FROEHLING & ROBERTSON, INC.
Engineering Stability Since 1881

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Record No: 62R-3078 October 14, 2013

Virginia Military Institute
Physical Plant
110 Hines Lane
Lexington, Virginia 24450

Attention: Major Richard Fletcher, P.E.
Maintenance Reserve Program Manager (FletcherRA@vmi.edu)

Subject: Limited Asbestos Testing
303 Letcher Avenue
Virginia Military Institute
Lexington, Virginia

Major Fletcher,

Froehling & Robertson, Inc. (F&R) personnel on September 24, 2013 conducted an asbestos inspection and testing survey of window glazing and caulking from the exterior and mortar and thermal systems insulation from the Boiler Room of the structure located at 303 Letcher Avenue on the VMI Post. The testing was performed as part of painting and renovation projects that may require disturbance of the materials. The following sections summarize our findings with regards to the windows and boiler room.

1.0 LIMITED ASBESTOS SURVEY FINDINGS AND RESULTS

1.1. Asbestos Findings

Twelve (12) bulk samples were collected and analyzed for asbestos; a total of thirteen (13) layers were analyzed as a result of multiple layers in one of the samples. The suspect ACMs were submitted to Environmental Hazards Services, L.L.C. an NVLAP accredited (NVLAP Lab Code: 101882-0) and Virginia licensed asbestos laboratory, in Richmond, Virginia, for analysis by Polarized Light Microscopy (PLM) following EPA Method 600/R-93/116. The analytical results are shown in the following table. A copy of the laboratory Asbestos Bulk Analysis Report is included as an attachment to this report (see sample numbers 303GW-1 to 303GW-6 and 303GW-13 to 303GW-18). The survey results are presented in Table 1.

TABLE 1: Asbestos Sample Results: September 24, 2013

Sample Number	Sample Location	Sample Type	Lab Description	Analytical Results
303GW-1	**Boiler Room; steam feed main line joint**	**Thermals systems insulation (TSI)**	**Beige/Gray Fibrous**	**35% Chrysotile 15% Amosite**
303GW-2A	**Boiler Room; 6" Mudded elbow**	**TSI Insulation**	**Beige/Gray Fibrous**	**60% Chrysotile**
303GW-2B	**Boiler Room; 6" Mudded elbow**	**TSI Covering/Jacket**	**Tan Fibrous; White Paint Like**	**3% Chrysotile**
303GW-3	Boiler Room; 2" Hot water line mudded end cap	TSI	Gray Powder; Fibrous	NAD
303GW-4	Boiler Room; 2" Steam line branch mudded joint	TSI	Gray Powder; Fibrous	NAD
303GW-5	Boiler Room Chimney	Mortar	Beige Granular	NAD
303GW-6	Boiler Room Chimney	Refractory Mortar	Beige Granular	NAD
303GW-13	**Front Left Ground Floor**	**Window glazing**	**White Granular; White Paint Like**	**2% Chrysotile**
303GW-14	Front left ground floor	Window glazing	Beige Granular; White Paint Like	NAD
303GW-15	Left Side 2nd Floor	Window glazing	White Granular; White Paint Like	NAD
303GW-16	Front Left Ground Floor	Window caulk	White Granular; White Paint Like	NAD
303GW-17	Front right ground floor	Window caulk	White Granular; White Paint Like	NAD
303GW-18	Front left ground floor	Window caulk	White Granular; White Paint Like	NAD

[1]NAD: No Asbestos Detected

1.2. Survey Results

1.2.1. Asbestos Containing Materials

Friable Asbestos Containing Materials:

Asbestos (35% Chrysotile and 15% Amosite) was detected in a representative sample (303GW-1) collected of the insulation on the steam feed main line joint in the Boiler Room of the residence. This material is classified as friable ACM and is in poor condition. All similar insulation on steam line joints should be assumed to be an asbestos containing material (ACM).

Asbestos (60% Chrysotile) was detected in a representative sample (303GW-2A) collected of the 6" mudded elbow located in the boiler room of the residence. This material is classified as friable ACM and is in fair condition. All similar 6" mudded elbows should be assumed to be an

asbestos containing material (ACM). In addition, 3% Chrysotile asbestos was detected in a representative sample (303GW-2B) collected of the 6" mudded elbow covering/jacket. This material is classified as friable ACM and is in fair condition. All similar 6" mudded elbow covering/jacketing should be assumed to be an asbestos containing material (ACM).

Non-Friable Asbestos Containing Materials:

Asbestos (2% Chrysotile) was detected in a representative sample (303GW-13) collected of the window glazing located on the front left ground gloor window of the residence. This material is classified as Category II non-friable ACM and is in fair condition. All similar window glazing should be assumed to be an asbestos containing material (ACM). **Note: Based on our observations, the windows have been re-glazed or patched over the decades using various types of glazing compound. Due to the inability to discern which windows have the specific asbestos containing glazing, we recommend that all window glazing at the structure be presumed to contain asbestos.**

The Asbestos Analytical Report and the Chain of Custody Documentation is provided as an attachment to this report.

Note 1: If during repair/renovation activities, work is performed that will impact suspect materials that have not been sampled, it is recommended that these materials be sampled by a Virginia licensed asbestos inspector prior to disturbance.

1.3. EPA/NESHAP Regulations for Asbestos Containing Materials

The U.S. Environmental Protection Agency promulgated the National Emission Standards for Hazardous Air Pollutants (NESHAP) [40 CFR Part 61], which addresses the application, removal, and disposal of asbestos-containing materials (ACM). Under NESHAP the following categories are defined for asbestos-containing materials:

Friable - When dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

Non-friable - When dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Category I Non-friable ACM - Packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than 1% asbestos.

Category II Non-friable ACM – Any material, excluding Category I Non-friable ACM, which contains more than 1% asbestos.
Regulated Asbestos Containing Material (RACM) – One of the following:

1. Friable ACM
2. Category I Non-friable ACM that has become friable.
3. Category I Non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading.
4. Category II Non-friable ACM that has a high probability of becoming, or has become, friable by the forces expected to act on the material in the course of demolition or renovation operations.

Under NESHAP, the following actions are required:

1. Prior to the commencement of demolition or renovation activities, the building owner must inspect the affected facility or part of the facility where the demolition or renovation activities will occur for the presence of asbestos.

2. Remove all RACM from the facility before any activity begins that would break up, dislodge, or similarly disturb the material or preclude access for subsequent removal.

3. RACM need not be removed if:

   a) It is Category I non-friable ACM that is not in poor condition.
   b) It is on a facility component that is encased in concrete or other similar material and is adequately wet whenever exposed.
   c) It was not accessible for testing and was therefore not discovered until after demolition began and because of the demolition the material cannot be safely removed.
   d) It is Category II non-friable ACM and the probability is low that the material will become crumbled, pulverized, or reduced to powder during demolition.

2.0 LIMITATIONS

This report has been prepared for the exclusive use of the Virginia Military Institute and/or their agents. This service was performed in accordance with generally accepted environmental practices. No other warranty, expressed or implied, is made. Our conclusions and recommendations are based, in part, upon information provided to us by others and our site observations. We have not verified the completeness or accuracy of the information provided by others, unless otherwise noted. Our observations and recommendations are based upon conditions readily visible at the site at the time of our site visit, and upon current industry standards. During F&R's non-invasive inspection, accessible areas were visually surveyed for the presence of suspect asbestos materials. Areas inspected for the above-referenced materials were limited to those designated by the Client and the scope of services and which could be safely accessed.

During this study, suspect asbestos samples were submitted for analysis at an NVLAP-accredited laboratory via polarized light microscopy and suspect hazardous material samples were submitted for laboratory analysis. As with any similar survey of this nature, actual conditions exist only at the precise locations from which suspect asbestos samples were collected. Certain inferences are based on the results of this sampling and related testing to form a professional opinion of conditions in areas beyond those from which the samples were collected. It is also understood that this is a non-invasive survey so that it is possible that concealed materials may be present that were not accessible during the original survey. No other warranty, expressed or implied, is made.

Under this scope of services, F&R assumes no responsibility regarding response actions (e.g. O&M Plans, Encapsulation, Abatement, Removal, Notifications, etc.) initiated as a result of these findings. F&R assumes no liability for the duties and responsibilities of the Client with respect to compliance with these regulations. Compliance with regulations and response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements and should be performed by appropriately qualified and licensed-personnel, as warranted.

Froehling & Robertson, Inc. by virtue of providing the services described in this report, does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies any conditions at the site that may present a potential danger to public health, safety, or the environment. The Client agrees to notify the appropriate local, state, or federal public agencies as required by law, or otherwise to disclose, in a timely manner, any information that may be necessary to prevent any danger to public health, safety, or the environment. The contents of the report should not be construed in any way as a recommendation to purchase, sell, or develop the project site.

3.0 SIGNATURES

If you have any questions concerning this report, please feel free to contact the undersigned. Froehling & Robertson, Inc. appreciates the opportunity to work with you as your Environmental Consultant, and looks forward to a continued cordial working relationship with you.

Respectfully Submitted,
FROEHLING & ROBERTSON, INC.

Roy L. Wriston	Gregory L. Whitt
Industrial Hygienist	Environmental Group Manager
VA Asbestos Inspector License 3303-003648	VA Asbestos Inspector License 3303-003557

Attachments: Appendices

APPENDIX A

Asbestos Analytical Reports
And
Chain of Custody Documentation

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 13-09-03307

Client: Froehling & Robertson Inc. - Roanoke
1734 Seibel Drive, N.E.
Roanoke, VA 24012

Received Date: 09/26/2013
Analyzed Date: 09/30/2013
Reported Date: 10/01/2013

Project/Test Address: Lexington; VMI Letcher Ave; VA

Client Number:
48-4628

Fax Number:
540-344-3657

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
13-09-03307-001	303GW-1		Beige/Gray Fibrous; Inhomogeneous	35% Chrysotile 15% Amosite	5% Cellulose 45% Non-Fibrous
			Total Asbestos:	50%	
Asbestos present throughout.					
13-09-03307-002A	303GW-2	Insulation	Beige/Gray Fibrous; Inhomogeneous	60% Chrysotile	10% Cellulose 30% Non-Fibrous
			Total Asbestos:	60%	
Chrysotile present throughout.					
13-09-03307-002B	303GW-2	Covering/ Jacket	Tan Fibrous; White Paint-Like; Inhomogeneous	3% Chrysotile	50% Cellulose 47% Non-Fibrous
			Total Asbestos:	3%	
Contamination from insulation. Chrysotile present in tan fibrous material.					
13-09-03307-003	303GW-3		Gray Powder; Fibrous; Inhomogeneous	NAD	5% Cellulose 25% Fibrous Glass 70% Non-Fibrous
13-09-03307-004	303GW-4		Gray Powder; Fibrous; Inhomogeneous	NAD	5% Cellulose 25% Fibrous Glass 70% Non-Fibrous

Rev 1.0 (Revised On: 10/01/2013): Amended client sample #s to read 303GW-1 to 303GW-6 per clients request.

Environmental Hazards Services, L.L.C

Client Number: 48-4628 Report Number: 13-09-03307

Project/Test Address: Lexington; VMI Letcher Ave; VA

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
13-09-03307-005	303GW-5		Beige Granular; Homogeneous	NAD	2% Cellulose 98% Non-Fibrous
13-09-03307-006	303GW-6		Beige Granular; Homogeneous	NAD	100% Non-Fibrous
13-09-03307-007	301GW-7		Gray Granular; Homogeneous	NAD	3% Wollastonite 97% Non-Fibrous
13-09-03307-008	301GW-8		Beige Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-009	301GW-9		Beige Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-010	301GW-10		White Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-011	301GW-11		White Granular; White Paint-Like; Inhomogeneous	NAD	2% Cellulose 98% Non-Fibrous

Rev 1.0 (Revised On: 10/01/2013): Amended client sample #s to read 303GW-1 to 303GW-6 per clients request.

Environmental Hazards Services, L.L.C

Client Number: 48-4628 Report Number: 13-09-03307

Project/Test Address: Lexington; VMI Letcher Ave; VA

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
13-09-03307-012	301GW-12		Whtie Granular; Beige Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-013	303GW-13		White Granular; White Paint-Like; Inhomogeneous	2% Chrysotile	98% Non-Fibrous
			Total Asbestos:	2%	
Chrysotile present throughout.					
13-09-03307-014	303GW-14		Beige Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-015	303GW-15		White Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-016	303GW-16		White Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-017	303GW-17		White Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-018	303GW-18		White Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous

Rev 1.0 (Revised On: 10/01/2013): Amended client sample #s to read 303GW-1 to 303GW-6 per clients request.

Environmental Hazards Services, L.L.C

Client Number: 48-4628 Report Number: 13-09-03307

Project/Test Address: Lexington; VMI Letcher Ave; VA

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
13-09-03307-019	305GW-19		Gray Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-020	305GW-20		White Granular; White Paint-Like; Inhomogeneous	2% Chrysotile	98% Non-Fibrous
			Total Asbestos:	2%	
Chrysotile present throughout.					
13-09-03307-021	305GW-21		White Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-022	305GW-22		White Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-023	305GW-23		Gray Granular; White Paint-Like; Inhomogeneous	2% Chrysotile	98% Non-Fibrous
			Total Asbestos:	2%	
Chrysotile present throughout.					
13-09-03307-024	305GW-24		Gray Granular; White Paint-Like; Inhomogeneous	2% Chrysotile	98% Non-Fibrous
			Total Asbestos:	2%	
Chrysotile present throughout.					
13-09-03307-025	307GW-25		White Granular; Homogeneous	NAD	100% Non-Fibrous

Rev 1.0 (Revised On: 10/01/2013): Amended client sample #s to read 303GW-1 to 303GW-6 per clients request.

Environmental Hazards Services, L.L.C

Client Number: 48-4628 Report Number: 13-09-03307

Project/Test Address: Lexington; VMI Letcher Ave; VA

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
13-09-03307-026	307GW-26		Beige/White Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-027	307GW-27		White Granular; Homogeneous	NAD	100% Non-Fibrous
13-09-03307-028	309GW-28		Beige Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-029	309GW-29		White Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-030	309GW-30		White Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
13-09-03307-031	309GW-31		White/Gray Granular; White Paint-Like; Inhomogeneous	2% Chrysotile	98% Non-Fibrous
			Total Asbestos:	2%	
Chrysotile present throughout.					
13-09-03307-032	309GW-32		White Granular; White Paint-Like; Inhomogeneous	NAD	5% Cellulose 95% Non-Fibrous

Rev 1.0 (Revised On: 10/01/2013): Amended client sample #s to read 303GW-1 to 303GW-6 per clients request.

Environmental Hazards Services, L.L.C

Client Number: 48-4628 Report Number: 13-09-03307

Project/Test Address: Lexington; VMI Letcher Ave; VA

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials

QC Sample: 27-NIST REF

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020

Analyst: Timothy Harris

Reviewed By Authorized Signatory: Tasha Eaddy

Tasha Eaddy
QA/QC Clerk

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without the written consent of the Environmental Hazards Service, L.L.C. California Certification #2319 NY ELAP #11714 NVLAP #101882-0. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection.

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

* All California samples analyzed by Polarized Light Microscopy, EPA Method 600/M4-82-020, Dec. 1982.

LEGEND: NAD = no asbestos detected

Rev 1.0 (Revised On: 10/01/2013): Amended client sample #s to read 303GW-1 to 303GW-6 per clients request.