



**Masterman High School**  
1699 Spring Garden St  
Philadelphia, PA  
Imminent Hazard Locations

## Asbestos Air Monitoring Report

**DECEMBER 14, 2020**

**PREPARED FOR:**

School District of Philadelphia  
440 North Broad Street, Room 3053  
Philadelphia, Pennsylvania  
Attention: Mr. Stephen Link

**PREPARED BY:**

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**CONTROL NUMBER:**

2020214002.2

**WORK ORDER NUMBER(S):**

1826343, 1794407, 1794410, 1794415

**ENCUMBRANCE NUMBER:**

TBD

**VERTEX Project No:** 60018

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## 1.0 EXECUTIVE SUMMARY

In October 2019, The Vertex Companies, Inc. (VERTEX) was retained by the School District of Philadelphia to provide air monitoring and laboratory services in conjunction with the abatement of designated asbestos containing materials from Masterman High School at 1699 Spring Garden St in Philadelphia, PA.

This project was performed under School District Control Number 2020214002.2, Work Order Numbers 1826343, 1794407, 1794410, 1794415, & Encumbrance Number (TBD).

Specifically, this project entailed the abatement (removal) of the following designated asbestos containing materials that were identified as imminent hazards:

The project entailed the **removal** of:

- Approximately 1 square foot of debris from 1<sup>st</sup> Floor Home and School Closet
- Approximately 24 linear feet of pipe fitting/insulation in 1<sup>st</sup> Floor Home and School Closet

In addition, the project entailed the **encapsulation** (i.e., non-imminent hazard locations) of the following designated damaged asbestos containing materials:

- Approximately 1 linear foot of pipe insulation from Classroom 311
- Approximately 1 linear foot of pipe insulation from Basement Book Storage Room in Hall next to Hydration Station
- Approximately 1 linear foot of pipe insulation from Basement Mechanical Room next to Classroom 9

The following items listed on the notification were not completed at this time and will be completed at a later date:

The **removal** of:

- Approximately 1 linear foot of pipe fittings from Counselors Office 110
- Approximately <1 linear foot of pipe fittings from Basement Electrical Room next to BE Office
- Approximately 1 linear foot of pipe insulation from Basement Pump Room
- Approximately 3 linear feet of pipe insulation from Music Classroom 102

The **encapsulation** of:

- Approximately <1 linear foot of pipe fittings from Basement BE Office
- Approximately 1 linear foot of pipe fitting/insulation from Basement LOGO Closet next to elevator 1

- Approximately <1 linear foot of pipe fittings from Basement Hall H05 near Classroom 15
- Approximately 1 linear foot of pipe fitting/insulation from Hall next to Band Room with Stairs to Stage/Auditorium
- Approximately 1 linear foot of pipe insulation from 115E Assistant Principals Office
- Approximately 1 linear foot of pipe insulation from Classroom 101
- Approximately 3 linear feet of pipe insulation from Classroom 104
- Approximately 1 linear foot of pipe insulation from 5<sup>th</sup> Floor Hall H53 by Classroom 506

A-Team performed abatement on October 22, 2019 through October 28, 2019; for a total of four (4) work shifts.

VERTEX provided air monitoring services which included the collection of airborne asbestos samples before, during, and after the abatement project. This air monitoring program was conducted in accordance with all applicable Federal, Commonwealth of Pennsylvania, and City of Philadelphia Asbestos Control Regulations. Certified Asbestos Project Inspectors performed the air monitoring services.

## **2.0 PROJECT OVERSIGHT**

VERTEX provided an API for an on-site inspection of the asbestos removal project, which included:

- (1) Monitoring the activities and work procedures of the removal contractor (A-Team).
- (2) Collection of air samples to determine compliance with applicable regulations.
- (3) Verify the collection and removal of all designated asbestos containing materials that were removed.

## **3.0 RESULTS**

1. Final clearance air samples were collected and analyzed by Phase Contrast Microscopy (PCM) as required by the City of Philadelphia Asbestos Control Regulations.

PCM Final Airborne Concentrations collected inside the minor and incidental regulated work areas were below 0.01 F/cc, the clearance criteria in accordance with the City of Philadelphia Asbestos Control Regulations.

2. The airborne fiber concentrations collected outside the regulated (i.e. perimeter samples) work areas during removal operations were below 0.01 F/cc, the EPA recommended level for clean air.
3. The airborne fiber concentrations inside the regulated work areas (i.e. containment) collected during abatement operations was also below 0.01 F/cc.

Please refer to the attached 6.0 PCM Air Sampling Results for a summary of the air sample results.

#### **4.0 ANALYTICAL / AIR MONITORING METHODOLOGIES**

**Phase Contrast Microscopy (PCM)** air samples were collected and analyzed in accordance with the National Institute of Safety and Health (NIOSH) Analytical Method #7400, "Asbestos Fibers in Air," using A counting rules. A segment of the collected sample filter is mounted on a slide, treated chemically to make the filter transparent, and then examined using a special microscope reticule and counting procedure with phase contrast illumination at 400 to 500 magnification. Any particle having a length to width (or aspect) ratio greater than 3:1, and a length of 5 micrometers ( $\mu\text{m}$ ) or greater is counted as a fiber. PCM analysis does not distinguish between asbestos and non-asbestos fibers.

All air samples were collected by the high-volume method in which a pump is used to draw a volume of air through a membrane filter at a known rate. Typical sampling rates for final air testing are less than 10 Liters per minute (L/min) for approximately 1,200-1,800 liters. Samples are collected in 25-millimeter (mm) cassettes containing a mixed cellulose ester (MCE) filter with a 0.8  $\mu\text{m}$ -effective pore size for PCM analysis.

Daily and designated final air samples were collected and analyzed by Phase Contrast Microscopy (PCM) as per the City of Philadelphia Asbestos Control Regulations (ACR).

#### **5.0 ABATEMENT / ENCLOSURE METHODOLOGIES (MINOR/INCIDENTAL)**

Abatement was performed by Commonwealth of Pennsylvania licensed asbestos abatement workers. All licensed workers donned proper personal protective (PPE) equipment, including but not limited to TYVEK<sup>®</sup> suits and NIOSH approved half-face air purifying respirators.

Prior to building the tent enclosure, stored materials in the closet were HEPA vacuumed and/or wet wiped, removed from the closet, and stored in the IMC.

##### **Glovebag**

Prior to glovebag asbestos removal (i.e., 1<sup>st</sup> Floor Home and School Closet), asbestos warning signs were posted to demarcate the asbestos regulated work area and asbestos warning tape was used for notification purposes. Access to the regulated area was limited to authorized personnel only.

Critical barriers consisting of two layers of plastic sheeting were used to seal over all openings in the work area and prevent airborne asbestos from migrating to adjacent areas. A tent enclosure, consisting of 2-layers of 6-mil plastic sheeting was constructed and utilized to establish a secondary containment. The floor and other surfaces inside the regulated work area were pre-cleaned. Six mil plastic drop sheeting was placed on the floor surface immediately below the pipe insulation to be removed. Negative air was established inside the tent enclosure.

The pipe insulation removal process consisted of pre-wetting of the pipe insulation, taping the glovebag to the pipe, re-wetting of the asbestos insulation, cutting metal bands, removing the insulation, wetting the insulation in the glovebag, wet wiping of the pipe, followed by glovebag removal. A HEPA vacuum was utilized to establish negative pressure inside the glovebags prior to removal. Following abatement, the regulated work area was HEPA vacuumed and wet wiped clean.

Note: Where the scope of work entailed the clean-up of debris (i.e., 1<sup>st</sup> Floor Home and School Closet) bulk debris on the floor was wetted and placed into an asbestos bag. Following debris clean-up, the regulated work area was HEPA vacuumed, wet wiped clean, and sealed.

A visual inspection, utilizing a leaf blower, was performed in the work area to ensure the completion of abatement operations and no visible debris was observed within the regulated work area. Following successful visual inspection, the work area was encapsulated. Following sufficient drying time all interior plastic sheeting was removed from walls and floor where applicable. The area was re-cleaned and re-encapsulated.

### **Incidental Projects (Encapsulation)**

Prior to encapsulation, asbestos warning signs were posted to demarcate the asbestos regulated work area and asbestos warning tape was used for notification purposes. Where applicable, critical or isolation barriers were constructed to further regulate the work area. Access to the regulated area was limited to authorized personnel only.

The floor and other surfaces inside the regulated work area was pre-cleaned. Six mil plastic drop sheeting was placed on the floor surface immediately below the pipe insulation to be encapsulated.

The pipe insulation encapsulation process consisted of wetting rewettable cloth and wrapping it around the cracks or exposed ends and the application of a bridging encapsulant to cover the cracks or exposed ends. Following encapsulation procedures, the regulated work area was HEPA vacuumed and wet wiped clean.

A visual inspection was performed in the work area to ensure all damaged areas of pipe insulation were addressed and no visible debris was observed within the regulated work areas.

Final clearance samples were performed in accordance with the City of Philadelphia Asbestos Control Regulation and the AHERA regulation. Final air testing incorporated PCM methodologies.

## **Disposal**

Following the completion of the abatement operations, all waste generated as part of the removal project was double-bagged and labeled for proper disposal. Asbestos waste will be transported by Super Kwik, licensed waste transporters, and disposed of at Dauphin Meadows, an EPA approved landfill.

## 6.0 SUMMARY OF PCM AIR SAMPLING RESULTS

School District of Philadelphia Masterman High School Philadelphia, PA				
Sample #	Sample Location/Activity	Volume (L)	Fibers/100 Fields	Sample Result (F/cc)
<b>Date Collected: 10/22/19</b>				
<b>Site Activity/Work Area: 1 SF of pipe Insulation debris. Cleanup in home &amp; school hallway closet access from auditorium</b>				
1022-01	Perimeter: Hallway 3 foot from closet	600	7.5	0.006
1022-02	Perimeter: Hallway 15 feet from closet	600	9	0.007
1022-03	Final: Inside closet center	1200	11	0.004
1022-04	Final: Hallway outside closet 3 feet	1200	9	0.004
1022-05	Final: Hallway outside closet 15 feet	1200	10.5	0.004
1022-06	Final Hallway outside closet 25 feet	1200	6.5	0.003
1022-07	Final: Inside closet room shelf	1200	8.5	0.003
1022-08	Field Blank	-	0	-
<b>Date Collected: 10/26/19</b>				
<b>Site Activity/Work Area: 1st Floor Home &amp; School Hallway Closet</b>				
1026-01	Baseline: 1st Floor Hallway Closet	1200	3	<0.002
1026-02	Baseline: 1st Floor Hallway Closet	1200	4	<0.002
1026-03	Baseline: 1st Floor Hallway Closet	1200	2.5	<0.002
1026-05	Perimeter: Next to H&S closet 3 feet from w/a	1260	10	0.004
1026-06	Perimeter: Main office hallway 15 feet from w/a	1260	7.5	0.003
1026-07	Perimeter: Next to custodial closet 30 feet from w/a	1260	5	< 0.002
1026-08	Perimeter: Next to H&S closet 3 feet from w/a	1200	8	0.003
1026-09	Perimeter: Main office hallway 15 feet from w/a	1200	4	< 0.002
1026-10	Perimeter: Next to custodial closet 30 feet from w/a	1200	7.5	0.003
1026-11	Field Blank	-	0	-
<b>Date Collected: 10/27/19</b>				
<b>Site Activity/Work Area: 1st Floor Home &amp; School closet/Removal &amp; Encapsulation of 24 LF Pipe Insulation</b>				
1027-01	Perimeter: Next to elevator 1st floor	657	2	< 0.004
1027-02	Perimeter: Next to women's restroom 1st floor	657	4	< 0.004
1027-03	Perimeter: Adjacent to auditorium 1st floor	657	2	< 0.004
1027-04	Work Area: North Work Area	657	11	0.008
1027-05	Blank	-	0	-
<b>Date Collected: 10/27/19</b>				
<b>Site Activity/Work Area: Basement Mechanical Room next to classroom 9/Encapsulation of 1 LF Pipe Insulation</b>				
1027-06	Working Final: Near Door	900	4	< 0.003
1027-07	Working Final: Adjacent Panel PR	900	3	< 0.003
1027-08	Blank	-	0	-

<b>Date Collected: 10/27/19</b>				
<b>Site Activity/Work Area: Classroom 311/ Encapsulation of 1 LF of Pipe Insulation</b>				
1027-09	Working Final: South East Work Area	900	4	< 0.003
1027-10	Blank	-	0	-
<b>Date Collected: 10/27/19</b>				
<b>Site Activity/Work Area: Basement Book Storage Room in Hall next to Hydration Station/Encapsulation of 1 LF Pipe Insulation</b>				
1027-11	Working Final: Adjacent Bookshelf	900	2	< 0.003
1027-12	Working Final: Near Door	900	3	< 0.003
1027-13	Blank	-	0	-
<b>Date Collected: 10/27/19</b>				
<b>Site Activity/Work Area: 1st Floor Home and School Closet</b>				
1027-14	Final: South Work Area	1200	5	< 0.002
1027-15	Final: Southeast Work Area	1200	4	< 0.002
1027-16	Final: North Work Area	1200	6	0.002
1027-17	Final: East Work Area	1200	3	< 0.002
1027-18	Final: West Work Area	1200	2	< 0.002
1027-19	Blank	-	0	-