



## **Asbestos & Lead Based Paint Assessment**

City of Spartanburg  
438 Arch Street  
Spartanburg, South Carolina

### ***Prepared for:***

The City of Spartanburg  
201 Caulder Avenue  
Spartanburg, South Carolina

### ***Prepared by:***

Apex Environmental Management, Inc.  
7 Winchester Court  
Mauldin, South Carolina 29662

Project Number: 0815-163

December 15, 2015





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Mauldin, SC 29662  
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## SERVICES

Indoor Air Quality  
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Plans  
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Environmental Site  
Assessments  
Hazard  
Communication

## Apex Project Number 0815-163

December 15, 2015

Mr. Demian Carpenter  
City of Spartanburg  
P.O. Box 1749  
Spartanburg, South Carolina 29304

Reference: Asbestos and Lead-Based Paint Assessment Services  
438 Arch Street  
Spartanburg, South Carolina

Dear Mr. Carpenter:

Apex Environmental Management, Inc. (Apex) is pleased to provide the results of our assessment services for the referenced property.

This report and the associated attachments summarize our evaluation of the conditions observed at the project site. The findings presented by Apex are based upon sampling performed in the subject building. There is a chance that undetected ACM may exist in the building between walls or in other areas that would only be exposed during demolition or structural renovations. Should material be discovered that could potentially contain asbestos during the demolition process, additional samples of the material should be collected by a licensed asbestos inspector and submitted to an accredited laboratory for analytical interpretation. Our recommendations are based on the guidelines presented in EPA and/or OSHA regulations.

Please note that this document is not a specification for asbestos removal. It does not contain means and methods for abatement. Quantities are estimates and contractors must verify amounts prior to bidding or removal. If you are planning an abatement project, please contact Apex to discuss the requirements. Use of this document without the express written consent of Apex is at the sole risk of the user and or/abatement contractor.

The conclusions and/or recommendations contained in this report are based on our understanding of the applicable standards at the time this report was prepared. No warranty, expressed or implied, is made. If you have any questions please feel free to contact us at (864) 404-3210.

Respectfully submitted,  
**APEX ENVIRONMENTAL MANAGEMENT, INC.**

Thomas H. Oliver  
Director of Operations

Appendices

**ASBESTOS AND LEAD BASED PAINT ASSESSMENT**

**CITY OF SPARTANBURG  
438 ARCH STREET  
SPARTANBURG, SOUTH CAROLINA**

**APEX PROJECT NO. 0815-163**

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## **SECTION I**

### **Asbestos & Lead Evaluation Report**

**ASBESTOS/LEAD EVALUATION REPORT**  
**APEX PROJECT NUMBER: 0815-163**

Date:	12/15//2015	Page Number:	1 of 4
Client:	City of Spartanburg	Client Contact:	Mr. Demian Carpenter
Client Address:	201 Caulder Avenue Spartanburg, SC 29304	Client Phone Number:	
Project:	Asbestos and Lead Evaluation		
Property Address:	438 Arch Street Spartanburg, SC		
Assessor:	Rebecca Shultz	Date of Assessment:	12/2/2015
Company:	Apex Environmental Management 7 Winchester Court Mauldin, SC 29662	Phone Number	
Purpose of Assessment:	Demolition	Age of Structure:	50+ years
Building Type:	Residential	Number of Stories:	1
Foundation:	Brick & CMU Block Crawlspce	Approximate Square Footage	1,466 SF

**EXTERIOR BUILDING MATERIALS**

Pitched wooden roof with shingles felt.  
Transite siding.  
Wooden doors & windows.  
Window glazing.  
No caulk on doors.  
Chimney mastic assumed positive on 1 chimney.

**INTERIOR BUILDING MATERIALS**

Plaster with finish.  
Wooden floors & ceilings.  
Wooden wall paneling.  
Carpet over wooden floors.  
Multiple types of vinyl floors with & without mastics.  
Multiple types of ceiling tiles.  
Ceiling texture over drywall with no joint compound or tape.

## **SCOPE OF THE SURVEY**

The objectives of the asbestos and lead assessment included the following:

- Identification of suspect asbestos-containing material (ACM) and lead based paints (LBP) in readily observable locations. Limited demolition of building finishes was conducted.
- Asbestos survey with sample collection by a South Carolina accredited inspector.
- Suspect ACM analysis by polarized light microscopy (PLM) utilizing CEI Labs (CEI) as an NVLAP certified laboratory, their accreditation number is 101768-0.
- Transmission electron microscopy (TEM) analysis of non-friable organically bound materials suspected to contain asbestos and testing negatively by PLM analysis.
- Lead inspection by a lead inspector certified by the Environmental Protection Agency and licensed to conduct LBP surveys in South Carolina.
- In situ analysis of suspected lead based paints by X-ray fluorescence (XRF).
- Presenting the results in a report identifying confirmed ACMs and LBPs.

## **METHODS**

### **Asbestos Containing Materials**

In order to determine if the suspect materials observed during the visual survey contained asbestos, representative bulk samples were collected and placed in sealed packages. Thirty-five (35) bulk samples were collected during the survey and submitted to CEI Labs (CEI) in Cary, North Carolina for analysis using the EPA recommended method of Polarized Light Microscopy (PLM) coupled with dispersion staining (Method No. EPA 600/M4-82-020, Dec. 1982). CEI participates in the National Voluntary Laboratory Accreditation Program (NVLAP). Their NVLAP accreditation number is 101768-0. EPA regulations require that multiple samples of each homogeneous material be collected for laboratory analysis. In accordance with South Carolina Regulation 61-86.1, non-friable organically bound materials that are reported to be non-asbestos containing by PLM analysis must also be analyzed by Transmission Electron Microscopy (TEM). Five (5) samples were analyzed using TEM.

### **Lead-Based Paint**

Lead painted surfaces were analyzed in place using X-ray fluorescence. Painted surfaces were selected based on color of topcoat, underlying layers and substrate on which it was painted.

## **RESULTS**

### **Asbestos Results**

The EPA defines an asbestos-containing material as a material containing more than one percent asbestos. Provided below is a general discussion of the asbestos containing materials identified in the residence. A specific *PLM* and *TEM* table is located in Appendix II of this report and identifies positive materials and designates approximate quantities.

Suspect asbestos containing materials that were identified to be asbestos containing include:

- Window glazing on exterior windows, 10 window units.

- Transite siding & felt paper beneath, 2,000 SF.
- Roof/chimney mastic assumed positive on 1 chimney, 6 LF.

### Lead Based Paint

OSHA does not recognize a threshold level of lead for definition purposes, only the presence or absence of lead. The current OSHA regulations recognize an airborne action level of thirty micrograms per cubic meter ( $30 \mu\text{g}/\text{m}^3$ ) during an eight-hour workday and a permissible exposure level of fifty micrograms per cubic meter ( $50 \mu\text{g}/\text{m}^3$ ) for employees.

Currently, the EPA defines LBP as paint containing in excess of, or equal to,  $1.0 \text{ mg}/\text{cm}^3$ . The XRF analytical results and approximate locations of the paint samples collected are included in the Lead Analysis Report in Appendix II.

Several surfaces in the building tested positive for lead in excess of the regulatory definition:

#### Exterior

- Brown Wooden Door Frames
- White Wood Door Frames

#### Interior

- Green Plaster Walls

## **RECOMMENDATIONS AND DISCUSSION**

### Asbestos Containing Materials

If the above referenced asbestos materials are to be disturbed by renovations or demolition, the asbestos must be removed in accordance with EPA, State of South Carolina and OSHA asbestos regulations. The State of South Carolina, Department of Health and Environmental Control (DHEC) has specific regulations that must be adhered to during asbestos removal/abatement projects.

APEX recommends the following:

1. Abate the asbestos containing materials in the structure prior to renovation or demolition.
2. Follow applicable asbestos regulations during renovation or demolition of the structure. You should be aware that stringent requirements are imposed upon anyone renovating or demolishing a structure in which ACM will be disturbed. This work must be performed in accordance with OSHA asbestos regulations, 29 CFR 1910 & 1926, and NESHAP asbestos regulations 40 CFR 61, subpart M. South Carolina regulations require the accreditation of personnel who work in the asbestos field and notification and permitting fees for asbestos removal projects. There is a 10 working day notification period required prior to abatement of asbestos in a facility. Failure to take proper precautions and actions to protect human health and the environment can result in penalties, danger to personnel, and construction delays.

Lead-Based Paint

Currently the South Carolina Department of Health and Environmental Control (SCDHEC) define LBP as paint containing greater than 0.7 milligrams per square centimeter (mg/cm<sup>2</sup>) lead or in excess of, or equal to, 0.5 percent lead. Building materials identified as being painted with LBP should be segregated from the other building materials and recycled or disposed of in a municipal lined landfill. The removed wastes would need to be containerized and further tested by Toxic Characteristic Leaching procedures (TCLP) to determine if the waste is classified as hazardous. The remaining building materials that are not painted with LBP may be disposed of in a construction and demolition landfill. However, the landfills should be contacted to determine their specific disposal requirements.

Occupational Safety and Health Administration Lead Regulations apply to actions initiated on lead containing materials. This regulation applies to lead concentrations greater than the analytical limit of detection. This regulation sets exposure levels on airborne lead and does not reference the percent lead in paint. Therefore, initial personal air monitoring should be conducted on workers performing work on surfaces which have a lead concentration of 0.1 mg/cm<sup>2</sup> or above to satisfy the OSHA requirements. If a baseline exposure lower than the OSHA Action Level of 30 micrograms per cubic meter (µg/m<sup>3</sup>) is established, personal air monitoring may be terminated. The full OSHA lead standard should be referenced for compliance.

**A copy of this report must be submitted to SCDHEC at least ten (10) working days prior to demolition when applying for a demolition permit.**



## **SECTION II**

### **Tables**

# ASBESTOS SURVEY FIELD DATA SHEET

Project Name: COS 438 Arch St.

Sampled By: Rebecca Shultz

Project Location: Spartanburg, SC

Project Manager: Rebecca Shultz

Project Number: 0815-163

Date: 12/2/2015

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
1	Throughout	Plaster & finish	PLM - NAD	Friable	Good	2,800 SF
2						
3						
4						
5						
6	Right Bedrooms	1' x 2' Ceiling tile	PLM - NAD	Friable	Good	232 SF
7						
8						
9	Kitchen	Yellow linoleum flooring & mastic	PLM - NAD	Non-Friable	Good	560 SF
10			TEM - NAD			
11						
12	Living Room	Ceiling texture	PLM - NAD	Friable	Good	300 SF
13						
14						
15	Living Room & Bedroom	Vinyl flooring with no mastic under carpet	PLM - NAD	Non-Friable	Good	225 SF
16			TEM - NAD			
17						

Sample No.	Location	Sample Description	Analytical Results	Friable/Non Friable	Condition	Quantity
18	Left Bedroom	1' x 1' Ceiling tile	PLM - NAD	Friable	Good	232 SF
19						
20						
21	Hallway	2' x 4' Ceiling tile	PLM - NAD	Friable	Good	225 SF
22						
23						
<b>24</b>	<b>Exterior Windows</b>	<b>Window glazing</b>	<b>PLM - 3% Chrysotile</b>	<b>Non-Friable</b>	<b>Good</b>	<b>10 EA</b>
<b>25</b>						
<b>26</b>						
<b>27</b>	<b>Exterior Siding</b>	<b>Transite siding &amp; felt paper</b>	<b>PLM - 15% Chrysotile</b>	<b>Non-Friable</b>	<b>Good</b>	<b>2,000 SF</b>
<b>28</b>						
<b>29</b>						
30	Exterior Roof	Roof shingles & felt paper	PLM - NAD	Non-Friable	Good	2,200 SF
31						
32			TEM - NAD			
33	Living Room	Drywall under ceiling texture with no joint compound or tape	PLM - NAD	Friable	Good	300 SF
34						
35						
<b>Assumed</b>	<b>Roof/Chimneys</b>	<b>Roof/Chimney mastic on 1 chimney</b>	<b>Assumed</b>	<b>Non-Friable</b>	<b>Good</b>	<b>6 LF</b>

NAD = No Asbestos Detected

LF = Linear Feet

EA = Each

**Bold = Positive For Asbestos**

SF = Square Feet

# FIELD DATA SHEET

## LBP ANALYSIS

Project Name: COS 438 Arch St.

Sampled By: Rebecca Shultz

Project Location: Spartanburg SC

Project Manager: Rebecca Shultz

Project Number: 0815-163

Date: 12/2/2015

Sample No.	Sample Location	Component	Color	Substrate	Analytical Result (mg/m <sup>3</sup> )
17	Exterior	Siding	Tan	Cement Board	0.00
18	Exterior	Porch Frame	White	Wood	0.00
<b>19</b>	<b>Exterior</b>	<b>Door Frame</b>	<b>Brown</b>	<b>Wood</b>	<b>4.33</b>
20	Exterior	Door	Brown	Wood	0.00
21	Living Room	Window	Tan	Wood	0.02
22	Living Room	Baseboard	White	Wood	0.00
23	Front Bedroom	Wall	Yellow (Copper)	Plaster	0.01
24	Front Bedroom	Mantle	White	Wood	0.02
25	Front Bedroom	Wall	Tan	Plaster	0.03
26	Front Bedroom	Door Frame	White	Wood	0.00
27	Front Bedroom	Door	Brown	Wood	0.01
<b>28</b>	<b>Hallway</b>	<b>Wall</b>	<b>Green</b>	<b>Plaster</b>	<b>1.00</b>
29	Hallway	Wall	White	Wood	0.04
30	Kitchen	Cabinet	Green	Wood	0.00

### **SECTION III**

#### **Laboratory Analytical Results**



December 8, 2015

Apex Environmental Management  
7 Winchester Court  
Mauldin, SC 29662

**CLIENT PROJECT:** COS; 438 Arch St.; 0815-163  
**CEI LAB CODE:** B15-8174

Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on December 4, 2015. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,

A handwritten signature in black ink, appearing to read "Tianbao Bai", written in a cursive style.

Tianbao Bai, Ph.D., CIH  
Laboratory Director





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## **ASBESTOS ANALYTICAL REPORT**

### **By: Polarized Light Microscopy**

Prepared for

**Apex Environmental Management**

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CLIENT PROJECT: COS; 438 Arch St.; 0815-163

CEI LAB CODE: B15-8174

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 12/08/15

TOTAL SAMPLES ANALYZED: 25

# SAMPLES >1% ASBESTOS: 2

**TEL: 866-481-1412**

*[www.ceilabs.com](http://www.ceilabs.com)*



# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS; 438 Arch St.; 0815-163

CEI LAB CODE: B15-8174

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
1	Layer 1	B108622	White	Plaster Skim Coat	None Detected
	Layer 2	B108622	Beige	Plaster Base Coat	None Detected
2	Layer 1	B108623	White	Plaster Skim Coat	None Detected
	Layer 2	B108623	Beige	Plaster Base Coat	None Detected
3	Layer 1	B108624	White	Plaster Skim Coat	None Detected
	Layer 2	B108624	Beige	Plaster Base Coat	None Detected
4	Layer 1	B108625	White	Plaster Skim Coat	None Detected
	Layer 2	B108625	Beige	Plaster Base Coat	None Detected
5	Layer 1	B108626	White	Plaster Skim Coat	None Detected
	Layer 2	B108626	Beige	Plaster Base Coat	None Detected
6		B108627	Tan	Ceiling Tile	None Detected
7		B108628	Tan	Ceiling Tile	None Detected
8		B108629	Tan	Ceiling Tile	None Detected
9	Layer 1	B108630	Yellow	Vinyl Flooring	None Detected
	Layer 2	B108630	Tan	Mastic	None Detected
10	Layer 1	B108631	Yellow	Vinyl Flooring	None Detected
	Layer 2	B108631	Tan	Mastic	None Detected
11		B108632		Sample Submitted for TEM Analysis	
12		B108633	White	Ceiling Texture	None Detected
13		B108634	White	Ceiling Texture	None Detected
14		B108635	White	Ceiling Texture	None Detected
15		B108636	Orange	Vinyl	None Detected
16		B108637	Orange	Vinyl	None Detected
17		B108638		Sample Submitted for TEM Analysis	
18		B108639	Tan	Ceiling Tile	None Detected
19		B108640	Tan	Ceiling Tile	None Detected
20		B108641	Tan	Ceiling Tile	None Detected
21		B108642	Beige	Ceiling Tile	None Detected
22		B108643	Beige	Ceiling Tile	None Detected
23		B108644	Beige	Ceiling Tile	None Detected





# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: COS; 438 Arch St.; 0815-163

CEI LAB CODE: B15-8174

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
24		B108645	Brown	Window Glaze	Chrysotile 3%
25		B108646		Sample Not Analyzed per COC	
26		B108647		Sample Not Analyzed per COC	
27	Layer 1	B108648	Yellow,Gray	Cement Board Siding	Chrysotile 15%
	Layer 2	B108648	Black	Felt	None Detected
28		B108649		Sample Not Analyzed per COC	
29		B108650		Sample Not Analyzed per COC	
30	Layer 1	B108651	White,Black	Shingle	None Detected
	Layer 2	B108651	Black	Felt	None Detected
31	Layer 1	B108652	White,Black	Shingle	None Detected
	Layer 2	B108652	Black	Felt	None Detected
32		B108653		Sample Submitted for TEM Analysis	



# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Apex Environmental Management  
7 Winchester Court  
Mauldin, SC 29662

**CEI Lab Code:** B15-8174  
**Date Received:** 12-04-15  
**Date Analyzed:** 12-07-15  
**Date Reported:** 12-08-15

**Project:** COS; 438 Arch St.; 0815-163

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
<b>1</b> Layer 1 B108622	Plaster Skim Coat	Heterogeneous White Non-fibrous Bound		5% Paint 35% Silicates 60% Binder	<b>None Detected</b>
Layer 2 B108622	Plaster Base Coat	Heterogeneous Beige Non-fibrous Bound	<1% Hair	65% Silicates 10% Calc Carb 25% Binder	<b>None Detected</b>
<b>2</b> Layer 1 B108623	Plaster Skim Coat	Heterogeneous White Non-fibrous Bound		5% Paint 35% Silicates 60% Binder	<b>None Detected</b>
Layer 2 B108623	Plaster Base Coat	Heterogeneous Beige Non-fibrous Bound	<1% Hair	65% Silicates 10% Calc Carb 25% Binder	<b>None Detected</b>
<b>3</b> Layer 1 B108624	Plaster Skim Coat	Heterogeneous White Non-fibrous Bound		5% Paint 35% Silicates 60% Binder	<b>None Detected</b>
Layer 2 B108624	Plaster Base Coat	Heterogeneous Beige Non-fibrous Bound	<1% Hair	65% Silicates 10% Calc Carb 25% Binder	<b>None Detected</b>
<b>4</b> Layer 1 B108625	Plaster Skim Coat	Heterogeneous White Non-fibrous Bound		5% Paint 35% Silicates 60% Binder	<b>None Detected</b>



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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
Layer 2 B108625	Plaster Base Coat	Heterogeneous Beige Non-fibrous Bound	<1%	Hair	65% 10% 25%	Silicates Calc Carb Binder	None Detected
5 Layer 1 B108626	Plaster Skim Coat	Heterogeneous White Non-fibrous Bound			5% 35% 60%	Paint Silicates Binder	None Detected
Layer 2 B108626	Plaster Base Coat	Heterogeneous Beige Non-fibrous Bound	<1%	Hair	65% 10% 25%	Silicates Calc Carb Binder	None Detected
6 B108627	Ceiling Tile	Heterogeneous Tan Fibrous Bound	95%	Cellulose	5%	Paint	None Detected
7 B108628	Ceiling Tile	Heterogeneous Tan Fibrous Bound	95%	Cellulose	5%	Paint	None Detected
8 B108629	Ceiling Tile	Heterogeneous Tan Fibrous Bound	95%	Cellulose	5%	Paint	None Detected
9 Layer 1 B108630	Vinyl Flooring	Heterogeneous Yellow Fibrous Bound	25% 10%	Cellulose Fiberglass	50% 15%	Vinyl Binder	None Detected



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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
Layer 2 B108630	Mastic	Homogeneous Tan Non-fibrous Bound			100%	Mastic	None Detected
10 Layer 1 B108631	Vinyl Flooring	Heterogeneous Yellow Fibrous Bound	25% 10%	Cellulose Fiberglass	50% 15%	Vinyl Binder	None Detected
Layer 2 B108631	Mastic	Homogeneous Tan Non-fibrous Bound			100%	Mastic	None Detected
11 B108632	Sample Submitted for TEM Analysis						
12 B108633	Ceiling Texture	Heterogeneous White Non-fibrous Bound			60% 15% 25%	Calc Carb Vermiculite Binder	None Detected
13 B108634	Ceiling Texture	Heterogeneous White Non-fibrous Bound			60% 15% 25%	Calc Carb Vermiculite Binder	None Detected
14 B108635	Ceiling Texture	Heterogeneous White Non-fibrous Bound			60% 15% 25%	Calc Carb Vermiculite Binder	None Detected
15 B108636	Vinyl	Heterogeneous Orange Fibrous Bound	10%	Cellulose	75% 15%	Vinyl Binder	None Detected



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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
16 B108637	Vinyl	Heterogeneous Orange Fibrous Bound	10%	Cellulose	75% 15%	Vinyl Binder	None Detected
17 B108638	Sample Submitted for TEM Analysis						
18 B108639	Ceiling Tile	Heterogeneous Tan Fibrous Bound	95%	Cellulose	5%	Paint	None Detected
19 B108640	Ceiling Tile	Heterogeneous Tan Fibrous Bound	100%	Cellulose			None Detected
20 B108641	Ceiling Tile	Heterogeneous Tan Fibrous Bound	95%	Cellulose	5%	Paint	None Detected
21 B108642	Ceiling Tile	Heterogeneous Beige Fibrous Bound	60% 20%	Cellulose Fiberglass	5% 15%	Paint Perlite	None Detected
22 B108643	Ceiling Tile	Heterogeneous Beige Fibrous Bound	60% 20%	Cellulose Fiberglass	5% 15%	Paint Perlite	None Detected
23 B108644	Ceiling Tile	Heterogeneous Beige Fibrous Bound	60% 20%	Cellulose Fiberglass	5% 15%	Paint Perlite	None Detected



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Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
<b>24</b> B108645	Window Glaze	Heterogeneous Brown Non-fibrous Bound		5% 50% 42%	Paint Calc Carb Binder	<b>3% Chrysotile</b>	
<b>25</b> B108646	Sample Not Analyzed per COC						
<b>26</b> B108647	Sample Not Analyzed per COC						
<b>27</b> Layer 1 B108648	Cement Board Siding	Heterogeneous Yellow,Gray Fibrous Tightly Bound		5% 30% 50%	Paint Silicates Binder	<b>15% Chrysotile</b>	
Layer 2 B108648	Felt	Homogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	<b>None Detected</b>
<b>28</b> B108649	Sample Not Analyzed per COC						
<b>29</b> B108650	Sample Not Analyzed per COC						
<b>30</b> Layer 1 B108651	Shingle	Heterogeneous White,Black Fibrous Bound	20%	Fiberglass	55% 25%	Tar Gravel	<b>None Detected</b>
Layer 2 B108651	Felt	Homogeneous Black Fibrous Bound	70%	Cellulose	30%	Tar	<b>None Detected</b>



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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
31 Layer 1 B108652	Shingle	Heterogeneous	20%	Fiberglass	55%	Tar	None Detected
		White,Black			25%	Gravel	
		Fibrous Bound					
Layer 2 B108652	Felt	Homogeneous	70%	Cellulose	30%	Tar	None Detected
		Black					
		Fibrous Bound					
32 B108653	Sample Submitted for TEM Analysis						



---

**LEGEND:**      Non-Anth      = Non-Asbestiform Anthophyllite  
                 Non-Trem      = Non-Asbestiform Tremolite  
                 Calc Carb      = Calcium Carbonate

---

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

---

**LIMIT OF DETECTION:** <1% by visual estimation

---

**REGULATORY LIMIT:** >1% by weight

---

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation.

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by CEI Labs, Inc. CEI Labs makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

**ANALYST:** Samantha Card  
Samantha Card

**APPROVED BY:** Tianbao Bai  
Tianbao Bai, Ph.D., CIH  
Laboratory Director







107 New Edition Court, Cary, NC 27511  
Tel: 866-481-1412; Fax: 919-481-1442

## CHAIN OF CUSTODY

(32)

LAB USE ONLY:

CEI Lab Code:

CEI Lab I.D. Range:

B13 8174  
B1080022 B108053

### COMPANY CONTACT INFORMATION

Company: Apex Environmental Management	Client #:
Address: 7 Winchester Court	Job Contact: Rebecca Shultz
Mauldin, SC 29662	Email: rshultz@apex-ehs.com
	Tel: 864-404-3210
Project Name: COS 438 Arch St.	Fax:
Project ID #: 0815-163	P.O. #:

ASBESTOS	METHOD	4 HR*	8 HR*	24 HR	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
TEM BULK	CHATFIELD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PLM POINT COUNT (400)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM POINT COUNT (1000)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM GRAVIMETRIC	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM GRAV w POINT COUNT	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OTHER:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

POSITIVE STOP ANALYSIS	<input checked="" type="checkbox"/>
SOUTH CAROLINA SAMPLES	<input checked="" type="checkbox"/>

### TEM INSTRUCTIONS

BEGIN TEM ANALYSIS AFTER NEGATIVE PLM	<input checked="" type="checkbox"/>
ANALYZE TEM SAMPLES SIMULTANEOUSLY WITH PLM	<input type="checkbox"/>

REMARKS: If needed, combine samples from the same group to achieve sufficient weight for TEM analysis.

☒ Accept Samples  
☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
<i>John K. Miller</i>	12-3-15	<i>[Signature]</i>	12/4/15 10am

\*Call to confirm RUSH analysis.

Samples will be disposed of 30 days after analysis

### COMPANY CONTACT INFORMATION

Company: Apex Env. Mgmt.

Job Contact: Rebecca Shultz

Project Name: COS 438 Arch St.

Project ID #: 0815-103

Tel:

SAMPLE ID#	DESCRIPTION / LOCATION	TEST	
1	Throughout / Plaster	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
2		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
3		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
4		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
5		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
6	Rt Bedroom / ceiling tile 1x2	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
7		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
8		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
9	Kitchen / yellow vinyl flr	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
10		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
11		PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
12	Living Rm / ceiling texture	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
13	" "	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
14	Living Rm / ceiling texture	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
15	Living + Bed rms / vinyl under carpet	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
16		PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
17		PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
18	Lft Bedroom / 1x1 ceiling tile	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
19	" "	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
20	Lft Bedroom / 1x1 ceiling tile	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
21	Hall / 2x4 ceiling tile	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
22		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
23		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
24	Exterior / window glaze	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
25		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
26		PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
27	Exterior / cement board siding	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
28	+ felt	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
29		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
30	roof <del>2 layers</del> shingles + felt	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
31			
32			



---

December 10, 2015

Apex Environmental Management  
7 Winchester Court  
Mauldin, SC 29662

**CLIENT PROJECT:** COS 438 Arch St.; 0815-163  
**CEI LAB CODE:** T15-1946

Dear Customer:

Enclosed are asbestos analysis results for TEM bulk samples received at our laboratory on December 7, 2015. The samples were analyzed for asbestos using transmission electron microscopy (TEM) per Chatfield Method.

Sample results containing > 1% asbestos are considered asbestos-containing materials (ACMs) per the EPA regulatory requirements. The detection limit for the TEM Chatfield method is <1% depending on the processed weight and constituents of the sample.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,

A handwritten signature in black ink, appearing to read "Tianbao Bai", written in a cursive style.

Tianbao Bai, Ph.D., CIH  
Laboratory Director



---

**ASBESTOS ANALYTICAL REPORT**  
**By: Transmission Electron Microscopy**

Prepared for

**Apex Environmental Management**

---

CLIENT PROJECT: COS 438 Arch St.; 0815-163

CEI LAB CODE: T15-1946

TEST METHOD: Bulk Chatfield  
EPA 600 / R93 / 116

REPORT DATE: 12/10/15

**TEL: 866-481-1412**

*[www.ceilabs.com](http://www.ceilabs.com)*



# ASBESTOS BULK ANALYSIS

By: TRANSMISSION ELECTRON MICROSCOPY

**Client:** Apex Environmental Management  
7 Winchester Court  
Mauldin, SC 29662

**CEI Lab Code:** T15-1946  
**Date Received:** 12-07-15  
**Date Analyzed:** 12-09-15  
**Date Reported:** 12-10-15

**Project:** COS 438 Arch St.; 0815-163

## TEM BULK CHATFIELD / EPA 600 / R93 / 116

Client ID Lab ID	Material Description	Sample Weight (g)	Organic Material %	Acid Soluble Material %	Acid Insoluble Material %	Asbestos %
11 T44940	Yellow Vinyl Flooring	0.281	0	89	11	None Detected
11 T44941	Tan Mastic	0.291	45	12	43	None Detected
17 T44942	Orange Vinyl	0.33	35.8	62.1	2.1	None Detected
32 T44943	White, Black Shingle	0.348	29.3	44.8	25.9	None Detected
32 T44944	Black Felt	0.239	91.6	3.8	4.6	None Detected



---

**LEGEND:** None

---

**METHOD:** CHATFIELD & EPA/600/R-93/116

---

**LIMIT OF DETECTION:** Varies with the weight and constituents of the sample (<1%)


---

**REGULATORY LIMIT:** >1% by weight

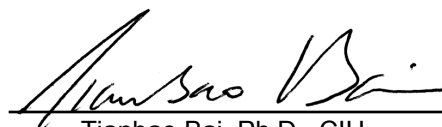
---

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by CEI Labs, Inc. CEI Labs makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client.

**ANALYST:**

  
Gary A. Swanson

**APPROVED BY:**

  
Tianbao Bai, Ph.D., CIH  
Laboratory Director



107 New Edition Court, Cary, NC 27511  
Tel: 866-481-1412; Fax: 919-481-1442

T15-1946

T44940-1

CHAIN OF CUSTODY

32

LAB USE ONLY:

CEI Lab Code:

CEI Lab I.D. Range:

B15 8174  
B1080022 B108053

### COMPANY CONTACT INFORMATION

Company: Apex Environmental Management	Client #:
Address: 7 Winchester Court	Job Contact: Rebecca Shultz
Mauldin, SC 29662	Email: rshultz@apex-ehs.com
	Tel: 864-404-3210
Project Name: COS 438 Arch St	Fax:
Project ID #: 0815-163	P.O. #:

ASBESTOS	METHOD	4 HR*	8 HR*	24 HR	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
TEM BULK	CHATFIELD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PLM POINT COUNT (400)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM POINT COUNT (1000)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM GRAVIMETRIC	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM GRAV w POINT COUNT	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OTHER:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

POSITIVE STOP ANALYSIS	<input checked="" type="checkbox"/>
SOUTH CAROLINA SAMPLES	<input checked="" type="checkbox"/>

### TEM INSTRUCTIONS

BEGIN TEM ANALYSIS AFTER NEGATIVE PLM	<input checked="" type="checkbox"/>
ANALYZE TEM SAMPLES SIMULTANEOUSLY WITH PLM	<input type="checkbox"/>

REMARKS: If needed, combine samples from the same group to achieve sufficient weight for TEM analysis.



Accept Samples  
Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
<i>John K. Miller</i>	12-3-15	<i>Rebecca Shultz</i>	12/4/15 10am
<i>Santiago Cervel</i>	12-7-15		

\*Call to confirm RUSH analysis.

12:15pm

Samples will be disposed of 30 days after analysis

715-1946



## SAMPLING FORM

B15 8/17/4

## COMPANY CONTACT INFORMATION

Company: Apex Env. Mgmt.

Job Contact: Rebecca Shultz

Project Name: COS 438 Arch St.

Project ID #: 0815-103

Tel:

SAMPLE ID#	DESCRIPTION / LOCATION	TEST	
1	Throughout / Plaster	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
2		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
3		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
4		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
5		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
6	Bedrm / ceiling tile 1x2	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
7		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
8		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
9	Kitchen / yellow vinyl flr	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
10		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
11		PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
12	living rm / ceiling texture	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
13		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
14	Living rm / ceiling texture	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
15	Living + Bed rms / vinyl under carpet	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
16		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
17		PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
18	Lft Bedrm / 1x1 ceiling tile	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
19	"	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
20	Lft Bedroom / 1x1 ceiling tile	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
21	Hall / 2x4 ceiling tile	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
22		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
23		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
24	Exterior / window glaze	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
25		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
26		PLM <input type="checkbox"/>	TEM <input checked="" type="checkbox"/>
27	Exterior / cement board siding	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
28	+ felt	PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
29		PLM <input type="checkbox"/>	TEM <input type="checkbox"/>
30	roof <del>boards</del> 2 layers shingles + felt	PLM <input checked="" type="checkbox"/>	TEM <input type="checkbox"/>
31			
32			





SEEML Reference Number:  
151215003-A

### **Southeast Environmental Microbiology Laboratories**

506-A Laurens Road  
Greenville, South Carolina 29607  
Phone: (864) 233-3770  
Fax: (864) 233-6589

The information and data for **Apex Environmental** has been checked for thoroughness and accuracy. The following report is contained within this document:

- ☒ Bulk asbestos fiber analysis: EPA 600/M4-82-020 Interim Method for the Determination of Asbestos in Bulk Insulation
- ☒ Bulk asbestos fiber analysis: EPA 600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials

Lab Manager Review: *Andrea Berrios*

Date: 12/15/15

Thank you for choosing Southeast Microbiology Laboratories (SEEML). We strive to provide superior quality testing, analytical data and customer service. SEEML is accredited through the National Institute of Standards and Technology (NIST) National Voluntary Accreditation Program (NVLAP) for bulk asbestos analysis (NVLAP # 201031-0).

#### Confidentiality Notice:

The document(s) contained herein are confidential and privileged information intended for the exclusive use of the individual or entity named above. If the reader of this message is not the intended recipient, or an employee or agent responsible for delivering it to the intended recipient, you are hereby notified that any dissemination, distribution or copying of the document(s) is strictly prohibited. If you have received this document in error, please immediately notify us by telephone to arrange for its return. Thank you.

#### Guidelines for Interpretation:

A material is considered regulated asbestos containing material (ACM) where the asbestos content is determined to be one percent or greater. Several organizations, including the American Conference of Government Industrial Hygienists (ACGIH); the American Industrial Hygiene Association (AIHA); the Indoor Air Quality Association (IAQA); the United States Environmental Protection Agency (USEPA); the Centers for Disease Control (CDC) as well as the California Department of Health Services (CADHS) have published guidelines for assessment and interpretation of analytical data indicating a tested material is ACM.

Interpretation of the data and information within this document is left to the company, consultant, and/or persons who conducted the fieldwork.



## SEEML Asbestos Chain-of-Custody Form

506-A Laurens Rd, Greenville, SC 29607



Phone : (864)-233-3770, Fax : (864)-233-6589, [www.seeml.com](http://www.seeml.com)

NVLAP Lab ID: 201031-0

Page 1 of 1

SEEML Ref #:		Lab ID:	
151215003-A		006-008	
Company:	Apex Environmental Mgmt	Date Sampled:	12-15-15
Project Manager:	Tom Oliver	Project Name:	COS 438 Arch St.
Address:	7 Winchester Court	Project Location:	
City, State, Zip:	Mauldin, SC 29662	Project No:	0815-163
Phone:	864-640-5127	Analysis Requested/TAT (Circle One):	
Email Address:	tolivere@apex-ehs.com	PLM TAT	*Same Day <u>Next Day</u> 2 Day 3 Day 4 Day 5 Day
		TEM TAT	**Next Day 2 Day 3 Day 4 Day 5 Day

[illegible]

Relinquished By: 	12-15-15	Time/Date	Received By: 	15:00	Time/Date
Relinquished By:		Time/Date	Received By:		Time/Date

Positive Stop Requested : ☒

Analysis Types:	**TEM		PLM	
	Air Cassette	Bulk	Point Count	Bulk

\*Same Day TAT is only offered on Bulk PLM analysis.

**\*\*TEM analysis is subcontracted; the requested TAT starts after PLM results have been submitted by SEEML, unless otherwise**

requested.

Form 2.0 Rev. 3 10/07/14

## **SECTION IV**

### **Photographs**





Photo 1 -- 438 Arch Street in Spartanburg, SC.



Photo 2 – Plaster with finish.



Photo 3 – Ceiling texture over drywall.



Photo 4 – 2' x 4' Ceiling tile.



Photo 5 – 1' x 1' ceiling tile.



Photo 6 – Window glazing.



Photo 7 – Transite siding & felt paper beneath.

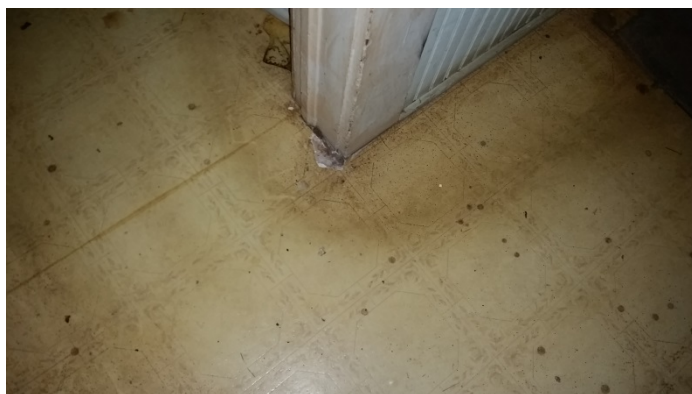


Photo 8 – Yellow linoleum flooring & mastic in the kitchen..

## **SECTION V**

### **SC Asbestos Inspector License**



Rebecca W Shultz  
7 Winchester Ct  
Mauldin, SC 29662

108487

North Carolina  
Asbestos Accreditation

EXPIRATION

06-30-2016

DOB	SEX	HT	WT
09-19-1974	F	5'4"	175
CLASS	#	EXP	
DESIGNER	40465	06-16	
INSPECTOR	12394	06-16	
SUPER AIR MONITOR	90151	08-15	

SCDHEC ISSUED  
Asbestos ID Card

Rebecca Shultz



CONSULTPD  
CONSULTBI

Expires  
PD-00060 06/10/16  
BI-00492 06/09/16