediate)	Scope 2 (2-5 years)	Scope 3 (6-10 years)	Totals
6. FIRE PROTECTION AND PLUMBING					COTUIT ELEMENTARY SCHOOL				
6.1 Automatic Sprinkler Systems: The building does not contain an automatic sprinkler system. If building undergoes a major renovation or building addition, then an automatic sprinkler system must be installed throughout the building, including crawl space area.	17,266	SF	7.25	125,179	162,732		162,732		162,732
6.2 Plumbing Fixtures: Install high efficiency fixtures to reduce water consumption.	26	EA	3,500	91,000	118,300.00	118,300			118,300
6.3 Domestic Cold Water System: Due to age, replace system in its entirety.	17,266	SF	3.00	51,798	67,337	33,669			33,669
6.4 Domestic Hot Water Systems: Replace water heater with natural gas fired, high efficient condensing water heater.	1	EA	30,000	30,000	39,000	39,000			39,000
6.5 LP Gas System: Consider converting to natural gas. Utility Company would need to extend the nearest gas main approximately 450 linear feet from Narrows Way.	1	LS	40,000	40,000	52,000		52,000		52,000
6.6 Drainage System: Video inspect existing cast iron drainage piping. Replace existing galvanized venting. Provide new Mech Room floor drain and sump pump.	1	LS	30,000	30,000	39,000		39,000		39,000
Total						190,969	253,732	0	444,701
Total Inflated @ 4% Compounded Annually						206,552	308,704	0	515,256

¹Total includes Soft Costs (30%): Contingency, Administration and A/E Fees.

1. SITE



1.1: Open play area behind school



1.2: Playground behind school



1.3: Underground fuel storage tank



1.4: Bituminous pavement at rear of school in poor condition



1.5: Wooded area behind school with picnic tables

PHOTOGRAPHS

2. BUILDING ENVELOPE



2.1: Stained and deteriorated mortar at front entrance pediment



2.2: Scrape and paint soffit, rake and eave trim throughout



2.4: Typical rusted steel lintel to be scraped, primed and painted



2.5: Typical cracked brick and mortar joint at corner; this condition occurs in numerous locations



2.6: Step cracking from lower window sill to adjacent higher window sill



2.8: Cupola requires repainting

PHOTOGRAPHS



2.9: Brick chimney and cap require repair



2.12: Typical condition of steel lintel at window



2.20: Deteriorated wood siding at modulars



2.21: Deteriorated wood trim at modulars



2.26: Noncompliant railings at stair to boiler room



2.33: Algae growth at bottom of wall

PHOTOGRAPHS



2.34: Damaged, displaced mesh wood-framed screens



2.40: Damaged, aged kitchen louver

3. BUILDING INTERIORS



3.1: No HP access to stage; door and stair at right rear of stage



3.2: Deteriorated toilet room door to toilet



3.5: Small kitchen area with limited equipment



3.7: Asbestos floor tile in lobby area

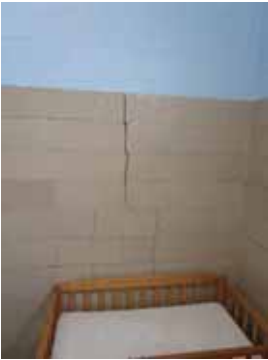


3.8: Remove fixtures in storage closet



3.10: Noncompliant toilet rooms throughout the building

PHOTOGRAPHS



3.11: CMU crack in toilet room B



3.13: Noncompliant door hardware



3.17: Typical classroom sink and casework



3.26: Metal lockers in poor condition



3.30: Uneven, damaged threshold between corridor and modular wing



3.32: Delaminated flooring on slab at modulars



3.35: Double 30" doors do not comply to egress requirements



3.36: An opening has been cut in the attic firewall

PHOTOGRAPHS

4. MECHANICAL



4.1: Existing steam boiler



4.2: Existing condensate receiver and pump



4.3: Boiler breeching



4.4: Boiler chimney



4.5: Boiler fuel oil pumps



4.6: Fuel oil monitor



4.7: Parking Lot – Fuel oil tank access covers



4.8: Classroom unit ventilator



4.9: Classroom unit ventilator installed between two classrooms



4.10: Steam convector



4.11: Cafetorium sidewall supply diffusers



4.12: Cafetorium low return registers

PHOTOGRAPHS



4.13: Roof exhaust ventilators



4.14: Attic – Exhaust ductwork



4.15: Modular classroom – ductless AC unit



4.16: Modular classroom – outdoor condenser unit



4.17: Pneumatic ATC compressor



4.18: Typical thermostat



4.19: Pneumatic control panel



4.20: Pneumatic control panel

PHOTOGRAPHS

5. ELECTRICAL



5.1: Main building riser pole



5.2: Modular building riser pole



5.3: Modular CR service



5.4: Main switchboard



5.5: Main circuit breaker switchboard



5.6: Distribution panel

PHOTOGRAPHS



5.7: Typical panel in corridor



5.8: Typical panel in gym area



5.9: Outlets installed using surface raceway



5.10: Outlets installed using surface raceway



5.11: Typical classroom lighting



5.12: Gymnasium lighting

PHOTOGRAPHS



5.13: Modular classroom lighting



5.14: Office lighting



5.15: Exterior wall sconce



5.16: Battery unit



5.17: Lit exit sign



5.18: Exit light with emergency light heads



5.19: Fire alarm control panel



5.20: Fire alarm pull station



5.21: Fire alarm horn/strobe



5.22: Knox box



5.23: Master clock



5.24: Local sound system

PHOTOGRAPHS



5.25: Airphone at front door



5.26: Airphone at rear door



5.27: Surveillance camera

6. FIRE PROTECTION & PLUMBING



6.1: Typical water closet



6.2: Wall hung urinals



6.3: Wall hung lavatory



6.4: Drinking fountain



6.5: Classroom sink



6.6: Janitor's sink

PHOTOGRAPHS



6.7: Kitchen Pre-rinse sink and dishwasher



6.8: In-floor grease interceptor



6.9: Domestic water service & meter



6.10: Make-up water backflow preventer



6.11: Domestic water heater



6.12: Water piping in crawl space



6.13: Recirculation pumps



6.14: Exterior Propane Tank



6.15: Cast iron piping in crawl space



6.16: Galvanized steel vent

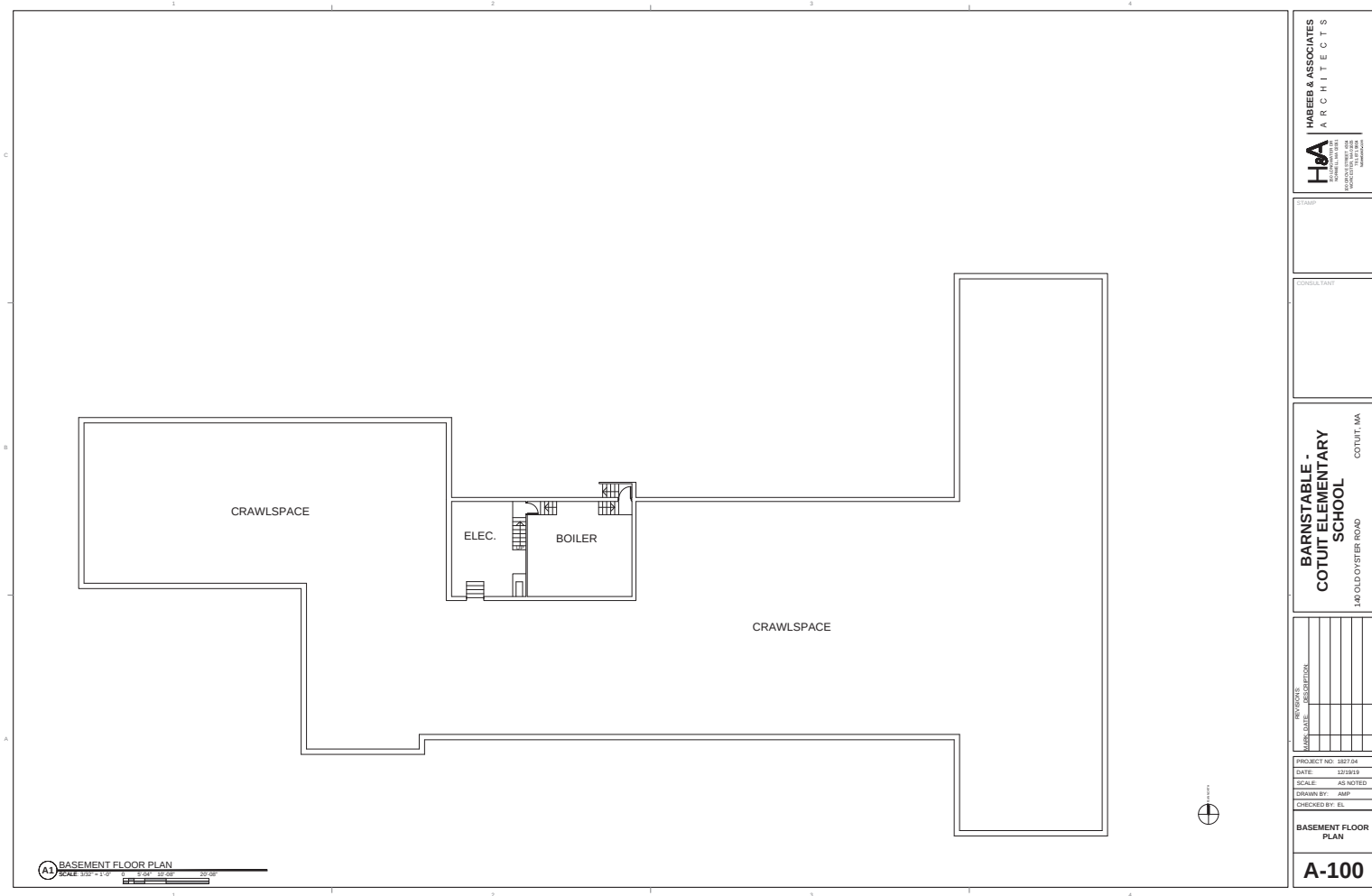


6.17: Boiler Room drain clogged

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Appendix A: H&A Drawings

A-100 BASEMENT FLOOR PLAN
A-101 FIRST FLOOR PLAN



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**Appendix B: Mechanical, Electrical, Plumbing and Fire Protection
Systems Narrative**

Cotuit Elementary School, Barnstable, MA
Plumbing Existing Conditions Systems Report
J#568 012 00.00
L#69745/Page 1/December 24, 2019

HEATING, VENTILATION & AIR CONDITIONING (HVAC)

Heating System:

The majority of the building is heated by an oil fired low pressure steam plant. The steam heating plant consists of a single cast iron, oil fired HB Mills 44 series, low pressure steam boiler that provides approximately 1933 MBH capacity heating to the building steam heating equipment. The Modular classrooms are not heated by the steam boiler plant. The boiler serves steam classroom unit ventilators, convectors, cabinet unit heaters and fin tube radiation heating. The boiler plant appears to have been maintained throughout the years while the building has been abandoned and the boiler appears to be maintaining adequate heating temperatures within the building. However, the boiler is original 1956 vintage and appears to be in poor condition. The boiler is served by an oil-fired burner manufactured by Industrial Combustion and installed circa 1985. Combustion air for the boiler plant is brought into the boiler room through a single louver. Combustion gases are discharged from the boilers to a metal flue breeching and masonry chimney.

Steam and condensate piping are routed from the boiler room to the building heating equipment. The majority of steam and condensate piping appears to be steel construction and appears original to the building. Many sections of piping appear to be uninsulated or have damaged insulation. A floor mounted steam condensate receiver and simplex pump is located in the basement boiler room adjacent to the boiler. The condensate receiver and simplex pump appear to be in poor condition.

The boiler operates on No. 2 fuel oil. There is a 10,000 gallon underground fuel oil tank located behind the building next to the boiler room. There is a Veeder Root Fuel Oil monitoring system installed. The condition of the fuel oil tank is unknown, however the fuel oil

monitor and fuel oil pumps appear to be functional. There did appear to be oil leaks within the boiler room associated with the boiler fuel oil burner and/or piping.

Classrooms are heated by original 1956 vintage AAF Herman Nelson Unit Ventilators that appears to be in poor condition. Classrooms are typically exhausted by a single room exhaust grille that is ducted to a central exhaust ventilator distribution system. The exhaust grilles and ductwork appear to be 1956 vintage, in poor and soiled condition. Two classrooms appear to have been divided, and room wall dividers were built around the unit ventilators. New unit ventilators, or dedicated alternative HVAC systems, should be provided for all classrooms.

The Administration offices are heated by a combination of perimeter wall mounted steam fin tube radiation and convector heating. The Administration office areas do not have a mechanical ventilation system installed and are ventilated through the use of operable windows.

Hallways and restrooms are typically heated by steam convectors, which are original 1956 vintage and in poor condition. There does not appear to be code required ventilation in Hallways. Exhaust air in toilet rooms appears to be marginal with most exhaust grilles appearing to be soiled and rusted.

The Cafetorium is served by steam heating and ventilation unit located in mezzanine level above the kitchen. The units are ducted to high sidewall supply diffusers and low wall return registers. The units are original 1956 vintage and in need of replacement. The kitchen has a kitchen exhaust hood and exhaust air fan. The kitchen hood does not have a fire suppression system installed.

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Plumbing Existing Conditions Systems Report
J#568 012 00.00
L#69745/Page 2/December 24, 2019

The two modular classrooms are heated and air conditioned by ductless wall mounted heat pump AC units that are connected with refrigeration piping and control wiring to associated outdoor condensing units. The units' functionality appears to be marginal. Both the indoor and outdoor units appear to be in poor condition and in need of replacement. Classrooms doors appear to be left open to allow heating from adjacent areas to heat these spaces while the building has been abandoned. The modular classrooms do not appear to have a mechanical ventilation system installed. The office area and hallway are of the modular classroom wing are heated by wall mounted electric baseboard heating that appears to be in poor condition.

The building HVAC system, with the exception of the modular classrooms, is primarily controlled by a pneumatic control system consisting of control panels, pneumatic air tubing, and an air compressor and air dryer system. The control system appears to be original 1956 vintage with several components having been repaired and replaced since the original installation.

Recommendations:

While the existing low pressure oil fired steam heating system appears to have been well maintained and operational, the building HVAC system is in poor condition and has exceeded its expected useful service life. Therefore, we recommend that the building HVAC system is replaced in its entirety. In addition in order to provide code required ventilation, and a higher degree of thermal comfort for the building we would recommend that the existing system is upgraded. HVAC system replacement and upgrade scope of work would include the following:

- Replace existing steam heating system with new hot water heating system.
- Potentially convert from fuel oil to natural gas as fuel source for boiler plant or replace the existing fuel oil distribution system. Fuel Oil Tank condition should be reviewed further if it is elected to keep utilizing No. 2 fuel oil as the building's heating fuel source.
- Replace existing classroom unit ventilators.
 - Potentially install alternate HVAC system with central ventilation that would eliminate Unit Ventilators. This would likely require additional ceiling work, attic space work or structural reinforcement work for new air handling equipment and central ventilation ductwork. Due to existing floor to floor height restrictions, ductwork would likely have to be exposed or concealed in soffits in many areas.
 - Potentially add air conditioning to classrooms.
- Replace Cafetorium heating and ventilation units. Potentially add air conditioning to the Cafetorium.
- Replace existing Administration fin tube radiation heating. Provide new ventilation and air conditioning for administration office areas.
- Replace existing Hallway and toilet room steam convectors with new hot water convector. Hallways should be provided with code required ventilation air.

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Cotuit Elementary School, Barnstable, MA
Plumbing Existing Conditions Systems Report
J#568 012 00.00
L#69745/Page 3/December 24, 2019

- Replace existing utility/storage room unit heaters with new hot water unit heaters.
- Replace existing exhaust fans, ventilators and associated exhaust air ductwork distribution system.
- Replace existing kitchen exhaust hood and fan.
- Replace modular classroom ductless heat pump AC systems. Add new ventilation system to the modular classrooms.
- Replace the building control systems with a new direct digital control (DDC) and building energy management system (BMS).

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Cotuit Elementary School, Barnstable, MA
Electrical Existing Conditions Systems Report
J#568 012 00.00
L#69747/Page 1/December 24, 2019

ELECTRICAL:

Executive Summary:

The Cotuit Elementary School original electrical systems are in good condition; the systems had been upgraded in 2003. There have been upgrades to the main breaker switchgear, fire alarm system and selected lighting.

Electrical Service:

The building is fed with an underground service from the utility company pole. The service is rated at 600 ampere, 120/208V, 3 Phase, 4 Wire. There are also two Modular Buildings that share a 120/240V, 1 Phase, 3 Wire overhead service with secondary meter, a 200 amp service. The facility has a total of (2) secondary utility meters.

Electrical Distribution System:

The main distribution panel is rated at 600 amps with the main circuit breaker set to 600 amps. The main circuit breaker is manufactured by Eaton Cutler-Hammer.

The remainder of the electrical distribution in the building is in very good condition.

Existing panelboards in the building are of circuit breaker type and manufactured by Eaton Cutler-Hammer. There is sufficient spare capacity on the existing panelboards. Most panelboards are flush mounted and located in corridors.

There are also two Modular Buildings each fed with its own services. The service is fed overhead.

The meter number for the Modular Building could not be read due to tree overgrowth, and Main Building meter number is #5099317.

Branch Circuits/Wiring Devices:

Branch circuits and data wiring have been added over the years and most outlets are installed using surface raceway.

Lighting System:

Interior lighting is typically 2x4 recessed troffers in corridors with acrylic lenses and retrofit LED lamps in areas with dropped ceilings and acoustical ceiling tiles. All classroom locations contain two lamp pendent wraparound fixtures with retrofit LED lamps. In general, interior lighting is in fair condition.

Gymnasium lighting consists of four T5 lamp fluorescent high bay fixtures with lens and wire guards, however the light level is inadequate.

Lighting is controlled via local line voltage switches. There are no automated lighting control system/occupancy sensors or daylight harvesting systems installed in the school, but a few wall mounted occupancy sensors were observed.

Exterior lighting consists of building mounted mini-sconces with LED sources, HID wall packs and some incandescent flood lights. These fixtures do not provide adequate light. There is no emergency egress lighting at exterior doors. There are no pole mounted lights for parking areas.

Cotuit Elementary School, Barnstable, MA
Electrical Existing Conditions Systems Report
J#568 012 00.00
L#69747/Page 2/December 24, 2019

Emergency Power System:

There is no generator at this facility. Emergency lighting is accomplished using central plug-in emergency battery units and self-contained exit signs. Some exit signs are unlit. The condition of these units varies from fair to good condition. A test was not done to confirm code compliance at the time of the visit.

Fire Alarm System:

The fire alarm system consists of an addressable Notifier System 500 with horn/strobe notification appliances. The school has full coverage for detection. The system is in poor condition and it does not meet current code. Educational use group is required to have a voice evacuation system. The master box is located outside the main entry adjacent to the key repository box, Master Box #3441.

Miscellaneous/ Communications/ Security:

There is no BDA, Bi-Directional Antenna System installed.

The existing incoming communications services run overhead between the riser pole and the Main Electric Room.

The MDF and IDFs are not located within dedicated rooms.

The data cabling is generally CAT5, run in exposed raceways throughout the facility. The hardwired outlets are generally installed within surface wiremold raceways.

The master clock system is not functional.

Each classroom has a wall mounted phone to communicate with the main office's desktop main phone system. The phone system is manufactured by Iwatsu. Public paging system speakers are located in corridors and other large spaces.

Wireless coverage was not observed throughout the school.

Card access proximity readers exist at front and rear exterior doors. CCTV video surveillance cameras exist at front and rear exterior doors and interior of building. The CCTV system is connected to an NVR located at the Office.

Lightning Protection System:

There is no Lightning Protection System installed.

Recommendations:

1. The Modular Buildings' lighting is in fair condition and light levels are adequate; however, occupancy sensors should be added for energy savings.
2. All of the existing lighting in the main building should be upgraded to LED fixtures with integral dimming drivers for reduction in energy consumption and reoccurring lamp replacement costs.
3. An addressable lighting control system with occupancy and daylight dimming sensors should supplement the new LED lighting to further increase energy savings.

4. Where the budget does not allow for an addressable lighting control system, local occupancy sensors should be installed in all spaces and local daylight photo dimmers installed where natural daylight is available.
5. Exterior lighting is in poor condition and the site is under lit. Supplemental LED/dark sky compliant fixtures should be installed.
6. A test should be performed to determine the compliance of the current emergency battery units providing the required emergency egress lighting. Exterior egress lighting should be provided at all egress doors.
7. An exterior diesel or natural gas stand-by generator within a weatherproof sound attenuated enclosure should be provided along with two transfer switches. The generator should serve emergency lighting, freeze protection, HVAC equipment, refrigeration, communications and security systems at a minimum. Where it is designated to serve emergency lighting, a second transfer switch will be required with a dedicated life safety panel within a 2-hour rated closet to serve selected egress lights and exit signs.
8. The existing fire alarm system should be upgraded to an addressable system with voice evacuation in order to comply with current code. A mass notification system should be provided integral to the fire alarm system.
9. A system of lightning protection should be provided. The system will be installed in compliance with the provisions of the latest "Code for Protection Against Lightning" for buildings as adopted by the National Fire Protection Association and the Underwriters' Laboratories, Inc. for a UL Master Label System. The lightning protection equipment will include air terminals, conductors, conduits, fasteners, connectors, ground rods, etc.
10. Provide a BDA, Bi-Directional Antenna System.
11. Increase wireless to full coverage with one (1) access point per classroom.
12. Upgrade all existing infrastructure cabling with Category 6 cabling.
13. Provide dedicated rooms for MDF and IDF locations with A/C and cable tray.
14. Connect MDF, IDFs, and Security/Card Access systems to a Central UPS system with UPS connected to the generator.
15. Provide an IP public address and wireless master clock system.
16. Add additional surveillance cameras to CCTV system.

FIRE PROTECTION

The building is not protected with an automatic sprinkler system.

In general, Massachusetts General Law M.G.L. c.148, s.26G requires that any existing building over 7,500 square feet that undergoes **major** alterations, or building additions, must be sprinklered. Examples of major alterations are demolition or reconstruction of existing ceilings or installation of suspended ceilings; removal of sub flooring; demolition and/or reconstruction of walls, doors, or stairways; or removal or relocation of a significant portion of the building's mechanical or electrical systems. Alterations are considered major when such work affects 33% or more of the building area or when total work (excluding sprinkler installation) is equal to 33% or more of the assessed value of the building.

If the proposed project scope exceeds these thresholds, then the existing building and any additions will require installation of an automatic sprinkler system. A new dedicated fire water service will be required to supply the building. All heated areas shall be protected with a wet type sprinklers system and the unheated attic shall be protected with a dry type sprinkler system.

PLUMBING

Executive Summary:

Presently, the Plumbing Systems serving the building are cold water, hot water, sanitary, waste and vent system, and LP gas. On-site septic system and municipal water service the Building.

The majority of the plumbing systems are original to the building. The plumbing systems, while continuing to function, have served their useful life. Due to its age, completely new water piping systems are recommended.

The plumbing fixtures are in poor to fair condition. In general, the fixtures appear to have served their useful life. Current Access Code requires accessible fixtures wherever plumbing is provided. In terms of the water conservation fixtures, their use is governed by the provisions of the Plumbing and Building Code. Essentially, the code does not require these fixtures to be upgraded, but where new fixtures are installed, as may be required by other codes or concerns, the new fixtures need to be water conserving type fixtures. All new fixtures are recommended.

Cast iron is used for sanitary drainage piping with some galvanized steel vent piping. Where visible, the cast iron pipe appears to be in fair condition. Smaller waste pipe sizes appear to be copper. In general, the drainage piping can be reused where adequately sized for the intended new use. Rainwater from the sloped roof is collected with a series of gutters and downspouts which connect to a below grade drainage system.

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Plumbing Existing Conditions Systems Report
J#568 012 00.00
L#69728/Page 2/December 24, 2019

Fixtures:

The water closets are floor mounted vitreous china with manually operated flush valves.

Urinals are wall hung vitreous china with manually operated flush valves.

Lavatories are wall hung vitreous china. The majority of lavatories have been retrofitted with metering type faucets. Some lavatories are fitted with manual hot and cold water handle faucets.

Drinking fountains consist of wall hung vitreous china fountains.

Janitor's sinks are generally trap standard mounted, enameled cast iron sinks. Faucets are not equipped with vacuum breakers.

Classroom sinks are single bowl, stainless steel, counter mounted with manual gooseneck faucets.

In modular addition there is a laundry style tub with manual faucet.

Kitchen area fixtures are in fair condition. The pot washing sink is fitted with an in-floor grease interceptor. The dishwasher is not connected to a grease interceptor as would be required by current code. Hand sink has a sensor type faucet.

There are no accessible fixtures in the building.

Water Systems:

The main domestic water service is located in the Building crawl space. The service is 4" in size and includes a 2" meter. There is no backflow preventer on the service. The majority of the domestic distribution piping is located in the crawl space below the building. Piping, where exposed, appears to be copper with sweat joints. The majority of the piping is insulated. Pipe insulation appears to have asbestos.

Domestic hot water is generated through an oil-fire tank type water heater. Water heater is a Bock model 71E, with 173,000 BTUH input and 68 gallons of storage. System supplies two temperatures; 140 deg. F for the kitchen and 120 deg. F for the remaining building fixtures. There is a thermostatic mixing valve on the system. The hot water systems are recirculated.

There is a reduced pressure backflow preventer in the boiler room which supplies the heating system make-up water.

LP Gas:

There is an exterior propane tank in the rear of the building. The propane supplies gas to the oil-fired heating boiler pilot. Gas is not provided anywhere else in the building.

Gas piping is black steel with screwed joints and fittings.

Natural gas is currently not available in Old Oyster Road. Utility Company would need to extend the nearest gas main approximately 450 linear feet from Narrows Way.

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Plumbing Existing Conditions Systems Report
J#568 012 00.00
L#69728/Page 3/December 24, 2019

Drainage Systems:

Cast iron is used for sanitary drainage. Where visible, the cast iron pipe appears to be in fair condition. Smaller waste pipe sizes appear to be copper. Vent piping is galvanized steel.

Boiler room floor drain is clogged and does not appear to be draining.

In general, the cast iron drainage piping can be reused even in a major renovation where adequately sized for the intended new use.

Recommendations:

Replace existing domestic water piping in its entirety.

Install high efficiency plumbing fixtures to reduce water consumption and reduce impact on sewage disposal system.

Domestic water heater is nearing the end of its life expectancy. Recommend conversion to natural gas high-efficient condensing water heaters, sized for the building use.

Replace galvanized vent piping.

Video inspect existing sanitary drainage.

Replace Boiler Room floor drain and sump pump.

Appendix C: EFI Global – Asbestos and Hazardous Materials Survey



January 7, 2020

Ms. Elizabeth Lewis, P.E.
Project Manager/Structural Engineer
Habeeb & Associates Architects
150 Longwater Drive, Suite 201
Norwell, Massachusetts 02061

RE: **Asbestos & Hazardous Materials Survey Report**
Former Cotuit Elementary School
140 Old Oyster Road
Cotuit, Massachusetts
EFI Project No. 020.00836

Dear Ms. Lewis:

EFI Global Inc. (EFI) is pleased to provide this survey report to Habeeb and Associates Architects for a pre-renovation hazardous materials survey of the Former Cotuit Elementary School, located at 140 Old Oyster Road in Cotuit, Massachusetts (Site). EFI performed the survey on December 12, 2019 using an USEPA-accredited and Massachusetts Department of Labor Standards (Mass DLS) certified asbestos inspector, Mr. John Vaz. The pre-renovation survey included an inspection of the building for suspect asbestos-containing materials, sampling of representative painted surfaces and coatings for lead in paint, and an inventory of universal waste and other hazardous materials that may require special handling and disposal.

EFI is pleased to provide environmental consulting services to Habeeb & Associates Architects. If you have any questions regarding the contents of this report, or need additional assistance, please do not hesitate to contact either of the undersigned at 800-659-1202. Thank you for this opportunity to serve your environmental needs.

Sincerely,
EFI Global, Inc.

John Vaz
Senior Project Manager

Jennifer L. Archacki
Environmental Service Line Principal

ASBESTOS & HAZARDOUS MATERIALS SURVEY REPORT

Former Cotuit Elementary School
140 Old Oyster Road
Cotuit, Massachusetts



Prepared for:

Ms. Elizabeth Lewis, P.E.
Habeeb & Associates Architects
150 Longwater Drive, Suite 201
Norwell, Massachusetts 02061

Prepared by:



155 West Street, Suite 6
Wilmington, Massachusetts 01887

January 7, 2020

EFI Project Number 020.00836

TABLE OF CONTENTS

INTRODUCTION	1
1.0 ASBESTOS CONTAINING MATERIALS SURVEY	1
1.1 <i>Survey Methodology and Analytical Methods</i>	1
1.2 <i>Asbestos-Containing Materials Findings</i>	3
1.3 <i>Asbestos Survey Limitations</i>	4
1.4 <i>Recommendations</i>	4
2.0 LEAD TESTING	5
2.1 <i>Summary of Findings</i>	5
2.2 <i>Regulatory Implications and Recommendations</i>	5
3.0 PCB/MERCURY-CONTAINING LIGHT FIXTURES (UNIVERSAL WASTE)	7
3.1 <i>Summary of Findings</i>	7
4.0 OTHER HAZARDOUS MATERIALS	7

TABLES

TABLE 1 – ASBESTOS-CONTAINING MATERIALS INVENTORY
TABLE 2 – UNIVERSAL WASTE & HAZARDOUS MATERIALS INVENTORY

ATTACHMENTS

ATTACHMENT A – PHOTOGRAPHS
ATTACHMENT B – ASBESTOS BULK SAMPLE LABORATORY REPORT
ATTACHMENT C – LEAD PAINT CHIP SAMPLING LABORATORY REPORT
ATTACHMENT D – ACM BULK SAMPLE LOCATION DRAWINGS
ATTACHMENT E – ASBESTOS LOCATION DRAWINGS

EXECUTIVE SUMMARY

EFI Global (EFI) performed a pre-renovation survey for asbestos-containing materials (ACM), testing for lead painted surfaces, and a visual inventory for regulated/potentially hazardous building materials that may require special handling and disposal prior to the start of planned renovation activities at the Former Cotuit Elementary School, located at 140 Old Oyster Road in Cotuit, Massachusetts. The survey was performed on December 12, 2019 by a USEPA-accredited and Massachusetts Department of Labor Standards (Mass DLS) certified asbestos inspector, Mr. John Vaz (Certification No.: A1000270). The survey included all accessible interior and exterior areas of the building.

Based on the findings of the asbestos survey, the following ACMs were identified:

- Corrugated paper (i.e. "Aircell) pipe insulation
- Pipe fitting insulation
- White block pipe insulation
- 9" x 9" Black streak floor tile
- 9" x 9" Purple streak floor tile
- Black sink undercoat
- Interior grey seam caulk
- Black mastic associated with 12" x 12" grey mottled floor tile
- Exterior door caulk

No asbestos was detected in any of the other suspect materials sampled and analyzed by the laboratory. The identified ACMs should be removed and disposed by a Massachusetts-licensed Asbestos Contractor prior to the start of planned renovation/demolition activities.

EFI performed roof sampling during the survey to determine whether asbestos-containing roofing materials are present. Due to the roof access hatch being nailed shut, and icy weather conditions at the time of the survey, EFI could not access the flat top roof. As such, roofing materials in this area are assumed to be asbestos-containing unless bulk sampling and analysis proves otherwise.

Additionally, EFI observed a grey boiler breaching insulation in the basement boiler room. This material was not accessible since the boiler was still in operation and due to height restrictions. EFI observed signage on the door of the boiler room indicating the presence of asbestos but no labels were present on the grey breaching insulation. As such, the grey boiler breaching insulation as well as interior boiler components are considered assumed asbestos-containing material.

The lead content of all samples collected from representative painted surfaces were below the laboratory limit of detection of 0.036% lead by weight.

A visual inventory for other potentially hazardous or regulated building materials was performed. EFI observed smoke alarms, fire extinguishers, hydraulic door arms, emergency lights, an above ground storage tank (AST), an underground storage tank (UST) mercury switches, compressors, and assorted paints and chemicals within the building. Lastly, EFI observed both PCB and non-PCB containing light ballasts in the building.

INTRODUCTION

EFI Global (EFI) performed a thorough survey of the building, including a survey for asbestos-containing materials (ACM), lead painted surfaces, a visual inventory for polychlorinated biphenyl (PCB) containing building materials and an assessment of regulated/potentially hazardous materials that may require special handling and disposal at the Former Cotuit Elementary School, located at 140 Old Oyster Road in Cotuit, Massachusetts (Site). The survey was performed on December 12, 2019 by Mr. John Vaz of EFI, and was conducted as part of a feasibility study of the building to determine future use. As such, our survey included all accessible interior and exterior areas of the building that will be impacted by the planned renovations (Project Area). The building was vacant at the time of EFI's survey, and limited destructive survey methods utilizing hand tools were used to inspect representative wall and ceiling cavities, flooring areas or other areas where concealed suspect materials may be present. Bulk samples of accessible suspect ACMs and painted surfaces were submitted for laboratory analysis to determine asbestos and lead content, respectively.

It is EFI's understanding that the building will no longer be used as a school K-12 after renovations are complete. As such, the building will no longer require compliance with the US Asbestos Hazard Emergency Response Act (AHERA) regulation. EFI's survey was not performed as an update to existing AHERA reports, and re-inspections.

1.0 ASBESTOS CONTAINING MATERIALS SURVEY

1.1 Survey Methodology and Analytical Methods

The asbestos survey was performed by a USEPA-accredited and Massachusetts Department of Labor Standards (MassDLS) certified asbestos inspector, Mr. John Vaz (License No.: A1000270).

Bulk samples of observed suspect materials within the building were submitted under chain of custody protocol to EMSL Analytical, Inc. (EMSL) of Woburn, Massachusetts, a Massachusetts-licensed laboratory to determine asbestos content. EMSL is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for bulk asbestos fiber analysis, which is administered by the National Institute of Standards and Testing (NIST). A total of 89 samples were analyzed by EMSL. Samples were analyzed with a standard 3-day turnaround time using polarized light microscopy (PLM) in accordance with United States Environmental Protection Agency (EPA) Method 600/R-93/116. The PLM/DS analytical method is modeled after 40 CFR Part 763, Subpart F, Attachment A: "Interim Method for the Determination of Asbestos in Bulk Insulation Samples." By using the PLM/DS method, a trained microscopist is able to identify and distinguish between asbestos group minerals and other fibrous materials such as cellulose (paper), mineral (rock), wood, or glass fiber. The quantity of each of these substances is estimated on a visual basis and recorded as a percent. If a material contains greater than or equal to one percent asbestos, it is considered an asbestos-containing material (ACM) under Massachusetts asbestos regulations.

Photographs depicting suspect ACMs sampled by EFI are presented in Attachment A. Copies of the asbestos laboratory analytical reports are presented in Attachment B. Drawings showing the locations of bulk samples and locations of identified ACMs are included in Attachments D and E. An inventory of the types, estimated quantities, condition and location of ACMs identified during the survey is presented in Table 1.

EFI conducted a thorough inspection of all accessible interior and exterior areas of the building. EFI used limited exploratory demolition methods to inspect areas with difficult access such as wall and ceiling cavities, multi-layer flooring systems, restroom wet wall chases or other locations where hidden suspect materials may be present.

Building materials exist in the form of thermal systems insulation (TSI), surfacing materials, and miscellaneous materials. Bulk samples representing individual homogeneous areas of suspect ACM, (materials that are determined to be uniform in color and texture and installed in the same construction period) were collected in a randomly distributed manner, in accordance with the EPA sampling protocol outlined in 40 CFR 763:

Surfacing materials

(e.g., wall and ceiling plaster) - In a randomly distributed manner, collect bulk samples of surfacing materials, representative of each homogeneous area, and not assumed to be ACM.

- Collect at least three bulk samples from each homogeneous area that is less than or equal to 1,000 ft².
- Collect at least five bulk samples from each homogeneous area that is greater than 1,000 ft², but less than or equal to 5,000 ft².
- Collect at least seven bulk samples from each homogeneous area that is greater than 5,000 ft².

Thermal systems insulation

(e.g., pipe fitting insulation, tank insulation, etc.) In a randomly distributed manner, collect at a minimum, three (3) bulk samples of thermal systems insulation material, representative of each homogeneous area, and not assumed to be ACM.

- Collect, at a minimum, one (1) bulk sample of patched thermal systems insulation, representative of each homogeneous area, and not assumed to be ACM, providing the section of patch was less than 6 linear or square feet.
- Collect, at a minimum, three (3) representative bulk samples of each insulated mechanical system not assumed to be ACM, including, but not limited to cementitious material used on pipe fittings such as tees, elbows, or valves. Representative sampling was conducted in a manner sufficient as to identify whether each homogeneous area is either asbestos or non-asbestos containing.
- Bulk samples are not required to be collected from any homogeneous area where the accredited asbestos inspector has determined that the thermal systems insulation is a non-suspect material (i.e., fiberglass, foam glass, rubber, or any other non-ACM).

Miscellaneous materials

(e.g., floor and ceiling tiles) - Collect, at a minimum, two (2) representative bulk sample of each miscellaneous material assumed to be ACM, including, but not limited to ceiling tiles, floor tiles, associated

Ms. Elizabeth Lewis, P.E.
EFI Project No.: 020.00836

Former Cotuit Elementary School
140 Old Oyster Road, Cotuit, MA

floor tile mastic, etc. Representative sampling was conducted in a manner sufficient as to identify whether each homogenous area is either asbestos or non-asbestos containing.

1.2 Asbestos-Containing Materials Findings

If a material contains greater than or equal to one percent asbestos, it is considered an asbestos-containing material (ACM) under Massachusetts Department of Environmental Protection asbestos regulations. The following suspect ACMs sampled by EFI were reported by EMSL as containing no detectable concentration of asbestos:

- | | |
|---|---|
| <ul style="list-style-type: none"> • Tar paper on wood floor in Attic below cupola • Pink boiler breaching insulation* • 12" x 12" Cream streak floor tile and associated tan paper/mastic • Gypsum board • Joint compound • 2' x 4' Rough white finish ceiling tile • Yellow carpet mastic • 12" x 12" White with blue streak floor tile and associated yellow mastic • Faux wood flooring panel • 12" x 12" Beige floor tile and associated yellow mastic and grey leveler • 12" x 12" White with multi-color fleck floor tile and associated orange mastic • Ceramic baseboard tile grout • Concrete block wall grout | <ul style="list-style-type: none"> • Roof shingle and associated vapor barrier – pitched roof • Black mastic associated with 9" x 9" Black streak floor tile • Ceramic floor tile grout • Black mastic associated with 9" x 9" purple streak floor tile • 1" x 1" Dot ceiling tile with fiberglass core • 2' x 4' Crow feet ceiling tile • 1' x 1' Irregular dot ceiling tile • 2' x 2' white dented ceiling tile • Skim coat plaster • Coarse coat plaster • 12" x 12" black streak floor tile and associated mastic • 2' x 2' Crow feet ceiling tile • Wood baseboard adhesive • 12" x 12" Grey mottled floor tile** • Exterior window caulk |
|---|---|

The following suspect ACMs sampled by EFI were reported by EMSL as containing greater than or equal to one percent asbestos, the Massachusetts definition for classification as ACM:

- | | |
|--|---|
| <ul style="list-style-type: none"> • Corrugated paper (i.e. "aircell") pipe insulation • Pipe fitting insulation • White pipe insulation • 9" x 9" Black streak floor tile • Black sink undercoat | <ul style="list-style-type: none"> • 9" x 9" Purple streak floor tile • Interior grey seam caulk • Black mastic associated with 12" x 12" grey mottled floor tile • Exterior door caulk |
|--|---|

*A grey boiler breaching insulation was observed over the pink breaching insulation at the top of the boiler breaching line that was inaccessible due to height and the fact that the boiler was still operational. As such, the grey boiler breaching insulation and the interior boiler components are considered assumed asbestos-containing materials unless bulk sampling and analysis proves otherwise.

**Floor tile to be managed as ACM due to ACM mastic contamination.

An inventory of the types, locations and estimated quantities of ACMs identified during the survey is presented in Table 1.

Copies of the asbestos laboratory analytical reports are presented in Attachment B.

1.3 Asbestos Survey Limitations

EFI performed the survey in all accessible interior and exterior building areas that were reasonably accessible at the time of the survey. Our scope of work included using limited destructive sampling methods (i.e. exploratory demolition using hand tools) where possible. At the time of the survey, EFI performed the destructive testing in areas behind gypsum board ceilings and walls and wooden floorboards. What about restroom wet walls?

EFI performed roof sampling during the survey to determine whether asbestos-containing roofing materials are present. EFI was assisted by Aulson Roofing who professionally patched and repaired the bulk sampling locations. Due to the roof access hatch being nailed shut, and icy weather conditions experienced at the time of the survey, EFI could not access the flat top roof. As such, roofing materials in this area are assumed asbestos-containing until bulk sampling and analysis can be performed.

Additionally, EFI observed a grey boiler breaching insulation in the basement boiler room. This material was not accessible due to height and the fact that the boiler was still operational at the time of the survey. As such, the grey boiler breaching insulation and the interior boiler components are considered assumed asbestos-containing material until bulk sampling and analysis can be performed.

Any hidden materials uncovered during future renovation/demolition activities, and not identified within this report, must be assumed to contain asbestos until laboratory analysis proves otherwise. EFI's survey did not include an assessment for underground steam lines and underground transit water/sewer lines that may be present at the Site. Lastly, EFI did not perform an inspection below grade on the foundation due to the presence of pavement and the fact that the ground was frozen at the time of this survey.

1.4 Recommendations

EFI recommends that areas not evaluated due to height restrictions and boiler usage be surveyed prior to the start of renovation activities. Materials assumed to contain asbestos should be sampled and analyzed to determine asbestos content or be treated as ACM during renovations. All confirmed and assumed ACMs that will be impacted by the proposed renovation activities should be properly removed, packaged, and disposed by a Massachusetts-licensed Asbestos Contractor in accordance with applicable federal, state and local regulations. EFI recommends development of a technical specification for the project to assist with Contractor selection and bidding. Third party air monitoring must be performed during and/or at the completion of abatement activities for re-occupancy of the work areas. EFI is available to assist with abatement management, contractor oversight, and air monitoring as required by applicable state and federal asbestos regulations.

If suspect ACMs other than the above-referenced materials are identified during renovation activities, EFI recommends that they be assumed ACM until sampled and analyzed by a Massachusetts-accredited

asbestos inspector using a Massachusetts-licensed asbestos analytical laboratory prior to disturbance.

Additionally, if areas/suspect materials noted in Section 1.3 that were not assessed (i.e., grey boiler insulation, flat top roof, subgrade foundation) are to be impacted in future renovations, then these areas and any suspect materials encountered should be assessed for asbestos content prior to beginning renovation activities.

2.0 LEAD TESTING

EFI performed limited testing for lead in paint on representative and accessible painted surfaces within the building. Paint chips were collected from presentative painted/coated surfaces to determine lead content. Lead analysis was conducted by EMSL of Woburn Massachusetts, with a standard 5-day turnaround time. EMSL analyzed the samples using atomic absorption spectrometry (AAS) in accordance with US EPA method SW846-7420.

2.1 Summary of Findings

A total of ten (10) paint chip samples were collected from throughout the building. The lead content of all the samples analyzed were below the laboratory limit of detection of 0.036% lead by weight. A copy of the lead paint laboratory analytical report is presented in Attachment C. All Contractors performing work that disturbs any concentration of lead must comply with the OSHA Lead in Construction Standard, 29 CFR 1926.62, Lead.

A copy of the lead paint laboratory analytical report is presented in Attachment C.

2.2 Regulatory Implications and Recommendations

2.2.1 Regulatory Implications

OSHA defines any detectable concentration of lead in paint as a potential lead exposure hazard to workers performing construction or demolition work that disturbs these surfaces, as even small concentrations of lead can result in elevated employee exposures. The level of exposure varies based upon the lead concentration, type of work performed, method of removal, and other workplace conditions. Since these conditions can vary greatly, the OSHA Lead Construction Standard (29 CFR 1926.62) requires exposure monitoring or the use of historical or objective monitoring data to ensure that employee exposures do not exceed the OSHA action level of 30 micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$) and the OSHA permissible exposure limit (PEL) of 50 $\mu\text{g}/\text{m}^3$.

OSHA requires that contractors monitor employee exposures if coated surfaces with paint containing lead are impacted during construction or demolition/demolition. Contractors and employers of staff who may disturb these materials are obligated to perform a negative exposure assessment in accordance with OSHA regulations to document that exposure to lead does not exceed the OSHA action level and the PEL.

OSHA states that the employer must treat employees as if they would be exposed above the PEL until the employer 1) performs an exposure assessment that documents that employees are not exposed above the PEL or 2) can supply prior data regarding the same type of work which may exempt them from the standard. The OSHA Lead Construction Standard applies to many construction activities including the following:

- manual demolition of structures, manual scraping, manual sanding, and use of heat gun where lead-containing coatings or paints are present;
- abrasive blasting enclosure movement and removal;
- power tool cleaning;
- lead burning;
- using lead-containing mortar or spray painting with lead-containing paint;
- abrasive blasting, rivet busting, or welding, cutting, or burning on any structure where lead-containing coatings or paint are present;
- cleanup activities where dry expendable abrasives are used; and
- any other task the employer believes may cause exposure in excess of the PEL.

The contractor must provide respiratory protection, protective work clothing and equipment, change areas, hand washing facilities, biological monitoring, and training until an exposure assessment has determined that the work activity will result in an exposure below the PEL. Additional requirements under the standard include a written compliance program, as well as, record keeping.

The contractor must also characterize and dispose of all dust, debris, and blast media (if applicable) in accordance with US EPA and RIDOH regulations. This includes waste characterization of dust, debris and blast media generated during paint removal activities via the toxicity characteristic leaching procedure (TCLP).

2.2.2 Waste Disposal Implications

Waste disposal is governed by the EPA's Resource Conservation and Recovery Act (RCRA) regulations, which distinguish between solid wastes and hazardous wastes. Solid wastes include general construction debris and are subject to minimum handling, transportation, and landfill disposal requirements under RCRA regulations. Hazardous wastes, including certain lead-containing materials, are subject to restrictions designed to prevent the hazardous materials from entering the environment. Lead waste is classified as hazardous or non-hazardous based on the results of the TCLP testing. The leachability test measures whether or not lead leaches from the waste in excess of the regulated level of 5.0 mg/L. If the results of the TCLP analysis exceed this level, the waste must be handled, transported and disposed as a hazardous waste in an approved waste site, reclamation facility or incinerator site. EPA's regulations require the TCLP test be performed so that it represents the matrix and material of the waste stream.

2.2.3 Recommendations

It is recommended that construction or demolition personnel conducting work at the facility comply with applicable OSHA Lead Construction Standard requirements during all construction activities at the Site.

3.0 PCB/MERCURY-CONTAINING LIGHT FIXTURES (UNIVERSAL WASTE)

The primary concern regarding the disposal of used light ballasts is the health risk associated with exposure to PCBs. Fluorescent light ballasts contain a small capacitor that may contain high concentrations of PCBs (greater than 90% pure PCBs or 900,000 ppm). These chemical compounds were widely used as insulators in electrical equipment such as capacitors, switches, and voltage regulators through the late 1970s. Fluorescent light ballasts manufactured prior to 1979 may contain small quantities of PCBs. Recently manufactured fluorescent light ballasts are required to have "No PCBs" labels. Light ballasts that do not have "No PCBs" labels should be assumed to contain PCBs and treated as PCB-containing and handled/disposed of accordingly. In addition, if light ballasts do not have "No PCBs" labels, the manufacturer can be contacted to ascertain the presence of PCBs. Following the ban of PCB production, in 1979 manufacturers began using di (2-ethylhexyl) phthalate (DEHP) as a replacement to PCBs. DEHP is listed as a hazardous substance under the USEPA's Superfund regulations. Generators discarding of light ballasts should take the same precautions with their DEHP ballasts as they do with their PCB ballasts to avoid any future liabilities.

The primary concern regarding the disposal of fluorescent light tubes is the health risk associated with exposure to mercury. Fluorescent light bulbs contain a small quantity of mercury that can be harmful to the environment and to human health when improperly managed. Mercury is regulated under EPA's Resource Conservation and Recovery Act (RCRA). To minimize the potential of mercury contamination, EFI recommends that fluorescent light bulbs be disposed/ recycled in accordance with applicable regulations.

3.1 Summary of Findings

EFI performed a visual inspection of representative fluorescent light bulbs and ballasts located in the building. A visual inspection of representative ballasts indicate the presence of both unlabeled ballasts and ballasts that are marked as containing "No PCBs". EFI recommends all unlabeled ballasts be treated as PCB-containing, and that all ballasts be removed from the building and disposed in accordance with applicable federal, state, and local regulations. In addition, EFI recommends recycling of the fluorescent light tubes in accordance with applicable state and federal regulations. A detailed inventory of fluorescent light tubes and ballasts is provided in Table 2.

4.0 OTHER HAZARDOUS MATERIALS

EFI performed a visual inspection and inventory of potentially hazardous chemicals or items, and petroleum and mechanical equipment located within the building that may require special handling and disposal in conjunction with renovation activities. EFI observed smoke alarms, fire extinguishers, hydraulic door arms, emergency lights, an above ground storage tank, an underground storage tank, mercury switches, compressors, and assorted paints and chemicals within the building. An inventory of the observed building-related hazardous materials is presented in Table 2.

It is recommended that identified Other Hazardous Materials be properly removed, disposed or sent to a recycling facility a qualified contractor. If proposed renovation activities will impact the observed AST and USTs, the tanks should be properly drained and handled by a qualified contractor.

TABLE 1
Asbestos-Containing Materials Inventory
December 12, 2019
Former Cotuit Elementary School, 140 Old Oyster Road, Cotuit, MA

Material Description	Material Location	Estimated Quantity
Aircell pipe insulation; Pipe fitting insulation; White block pipe insulation	Basement – crawlspace throughout	2,850 LF
	Each classroom/office (approximately 10 LF associated with wall radiators)	200 LF
	Bathroom/Kitchen Wet Walls	300 LF
9" x 9" Black Streak Floor Tile	1 st Floor Main and Side Hallways, Front Lobby, Kitchen Side Entrance, Library Hall, Library Exit Doors	3,350 SF
Black Sink Undercoat	1 st Floor – Classrooms 3, 7-11; Library hall (7 Sinks)	75 SF
9" x 9" Purple streak floor tile	1 st Floor - Classrooms 3-11; Teacher's Lounge, FR-1, FR-2, Library, Library Classroom, and Kitchen Storage	8,750 SF
Grey interior seam caulk	1 st Floor Main and Side Hallways	250 LF
	1 st Floor Classrooms/Offices (approximately 20 LF in each classroom)	400 LF
Black mastic associated with 12" x 12" Grey mottled floor tile	1 st Floor – Gym Storage Room	110 SF
Exterior Door Caulk	Main Building – Exterior Doors (8 Doors)	160 LF
Roofing Material (Assumed)	Roof – Flat Top Roof	1,200 SF
Grey Boiler Breaching Insulation (Assumed)	Basement – Boiler Room	250 SF
Internal Boiler Components (Assumed)	Basement – Boiler Room	250 SF

SF – square feet
LF – linear feet

TABLE 2

Universal Waste & Hazardous Materials Inventory
December 12, 2019
Former Cotuit Elementary School, 140 Old Oyster Road, Cotuit, MA

Material Description (Hazard)	Material Location	Estimated Quantity
Fluorescent Light Tubes	Throughout Building (includes approximately 200 bulbs in boxes in Side Hall Janitor Closet)	1,100 Units
Fluorescent Light Ballasts	Throughout Building	400 Units
Smoke Alarms	Throughout Building	20 Units
Mercury Switch (Thermostat)	Throughout Building	10 Units
Fire Extinguishers	Throughout Building	15 Units
Emergency Lights	Throughout Building	20 Units
Hydraulic Door Arms	Throughout Building	15 Units
Emergency Exit Signs	Throughout Building	20 Units
Fire Pull Stations	Throughout Building	15 Units
Above Ground Storage Tank (AST) (Approx. 100 gallon - Empty)	Basement Boiler Room	1 Unit
Misc. paints/thinners	Classroom 1 (in flammable cabinet)	15 Gallons
Misc. degreasers	Basement Boiler Room	5 Gallons
Insecticide	Side Hall Janitor Closet	1 Gallon
Electric motors	Basement Boiler Room	1 Unit
Compressors	Basement Boiler Room	3 Units
Propane Tank	Exterior – Rear of Building	1 Unit
Heating Oil Underground Storage Tank	Exterior – Rear of Building	1 Unit

ATTACHMENT A
PHOTOGRAPHS

Ms. Elizabeth Lewis, P.E.
EFI Project No.: 020.00836

Former Cotuit Elementary School
140 Old Oyster Road, Cotuit, MA



Figure 1: Tar paper on wood floor of attic under cupola



Figure 2: ACM pipe insulation/fittings in basement crawlspace



Figure 3: Pink boiler breeching insulation. Note assumed grey boiler breeching insulation at top



Figure 4: Boiler unit (in operation, assumed ACM components inside)



Figure 5: Storage tank in Basement Boiler Room



Figure 6: Inside flammable storage cabinet in Classroom 1



Figure 7: 12" x 12" Cream streak floor tile



Figure 8: 2' x 4' Crow feet ceiling tile (Left), 2' x 4' Rough finish white ceiling tile (Right)



Figure 9: Faux wood floor panel



Figure 10: 12" x 12" White with blue streak floor tile



Figure 11: 12" x 12" Beige floor tile



Figure 12: 12" x 12" White with multicolor fleck floor tile



Figure 13: ACM 9" x 9" Black streak floor tile (mastic is non-asbestos)



Figure 14: Ceramic baseboard tile grout, concrete block wall grout

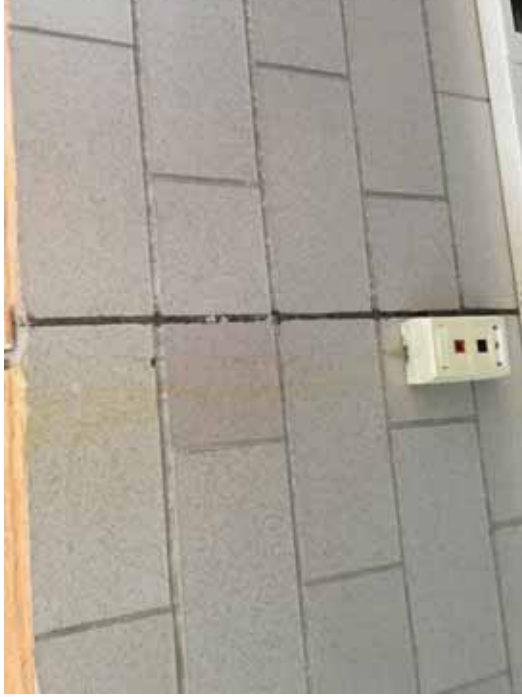


Figure 15: ACM Interior seam caulk



Figure 16: ACM 9" x 9" purple streaked floor tile (Mastic is not asbestos)



Figure 17: ACM black sink undercoat

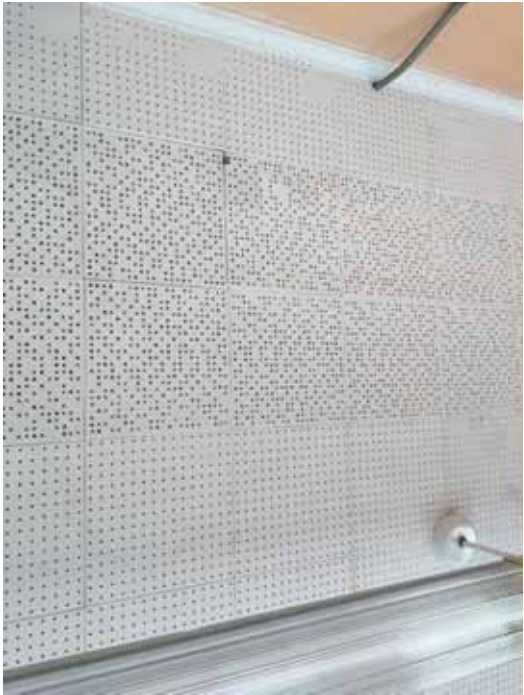


Figure 18: 1'x1' Dot ceiling tile (sides), 1'x1' Irregular dot ceiling tile (center)



Figure 19: 2' x 2' Crow feet ceiling tile



Figure 20: 12" x 12" Black streak floor tile (bottom left). Remaining floor tile is ACM 9"x9" Black streak floor tile.



Figure 21: Multi-purpose room. Note no paper under floor.



Figure 22: 12" x 12" Grey mottled floor tile (underlain by ACM mastic)



Figure 23: UST location behind building



Figure 24: Propane tank at the rear of the building



Figure 25: Exterior window caulk

ATTACHMENT B

ASBESTOS LABORATORY REPORT

Ms. Elizabeth Lewis, P.E.
EFI Project No.: 020.00836

Former Cotuit Elementary School
140 Old Oyster Road, Cotuit, MA



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EMSL Order: 131909633
Customer ID: EAF166
Customer PO:
Project ID:

Attention: John Vaz
EFI Global, Inc.
155 West Street
Suite 6
Wilmington, MA 01887
Project: 020.00/Cotuit Elementary School; 140 Old Oyster Rd; Cotuit, MA

Phone: (978) 688-3736
Fax: (978) 688-5494
Received Date: 12/13/2019 9:30 AM
Analysis Date: 12/17/2019 - 12/18/2019
Collected Date: 12/12/2019

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

Sample	Description	Appearance	Non-Asbestos		Asbestos % Type
			% Fibrous	% Non-Fibrous	
001A <i>131909633-0001</i>	Attic - Center Below Cupola - Tar Paper on Wood Floor	Black Non-Fibrous Homogeneous	65% Cellulose	35% Non-fibrous (Other)	None Detected
001B <i>131909633-0002</i>	Attic - Center Below Cupola - Tar Paper on Wood Floor	Black Non-Fibrous Homogeneous	65% Cellulose	35% Non-fibrous (Other)	None Detected
002A <i>131909633-0003</i>	Basement Crawl Space - Air Cell Pipe Insulation	Gray Fibrous Homogeneous	15% Cellulose	50% Non-fibrous (Other)	10% Amosite 25% Chrysotile
002B <i>131909633-0004</i>	Basement Crawl Space - Air Cell Pipe Insulation				Positive Stop (Not Analyzed)
002C <i>131909633-0005</i>	Basement Crawl Space - Air Cell Pipe Insulation				Positive Stop (Not Analyzed)
003A <i>131909633-0006</i>	Basement Crawl Space - Pipe Fitting Insulation	White Fibrous Homogeneous	25% Glass	45% Non-fibrous (Other)	10% Amosite 20% Chrysotile
003B <i>131909633-0007</i>	Basement Crawl Space - Pipe Fitting Insulation				Positive Stop (Not Analyzed)
003C <i>131909633-0008</i>	Basement Crawl Space - Pipe Fitting Insulation				Positive Stop (Not Analyzed)
004A <i>131909633-0009</i>	Basement Crawl Space - White Pipe Insulation	White Fibrous Homogeneous		60% Non-fibrous (Other)	30% Amosite 10% Chrysotile
004B <i>131909633-0010</i>	Basement Crawl Space - White Pipe Insulation				Positive Stop (Not Analyzed)
004C <i>131909633-0011</i>	Basement Crawl Space - White Pipe Insulation				Positive Stop (Not Analyzed)
005A <i>131909633-0012</i>	Basement Boiler Room - Boiler Breaching Insulation	Tan Fibrous Homogeneous	15% Synthetic	85% Non-fibrous (Other)	None Detected
005B <i>131909633-0013</i>	Basement Boiler Room - Boiler Breaching Insulation	Tan Fibrous Homogeneous	15% Synthetic	85% Non-fibrous (Other)	None Detected
005C <i>131909633-0014</i>	Basement Boiler Room - Boiler Breaching Insulation	Tan Fibrous Homogeneous	15% Synthetic	85% Non-fibrous (Other)	None Detected
006A <i>131909633-0015</i>	Classroom 1 - 12x12 Cream Streaked Floor Tile	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
006B <i>131909633-0016</i>	Classroom 1 - 12x12 Cream Streaked Floor Tile	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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EMSL Order: 131909633
Customer ID: EAF166
Customer PO:
Project ID:

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

Sample	Description	Appearance	Non-Asbestos		Asbestos % Type
			% Fibrous	% Non-Fibrous	
007A 131909633-0017	Classroom 1 - Assoc. Mastic/Paper	Tan Non-Fibrous Homogeneous	35% Synthetic	65% Non-fibrous (Other)	None Detected
007B 131909633-0018	Classroom 1 - Assoc. Mastic/Paper	Tan Non-Fibrous Homogeneous	35% Synthetic	65% Non-fibrous (Other)	None Detected
008A 131909633-0019	Classroom 1 - Sheetrock	White Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
009A 131909633-0020	Classroom 1 - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
010A 131909633-0021	Classroom 1 - 2x4 Rough Finish White Ceiling Tile	White Non-Fibrous Homogeneous	45% Cellulose 40% Min. Wool	15% Non-fibrous (Other)	None Detected
008B 131909633-0022	Classroom 2 - Sheetrock	Brown/White Non-Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
009B 131909633-0023	Classroom 2 - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
010B 131909633-0024	Classroom 2 - 2x4 Rough Finish White Ceiling Tile	White Fibrous Homogeneous	45% Cellulose 40% Min. Wool	15% Non-fibrous (Other)	None Detected
011A 131909633-0025	Classroom 2 - Yellow Carpet Mastic	Yellow Non-Fibrous Homogeneous	5% Synthetic 2% Glass	93% Non-fibrous (Other)	None Detected
011B 131909633-0026	Classroom 2 - Yellow Carpet Mastic	Yellow Non-Fibrous Homogeneous	5% Synthetic 2% Glass	93% Non-fibrous (Other)	None Detected
012A 131909633-0027	Classroom 2 - 12x12 White w/ Blue Streak Floor Tile	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
012B 131909633-0028	Classroom 2 - 12x12 White w/ Blue Streak Floor Tile	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
013A 131909633-0029	Classroom 2 - Assoc. Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
013B 131909633-0030	Classroom 2 - Assoc. Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
014A-Brown Layer 131909633-0031	Classroom 2 - Faux Wood Flooring Panel	Brown Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
014A-Blue Layer 131909633-0031A <i>Blue panel under brown panel.</i>	Classroom 2 - Faux Wood Flooring Panel	Blue Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
014B 131909633-0032	Classroom 2 - Faux Wood Flooring Panel	Black Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
015A 131909633-0033	Add-on Back Hallway - 12x12 Beige Floor Tile	Beige Non-Fibrous Homogeneous	3% Cellulose	97% 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

Sample	Description	Appearance	Non-Asbestos		Asbestos % Type
			% Fibrous	% Non-Fibrous	
016A	Add-on Back Hallway - Assoc. Mastic	Yellow Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
131909633-0034					
017A	Add-on Back Hallway - Leveler Under 015A Tie/Mastic	Gray Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
131909633-0035					
017B	Add-on Back Hallway - Leveler Under 015A Tie/Mastic	Gray Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
131909633-0036					
015B	Room by Classroom 1 - 12x12 Beige Floor Tile	Beige Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
131909633-0037					
016B	Room by Classroom 1 - Assoc. Mastic	Yellow Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
131909633-0038					
018A	Room by Classroom 1 - 12x12 White w/ Multicolor Fleck Floor Tile	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
131909633-0039					
018B	Room by Classroom 1 - 12x12 White w/ Multicolor Fleck Floor Tile	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
131909633-0040					
019A	Room by Classroom 1 - Assoc. Orange Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
131909633-0041					
019B	Room by Classroom 1 - Assoc. Orange Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
131909633-0042					
020A	Main Bldg - Side Hall Janitor Closet - Ceramic Baseboard Tile Grout	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
131909633-0043					
021A	Main Bldg - Side Hall Boys Room - Concrete Block Wall Grout	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
131909633-0044					
022A	Roof - Roof Shingle	Black Fibrous Homogeneous	15% Glass	85% Non-fibrous (Other)	None Detected
131909633-0045					
022B	Roof - Roof Shingle	Black Non-Fibrous Homogeneous	15% Glass	85% Non-fibrous (Other)	None Detected
131909633-0046					
023A	Roof - Vapor Barrier Under Shingle on Wood Deck	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
131909633-0047					
023B	Roof - Vapor Barrier Under Shingle on Wood Deck	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
131909633-0048					
024A	Main Building - Side Hall - 9x9 Black Steak Floor Tile	Black Non-Fibrous Homogeneous		90% Non-fibrous (Other)	10% Chrysotile
131909633-0049					
025A	Main Building - Side Hall - Assoc. Black Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
131909633-0050					
026A	Main Building - Side Hall - Interior Gray Seam Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
131909633-0051					

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Sample	Description	Appearance	Non-Asbestos		Asbestos % Type
			% Fibrous	% Non-Fibrous	
027A 131909633-0052	Main Bldg - Side Hall Girls Bathroom - Ceramic Floor Tile Grout	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
009C 131909633-0053	Add-on Back Hallway - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
028A 131909633-0054	Classroom 3 - Black Sink Undercoat	Black Non-Fibrous Homogeneous		90% Non-fibrous (Other)	10% Chrysotile
029A 131909633-0055	Classroom 3 - 9x9 Purple Streak Floor Tile	Purple Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
030A 131909633-0056	Classroom 3 - Assoc. Black Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
031A 131909633-0057	Wall B/T Classrooms 3&4 - Sheetrock	White Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
032A 131909633-0058	Classroom 4 - 1x1 Dot Ceiling Tile w/ Fiberglass Core	White/Yellow Fibrous Homogeneous	90% Min. Wool	10% Non-fibrous (Other)	None Detected
028B 131909633-0059	Library - Black Sink Undercoat				Positive Stop (Not Analyzed)
033A 131909633-0060	Library - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
033B 131909633-0061	Library - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
033C 131909633-0062	Library - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
031B 131909633-0063	Wall B/T Classrooms 5&6 - Sheetrock	White Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
034A 131909633-0064	Main Hallway - 2x11 Crow Feet Ceiling Tiles	Gray/White Fibrous Homogeneous	60% Cellulose 20% Min. Wool	20% Non-fibrous (Other)	None Detected
034B 131909633-0065	Main Hallway - 2x11 Crow Feet Ceiling Tiles	Gray/White Fibrous Homogeneous	60% Cellulose 20% Min. Wool	20% Non-fibrous (Other)	None Detected
026B 131909633-0066	Main Hallway - Interior Gray Seam Caulk	Gray Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
024B 131909633-0067	Main Hallway - 9x9 Black Streak Floor Tile				Positive Stop (Not Analyzed)
025B 131909633-0068	Main Hallway - Assoc. Black Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
032B 131909633-0069	Classroom 2 - 1x1 Dot Ceiling Tile	White/Yellow Fibrous Homogeneous	90% Min. Wool	10% Non-fibrous (Other)	None Detected



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EMSL Order: 131909633
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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos	
			% Fibrous	% Non-Fibrous	% Type	% Type
035A	Classroom 2 - 1x1 Irregular Dot Ceiling Tile	Gray/White Fibrous Homogeneous	60% Cellulose 20% Min. Wool	20% Non-fibrous (Other)	None Detected	
131909633-0070						
035B	Classroom 9 - 1x1 Irregular Dot Ceiling Tile	Gray/White Fibrous Homogeneous	60% Cellulose 20% Min. Wool	20% Non-fibrous (Other)	None Detected	
131909633-0071						
029B	Classroom 10 - 9x9 Purple Streak Floor Tile				Positive Stop (Not Analyzed)	
131909633-0072						
030B	Classroom 10 - Assoc. Black Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected	
131909633-0073						
036A	Teachers Lounge - Ceiling - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected	
131909633-0074						
036B	Teachers Lounge - Ceiling - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected	
131909633-0075						
036C	Teachers Lounge - Ceiling - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected	
131909633-0076						
037A	Teachers Lounge - Ceiling - Coarse Coat Plaster	Gray Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected	
131909633-0077						
037B	Teachers Lounge - Ceiling - Coarse Coat Plaster	Gray Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected	
131909633-0078						
037C	Teachers Lounge - Ceiling - Coarse Coat Plaster	Gray Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected	
131909633-0079						
038A	Front Lobby - 12x12 Black Streak Floor Tile	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected	
131909633-0080						
038B	Front Lobby - 12x12 Black Streak Floor Tile	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected	
131909633-0081						
039A	Front Lobby - Assoc. Black Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected	
131909633-0082						
039B	Front Lobby - Assoc. Black Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected	
131909633-0083						
040A	Front Lobby - 2x2 Crow Feet Ceiling Tile	Gray/White Fibrous Homogeneous	55% Cellulose 30% Min. Wool	15% Non-fibrous (Other)	None Detected	
131909633-0084						
040B	Front Lobby - 2x2 Crow Feet Ceiling Tile	Gray/White Fibrous Homogeneous	55% Cellulose 30% Min. Wool	15% Non-fibrous (Other)	None Detected	
131909633-0085						
027B	Front Office - Bathroom - Ceramic Floor Tile Grout	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected	
131909633-0086						
041A	Gym - Wood Baseboard Adhesive	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected	
131909633-0087						
041B	Gym - Wood Baseboard Adhesive	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected	
131909633-0088						

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Page 5 of 6



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Sample	Description	Appearance	Non-Asbestos		Asbestos	
			% Fibrous	% Non-Fibrous	% Type	% Type
042A 131909633-0089	Gym Storage - 12x12 Gray Mottled Floor Tile	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)		None Detected
042B 131909633-0090	Gym Storage - 12x12 Gray Mottled Floor Tile	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)		None Detected
043A 131909633-0091	Gym Storage - Assoc. Mastic	Black/Yellow Non-Fibrous Homogeneous		92% Non-fibrous (Other)		8% Chrysotile
043B 131909633-0092	Gym Storage - Assoc. Mastic					Positive Stop (Not Analyzed)
044A 131909633-0093	Main Building Windows - Exterior Window Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)		None Detected
044B 131909633-0094	Main Building Windows - Exterior Window Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)		None Detected
045A 131909633-0095	Main Building Doors - Exterior Door Caulk	Gray Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)		None Detected
045B 131909633-0096	Main Building Doors - Exterior Door Caulk	Gray Non-Fibrous Homogeneous		97% Non-fibrous (Other)		3% Chrysotile
020B 131909633-0097	Kitchen - Ceramic Baseboard Tile Grout	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)		None Detected
021B 131909633-0098	Front Lobby - Ceramic Block Wall Grout	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)		None Detected

Analyst(s)

Elizabeth Sturfs (46)
Valerica Stanca (43)



Steve Grise, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. 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. All samples received in acceptable condition unless otherwise noted. 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. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA NVLAP Lab Code 101147-0, CT PH-0315, MA AA000188, RI AAL-139, VT AL998919, Maine Bulk Asbestos LB-0039

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BOSTON NORTH

131909633

C-35

BULK SAMPLE CHAIN OF CUSTODY FORM

Report to (Your Name):	John Vcz		Bill To:	Accounts Payable
Company:	EFI Global, Inc.		Address:	Same
Address:	155 West Street Suite 6		City, State, Zip:	Same
City, State, Zip:	Wilmington, MA 01887		Telephone:	800-659-1202
			Fax:	978-688-5494
Project Information				
Project No. and Description:	020-00 Colant Elementary School - 140 Old St. for Rel. Colant NMA			
Email Report to:	Lynda.McDermott@efiglobal.com; Sean.Duffy@efiglobal.com; Jessica.Rauseo@efiglobal.com			
Alternate (Your Email):	John.Vcz@efiglobal.com			
Requested Turnaround Time:				
☐ 3 hour	☐ 1 day (24hr)	☐ 2 day (48hr)	☒ 3 day (72 hr)	☐ 4 day (96 hr)
			☐ 1 week	☐ 2 week
Media and Methodology				
Type of Analysis:	P/M Asbestos			
Notes:	Please analyze all plaster and joint compound samples.			
Check for Positive Stop: ☒				

Sample ID	Type of Material	Location
001A,B	Two Paper on Wood Floor	Attic - Center Below Capsule
002A,B,C	Air Cell Pipe Insulation	Basement Central Space
003A,B,C	Pipe Fitting Insulation	" " "
004A,B,C	White Pipe Insulation	" " "
005A,B,C	Boiler Breaching Insulation	Basement Boiler Room
006A,B	1212 Cream Streaked Floor Tile	Classroom 1
007A,B	Associated Master/Reper	" " "
008A	Sheetrock	" " "
009A	Joint Compound	" " "
010A	2x4 Rough Finish White Ceiling Tile	" " "
008B	Sheetrock	Classroom 3

Total Number of Samples Submitted: _____ Date Collected: 12/12/19

Samplers Name: John Vcz Samplers Signature: *[Signature]*

Relinquished By (EFI): *[Signature]* FEDEX Date: 12/18/19 Time: _____

Received By (Lab): _____ Date: 12/30 Date: 12/31 2019 Time: _____

Sample ID	Type of Material	Location
009B, 0	Joint Compound	Classroom 2
010B	2x4 Rough Finish White Ceiling Tile	" "
011A,B	Yellow Carpet Mastic	" "
012A,B	12x12 White w/ Blue Struck Floor Tile	" "
013A,B	Associated Yellow Mastic	" "
014A,B	Faux Wood Flooring Panel	" "
015A	12x12 Beige Floor Tile	Addon Beige Hallway
016A	Associated Mastic	" "
017A,B	Leveler under 015A Tile/Mastic	" "
015B	12x12 Beige Floor Tile	Room By Classroom 1
016B	10x10 Associated Mastic	" "
016A,B	12x12 White w/ Multicolor Fleck Floor Tile	" "
017A,B	Associated Orange Mastic	" "
020A	Ceramic Backboard Tile Grout	Main Bldg - Side Hall Junior Closet
021A	Concrete Black Wall Grout	Main Bldg - Side Hall Boys Room
022A,B	Roof Shingle	Roof
023A,B	Vapor Barrier Under Shingle on Wood Deck	" "
024A	19 Black Struck Floor Tile	Main Building - Side Hall
025A	Associated Black Mastic	" "
026A	Interior Grey Seem Chalk	" "
027A	Ceramic Floor Tile Grout	Main Bldg - Side Hall Girls Bathroom
009C	Joint Compound	Addon Beige Hallway
028A	Black Sink Undercoat	Classroom 3
029A	9x9 Purple Struck Floor Tile	" "
030A	Assoc. Black Mastic	" "
031A	Sheetrock Shetrock	Wall BT Classrooms 304
032A	1x1 Dot Ceiling Tile w/ Fiberglass core	Classroom 4
026B	Black Sink Undercoat	Library
033A,B,C	Joint Compound	Library
031B	Shetrock	Wall BT Classrooms 50C

REC'D *MC* ~~ENCLOSURE~~ DEC 13 2019

ATTACHMENT C

LEAD PAINT LABORATORY REPORT

Ms. Elizabeth Lewis, P.E.
EFI Project No.: 020.00836

Former Cotuit Elementary School
140 Old Oyster Road, Cotuit, MA

**EMSL Analytical, Inc.**

5 Constitution Way, Unit A, Woburn, MA 01801

Phone/Fax: (781) 933-8411 / (781) 933-8412

<http://www.EMSL.com> bostonlab@emsl.comEMSL Order: 131909623
CustomerID: EAF66
CustomerPO:
ProjectID:

Attn: John Vaz

EFI Global, Inc.

155 West Street

Suite 6

Wilmington, MA 01887

Phone: (978) 688-3736
Fax: (978) 688-5494
Received: 12/13/19 9:30 AM
Collected: 12/12/2019

Project: 020.00438/Cotuit Elementary School; 140 Old Oyster Rd; Cotuit, MA

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample Description	Lab ID	Collected	Analyzed	Weight	Lead Concentration
PB001	131909623-0001	12/12/2019	12/18/2019	0.1216 g	<0.016 % wt
Site: Classroom 1					
Desc: Peach Paint on Sheetrock					
PB002	131909623-0002	12/12/2019	12/18/2019	0.1089 g	<0.018 % wt
Site: Classroom 2					
Desc: Blue Paint on Sheetrock					
PB003	131909623-0003	12/12/2019	12/18/2019	0.2504 g	<0.0080 % wt
Site: Add-on Hallway					
Desc: Beige Paint on Sheetrock					
PB004	131909623-0004	12/12/2019	12/18/2019	0.0691 g	<0.029 % wt
Site: Classroom 3					
Desc: Purple Paint on Concrete Block/Wood Trim					
PB005	131909623-0005	12/12/2019	12/18/2019	0.1382 g	<0.014 % wt
Site: Offices Next to Classroom 4					
Desc: Gray Paint on Trim					
PB006	131909623-0006	12/12/2019	12/18/2019	0.2502 g	<0.0080 % wt
Site: Library					
Desc: Pink Paint on Sheetrock/Trim					
PB007	131909623-0007	12/12/2019	12/18/2019	0.1167 g	<0.017 % wt
Site: Classroom 9					
Desc: Green Paint on Block/Trim					
PB008	131909623-0008	12/12/2019	12/18/2019	0.0551 g	<0.036 % wt
Site: Classroom 8					
Desc: Yellow Paint on Block/Trim					
PB009	131909623-0009	12/12/2019	12/18/2019	0.1593 g	<0.013 % wt
Site: Classroom 10					
Desc: Red Paint on Trim					
PB010	131909623-0010	12/12/2019	12/18/2019	0.2494 g	<0.0080 % wt
Site: Exterior					
Desc: White Paint on Exterior Window/Trim					

Eric Steele, Laboratory Manager
or other approved signatory

*Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008 % wt based on the minimum sample weight per our SOP. Unless noted, results in this report are not blank corrected. 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. Samples received in good condition unless otherwise noted. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. The QC data associated with the sample results included in this report meet the recovery and precision requirements unless specifically indicated otherwise. Definitions of modifications are available upon request.

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

Initial report from 12/18/2019 16:16:58

Test Report ChmSinglePrmInQC-7.32.3 Printed: 12/18/2019 4:16:58 PM

Page 1 of 1


 efi global
 BOSTON NORTH

131909623

BULK SAMPLE CHAIN OF CUSTODY FORM

Report to (Your Name):	John Vaz		Bill To:	Accounts Payable
Company:	EFI Global, Inc.		Address:	Same
Address:	155 West Street Suite 5		City, State, Zip:	Same
City, State, Zip:	Wilmington, MA 01887		Telephone:	800-659-1202
			Fax:	978-688-5494
Project Information				
Project No. and Description:	020 00436 Catul Elementary School 140 Old Apple Rd Catul MA			
Email Report to:	Lynda.McDermott@efiglobal.com; Sean.Cassidy@efiglobal.com; Jessica.Rauseo@efiglobal.com			
Alternate (Your Email):	john.vaz@efiglobal.com John Vaz			
Requested Turnaround Time:				
☐ 3 hour	☐ 1 day (24hr)	☐ 2 day (48hr)	☒ 3 day (72 hr)	☐ 4 day (96 hr)
			☐ 1 week	☐ 2 week
Media and Methodology				
Type of Analysis:	LBP - Flame PAS			
Notes:	Please analyze all plaster and joint compound samples.			

Check for Positive Stop: ☐

Sample ID	Type of Material	Location
PB000	For plaster and joint compound	At the Catul Elementary School
PB001	Peach Paint on Sheetrock	Classroom 1
PB002	Blue Paint on Sheetrock	Classroom 2
PB003	Beige Paint on Sheetrock	Add-On Hall Way
PB004	Purple Paint on Concrete Block/Wall Trim	Classroom 3
PB005	Gray Paint on Trim	Offices Next to Classroom 4
PB006	Pink Paint on Sheetrock/Trim	Library
PB007	Green Paint on Block/Trim	Classroom 9
PB008	Yellow Paint on Block/Trim	Classroom 6
PB009	Red Paint on Trim	Classroom 10
PB010	White Paint on Exterior Window/Trim Exterior	

Total Number of Samples Submitted:

Date Collected: 12/12/19

Samplers Name:

Samplers Signature: John Vaz

Relinquished By (EFI):

Date: 12/12/19

Received By (Lab):

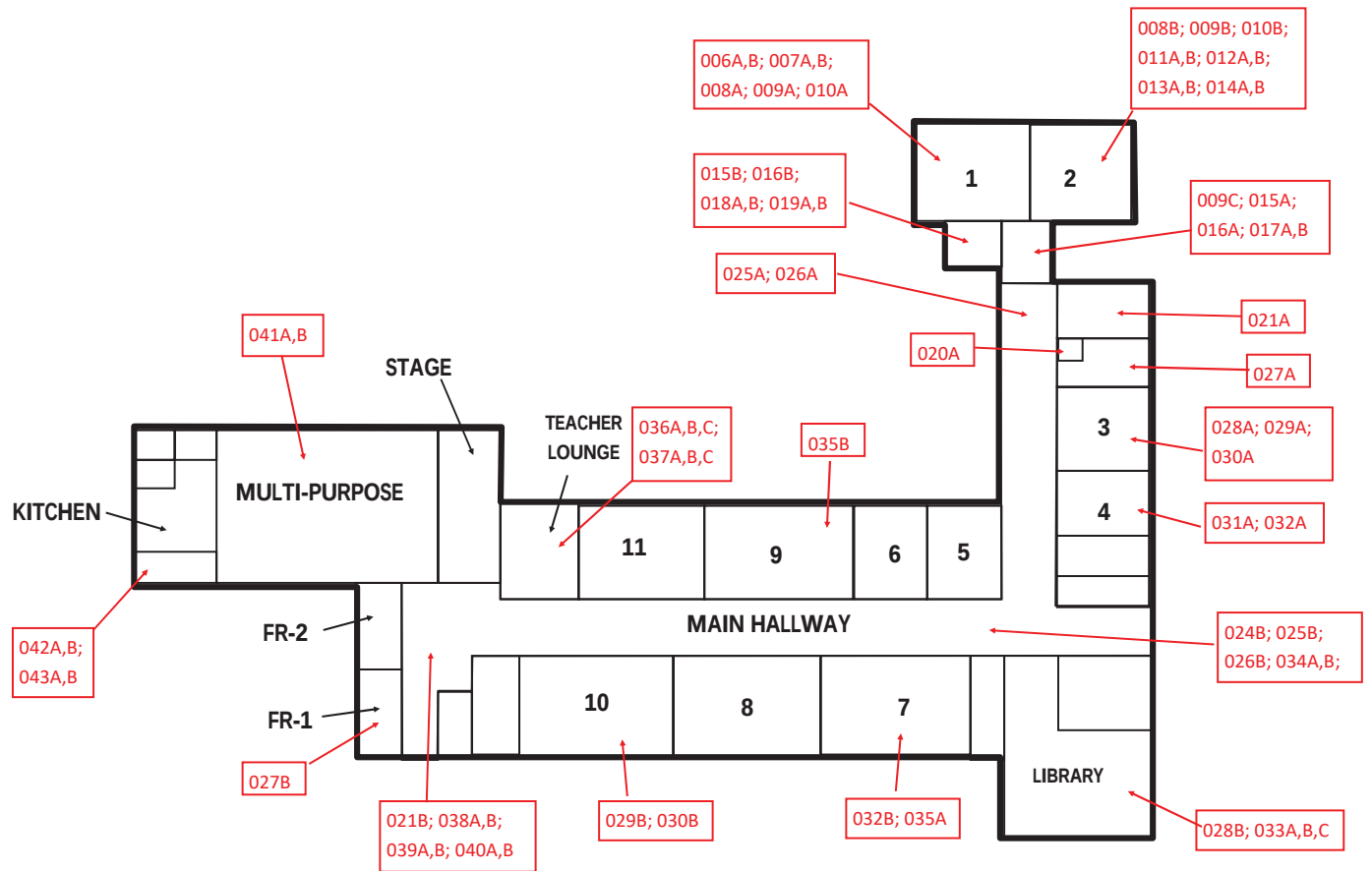
Date: 12/12/19

FX102; 8142 2631 0036

C-40

ATTACHMENT D

SAMPLE LOCATION DRAWINGS



# = CLASSROOM NUMBER	ACM SAMPLE LOCATION DRAWING FORMER COTUIT ELEMENTARY SCHOOL 140 OLD OYSTER ROAD COTUIT, MASSACHUSETTS	
		PN: DT: DB: CB:
		FIGURE 1A C-42

ATTACHMENT E
ASBESTOS LOCATION DRAWINGS

Ms. Elizabeth Lewis, P.E.
EFI Project No.: 020.00836

Former Cotuit Elementary School
140 Old Oyster Road, Cotuit, MA

LEGEND-

= ACM FLOOR TILE

= ACM FLOOR TILE MASTIC

NOTES

- APPROXIMATELY 2,850 LF PIPE/FITTING INSULATION IN BASEMENT.
- APPROXIMATELY 300 LF PIPE/FITTING INSULATION IN BATHROOM/KITCHEN WET WALLS
- 10 LF OF PIPE INSULATION AT RADIATORS AND 20 LF OF INTERIOR SEAM CAULK IN EACH CLASSROOM/ OFFICE.
- BLACK SINK UNDERCOAT IN ROOMS 3,7,8,9,10,11 AND LIBRARY HALL
- 160 LF OF ACM EXTERIOR DOOR CAULK—EXTERIOR DOORS ON MAIN BUILDING
- ASSUMED 1,200 SF ROOFING MATERIAL—TOP FLAT ROOF
- ASSUMED 250 SF GREY BOILER BREECHING MATERIAL AND 250 SF BOILER COMPONENTS—BOILER ROOM

