

**ASBESTOS-CONTAINING MATERIALS, LEAD-CONTAINING PAINTS  
AND HAZARDOUS BUILDING MATERIALS SURVEY, FORMER POWDER HOUSE SCHOOL,  
1060 BROADWAY, SOMERVILLE, MASSACHUSETTS**



***PREPARED FOR:***  
**ADD INC.**  
**311 SUMMER STREET**  
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***PREPARED BY:***  
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**MARCH 18, 2014**



**ASBESTOS-CONTAINING MATERIALS, LEAD-CONTAINING PAINTS  
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FORMER POWDER HOUSE SCHOOL, SOMERVILLE, MASSACHUSETTS**  
*Axiom Partners, Inc.*

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**CERTIFICATION OF RESULTS**

This report has been prepared for the exclusive use ADD Inc. Photocopying of this document by parties other than those designated by the Client, or use of this document for purposes other than it is intended, is strictly prohibited.

Respectfully submitted this 18<sup>th</sup> Day of March, 2014

Prepared by:

A handwritten signature in black ink, appearing to read "Edward Kearney", followed by a period.

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Edward K. Kearney, CIH  
Project Manager/Principal



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## **1.0 PURPOSE AND SCOPE OF WORK**

Axiom Partners, Inc. (AXIOM) was retained by ADD Inc. to conduct asbestos-containing materials, lead-based paints and hazardous building materials survey at the former Powder House School located at 1060 Broadway, Somerville, Massachusetts. The purpose of this investigation was to identify accessible Asbestos-Containing Materials (ACMs), Lead-Containing Paints (LCP) and hazardous building materials prior to future building renovations/demolition.

## **2.0 SITE DESCRIPTION**

This former school is a three story concrete building that is approximately 80,000 square feet in size. This building has a concrete slab foundation with flat rubber membrane roofs. Interior furnishings comprise of wallboard, suspended ceiling tiles (office areas), resilient flooring materials, plaster ceilings, vinyl cove base and textured plaster/concrete. The windows are generally metal cased units.

There are four flat roofs throughout the school. The largest is the highest level, mid-level roof is over the school office and the lowest level roof wraps around the front at the bay doors and continued around the side of the building. There is also a very small mechanical roof deck on the rear of the school where it meets the neighboring school building. All roofs are stone ballasted rubber membrane over a built-up system on top of foam glass blocks adhered to the concrete roof deck with an asphaltic adhesive.

## **3.0 INSPECTION PERSONNEL, METHODS AND LABORATORY**

### **3.1 Inspection Personnel and Process**

#### *3.1.1 Inspection Personnel*

The investigative survey was conducted on March 3 and 10, 2014 by experienced and Massachusetts Department of Labor Standards (DLS) licensed Asbestos Inspectors Edward Kearney (Massachusetts Asbestos Inspector License Number 050217) and Peter Del Sette (Massachusetts Asbestos Inspector License Number 061265).

#### *3.1.2 Inspection Process*

The inspection for ACMs and LCPs was conducted in a systematic manner using AXIOM's standard safety procedures and inspection protocols including:

1. A visual inspection of the building interior, exterior and roofs to locate, quantify and assess the condition of materials suspected to contain asbestos and lead.
2. Collection and analysis of materials as described herein to determine their composition.
3. Review of previous sampling report and laboratory analysis.

### **3.2 Asbestos-Containing Materials (ACM) Investigation**



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### 3.2.1 Methodology

The inspection for suspect ACMs included:

1. Collection of representative bulk samples of each homogeneous area or application of suspect material in sufficient numbers to comply with EPA/AHERA minimum criteria (see Chart A below).
2. To prevent release of any airborne asbestos, samples of suspect materials were collected by first carefully wetting the suspect materials and then removing a small full-thickness sample and placing it in a sealed plastic bag labeled with a unique sample identification number.
3. Chain-of-custody documentation was used to ensure sample integrity.
4. Analysis of the bulk samples by an accredited laboratory using the EPA approved Polarized Light Microscopy (PLM).
5. A review of the inspection findings and lab results to ensure proper and consistent identification and characterization of all assumed and confirmed ACMs.

**Chart A**

**Minimum Asbestos Bulk Sampling Criteria**

Type of Suspect Material <sup>1</sup>	Minimum Sampling Criteria
Surfacing	EPA/AHERA mandated statistically random criteria (Min. of 3 samples; Max. of 7 samples)
Miscellaneous	Minimum of 2 samples of each homogeneous application (unless otherwise noted)
Thermal System Insulations	Three random samples of each homogeneous material

### 3.2.2 Definition of Key Inspection Terms

Given the specific purposes and objectives of this inspection, the following definitions were used for the terms: Suspect Materials, Non-Suspect Materials, Homogeneous Applications or Areas, Inaccessible Building Areas, and Confirmed ACMs:

1. Suspect Materials: installed building materials that either was pre-formed (i.e., manufactured off-site) or were prepared and installed on-site. All building materials are considered a suspect material except as noted below.
2. Non-Suspect Materials: For the purposes of this inspection, the following materials were considered non-suspect and were not assessed or sampled if observed:
  - Plastic
  - Clay or Ceramic Tiles

<sup>1</sup> Per homogeneous material or area



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- Glass
  - Wood or Wood Composite Materials
  - Brick, Granite, Marble, or Other Stonework
  - Pink or Yellow Fiberglass Insulation on Pipes or Other Mechanical Components
  - Rubber or Synthetic Foam
  - Paint (unless textured)
  - Concrete or Mortar (except Gyp-Crete)
  - Carpeting, Curtains, Wallpaper, and Other Paper/Natural Fiber, Fabric, or Synthetics
3. Homogeneous Applications or Areas: are suspect materials which serve the same function or purpose (e.g., floor or ceiling tiles) have similar color and texture and were likely installed at or near the same time. Note that the homogeneity of certain materials such as wall and ceiling plaster at times cannot be readily determined.
4. Inaccessible Building Areas: building areas, systems, structural components, or surfaces which could not be observed because it was unsafe or impractical to disassemble or remove systems or coverings or because a human being cannot physically enter or observe the area or components. These areas include some of the spaces behind hard walls and ceilings, buried portions of building foundations, buried pipes, pipe chases, underground electrical vaults, man holes and inside any type of enclosed or sealed storage tanks or vessels, boilers and above-ground storage tanks.
5. Confirmed ACMs: suspect materials where at least one of the bulk samples contains an asbestos concentration greater than 1%. According to the EPA/AHERA criteria, if all bulk samples of a homogeneous area of material are found to contain less than 1% asbestos, the material may be classified as a non-asbestos material.

### **3.3 Asbestos Laboratory Services**

#### **3.3.1 PLM Bulk Sample Analysis**

Bulk samples collected during the inspection were submitted to EMSL and ProScience Analytical Services, Inc. located in Woburn, MA for analysis. Both laboratories are licensed by the Massachusetts DLWD for asbestos bulk sample analysis and are accredited for asbestos bulk sample analysis under the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology (NIST). Bulk samples were analyzed for asbestos content using EPA Method 600/R-93/116.

The entire inventory of collected samples may not have required analysis. Initially, one sample per material was analyzed. If the first sample was found to contain asbestos, the remaining samples were not analyzed (*Positive Stop* protocol). If the first sample was determined not to contain asbestos, however, the remaining samples were analyzed until asbestos was detected or until the entire sample set was analyzed. The laboratory analysis results are included in Appendix A.

### **3.4 Lead Containing Paints (LCPs) Investigation**

Representative testing of painted surfaces for the presence of lead was performed in the building as part of AXIOM's scope of work. Detailed survey data is presented in Appendix B.

#### **3.4.1 Introduction**



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Historically, lead was added to paint because its color stability properties made it a desirable pigment and because it enhances durability. Lead-containing paint (LCP) becomes harmful when ingested or inhaled as dust or fumes. Once lead pigment was proven to be a health hazard, it was officially banned in 1978 from paint applied in residences. In an occupational setting, if lead-based painted surfaces are to be impacted by renovation or demolition activities, contractor personnel exposure (per OSHA compliance) and waste disposal (per EPA compliance) issues must be addressed and factored into the cost of the project.

#### *3.4.2 Testing Methodology*

AXIOM utilized a Portable X-Ray Fluorescence Analyzer (XRF) to perform the lead paint survey. The XRF is a hand held instrument that contains a radioisotopic source and operates on the principle of X-ray fluorescence. The depression of a spring-loaded trigger mechanism on the XRF unit opens a shutter in the face-plate that allows radiation from an isotopic source to stimulate the lead atoms in the paint. This stimulation causes the atoms to emit (fluoresce) X-rays which the unit detects and converts into electrical pulses which are then processed and the result is read through a digital display on the instrument.

AXIOM used a NITON Model XLp300. The NITON analyzes surfaces quickly, accurately and non-destructively. Surface levels of lead are measured in milligrams per square centimeter (mg/cm<sup>2</sup>). This unit can measure the concentration of LCP on surfaces as little as 0.01 mg of lead/cm<sup>2</sup>.

#### *3.4.3 XRF Testing Procedures*

Upon arrival at the site, a "validation test" was performed to ensure that the XRF instrument was operating properly. The validation test was performed on a calibration test sheet supplied by the manufacturer to determine if the instrument is consistently measuring lead content. During this survey the XRF was functioning properly as defined by the manufacturer.

In conducting the LCP survey, representative tests were performed on homogeneous (similar color and use) painted surfaces. Results were related to other surfaces possessing similar homogeneous characteristics. By following this sampling protocol, every painted surface did not have to be tested. Representative testing was performed for the presence of lead-based paint (LBP) on accessible interior painted surfaces.

### **3.5 Polychlorinated Biphenyls (PCBs) Investigation**

AXIOM conducted an inspection of the buildings to identify suspect PCB-containing fluorescent light fixture ballasts and PCB-containing electrical transformers. The survey was conducted in a systematic manner that included:

1. Performing a detailed walk-through to inspect a representative number of light fixtures and categorize the various types of accessible fluorescent light fixtures.



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2. Preparing an inventory of electrical light ballasts known or suspected to contain PCBs. Nameplate data was recorded if it was present and legible.

### **3.6 Mercury Light Tubes and Thermostats Investigation**

An inspection was conducted throughout the building to identify suspect Mercury-containing equipment and materials as follows:

1. Performing a walkthrough and preparing an inventory of fluorescent light bulbs that contain Mercury vapor in conjunction with the light ballast inspection described in Section 3.5.
2. Performing a walkthrough to identify and inventory thermostats, switches, actuators and other equipment that contain liquid Mercury.

### **3.7 Chlorofluorocarbons (CFCs) Investigation**

AXIOM performed a walkthrough of the building and roof and prepared an equipment inventory including an estimate of CFCs. Nameplate data was recorded if it was present and legible. Assumptions were made if the unit was inaccessible or if the nameplate was not present or illegible.

## **4.0 FINDINGS AND RECOMMENDATIONS**

### **4.1 Asbestos-Containing Materials**

#### *4.1.1 Asbestos-Containing Materials (ACMs)*

Materials **confirmed** to contain asbestos at the subject building are as follows:

<b>Material</b>	<b>Location(s)</b>	<b>Estimated Quantity<sup>2</sup></b>	<b>Friability</b>
12" x 12" Brown Floor Tiles and Mastics	First, Second and Third Floors Hallways, Cafeteria, Auditorium, Classrooms	~25,000 SF	Non-Friable
Window Caulking Materials	Interior Doors	~4,800 LF	Non-Friable
Brown Duct Sealant	Cafeteria/Dishwashing Area	~200 SF	Non-Friable
Pipe Insulation	Exterior at Electric Vault and Interior of Room 108	~60 LF	Friable
Radiator Caulking	Radiators Located (first floor hallways)	~30 LF	Non-Friable
Door Caulking	Interior Doors Throughout Building	~200 Doors	Non-Friable

<sup>2</sup> SF = Square Foot; LF = Linear Foot; TBD = To Be Determined



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Material	Location(s)	Estimated Quantity <sup>2</sup>	Friability
Coating on underside of cement stairs	Stairwells Throughout the Building	~1,500 SF	Non-Friable
Sink Undercoating Materials (pink & black)	Throughout Building	~30 Sinks	Non-Friable
Column Caulking	Throughout Building	~4,000 LF	Non-Friable
Louver Vent Caulking	Exterior Roof & Building	~300 LF	Non-Friable
Duct Insulation	Second Floor Roof Access Room	~100 SF	Friable
Duct Insulation	Rope Insulation Room 235	~20 LF	Friable
Roofing Materials, Main Field	Roofing Materials Under Rubber Membrane, All Roofs, All Levels	~40,000 SF	Non-Friable
Roofing Flashing Materials	Built-Up Roof Flashing Materials All Roof, All Levels	~4,000 LF	Non-Friable
Sealant on Vertical Seams in Copper Flashing	Roof all Levels	~300 LF	Non Fr
Damp Proofing Materials	Inside Perimeter & Courtyard CMU Walls	~40,000 SF	Non-Friable

#### 4.1.2 Non-Asbestos-Containing Materials

The following materials are **non**-ACMs based on bulk sample analysis:

Material	Location(s)
Suspended Ceiling Tiles	Throughout Building
Wall & Ceiling Board Materials	Throughout Building
Plaster & Textured Ceilings & Walls	Throughout Building
Sealant along Basement Foundation Wall (courtyard)	Throughout Building
Pipe Fitting Insulation (water and drain pipes)	Throughout Building
Cove Base & Mastics	Throughout Building
12"x12" Blue Floor Tiles and Mastics	Various Rooms
12"x12" White Floor Tiles and Mastics	Various Rooms
12"x12" Grey Floor Tiles and Mastics	Various Rooms
12"x12" Beige Floor Tiles and Mastics	Various Rooms
Metal Ceiling Tile Insulation	Throughout Building
Window Caulking Materials	Throughout Building



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<b>Material</b>	<b>Location(s)</b>
Gypsum Wall Board	Throughout Building
Joint Compounds	Throughout Building
Ceramic Wall & Floor Tile Mortar/Grout	Throughout Bathrooms
Wall & Floor Adhesives	Gymnasium
Wall Partition	Gymnasium
Blackboard Adhesives	Throughout Classrooms
Carpet Mastics	Throughout Building
Exterior Window, Door & Expansion Joint Caulking	Throughout Building

#### 4.1.3 Presumed Asbestos-Containing Materials (PACMs)

Suspect or presumed ACMs that **may** be present but could not be investigated or tested due to inaccessibility or difficulty to identify and/or sample are as follows:

<b>Material</b>	<b>Location</b>	<b>Friability</b>
Damp Proofing	On Buried Portion of Foundation	Non-Friable
Below Grade Pipes	Below Grade Pipes	Friable
Window & Door Caulking	Concealed Behind Window/Door Frames	Non-Friable
Radiator Insulation	Behind Radiator Units	Non-Friable
Wire Insulation	Electrical Wire Insulation	Non-Friable

#### 4.1.4 Recommendations

All confirmed and presumed ACMs that will be impacted by the demolition activities must be removed by a Massachusetts-licensed Asbestos Removal Contractor. Removal of ACMs must be clearly defined in a project specification which is used to obtain competitive bids for the work.

## 4.2 Lead-Containing Paints (LCPs)

Testing performed on various painted components revealed that some of the coatings contain lead in detectable quantities. A complete listing of the testing results can be found in Appendix B, however, the paints with some of the highest measurable lead levels are as follows.

<b><u>Location/Component/Color</u></b>	<b>XRF Reading (mg/cm<sup>2</sup>)</b>
Interior Metal Door, Second Floor Gym, Yellow	1.9
Interior Metal Hand Railing, Second & Third Floor Stairwells, Black	1.3 - 1.9



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<u>Location/Component/Color</u>	<u>XRF Reading (mg/cm<sup>2</sup>)</u>
Exterior Metal Door, Front of Building near Loading Dock, Brown	0.28
Exterior Metal Door Casing, Front of Building near Loading Dock, Brown	0.29

The HUD<sup>3</sup> lead paint standard classifies lead-containing paint (LCP) as paint having  $\geq 1.0$  mg/cm<sup>2</sup> as measured by the XRF or  $\geq 0.5\%$  of lead by weight as analyzed by Atomic Absorption. With respect to demolition work, OSHA defines LCP as any paint containing detectable amounts of lead.

The current interpretation of the EPA's Resource Conservation and Recovery Act (RCRA) requires that waste generated during projects where LCPs are present and will be disposed of to be tested for the toxicity characteristic of lead in the waste stream. TCLP<sup>4</sup> testing is performed to determine whether waste (construction/demolition debris) must be classified as hazardous because of its lead content or if it can be disposed in a conventional construction and demolition (C&D) landfill. The regulatory limit for lead toxicity is 5.0 milligrams per liter (mg/L) using the EPA Method SW846-7420 for Atomic Absorption Spectroscopy (AAS).

Since lead paint abatement is not required and will not be performed prior to demolition activities, TCLP testing can be performed by the General Contractor, the demolition / abatement contractor or the owner's industrial hygiene consultant.

In general, if the amount of LCP in the demolition debris waste stream is relatively small, the dilution often results in passing TCLP testing.

Finally, the General Contractor (GC) should be made aware of the presence of lead paint testing results to satisfy the hazard communication requirements set forth by OSHA regulations. Specifically, contractors and subcontractors should be required to comply with OSHA regulations including 29 CFR 1926.62, *Lead Exposure in Construction: Interim Final Rule* and 29 CFR 1926.59, *Hazard Communication for the Construction Industry*. This could be accomplished by providing the GC with a copy of this report.

#### **4.3 Polychlorinated Biphenyls (PCBs)**

AXIOM identified different types of fluorescent light fixtures in the buildings. Some ballasts were found to have "No PCBs" labeling. An inventory of the bulbs and ballasts is provided in Appendix C.

Ballasts that are not labeled "No PCBs" must be removed, packaged and disposed of in accordance with the EPA's Green Lights Program (July 1994) for Lighting Waste Disposal and in compliance with governing regulations. Ballasts labeled "No PCBs" must be presumed to contain di (2-ethylhexyl) phthalate (DEHP).

<sup>3</sup> U.S. Department of Housing and Urban Development

<sup>4</sup> Toxicity Characteristic Leachate Procedure (TCLP)



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There are two methods currently available for disposal of PCB-containing ballasts including incineration and disposal. Incineration is typically more expensive. Regardless of the method, *documentation must be provided that verifies the proper removal, transportation, and disposal (destruction/incineration) at an approved facility.*

The fluorescent light bulbs or ballasts will be removed and disposed prior to the demolition of the building. In general, PCB ballasts must be placed in 55-gallon drums which once filled, the drums shall be closed and properly labeled for temporary storage, transport, and disposal in accordance with all applicable regulations. Drums containing PCB ballasts must be transported to an EPA-approved disposal facility (incinerator). Documentation must be provided that verifies the proper removal, transportation, and disposal (destruction/incineration) at the approved facility. Drums containing non-PCB fluids, ballasts shall be disposed of at a legally permitted disposal facility.

Some of the ballasts that were inspected by AXIOM were found not to contain PCBs, no special requirements for PCB handling and disposal will be necessary for these ballasts. They should be properly recycled as non-PCB waste.

Oils identified to be PCB containing (greater than 50 PPB) must be disposed of as a PCB waste. Transformer oils found not to be PCB containing can be disposed of with the transformer by the demolition contractor.

#### **4.4 Mercury**

AXIOM identified thermostats and fluorescent light tubes associated with the light fixtures in the buildings. An inventory of the light tubes and mercury bulbs is provided in Appendix C.

Fluorescent light tubes known or presumed to contain Mercury vapor must be removed, packaged, handled, transported and disposed of in compliance with governing regulations.

Handling and disposal of fluorescent light tubes should be performed in accordance with the Massachusetts Universal Waste Management Standard (310 CMR 30.1034) as well as EPA's Resource Conservation and Recovery Act (RCRA) and other governing regulations and requirements. Guidance documents are also available from the EPA (e.g. the 1994 Green Lights Program for Lighting Waste Disposal). If fluorescent lamps become broken or damaged during removal, the broken lamps shall be managed as hazardous waste. Note that intact fluorescent light tubes may be reused.

#### **4.5 Chlorofluorocarbons (CFCs)**

AXIOM identified CFCs in some of the equipment (air conditioners, etc.) found within the building and roofs. An inventory of the equipment is provided in Appendix C.

Handling and disposal of CFCs should be performed in accordance with the Massachusetts Universal Waste Management Standard (310 CMR 30.1034) as well as EPA's Resource Conservation and Recovery Act (RCRA) and other governing regulations and requirements. Guidance documents are also available from the EPA (e.g. the 1994 Green Lights Program for Lighting Waste Disposal).



## **5.0 LIMITATIONS AND EXCLUSIONS**

### **5.1 Limitations and Conditions of This Investigation**

#### *5.1.1 Investigative Survey*

This NESHAPs survey involved an investigation for ACMs in preparation for a specific renovation project. Although this investigation involved some exploratory demolition intended to identify and sample inaccessible building materials, the potential remains that concealed ACMs may be encountered in the building or at the site.

#### *5.1.2 Inaccessible Materials and Locations*

Inaccessible building areas, systems, structural components, or surfaces which may not have been observed because it was unsafe or impractical to demolish, disassemble, or remove systems or coverings, or because a human being cannot physically enter or observe the area or component. Unless specifically noted, inaccessible areas may include:

- buried or otherwise concealed pipe trenches and utility vaults/corridors;
- buried foundations;
- electrical equipment/wire;
- fire door cores;
- remnant window and door caulking that have been replaced or in-filled; and
- concealed mechanical materials.

AXIOM made every reasonable effort to address these potential ACMs in the building. Floors were inspected beneath carpeting in representative areas and ceiling spaces were viewed. However, the potential remains that concealed ACMs could be encountered during any future demolition project.

#### *5.1.3 Other Environmental Exclusions*

1. This investigation did not include an assessment of air quality or analyses of soil, surface water or groundwater. Furthermore, this study did not include any subsurface exploration, testing or assessment for wetlands.
2. This investigation did not include assessments for the presence of pesticides, herbicides, urea-formaldehyde or Radon, nor any air quality monitoring, or any chemical analyses of soil, surface water, or groundwater at the Site.
3. No attempt was made to check the compliance of present or past owners of the Site with Federal, State, or local laws.
4. The testing for lead paint was performed by an experienced Industrial Hygienist. It is intended only to satisfy the requirements of OSHA regulations including 29 CFR 1926.62, *Lead Exposure in Construction: Interim Final Rule* and 29 CFR 1926.59, *Hazard Communication for the Construction Industry*.



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This investigation was not performed by an EPA HUD<sup>5</sup> or state accredited/licensed Lead Inspector which is often required for residential structures where children under the age of six live.

**5.1.4 Project Specifications**

Users are cautioned that this document is an inspection report, not a project specification. Although it is often feasible to use a report such as this to obtain bids for asbestos and related abatement work, it does not provide a proper and/or complete document for defining the scope of work and contractual obligations.

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<sup>5</sup> US Department of Housing and Urban Development



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**APPENDIX A**

**Asbestos Bulk Sample Results**



**EMSL Analytical, Inc.**

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Received: 03/05/14 9:05 AM  
Analysis Date: 3/11/2014  
Collected: 3/3/2014

Project: 01147.006 / Powderhouse School; Somerville, MA

## 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	
030314-02-01A 131400744-0001	Floors 1-3 Hallways - 12x12 Brown Floor Tiles	Gray Non-Fibrous Homogeneous		95% Non-fibrous (other)	5% Chrysotile	
030314-02-01B 131400744-0002	Floors 1-3 Hallways - 12x12 Brown Floor Tiles				Stop Positive (Not Analyzed)	
030314-02-01C 131400744-0003	Floors 1-3 Hallways - 12x12 Brown Floor Tiles				Stop Positive (Not Analyzed)	
030314-02-02A 131400744-0004	Floors 1-3 Hallways - Mastic on 12x12 Brown Floor Tiles	Black Non-Fibrous Homogeneous		90% Non-fibrous (other)	10% Chrysotile	
030314-02-02B 131400744-0005	Floors 1-3 Hallways - Mastic on 12x12 Brown Floor Tiles				Stop Positive (Not Analyzed)	
030314-02-02C 131400744-0006	Floors 1-3 Hallways - Mastic on 12x12 Brown Floor Tiles				Stop Positive (Not Analyzed)	
030314-02-03A 131400744-0007	Floors 1-3 Hallways - 1x1 Ceiling Tiles	Gray Fibrous Homogeneous	60% Min. Wool	40% Non-fibrous (other)	None Detected	
030314-02-03B 131400744-0008	Floors 1-3 Hallways - 1x1 Ceiling Tiles	Gray Fibrous Homogeneous	60% Min. Wool	40% Non-fibrous (other)	None Detected	

## Analyst(s)

Fievel Lam (66)

Sean Ryan (8)

Kevin Pine (19)

Steve Grise, Laboratory Manager  
or other approved signatory

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

Initial report from 03/11/2014 11:24:23



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EMSL Order: 131400744

CustomerID: AXIO80

CustomerPO:

ProjectID:

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Project: 01147.006 / Powderhouse School; Somerville, MA

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

Sample	Description	Appearance	<u>Non-Asbestos</u>		<u>Asbestos</u>
			% Fibrous	% Non-Fibrous	% Type
030314-02-03C 131400744-0009	Floors 1-3 Hallways - 1x1 Ceiling Tiles	Gray Fibrous Homogeneous	70% Min. Wool	30% Non-fibrous (other)	None Detected
030314-02-04A 131400744-0010	- Ceiling Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-04B 131400744-0011	- Ceiling Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-04C 131400744-0012	- Ceiling Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-05A 131400744-0013	Water Pipes - Cementitious Pipe Fittings	Gray Fibrous Homogeneous	40% Min. Wool	60% Non-fibrous (other)	None Detected
030314-02-05B 131400744-0014	3rd Floor Roof Access Room - Cementitious Pipe Fittings	Gray Fibrous Homogeneous	40% Min. Wool	60% Non-fibrous (other)	None Detected
030314-02-05C 131400744-0015	Above Perimeter Room Ceilings - Cementitious Pipe Fittings	Gray Fibrous Homogeneous	40% Min. Wool	60% Non-fibrous (other)	None Detected
030314-02-06A 131400744-0016	Café Back Rooms - Skim Coat Ceiling Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

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Project: **01147.006 / Powderhouse School; Somerville, MA**

## 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
030314-02-06B 131400744-0017	Café Back Rooms - Skim Coat Ceiling Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-06C 131400744-0018	Café Back Rooms - Skim Coat Ceiling Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-07A 131400744-0019	- 12x12 Dark Blue Floor Tiles	Blue Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-07B 131400744-0020	- 12x12 Dark Blue Floor Tiles	Blue Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-08A 131400744-0021	- Mastic on 12x12 Dark Blue Floor Tiles	Black Non-Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
030314-02-08B 131400744-0022	- Mastic on 12x12 Dark Blue Floor Tiles	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-09A 131400744-0023	- Mastic on Cove Base	Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-09B 131400744-0024	- Mastic on Cove Base	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

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

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
030314-02-10A 131400744-0025	- 12x12 Beige/Light Brown Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-10B 131400744-0026	- 12x12 Beige/Light Brown Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-10C 131400744-0027	- 12x12 Beige/Light Brown Floor Tiles	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-11A 131400744-0028	- Mastic on 12x12 Beige/Light Brown Floor Tiles	Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-11B 131400744-0029	- Mastic on 12x12 Beige/Light Brown Floor Tiles	Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-11C 131400744-0030	- Mastic on 12x12 Beige/Light Brown Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-12A 131400744-0031	- Sink Undercoating; Pink	Pink Non-Fibrous Homogeneous		90% Non-fibrous (other)	10% Chrysotile
030314-02-13 131400744-0032	- Metal Ceiling Tile Insulation	Yellow Fibrous Homogeneous	85% Glass	15% 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
			% Fibrous	% Non-Fibrous	% Type
030314-02-14A 131400744-0033	- Roof Drain Pipe Pitting Insulation >6" od	Gray Fibrous Homogeneous	40% Min. Wool	60% Non-fibrous (other)	None Detected
030314-02-14B 131400744-0034	- Roof Drain Pipe Pitting Insulation >6" od	Gray Fibrous Homogeneous	40% Min. Wool	60% Non-fibrous (other)	None Detected
030314-02-14C 131400744-0035	- Roof Drain Pipe Pitting Insulation >6" od	White Fibrous Homogeneous	40% Min. Wool	60% Non-fibrous (other)	None Detected
030314-02-15A 131400744-0036	- 12x12 Light Grey Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-15B 131400744-0037	- 12x12 Light Grey Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-15C 131400744-0038	- 12x12 Light Grey Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-16A 131400744-0039	- Mastic on 12x12 Light Grey Floor Tiles	Black Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (other)	None Detected
030314-02-16B 131400744-0040	- Mastic on 12x12 Light Grey Floor Tiles	Black Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (other)	None Detected

## Analyst(s)

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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	<u>Non-Asbestos</u>		<u>Asbestos</u>
			% Fibrous	% Non-Fibrous	% Type
030314-02-16C 131400744-0041	- Mastic on 12x12 Light Grey Floor Tiles	Black Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (other)	None Detected
030314-02-17A 131400744-0042	- 12x12 White Floor Tiles	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-17B 131400744-0043	- 12x12 White Floor Tiles	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-17C 131400744-0044	- 12x12 White Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-18A 131400744-0045	- Mastic on 12x12 White Floor Tiles	Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-18B 131400744-0046	- Mastic on 12x12 White Floor Tiles	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-19A 131400744-0047	- Smooth Plaster Wall Material	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-19B 131400744-0048	- Smooth Plaster Wall Material	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

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

Sample	Description	Appearance	<u>Non-Asbestos</u>		<u>Asbestos</u>
			% Fibrous	% Non-Fibrous	% Type
030314-02-19C 131400744-0049	- Smooth Plaster Wall Material	Gray/White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
030314-02-20 131400744-0050	- Ceramic Floor Tile Mortar/Grout	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-21A 131400744-0051	- Gypsum Wallboard	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-21B 131400744-0052	- Gypsum Wallboard	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-21C 131400744-0053	- Gypsum Wallboard	Gray/Tan Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
030314-02-22A 131400744-0054	- Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-22B 131400744-0055	- Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-22C 131400744-0056	- Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

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

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
030314-02-23A 131400744-0057	- 12x12 Light Blue/Grey Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-23B 131400744-0058	- 12x12 Light Blue/Grey Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-23C 131400744-0059	- 12x12 Light Blue/Grey Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-24A 131400744-0060	- Mastic on 12x12 Light Blue/Grey Floor Tiles	Black Non-Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
030314-02-24B 131400744-0061	- Mastic on 12x12 Light Blue/Grey Floor Tiles	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-24C 131400744-0062	- Mastic on 12x12 Light Blue/Grey Floor Tiles	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-25A 131400744-0063	- 12x12 Brown Wavy Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-25B 131400744-0064	- 12x12 Brown Wavy Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

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Fax: (781) 213-6992  
Received: 03/05/14 9:05 AM  
Analysis Date: 3/11/2014  
Collected: 3/3/2014

Project: 01147.006 / Powderhouse School; Somerville, MA

## 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
030314-02-25C 131400744-0065	- 12x12 Brown Wavy Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-26A 131400744-0066	- Mastic on 12x12 Brown Wavy Floor Tiles	Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-26B 131400744-0067	- Mastic on 12x12 Brown Wavy Floor Tiles	Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-26C 131400744-0068	- Mastic on 12x12 Brown Wavy Floor Tiles	Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-27 131400744-0069	- Sink Undercoating; Black	Black Non-Fibrous Homogeneous		97% Non-fibrous (other)	3% Chrysotile
030314-02-28A 131400744-0070	- Adhesive on Backboards	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-28B 131400744-0071	- Adhesive on Backboards	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-29A 131400744-0072	- 12x12 Blue/Grey Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

## Analyst(s)

Fievel Lam (66)

Sean Ryan (8)

Kevin Pine (19)

Steve Grise, Laboratory Manager  
or other approved signatory

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

Initial report from 03/11/2014 11:24:23



**EMSL Analytical, Inc.**

7 Constitution Way, Suite 107, Woburn, MA 01801

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

<http://www.EMSL.com>[bostonlab@emsl.com](mailto:bostonlab@emsl.com)

EMSL Order: 131400744

CustomerID: AXIO80

CustomerPO:

ProjectID:

Attn: **Ed Kearney**  
**Axiom Partners, Inc.**  
**545 Salem Street**  
**Wakefield, MA 01880**

Phone: (781) 213-9198  
 Fax: (781) 213-6992  
 Received: 03/05/14 9:05 AM  
 Analysis Date: 3/11/2014  
 Collected: 3/3/2014

Project: 01147.006 / Powderhouse School; Somerville, MA

## 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
030314-02-29B 131400744-0073	- 12x12 Blue/Grey Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-29C 131400744-0074	- 12x12 Blue/Grey Floor Tiles	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-30A 131400744-0075	- Mastic on 12x12 Blue/Grey Floor Tiles	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-30B 131400744-0076	- Mastic on 12x12 Blue/Grey Floor Tiles	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-30C 131400744-0077	- Mastic on 12x12 Blue/Grey Floor Tiles	Black Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (other)	None Detected
030314-02-31 131400744-0078	Gymnasium - Wall Adhesive	Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-32 131400744-0079	Gymnasium - Rubber Floor Adhesive	Red Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-33 131400744-0080	Collapsible Wall Partition of Gymnasium - Wall Partition	Tan Fibrous Homogeneous	85% Cellulose	15% Non-fibrous (other)	None Detected

## Analyst(s)

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Kevin Pine (19)

Steve Grise, Laboratory Manager  
or other approved signatory

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

Initial report from 03/11/2014 11:24:23



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<http://www.EMSL.com>[bostonlab@emsl.com](mailto:bostonlab@emsl.com)

EMSL Order: 131400744

CustomerID: AXIO80

CustomerPO:

ProjectID:

Attn: **Ed Kearney**  
**Axiom Partners, Inc.**  
**545 Salem Street**  
**Wakefield, MA 01880**

Phone: (781) 213-9198  
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Project: 01147.006 / Powderhouse School; Somerville, MA

## 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
030314-02-34A 131400744-0081	Back Stairs; Gymnasium - Interior Door/Window Glazing	Gray Non-Fibrous Homogeneous		97% Non-fibrous (other)	3% Chrysotile
030314-02-34B 131400744-0082	Back Stairs; Gymnasium - Interior Door/Window Glazing				Stop Positive (Not Analyzed)
030314-02-35A 131400744-0083	- Carpet Mastics	Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-35B 131400744-0084	- Carpet Mastics	Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-36A 131400744-0085	Between CMU Walls - Dampproofing	Black Non-Fibrous Homogeneous		90% Non-fibrous (other)	10% Chrysotile
030314-02-36B 131400744-0086	Between CMU Walls - Dampproofing				Stop Positive (Not Analyzed)
030314-02-36C 131400744-0087	Between CMU Walls - Dampproofing				Stop Positive (Not Analyzed)
030314-02-37A 131400744-0088	- 12x12 White Floor Tiles	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

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Project: **01147.006 / Powderhouse School; Somerville, MA**

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

Sample	Description	Appearance	<u>Non-Asbestos</u>		<u>Asbestos</u>
			% Fibrous	% Non-Fibrous	% Type
030314-02-37B 131400744-0089	- 12x12 White Floor Tiles	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-37C 131400744-0090	- 12x12 White Floor Tiles	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-38A 131400744-0091	- Mastic on 12x12 White Floor Tiles	Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-38B 131400744-0092	- Mastic on 12x12 White Floor Tiles	Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-38C 131400744-0093	- Mastic on 12x12 White Floor Tiles	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-39 131400744-0094	Not Applicable - No Sample				Not Submitted
030314-02-40 131400744-0095	- Exterior Door Caulking	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-41 131400744-0096	- Exterior Window/Panel Caulking	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

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Initial report from 03/11/2014 11:24:23



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Project: 01147.006 / Powderhouse School; Somerville, MA

## 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
030314-02-42 131400744-0097	- Exterior Door Caulking	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-43 131400744-0098	- Exterior Expansion Joint Sealant	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-44 131400744-0099	Between Window Frame & Concrete Slab - Exterior Caulking	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-45 131400744-0100	Between Concrete Column & Metal Window Frame - Exterior Vertical Caulking	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
030314-02-46 131400744-0101	- Exterior Vertical Caulking	Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

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Initial report from 03/11/2014 11:24:23





EMSL ANALYTICAL, INC.  
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# Asbestos Chain of Custody

EMSL Order Number (Lab Use Only):

131400744

EMSL ANALYTICAL, INC.  
7 CONSTITUTION WAY  
SUITE 107  
WOBBURN, MA 01801  
PHONE: 781-933-8411  
FAX: 781-933-8412

Company : Axiom Partners, Inc.		EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different <small>If Bill to is Different note instructions in Comments**</small>	
Street: 545 Salem Street		Third Party Billing requires written authorization from third party	
City: Wakefield	State/Province: MA	Zip/Postal Code: 01880	Country:
Report To (Name): Powderhouse School, Somerville, MA		Fax #: 508-744-7306	
Telephone #: 508-274-5703		Email Address: ekearney@axiomenv.com	
Project Name/Number: #01147.006			
Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email		Purchase Order: <span style="background-color: yellow;">U.S. State Samples Taken: MA</span>	
<b>Turnaround Time (TAT) Options* - Please Check</b>			
<input type="checkbox"/> 3 Hour <input type="checkbox"/> 6 Hour <input type="checkbox"/> 24 Hour <input type="checkbox"/> 48 Hour <input type="checkbox"/> 72 Hour <input checked="" type="checkbox"/> 96 Hour <input type="checkbox"/> 1 Week <input type="checkbox"/> 2 Week			
<small>*For TEM Air 3 hr through 6 hr, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.</small>			
<b>PCM - Air</b> <input type="checkbox"/> NIOSH 7400 <input type="checkbox"/> w/ OSHA 8hr. TWA <b>PLM - Bulk (reporting limit)</b> <input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%) <span style="float: right;">3/5/14</span> <input type="checkbox"/> PLM EPA NOB (<1%) Point Count <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) Point Count w/Gravimetric <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) <input type="checkbox"/> NYS 198.1 (friable in NY) <input type="checkbox"/> NYS 198.6 NOB (non-friable-NY) <input type="checkbox"/> NIOSH 9002 (<1%)		<b>TEM - Air</b> <input type="checkbox"/> 4-4.5hr TAT (AHERA only) <input type="checkbox"/> AHERA 40 CFR, Part 763 <input type="checkbox"/> NIOSH 7402 <input type="checkbox"/> EPA Level II <input type="checkbox"/> ISO 10312 <b>TEM - Bulk</b> <input type="checkbox"/> TEM EPA NOB <input type="checkbox"/> NYS NOB 198.4 (non-friable-NY) <input type="checkbox"/> Chatfield SOP <input type="checkbox"/> TEM Mass Analysis-EPA 600 sec. 2.5 <b>TEM - Water:</b> EPA 100.2 Fibers >10µm <input type="checkbox"/> Waste <input type="checkbox"/> Drinking All Fiber Sizes <input type="checkbox"/> Waste <input type="checkbox"/> Drinking	
		<b>TEM- Dust</b> <input type="checkbox"/> Microvac - ASTM D 5755 <input type="checkbox"/> Wipe - ASTM D6480 <input type="checkbox"/> Carpet Sonication (EPA 600/J-93/167) <b>Soil/Rock/Vermiculite</b> <input type="checkbox"/> PLM CARB 435 - A (0.25% sensitivity) <input type="checkbox"/> PLM CARB 435 - B (0.1% sensitivity) <input type="checkbox"/> TEM CARB 435 - B (0.1% sensitivity) <input type="checkbox"/> TEM CARB 435 - C (0.01% sensitivity) <input type="checkbox"/> EPA Protocol (Semi-Quantitative) <input type="checkbox"/> EPA Protocol (Quantitative) <b>Other:</b> <input type="checkbox"/>	
<input checked="" type="checkbox"/> <b>Check For Positive Stop - Clearly Identify Homogenous Group</b>			
Samplers Name: Edward Kearney		Samplers Signature: <i>E. Kearney</i>	
Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
1 030314-02-01A	12"x12" Brown Floor Tiles, Floors 1-3 Hallways		
2 030314-02-01B	12"x12" Brown Floor Tiles, Floors 1-3 Hallways		
3 030314-02-01C	12"x12" Brown Floor Tiles, Floors 1-3 Hallways		
4 030314-02-02A	Mastic on 12"x12" Brown Floor Tiles, Floors 1-3 Hallways		
5 030314-02-02B	Mastic on 12"x12" Brown Floor Tiles, Floors 1-3 Hallways		
6 030314-02-02C	Mastic on 12"x12" Brown Floor Tiles, Floors 1-3 Hallways		
7 030314-02-03A	1'x1' Ceiling Tiles, Floors 1-3 Hallways		
8 030314-02-03B	1'x1' Ceiling Tiles, Floors 1-3 Hallways		
Client Sample # (s):		Total # of Samples:	
Relinquished (Client): <i>E. Kearney</i>		Date: 3-4-14 Time: 1/00	
Received (Lab):		Date: Time:	
Comments/Special Instructions: Analyze all layers for any sample as appropriate			
FedEx # 7981 0304 0894			





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# Asbestos Chain of Custody

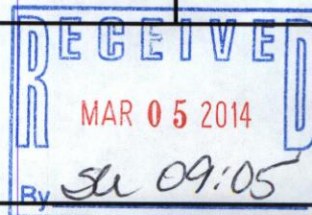
EMSL Order Number (Lab Use Only):

131400744

EMSL ANALYTICAL, INC.  
7 CONSTITUTION WAY  
SUITE 107  
WOBURN, MA 01801  
PHONE: 781-933-8411  
FAX: 781-933-8412

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
9 030314-02-03C	1'x1' Ceiling Tiles, Floors 1-3 Hallways		
10 030314-02-04A	Ceiling Plaster		
11 30314-02-04B	Ceiling Plaster		
12 30314-02-04C	Ceiling Plaster		
13 030314-02-05A	Cementitious Pipe Fittings, water pipes		
14 030314-02-05B	Cementitious Pipe Fittings, third floor, roof access room		
15 030314-02-05C	Cementitious Pipe Fittings, above perimeter room ceilings		
16 030314-02-06A	Skim Coat Ceiling Plaster, café back rooms		
17 030314-02-06B	Skim Coat Ceiling Plaster, café back rooms		
18 030314-02-06C	Skim Coat Ceiling Plaster, café back rooms		
19 030314-02-07A	12"x12" Dark Blue Floor Tiles		
20 030314-02-07B	12"x12" Dark Blue Floor Tiles		
21 030314-02-08A	Mastic on 12"x12" Dark Blue Floor Tiles		
22 030314-02-08B	Mastic on 12"x12" Dark Blue Floor Tiles		
23 030314-02-09A	Mastic on Cove Base		
24 030314-02-09B	Mastic on Cove Base		
*Comments/Special Instructions:			







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# Asbestos Chain of Custody

EMSL Order Number (Lab Use Only):

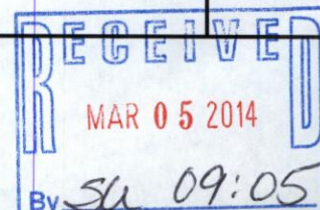
131400744

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Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
25 030314-02-10A	12"x12" Beige/Light Brown Floor Tiles		
26 030314-02-10B	12"x12" Beige/Light Brown Floor Tiles		
27 30314-02-10C	12"x12" Beige/Light Brown Floor Tiles		
28 30314-02-11A	Mastic on 12"x12" Beige/Light Brown Floor Tiles		
29 030314-02-11B	Mastic on 12"x12" Beige/Light Brown Floor Tiles		
30 030314-02-11C	Mastic on 12"x12" Beige/Light Brown Floor Tiles		
31 030314-02-12A	Sink Undercoating, pink		
32 030314-02-13	Metal ceiling tile Insulation		
33 030314-02-14A	Roof Drain Pipe Pitting Insulation >6"o.d.		
34 030314-02-14B	Roof Drain Pipe Pitting Insulation >6"o.d.		
35 030314-02-14C	Roof Drain Pipe Pitting Insulation >6"o.d.		
36 030314-02-15A	12"x12" Light Grey Floor Tiles		
37 030314-02-15B	12"x12" Light Grey Floor Tiles		
38 030314-02-15C	12"x12" Light Grey Floor Tiles		
39 030314-02-16A	Mastic on 12"x12" Light Grey Floor Tiles		
40 030314-02-16B	Mastic on 12"x12" Light Grey Floor Tiles		

\*Comments/Special Instructions:







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Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
41 030314-02-16C	Mastic on 12"x12" Light Grey Floor Tiles		
42 030314-02-17A	12"x12" White Floor Tiles		
43 030314-02-17B	12"x12" White Floor Tiles		
44 030314-02-17C	12"x12" White Floor Tiles		
45 030314-02-18A	Mastic on 12"x12" White Floor Tiles		
46 030314-02-18B	Mastic on 12"x12" White Floor Tiles		
47 030314-02-19A	Smooth Plaster wall Material		
48 030314-02-19B	Smooth Plaster wall Material		
49 030314-02-19C	Smooth Plaster wall Material		
50 030314-02-20	Ceramic Floor Tile mortar/grout (analyze layers)		
51 030314-02-21A	Gypsum Wall Board		
52 030314-02-21B	Gypsum Wall Board		
53 030314-02-21C	Gypsum Wall Board		
54 030314-02-22A	Joint Compound		
55 030314-02-22B	Joint Compound		
56 030314-02-22C	Joint Compound		
*Comments/Special Instructions:			

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MAR 05 2014

By SL 09:05





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PHONE: 781-933-8411  
FAX: 781-933-8412

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
57 030314-02-23A	12"x12" Light Blue/Grey Floor Tiles		
58 030314-02-23B	12"x12" Light Blue/Grey Floor Tiles		
59 030314-02-23C	12"x12" Light Blue/Grey Floor Tiles		
60 030314-02-24A	Mastic on 12"x12" Light Blue/Grey Floor Tiles		
61 030314-02-24B	Mastic on 12"x12" Light Blue/Grey Floor Tiles		
62 030314-02-24C	Mastic on 12"x12" Light Blue/Grey Floor Tiles		
63 030314-02-25A	12"x12" Brown Wavy Floor Tiles		
64 030314-02-25B	12"x12" Brown Wavy Floor Tiles		
65 030314-02-25C	12"x12" Brown Wavy Floor Tiles		
66 030314-02-26A	Mastic on 12"x12" Brown Wavy Floor Tiles		
67 030314-02-26B	Mastic on 12"x12" Brown Wavy Floor Tiles		
68 030314-02-26C	Mastic on 12"x12" Brown Wavy Floor Tiles		
69 030314-02-27	Sink Undercoating Black		
70 030314-02-28A	Adhesive on Backboards		
71 030314-02-28B	Adhesive on Backboards		
X			
*Comments/Special Instructions:			

R

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MAR 05 2014  
By SM 09:05





EMSL ANALYTICAL, INC.  
LABORATORY • PRODUCTS • TRAINING

# Asbestos Chain of Custody

EMSL Order Number (Lab Use Only):

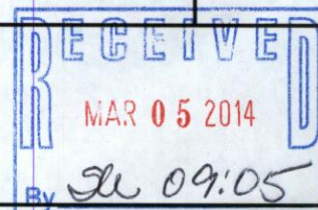
131400744

EMSL ANALYTICAL, INC.  
7 CONSTITUTION WAY  
SUITE 107  
WOBURN, MA 01801  
PHONE: 781-933-8411  
FAX: 781-933-8412

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
72 030314-02-29A	12"x12" Blue/Grey Floor Tiles		
73 030314-02-29B	12"x12" Blue/Grey Floor Tiles		
74 030314-02-29C	12"x12" Blue/Grey Floor Tiles		
75 030314-02-30A	Mastic on 12"x12" Blue/Grey Floor Tiles		
76 030314-02-30B	Mastic on 12"x12" Blue/Grey Floor Tiles		
77 030314-02-30C	Mastic on 12"x12" Blue/Grey Floor Tiles		
78 030314-02-31	Wall Adhesive Gynasium		
79 030314-02-32	Rubber Floor Adhesive Gynasium		
80 030314-02-33	Wall Partition (collapsible wall partition gynasium)		
81 030314-02-34A	Interior door/Window Glazing Compound, back stairs gynasium		
82 030314-02-34B	Interior door/Window Glazing Compound, back stairs gynasium		
83 030314-02-35A	Carpet Mastics		
84 030314-02-35B	Carpet Mastics		
85 030314-02-36A	Damp Proofing Between CMU Walls		
86 030314-02-36B	Damp Proofing Between CMU Walls		
87 030314-02-36C	Damp Proofing Between CMU Walls		

\*Comments/Special Instructions:







EMSL ANALYTICAL, INC.  
LABORATORY • PRODUCTS • TRAINING

# Asbestos Chain of Custody

EMSL Order Number (Lab Use Only):

131400744

EMSL ANALYTICAL, INC.  
7 CONSTITUTION WAY  
SUITE 107  
WOBBURN, MA 01801  
PHONE: 781-933-8411  
FAX: 781-933-8412

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
88 030314-02-37A	12"x12" White Floor Tiles		
89 030314-02-37B	12"x12" White Floor Tiles		
90 030314-02-37C	12"x12" White Floor Tiles		
91 030314-02-38A	Mastic on 12"x12" White Floor Tiles		
92 030314-02-38B	Mastic on 12"x12" White Floor Tiles		
93 030314-02-38C	Mastic on 12"x12" White Floor Tiles		
94 030314-02-39	no sample		
95 030314-02-40	Exterior Door Caulking		
96 030314-02-41	Exterior Window/panel Caulking		
97 030314-02-42	Exterior Door Caulking		
98 030314-02-43	Exterior Expansion Joint Sealant		
99 030314-02-44	Exterior Caulking between Window Frame & Concrete slab		
100 030314-02-45	Exterior Vertical Caulking between concrete column & Metal window frame		
101 030314-02-46	Exterior Vertical Caulking		
X			
X			
*Comments/Special Instructions:			

**RECEIVED**  
MAR 05 2014  
By lu 09:05





# ProScience Analytical Services, Inc

---

Peter Del Sette  
Axiom Partners, Inc., MA  
545 Salem St.  
Wakefield, MA 01880

March 13, 2014

Dear Peter Del Sette,

The enclosed analytical results have been obtained by using the EPA/600/R-93/116 method. The "Visual Estimate" quantitative method is generally used for determining the percentage of asbestos and other components of the sample. "The Point Counting" method may also be used upon client request or at the analyst discretion. The Point Count method is usually recommended when the sample contains less than 10% asbestos by Visual estimate. Asbestos content less than 1% is recorded on the report as TR (trace).

The Quality Control data related to the samples analyzed is available upon client's written request. ProScience Analytical Services Inc., assumes no responsibility for potential sample contamination that may have occurred during the sample collection process or erroneous data provided by the client.

The enclosed results may not be used under any circumstances as product endorsement by any US government agency including NIST/NVLAP.

All Laboratory records are retained for at least three years unless otherwise directed in writing by the client. The actual samples are retained for a period of two months and written request is necessary in order to be retained for a longer period of time. All analytical results and records are considered strictly confidential and will not be released under any circumstances to anyone except the actual client. The analytical results included in this report apply only to the items tested.

If you have any questions please contact the Laboratory Manager or the Laboratory Director.

Sincerely,

Stefanie Bishop, Optical Asbestos Manager

Aimee Cormier, Laboratory Director

Enclosure: Version 2  
LAB BATCH ID: B 90570 CLIENT PROJECT ID: N/A  
Client Ref: Former Powderhouse Elementary School, 1060 Broadway, Somerville, MA  
AIHA ID# 102754; CT ID# PH-0209; MA ID# AA000156; ME ID# LB-055; ME ID# LA-056; NVLAP  
Lab Code 200090-0; RI ID # AAL-093; VT ID# AL016876



# ProScience Analytical Services, Inc.

Client Name: Axiom Partners, Inc., MA  
 PO #: N/A  
 Client Project #: N/A  
 Client Reference: Former Powderhouse Elementary School, 1060 Broadway, Somerville, MA  
 Method: EPA/600/R-93/116

**Batch: B90570**  
 Date Sampled: 3/10/2014  
 Date Received: 3/11/2014  
 Date Analyzed: 3/13/2014  
 Date of Report: 3/13/2014

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-03-01A	Gray	10	0	0	0	0	0	0	0	0	0	0	0	90
Description: Radiator Caulking Location: N/A Comments:														
														Is asbestos present? Yes. Analyzed: Yes

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-03-02A	Multi	10	0	0	0	0	0	0	0	0	0	0	0	90
Description: Stairwell Under Coating Material Location: N/A Comments:														
														Is asbestos present? Yes. Analyzed: Yes

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-03-03A	Multi	10	0	0	0	0	0	0	0	0	0	0	0	90
Description: Interior Door Caulking Location: N/A Comments:														
														Is asbestos present? Yes. Analyzed: Yes

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-03-04A	Multi	10	0	0	0	0	0	0	0	0	0	0	0	90
Description: Interior Window Caulking/Wire Mesh Windows Around Doors Location: N/A Comments:														
														Is asbestos present? Yes. Analyzed: Yes

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-03-05A	Multi	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Interior Column Caulking Location: N/A Comments:														
														Is asbestos present? No. Analyzed: Yes

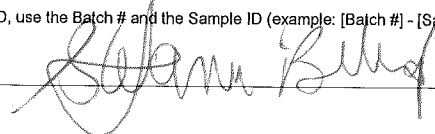
Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-03-06A	Gray	0	0	0	0	0	0	0	0	2	0	0	0	98
Description: Plaster Ceiling in Storage Room Location: N/A Comments:														
														Is asbestos present? No. Analyzed: Yes

Asbestos Codes: CHR = Chrysotile AMO = Amosite CRO = Crocidolite ACT = Actinolite TRE = Tremolite ANT = Anthophyllite  
 Non-Asbestos Codes: FBG = Fiberglass MNW = Mineral Wool CEL = Cellulose HAR = Hair SYN = Synthetic OTH = Other NON = Non-Fibrous Minerals

Note: To create a unique lab sample ID, use the Batch # and the Sample ID (example: [Batch #] - [Sample ID]).

\* All results are in percentage.

Analyst: Stefanie Bishop





**Client Name:** Axiom Partners, Inc., MA  
**Client Project #:** N/A  
**Client Reference:** Former Powderhouse Elementary School, 1060 Broadway, Somerville, MA

**Batch:** B 90570  
**Date Received:** 3/11/2014  
**Date Due:** 3/13/2014  
**Stop on first pos:** Yes or No

Batch: 90570		Stereo Scope					Optical Properties					RI		Asbestos Percent						Non-Asbestos Percent							
		Analyst	SSAPE	Color	Homogeneity	Texture	Friable	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	Parallel	Perpendicular	Chrysotile	Amosite	Crocidolite	Tremolite	Anthophyllite	Actinolite	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
031014-03-01A	Radiator Caulking	BB		6N6N									150/10														90
031014-03-02A	Stairwell Under Coating Material			6N6N									150/10														90
031014-03-03A	Interior Door Caulking			6N6N									150/10														90
031014-03-04A	Interior Window Caulking/Wire Mesh Windows Around Doors			6N6N									150/10														90
031014-03-05A	Interior Column Caulking			6N6N									150/10														100
031014-03-06A	Plaster Ceiling in Storage Room			6N6N									150/10														90

Analyzed By / Date: *John B. B. 3-13-14* QC By / Date: *John B. B. 3-13-14* Fax, Email, Verbal Results By / Date: *John B. B. 3-13-14* # of Samples: 6

Comments:



# ProScience

MA Office (HQ) 22 Cummings Park, Woburn, MA 01801 T: 781-935-3212 F: 781-932-4857 general@proscience.net  
CT Office (AHERA Only) 683 N Mountain Rd, Newington, CT 06111 T: 860-953-1022 F: 860-953-1030 ct@proscience.net

Proj. Name	Former Powderhouse Elementary School, 1060 Broadway, Somerville, MA	Proj. #	
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PASI Batch #	B90570
--------------	--------

Client	Name	AXIOM Partners, Inc.	PO #	
	Address	979 Main Street, Wakefield, MA		

Contact	Name	Peter Del Sette, Jr. / Ed Kearney
	Phone	781-248-6859
	Fax	
	Email	pdelsette@axiomenv.com ekearney@axiomenv.com

Off-hours work is available but subject to PASI approval and surcharges. TAT in business days.

TAT(Circle)	
Rush	
Same Day	
Next Day	
2 Days	
3 Days	
4-5 Days	

Results	Tel	Fax	Email
Final Report			
Email			
Copy			

Analysis	PLM Bulk	
	Bulk (600 / R-93 / 116)	
	Wipes (EPA 600)	
	Point Count (EPA 600)	
	Soil (EPA)	
	NOB (NY-ELAP)	
Special Instructions	Stop on First Positive	
	TEM NOB Negative Bulks	
	Point Count <10% Asb.	

Line #	Field ID	Date Collected	Description	Location
1	031014-03-01A	3/10/2014	Radiator Caulking	
2	031014-03-02A	3/10/2014	Stairwell Under Coating Material	
3	031014-03-03A	3/10/2014	Interior Door Caulking	
4	031014-03-04A	3/10/2014	Interior Window Caulking/Wire Mesh Windows Around Doors	
5	031014-03-05A	3/10/2014	Interior Column Caulking	
6	031014-03-06A	3/10/2014	Plaster Ceiling in Storage Room	

Relinquished By Peter Del Sette  
Received By Kathy Astor  
Date / Time 3/11/14 @ 2:35 PM





# ProScience Analytical Services, Inc

---

Peter Del Sette  
Axiom Partners, Inc., MA  
545 Salem St.  
Wakefield, MA 01880

March 13, 2014

Dear Peter Del Sette,

The enclosed analytical results have been obtained by using the EPA/600/R-93/116 method. The "Visual Estimate" quantitative method is generally used for determining the percentage of asbestos and other components of the sample. "The Point Counting" method may also be used upon client request or at the analyst discretion. The Point Count method is usually recommended when the sample contains less than 10% asbestos by Visual estimate. Asbestos content less than 1% is recorded on the report as TR (trace).

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If you have any questions please contact the Laboratory Manager or the Laboratory Director.

Sincerely,

Stefanie Bishop, Optical Asbestos Manager

Aimee Cormier, Laboratory Director

Enclosure: Version 2  
LAB BATCH ID: B 90571 CLIENT PROJECT ID: N/A  
Client Ref: Former Powderhouse Elementary School, 1060 Broadway, Somerville, MA  
AIHA ID# 102754; CT ID# PH-0209; MA ID# AA000156; ME ID# LB-055; ME ID# LA-056; NVLAP  
Lab Code 200090-0; RI ID # AAL-093; VT ID# AL016876



# ProScience Analytical Services, Inc.

Client Name: Axiom Partners, Inc., MA  
 PO #: N/A  
 Client Project #: N/A  
 Client Reference: Former Powderhouse Elementary School, 1060 Broadway, Somerville, MA  
 Method: EPA/600/R-93/116

**Batch: B90571**  
 Date Sampled: 3/10/2014  
 Date Received: 3/11/2014  
 Date Analyzed: 3/13/2014  
 Date of Report: 3/13/2014

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-01A	Black	10	0	0	0	0	0	0	0	0	0	0	0	90
Description: Mid-Level Roof Field Location: Coating on Concrete Deck Under Roofing Comments: Is asbestos present? Yes. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-01B		0	0	0	0	0	0	0	0	0	0	0	0	0
Description: Mid-Level Roof Field Location: Coating on Concrete Deck Under Roofing Comments: Analyzed: No														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-02A	Black	TR	0	0	0	0	0	0	0	10	0	0	0	90
Description: Misc. Black Sealant on Rooftop A/Cs, Edges, ect. Location: Mid-Level Roof Field Comments: Is asbestos present? Yes. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-02B	Black	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Misc. Black Sealant on Rooftop A/Cs, Edges, ect. Location: Mid-Level Roof Field Comments: Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-03A	Gray	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Hard Grey Exterior Window Caulking Location: Mid-Level Roof Comments: Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-03B	Gray	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Hard Grey Exterior Window Caulking Location: Mid-Level Roof Comments: Is asbestos present? No. Analyzed: Yes														



# ProScience Analytical Services, Inc.

Client Name: Axiom Partners, Inc., MA  
 PO #: N/A  
 Client Project #: N/A  
 Client Reference: Former Powderhouse Elementary School, 1060 Broadway, Somerville, MA  
 Method: EPA/600/R-93/116

**Batch: B90571**  
 Date Sampled: 3/10/2014  
 Date Received: 3/11/2014  
 Date Analyzed: 3/13/2014  
 Date of Report: 3/13/2014

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-04A	Gray	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Vertical/Horizontal Seam Sealant on Ext. Walls Location: Mid-Level Roof Field Comments: <span style="float: right;">Is asbestos present? No. Analyzed: Yes</span>														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-04B	Gray	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Vertical/Horizontal Seam Sealant on Ext. Walls Location: Upper Level Roof Field Comments: <span style="float: right;">Is asbestos present? No. Analyzed: Yes</span>														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-05A	Tan	5	0	0	0	0	0	0	0	0	0	0	0	95
Description: Wall Vent Caulking Location: Mid-Level Roof Field Comments: <span style="float: right;">Is asbestos present? Yes. Analyzed: Yes</span>														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-05B		0	0	0	0	0	0	0	0	0	0	0	0	0
Description: Wall Vent Caulking Location: Mid-Level Roof Field Comments: <span style="float: right;">Analyzed: No</span>														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-06A	White	0	25	0	0	0	0	0	0	0	0	0	0	75
Description: Duct Insulation Location: Second Floor AHU Room Comments: <span style="float: right;">Is asbestos present? Yes. Analyzed: Yes</span>														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-06B		0	0	0	0	0	0	0	0	0	0	0	0	0
Description: Duct Insulation Location: Second Floor AHU Room Comments: <span style="float: right;">Analyzed: No</span>														



# ProScience Analytical Services, Inc.

Client Name: Axiom Partners, Inc., MA  
 PO #: N/A  
 Client Project #: N/A  
 Client Reference: Former Powderhouse Elementary School, 1060 Broadway, Somerville, MA  
 Method: EPA/600/R-93/116

Batch: **B90571**  
 Date Sampled: 3/10/2014  
 Date Received: 3/11/2014  
 Date Analyzed: 3/13/2014  
 Date of Report: 3/13/2014

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-06C		0	0	0	0	0	0	0	0	0	0	0	0	0
Description: Duct Insulation Location: Second Floor AHU Room Comments: Analyzed: No														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-07A	Black	20	0	0	0	0	0	0	0	0	0	0	0	80
Description: Roofing Material Location: Mid-Level Roof Field Under Rubber and ISO Bds. Comments: Is asbestos present? Yes. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-07B		0	0	0	0	0	0	0	0	0	0	0	0	0
Description: Roofing Material Location: Mid-Level Roof Field Under Rubber and ISO Bds. Comments: Analyzed: No														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-08A	Black	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Mastic on Foam Glass Roof Blocks Location: Mid-Level Roof Field Comments: Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-08B	Black	0	0	0	0	0	0	5	0	0	0	0	0	95
Description: Mastic on Foam Glass Roof Blocks Location: Upper Level Roof Field Comments: Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-08C	Black	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Mastic on Foam Glass Roof Blocks Location: Upper Level Roof Field Comments: Is asbestos present? No. Analyzed: Yes														



# ProScience Analytical Services, Inc.

Client Name: Axiom Partners, Inc., MA  
 PO #: N/A  
 Client Project #: N/A  
 Client Reference: Former Powderhouse Elementary School, 1060 Broadway, Somerville, MA  
 Method: EPA/600/R-93/116

**Batch: B90571**  
 Date Sampled: 3/10/2014  
 Date Received: 3/11/2014  
 Date Analyzed: 3/13/2014  
 Date of Report: 3/13/2014

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-09A	Multi	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Grey/Black Vertical/Horizontal Seam Sealant Location: Lower Level Front/Side Roof Comments:														
Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-09B	Multi	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Grey/Black Vertical/Horizontal Seam Sealant Location: Lower Level Front/Side Roof Comments:														
Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-10A	Black	5	0	0	0	0	0	0	0	30	0	0	0	65
Description: Roofing Material Under Rubber Location: Upper Level Roof Field Comments:														
Is asbestos present? Yes. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-10B		0	0	0	0	0	0	0	0	0	0	0	0	0
Description: Roofing Material Under Rubber Location: Upper Level Roof Field Comments:														
Analyzed: No														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-11A	Dk. Brown	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Grey Caulking on Copper Flashing Location: Perimeter of Upper Level Roof Comments:														
Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-11B	Dk. Brown	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Grey Caulking on Copper Flashing Location: Perimeter of Upper Level Roof Comments:														
Is asbestos present? No. Analyzed: Yes														



# ProScience Analytical Services, Inc.

Client Name: Axiom Partners, Inc., MA  
 PO #: N/A  
 Client Project #: N/A  
 Client Reference: Former Powderhouse Elementary School, 1060 Broadway, Somerville, MA  
 Method: EPA/600/R-93/116

**Batch: B90571**  
 Date Sampled: 3/10/2014  
 Date Received: 3/11/2014  
 Date Analyzed: 3/13/2014  
 Date of Report: 3/13/2014

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-12A	Black	20	0	0	0	0	0	0	0	0	0	0	0	80
Description: Vertical Sealant on Copper Flashing Seams Location: Perimeter of Upper Level Roof Comments:														
Is asbestos present? Yes. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-12B		0	0	0	0	0	0	0	0	0	0	0	0	0
Description: Vertical Sealant on Copper Flashing Seams Location: Perimeter of Upper Level Roof Comments:														
Analyzed: No														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-13A	Black	5	0	0	0	0	0	0	0	0	0	0	0	95
Description: Black Damp Proofing on Blue Insulation Boards Location: Between Interior and Exterior Walls Comments:														
Is asbestos present? Yes. Analyzed: Yes														

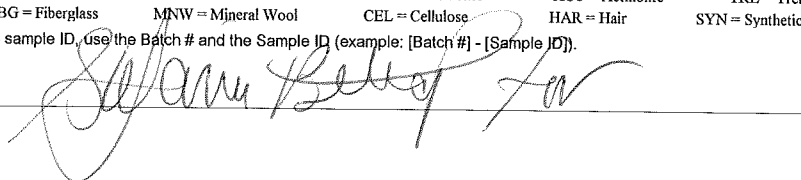
Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
031014-09-13B		0	0	0	0	0	0	0	0	0	0	0	0	0
Description: Black Damp Proofing on Blue Insulation Boards Location: Between Interior and Exterior Walls Comments:														
Analyzed: No														

Asbestos Codes: CHR = Chrysotile AMO = Amosite CRO = Crocidolite ACT = Actinolite TRE = Tremolite ANT = Anthophyllite  
 Non-Asbestos Codes: FBG = Fiberglass MNW = Mineral Wool CEL = Cellulose HAR = Hair SYN = Synthetic OTH = Other NON = Non-Fibrous Minerals

Note: To create a unique lab sample ID, use the Batch # and the Sample ID (example: [Batch #] - [Sample ID]).

\* All results are in percentage.

Analyst: Dan Pine





**Client Name:** Axiom Partners, Inc., MA  
**Client Project #:** N/A  
**Client Reference:** Former Powderhouse Elementary School, 1060 Broadway, Somerville, MA

**Batch:** 990571  
**Date Received:** 3/11/2014  
**Date Due:** 3/13/2014  
**Stop on first pos:** Yes or No

Sample ID	Description	Analyst	Stereo Scope					Optical Properties					RI		Asbestos Percent						Non-Asbestos Percent					
			SSAPE	Color	Homogeneity	Texture	Friable	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	Parallel	Perpendicular	Chrysotile	Amosite	Crocidolite	Tremolite	Anthophyllite	Actinolite	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other
031014-09-01A	Mid-Level Roof Field																									
031014-09-01B	Mid-Level Roof Field																									
031014-09-02A	Misc. Black Sealant on Rooftop ACs, Edges, ect.																									
031014-09-02B	Misc. Black Sealant on Rooftop ACs, Edges, ect.																									
031014-09-03A	Hard Grey Exterior Window Caulking																									
031014-09-03B	Hard Grey Exterior Window Caulking																									
031014-09-04A	Vertical/Horizontal Seam Sealant on Ext. Walls																									
031014-09-04B	Vertical/Horizontal Seam Sealant on Ext. Walls																									

Don't see 3/13/14

Comments:



Batch: 90571

Batch: / 90571		Stereo Scope					Optical Properties					RI		Asbestos Percent						Non-Asbestos Percent							
Sample ID	Description	Analyst	SSAPE	Color	Homogeneity	Texture	Friable	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	Parallel	Perpendicular	Chrysotile	Amosite	Crocidolite	Tremolite	Anthophyllite	Actinolite	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
031014-09-05A	Wall Vent Caulking																										
031014-09-05B	Wall Vent Caulking																										
031014-09-06A	Duct Insulation																										
031014-09-06B	Duct Insulation																										
031014-09-06C	Duct Insulation																										
031014-09-07A	Roofing Material																										
031014-09-07B	Roofing Material																										
031014-09-08A	Mastic on Foam Glass Roof Blocks																										
031014-09-08B	Mastic on Foam Glass Roof Blocks																										
031014-09-08C	Mastic on Foam Glass Roof Blocks																										

Comments:

Done by 3/13/14



Batch: B90571

Batch: D90571		Stereo Scope					Optical Properties					RI		Asbestos Percent					Non-Asbestos Percent								
Sample ID	Description	Analyst	SSAPE	Color	Homogeneity	Texture	Friable	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	Parallel	Perpendicular	Chrysotile	Amosite	Crocidolite	Tremolite	Anthophyllite	Actinolite	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
031014-09-09A	Grey/Black Vertical/Horizontal Seam Sealant																										
031014-09-09B	Grey/Black Vertical/Horizontal Seam Sealant																										
031014-09-10A	Roofing Material Under Rubber																										
031014-09-10B	Roofing Material Under Rubber																										
031014-09-11A	Grey Caulking on Copper Flashing																										
031014-09-11B	Grey Caulking on Copper Flashing																										
031014-09-12A	Vertical Sealant on Copper Flashing Seams																										
031014-09-12B	Vertical Sealant on Copper Flashing Seams																										
031014-09-13A	Black Damp Proofing on Blue Insulation Boards																										
031014-09-13B	Black Damp Proofing on Blue Insulation Boards																										

Comments:

*Handwritten signature* 3/13/14



Batch: 90571

Sample ID	Description	Analyst	Stereo Scope					Optical Properties					RI		Asbestos Percent							Non-Asbestos Percent				
			SSAPE	Color	Homogeneity	Texture	Friable	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	Parallel	Perpendicular	Chrysotile	Amosite	Crocidolite	Tremolite	Anthophyllite	Actinolite	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other

Analyzed By / Date:

*[Signature]* 3/13/14

QC By / Date:

*[Signature]* 3/13-14

Fax, Email, Verbal Results By / Date:

H.W. KA 3-13

# of Samples:

28

Comments:

SSAPE = Stereo Scope Asbestos Percentage Estimate

Birefringence L= less than .010, M= .011-.029, H= greater than .03; Microscope Olympus BH-2, Serial # circle 1-242277, 229027, 235000, 230663



# ProScience

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CT Office (AHERA Only) 683 N Mountain Rd, Newington, CT 06111 T: 860-953-1022 F: 860-953-1030 ct@proscience.net

PASI Batch #

B90571

Proj. Name	Former Powderhouse Elementary School, 1060 Broadway, Somerville, MA	Proj. #	
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Client	Name	AXIOM Partners, Inc.	PO #	
	Address	979 Main Street, Wakefield, MA		

Contact	Name	Peter Del Sette, Jr. / Ed Kearney
	Phone	781-248-6859
	Fax	
	Email	pdelsette@axiomenv.com ekearney@axiomenv.com

Off-hours work is available but subject to PASI approval and surcharges. TAT in business days.

Relinquished By Peter Del Sette Date / Time 3/10/2014  
Received By Kathy Astor Date / Time 3/11/14 @ 2:35pm

TAT(Circle)	
Rush	
Same Day	
Next Day	
2 Days	
3 Days	
4-5 Days	

Results	Tel	Fax	Email
Final Report	Trans	Copy	

Analysis	
PLM Bulk	
Bulk (600 / R-93 / 116)	
Wipes (EPA 600)	
Point Count (EPA 600)	
Soil (EPA)	
NOB (NY-ELAP)	
Special Instructions	
Stop on First Positive	
TEM NOB Negative Bulks	
Point Count <10% Asb.	

Line #	Field ID	Date Collected	Description	Location
1	031014-09-01A	3/10/2014	Mid-Level Roof Field	Coating on Concrete Deck Under Roofing
2	031014-09-01B	3/10/2014	Mid-Level Roof Field	Coating on Concrete Deck Under Roofing
3	031014-09-02A	3/10/2014	Misc. Black Sealant on Rooftop A/Cs, Edges, ect.	Mid-Level Roof Field
4	031014-09-02B	3/10/2014	Misc. Black Sealant on Rooftop A/Cs, Edges, ect.	Mid-Level Roof Field
5	031014-09-03A	3/10/2014	Hard Grey Exterior Window Caulking	Mid-Level Roof
6	031014-09-03B	3/10/2014	Hard Grey Exterior Window Caulking	Mid-Level Roof
7	031014-09-04A	3/10/2014	Vertical/Horizontal Seam Sealant on Ext. Walls	Mid-Level Roof Field
8	031014-09-04B	3/10/2014	Vertical/Horizontal Seam Sealant on Ext. Walls	Upper Level Roof Field
9	031014-09-05A	3/10/2014	Wall Vent Caulking	Mid-Level Roof Field
10	031014-09-05B	3/10/2014	Wall Vent Caulking	Mid-Level Roof Field
11	031014-09-06A	3/10/2014	Duct Insulation	Second Floor AHU Room
12	031014-09-06B	3/10/2014	Duct Insulation	Second Floor AHU Room
13	031014-09-06C	3/10/2014	Duct Insulation	Second Floor AHU Room
14	031014-09-07A	3/10/2014	Roofing Material	Mid-Level Roof Field Under Rubber and ISO Bds.
15	031014-09-07B	3/10/2014	Roofing Material	Mid-Level Roof Field Under Rubber and ISO Bds.



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PASI Batch #

090571

Proj. Name	Former Powderhouse Elementary School, 1060 Broadway, Sommerville, N		Proj. #	
16	031014-09-08A	3/10/2014	Mastic on Foam Glass Roof Blocks	Mid-Level Roof Field
17	031014-09-08B	3/10/2014	Mastic on Foam Glass Roof Blocks	Upper Level Roof Field
18	031014-09-08C	3/10/2014	Mastic on Foam Glass Roof Blocks	Upper Level Roof Field
19	031014-09-09A	3/10/2014	Grey/Black Vertical/Horizontal Seam Sealant	Lower Level Front/Side Roof
20	031014-09-09B	3/10/2014	Grey/Black Vertical/Horizontal Seam Sealant	Lower Level Front/Side Roof
21	031014-09-10A	3/10/2014	Roofing Material Under Rubber	Upper Level Roof Field
22	031014-09-10B	3/10/2014	Roofing Material Under Rubber	Upper Level Roof Field
23	031014-09-11A	3/10/2014	Grey Caulking on Copper Flashing	Perimeter of Upper Level Roof
24	031014-09-11B	3/10/2014	Grey Caulking on Copper Flashing	Perimeter of Upper Level Roof
25	031014-09-12A	3/10/2014	Vertical Sealant on Copper Flashing Seams	Perimeter of Upper Level Roof
26	031014-09-12B	3/10/2014	Vertical Sealant on Copper Flashing Seams	Perimeter of Upper Level Roof
27	031014-09-13A	3/10/2014	Black Damp Proofing on Blue Insulation Boards	Between Interior and Exterior Walls
28	031014-09-13B	3/10/2014	Black Damp Proofing on Blue Insulation Boards	Between Interior and Exterior Walls



**ASBESTOS-CONTAINING MATERIALS, LEAD-CONTAINING PAINTS  
AND HAZARDOUS BUILDING MATERIALS SURVEY  
FORMER POWDER HOUSE SCHOOL, SOMERVILLE, MASSACHUSETTS**  
*Axiom Partners, Inc.*

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**APPENDIX B**

**XRF Paint Analysis Results**



## XRF PAINT TESTING RESULTS

### The Former Powderhouse Elementary School 1060 Broadway, Somerville, MA

LOCATION	SAMPLE CODE	SUBSTRATE TYPE	PAINT CONDITION	XRF READING (mg/cm <sup>2</sup> )	COLOR
Interior, Second Floor, Gym	D	M	1	1.9	Yellow
Interior, Third Floor, Stairwell	HR	M	1	1.9	Black
Interior, Second Floor, Side Stairwell	HR	M	1 - 2	1.8	Black
Interior, Third Floor, Stairwell	HR	M	1	1.3	Black
Exterior, Front of Building, Loading Dock	DC	M	1 - 2	0.29	Brown
Interior, Third Floor, Main Hallway (elevator)	DC	M	1	0.29	Black
Exterior, Front of Building, Loading Dock	D	M	1 - 2	0.28	Brown
Interior, Third Floor, Main Hallway (elevator)	D	M	1	0.28	Black
Interior, Second Floor, PHCS Conference Room	D	M	1	0.19	Yellow
Interior, First Floor, Stairwell	Heater Unit	M	1	0.10	Black
Interior, First Floor, Main Hallway	W	CMU	1	0.06	Yellow
Interior, Second Floor, Main Hallway	W	CMU	1	0.06	Yellow
Interior, Third Floor, Classroom #307D	D	M	1	0.05	Yellow
Interior, First Floor, Classroom #121B	W	CMU	1	0.03	Yellow
Interior, First Floor, Classroom #129A	W	CMU	1	0.03	Yellow
Interior, Third Floor, Stairwell	DC	M	1	0.03	Black
Interior, Second Floor, Classroom #214A	DC	M	1	0.02	Black
Interior, Third Floor, Main Hallway	W	CMU	1	0.02	Yellow
Exterior, Side of Building	D	M	1	0.01	Brown
Interior, First Floor, Classroom #121B	DC	M	1	0.01	Black
Interior, First Floor, Classroom #129A	DC	M	1	0.01	Black

#### SAMPLE CODE:

BB-Baseboard; B-Bollards/Bumpers; CB-Cabinets; C/T-Casing/Trim; CL-Ceiling; CR-Chair Rail; D-Door; DC-Door Casing; DF-Door Frame; DJ-Door Jamb; DW-Duct Work; E-Equipment; FL-Floor; HR- Handrail; HVAC-Fans/Air Handlers; LCB-Lower Cabinets; UCB-Upper Cabinets; P-Piping; R-Railing; RD-Radiator; RC-Radiator Cover; SB-Stair Balusters; SH-Shingles/Siding; SR-Stair Riser; SS-Stair Stringer; ST-Stair Tread; STC-Structural Column; STB-Structural Beam; STM-Structure Misc; TK-Tank; W-Wall; UW-Upper Wall; LW-Lower Wall; WSH-Window Sash; WC-Window Casing; WF-Window Frame; WSL-Window Sill; O-Other

#### SUBSTRATE TYPE:

W-Wood; G-Gypsum Board; P-Plaster; C-Concrete; CB- Concrete Block; PA-Paneling; T-Tile; M-Metal; B-Brick; U-Unknown

#### PAINT CONDITION:

1 to 5; 1 = Undamaged (< 5% damage) ; 2 = Slight Damage (6-15% Damage) ; 3 = Moderate Damage (16-25% Damage) ; 4 = Extensive Damage (26-50% Damage) ; 5 = Severe Damage (>50% Damage)



## XRF PAINT TESTING RESULTS

### The Former Powderhouse Elementary School 1060 Broadway, Somerville, MA

LOCATION	SAMPLE CODE	SUBSTRATE TYPE	PAINT CONDITION	XRF READING (mg/cm <sup>2</sup> )	COLOR
Interior, Third Floor, Classroom #307D	DC	M	1	0.01	Black
Interior, Third Floor, Stairwell	D	M	1	0.01	Yellow
Exterior, Side of Building	DC	M	1	0.00	Brown
Exterior, Side of Building, By Parking Lot	DC	M	1	0.00	Blue
Exterior, Side of Building	D	M	1	0.00	Gray
Exterior, Side of Building	DC	M	1	0.00	Gray
Interior, First Floor, Main Hallway	DC	W	1	0.00	Black
Interior, First Floor, Main Hallway	Metal Heater	M	1	0.00	Brown
Interior, First Floor, Storage Room & Loading Dock Area (off Main Hallway)	D	M	1	0.00	Blue
Interior, First Floor, Storage Room & Loading Dock Area (off Main Hallway)	DC	M	1	0.00	Black
Interior, First Floor, Electrical Panel Room (off Main Hallway)	Electrical Panel	M	1	0.00	Gray
Interior, First Floor, Boy's Bathroom (off Main Hallway)	W	CMU	1	0.00	Yellow
Interior, First Floor, Classroom #121B	WC	M	1	0.00	Black
Interior, First Floor, Classroom #129A	WC	M	1	0.00	Black
Interior, First Floor, Art Room #136	W	CMU	1	0.00	Yellow
Interior, First Floor, Art Room #136	DC	M	1	0.00	Black
Interior, First Floor, Art Room #136	STC	C	1	0.00	Yellow
Interior, First Floor, Faculty Work Room	STC	C	1	0.00	Yellow
Interior, First Floor, Faculty Work Room	DC	M	1	0.00	Black
Interior, First Floor, Faculty Work Room	WC	M	1	0.00	Black
Interior, First Floor, Faculty Work Room	W	CMU	1	0.00	Yellow

#### SAMPLE CODE:

BB-Baseboard; B-Bollards/Bumpers; CB-Cabinets; C/T-Casing/Trim; CL-Ceiling; CR-Chair Rail; D-Door; DC-Door Casing; DF-Door Frame; DJ-Door Jamb; DW-Duct Work; E-Equipment; FL-Floor; HR- Handrail; HVAC-Fans/Air Handlers; LCB-Lower Cabinets; UCB-Upper Cabinets; P-Piping; R-Railing; RD-Radiator; RC-Radiator Cover; SB-Stair Balusters; SH-Shingles/Siding; SR-Stair Riser; SS-Stair Stringer; ST-Stair Tread; STC-Structural Column; STB-Structural Beam; STM-Structure Misc; TK-Tank; W-Wall; UW-Upper Wall; LW-Lower Wall; WSH-Window Sash; WC-Window Casing; WF-Window Frame; WSL-Window Sill; O-Other

#### SUBSTRATE TYPE:

W-Wood; G-Gypsum Board; P-Plaster; C-Concrete; CB- Concrete Block; PA-Paneling; T-Tile; M-Metal; B-Brick; U-Unknown

#### PAINT CONDITION:

1 to 5; 1 = Undamaged (< 5% damage) ; 2 = Slight Damage (6-15% Damage) ; 3 = Moderate Damage (16-25% Damage) ; 4 = Extensive Damage (26-50% Damage) ; 5 = Severe Damage (>50% Damage)



## XRF PAINT TESTING RESULTS

### The Former Powderhouse Elementary School 1060 Broadway, Somerville, MA

LOCATION	SAMPLE CODE	SUBSTRATE TYPE	PAINT CONDITION	XRF READING (mg/cm <sup>2</sup> )	COLOR
Interior, First Floor, Library	W	G	1	0.00	Yellow
Interior, First Floor, Library	WC	M	1	0.00	Black
Interior, First Floor, Library	W	CMU	1	0.00	Yellow
Interior, First Floor, Main Office	W	CMU	1	0.00	Yellow
Interior, First Floor, Cafeteria	W	CMU	1	0.00	Yellow
Interior, First Floor, Kitchen	DC	M	1	0.00	Black
Interior, First Floor, Kitchen	D	M	1	0.00	Black
Interior, First Floor, Kitchen	WC	M	1	0.00	Brown
Interior, Second Floor, Main Hallway	DC	W	1	0.00	Black
Interior, Second Floor, Main Hallway	Metal Heater	M	1	0.00	Brown
Interior, Second Floor, Stairwell/Front Entryway	W	CMU	1	0.00	Yellow
Interior, Second Floor, Stairwell/Front Entryway	W	C	1	0.00	Black
Interior, Second Floor, Stairwell/Front Entryway	CL	P	1 - 2	0.00	White
Interior, Second Floor, Health Room	W	CMU	1	0.00	Yellow
Interior, Second Floor, Health Room	DC	M	1	0.00	Black
Interior, Second Floor, Health Room	STC	C	1	0.00	Yellow
Interior, Second Floor, Classroom #214A	W	CMU	1	0.00	Yellow
Interior, Second Floor, Classroom #214A	STC	C	1	0.00	Yellow
Interior, Second Floor, Classroom #214A	CL	M	1	0.00	White
Interior, Second Floor, Classroom #214A	WC	M	1	0.00	Brown
Interior, Second Floor, Classroom #231A	W	CMU	1	0.00	Yellow

#### SAMPLE CODE:

BB-Baseboard; B-Bollards/Bumpers; CB-Cabinets; C/T-Casing/Trim; CL-Ceiling; CR-Chair Rail; D-Door; DC-Door Casing; DF-Door Frame; DJ-Door Jamb; DW-Duct Work; E-Equipment; FL-Floor; HR- Handrail; HVAC-Fans/Air Handlers; LCB-Lower Cabinets; UCB-Upper Cabinets; P-Piping; R-Railing; RD-Radiator; RC-Radiator Cover; SB-Stair Balusters; SH-Shingles/Siding; SR-Stair Riser; SS-Stair Stringer; ST-Stair Tread; STC-Structural Column; STB-Structural Beam; STM-Structure Misc; TK-Tank; W-Wall; UW-Upper Wall; LW-Lower Wall; WSH-Window Sash; WC-Window Casing; WF-Window Frame; WSL-Window Sill; O-Other

#### SUBSTRATE TYPE:

W-Wood; G-Gypsum Board; P-Plaster; C-Concrete; CB- Concrete Block; PA-Paneling; T-Tile; M-Metal; B-Brick; U-Unknown

#### PAINT CONDITION:

1 to 5; 1 = Undamaged (< 5% damage) ; 2 = Slight Damage (6-15% Damage) ; 3 = Moderate Damage (16-25% Damage) ; 4 = Extensive Damage (26-50% Damage) ; 5 = Severe Damage (>50% Damage)



## XRF PAINT TESTING RESULTS

### The Former Powderhouse Elementary School 1060 Broadway, Somerville, MA

LOCATION	SAMPLE CODE	SUBSTRATE TYPE	PAINT CONDITION	XRF READING (mg/cm <sup>2</sup> )	COLOR
Interior, Second Floor, Classroom #231A	WC	M	1	0.00	Brown
Interior, Second Floor, Classroom #231A	DC	M	1	0.00	Black
Interior, Second Floor, Classroom #231A	CL	M	1	0.00	White
Interior, Second Floor, Gym	DC	M	1	0.00	Black
Interior, Second Floor, Gym	FL	C	1	0.00	Red
Interior, Second Floor, Gym	W	CMU	1	0.00	Yellow
Interior, Second Floor, PHCS Conference Room	DC	M	1	0.00	Black
Interior, Second Floor, PHCS Conference Room	W	CMU	1	0.00	Yellow
Interior, Second Floor, PHCS Conference Room	BB	CMU	1	0.00	Black
Interior, Third Floor, Main Hallway	DC	W	1	0.00	Black
Interior, Third Floor, Main Hallway	Metal Heater	M	1	0.00	Brown
Interior, Third Floor, Stairwell	W	CMU	1	0.00	Yellow
Interior, Third Floor, Classroom #307D	W	CMU	1	0.00	Yellow
Interior, Third Floor, Classroom #307A	WC	M	1	0.00	Brown
Interior, Third Floor, Classroom #307A	STC	C	1	0.00	Yellow
Interior, Third Floor, Classroom #323A	W	CMU	1	0.00	Yellow
Interior, Third Floor, Classroom #323A	DC	M	1	0.00	Black
Interior, Third Floor, Classroom #323A	WC	M	1	0.00	Brown
Interior, Third Floor, Classroom #323A	BB	C	1	0.00	Black
Interior, Third Floor, Classroom #323A	STC	C	1	0.00	Yellow
Interior, Third Floor, Stairwell	W	CMU	1	0.00	Yellow

#### SAMPLE CODE:

BB-Baseboard; B-Bollards/Bumpers; CB-Cabinets; C/T-Casing/Trim; CL-Ceiling; CR-Chair Rail; D-Door; DC-Door Casing; DF-Door Frame; DJ-Door Jamb; DW-Duct Work; E-Equipment; FL-Floor; HR- Handrail; HVAC-Fans/Air Handlers; LCB-Lower Cabinets; UCB-Upper Cabinets; P-Piping; R-Railing; RD-Radiator; RC-Radiator Cover; SB-Stair Balusters; SH-Shingles/Siding; SR-Stair Riser; SS-Stair Stringer; ST-Stair Tread; STC-Structural Column; STB-Structural Beam; STM-Structure Misc; TK-Tank; W-Wall; UW-Upper Wall; LW-Lower Wall; WSH-Window Sash; WC-Window Casing; WF-Window Frame; WSL-Window Sill; O-Other

#### SUBSTRATE TYPE:

W-Wood; G-Gypsum Board; P-Plaster; C-Concrete; CB- Concrete Block; PA-Paneling; T-Tile; M-Metal; B-Brick; U-Unknown

#### PAINT CONDITION:

1 to 5; 1 = Undamaged (< 5% damage) ; 2 = Slight Damage (6-15% Damage) ; 3 = Moderate Damage (16-25% Damage) ; 4 = Extensive Damage (26-50% Damage) ; 5 = Severe Damage (>50% Damage)



**ASBESTOS-CONTAINING MATERIALS, LEAD-CONTAINING PAINTS  
AND HAZARDOUS BUILDING MATERIALS SURVEY  
FORMER POWDER HOUSE SCHOOL, SOMERVILLE, MASSACHUSETTS**  
*Axiom Partners, Inc.*

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**APPENDIX C**

**Hazardous Building Materials Inventory**



**Hazardous Building Materials Inventory  
The Former Powderhouse Elementary School  
1060 Broadway, Somerville, MA**

**Fluorescent Light Bulbs & Ballasts**

Description	Qty	Location	Manufacturer	PCB Content
3'; 6 Bulbs Suspended	250	1 <sup>st</sup> Floor Classrooms Throughout	Unknown	Yes
4'; 2 Bulbs Suspended	225	1 <sup>st</sup> Floor Classrooms, Hallways, Stairwells & Other Rooms Throughout	Unknown	Yes
3'; 6 Bulbs Suspended	175	2 <sup>nd</sup> Floor Classrooms Throughout	Unknown	Yes
4'; 2 Bulbs Suspended	150	2 <sup>nd</sup> Floor Classrooms, Hallways, Stairwells & Other Rooms Throughout	Unknown	Yes
4'; 1 Bulb Suspended	20	2 <sup>nd</sup> Floor Classrooms & Other Rooms Throughout	Unknown	Yes
Halogen; 1 Bulb Suspended	10	2 <sup>nd</sup> Floor Gym	N/A	N/A*
3'; 6 Bulbs Suspended	200	3 <sup>rd</sup> Floor Classrooms Throughout	Unknown	Yes
4'; 2 Bulbs Suspended	180	3 <sup>rd</sup> Floor Classrooms, Hallways, Stairwells & Other Rooms Throughout	Unknown	Yes

\* = Suspected to contain mercury.

**CFC-Containing Equipment**

Description	Location	Number of Units	CFC Quantity
Refrigerator	1 <sup>st</sup> Floor Kitchen Area	1	> 1 pound
Coolers	1 <sup>st</sup> Floor Kitchen Area	2	Unknown
Cooler	1 <sup>st</sup> Floor Loading Dock Area	1	Unknown
Large McQuay A/C Units	Upper and Middle Level Roofs	7	44Lbs. R-22 EA
Smaller McQuay A/C Units	Upper, Middle and Rear Level Roofs	5	15 Lbs R-22 EA
Carrier A/C Unit	Front Lower Roof	1	5 Lbs. R-12

**PCB-Containing Equipment**

Description	Location	Number of Units	PCB Quantity
Pad Mounted Transformer	Exterior By Back Loading Dock Area	1	Unknown
Floor Mounted Transformer	1 <sup>st</sup> Floor Electrical Panel Room	1	"Dry Type"

**Miscellaneous Items**

Description	Location	Quantity
55-Gallon Metal Drums (full of unknown liquid [presumed hydraulic oil])	1 <sup>st</sup> Floor Elevator Machine Room	2
Water Fountains	1 <sup>st</sup> Floor Main Hallways Throughout	4
Hydraulic Oil associated w/ Elevator Ram (presumed)	1 <sup>st</sup> Floor, Main Hallway, Underneath Elevator	1



Fire Extinguishers	1 <sup>st</sup> Floor Main Hallways Throughout	2
Emergency Generator	Exterior By Back Loading Dock Area	1
Water Fountains	2 <sup>nd</sup> Floor Main Hallways Throughout	4
Fire Extinguishers	2 <sup>nd</sup> Floor Main Hallways Throughout	1
Water Fountains	3 <sup>rd</sup> Floor Main Hallways Throughout	2
Air Compressor Tank	3 <sup>rd</sup> Floor Equipment Room	1*

\* = Suspected to contain hydraulic oil.



**APPENDIX D**  
**Site Photographs**





**12"x12" Brown Asbestos-Containing Floor Tile and Mastic Located Throughout School**



**NON-Asbestos-Containing Roof Drain Insulation Above Suspended Ceilings Throughout School**





**Asbestos-Containing Damp Proofing on Blue Foam in Insulation Board on Interior CMU Walls**



**Typical Stone Ballasted Rubber Roof Over Multi-Layer Asbestos-Containing Roofing**



## **APPENDIX E**

### **Cost Estimate**



# HAZARDOUS BUILDING MATERIALS ABATEMENT COST ESTIMATE

AXIOM PARTNERS, INC.  
Environmental Engineers  
545 Salem Street  
Wakefield, MA 01880

BUDGET:  
PRELIM:  
FINAL: X

DATE: 18-Mar-14  
BY: E. Kearney  
CHECKED: R. Ames

CLIENT: ADD Inc.  
LOCATION: **Powderhouse School**  
Somerville, MA  
SUBJECT: HAZMAT Abatement

LINE NO.	ITEM DESCRIPTION	QTY	UNIT	ABATEMENT/REMOVAL			REPLACEMENT			TOTAL COST
				UNIT COST	ESCALATION FACTOR	AMOUNT	UNIT COST	ESCALATION FACTOR	AMOUNT	
	<b>Confirmed &amp; Presumed ACMs</b>									
1										
2	Confirmed 12"x12' Brown Floor Tiles and Mastics throughout Build	25,000	SF	\$ 3.50	1.00	\$ 87,500.00	\$ -		\$ -	\$ 87,500.00
3	Confirmed Roofing Materials (Main Field, Flashing, Vertical Seams)	44,300	SF	\$ 2.50	1.00	\$ 110,750.00	\$ -		\$ -	\$ 110,750.00
4	Confirmed Pipe Insulation	60	LF	\$ 45.00	1.00	\$ 2,700.00	\$ -		\$ -	\$ 2,700.00
5	Confirmed Interior Window Caulk Materials around Doors	4,800	LF	\$ 2.00	1.00	\$ 9,600.00	\$ -		\$ -	\$ 9,600.00
6	Confirmed Duct Sealant Materials throughout building	200	SF	\$ 5.00	1.00	\$ 1,000.00	\$ -		\$ -	\$ 1,000.00
7	Confirmed Radiator Caulking Materials	30	LF	\$ 16.50	1.00	\$ 495.00	\$ -		\$ -	\$ 495.00
8	Confirmed Coating/Mastic on Underside of Stairwells	1,500	SF	\$ 18.00	1.00	\$ 27,000.00	\$ -		\$ -	\$ 27,000.00
9	Confirmed Sink Undercoating materials	30	EA	\$ 100.00	1.00	\$ 3,000.00	\$ -		\$ -	\$ 3,000.00
10	Confirmed Column Caulking throughout Building	4,000	LF	\$ 4.00	1.00	\$ 16,000.00	\$ -		\$ -	\$ 16,000.00
11	Confirmed Exterior Louver Vent Caulking	300	LF	\$ 20.00	1.00	\$ 6,000.00	\$ -		\$ -	\$ 6,000.00
12	Confirmed Duct Insulation	120	SF	\$ 15.00	1.00	\$ 1,800.00	\$ -		\$ -	\$ 1,800.00
13	Confirmed Damp Proofing Materials on Exterior/CMU Walls	40,000	SF	\$ 10.00	1.00	\$ 400,000.00	\$ -		\$ -	\$ 400,000.00
14	Confirmed Interior Door Caulking	200	EA	\$ 100.00	1.00	\$ 20,000.00	\$ -		\$ -	\$ 20,000.00
15										
16	<b>Presumed ACMs Not Observed</b>									
17	Presumed Below Grade Transite Pipe From Street Utility Mains	TBD	LF	\$ 15,000.00	1.00	\$ 15,000.00	\$ -		\$ -	\$ 15,000.00
18	Presumed Concealed Window Caulking	TBD	EA	\$ 25,000.00	1.00	\$ 25,000.00	\$ -		\$ -	\$ 25,000.00
19	Presumed Concealed Pipe & Fitting Insulation	TBD	LF	\$ 25,000.00	1.00	\$ 25,000.00	\$ -		\$ -	\$ 25,000.00
20										
21	Lead Paint (in general, no abatement cost for demolition, cost is for exposure monitoring, Health & Safety requirements)									\$ 5,000.00
22	Contingency for Misc. Haz Building Materials (Light Fixture Bulbs and Ballasts, Mercury Containing Items and CFCs)									\$ 20,000.00
23										
24										
25	<b>SUBTOTAL</b>									<b>\$ 775,845.00</b>
26										
27	<b>10% CONTINGENCY</b>									<b>\$ 77,584.50</b>
28										
29	<b>SUBTOTAL/CONTINGENCY</b>									<b>\$ 853,429.50</b>
30										
31	<b>INDUSTRIAL HYGIENE SERVICES (5%)</b>									<b>\$ 42,671.48</b>
32										
33	<b>ASBESTOS &amp; HAZARDOUS BUILDING MATERIALS ABATEMENT TOTAL</b>									<b>\$ 896,100.98</b>

TBD = To Be Determined