



## Addendum

20 JULY 2018

Addendum No.	ONE
Project:	Science and Technology Roof
	<b>University of South Carolina Beaufort</b> <b>University of South Carolina</b>
	WTS # 1703 USC # FP00000103
From:	Gene Bell, AIA LEED AP BD+C
To:	Prospective Bidders / Plan Holders

Addenda are issued prior to execution of Contract. All instructions contained herein shall be reflected in the Contract Sum and this Addendum will be made a part of the Contract Documents, if, as, and when a Construction Contract is awarded.

This Addendum forms a part of the Contract Documents and modifies the original documents dated 29 May 2018, as noted below. Acknowledge receipt of this Addendum in this space provided on the Bid Form. Failure to do so will subject the Bidder to disqualification.

This Addendum consists of 01 pages and the following attachments:

Limited Asbestos & Lead Survey dated March 05, 2018 ..... 28 Pages  
USC Contractor Requirements for Disturbance of LEAD Containing Materials ..... 1 Page  
PreBid Signin Sheets ..... 1 Pages  
075600 – LIQUID APPLIED ROOFING ..... 9 Pages

- A. ASBESTOS AND LEAD SURVEY:** Attached please find the Limited Asbestos & Lead Survey for Information Only. No ACMs were found. No Lead was found above DHEC allowable levels. Nevertheless, lead may be present in paint and any destructive actions to suspected lead paint will need to be handled per OSHA and USC Contractor Requirements for Disturbance of LEAD Containing Materials, also attached.
- B. PREBID SIGNIN SHEETS:** See attached
- C. REVISIONS TO THE DRAWINGS:**
- Insulation Thickness: The Roof insulation shall be 3.5" thick minimum 4'-0" from the centerline of the main drain, including HD Coverboard.
- D. REVISIONS TO THE PROJECT MANUAL:**
- Add 075600 Liquid Applied Roofing to the Table of Contents and to the manual as attached.
- E. CLARIFICATIONS:**
- Last Addenda will be issued by 2pm July 27<sup>th</sup>.
  - Last Day for Questions or Substitutions is July 23<sup>rd</sup> by close of business.

**F. QUESTIONS**

- a. Will a laydown area be provided for at the site? **A: Yes, Owner will work with the Contractor to designate an area for laydown, parking and equipment.**
- b. Who is the manufacturer of the current window system? **A: The manufacturer of the existing system is US Aluminum.**
- c. Will water and electric be available on site? **A: Yes, per section 015000, the contractor will be allowed to connect to the existing water and electric service.**
- d. Will the University allow trees to be tied back and bushes to be cut back to allow access to the wall? Is the contractor to replace the plantings? **A: USCB will coordinate with and provide trimming or removal of plant material with the contractor. The contractor will only replace plantings identified to remain and damaged during construction.**

**END OF ADDENDA**



**Limited Asbestos and Lead-Based  
Paint Assessment Report  
USCB Bluffton Campus – Science and  
Technology Building  
Bluffton, South Carolina  
S&ME Project No. 4261-18-024**

Assessment Performed By:

03-05-18

James L. McMillan (SCDHEC Accreditation #BI-01643) Date

**PREPARED FOR:**

**University of South Carolina  
Facilities Design and Construction  
1300 Pickens Street  
Columbia, SC 29201**

**PREPARED BY:**

**S&ME, Inc.  
620 Wando Park Boulevard  
Mt Pleasant, SC 29464**

**March 13, 2018**



March 13, 2018

University of South Carolina  
Facilities Design and Construction  
1300 Pickens Street  
Columbia, South Carolina 29201

Attention: Mr. Lee Miller  
[mille979@mailbox.sc.edu](mailto:mille979@mailbox.sc.edu)

Mr. Dwight Jones, PE  
[djones@uscb.edu](mailto:djones@uscb.edu)

Reference: **Limited Asbestos and Lead-Based Paint Assessment Report  
Science and Technology Building - Exterior Sealant and Roof**  
USCB – Bluffton Campus  
Bluffton, South Carolina  
S&ME Project No. 4261-18-024

Gentlemen:

S&ME, Inc. (S&ME) is pleased to provide the enclosed report detailing the limited asbestos and lead-based paint assessment of the exterior sealants and roof of the referenced structure. The attached report presents the findings of S&ME's evaluation conducted on February 28, 2018. The assessment was performed in general accordance with S&ME Proposal 42-1800104 dated January 31, 2018 and the terms and conditions of the current Geotechnical and Material Testing Indefinite Delivery Contract (H27-D262-PD), between S&ME and the University of South Carolina dated February 28, 2017. The enclosed report includes the executive summary, project background, assessment procedures, findings and results, and conclusions and recommendations for the proper treatment of asbestos containing materials and lead-based paint.

This report is provided for the sole use of the University of South Carolina. Use of this report by any other parties will be at such party's sole risk and S&ME, Inc. disclaims liability for any such use or reliance by third parties. The results presented in this report are indicative of conditions only during the time of the assessment and of the specific areas referenced. The information provided in this assessment report should not be used as a bidding document, and field conditions should be verified.

We appreciate the opportunity to provide you with our industrial hygiene services. If you have any questions concerning this report, please call us at (843) 884-0005.

Sincerely,  
**S&ME, Inc.**

A handwritten signature in blue ink that reads "James L. McMillan".

James L. McMillan  
Industrial Hygiene Staff Professional

A handwritten signature in blue ink that reads "Tom Behnke".

Tom Behnke, PG, CHMM  
Project Manager



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## Executive Summary

Information concerning the project was provided by Mr. Gene Bell with Watson Tate Savory Architects. We understand that the roofing systems will be replaced on the Science and Technology Building and the exterior sealants on the building will also be replaced or repaired. The roofing systems on the building is EPDM rubber over concrete and metal form deck and metal roof panels. The assessment was limited to various roof areas and exterior sealants to be disturbed by the proposed renovations as described by the client. The assessment also complies with federal, state, and local asbestos requirements regarding identification of asbestos containing materials (ACMs) that may be disturbed due to renovation or demolition.

The Science and Technology Building is two-story, approximately 40,000 square feet in size, and consists mainly of office areas and classrooms associated with USCB Bluffton. Interior finishes in the subject area include drywall walls and ceilings, acoustical ceiling tiles, and carpet and ceramic flooring. Exterior finishes include brick-veneer and concrete, and EPDM and metal roofing areas. The structure was occupied on the day of our site visit.

## Asbestos

The suspect ACMs sampled and analyzed as part of this assessment included roof patch material, various sealants, flashing material, and expansion joint material. The Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA) defines a material an ACM if an asbestos content greater than one percent (>1%) is detected in a representative sample. Of the representative materials sampled and analyzed as part of this assessment, no ACMs were identified.

If additional suspect ACMs not addressed in this report are discovered during the planned renovation activities, bulk samples must be collected by a SCDHEC licensed inspector and analyzed for asbestos content prior to disturbance or disposal of the suspect material(s). This report should also be provided to the contractor(s) to assist with compliance with applicable State and Federal regulations.

## Lead-Based Paint Assessment

A lead-based paint assessment was performed of representative exterior painted components associated with the subject areas. The components were analyzed using direct measurement X-Ray Fluorescence (XRF) technology using a Thermo-Scientific XLp 302 (serial #25910). For the purpose of this assessment, painted surfaces with lead concentrations meeting the SCDHEC disposal limit (0.7 mg/cm<sup>2</sup>) are considered lead-based paint.

Of the representative suspect painted components tested, none exhibited lead concentrations meeting the SCDHEC disposal limit of 0.7 mg/cm<sup>2</sup>. Low levels of lead were present which may be applicable to the standards of the OSHA 29 CFR 1926.62 (Lead in Construction) dependent upon the tasks impacting those surfaces.



Destructive actions to paint containing detectable levels of lead (e.g. component removal, demolition, sanding, grinding, burning, paint preparation, etc.) will require the contractor comply with the standards of the OSHA regulation 29 CFR 1926.62 (Lead in Construction), including but not limited to training, initial exposure monitoring, the use of personal protective equipment, and medical surveillance.

This summary is for convenience of the reader and should not be completely relied upon without reviewing the full contents of this report, including appended materials.



## **1.0 Background**

S&ME, Inc. (S&ME) was contracted by the University of South Carolina (USC) to perform an asbestos and lead-based paint assessment of various roof areas and exterior sealants associated with the Science and Technology Building located at the USC Beaufort Bluffton campus at 1 University Boulevard in Bluffton, South Carolina. We understand that the roofing systems will be replaced on the Science and Technology Building and the exterior sealants on the building will also be replaced or repaired. The assessment was requested to identify the presence of asbestos containing materials (ACMs) and lead-based paint associated with the referenced areas due to planned renovation activities. The assessment also complies with federal, state, and local asbestos requirements regarding identification of asbestos containing building materials that may be disturbed due to renovation or demolition.

### **1.1 Asbestos Assessment**

The asbestos assessment was conducted to assess, sample, and identify ACMs in accordance with regulatory requirements. The identification of ACMs will aid in the prevention of occupational exposures and/or environmental releases of airborne asbestos. Identification of ACMs also complies with Title 40 Code of the Federal Regulations, part 61, and State regulation 61-86.1 enforced by the South Carolina Department of Health and Environmental Control (SCDHEC), along with Title 29 Code of Federal Regulations, part 1926 enforced by the Occupational Safety and Health Administration (OSHA). The following sections describe the assessment procedures used, results of the suspect ACMs sampled and analyzed, and conclusions and recommendations related to ACMs.

### **1.2 Lead-Based Paint**

The purpose of the testing was to assess and identify lead-based paint coatings associated with the referenced areas. The identification of these materials will aid in the compliance of occupational exposure (OSHA) and/or environmental releases of airborne lead dust in accordance with OSHA 29 CFR 1926.62 (Lead in Construction) and provide information to determine proper disposal of lead-based paint coated components and debris in accordance with the SCDHEC and the Environmental Protection Agency (EPA).

## **2.0 Site and Project Description**

### **2.1 Purpose**

The purpose of the assessment was to identify the presence of ACMs and lead-based paint prior to renovation activities. An assessment strategy appropriate for this purpose was presented in our proposal and is described in this report. The report should be interpreted only with regard to the specific locations and materials referenced.

### **2.2 Site Description**

The Science and Technology Building is two-story, approximately 40,000 square feet in size, and consists mainly of office areas and classrooms associated with USCB Bluffton. Interior finishes in the subject area include drywall





walls and ceilings, acoustical ceiling tiles, and carpet and ceramic flooring. Exterior finishes include brick-veneer and concrete, and EPDM and metal roofing areas. The structure was occupied on the day of our site visit.

## 3.0 Assessment Procedures

### 3.1 Asbestos Containing Materials

The assessment was performed by observing and sampling suspect ACMs associated with the roof and exterior sealants. The possibility exists that suspect materials were undetected in inaccessible areas such as pipe chases, roofing overlays, or wall voids. If additional suspect ACMs not identified in this report are discovered during destructive activities, bulk samples must be collected by a SCDHEC licensed inspector and analyzed for asbestos content prior to disturbance or disposal of the suspect materials.

A sampling strategy was developed to provide representative samples in accordance with the SCDHEC and EPA. Bulk samples of suspect ACMs were collected by a SCDHEC licensed inspector. The bulk samples were then extracted from suspect ACMs and recorded on a chain of custody record and submitted to our in-house Polarized Light Microscopy (PLM) laboratory. The samples were subsequently analyzed by PLM, and confirmation analysis was performed by Transmission Electron Microscopy (TEM) by *EMSL Analytical*, for non-friable organically bound materials reported negative by PLM. The laboratories are located in Charlotte, North Carolina and are accredited by the National Voluntary Laboratory Accreditation Program (NVLAP), which is administered by the National Institute of Standards and Technology.

#### *Polarized Light Microscopy (PLM)*

The suspect materials were analyzed by trained microscopists using PLM techniques coupled with dispersion staining in accordance with EPA Test Method Title 40 Code of Federal Regulations, Chapter I (1-1-87 edition), Part 763, Subpart F-APPENDIX A. This method identifies asbestos mineral fibers based on six optical characteristics: morphology, birefringence, refractive index, extinction angle, sign of elongation and dispersion staining colors. The laboratory analysis reports the specific type of asbestos identified (there are six asbestos minerals) and the percentage of asbestos present.

#### *Transmission Electron Microscopy (TEM)*

Suspect non-friable organically bound materials, exhibiting negative results via PLM analysis, were analyzed by trained microscopists via TEM, in accordance with ASTM E2356 per SCDHEC requirements.

### 3.2 Lead-Based Paint

Lead-based paint testing was performed on representative painted components associated with the referenced areas. The components were analyzed with a Thermo-Scientific XLP-302 XRF spectrum analyzer (serial #25910). The suspect painted finishes were selected based on the color of the topcoat and the underlying paint layers and/or the substrate on which it was applied. The possibility exists that lead-based paint finishes are present in those inaccessible areas such as pipe chases, wall voids, etc. The SCDHEC defines a lead-based paint as any paint



containing lead at concentrations equaling  $0.7 \text{ mg/cm}^2$  or greater by XRF testing. For the purpose of the assessment, paint containing  $0.7 \text{ mg/cm}^2$  or greater was considered lead-based paint due to the planned activities.

The OSHA does not recognize a threshold level of lead for definition purposes, only the airborne concentration of lead a worker is exposed. The current OSHA regulations recognize an airborne action level of 30 micrograms per cubic meter ( $\mu\text{g/m}^3$ ) during an eight-hour day and a permissible exposure limit of  $50 \mu\text{g/m}^3$ .

## 4.0 Findings and Results

### 4.1 Asbestos

The suspect ACMs sampled on February 28, 2018, and analyzed as part of this assessment consisted of roof patch material, various sealants, flashing material, and expansion joint material. The EPA and the OSHA defines a material an ACM if an asbestos content of greater than one percent ( $>1\%$ ) is detected in a representative sample. Of the representative materials sampled and analyzed as part of this assessment, no ACMs were identified.

A summary of asbestos results is provided in **Appendix I**, and exhibits the sample number, location, type of material tested, approximate quantity of the material sampled, condition of the material, and corresponding result for each sample. A diagram of bulk sample locations and photographs is provided in **Appendix II**, and a copy of the inspector's SCDHEC license is provided in **Appendix III**. Copies of the laboratory analyses and chain-of-custody records are provided in **Appendix IV**.

### 4.2 Lead-Based Paint

Of the representative suspect painted components tested, none exhibited lead concentrations meeting the SCDHEC disposal limit of  $0.7 \text{ mg/cm}^2$ . However, low levels of lead were present which may be applicable to the standards of the OSHA 29 CFR 1926.62 (Lead in Construction) dependent upon the tasks impacting those surfaces.

The summary of XRF readings is provided in **Appendix V**, and should be reviewed in full.

## 5.0 Conclusions and Recommendations

The asbestos and lead-based paint assessment performed on January 18, 2018, of the various roof areas and exterior sealants associated with the Science and Technology Building located at USC Beaufort Bluffton campus at 1 University Boulevard in Bluffton, South Carolina, did not identify the presence of ACMs, or lead-based paint applicable to SCDHEC and EPA disposal standards. However, low levels of lead were identified that may be applicable to the standards of the OSHA, depending upon the tasks impacting those painted surfaces. This report should be provided to the contractor(s) to assist with compliance with applicable State and Federal regulations



## **5.1 Asbestos Recommendations**

If additional suspect materials not addressed in this report are discovered during renovation activities, work impacting those suspect materials must cease and bulk samples must be collected by a SCDHEC licensed inspector and analyzed for asbestos content, prior to disturbance or disposal.

## **5.2 Lead-Based Paint**

Destructive actions to paint containing low levels of lead (e.g. component removal, demolition, sanding, grinding, burning, paint preparation, etc.) may require the contractor comply with the standards of the OSHA regulations 29 CFR 1926.62 (Lead in Construction) depending upon the planned impacts to those subject paints. OSHA compliance may require training, initial exposure monitoring, the use of personal protective equipment, and medical surveillance.

Paint coatings may be present that contain low levels of lead that cannot be detected by X-ray fluorescence, and may be applicable to OSHA regulations 29 CFR 1926.62. The quantities reported by XRF may be useful in determining the relative risk associated with various demolition tasks, for example disturbances to paints with low lead levels may be less likely to result in airborne lead exposures in excess of the OSHA Action Level.

## **6.0 Assumptions and Limitations**

This report is provided for the sole use of the Client. Use of this report by any other parties will be at such party's sole risk, and S&ME disclaims liability for any such use or reliance by third parties. The results presented in this report are indicative of conditions only during the time of the sampling period and of the specific areas referenced. Under no circumstances is this report to be used as a bidding document, or as a project design or specification.

S&ME performed the services in accordance with generally accepted practices of reputable environmental consultants undertaking similar studies at the same time and in the same geographical area. S&ME has endeavored to meet this standard of care. No other warranty, expressed or implied, is intended or made with respect to this report or S&ME's services. Users of this report should consider the scope and limitations related to these services when developing opinions as to risks associated with the site.

The findings of the asbestos evaluation were based largely on visual observations within the amount of time available. The findings do not warrant that all asbestos-containing materials have been identified; asbestos-containing materials could be present in areas not readily-accessible to observation. In addition, the actual locations and quantities of materials determined to contain asbestos may vary from those herein. Apparent homogeneous sampling areas may vary in actual asbestos content due to previous renovations, maintenance or related operations.

The assessment did not include destructive actions. Therefore, possibility exists that suspect materials were undetected in inaccessible, covered, or concealed areas. If additional suspect materials are discovered during the planned destructive activities, bulk samples must be collected by an asbestos inspector and analyzed for asbestos content.



**Limited Asbestos and Lead-Based Paint Assessment Report**  
**USCB – Bluffton Campus; Science and Technology Building**  
Bluffton, South Carolina  
S&ME Project No. 4261-18-024

The findings of the lead-based paint evaluation were based largely on furnished information, visual observations within the amount of time available, and the specific number of areas analyzed. The findings do not warrant that all painted surfaces containing lead have been identified; different underlying painted surfaces which contain lead could exist under similar top layers. Also, apparent similarly painted surfaces may vary in actual lead content.

## **Appendices**

## **Appendix I – Summary of Asbestos Results**



**Table I: Summary of Asbestos Results**

HA	Material Description	Material Location	<sup>2</sup> Approx. Quantity	Category (F/I/II)	Material Type	Condition/ Potential for Disturbance	Sample No.	Sample Location	Type and <sup>1</sup> Percent Asbestos
WRP	Roof Patch (white)	2nd Story Roof - Various Areas	10 SF	NF Cat I			024-WRP-01		ND
							024-WRP-02		ND
							024-WRP-03		ND
GJ	Joint Material (grey)	2nd Story Roof Entry	36 LF	NF Cat I			024-GJ-01		ND
							024-GJ-02		ND
							024-GJ-03		ND <sup>3</sup>
WS	Sealant (white)	Various Seams and Joints	100 LF	NF Cat I			024-WS-01		ND
							024-WS-02		ND
							024-WS-03		ND <sup>3</sup>
BS	Sealant (black)	Various Seams and Joints	100 LF	NF Cat I			024-BS-01		ND
							024-BS-02		ND
							024-BS-03		ND <sup>3</sup>
BFM	Flashing Material (black)	2nd Story Roof Entry	75 SF	NF Cat I			024-BFM-01		ND
							024-BFM-02		ND
							024-BFM-03		ND <sup>3</sup>
EX	Expansion Joint Material	Various Seams and Joints	<1,000 LF	NF Cat I			024-EX-01		ND
							024-EX-02		ND
							024-EX-03		ND <sup>3</sup>

ND = No Asbestos Detected

LPD = low potential for disturbance

G = good

F = friable

Misc = miscellaneous

N/A = Not Applicable

PD = potential for disturbance

D = damaged

NF = non-friable

Surf = surfacing

SF = square feet

PSD = potential for significant disturbance

SD = significantly damaged

EA = each

TSI = thermal system insulation

LF = linear feet

HA = homogeneous area

Cat. I = category I

Cat. II = category II

<sup>1</sup>EPA, SCDHEC and OSHA defines a material as asbestos containing if an asbestos content greater than one percent (>1%) is detected in a representative sample.

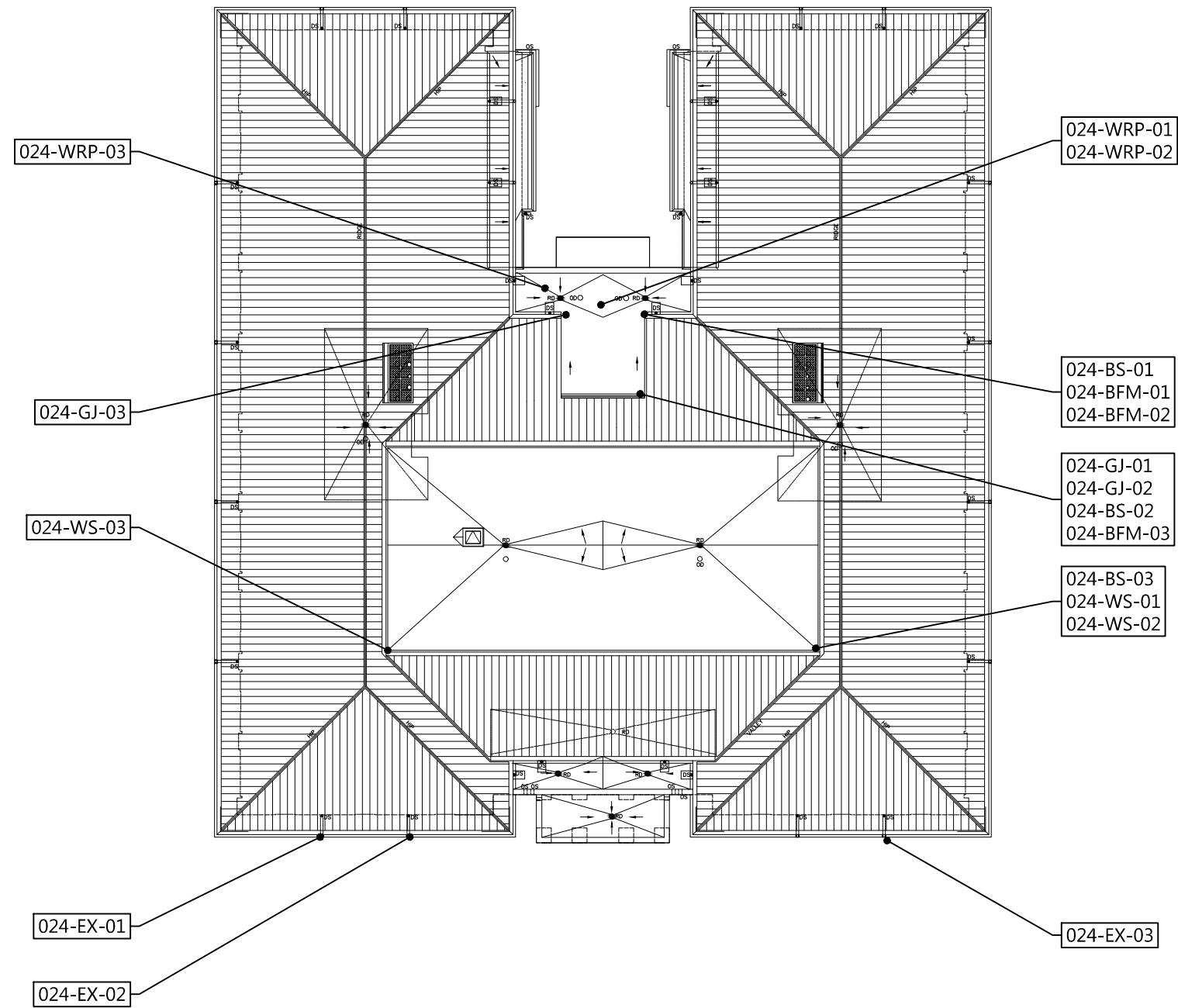
<sup>2</sup>Quantities are estimated, and should not be used for bidding purposes, as field conditions should be verified.

<sup>3</sup>Samples analyzed by TEM to confirm negative results reported by PLM analysis.

## **Appendix II – Diagram of Bulk Sample Locations and Photographs**



\\colse1\Active\Projects\2018\ENV\4261-18-024 USC Science & Technology Bldg. Ah\CAD\Construction\4261-18-024.dwg

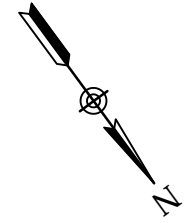
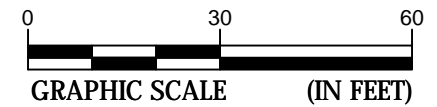


#### LEGEND

024-XX-XX BULK SAMPLE LOCATION

NOTES: NO ASBESTOS WAS DETECTED IN THE BULK SAMPLES COLLECTED AND ANALYZED.

NO PAINTED SURFACES MEETING THE SCDHEC DISPOSAL LIMIT OF 0.7 mg/cm<sup>2</sup> WERE DETECTED.



### LIMITED ASBESTOS & LEAD-BASED PAINT ASSESSMENT

SCIENCE & TECHNOLOGY BUILDING  
1 UNIVERSITY BOULEVARD  
BLUFFTON, SOUTH CAROLINA

SCALE:  
AS SHOWN

DATE:  
3-05-2018

PROJECT NUMBER  
4261-18-024

FIGURE NO.

1



**1** Typical exterior view of the Science and Technology Building on the USCB Bluffton Campus.



**2** Asbestos results were negative for all roof patching material.



**3** Asbestos results were negative for the white and black sealants.



**4** Asbestos results were negative for the flashing material covered by the metal panels.

### **Appendix III – Copy of Inspector's SCDHEC License**



**South Carolina  
Department of Health and Environmental Control  
Asbestos License**

**James McMillan**



*Air Sampler AS-00539  
Building Inspector BI-01643*

## **Appendix IV – Laboratory Analysis Sheets and Chain of Custody Records**



9771D Southern Pine Boulevard  
Charlotte, NC 28273  
704-940-1830 Fax 704-565-4929  
NVLAP Lab Code 102075-0

## POLARIZED LIGHT MICROSCOPY

Performed by EPA 600/R-93/116 Method

# Asbestos Analysis Summary

**Client Name** Columbia Branch  
**Client Job** USC Bluffton Science/Tech Bldg

134 Suber Rd.  
Columbia SC 29210

**Date Received** 3/1/2018

**Date Analyzed** 3/2/2018

**Job Number** 4261-18-024

Lab ID:	Sample #:	Appearance	Comments	Asbestos %/Type	Non-Asbestos Fibrous %/Type	Non-Fibrous %/Type
18-1417	024-WRP-01	WHITE/BLACK RUBBERY		ND		100 OTHER
18-1418	024-WRP-02	WHITE/BLACK RUBBERY		ND		100 OTHER
18-1420	024-GJ-01	GREY PLIABLE		ND		100 OTHER
18-1421	024-GJ-02	GREY PLIABLE		ND		100 OTHER

Analyzed by: Jane Wasilewski

*Additional Comments:*

Jane Wasilewski  
Laboratory Manager

For heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. ND = None Detected (Asbestos Not Present In Representative Sample). RCF= (Refractory Ceramic Fiber) The results relate only to the items tested. The sample may not be fully representative of the larger material in question. This sheet may not be reproduced except with permission from SME, Inc. This report may not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. Although Polarized Light Microscopy (PLM/Dispersion Staining) (Method EPA 600/R-93/116) is the specified method for analysis of bulk material samples for asbestos under the EPA Asbestos Hazard Emergency Response Act, there have been reports that this method may not identify asbestos when fiber sizes are extremely small or if they are bound in a resinous material. Such materials include floor tile, mastic and asphaltic roofing. Currently, reanalysis by Transmission Electron Microscopy (TEM) to verify results of <1% or "None Detected" for these materials is recommended.

<b>Lab ID:</b>	<b>Sample #:</b>	<b>Appearance</b>	<b>Comments</b>	<b>Asbestos %/Type</b>	<b>Non-Asbestos Fibrous %/Type</b>	<b>Non-Fibrous %/Type</b>
18-1423	024-WS-01	WHITE PLIABLE		ND		100 OTHER
18-1424	024-WS-02	WHITE PLIABLE		ND		100 OTHER
18-1426	024-BS-01	BLACK PLIABLE		ND		100 OTHER
18-1427	024-BS-02	BLACK PLIABLE		ND		100 OTHER
18-1429	024-BFM-01	BLACK FIBROUS		ND	3 CELLULOSE 2 GLASS	95 OTHER
18-1430	024-BFM-02	BLACK FIBROUS		ND	3 CELLULOSE 2 GLASS	95 OTHER

**Analyzed by: Jane Wasilewski**

***Additional Comments:***

**Jane Wasilewski**  
**Laboratory Manager**

For heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. ND = None Detected (Asbestos Not Present In Representative Sample). RCF= (Refractory Ceramic Fiber) The results relate only to the items tested. The sample may not be fully representative of the larger material in question. This sheet may not be reproduced except with permission from SME, Inc. This report may not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. Although Polarized Light Microscopy (PLM/Dispersion Staining) (Method EPA 600/R-93/116) is the specified method for analysis of bulk material samples for asbestos under the EPA Asbestos Hazard Emergency Response Act, there have been reports that this method may not identify asbestos when fiber sizes are extremely small or if they are bound in a resinous material. Such materials include floor tile, mastic and asphaltic roofing. Currently, reanalysis by Transmission Electron Microscopy (TEM) to verify results of <1% or "None Detected" for these materials is recommended.

**Job Number** 4261-18-024

<i>Lab ID:</i>	<i>Sample #:</i>	<i>Appearance</i>	<i>Comments</i>	<i>Asbestos %/Type</i>	<i>Non-Asbestos Fibrous %/Type</i>	<i>Non-Fibrous %/Type</i>
18-1432	024-EX-01	BEIGE RUBBERY		ND		100 OTHER
18-1433	024-EX-02	BEIGE RUBBERY		ND		100 OTHER

  
Analyzed by: Jane Wasilewski

*Additional Comments:*

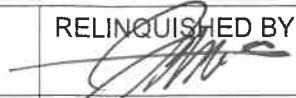
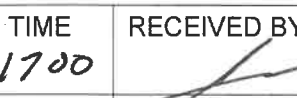
  
Jane Wasilewski  
Laboratory Manager

For heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. ND = None Detected (Asbestos Not Present In Representative Sample). RCF= (Refractory Ceramic Fiber) The results relate only to the items tested. The sample may not be fully representative of the larger material in question. This sheet may not be reproduced except with permission from SME, Inc. This report may not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. Although Polarized Light Microscopy (PLM/Dispersion Staining) (Method EPA 600/R-93/116) is the specified method for analysis of bulk material samples for asbestos under the EPA Asbestos Hazard Emergency Response Act, there have been reports that this method may not identify asbestos when fiber sizes are extremely small or if they are bound in a resinous material. Such materials include floor tile, mastic and asphaltic roofing. Currently, reanalysis by Transmission Electron Microscopy (TEM) to verify results of <1% or "None Detected" for these materials is recommended.



# BULK SAMPLE CHAIN OF CUSTODY RECORD

Page 1 of 2

PROJECT NO. <u>42G1-18-024</u>		PROJECT NAME <u>USC BLUFFTON</u>		RELINQUISHED BY: 		DATE <u>2/28</u>		TIME <u>1700</u>		RECEIVED BY: <u>9:47 AM</u>  <u>3/1/18</u>		
FACILITY <u>SCIENCE &amp; TECHNOLOGY BLDG</u>				RELINQUISHED BY:		DATE		TIME		RECEIVED BY:		
SAMPLER(S) J. McMillan			DATE TAKEN <u>2/28</u>		RELINQUISHED BY:		DATE		TIME		RECEIVED BY:	
SAMPLE #	HOMOGENEOUS AREA	MATERIAL TYPE	LAB NUMBER	DATE ANALYZED	ANALYSTS INITIALS	ASBESTOS + I N/D		ARCHIVE NUMBER	DATE ARCH	ARCHIVERS INITIALS	SPECIAL INSTRUCTIONS	
<u>024-WEP-01</u>	<u>1</u>	<u>ROCK PATCH</u>	<u>18-1417</u>									
<u>02-</u>	<u>1</u>	<u>↓</u>	<u>18</u>									
<u>03</u>	<u>1</u>	<u>↓</u>	<u>19</u>								<u>TEM</u>	
<u>024-65-01</u>	<u>2</u>	<u>CAULK</u>	<u>20</u>									
<u>02</u>	<u>1</u>	<u>↓</u>	<u>21</u>									
<u>03</u>	<u>1</u>	<u>↓</u>	<u>22</u>								<u>TEM</u>	
<u>024-WS-01</u>	<u>3</u>	<u>SEALANT</u>	<u>23</u>									
<u>02</u>	<u>1</u>	<u>↓</u>	<u>24</u>									
<u>03</u>	<u>1</u>	<u>↓</u>	<u>25</u>								<u>TEM</u>	
<u>024-B5-01</u>	<u>4</u>	<u>SEALANT</u>	<u>26</u>									
<u>02</u>	<u>1</u>	<u>↓</u>	<u>27</u>									
<u>03</u>	<u>1</u>	<u>↓</u>	<u>28</u>								<u>TEM</u>	
<u>024-BFM-01</u>	<u>5</u>	<u>FLASHING</u>	<u>29</u>									
<u>02</u>	<u>1</u>	<u>MATERIAL</u>	<u>30</u>									
<u>03</u>	<u>1</u>	<u>↓</u>	<u>1431</u>								<u>TEM</u>	

ALL SAMPLES WILL BE DISPOSED OF NINETY DAYS AFTER ANALYSIS UNLESS OTHERWISE REQUESTED

## MATERIAL TYPES

A - 1/2" Pipe Fitting  
B - 1/2" Pipe Fitting  
C - 1/2" Pipe Fitting  
D - 1/2" Pipe Fitting  
E - 1/2" Pipe  
F - 1/2" Pipe

G - 9-14" Pipe  
H - 14" Pipe  
I - Spray-On/Trowel  
J - Floor Tile  
K - Tanks/Boiler  
L - Asbestos Insul

M - Air-Exp. In.  
N - Ceiling Wall Tile  
O - Asbestos  
P - Other  
Q - Other  
R - Other

PLM TAT - 5 Days Hours Same Day  
TEM TAT - 3 Days Hours Same Day  
Do not run TEM if both PLMs are positive

[illegible]

A = 4" Pipe Fitting	B = 9" 14" Pipe	M = Arm, Exp. Jt.
B = 4" 8" Pipe Fitting	H = 14" Pipe	N = Ceiling Wall Tie
C = 9" 14" Pipe Fitting	I = Spray-On Insul.	O = Fiberboard
D = 14" Pipe Fitting	J = Floor Tie	R = Other
E = 4" Pipe	K = Tank, Boiler	(See notes for I
F = 4" 8" Pipe	L = A/P (1" Insul.)	to panel)

PLM TAT - 5 ~~Days~~ Hours Same Day  
TEM TAT - 3 ~~Days~~ Hours Same Day

Do not run TEM if both PLMs are positive



# EMSL Analytical, Inc.

10801 Southern Loop Blvd Pineville, NC 28134

Tel/Fax: (704) 525-2205 / (704) 525-2382

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

EMSL Order: 411801649

Customer ID: SMEI54

Customer PO:

Project ID:

**Attention:** Jane Wasilewski  
S&ME, Inc.  
9771D Southern Pine Blvd.  
Charlotte, NC 28273

**Phone:** (704) 940-1830

**Fax:** (704) 565-4929

**Received Date:** 03/02/2018 11:20 AM

**Analysis Date:** 03/03/2018

**Collected Date:**

**Project:** 4261-18-024

## 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
024-WRP-03 411801649-0001	Roof Patch	Gray/Black Non-Fibrous Homogeneous	96.5	3.5 Fibrous_Other	No Asbestos Detected
024-GJ-03 411801649-0002	Caulk	Gray Non-Fibrous Homogeneous	100	None	No Asbestos Detected
024-WS-03 411801649-0003	Sealant	White Non-Fibrous Homogeneous	100	None	No Asbestos Detected
024-BS-03 411801649-0004	Sealant	Black Non-Fibrous Homogeneous	96.0	4.0 Fibrous_Other	No Asbestos Detected
024-BFM-03 411801649-0005	Flashing	Black Fibrous Homogeneous	100	None	No Asbestos Detected
024-EX-03 411801649-0006	Exp. Joint	Gray Fibrous Homogeneous	100	None	No Asbestos Detected

Analyst(s)

Aaron Hartley (6)

Lee Plumley, Laboratory Manager  
or other approved signatory

This laboratory is not responsible for % asbestos in total sample when the residue only is submitted for analysis. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Pineville, NC

Initial report from: 03/05/2018 10:20:23



EMSL ANALYTICAL, INC.  
LABORATORY • PRODUCTS • TRAINING

# Asbestos Chain of Custody

EMSL Order Number (Lab Use Only):

411801649

EMSL ANALYTICAL, INC.  
10801 SOUTHERN LOOP BLVD  
PINEVILLE, NC 28134  
PHONE: 704-525-2205  
FAX: 704-525-2382

Company : S&ME Inc.		EMSL-Bill to: <input type="checkbox"/> Same <input checked="" type="checkbox"/> Different If Bill to is Different note instructions in Comments**	
Street: 9771D Southern Pine Blvd.		Third Party Billing requires written authorization from third party	
City: Charlotte	State/Province: NC	Zip/Postal Code: 28273	Country:
Report To (Name): Jane Wasilewski		Telephone #: 704-940-1830	
Email Address: jwasilewski@smeinc.com		Fax #:	Purchase Order:
Project Name/Number:		Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email	
U.S. State Samples Taken:		CT Samples: <input type="checkbox"/> Commercial/Taxable <input type="checkbox"/> Residential/Tax Exempt	

Turnaround Time (TAT) Options* - Please Check							
<input type="checkbox"/> 3 Hour	<input type="checkbox"/> 6 Hour	<input type="checkbox"/> 24 Hour	<input type="checkbox"/> 48 Hour	<input checked="" type="checkbox"/> 72 Hour	<input type="checkbox"/> 96 Hour	<input type="checkbox"/> 1 Week	<input type="checkbox"/> 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.

<b>PCM - Air</b> <input type="checkbox"/> Check if samples are from NY <input type="checkbox"/> NIOSH 7400 <input type="checkbox"/> w/ OSHA 8hr. TWA <b>PLM - Bulk (reporting limit)</b> <input type="checkbox"/> PLM EPA 600/R-93/116 (<1%) <input type="checkbox"/> PLM EPA NOB (<1%) Point Count <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) Point Count w/Gravimetric <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) <input type="checkbox"/> NYS 198.1 (friable in NY) <input type="checkbox"/> NYS 198.6 NOB (non-friable-NY) <input type="checkbox"/> NIOSH 9002 (<1%)	<b>TEM - Air</b> <input type="checkbox"/> 4-4.5hr TAT (AHERA only) <input type="checkbox"/> AHERA 40 CFR, Part 763 <input type="checkbox"/> NIOSH 7402 <input type="checkbox"/> EPA Level II <input type="checkbox"/> ISO 10312 <b>TEM - Bulk</b> <input checked="" type="checkbox"/> TEM EPA NOB <input type="checkbox"/> NYS NOB 198.4 (non-friable-NY) <input type="checkbox"/> Chatfield SOP <input type="checkbox"/> TEM Mass Analysis-EPA 600 sec. 2.5 <b>TEM - Water:</b> EPA 100.2 Fibers >10µm <input type="checkbox"/> Waste <input type="checkbox"/> Drinking All Fiber Sizes <input type="checkbox"/> Waste <input type="checkbox"/> Drinking	<b>TEM- Dust</b> <input type="checkbox"/> Microvac - ASTM D 5755 <input type="checkbox"/> Wipe - ASTM D6480 <input type="checkbox"/> Carpet Sonication (EPA 600/J-93/167) <b>Soil/Rock/Vermiculite</b> <input type="checkbox"/> PLM CARB 435 - A (0.25% sensitivity) <input type="checkbox"/> PLM CARB 435 - B (0.1% sensitivity) <input type="checkbox"/> TEM CARB 435 - B (0.1% sensitivity) <input type="checkbox"/> TEM CARB 435 - C (0.01% sensitivity) <input type="checkbox"/> TEM Qual. via Filtration Technique <input type="checkbox"/> TEM Qual. via Drop-Mount Technique <b>Other:</b> <input type="checkbox"/>
--	---	---

<input type="checkbox"/> Check For Positive Stop - Clearly Identify Homogenous Group	Filter Pore Size (Air Samples): <input type="checkbox"/> 0.8µm <input type="checkbox"/> 0.45µm
--	--

Samplers Name:	Samplers Signature:
----------------	---------------------

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
024-WRP-03	Roof Patch		
024-GJ-03	caulk		
024-WS-03	Sealant		
024-Bs-03	↓		
024-BFM-03	Flashing		
024-Ex-03	Exp Joint		

Client Sample # (s):	-	Total # of Samples:	6
Relinquished (Client):		Date:	3/2/18
Received (Lab):		Date:	3/2/18
Comments/Special Instructions: Bill to S&ME, Inc., 9751 Southern Pine Blvd., Charlotte NC 28273		Time:	11:20AM W/12
****EMAIL INVOICE TO JANE WASILEWSKI****			

4261-18-024

## **Appendix V – Summary of XRF Readings**



XLN No.	Site	Floor	Side	Room	Structure	Component	Color	Substrate	Condition	Results	Action Level	Lead	Units
1									Shutter Calibrate			1.84	mg/cm <sup>2</sup>
2	USCB Sci & Tech	2	A	Exterior Roof					Calibrate			1	mg/cm <sup>2</sup>
3	USCB Sci & Tech	2	A	Exterior Roof					Calibrate			1.4	mg/cm <sup>2</sup>
4	USCB Sci & Tech	2	A	Exterior Roof					Calibrate			1	mg/cm <sup>2</sup>
5	USCB Sci & Tech	2	A	Exterior Roof					Calibrate			1.2	mg/cm <sup>2</sup>
6	USCB Sci & Tech	3	A	Exterior Roof	Roof		Black	EPDM	Non-Deteriorated	Negative	0.7	0	mg/cm <sup>2</sup>
7	USCB Sci & Tech	3	A	Exterior Roof	Vent		Black	Metal	Non-Deteriorated	Negative	0.7	0	mg/cm <sup>2</sup>
8	USCB Sci & Tech	3	A	Exterior Roof	Door		Grey	Metal	Non-Deteriorated	Negative	0.7	0.01	mg/cm <sup>2</sup>
9	USCB Sci & Tech	3	A	Exterior Roof	Roof		Grey	Metal	Non-Deteriorated	Negative	0.7	0	mg/cm <sup>2</sup>
10	USCB Sci & Tech	3	A	Exterior Roof	Roof		Black	EPDM	Non-Deteriorated	Negative	0.7	0	mg/cm <sup>2</sup>
11	USCB Sci & Tech	3	A	Exterior Roof	Roof		Black	EPDM	Non-Deteriorated	Negative	0.7	0	mg/cm <sup>2</sup>
12	USCB Sci & Tech	3	A	Exterior Roof	Pipe		Black	Metal	Non-Deteriorated	Negative	0.7	0	mg/cm <sup>2</sup>
13	USCB Sci & Tech	3	A	Exterior Roof	Pipe		Black	Metal	Non-Deteriorated	Negative	0.7	0	mg/cm <sup>2</sup>

mg/cm<sup>2</sup> = milligram per square centimeter

SCDHEC requires special disposal for paint containing lead >0.7 mg/cm<sup>2</sup>

OSHA does not recognize a concentration of lead for definition purposes, only the airborne concentration a worker is exposed.

**Bold** = Paint Readings meeting or exceeding SCDHEC disposal level of 0.7 mg/cm<sup>2</sup>

# UNIVERSITY OF SOUTH CAROLINA

## Contractor Requirements for Disturbance of Lead Containing Materials

The following contractor requirements exist to ensure that work disturbing lead containing materials at the University of South Carolina occurs in a safe and compliant manner, while minimizing risk to University personnel, property and the environment. You are encouraged to read and understand the OSHA standard for lead in the construction industry, 29CFR 1926.62.

### SUBMITTALS

The following information must be provided to and approved by the University before any disturbance of lead materials may begin.

1. Description of each activity where lead materials will be disturbed.
2. Description of controls that will be used to minimize the generation of lead dust (i.e. wet methods, ventilation).
3. Demonstration that disturbance will not result in airborne concentrations of lead in excess of the OSHA Action Level of  $30 \mu\text{g}/\text{m}^3$  (i.e. a negative exposure assessment or NEA). Air monitoring data from previous, similar jobs conducted within the past 12 months are acceptable. If you do not have an NEA for the work described, then all work must be maintained under negative pressure and comply with OSHA 1926(e).
4. Description of decontamination procedures for personnel, equipment/tools and PPE to prevent the migration of lead materials from the work area.
5. Documentation that all personnel that will be involved in lead disturbance are trained in accordance with CFR 1926.62(l).
6. Description of process for collection, containerization and on-site management of lead containing waste material.

### MINIMUM REQUIREMENTS

The University may conduct a safety inspection of your work site at any time. At a minimum, the following items will be inspected. Failure to comply may result in a work stoppage until items are corrected.

1. Access to work area must be clearly demarcated and restricted. OSHA-compliant lead work signage must be posted in conspicuous locations.
2. When vacuums are used for dust collection, HEPA vacuums must be used. Dry sweeping is prohibited.
3. Lead materials that have been removed from structures must be captured so as to prevent contamination of other building materials or the environment. For outdoor work, lead materials may not come in contact with the ground.
4. Lead materials that have been removed must be cleaned up promptly (at least daily and before leaving the worksite at any time).
5. No lead materials may leave work area outside of impermeable containers. Workers must be adequately decontaminated prior to leaving work area.
6. The University will manage the disposal of all hazardous lead waste through its existing Hazardous Waste Management program. The disposal of lead waste not meeting the definition of Hazardous Waste must be coordinated through the University. Minimum requirements for on-site management of lead waste:
  - a. The contractor is responsible for providing containers for the storage of waste/disposal. Containers must be impermeable and capable of being closed.
  - b. Waste container must remain closed at all times unless adding or removing waste.
  - c. Waste container must be labeled with words that describe its contents (i.e. – lead paint waste).
  - d. No more than fifty-five (55) gallons of hazardous waste may be accumulated on-site at any one time.



**University of South Carolina**  
**Non Mandatory Pre Bid Sign In Sheet**  
 Bluffton, SC

**Project Name:** USC Beaufort Replace Science & Technology Building Roof  
**Project Number:** FP00000103  
**Pre Bid Date & Time:** July 10, 2018 11:00AM 1 University Blvd, Business Office Conference Room No 142

SWMBE Contractor ? Indicate Below	Name	Company Name	Address	Phone #	Email
S W M B E	Ross Jordan	Baker Roofing CO	7154 Cross County Rd North Charleston SC 29418	843 214 5302	rjordan@bakerroofing.com
S W M B E	Brett Dunn	Bone Dry Roofing	7271 SPA 124 N. CHARLESTON SC	843 618-1384	bdunn@bonedryroofing.net
S W M B E	TEO DEATON	Roofing Professionals	PO BOX 995 KILPATRICK VA 21324	912-756-7113	deaton@spiroof.com
S W M B E	Jeremiah Price	SOPREMA	114 W Sparrowwood Dr Lexington SC 29072	803-360-8204	jprice@soprema.us
S W M B E	ALESSANDRO V. TELLO	METALCRAFTS	4522 OCEANVIEW RD SAVANNAH, GA 31405	912-236-0605	avtello@tectaamerica.com
S W M B E	ROBERT CARVER	CITYSCAPE ROOFING		828-409 6730	rcarver@cityscaperoofing.com
S W M B E	GENE BELL	WATSON TATE SALES			
S W M B E	DNIGHT JONES	USCB			
S W M B E	AIMER EISH LEE MILLER	VIA PHONE USC			

\*\*\*\*By signing this sheet you agree to receive information electronically.



## SECTION 075600 - LIQUID APPLIED ROOFING

### PART 1 - GENERAL

#### 1.1 DESCRIPTION OF EXISTING SUBSTRATES

- A. Application of product over existing EPDM roofing system.

#### 1.2 DESCRIPTION OF LIQUID-APPLIED ROOFING SYSTEM

- A. The Liquid-Applied System consists of a polyester-reinforced elastomeric acrylic system specifically designed for roofing installation. The system is
  - 1. Approved by FM (Factory Mutual) according to the complete Standard 4470 for Class 1 Roof Constructions;
  - 2. Classified and subjected to follow-up by UL (Underwriters Laboratories);
  - 3. Manufactured in accordance with ISO 9001:2008 & 14001:2004 regulations.

#### 1.3 SECTION INCLUDES

- A. Liquid-Applied flexible acrylic waterproofing system for use over new or existing roofing. Work shall include the preparation of the roof surface, flashing, detailing, application of the roof system, and cleanup.

#### 1.4 RELATED WORK

- A. Contractor shall review all sections of the project specifications to determine items of work that will interface with the application of this roofing system. Compliance with applicable building codes shall be assured by the specifier or project engineer, while coordination and execution of related sections shall be the responsibility of the approved contractor.

#### 1.5 REFERENCES

- A. NRCA Roofing and Waterproofing Manual

- 1.6      Factory Mutual RoofNav Directory
  
- 1.7      Underwriters Laboratories Building Materials Directory
  
- 1.8      ASTM D5034-09(2013)      Breaking Strength and Elongation of Textile Fabrics
  
- 1.9      ASTM D3787-07(2011)      Bursting Strength of Textiles
  
- 1.10     ASTM D1117-01                  Guide for Evaluating Nonwoven Fabric
  
- 1.11     ASTM D1777-96(2011)      Thickness of Textile Materials
  
- 1.12     ASTM G29-96(2010) Test Methods for Algae Resistance
  
- 1.13     ASTM E108-11      Test Method for Fire Tests of Roof Coverings
  
- 1.14     ASTM D1653-13      Water Vapor Transmission of Organic Coating Films
  
- 1.15     ASTM G155-13                  Practice for Operating Xenon Arc Light Apparatus for  
Exposure   of Non-Metallic Materials
  
- 1.16     ASTM D412-06a      Tensile Properties of Vulcanized Rubber & Thermoplastic  
Elastomers
  
- 1.17     ASTM D6083-05e1   Standard Specification for Liquid Applied Acrylic Coating
  
- 1.18     ASTM C1549-09      Determination of Solar Reflectance at Near Ambient  
Temperature Using a Portable Solar Reflectometer
  
- 1.19     ASTM C1371-04ae1          Determination of Emittance of Materials at Near Room  
Temperature Using Portable Emissometers
  
- 1.20     FM 4470                  Standard for Class 1 Spread of Flame, Windstorm Pressure,  
Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to  
Leakage

1.21 REVIEW / SUBMITTALS

- A. Shop Drawings: Submit a scale drawing illustrating layout of joint reinforcing and all flashing details.

1.22 Product Data: Provide manufacturer's published technical literature, SDS, and warranty on products that make up the roofing system, including coatings, reinforcing fabrics, flashing materials, roof drains, fasteners, etc.

1.23 Installation Instructions: Submit all data sheets available from the manufacturer on the installation of the roofing system applicable to the project.

1.24 Submit manufacturer's Certificates of Compliance or Analysis that all products meet or exceed project requirements. If required, Contractor to supply samples or mockup.

1.25 Applicator is responsible for submitting proof they are approved by the manufacturer.

1.26 Prior to bid, all project specifications, details, and submittals shall be reviewed by manufacturer for pre-approval and to comply with warranty requirements. Successful bidder should initiate warranty pre-inspection process before commencing work.

1.27 QUALIFICATIONS

- A. Contractor Qualifications: The Applicator of the specified roofing material shall be a certified by the manufacturer. The Applicator shall provide a certified contractor letter from the roofing system manufacturer verifying the Contractor's status, level, and ability to furnish the specified warranty type and term.

1.28 Manufacturer Qualifications: Manufacturer shall have a minimum twenty (20) years manufacturing experience in the roof coating industry.

1.29 QUALITY CONTROL

- A. Codes and Standards: The contractor shall become thoroughly familiar with all codes, regulations and standards governing the specified work. Any contradiction between the manufacturer's requirements and these specifications shall be brought to the attention of the manufacturer and the specifier or project engineer.

- 1.30 Deviations: There shall not be any deviations from these specifications unless the deviation is submitted in writing to the specifier/project engineer. Any request for deviation must be approved in writing from the roofing manufacturer's technical department delineating the details of the deviation.
- 1.31 Training and Documentation: The Contractor is responsible for ensuring a trained foreman is on site during the installation of specified products. A daily log of application activities and environmental conditions should be maintained and available on-site with copies of technical data/application instructions & SDS.
- 1.32 Technical Inspections: The Manufacturer may require Technical Inspections based on warranty types and terms. These inspections include, but not limited to, pre-construction, interim, and final inspections. Provide inspections as required to meet warranty requirements.
- 1.33 DELIVERY, STORAGE & HANDLING
- A. Deliver materials to jobsite in manufacturer's unopened and undamaged containers bearing the following information:
1. Name and Address of Manufacturer
  2. Identification of Contents – Including Product Code
  3. Net Volume of Contents
  4. Lot or Batch Number
  5. VOC Content
  6. Storage Temperature Limits
  7. Shelf Life and Expiration Date
  8. Mixing Instructions and Proportions of Contents
  9. Safety Information and Instructions
- B. Store and protect materials from damage and weather in accordance with manufacturer's published instructions.
- 1.34 Ambient temperatures should range between 50 and 90°F (10 to 32°C). Keep out of direct sunlight.
- 1.35 Place stored material containers on pallets and cover with tarpaulin tied to bottom of pallets.
- 1.36 ENVIRONMENTAL REQUIREMENTS
- A. Do not apply if ambient temperatures are expected to fall below 50°F (10°C), or if rain or heavy dew is anticipated before liquid coating component has cured.

### 1.37 WARRANTIES AND ELIGIBILITY

- A. Contractor to furnish manufacturer's or Guarantee in accordance with project specifications. Contractor shall follow written application process in accordance with manufacturer's warranty program.
- B. Manufacturer's Labor and Material Warranty
  - 1. Duration: 25 Years

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- A. Basis of design: Hydro Stop by GAF - 1 Campus Drive Parsippany, New Jersey 07054, 1-973-628-3000, [www.gaf.com](http://www.gaf.com)
- B. Alsan Coating AC 401 by Soprema; 310 Quadral Drive, Wadsworth Ohio, 44281, [www.soprema.us](http://www.soprema.us)
- C. Sealoflex Waterproofing System PO Box 3135 Summerville, SC, 29484; [www.sealoflex.com](http://www.sealoflex.com)

### 2.2 MEMBRANE COMPOUND MATERIAL

- A. Waterproofing Material: three stage, fabric-reinforced, flexible acrylic coating, fluid-applied in successive steps to form a continuous, seamless, watertight membrane; 39 to 60 mils minimum cured total system thickness, comprised of the following:
  - 1. Foundation and Saturation Coats: highly flexible, water- based, 100% pure acrylic polymer resin coatings.
  - 2. Fabric: polyester, non-woven, stitch-bonded and heat-set fabric.
  - 3. FinishCoat: ultraviolet light-resistant blend of highly flexible, water-based, 100% pure acrylic polymer resin coating. Color as selected from manufacturer's standard color chart.
- B. Reinforcing Fabric: shall be non-woven, 100% polyester, stitch bonded, heat-set fabric with the following characteristics:
  - 1. Weight: 3 oz / per square yard (106.31 grams / square meter)
  - 2. Tensile Strength Warp 74 lbs. (33.60 kg) per ASTM D 5034
  - 3. Fill 45 lbs. (20.43 kg)
  - 4. Elongation @ Break Warp 21.3% per ASTM D 5034
  - 5. Fill 51.3%
  - 6. Ball Burst 111 lbs. (50.39 kg) per ASTM D 3787
  - 7. Trapezoid Warp 13.5 lbs. (6.13 kg) per ASTM D 117
  - 8. Fill 24.2 lbs. (10.99 kg)

9. Thickness .018 inches (.457 mm) per ASTM D-1777

C. Cured Membrane Characteristics

1. Elongation ASTM D638 >300% elastomeric
2. Tensile Strength (cured) ASTM D412 >2000 PSI
3. Density: 12.1 lb/gal
4. Volume Solids: > or = 53 %
5. Weight Solids: > or = 66%
6. Algae Resistance ASTM G29 No Growth Supported
7. Moisture Vapor ASTM E96 3 Perms
8. Weathering ASTM G26 No effect after 3,000 hours.
9. Salt Spray Test ASTM B117 No effect.
10. Fire Rating ASTM E108 Class A
11. VOC (calculated): < 72 g/L
12. Susceptibility to Leakage FM 4470 No signs of water leakage.
13. Windstorm Pressure FM 4470 Meets Class 1- 90
14. Windstorm Pull FM 4470 Class 1-225 on Polyisocyanurate
15. Class 1-270 on Expanded Polystyrene
16. Class 1-375 on Lightweight Concrete
17. Class 1-735 on Structural Concrete
18. Severe Hail Test FM 4470 No separation or rupture 1-SH
19. Resistance to Foot Traffic FM 4470 No sign of tearing or cracking.
- 20.
- 21.

D. ACCESSORIES

1. Polymer modified cementitious slurry to fill cracks, voids, or low depressions on various substrates or embedded in Fabric as below grade waterproofing.
2. Sealant : Single package, high solids acrylic, elastomeric sealant.
3. Caps: Fabric reinforcement for sealing metal fasteners.
4. Metal Primer: Water-based, surfactant-free primer used on direct-to-metal applications to stabilize and protect metal surfaces.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. When applying a Liquid-Applied Roofing System as a recover over an existing roofing system, have manufacturer of the system review compatibility with substrate and recommend preparation.
- B. Verify that substrate surfaces are durable, free of frozen matter, dampness, loose particles, cracks, pits, projections, and/or foreign matter detrimental to adhesion or application of waterproofing system.

- C. Verify that substrate surfaces are smooth and not detrimental to full contact bond of waterproofing materials. Perform test patches to verify substrate suitability to receive the specified coat system.
- D. Verify items that penetrate surfaces to receive waterproofing are securely installed and suitably flashed.
- E. Verify that substrate areas are adequately supported and firmly fastened in place.
- F. Verify that roof deck has a minimum slope of  $\frac{1}{4}$ :12.
- G. Verify that roof does not have areas of ponding water.
- H. Verify that all contiguous walls are properly waterproofed.

### 3.2 PREPARATION

- A. Protect adjacent surfaces not designated to receive waterproofing. Inspect and make all necessary repairs to substrate. Remove and replace wet substrates and insulation, if applicable.
- B. At a minimum, clean and prepare surfaces to receive waterproofing by removing all dirt, dust, loose and flaking particles, grease and debris with the use of a stiff bristle push broom. Apply United Cleaning Concentrate and rinse per manufacturer's instructions. Care should be taken not to inject water into the substrate during the preparation phase. Allow adequate time for complete drying after the cleaning process.
- C. Substrates with heavy contamination of grease, oils, dirt, etc. may require supplemental cleaning methods. Contact Product manufacturer for procedures.
- D. At a minimum, seal cracks and joints with Fabric. Repair additional substrate conditions per approved manufacturer approved details..
- E. Refer to manufacturer for detailed substrate preparation procedures by individual substrate.
- F. Do not apply waterproofing to surfaces unacceptable to manufacturer, or under inclement environmental conditions.

### 3.3 APPLICATION

- A. Foundation Coats & Fabric Components – Initial foundation coat consists of one coat of Foundation Coat applied to the substrate, Premium Coat Fabric (sizes vary) laid into the wet Foundation Coat, and a second coat of Foundation Coat saturating the fabric from above. Care should be given to ensure that adjacent runs of fabric are overlapped a minimum of 4 inches.

- B. Foundation coats are applied at a total rate of 25-40 ft<sup>2</sup>/gal depending on substrate. FoundationCoat should only be applied with the use of approved roof brushes. Rolling and spraying of the FoundationCoat are absolutely forbidden.
- C. Roof Perimeter - Using 12-inch fabric and the foundation components (described above), waterproof entire roof perimeter. Continue waterproofing up vertical surfaces and onto deck a minimum of 6 inches in each direction.
- D. Roof Penetrations - Using 12-inch fabric and the foundation components (described above), seal items projecting through waterproofing material watertight. Waterproof up penetrations a minimum of 6".
- E. Roof Field - Using 40 in. fabric and the foundation components (as described above) seal the entire roof field. Overlap adjacent runs of fabric 4 inches minimum.
- F. Install second fabric component in Finish Coat in the same fashion as the initial foundation coat and fabric. Apply second fabric component after the installation of all through wall scupper liners and flanged flashings.
- G. Finish Coat Component - Apply 2 coats of FinishCoat at a combined total rate of 70 ft<sup>2</sup>/gal over entire roof area. Minimum millage requirements are 11.5 mils (.0115 inches) wet and 6.1 mils (.0061 inches) dry per coat. Allow to dry between coats. Total Finish Coat dry thickness should be a minimum of 12.2 mils (.0122 inches).
- H. Completed PremiumCoat System - System must be installed to a minimum 68 mil (.068 inches) total cured thickness.
- I. Monitor finished system for 7 day, sweeping off birdbaths to allow for full cure.

### 3.4 PROTECTION OF FINISHED WORK

- A. Monitor finished system for seven days, sweeping off any birdbaths to allow for full cure.

### 3.5 CLEANING

- A. Immediately clean surfaces not scheduled to receive waterproofing in accordance with manufacturer's instructions.

END OF SECTION