

**REPORT
FOR
HAZARDOUS MATERIALS DETERMINATION
SURVEY
AT THE
MINUTEMAN CAREER & TECHNICAL HIGH SCHOOL
LEXINGTON, MASSACHUSETTS**

PROJECT NO: 213 114.00

Survey Dates:
May 6-10, 2013

SURVEY CONDUCTED BY:

**UNIVERSAL ENVIRONMENTAL CONSULTANTS
12 BREWSTER ROAD
FRAMINGHAM, MA 01702**

May 20, 2013

Mr. Mike McKeon
Kaestle Boos Associates, Inc.
325 Foxborough Boulevard, Suite 100
Foxborough, MA 02035

Reference: **Hazardous Materials Determination Survey**
Lexington Minuteman Career & Technical High School

Dear Mr. McKeon:

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

Enclosed please find the report for hazardous materials determination survey at the Minuteman Career & Technical High School, Lexington, MA.

Please do not hesitate to call should you have any questions.

Very truly yours,

Universal Environmental Consultants



Ammar M. Dieb
President

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Enclosure

1.0 INTRODUCTION:

UEC has been providing comprehensive asbestos services since 2001 and has completed projects throughout New England. We have completed projects for a variety of clients including residential, commercial, industrial, municipal, and public and private schools. We maintain appropriate asbestos licenses and staff with a minimum of twenty years of experience.

As part of the proposed renovation and demolition project, UEC was contracted by Kaestle Boos Associates, Inc. to conduct the following services at the Minuteman Career & Technical High School, Lexington, MA:

- Asbestos Containing Materials (ACM) Inspection;
- Lead Based Paint (LBP);
- Polychlorinated Biphenyls (PCB's)-Electrical Equipment and Light Fixtures;
- PCB's Caulking and Sealant Sampling;
- Mercury in rubber flooring;
- Cresol flooring;
- Underground Storage Oil Tanks (UST).

The scope of work included the inspection of accessible ACM, collection of bulk samples from materials suspected to contain asbestos, determination of types of ACM found and cost estimates for remediation. Bulk samples analyses for asbestos were performed using the standard Polarized Light Microscopy (PLM) in accordance with the Environmental Protection Agency (EPA) standard.

Bulk samples were collected by an EPA accredited and Massachusetts licensed asbestos inspector Mr. Leonard J. Busa (AI-030673) and analyzed by a Massachusetts licensed laboratory Asbestos Identification Laboratory, Woburn, MA.

PCB's bulk samples were analyzed by a Massachusetts licensed laboratory EMSL, Cinnaminson, NJ in accordance with EPA 3540C/8082 method.

Mercury in rubber flooring samples were analyzed by a Massachusetts licensed laboratory EMSL, Cinnaminson, NJ in accordance with EPA 7471B method.

Samples results are attached.

2.0 FINDINGS:

ASBESTOS CONTAINING MATERIALS (ACM) INSPECTION:

The regulations for asbestos inspection are based on representative sampling. It would be impractical and costly to sample all materials in all areas. Therefore, representative samples of each homogenous area were collected and analyzed or assumed.

All suspect materials were grouped into homogenous areas. By definition a homogenous area is one in which the materials are evenly mixed and similar in appearance and texture throughout. A homogeneous area shall be determined to contain asbestos based on findings that the results of at least one sample collected from that area shows that asbestos is present in an amount greater than 1 percent in accordance with EPA regulations.

All suspect materials that contain any amount of asbestos must be considered asbestos if it is scheduled to be disturbed per the requirements of the Department of Environmental Protection (DEP) regulations.

No additional suspect and accessible ACM were found during this survey. However, hidden ACM may be found during renovation and demolition activities.

Number of Samples Collected

Eighty six (86) bulk samples were collected from the following materials suspected of containing asbestos:

Type and Location of Material

1. Fireproofing at metal shop
2. Fireproofing at room 3S-31
3. Wall plaster for circular section at upper level dining
4. Ceiling plaster at boy's locker room
5. Ceiling plaster at stairwell down to women's locker room
6. Joint compound at ground floor
7. Joint compound at ground floor
8. 2'x 4' Suspended acoustical ceiling tile type I at plumbing shop
9. 2'x 4' Suspended acoustical ceiling tile type I at room 2S-53
10. Interior window glazing caulking
11. Interior window glazing caulking
12. Glazing caulking for small window in metal door at room 2S-22
13. Glazing caulking for small window in metal door at printing
14. Red sealant on metal duct corner at cleaning room by business office
15. Non-suspect lab table at science room 31
16. Transite tab table at room 3S-23
17. Transite table for fume hood at science room 31
18. Small tank insulation at boiler room
19. Small tank insulation at boiler room
20. Small pipe insulation at boiler room
21. Fitting insulation at boiler room
22. Mud on flange at boiler room
23. Fitting insulation at boiler room
24. Mud on flange at boiler room
25. Mud on flange at boiler room
26. White sealant on new insulated pipe at boiler room
27. Pipe insulation protruding from pit wall from exterior
28. Strip of flooring at track hallway
29. Black glue on bottom of wood block floor at hallway by elevator
30. Black glue on bottom of wood block floor at metal shop
31. Stick-on vinyl floor tile at greenhouse
32. Residue white flooring at boy's locker room
33. Resin paper at boy's locker room
34. Orange stair tread at stairwell
35. White with blue spots vinyl floor tile at lobby outside admissions
36. Black mastic for white with blue spots vinyl floor tile at lobby outside admissions
37. Red leveler for white with blue spots vinyl floor tile at lobby outside admissions
38. White with blue spots vinyl floor tile at third floor hallway by classroom 43
39. Mastic for white with blue spots vinyl floor tile at third floor hallway by classroom 43
40. Mastic for white with blue spots vinyl floor tile at barber shop
41. Brown vinyl floor tile at ground floor small drafting
42. Mastic for brown vinyl floor tile at ground floor small drafting
43. Darker brown vinyl floor tile at printing
44. Chocolate vinyl floor tile at hallway and stairwell
45. Sea green/blue vinyl floor tile at 3S-31

46. Deep sea blue vinyl floor tile at science room 31
47. New blue vinyl floor tile at upper level dining
48. Grey vinyl floor tile at trades hall loft office
49. New black vinyl floor tile at art
50. Mastic for new black vinyl floor tile at art
51. Red leveler for new black vinyl floor tile at art
52. Fire orange vinyl floor tile at 3S-22
53. Mastic for fire orange vinyl floor tile at 3S-22
54. Pink vinyl floor tile at third floor machinery lab
55. Mastic for pink vinyl floor tile at third floor machinery lab
56. White/grey vinyl floor tile at 2S-41
57. White/grey vinyl floor tile at 3N-13
58. Mastic for white/grey vinyl floor tile at 3N-13
59. Black with what streaks vinyl floor tile at ground floor hall by career directions
60. Black with what streaks vinyl floor tile at printing
61. Mastic for black with what streaks vinyl floor tile at printing
62. Gymnasium rubber floor
63. Gymnasium rubber floor adhesive
64. Light blue vinyl floor tile at science room 32
65. Linoleum floor covering under light blue vinyl floor tile at science room 32
66. Linoleum adhesive floor covering under light blue vinyl floor tile at science room 32
67. Linoleum floor covering at 3S-21
68. Linoleum floor covering at trades hall office loft
69. Linoleum floor covering at Lacrosse
70. Exterior pink vertical caulking in brick
71. Exterior pink vertical caulking in brick
72. Exterior pink window framing caulking
73. Exterior pink window framing caulking
74. Exterior pink door framing caulking
75. Exterior soft black glazing caulking
76. Interior hard brown glazing caulking for exterior window
77. Interior hard brown glazing caulking for exterior window
78. Interior black framing caulking for exterior window
79. Interior black framing caulking for exterior window
80. Interior thick black glazing caulking for exterior window
81. Exterior window glazing caulking at greenhouse
82. Exterior door framing caulking at snow blower shed
83. Exterior window framing caulking at landscape building
84. Exterior soft black glazing caulking
85. Black caulking on metal covering for window sill
86. Exterior black glue on copper flashing behind brick at side of window

Sample Results

Type and Location of Material

Sample Result

- | | |
|---|----------------------|
| 1. Fireproofing at metal shop | No Asbestos Detected |
| 2. Fireproofing at room 3S-31 | No Asbestos Detected |
| 3. Wall plaster for circular section at upper level dining | No Asbestos Detected |
| 4. Ceiling plaster at boy's locker room | No Asbestos Detected |
| 5. Ceiling plaster at stairwell down to women's locker room | No Asbestos Detected |
| 6. Joint compound at ground floor | No Asbestos Detected |
| 7. Joint compound at ground floor | No Asbestos Detected |
| 8. 2'x 4' Suspended acoustical ceiling tile type I at plumbing shop | No Asbestos Detected |

9. 2'x 4' Suspended acoustical ceiling tile type I at room 2S-53	No Asbestos Detected
10. Interior window glazing caulking	No Asbestos Detected
11. Interior window glazing caulking	No Asbestos Detected
12. Glazing caulking for small window in metal door at room 2S-22	No Asbestos Detected
13. Glazing caulking for small window in metal door at printing	No Asbestos Detected
14. Red sealant on metal duct corner at cleaning room by business office	3% Asbestos
15. Non-suspect lab table at science room 31	No Asbestos Detected
16. Transite tab table at room 3S-23	20% Asbestos
17. Transite table for fume hood at science room 31	20% Asbestos
18. Small tank insulation at boiler room	No Asbestos Detected
19. Small tank insulation at boiler room	No Asbestos Detected
20. Small pipe insulation at boiler room	No Asbestos Detected
21. Fitting insulation at boiler room	No Asbestos Detected
22. Mud on flange at boiler room	No Asbestos Detected
23. Fitting insulation at boiler room	No Asbestos Detected
24. Mud on flange at boiler room	No Asbestos Detected
25. Mud on flange at boiler room	No Asbestos Detected
26. White sealant on new insulated pipe at boiler room	No Asbestos Detected
27. Pipe insulation protruding from pit wall from exterior	No Asbestos Detected
28. Strip of flooring at track hallway	No Asbestos Detected
29. Black glue on bottom of wood block floor at hallway by elevator	No Asbestos Detected
30. Black glue on bottom of wood block floor at metal shop	No Asbestos Detected
31. Stick-on vinyl floor tile at greenhouse	No Asbestos Detected
32. Residue white flooring at boy's locker room	No Asbestos Detected
33. Resin paper at boy's locker room	No Asbestos Detected
34. Orange stair tread at stairwell	No Asbestos Detected
35. White with blue spots vinyl floor tile at lobby outside admissions	No Asbestos Detected
36. Black mastic for white with blue spots vinyl floor tile at lobby outside admissions	No Asbestos Detected
37. Red leveler for white with blue spots vinyl floor tile at lobby outside admissions	No Asbestos Detected
38. White with blue spots vinyl floor tile at third floor hallway by classroom 43	No Asbestos Detected
39. Mastic for white with blue spots vinyl floor tile at third floor hallway by classroom 43	No Asbestos Detected
40. Mastic for white with blue spots vinyl floor tile at barber shop	No Asbestos Detected
41. Brown vinyl floor tile at ground floor small drafting	No Asbestos Detected
42. Mastic for brown vinyl floor tile at ground floor small drafting	No Asbestos Detected
43. Darker brown vinyl floor tile at printing	No Asbestos Detected
44. Chocolate vinyl floor tile at hallway and stairwell	No Asbestos Detected
45. Sea green/blue vinyl floor tile at 3S-31	No Asbestos Detected
46. Deep sea blue vinyl floor tile at science room 31	No Asbestos Detected
47. New blue vinyl floor tile at upper level dining	No Asbestos Detected
48. Grey vinyl floor tile at trades hall loft office	No Asbestos Detected
49. New black vinyl floor tile at art	No Asbestos Detected
50. Mastic for new black vinyl floor tile at art	No Asbestos Detected
51. Red leveler for new black vinyl floor tile at art	No Asbestos Detected
52. Fire orange vinyl floor tile at 3S-22	No Asbestos Detected
53. Mastic for fire orange vinyl floor tile at 3S-22	10% Asbestos
54. Pink vinyl floor tile at third floor machinery lab	No Asbestos Detected
55. Mastic for pink vinyl floor tile at third floor machinery lab	No Asbestos Detected
56. White/grey vinyl floor tile at 2S-41	No Asbestos Detected
57. White/grey vinyl floor tile at 3N-13	No Asbestos Detected
58. Mastic for white/grey vinyl floor tile at 3N-13	No Asbestos Detected
59. Black with what streaks vinyl floor tile at ground floor hall by career directions	No Asbestos Detected
60. Black with what streaks vinyl floor tile at printing	No Asbestos Detected
61. Mastic for black with what streaks vinyl floor tile at printing	No Asbestos Detected
62. Gymnasium rubber floor	No Asbestos Detected

63. Gymnasium rubber floor adhesive	No Asbestos Detected
64. Light blue vinyl floor tile at science room 32	No Asbestos Detected
65. Linoleum floor covering under light blue vinyl floor tile at science room 32	No Asbestos Detected
66. Linoleum adhesive floor covering under light blue vinyl floor tile at science room 32	No Asbestos Detected
67. Linoleum floor covering at 3S-21	5% Asbestos
68. Linoleum floor covering at trades hall office loft	Not Analyzed
69. Linoleum floor covering at Lacrosse	2% Asbestos
70. Exterior pink vertical caulking in brick	No Asbestos Detected
71. Exterior pink vertical caulking in brick	No Asbestos Detected
72. Exterior pink window framing caulking	No Asbestos Detected
73. Exterior pink window framing caulking	No Asbestos Detected
74. Exterior pink door framing caulking	No Asbestos Detected
75. Exterior soft black glazing caulking	5% Asbestos
76. Interior hard brown glazing caulking for exterior window	2% Asbestos
77. Interior hard brown glazing caulking for exterior window	Not Analyzed
78. Interior black framing caulking for exterior window	No Asbestos Detected
79. Interior black framing caulking for exterior window	No Asbestos Detected
80. Interior thick black glazing caulking for exterior window	No Asbestos Detected
81. Exterior window glazing caulking at greenhouse	2% Asbestos
82. Exterior door framing caulking at snow blower shed	No Asbestos Detected
83. Exterior window framing caulking at landscape building	No Asbestos Detected
84. Exterior soft black glazing caulking	3% Asbestos
85. Black caulking on metal covering for window sill	No Asbestos Detected
86. Exterior black glue on copper flashing behind brick at side of window	5% Asbestos

Various samples were not analyzed. The Environmental Protection Agency regulations states that should one sample from a homogenous area was found to be greater than 1 percent of asbestos, then the material must be considered asbestos containing.

Observations and Conclusions

All ACM that might be disturbed during the proposed renovation and demolition activities must be removed by a Massachusetts licensed asbestos abatement contractor under the supervision of Massachusetts licensed project monitors.

1. Red sealant on metal duct corner was found to contain asbestos. The ACM was found at various locations.
2. Transite tab table was found to contain asbestos.
3. Transite table for fume hood was found to contain asbestos.
4. Mastic for fire orange vinyl floor tile was found to contain asbestos. The ACM was found at various locations.
5. Linoleum floor covering was found to contain asbestos. The ACM was found at various locations including under newer flooring.
6. Exterior soft black glazing caulking was found to contain asbestos.
7. Exterior window glazing caulking at greenhouse was found to contain asbestos.
8. Exterior black glue on copper flashing behind brick was found to contain asbestos. The demolition contractor will have to segregate the ACM from non-ACM building surfaces for proper disposal in an EPA approved landfill that does not recycle.
9. All remaining suspect materials were found not to contain asbestos.
10. Roofing and flashing material was assumed to contain asbestos. However, roofing material is not required to be removed by a licensed asbestos contractor prior to renovation or demolition.

LEAD BASED PAINT SURVEY (LBP):

A high school is not considered a regulated facility therefore the Massachusetts Lead Law does not apply. All LBP activities performed, including waste disposal, should be in accordance with applicable Federal, State, or local laws, ordinances, codes or regulations governing evaluation and hazard reduction. In the event of discrepancies, the most

protective requirements prevail. These requirements can be found in OSHA 29 CFR 1926-Construction Industry Standards, 29 CFR 1926.62-Construction Industry Lead Standards, 29 CFR 1910.1200-Hazards Communication, 40 CFR 261-EPA Regulations. According to OSHA, any amount of LBP triggers compliance.

PCB'S-ELECTRICAL EQUIPMENT AND LIGHT FIXTURES:

Visual inspection of various equipments such as light fixtures, thermostats, exit signs and switches was performed for the presence of PCB's and mercury. Ballasts in light fixtures were assumed not to contain PCB's (labels indicating that "No PCB's" were found).

Tubes in light fixtures, thermostats, exist-signs and switches were assumed to contain mercury.

PCB'S CAULKING AND SEALANT SAMPLING:

PCB's are manmade chemicals that were widely produced and distributed across the country from the 1950s to 1977 until the production of PCB's was banned by the US Environmental Protection Agency (EPA) law which became effective in 1978. PCB's are a class of chemicals made up of more than 200 different compounds. PCB's are non-flammable, stable, and good insulators so they were widely used in a variety of products including: electrical transformers and capacitors, cable and wire coverings, sealants and caulking, and household products such as television sets and fluorescent light fixtures. Because of their chemical properties, PCB's are not very soluble in water and they do not break down easily in the environment. PCB's also do not readily evaporate into air but tend to remain as solids or thick liquids. Even though PCB's have not been produced or used in the country for more than 30 years, they are still present in the environment in the air, soil, and water and in our food.

EPA requires that all construction waste including caulking be disposed as PCB's if PCB's level exceed 50 mg/kg (ppm). An abatement plan might also be required.

Number of Samples Collected

Seven (7) bulk samples were collected from the following.

Type and Location of Material

1. Exterior window framing caulking
2. Exterior vertical caulking in brick
3. Exterior vertical caulking in brick
4. Exterior vertical caulking in brick
5. Interior hard glazing caulking for exterior window
6. Interior soft glazing caulking for exterior window
7. Exterior window glazing caulking at greenhouse

Sample Results

Type and Location of Material	Sample Result
1. Exterior window framing caulking	0.97 mg/kg
2. Exterior vertical caulking in brick	No PCB's Detected
3. Exterior vertical caulking in brick	No PCB's Detected
4. Exterior vertical caulking in brick	No PCB's Detected
5. Interior hard glazing caulking for exterior window	3.7 mg/kg
6. Interior soft glazing caulking for exterior window	No PCB's Detected
7. Exterior window glazing caulking at greenhouse	No PCB's Detected

Observations and Conclusions

PCB's levels in all of the caulking samples were found to be much lower than the EPA limit of 50 mg/kg. No further action is required.

MERCURY IN RUBBER FLOORING:

Number of Samples Collected

Two (2) bulk samples were collected from the following.

Type and Location of Material

1. Rubber floor at gymnasium
2. Rubber floor at gymnasium

Sample Results

Type and Location of Material

Sample Result

- | | |
|------------------------------|---------------------|
| 1. Rubber floor at gymnasium | 0.77 mg/kg |
| 2. Rubber floor at gymnasium | No Mercury Detected |

Observations and Conclusions

Mercury levels in the rubber flooring were found to be lower than the EPA limit of 2 mg/kg. No further action is required.

CRESOL FLOORING:

The wood block flooring on the ground floor is oily and odorous. The wood block flooring was assumed to contain Cresol.

UNDERGROUND OIL STORAGE TANKS:

Two underground oil storage tanks were observed at the rear of the school. No records were found on-site for review.

3.0 COST ESTIMATES:

The cost includes removal and disposal of all accessible ACM, hazardous materials and an allowance for removal of inaccessible or hidden ACM that may be found during the renovation and demolition project.

Location	Material	Approximate Quantity	Cost Estimate (\$)
Various Locations	Red Sealant on Ducts	3,500 SF	17,500.00
	Fire Orange 12"x 12" Vinyl Floor Tiles and Mastic	2,000 SF	8,000.00
	Linoleum Floor Covering	30,000 SF	135,000.00
	Tubes in Light Fixtures	8,000 Total	80,000.00
	Miscellaneous HAZ MAT and Hidden ACM	Unknown	25,000.00
	Walls and Ceilings Demolition to access ACM	Unknown	25,000.00
Science Labs	Transite Tables/Counter Tops	8 Total	2,800.00
	Fume Hoods	8 Total	1,400.00
Ground Floor	Cresol Wood Block Flooring	20,000 SF	200,000.00

Exterior	Windows	500 Total	87,500.00
	Oil Storage Tanks	2 Total	40,000.00
	Building Flashing ¹	Unknown	100,000.00
	Transite Sewer Pipe ²	Unknown	30,000.00
Location			Material
Approximate Quantity			Cost Estimate (\$)
Estimated Fee for Design, Construction Monitoring and Air Sampling			67,800.00
Total:			820,000.00

¹: Part of Demolition activities.

²: Part of Demolition and addition activities.

4.0 DESCRIPTION OF SURVEY METHODS AND LABORATORY ANALYSES:

Asbestos:

Asbestos samples were collected using a method that prevents fiber release. Homogeneous sample areas were determined by criteria outlined in EPA document 560/5-85-030a.

Bulk material samples were analyzed using PLM and dispersion staining techniques with EPA method 600/M4-82-020.

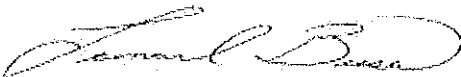
Polychlorinated Biphenyls:

PCB's samples were analyzed in accordance with EPA 3540C/8082 method.

Mercury in Rubber Flooring:

Mercury samples were analyzed in accordance with EPA 7471B method.

Inspected By:



Leonard J. Busa
Asbestos Inspector

5.0 LIMITATIONS AND CONDITIONS:

This report has been completed based on visual and physical observations made and information available at the time of the site visits, as well as an interview with the Owner's representatives. This report is intended to be used as a summary of available information on existing conditions with conclusions based on a reasonable and knowledgeable review of evidence found in accordance with normally accepted industry standards, state and federal protocols, and within the scope and budget established by the client. Any additional data obtained by further review must be reviewed by UEC and the conclusions presented herein may be modified accordingly.

This report and attachments, prepared for the exclusive use of Owner for use in an environmental evaluation of the subject site, are an integral part of the inspections and opinions should not be formulated without reading the report in its entirety. No part of this report may be altered, used, copied or relied upon without prior written permission from UEC, except that this report may be conveyed in its entirety to parties associated with Owner for this subject study.

