

Emerald, Inc.

CONSULTING AND ENGINEERING
SERVICES IN ENVIRONMENTAL AFFAIRS

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**LIMITED ROOF AND INTERIOR ASBESTOS SURVEY
REGARDING
BUILDING 1816
SHAW AIR FORCE BASE, SOUTH CAROLINA**



Prepared for:

**20th Civil Engineering Squadron
428 Chapin Street
Shaw Air Force Base, South Carolina 29152**

Prepared by:

**Emerald, Inc.
P.O. Box 3050
Sumter, South Carolina 29151**

**Date of Inspection: March 20, 2024
Date of Report: April 5, 2024**

FOREWORD

This report was prepared by Emerald, Inc. of Sumter, South Carolina, for the 20th Civil Engineering Squadron (CES), regarding interior portions of office and work bay space, as well as roof sections slated for renovation activities, located at Building 1816 in Shaw Air Force Base, S.C. The contents of this report are confidential and intended for the use of the client only.

J. Dalton Reames, Jr., S.C. Licensed Building Inspector, conducted the inspection, and Ronny L. Lowder, S.C. Licensed Building Inspector and Management Planner, prepared this report. Any questions or comments concerning this report should be directed to Ronny L. Lowder at either (803) 469-5454 or via email at rlowder@emeraldinc-us.com.

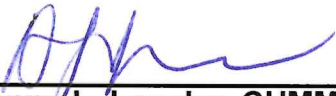

J. Dalton Reames, Jr.

SC Licensed Building Inspector
License Number BI-00945
Expiration Date: 11/06/24

SC Licensed AHERA Supervisor
License Number SA-01252
Expiration Date: 11/07/24

SC Licensed Air Sampler
License Number AS-00287
Expiration Date: 11/07/24

SC Licensed Project Designer
License Number PD-00200
Expiration Date: 08/02/24


Ronny L. Lowder, CHMM

SC Licensed Building Inspector
License Number BI-01497
Expiration Date: 09/18/24

SC Licensed AHERA Supervisor
License Number SA-00715
Expiration Date: 09/17/24

SC Licensed Mgmt Planner
License Number ASB-32201
Expiration Date: 09/18/24

1.0 INTRODUCTION AND OBJECTIVE

Emerald, Inc. was requested to conduct a Limited Interior and Roof Asbestos Survey of Building 1816, located at Shaw Air Force Base, S.C., to identify the presence of any asbestos-containing materials (ACM), prior to renovation activities. The inspection was authorized by Mr. Russ VanPatten, P.E., with the 20th CES. The inspection included identification and assessment of the condition of suspect asbestos-containing materials, either friable or non-friable, on the interior portions and roof sections of the areas slated for renovation activities.

This report is a compilation of the inspection and its results.

2.0 SURVEY METHODOLOGY

On March 20, 2024, Emerald, Inc. conducted a Limited Interior Asbestos Survey of the building located at Shaw Air Force Base. J. Dalton Reames, Jr., South Carolina Licensed Building Inspector, conducted the inspection.

Building 1816 is utilized for storage and personnel activity related to Air Force munitions purposes; therefore, only basic descriptions of the surveyed areas were obtained and are described as follows:

Roof Section A

Measuring approximately 60' x 55', the flat metal decking is covered by gypsum board, ISO board insulation and rolled shingles. Wall bases, formed by transitions to other roof sections, as well as roof equipment curbs, have shingle and tar sealants. A metal flashing strip above the base flashing is coated with a sealant material.

Roof Section C

Measuring approximately 60' x 35', the flat metal decking is covered by two separate ISO board insulation layers and an EPDM membrane. Roof penetrations and

one wall base area have black sealant covered by EPDM.

Roof Section D

Measuring approximately 60' x 25', the flat metal deck has layers of stone-covered, built-up roofing layers. Metal flashing around the perimeter edge of the roof is sealed with a tar-like, asbestos-containing sealant.

Office Areas (Ceiling Tiles and HVAC Ductwork)

Containing approximately 3,300 square feet of space, the surveyed materials of the Office Areas include 4' x 2' and 2' x 2' acoustical ceiling tiles suspended in metal framework and metal HVAC ductwork with foil-wrapped fiberglass insulation sealed with white mastic and duct tape.

Bay Areas (Fan Coil Units)

Ceiling mounted fan coil units have associated pipes with cellulose-based wrap and fiberglass insulation.

Boiler Room

The Boiler Room contains one generator-powered boiler unit. Associated pipe runs are covered with cellulose-based wrap, sealed with white mastic, over fiberglass insulation.

The surveyed areas will continue to be used for Air Force-related activities, following renovation activities.

The survey included a visual inspection to identify the presence of material suspected of containing asbestos. This identification was based on the experience and training of the inspector. A total of forty-two (42) samples were collected during the survey for laboratory analysis, based upon the required EPA and SC DHEC sampling matrix. Samples were placed in individual containers, labeled and numbered according to the

sampling scheme (1816-1 through 1816-42). Per SC DHEC Asbestos Regulations, the independent laboratory is required to sample all layers of each sample. As a result, sixty (60) samples were analyzed by the lab, via Polarized Light Microscopy (PLM) while utilizing Positive Stop, and twelve (12) samples were analyzed, via Transmission Electron Microscopy (TEM). Appendix B contains the Asbestos Survey Log kept during the inspection which identifies the samples collected by sample number, sample type, location and condition assessment, along with any comments. The samples were shipped to EMSL Analytical, Inc. in Kernersville, North Carolina for analysis. Analysis and results are discussed in Section 4.0.

3.0 HAZARD ASSESSMENT FACTORS (ASBESTOS)

3.1 Homogeneous Areas

The sample collection was typically conducted by homogeneous materials, i.e., any materials of the same type regarding uniformity throughout in structure or make-up and appearance (color, texture, and/or date of construction/application). Homogeneous materials can be further classified as surfacing materials, thermal system insulation and miscellaneous materials. Miscellaneous materials include ceiling tiles, floor tiles, roofing, caulking, and glazing, etc.

3.2 Hazard Factors

The samples of suspect material collected were classified as either friable (F) or non-friable (NF). Friable means the material can be crumbled, pulverized, or reduced to powder by ordinary hand pressure. Materials initially determined to be non-friable can receive a reclassification of friable if the material is damaged, thereby providing an avenue for release of asbestos fibers. Friable asbestos-containing material (ACM) has been determined by EPA and OSHA to be a greater hazard (health risk) than non-friable

ACM. In assessing the fiber release potential, the current condition of the suspect materials sampled was noted in the Asbestos Survey Log (Appendix B). The condition was denoted as good, damaged, or significantly damaged. Current condition is a factor used to assess the potential for fiber release. Other factors used to determine potential fiber release include air movement, surface type, and area activity as related to human occupancy.

4.0 ANALYSIS AND RESULTS

4.1 Laboratory Analysis

Bulk samples were analyzed by EMSL Analytical, Inc. using Polarized Light Microscopy (PLM) with Dispersion Staining Techniques (EPA Bulk Analysis Method 600/R-93/116). This method utilizes part of the bulk sample which is mounted on a slide and exposed to an oil of specific refractive index. This prepared slide is then subjected to a variety of optical tests.

Each type of asbestos displays unique characteristics when subjected to these tests. Percentages of asbestos content are then determined through visual estimating. Although this is an estimate, any material containing greater than one percent of any type of asbestos is classified as ACM by the EPA. Any material classified as ACM must be handled accordingly.

Under the revised South Carolina Asbestos Regulation 61-86.1 effective June 27, 2008, any analysis of non-friable organically bound (NOB) material that is found to be negative via PLM testing, must have confirmation testing via Transmission Electron Microscopy (TEM) on one sample from each media; therefore, twelve (12) samples were analyzed by the lab, via TEM testing.

4.2 Survey Results

Samples were collected and tested from various suspect materials, as referenced in Appendix B, Asbestos Sample Log. Samples of Roof Section A roofing layers, Roof Section A base/curb sealant layers, Roof Section A metal flashing sealant, Roof Section C roofing layers, Roof Section C base/curb sealant layers, Roof Section D built-up roofing (BUR) layers, roof gutter seam caulk, Office duct wrap with white mastic, and boiler pipe wrap with mastic were verified as negative, via TEM analysis.

Appendix C contains a copy of the analytical results from the laboratory.

TABLE 1
LIMITED INTERIOR AND ROOF AREAS - BUILDING 1816
SHAW AIR FORCE BASE, SOUTH CAROLINA
ASBESTOS-CONTAINING MATERIALS

Description	Location	Category (F/NF)	Approx. SF/LF
Black Sealant Associated with Metal Roof-edge Flashing	Perimeter of Roof Section D	Cat. I – NF – Good Condition	170 LF

Note: F - Friable
NF - Non-Friable

EMERALD, INC., CONDUCTED THE SURVEY TO THE BEST OF ITS ABILITY, ADHERING TO INDUSTRY STANDARDS. THE QUANTITIES PROVIDED IN THIS REPORT ARE APPROXIMATE AND SHALL SERVE AS A BASIS FOR ABATEMENT BID SUBMITTALS. IF ADDITIONAL SUSPECT MATERIALS ARE IDENTIFIED DURING RENOVATION OR DEMOLITION ACTIVITY, THE CONTRACTOR SHALL CEASE WORK AND NOTIFY THE CONTRACTING OFFICER REPRESENTATIVE (COR).

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon the inspection of March 20, 2024, and the analytical results from the samples collected and tested by an independent laboratory, the metal roof-edge flashing of Roof Section D, located at Building 1816 of Shaw Air Force Base, S.C., does contain non-friable ACM, as per Table 1. Such materials will have to be removed and properly disposed by a S.C. licensed abatement contractor per SC DHEC Bureau of Air Quality Asbestos Regulation 61-86.1 effective May 27, 2011, prior to renovation activities involving the asbestos-containing materials.

6.0 ASSUMPTIONS AND LIMITATIONS

The results, findings, conclusions and recommendations expressed in this report are based only on conditions that were observed during the inspection of March 20, 2024. Emerald, Inc., their representative and this report make no representation and/or assumptions as to past conditions or future occurrences. The information, conclusions and recommendations provided herein do not constitute as legal or medical advice. It is further understood that Emerald, Inc. makes no representations or warranties of any kind. Nor are such representations or warranties to be implied with respect to the data furnished. Emerald, Inc. assumes no responsibility with respect to the customers and its employees use thereof.

The information provided herein applies only to the subject property as it existed during Emerald, Inc.'s site visit. If this site's use and/or conditions change, information, observations and recommendations found herein would no longer apply. This report is intended to be used in its entirety. No excerpts may be taken to typify the findings of this survey. Emerald, Inc. shall not be liable for any special, consequential and/or exemplary damages resulting, in whole or in part, from the customer's use of the data provided. It was not within the scope of this investigation to remove surface materials to investigate portions of the structure or materials that lay beneath the surface. Our selection of sample locations and frequency is based upon our observations and the assumption that like materials in the same are homogeneous.

Emerald, Inc. conducted the survey to the best of its ability using the standards of the industry. In the event additional materials are found to contain asbestos, Emerald, Inc. shall not be liable for any failure of such findings during its initial survey.

7.0 APPENDICES

- APPENDIX A. Site Plan
- APPENDIX B. Asbestos Sample Log
- APPENDIX C. Chain of Custody & Analytical Results
- APPENDIX D. Building Inspector Licenses
- APPENDIX E. Site Photographs

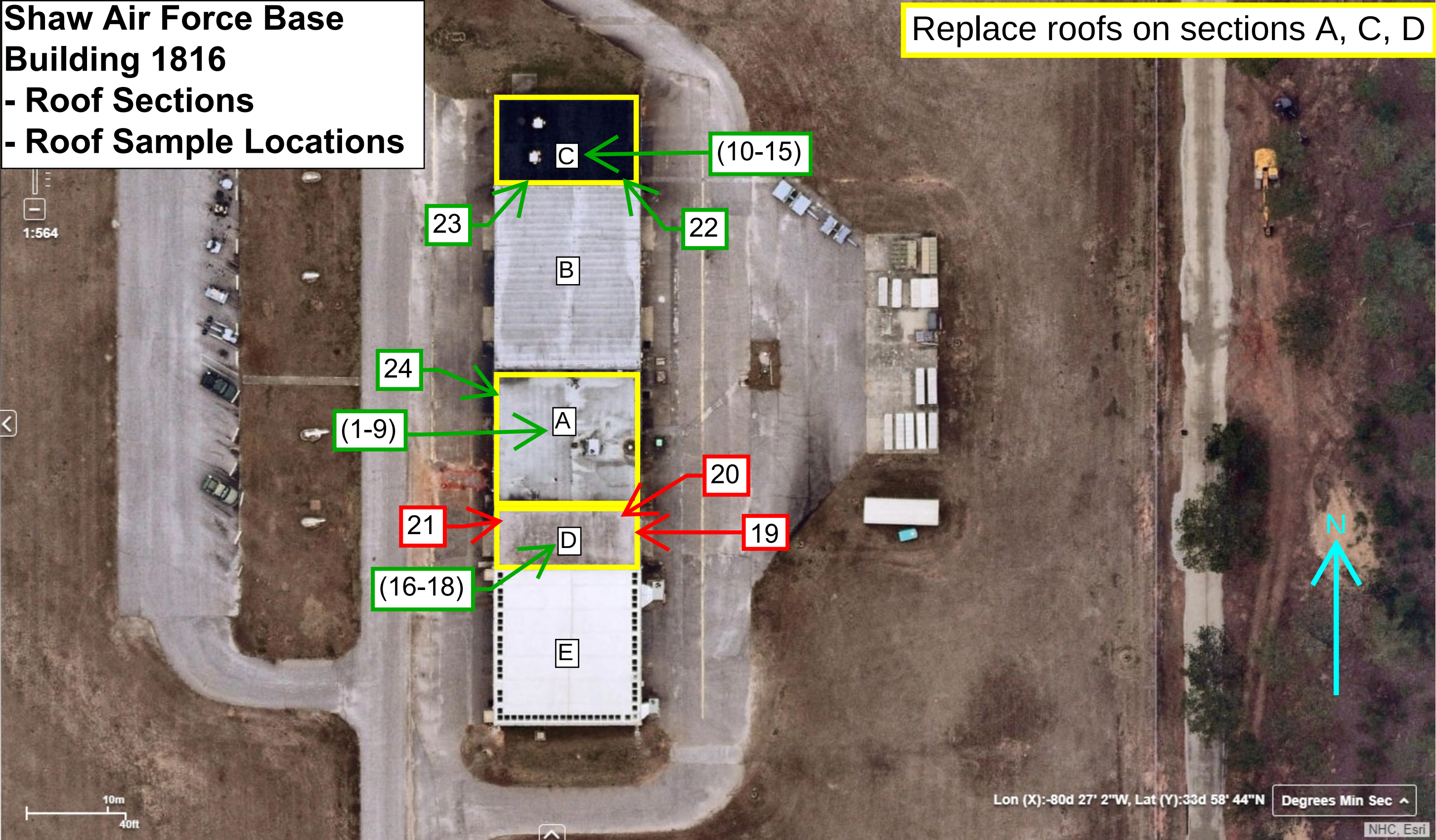
APPENDIX A

SITE PLAN

Shaw Air Force Base Building 1816

- Roof Sections
- Roof Sample Locations

Replace roofs on sections A, C, D

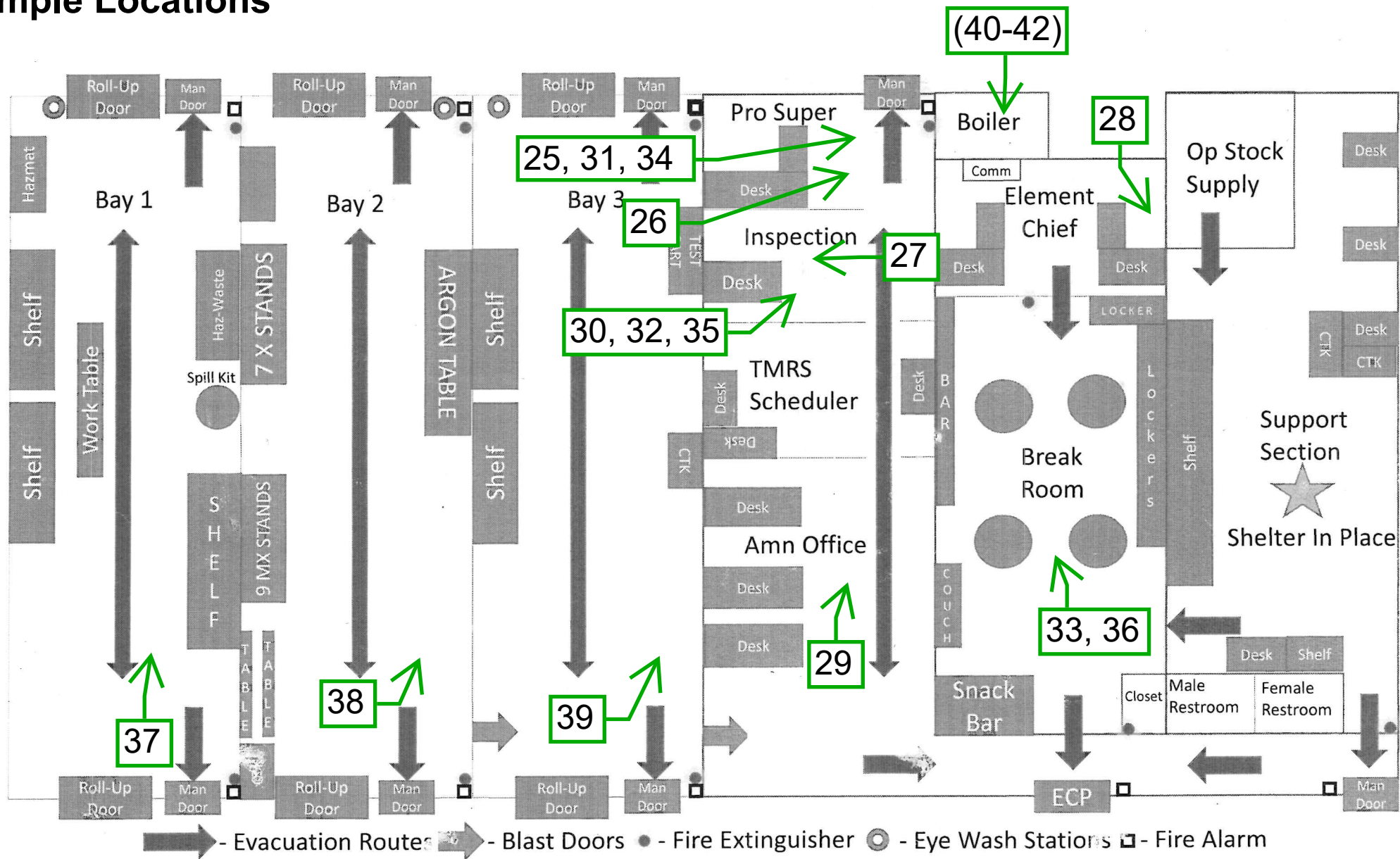


- Legend:
- Sample Location with No Asbestos Detected
 - Sample Location with Asbestos Detected at 5%

SAFB Building 1816

Floor Plan

Sample Locations



Legend:

Sample Location with No Asbestos Detected

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APPENDIX B

ASBESTOS SAMPLE LOG

EMERALD, INC.

ASBESTOS SAMPLE LOG

PROJECT NAME: Shaw Air Force Base: Building 1816

ADDRESS: Building 1816, Shaw Air Force Base, S.C.

DATE: 3/20/2024

INSPECTOR: Dalton Reames

SAMPLE #	LOCATION			DESCRIPTION	CONDITION	TYPE	F/NF	APPROX. SF/LF	POTENTIAL FOR FUTURE DISTURBANCE								
	FLOOR	ROOM	EXACT						CONTACT			VIBRATION			AIR EROSION		
									H	M	L	H	M	L	H	M	L
1816-1	Roof Section A		Roof Deck	Roof Section A Rolled Shingle-covered Roof System	G	M	NF	3,300 SF	X			X			X		
1816-2																	
1816-3																	
1816-4	Roof Section A	Wall Base		Roof Section A Wall Base and Curb Sealant Layers	G	M	NF	200 SF	X			X			X		
1816-5		Wall Base															
1816-6		Vent Curb															
1816-7	Roof Section A	Metal Flashing Strip		Roof Section A Coating and Strip on Metal Flashing	G	M	NF	120 LF	X			X			X		
1816-8																	
1816-9																	
1816-10	Roof Section C	Roof Deck		Roof Section C EPDM Membrane and Insulations Layers	G	M	NF	2,100 SF	X			X			X		
1816-11																	
1816-12																	
1816-13	Roof Section C	Wall Base		Roof Section C Wall Base and Curb Sealant Layers	G	M	NF	200 SF	X			X			X		
1816-14		Wall Base															
1816-15		Penetration Curb															
1816-16	Roof Section D	Roof Deck		Roof Section D Stone-covered Built-up Roofing Layers	G	M	NF	1,500 SF	X			X			X		
1816-17																	
1816-18																	
1816-19	Roof Section D	Roof-edge Perimeter Flashing		Roof Section D: Black Sealant Associated with Metal Edge Flashing	G	M	NF	170 LF	X			X			X		
1816-20																	
1816-21																	

Note: Red characters indicate material with asbestos detected at 5%.

Condition

G= Good
D= Damaged
SD= Significantly Damaged

Type

S= Surface
TSI= Thermal Systems Insulation
M= Miscellaneous

F/NF

F= Friable
NF= Non Friable

Potential for Future Disturbance

H= High
M= Moderate
L= Low

EMERALD, INC.

ASBESTOS SAMPLE LOG

PROJECT NAME: Shaw Air Force Base: Building 1816

ADDRESS: Building 1816, Shaw Air Force Base, S.C.

DATE: 3/20/2024

INSPECTOR: Dalton Reames

SAMPLE #	LOCATION			DESCRIPTION	CONDITION	TYPE	F/NF	APPROX. SF/LF	POTENTIAL FOR FUTURE DISTURBANCE										
	FLOOR	ROOM	EXACT						CONTACT			VIBRATION			AIR EROSION				
									H	M	L	H	M	L	H	M	L		
1816-22	Roof Gutters		Sect. C	Roof Gutter Seam Caulk	G	M	NF	120 LF	X				X				X		
1816-23			Sect. C																
1816-24			Sect. A																
1816-25	First	Pro Super	Dropped Ceiling System	2'x2' Beveled Acoustical Ceiling Tiles	G	M	F	265 SF	X				X				X		
1816-26		Pro Super																	
1816-27		Inspection																	
1816-28	First	Chief	Dropped Ceiling System	4'x2' Acoustical Ceiling Tiles	G	M	F	3,035 SF	X				X				X		
1816-29		Amn Office																	
1816-30		Inspection																	
1816-31	First	Pro Super	Above Ceiling Tiles	HVAC Duct Tape	G	M	NF	200 LF	X				X				X		
1816-32		Inspection																	
1816-33		Break Rm.																	
1816-34	First	Pro Super	Above Ceiling Tiles	White HVAC Mastic and Duct Wrap	G	M	NF	900 SF	X				X				X		
1816-35		Inspection																	
1816-36		Break Rm.																	
1816-37	First	Bay 1	At Ceiling Level	Pipe Wrap Associated with Ceiling-mounted Fan Coils	G	M	NF	75 LF	X				X				X		
1816-38		Bay 2																	
1816-39		Bay 3																	
1816-40	First	Boiler Room	Pipe Runs	Pipe Wrap and White Mastic	G	M	NF	100 LF	X				X				X		
1816-41																			
1816-42																			

Condition

G= Good
D= Damaged
SD= Significantly Damaged

Type

S= Surface
TSI= Thermal Systems Insulation
M= Miscellaneous

F/NF

F= Friable
NF= Non Friable

Potential for Future Disturbance

H= High
M= Moderate
L= Low

APPENDIX C

**CHAIN OF CUSTODY
&
ANALYTICAL RESULTS**



EMSL Analytical, Inc.

706 Galin Street Kernersville, NC 27284

Tel/Fax: (336) 992-1025 / (336) 992-4175

http://www.EMSL.com / kernersvillelab@emsl.com

EMSL Order: 022401544

Customer ID: EMER51

Customer PO:

Project ID:

Attention: Ronny Lowder

Emerald, Inc.

2520 Tahoe Drive

PO Box 3050

Sumter, SC 29151

Project: Shaw AFB : Bldg. 1816

Phone: (803) 469-5454

Fax: (803) 775-1970

Received Date: 03/21/2024 9:50 AM

Analysis Date: 03/25/2024

Collected Date:

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
1816-3-Built Up Roofing 022401544-0033	Roof A : Roofing Layers	Gray/Black Fibrous Heterogeneous	100.0 Other	None	No Asbestos Detected
1816-6-Silver Paint 022401544-0034	Roof A : Base & Curb Layers	Silver Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
1816-6-Tar 022401544-0035	Roof A : Base & Curb Layers	Black Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
1816-6-Built Up Roofing 022401544-0036	Roof A : Base & Curb Layers	Gray/Black Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
1816-9 022401544-0037	Roof A : Flashing Coat	Gray/Black Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
1816-12-Membrane 022401544-0038	Roof C : Roofing Layers	Black Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
1816-15-Membrane 022401544-0039	Roof C : Base & Curb Sealant	Black Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
1816-15-Sealant 022401544-0040	Roof C : Base & Curb Sealant	Black Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
1816-18-Built Up Roofing 022401544-0041	Roof D : BUR Layers	Brown/Black Non-Fibrous Heterogeneous	100.0 Other	None	No Asbestos Detected
1816-24 022401544-0042	Gutter System Caulk	Gray Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
1816-36-Mastic 022401544-0043	Duct Wrap w/ White Mastic	White Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected
1816-42-Mastic 022401544-0044	Boiler Pipe Wrap Layers & Mastic	White Non-Fibrous Homogeneous	100.0 Other	None	No Asbestos Detected

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. EMSL recommends that samples reported as none detected or < 1% undergo additional analysis via PLM to avoid the possibility of false negatives.

Samples analyzed by EMSL Analytical, Inc. Kernersville, NC

Initial report from: 03/26/2024 16:14:57



EMSL Analytical, Inc.

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Tel/Fax: (336) 992-1025 / (336) 992-4175

http://www.EMSL.com / kernersvillelab@emsl.com

EMSL Order: 022401544

Customer ID: EMER51

Customer PO:

Project ID:

Attention: Ronny Lowder

Emerald, Inc.

2520 Tahoe Drive

PO Box 3050

Sumter, SC 29151

Project: Shaw AFB : Bldg. 1816

Phone: (803) 469-5454

Fax: (803) 775-1970

Received Date: 03/21/2024 9:50 AM

Analysis Date: 03/25/2024

Collected Date:

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

Sample ID	Description	Appearance	% Matrix Material	% Non-Asbestos Fibers	Asbestos Types
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Analyst(s)

Stephen Bennett (12)

Stephen Bennett, Laboratory Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Kernersville, NC

Initial report from: 03/26/2024 16:14:57



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Emerald, Inc.

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PO Box 3050

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Project: Shaw AFB : Bldg. 1816

Phone: (803) 469-5454

Fax: (803) 775-1970

Received Date: 03/21/2024 9:50 AM

Analysis Date: 03/21/2024 - 03/22/2024

Collected Date:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos % Type
			% Fibrous	% Non-Fibrous	
1816-1-Built Up Roofing 022401544-0001	Roof A : Roofing Layers	Gray/Black Fibrous Heterogeneous	5% Cellulose 20% Synthetic 3% Glass	72% Non-fibrous (Other)	None Detected
1816-1-Foam Insulation 022401544-0001A	Roof A : Roofing Layers	Brown/Gray/Yellow Fibrous Heterogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
1816-1-Gypsum Board 022401544-0001B	Roof A : Roofing Layers	Brown/Gray Fibrous Heterogeneous	10% Cellulose 1% Glass	89% Non-fibrous (Other)	None Detected
1816-2-Built Up Roofing 022401544-0002	Roof A : Roofing Layers	Gray/Black Fibrous Heterogeneous	5% Cellulose 10% Synthetic 3% Glass	82% Non-fibrous (Other)	None Detected
1816-2-Foam Insulation 022401544-0002A	Roof A : Roofing Layers	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1816-3-Foam Insulation 022401544-0002B	Roof A : Roofing Layers	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1816-3-Gypsum Board 022401544-0002C	Roof A : Roofing Layers	Gray Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
1816-4-Silver Paint 022401544-0003	Roof A : Base & Curb Layers	Silver Non-Fibrous Homogeneous	2% Cellulose 5% Glass	93% Non-fibrous (Other)	None Detected
1816-4-Tar 022401544-0003A	Roof A : Base & Curb Layers	Black Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
1816-4-Built Up Roofing 022401544-0003B	Roof A : Base & Curb Layers	Gray/Black Fibrous Heterogeneous	5% Cellulose 10% Synthetic 5% Glass	80% Non-fibrous (Other)	None Detected
1816-5-Silver Paint 022401544-0004	Roof A : Base & Curb Layers	Silver Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
1816-5-Tar 022401544-0004A	Roof A : Base & Curb Layers	Black Non-Fibrous Homogeneous	6% Cellulose	94% Non-fibrous (Other)	None Detected
1816-5-Built Up Roofing 022401544-0004B	Roof A : Base & Curb Layers	Various/Black Fibrous Heterogeneous	10% Synthetic 2% Glass	88% Non-fibrous (Other)	None Detected
1816-7 022401544-0005	Roof A : Flashing Coat	Black Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
1816-8 022401544-0006	Roof A : Flashing Coat	Black Fibrous Heterogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
1816-10-Membrane 022401544-0007	Roof C : Roofing Layers	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 03/22/2024 15:15:52



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http://www.EMSL.com / kenersvillelab@emsl.com

EMSL Order: 022401544

Customer ID: EMER51

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos % Type
			% Fibrous	% Non-Fibrous	
1816-10-Yellow Foam Insulation	Roof C : Roofing Layers	Black/Yellow Fibrous Heterogeneous	5% Cellulose 1% Glass	94% Non-fibrous (Other)	None Detected
022401544-0007A					
1816-10-Brown Foam Insulation	Roof C : Roofing Layers	Brown Fibrous Heterogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
022401544-0007B					
1816-11-Membrane	Roof C : Roofing Layers	Black Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (Other)	None Detected
022401544-0008					
1816-11-Yellow Foam Insulation	Roof C : Roofing Layers	Yellow Fibrous Heterogeneous	2% Cellulose <1% Glass	98% Non-fibrous (Other)	None Detected
022401544-0008A					
1816-11-Brown Foam Insulation	Roof C : Roofing Layers	Brown Non-Fibrous Homogeneous	<1% Cellulose <1% Glass	100% Non-fibrous (Other)	None Detected
022401544-0008B					
1816-12-Yellow Foam Insulation	Roof C : Roofing Layers	Yellow Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
022401544-0008C					
1816-12-Brown Foam Insulation	Roof C : Roofing Layers	Brown Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (Other)	None Detected
022401544-0008D					
1816-13-Membrane	Roof C : Base & Curb Sealant	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
022401544-0009					
1816-13-Sealant	Roof C : Base & Curb Sealant	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
022401544-0009A					
1816-14-Membrane	Roof C : Base & Curb Sealant	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
022401544-0010					
1816-14-Sealant	Roof C : Base & Curb Sealant	Black Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (Other)	None Detected
022401544-0010A					
1816-16-Built Up Roofing	Roof D : BUR Layers	Black Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
022401544-0011					
1816-16-Fiberboard	Roof D : BUR Layers	Brown/Black Fibrous Homogeneous	97% Cellulose	3% Non-fibrous (Other)	None Detected
022401544-0011A					
1816-16-Foam	Roof D : BUR Layers	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
022401544-0011B					
1816-17-Built Up Roofing	Roof D : BUR Layers	Black Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
022401544-0012					
1816-17-Fiberboard	Roof D : BUR Layers	Brown Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
022401544-0012A					

Initial report from: 03/22/2024 15:15:52



EMSL Analytical, Inc.

706 Galin Street Kenersville, NC 27284

Tel/Fax: (336) 992-1025 / (336) 992-4175

http://www.EMSL.com / kenersvillelab@emsl.com

EMSL Order: 022401544

Customer ID: EMER51

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos % Type
			% Fibrous	% Non-Fibrous	
1816-17-Foam 022401544-0012B	Roof D : BUR Layers	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1816-18-Fiberboard 022401544-0012C	Roof D : BUR Layers	Brown/Tan Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
1816-18-Foam 022401544-0012D	Roof D : BUR Layers	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1816-19 022401544-0013	Roof D : Flashing Layers	Black Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
1816-20 022401544-0014	Roof D : Flashing Layers				Positive Stop (Not Analyzed)
1816-22 022401544-0015	Gutter System Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
1816-23 022401544-0016	Gutter System Caulk	Gray Non-Fibrous Homogeneous		10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
1816-25 022401544-0017	2' x 2' Ceiling Tile	Gray/White Fibrous Homogeneous	50% Cellulose 10% Glass	30% Perlite 10% Non-fibrous (Other)	None Detected
1816-26 022401544-0018	2' x 2' Ceiling Tile	Gray/White Fibrous Homogeneous	50% Cellulose 10% Glass	30% Perlite 10% Non-fibrous (Other)	None Detected
1816-27 022401544-0019	2' x 2' Ceiling Tile	Gray/White Fibrous Heterogeneous	40% Cellulose 15% Glass	30% Perlite 15% Non-fibrous (Other)	None Detected
1816-28 022401544-0020	4' x 2' Ceiling Tile	Gray/White Fibrous Homogeneous	50% Cellulose 10% Glass	30% Perlite 10% Non-fibrous (Other)	None Detected
1816-29 022401544-0021	4' x 2' Ceiling Tile	Gray/White Fibrous Homogeneous	50% Cellulose 10% Glass	30% Perlite 10% Non-fibrous (Other)	None Detected
1816-30 022401544-0022	4' x 2' Ceiling Tile	Gray Fibrous Heterogeneous	40% Cellulose 10% Glass	30% Perlite 20% Non-fibrous (Other)	None Detected
1816-31 022401544-0023	HVAC Duct Tape	Gray/Silver Fibrous Heterogeneous	2% Cellulose 15% Synthetic	83% Non-fibrous (Other)	None Detected
1816-32 022401544-0024	HVAC Duct Tape	Gray/Silver Fibrous Heterogeneous	2% Cellulose 15% Synthetic	83% Non-fibrous (Other)	None Detected
1816-33 022401544-0025	HVAC Duct Tape	Gray Non-Fibrous Homogeneous	<1% Cellulose 12% Synthetic <1% Glass	88% Non-fibrous (Other)	None Detected
1816-34-Mastic 022401544-0026	Duct Wrap w/ White Mastic	White Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
1816-34-Wrap 022401544-0026A	Duct Wrap w/ White Mastic	Tan/Silver Fibrous Heterogeneous	60% Cellulose 10% Glass	30% Non-fibrous (Other)	None Detected
1816-35-Mastic 022401544-0027	Duct Wrap w/ White Mastic	White Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected

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EMSL Order: 022401544

Customer ID: EMER51

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
1816-35-Wrap 022401544-0027A	Duct Wrap w/ White Mastic	Brown Fibrous Homogeneous	75% Cellulose 5% Glass	20% Non-fibrous (Other)	None Detected
1816-36-Wrap 022401544-0027B	Duct Wrap w/ White Mastic	Tan Fibrous Homogeneous	70% Cellulose 25% Glass	5% Non-fibrous (Other)	None Detected
1816-37 022401544-0028	Fan Coil Pipe Wrap	White/Silver Fibrous Heterogeneous	60% Cellulose 10% Glass	30% Non-fibrous (Other)	None Detected
1816-38 022401544-0029	Fan Coil Pipe Wrap	White/Silver Fibrous Heterogeneous	60% Cellulose 10% Glass	30% Non-fibrous (Other)	None Detected
1816-39 022401544-0030	Fan Coil Pipe Wrap	Tan Fibrous Homogeneous	85% Cellulose 10% Glass	5% Non-fibrous (Other)	None Detected
1816-40-Mastic 022401544-0031	Boiler Pipe Wrap Layers & Mastic	White Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
1816-40-Wrap 022401544-0031A	Boiler Pipe Wrap Layers & Mastic	Tan/Silver Fibrous Heterogeneous	40% Cellulose 10% Glass	50% Non-fibrous (Other)	None Detected
1816-41-Mastic 022401544-0032	Boiler Pipe Wrap Layers & Mastic	White Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (Other)	None Detected
1816-41-Wrap 022401544-0032A	Boiler Pipe Wrap Layers & Mastic	White Fibrous Homogeneous	85% Cellulose 10% Glass	5% Non-fibrous (Other)	None Detected
1816-42-Wrap 022401544-0032B	Boiler Pipe Wrap Layers & Mastic	White Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected

Analyst(s)

Bobby Wheatley (29)

Cameron Evans (31)

Stephen Bennett, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Kernersville, NC NVLAP Lab Code 102104-0, Virginia 3333-000228, West Virginia LT000321

Initial report from: 03/22/2024 15:15:52



Asbestos Chain of Custody

EMSL Order Number (Lab Use Only).

022401544

PHONE:
FAX:

Company Name: Emerald, Inc.		EMSL Customer ID:	
Street: P.O. Box 3050		City: Sumter	State/Province: SC
Zip/Postal Code: 29151	Country: US	Telephone #: 803-469-5454	Fax #: 803-469-5465
Report To (Name): Ronny Lowder		Please Provide Results: ☐ Fax ☒ Email	
Email Address: rlowder@emeraldinc-us.com		Purchase Order:	
Project Name/Number: Shaw AFB Bldg 1816		EMSL Project ID (Internal Use Only):	
U.S. State Samples Taken: SC		CT Samples: ☐ Commercial/Taxable ☐ Residential/Tax Exempt	
EMSL-Bill to: ☒ Same ☐ Different - If Bill to is Different note instructions in Comments** Third Party Billing requires written authorization from third party			
Turnaround Time (TAT) Options* - Please Check			
☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☒ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week			
*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.			
PCM - Air ☐ Check if samples are from NY ☐ NIOSH 7400 ☐ w/ OSHA 8hr. TWA PLM - Bulk (reporting limit) ☒ PLM EPA 600/R-93/116 (<1%) ☐ PLM EPA NOB (<1%) Point Count ☐ 400 (<0.25%) ☐ 1000 (<0.1%) Point Count w/Gravimetric ☐ 400 (<0.25%) ☐ 1000 (<0.1%) ☐ NYS 198.1 (friable in NY) ☐ NYS 198.6 NOB (non-friable-NY) ☐ NYS 198.8 SOF-V ☐ NIOSH 9002 (<1%)		TEM - Air ☐ 4-4.5hr TAT (AHERA only) ☐ AHERA 40 CFR, Part 763 ☐ NIOSH 7402 ☐ EPA Level II ☐ ISO 10312 TEM - Bulk ☐ NYS NOB 198.4 (non-friable-NY) ☐ Chatfield SOP ☐ TEM Mass Analysis-EPA 600 sec. 2.5 TEM - Water: EPA 100.2 Fibers >10µm ☐ Waste ☐ Drinking All Fiber Sizes ☐ Waste ☐ Drinking	
TEM- Dust ☐ Microvac - ASTM D 5755 ☐ Wipe - ASTM D6480 ☐ Carpet Sonication (EPA 600/J-93/167) Soil/Rock/Vermiculite ☐ PLM EPA 600/R-93/116 with milling prep (<1%) ☐ PLM EPA 600/R-93/116 with milling prep (<0.25%) ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%) ☐ TEM Qualitative via Filtration Prep ☐ TEM Qualitative via Drop Mount Prep ☐ Cincinnati Method EPA 600/R-04/004 - PLM/TEM (BC only) Other: ☐			
☒ Check For Positive Stop - Clearly Identify Homogenous Group		Filter Pore Size (Air Samples): ☐ 0.8µm ☐ 0.45µm	
Samplers Name: Dalton Reames		Samplers Signature:	
Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
	Descriptions on Following Page		3/20/2024
Client Sample # (s): 1816-1 thru 1816-42		Total # of Samples: 42	
Relinquished (Client):		Date: 3/20/2024	Time: 1630
Received (Lab): JS		Date: 3-21-24	Time: 9:50
Comments/Special Instructions:			



CHAIN OF CUSTODY

1544

EMSL Analytical, Inc.

706 Gralin Street
Kernersville, NC 27284

ASBESTOS LAB SERVICES

Client Sample # (s) 1816-1 thru 1816-42 Total Samples # 42

Relinquished: _____ Date: _____ Time: _____

Received: _____ Date: _____ Time: _____

Relinquished: _____ Date: _____ Time: _____

Received: _____ Date: _____ Time: _____

Phone: (336) 992-1025
Fax: (336) 992-4175
<http://www.emsl.com>

SAMPLE NUMBER	SAMPLE DESCRIPTION	VOLUME (if applicable)
1816-1	Roof A: Roofing Layers	
1816-2	"	} Sample All Layers
1816-3	"	
1816-4	Roof A: Base & Curb Layers	
1816-5	"	} Sample All Layers
1816-6	"	
1816-7	Roof A: Flashing Coat	
1816-8	"	
1816-9	"	
1816-10	Roof C: Roofing Layers	
1816-11	"	} Sample All Layers
1816-12	"	
1816-13	Roof C: Base & Curb Sealant	
1816-14	"	
1816-15	"	
1816-16	Roof D: BUR Layers	
1816-17	"	} Sample All Layers
1816-18	"	
1816-19	Roof D: Flashing Sealant	
1816-20	"	
1816-21	"	
1816-22	Gutter System Caulk	
1816-23	"	
1816-24	"	
1816-25	2'x2' Ceiling Tile	
1816-26	"	
1816-27	"	
1816-28	4'x2' Ceiling Tile	
1816-29	"	
1816-30	"	
1816-31	HVAC Duct Tape	
1816-32	"	
1816-33	"	
1816-34	Duct Wrap w/ [REDACTED]	} Sample Both
1816-35	"	
1816-36	"	
1816-37	Fan Coil Pipe Wrap	
1816-38	"	
1816-39	"	
1816-40	Boiler Pipe Wrap Layers & [REDACTED]	} Sample All Layers (Excluding Fiberglass)
1816-41	"	
1816-42	"	

2 of 2

APPENDIX D

BUILDING INSPECTOR LICENSES

SCDHEC ISSUED

Asbestos ID Card

RONNY LOWDER



CONSULTMP	ASB-32201	Expiration Date:
CONSULTBI	BI-01497	09/18/24
SUPERAHERA	SA-00715	09/18/24
		09/17/24

SCDHEC ISSUED

Asbestos ID Card

John Dalton Reames, Jr.



AIRSAMPLER	AS-00287
CONSULTBI	BI-00945
CONSULTPD	PD-00200
SUPERAHERA	SA-01252

Expiration Date:

11/07/24
11/06/24
08/02/24
11/07/24

APPENDIX E

SITE PHOTOGRAPHS



Photo #1
No Asbestos Detected in Roofing Layers of
Roof Section A



Photo #2
No Asbestos Detected in Base Layers or Metal
Flashing Materials of Roof Section A



Photo #3
View Depicting Curb Sealants of Roof Section A



Photo #4
No Asbestos Detected in EPDM Roof System of
Roof Section C.

Building 1816: Shaw Air Force Base



Photo #5
No Asbestos Detected in Wall/Curb Base
Sealant Layers of Roof Section C



Photo #6
No Asbestos Detected in Built-up Roofing
Layers of Roof Section D



Photo #7
**Asbestos Detected at 5% in Sealant Layers
of Perimeter Flashing on Roof Section D**

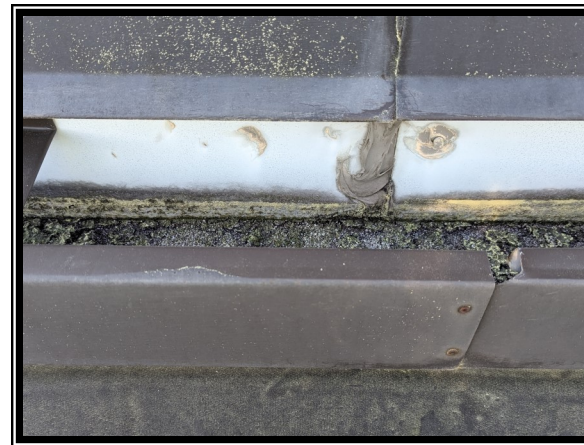


Photo #8
No Asbestos Detected in Roof Gutter Caulking



Photo #9
No Asbestos Detected in Ceiling Tiles or HVAC
Duct Materials in the Office Areas



Photo #10
No Asbestos Detected in Ceiling-mounted Fan
Coils' Pipe Wrap Material



Photo #11
View Depicting Boiler Equipment in Boiler Room



Photo #12
No Asbestos Detected in Boiler Pipe Wrap or
Mastic Materials