

September 1, 2023

Ms. Lori Morris Memphis Shelby County Airport Authority 2491 Winchester Road, Suite 113 Memphis, TN 38116

RE: Asbestos Survey Memphis International Airport Cargo Building #4 Roof 2491 Winchester Road Memphis, TN 38118

Dear Ms. Morris,

At your request, Tioga Environmental Consultants, Inc. (Tioga) performed a survey of the abovereferenced Property to identify the presence of asbestos. Specifically, a limited asbestos survey was performed to identify asbestos containing materials present on the roof of the Property. The purpose of this survey was to ensure that none of these materials, if present, would have an adverse environmental impact due to renovation activity within the existing facility.

On August 21, 2023, Donald White and Velita Thornton, EPA/AHERA Asbestos Inspectors, surveyed the Property. The findings of the survey are contained in the attached report.

If you have any questions about our report or we may be of further service, please contact me at (901) 791-2432.

Sincerely, TIOGA ENVIRONMENTAL CONSULTANTS, INC.

Velita Thornton Biologist / Environmental Scientist

Down-to-earth partners. Sky's-the-limit solutions.

Asbestos Survey-Cargo Building #4 Roof

2491 Winchester Road Memphis, Shelby County, Tennessee September 2023

Project No. 221425.00

Prepared For:

Memphis Shelby County Airport Authority 2491 Winchester Road, Suite 113 Memphis, TN 38116

Prepared By:



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1.0 PROJECT SUMMARY

Memphis Shelby County Airport Authority (MSCAA) requested Tioga Environmental Consultants, Inc. (Tioga) prepare a survey to identify Asbestos Containing Materials (ACM) present at the building structure addressed as 2491 Winchester Road in Memphis, Shelby County, Tennessee.

The survey was performed on August 21, 2023, by Donald White and Velita Thornton, EPA/AHERA Asbestos Inspectors.

1.1 Facility Description

The property, located at 2491 Winchester Road, consists of cargo buildings 3 and 4. The buildings are occupied by Delta Cargo, KLM Cargo, and Swissport fueling, and functions as a sorting and storage facility. Cargo building 3 was not included in this survey.

The building is a two-story brick and concrete structure with a loading zone on the east and west sides of the building. This building has a built-up roofing (BUR) system with a pebble top layer. The interior of the building was not assessed.

At the time of this survey, the property was being used as a cargo sorting and storage warehouse for Delta and KLM.

1.2 Scope of Services

Per the authorization of Memphis Shelby County Airport Authority, Tioga conducted a roof survey of 2491 Winchester Road in accordance with the following scope of work:

Asbestos Survey

- The roof of the Property was visually surveyed and samples of suspect asbestos containing materials (ACM) were collected by a State of Tennessee Certified Asbestos Inspector.
- A minimum of three samples were collected from each homogenous area. These samples were delivered to a NVLAP certified laboratory for analysis by polarized light microscopy (PLM).
- Existing drawings were used to mark sample locations and the extent of ACM, then converted into digital floor plans and attached to the report.

Reporting

• Tioga has prepared an Asbestos Survey Report containing site observations, chain-of-custody, sample results including types and locations of ACM, a photographic log, and site plans noting sample locations, as well as locations of asbestos containing materials.

1.3 Significant Assumptions

No significant assumptions were made regarding the survey of Cargo Roof #4.



1.4 **Deviations**

No deviations from the agreed upon scope of services occurred during the performance of this survey.

1.5 Inaccessible Areas

The survey was limited to the roof of Cargo building #4. All areas of the roof were accessible at the time of the survey.

1.6 Limitations and Exceptions of Survey

The scope of this survey was limited to accessible materials only.

This survey report is not intended as an asbestos abatement specification document. Contractors or consultants should independently verify the location, condition and/or estimated quantities of asbestos containing materials as a component of their preparation of remediation bid documents.



The asbestos inspection was performed on August 21, 2023, by Donald White and Velita Thornton of Tioga Environmental Consultants, Inc., State of Tennessee Certified Asbestos Inspectors, Certification Numbers A-I-183409-135425 and A-I-125234-135735, respectively. A copy of each of these certifications is included in Appendix 1.

Additionally, Tioga Environmental Consultants, Inc. is a State of Tennessee certified Asbestos Activities firm, Certification Number A-F-718-118880. A copy of this certification is also included in Appendix 1.

This survey was requested by Memphis Shelby County Airport Authority for the purpose of having a document that identifies and documents the presence of, and estimates the quantities of, any asbestos-containing materials (ACM) on the roof of Cargo Building #4, located at 2491 Winchester Road in Memphis, Tennessee. Additionally, completing this survey provides necessary documentation ensuring compliance with the U.S. Environmental Protection Agency (EPA), Tennessee Department of Environment & Conservation (TDEC), and Occupational Safety and Health Administration (OSHA) regulations. It is also essential information when considering any renovation or demolition activities in areas with identified ACM to ensure compliance with National Emission Standards for Hazardous Air Pollutants (NESHAP) and OSHA regulations.

During the inspection, the inspector collected thirty-one individual samples from nine different homogeneous areas and received a result for each individual material sampled. This report documents the findings of this asbestos survey. The details regarding this survey and a list of sampled materials are contained in Section 2.3 of this Report. ACM was identified, and the following summary in Table 1 provides an overview of the findings.

	Table 1 2491 Winchester Road CONFIRMED ASBESTOS CONTAINING MATERIALS								
Sample Number	Material	Estimated Quantity	Location/Condition						
CR4-01	BUR Core	19,938 ft ²	Cargo Roof #4 / Good						
CR4-02	White Liquid Roof Patch	123 ft ²	Cargo Roof #4 / Good						
CR4-03	Gray Flashing	80 Ln. Ft	Cargo Roof #4 / Good						
CR4-07	Gray Seam Caulk	5 Ln. Ft	Cargo Roof #4 / Good						
CR4-08	Black Penetration Caulk	5 Ln. Ft	Cargo Roof #4 / Good						
CR4-09	Gray Rolled Roofing with Black Tar	117 ft ²	Cargo Roof #4 / Good						

Notes: ft² = Square Feet

Ln. Ft=Linear Feet



2.1 Visual Observations

Tioga personnel conducted an examination of the roof of 2491 Winchester Road to identify suspect ACM. Observations included the type, condition, location, and estimated quantity of any suspect ACM.

Additionally, all suspect materials were evaluated for condition and friability, the ease with which the materials can be crushed with hand pressure. Asbestos materials determined to be friable, or that could be rendered friable during renovation activities are considered Regulated Asbestos Containing Materials (RACM) that must be removed prior to renovation or demolition.

2.2 Asbestos Sampling

Asbestos has been a widely used component of building materials throughout history due to its unique physical properties: poor heat and electrical conductor, fire resistance, and high tensile strength and low cost. Unfortunately, asbestos also poses potentially serious health concerns for people exposed to the material. Knowing where and how much ACM is in a building allows for proper managing of site activities and providing appropriate protection for building occupants and workers involved in maintenance, renovation, or demolition of asbestos containing materials.

This survey was conducted in general conformance with Asbestos Hazard Emergency Response Act (AHERA) and ASTM Standard E2356-18. It included a walkthrough of all accessible areas to identify suspect asbestos-containing materials, quantification of material amounts, collection of samples from each homogenous area, and assessment per functional space.

For this facility, homogeneous areas of suspect Asbestos-Containing Materials (ACM) were defined for each material type sampled. A total of nine homogeneous areas were identified and sampled. In each homogeneous area, Tioga identified, differentiated and sampled suspect materials based on color (i.e. color tar or flashing), texture, and apparent application date. For samples with multiple layers (i.e. roofing material, flashing, etc.), the laboratory assigns unique sample numbers designated with an A, B, C, and D to identify each layer.

Having identified the homogeneous areas, samples were collected from each for laboratory analysis. Photographs of each material type sampled are included in the Photographic Log in Appendix 2.

2.3 Asbestos Findings

All samples were transported via FedEx to Eurofins CEI, an NVLAP certified laboratory, for PLM analysis on August 21, 2023. Results were received on August 23, 2023. Materials identified containing greater than one percent (1%) asbestos are considered asbestos containing. A copy of the laboratory report is included in Appendix 4.

The laboratory analysis for samples collected as part of this survey found six building materials containing greater than one percent (1%) asbestos. Table 2 summarizes the



homogenous areas and materials sampled during this inspection as well as the results of the analysis.

Table 2										
	2491 Winchester Road ASBESTOS SAMPLE LOG SUMMARY									
			SUMMARY							
Material	Homogeneous Area Number	Sample Numbers	Results							
		A	Black BUR Core - Chrysotile 3%							
			White, Gold BUR Core – None Detected							
		В	Black BUR Core - Chrysotile 3% White, Gold BUR Core – None Detected							
			Black BUR Core - Chrysotile 3%							
		С	White, Gold BUR Core – None Detected							
BUR Core	CR4-01	D	Black BUR Core - Chrysotile 3%							
			White, Gold BUR Core – None Detected							
		Е	Black BUR Core - Chrysotile 3%							
			White, Gold BUR Core – None Detected							
		F	Black BUR Core - Chrysotile 3% White, Gold BUR Core – None Detected							
		G	Black BUR Core - Chrysotile 3%							
		<u> </u>	White Roof Patch Core – None Detected							
		А	Black Roof Patch Core - Chrysotile 3%							
			White, Gold Roof Patch Core– None Detected							
		В	White Roof Patch Core – None Detected							
White Liquid Roof Patch	CR4-02		Black Roof Patch Core - Chrysotile 3%							
			White, Gold Roof Patch Core- None Detected							
		с	White Roof Patch Core – None Detected							
			Black Roof Patch Core - Chrysotile 3%							
	<u></u>		White, Gold Roof Patch Core– None Detected Gray, Black Flashing - Chrysotile 10%							
		A B	Gray, Black Flashing - Chrysotile 10%							
Gray Flashing	CR4-03		Silver Paint - Chrysotile 2%							
		С	Black Flashing – Chrysotile 2%							
		A	None Detected							
Expansion Joint	CR4-04	В	None Detected							
		С	None Detected							
		A	None Detected							
White Parapet Caulk	CR4-05	В	None Detected							
		С	None Detected							
	004.00	<u>A</u>	None Detected							
Black Liquid Flashing	CR4-06	B C	None Detected							
			None Detected							
Gray Soom Coully	CR4-07	A B	Black, Gray Seam Caulk - Chrysotile 10% Gray Seam Caulk - None Detected							
Gray Seam Caulk	GR4-07	C B	Black, Gray Seam Caulk - None Detected							
		A	Black Penetration Caulk - None Detected							
Black Penetration Caulk	CR4-08	B	Black Penetration Caulk - Chrysotile 3%							
	000	C	Black Penetration Caulk - Chrysotile 3%							
			Black Rolled Roofing Core - Chrysotile 2%							
		A	Gray Rolled Roofing Core – None Detected							
Gray Rolled Roofing with Black	CR4-09	В	Black Rolled Roofing Core - Chrysotile 2%							
Tar	0114-09	Ъ	Gray Rolled Roofing Core – None Detected							
		С	Black Rolled Roofing Core - Chrysotile 2%							
			Gray Rolled Roofing Core – None Detected							

Notes: Green = Homogenous Areas positive for ACM Red = Positive ACM samples identified by certified laboratory



A drawing in Appendix 3 shows the sample locations and the locations of ACM at the Property.

There are three major categories used to classify asbestos-containing materials (ACM) found in buildings: Surfacing Materials, Thermal System Insulation (TSI), and Miscellaneous Materials. Materials in these broad categories are further classified as either friable or non-friable. Friable materials are materials that can be reduced to powder from hand pressure and may become an inhalation hazard. Non-friable asbestos materials are classified as either Category I or Category II Material.

Category I material is defined as asbestos-containing resilient floor covering, asphalt roofing products, packings and gaskets. Asbestos-containing mastic is also considered a Category I material (EPA determination – April 9, 1991). Category II material is defined as all remaining types of non-friable ACM not included in Category I that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. Non-friable asbestos-cement products such as transite are an example of Category II material.

Table 3 below identifies homogenous areas within the Property that are positive for asbestos along with the category and location of each. The summary and recommendations related to these ACM Findings are included in Section 4.1.

	Table 3										
	2491 Winchester Road CONFIRMED ASBESTOS CONTAINING MATERIALS										
Sample Number	Material	Estimated Quantity	Category Friable	Location/Condition	Figure						
CR4-01	BUR Core	19,938 ft ²	Category I Non-Friable	Cargo Roof #4 / Good	1						
CR4-02	White Liquid Roof Patch	123 ft ²	Category I Non-Friable	Cargo Roof #4 / Good	1						
CR4-03	Gray Flashing	80 Ln Ft	Category I Non-Friable	Cargo Roof #4 / Good	1						
CR4-07*	Gray Seam Caulk	5 Ln. Ft	Category I Non-Friable	Cargo Roof #4 / Good	1						
CR4-08*	Black Penetration Caulk	5 Ln. Ft	Category I Non-Friable	Cargo Roof #4 / Good	1						
CR4-09	Gray Rolled Roofing with Black Tar	117 ft ²	Category I Non-Friable	Cargo Roof #4 / Good	1						

Note: * = In this case the caulks are considered Category I as they are part of the roofing system.



3.1 Asbestos

All materials identified as asbestos containing should be maintained in good condition to avoid potential fiber release due to disturbance. In the event of demolition, the State of Tennessee and NESHAP require that all friable ACM and non-friable ACM that could become friable during renovation or demolition activities must be removed by a certified Asbestos Abatement Contractor prior to disturbance.

In all instances, non-certified personnel should not disturb or attempt removal of any of the asbestos-containing materials identified in this survey. OSHA regulation 29 CFR 1926.1101 requires that a qualified, certified Asbestos Abatement Contractor must be retained to perform abatement of ACM prior to demolition or renovation activities at the Property. At no time are non-certified personnel allowed to disturb or remove ACM.

It is recommended that any Asbestos Abatement Contractor retained to perform abatement activities at the facility should be required to maintain proper engineering control measures prior to and during the disturbance of all ACM to ensure protection of human health and safety for personnel involved with this project. These control measures are also required for the protection of the surrounding environment by preventing the possibility of contamination outside of the abatement areas. Appropriate area air and/or personnel monitoring during the removal of these materials must be conducted as per federal, state, and local regulations.

The following recommendations are based on the findings as identified in Section 2.3 and are in general conformance with the State of Tennessee, EPA, NESHAP and OSHA requirements:

- The asbestos containing BUR Roofing, White Liquid Roof Patch, Gray Flashing, and Gray Rolled Roofing with Black Tar are non-friable Category I materials. The State of Tennessee and NESHAP require that non-friable ACM that could become friable during renovation activities must be removed prior to disturbance. Since these materials may be rendered friable during renovation activities, they must be removed by an asbestos abatement contractor prior to being disturbed by renovation activities. These materials can be disposed of at a landfill that accepts asbestos waste. Asbestos waste manifest should be kept for records.
- The asbestos containing Seam and Penetration Caulks are non-friable Category I
 materials as they are considered part of the roofing system. Since these materials
 may be rendered friable during renovation activities, they must be removed by an
 asbestos abatement contractor prior to being disturbed by renovation activities.
 These materials can be disposed of at a landfill that accepts asbestos waste.
 Asbestos waste manifest should be kept for records.
- In all instances, non-certified personnel should not disturb or attempt removal of any of the asbestos-containing materials identified in this survey. OSHA regulation 29 CFR 1926.1101 requires that a qualified, certified Asbestos Abatement Contractor must be retained to perform abatement of ACM prior to renovation activities at the Property. At no time are non-certified personnel allowed to disturb or remove ACM.



- Per the EPA Applicability of The Asbestos NESHAP to Asbestos Roofing Removal Operations Guidance Manual, dated August 1994, use of removal methods that sand, grind, cut, or abrade ACM are prohibited. Work practices including wet removal methods, manual removal methods, and utilizing modified Rotating Blade (RB) roof cutting machines equipped with spray nozzle and HEPA vacuum systems must be implemented to control and minimize visible dust emissions. Additionally, since power plows and power slicers do not sand, grind, cut, or abrade roofing materials, their use is permitted and not subject to asbestos NESHAP regulations.
- If suspect materials are identified under roofing material, not sampled, or in any other accessible or inaccessible areas during renovation, additional testing should be performed to verify that these materials do not contain asbestos.



Appendix 1 Certifications and Licenses





THE STATE OF TENNESSEE

Department of Environment and Conservation Division of Solid Waste Management Toxic Substances Program William R. Snodgrass Tennessee Tower

312 Rosa L. Parks Avenue, 14th Floor Nashville TN 37243

By virtue of the authority vested by the Division of Solid Waste Management, the Company named below is hereby accreditted to offer and/or conduct Asbestos activities pursuant to Rule 1200-01-20:

Tioga Environmental Consultants, Inc.

357 N. Main Street Memphis TN, 38103

to conduct ASBESTOS ACTIVITIES in schools or public and commercial buildings in Tennessee. This firm is responsible for compliance with the applicable requirements of Rule 1200-01-20.



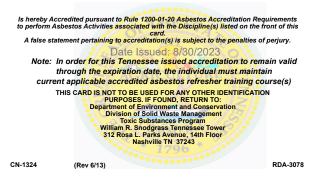
Given under the Seal of the State of Tennessee in Nashville. This **21st** Day of **October 2022**

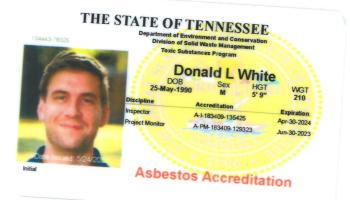
Division of Solid Waste Management Toxic Substance Program

CN-1324 (Rev 6/13)

RDA-3020

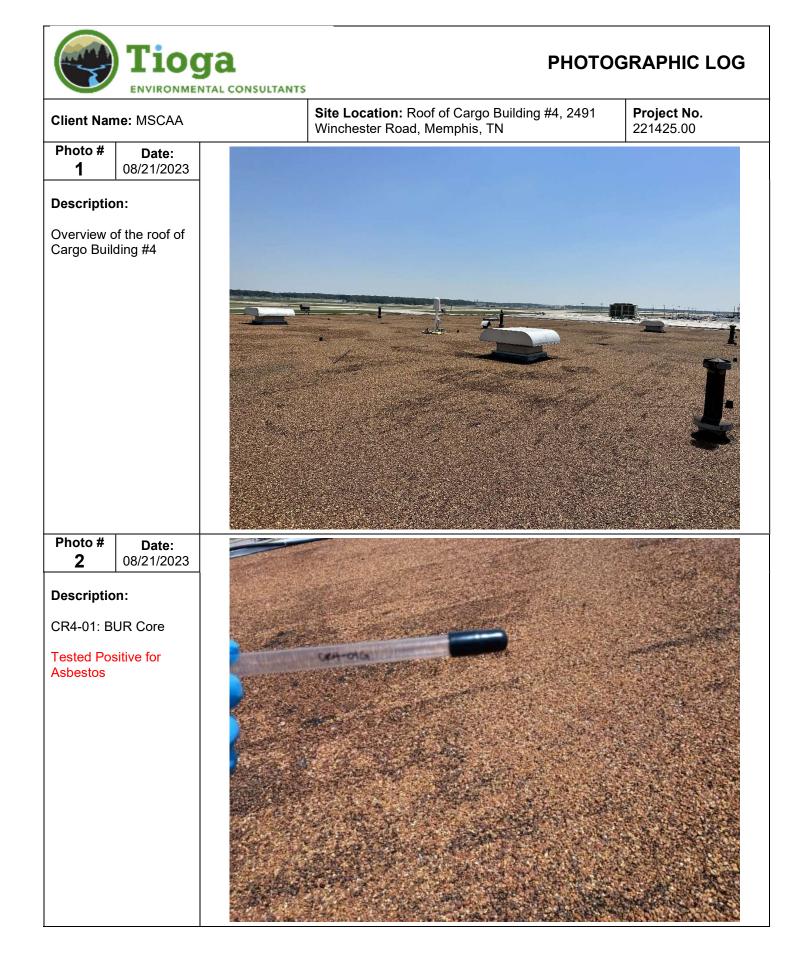






Appendix 2 Photographic Log







PHOTOGRAPHIC LOG

Client Name: MSCAA

Site Location: Roof of Cargo Building #4, 2491 Winchester Road, Memphis, TN **Project No.** 221425.00







Client Name: MSCAA

PHOTOGRAPHIC LOG

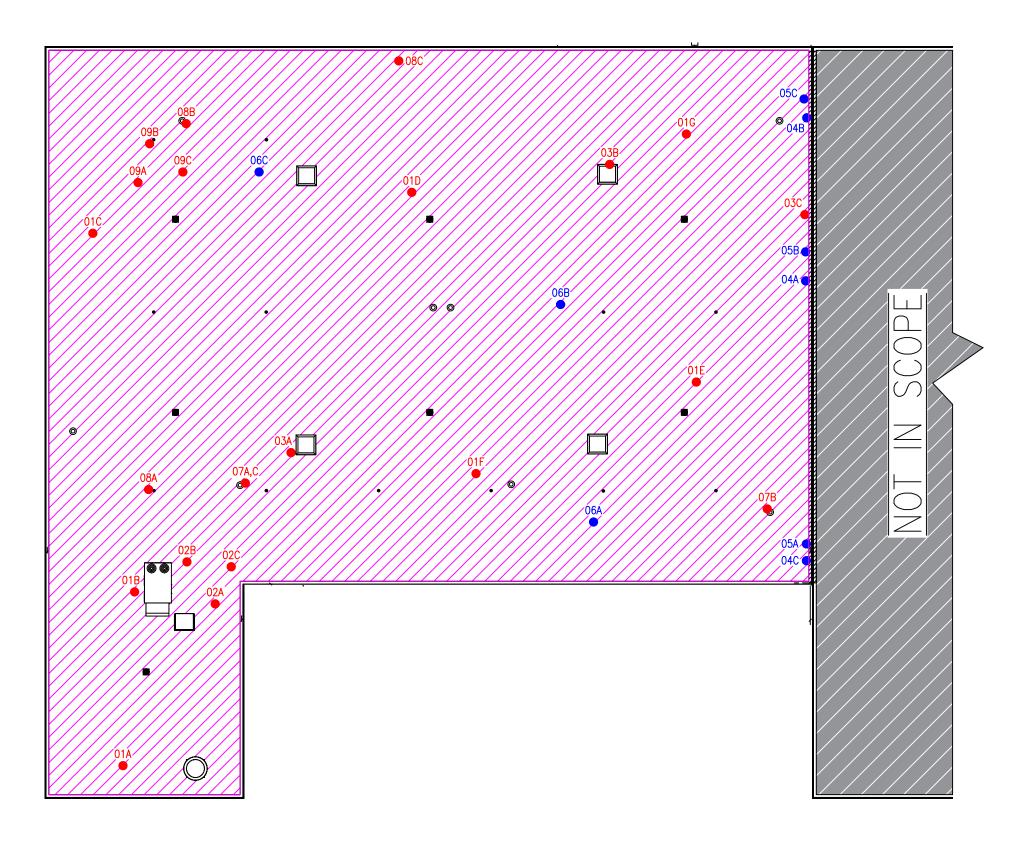
Site Location: Roof of Cargo Building #4, 2491 Winchester Road, Memphis, TN **Project No.** 221425.00

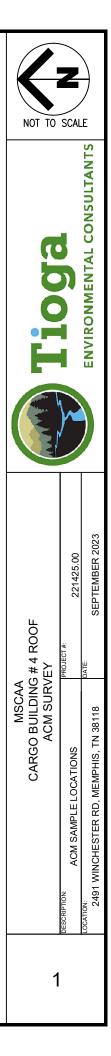




Appendix 3 Figures







SAMPLE SERIES: CR4-	
LEGEND	

01A = POSITIVE ACM LOCATION

01A = NEGATIVE ACM LOCATION

ACM ROOFING MATERIALS (INCLUDING BLACK BUR, WHITE ROOF PATCH, BLACK/ GRAY FLASHING, SILVER PAINT, BLACK FLASHING, BLACK/GRAY SEAM CALLK, GRAY SEAM CALLK, BLACK PENETRATION CAULK, AND BLACK ROLLED ROOFING) Appendix 4 Asbestos Laboratory Results and Chain of Custody





August 23, 2023

Tioga Environmental Consultants 357 North Main Street Memphis, TN 38103

CLIENT PROJECT:MSCAA Cargo 4 Roof, 221425.00CEI LAB CODE:B2318001

CEI

Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on August 22, 2023. 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.

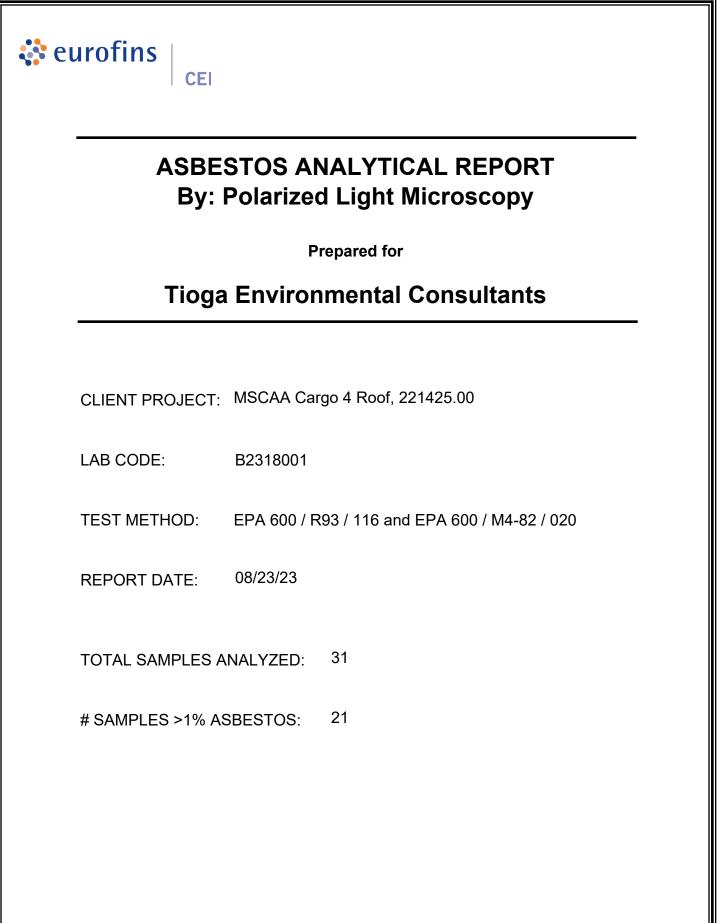
Thank you for your business and we look forward to continuing good relations.

Kind Regards,

Man Sao Di

Tianbao Bai, Ph.D., CIH Laboratory Director





730 SE Maynard Road • Cary, NC 27511 • 919.481.1413



Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

CEI

PROJECT: MSCAA Cargo 4 Roof, 221425.00

LAB CODE: B2318001

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

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
CR4-01A	Layer 1	B2318001.01	Black	Bur Core	Chrysotile 3%
	Layer 2	B2318001.01	White,Gold	Bur Core	None Detected
CR4-01B	Layer 1	B2318001.02	Black	Bur Core	Chrysotile 3%
	Layer 2	B2318001.02	White,Gold	Bur Core	None Detected
CR4-01C	Layer 1	B2318001.03	Black	Bur Core	Chrysotile 3%
	Layer 2	B2318001.03	White,Gold	Bur Core	None Detected
CR4-01D	Layer 1	B2318001.04	Black	Bur Core	Chrysotile 3%
	Layer 2	B2318001.04	White,Gold	Bur Core	None Detected
CR4-01E	Layer 1	B2318001.05	Black	Bur Core	Chrysotile 3%
	Layer 2	B2318001.05	White,Gold	Bur Core	None Detected
CR4-01F	Layer 1	B2318001.06	Black	Bur Core	Chrysotile 3%
	Layer 2	B2318001.06	White,Gold	Bur Core	None Detected
CR4-01G		B2318001.07	Black	Bur Core	Chrysotile 3%
CR4-02A	Layer 1	B2318001.08	White	Roof Patch Core	None Detected
	Layer 2	B2318001.08	Black	Roof Patch Core	Chrysotile 3%
	Layer 3	B2318001.08	White,Gold	Roof Patch Core	None Detected
CR4-02B	Layer 1	B2318001.09	White	Roof Patch Core	None Detected
	Layer 2	B2318001.09	Black	Roof Patch Core	Chrysotile 3%
	Layer 3	B2318001.09	White,Gold	Roof Patch Core	None Detected
CR4-02C	Layer 1	B2318001.10	White	Roof Patch Core	None Detected
	Layer 2	B2318001.10	Black	Roof Patch Core	Chrysotile 3%
	Layer 3	B2318001.10	White,Gold	Roof Patch Core	None Detected
CR4-03A		B2318001.11	Gray,Black	Flashing	Chrysotile 10%
CR4-03B		B2318001.12	Gray,Black	Flashing	Chrysotile 10%
CR4-03C	Layer 1	B2318001.13	Silver	Silver Paint	Chrysotile 2%
	Layer 2	B2318001.13	Black	Flashing	Chrysotile 2%
CR4-04A		B2318001.14	Black	Expansion Joint	None Detected
CR4-04B		B2318001.15	Black	Expansion Joint	None Detected
CR4-04C		B2318001.16	Black	Expansion Joint	None Detected
CR4-05A		B2318001.17	White	Parapet Caulk	None Detected
CR4-05B		B2318001.18	White	Parapet Caulk	None Detected



Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: MSCAA Cargo 4 Roof, 221425.00

CEI

LAB CODE: B2318001

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

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
CR4-05C		B2318001.19	White	Parapet Caulk	None Detected
CR4-06A		B2318001.20	Black	Liquid Flashing	None Detected
CR4-06B		B2318001.21	Black	Liquid Flashing	None Detected
CR4-06C		B2318001.22	Black	Liquid Flashing	None Detected
CR4-07A		B2318001.23	Black,Gray	Seam Caulk	Chrysotile 10%
CR4-07B		B2318001.24	Gray	Seam Caulk	None Detected
CR4-07C		B2318001.25	Black,Gray	Seam Caulk	Chrysotile 10%
CR4-08A		B2318001.26	Black	Penetration Caulk	None Detected
CR4-08B		B2318001.27	Black	Penetration Caulk	Chrysotile 3%
CR4-08C		B2318001.28	Black	Penetration Caulk	Chrysotile 3%
CR4-09A	Layer 1	B2318001.29	Black	Rolled Roofing Core	Chrysotile 2%
	Layer 2	B2318001.29	Gray	Rolled Roofing Core	None Detected
CR4-09B	Layer 1	B2318001.30	Black	Rolled Roofing Core	Chrysotile 2%
	Layer 2	B2318001.30	Gray	Rolled Roofing Core	None Detected
CR4-09C	Layer 1	B2318001.31	Black	Rolled Roofing Core	Chrysotile 2%
	Layer 2	B2318001.31	Gray	Rolled Roofing Core	None Detected



By: POLARIZING LIGHT MICROSCOPY

CEI

Client: Tioga Environmental Consultants 357 North Main Street Memphis, TN 38103
 Lab Code:
 B2318001

 Date Received:
 08-22-23

 Date Analyzed:
 08-23-23

 Date Reported:
 08-23-23

Project: MSCAA Cargo 4 Roof, 221425.00

Client ID	Lab	Lab	ASBESTOS						
Lab ID	Description	Attributes	Fibr	ous	Non-	Fibrous	%		
CR4-01A Layer 1 B2318001.01	Bur Core	Heterogeneous Black Non-fibrous Bound		Black Non-fibrous		Cellulose	se 87% Tar		3% Chrysotile
Layer 2 B2318001.01	Bur Core	Heterogeneous White,Gold Fibrous Bound	2%	Cellulose	88% 10%	Gypsum Vermiculite	None Detected		
CR4-01B Layer 1 B2318001.02	Bur Core	Heterogeneous Black Non-fibrous Bound	10%	Cellulose	87%	Tar	3% Chrysotile		
Layer 2 B2318001.02	Bur Core	Heterogeneous White,Gold Fibrous Bound	2%	Cellulose	88% 10%	Gypsum Vermiculite	None Detected		
CR4-01C Layer 1 B2318001.03	Bur Core	Heterogeneous Black Non-fibrous Bound	10%	Cellulose	87%	Tar	3% Chrysotile		
Layer 2 B2318001.03	Bur Core	Heterogeneous White,Gold Fibrous Bound	2%	Cellulose	88% 10%	Gypsum Vermiculite	None Detected		
CR4-01D Layer 1 B2318001.04	Bur Core	Heterogeneous Black Non-fibrous Bound	10%	Cellulose	87%	Tar	3% Chrysotile		



By: POLARIZING LIGHT MICROSCOPY

CEI

Client: Tioga Environmental Consultants 357 North Main Street Memphis, TN 38103

 Lab Code:
 B2318001

 Date Received:
 08-22-23

 Date Analyzed:
 08-23-23

 Date Reported:
 08-23-23

Project: MSCAA Cargo 4 Roof, 221425.00

Client ID Lab ID							ASBESTOS %
Layer 2 B2318001.04	Bur Core	Heterogeneous White,Gold Fibrous Bound	2%	Cellulose	88% 10%	Gypsum Vermiculite	None Detected
CR4-01E Layer 1 B2318001.05	Bur Core	Heterogeneous Black Non-fibrous Bound	10%	Cellulose	87%	Tar	3% Chrysotile
Layer 2 B2318001.05	Bur Core	Heterogeneous White,Gold Fibrous Bound	2%	Cellulose	88% 10%	Gypsum Vermiculite	None Detected
CR4-01F Layer 1 B2318001.06	Bur Core	Heterogeneous Black Non-fibrous Bound	10%	Cellulose	87%	Tar	3% Chrysotile
Layer 2 B2318001.06	Bur Core	Heterogeneous White,Gold Fibrous Bound	2%	Cellulose	88% 10%	Gypsum Vermiculite	None Detected
CR4-01G B2318001.07	Bur Core	Heterogeneous Black Non-fibrous Bound	10%	Cellulose	87%	Tar	3% Chrysotile
CR4-02A Layer 1 B2318001.08	Roof Patch Core	Homogeneous White Non-fibrous Bound			100%	Caulk	None Detected



By: POLARIZING LIGHT MICROSCOPY

CEI

Client: Tioga Environmental Consultants 357 North Main Street Memphis, TN 38103

 Lab Code:
 B2318001

 Date Received:
 08-22-23

 Date Analyzed:
 08-23-23

 Date Reported:
 08-23-23

Project: MSCAA Cargo 4 Roof, 221425.00

Client ID Lab ID	Lab Description	Lab Attributes	NO Fibr	N-ASBESTOS	NENTS ibrous	ASBESTOS	
Layer 2 B2318001.08	Roof Patch Core	Homogeneous Black Non-fibrous Bound		Cellulose	87%	Tar	% 3% Chrysotile
Layer 3 B2318001.08	Roof Patch Core	Heterogeneous White,Gold Fibrous Bound	2%	Cellulose	88% 10%	Gypsum Vermiculite	None Detected
CR4-02B Layer 1 B2318001.09	Roof Patch Core	Homogeneous White Non-fibrous Bound			100%	Caulk	None Detected
Layer 2 B2318001.09	Roof Patch Core	Homogeneous Black Non-fibrous Bound	10%	Cellulose	87%	Tar	3% Chrysotile
Layer 3 B2318001.09	Roof Patch Core	Heterogeneous White,Gold Fibrous Bound	2%	Cellulose	88% 10%	Gypsum Vermiculite	None Detected
CR4-02C Layer 1 B2318001.10	Roof Patch Core	Homogeneous White Non-fibrous Bound			100%	Caulk	None Detected
Layer 2 B2318001.10	Roof Patch Core	Homogeneous Black Non-fibrous Bound	10%	Cellulose	87%	Tar	3% Chrysotile



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Project: MSCAA Cargo 4 Roof, 221425.00

ASBESTOS BULK PLM, EPA 600 METHOD **NON-ASBESTOS COMPONENTS Client ID** Lab Lab ASBESTOS Lab ID Description Attributes **Fibrous** Non-Fibrous % 2% Layer 3 **Roof Patch Core** Heterogeneous Cellulose 88% Gypsum None Detected B2318001.10 White,Gold Vermiculite 10% Fibrous Bound Heterogeneous 10% Cellulose 10% Chrysotile CR4-03A Flashing 80% Tar B2318001.11 Gray,Black Non-fibrous Bound Flashing Heterogeneous 10% Cellulose 80% 10% Chrysotile CR4-03B Tar B2318001.12 Gray,Black Non-fibrous Bound CR4-03C Silver Paint Heterogeneous 78% Paint 2% Chrysotile Layer 1 Silver 20% Tar B2318001.13 Non-fibrous Bound 2% Chrysotile Layer 2 Flashing Heterogeneous 2% Cellulose 96% Tar B2318001.13 Black Non-fibrous Bound **CR4-04A** Expansion Joint Homogeneous 100% Rubber None Detected B2318001.14 Black Non-fibrous **Tightly Bound** Rubber None Detected **CR4-04B** Expansion Joint Homogeneous 100% B2318001.15 Black Non-fibrous **Tightly Bound**



By: POLARIZING LIGHT MICROSCOPY

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 Date Reported:
 08-23-23

Project: MSCAA Cargo 4 Roof, 221425.00

Client ID	Lab	Lab	ASBESTOS					
Lab ID	Description	Attributes	Fibr	ous	Non-Fibrous		%	
CR4-04C B2318001.16	Expansion Joint	Homogeneous Black Non-fibrous Tightly Bound			100%	Rubber	None Detected	
CR4-05A B2318001.17	Parapet Caulk	Homogeneous White Non-fibrous Bound			100%	Caulk	None Detected	
CR4-05B B2318001.18	Parapet Caulk	Homogeneous White Non-fibrous Bound			100%	Caulk	None Detected	
CR4-05C B2318001.19	Parapet Caulk	Homogeneous White Non-fibrous Bound			100%	Caulk	None Detected	
CR4-06A B2318001.20	Liquid Flashing	Heterogeneous Black Non-fibrous Bound	<1%	Cellulose	100%	Tar	None Detected	
CR4-06B B2318001.21	Liquid Flashing	Heterogeneous Black Non-fibrous Bound	10%	Cellulose	90%	Tar	None Detected	
CR4-06C B2318001.22	Liquid Flashing	Heterogeneous Black Non-fibrous Bound	<1%	Cellulose	100%	Tar	None Detected	



By: POLARIZING LIGHT MICROSCOPY

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 Lab Code:
 B2318001

 Date Received:
 08-22-23

 Date Analyzed:
 08-23-23

 Date Reported:
 08-23-23

Project: MSCAA Cargo 4 Roof, 221425.00

ASBESTOS BULK PLM, EPA 600 METHOD							
Client ID Lab ID	Lab Description	Lab Attributes		NON-ASBESTOS COMPONENTS Fibrous Non-Fibrous			ASBESTOS %
CR4-07A B2318001.23	Seam Caulk	Heterogeneous Black,Gray Non-fibrous Bound			90%	Tar	10% Chrysotile
CR4-07B B2318001.24	Seam Caulk	Heterogeneous Gray Non-fibrous Bound			100% <1%	Caulk Silicates	None Detected
CR4-07C B2318001.25	Seam Caulk	Heterogeneous Black,Gray Non-fibrous Bound			90%	Tar	10% Chrysotile
CR4-08A B2318001.26	Penetration Caulk	Heterogeneous Black Non-fibrous Bound	10%	Cellulose	90%	Tar	None Detected
CR4-08B B2318001.27	Penetration Caulk	Heterogeneous Black Non-fibrous Bound	3%	Cellulose	94%	Tar	3% Chrysotile
CR4-08C B2318001.28	Penetration Caulk	Heterogeneous Black Non-fibrous Bound	3%	Cellulose	94%	Tar	3% Chrysotile
CR4-09A Layer 1 B2318001.29	Rolled Roofing Core	Heterogeneous Black Non-fibrous Bound	10% 2%	Cellulose Fiberglass	86%	Tar	2% Chrysotile



By: POLARIZING LIGHT MICROSCOPY

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 08-23-23

 Date Reported:
 08-23-23

Project: MSCAA Cargo 4 Roof, 221425.00

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous Non-Fibrous			-	ASBESTOS %
Layer 2 B2318001.29	Rolled Roofing Core	Heterogeneous Gray Fibrous Loosely Bound	2%	Cellulose	88% 10%	Gypsum Vermiculite	None Detected
CR4-09B Layer 1 B2318001.30	Rolled Roofing Core	Heterogeneous Black Non-fibrous Bound	10% 2%	Cellulose Fiberglass	86%	Tar	2% Chrysotile
Layer 2 B2318001.30	Rolled Roofing Core	Heterogeneous Gray Fibrous Loosely Bound	2%	Cellulose	88% 10%	Gypsum Vermiculite	None Detected
CR4-09C Layer 1 B2318001.31	Rolled Roofing Core	Heterogeneous Black Non-fibrous Bound	10% 2%	Cellulose Fiberglass	86%	Tar	2% Chrysotile
Layer 2 B2318001.31	Rolled Roofing Core	Heterogeneous Gray Fibrous Loosely Bound	2%	Cellulose	88% 10%	Gypsum Vermiculite	None Detected



CEI

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

REPORTING LIMIT: <1% by visual estimation

REPORTING LIMIT FOR POINT COUNTS: 0.25% by 400 Points or 0.1% by 1,000 Points

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. Estimated measurement of uncertainty is available on request.

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins CEI. Eurofins CEI 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. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID and sample description.

ANALYST:

APPROVED BY:

Nicholas Moore

Tianbao Bai, Ph.D., CIH Laboratory Director





CHAIN OF CUSTODY

B2312001

LAB USE ONLY:

730 SE Maynard Road, Cary, NC 27511 Tel: 866-481-1412; Fax: 919-481-1442

CEI Lab Code:

CEI Lab I.D. Range:

COMPANY INFORMATION		PROJECT INFORMATION			
CEI CLIENT #:		Job Contact: Joe Littlefield			
Company: Tioga Environmental		Email / Tel: Jlittlefield@TiogaENV.com			
Address: 357 N. Main Street Memp	phis, TN 38103	Project Name: MSCAA Curgo #4 Roof			
		Project ID#: 221425.00			
Email: Jlittlefield@TiogaENV.com	*	PO #:			
Tel: 901-791-2432 Fax: 90	1-791-2442	STATE SAMPLES COLLECTED IN: TN			

CEI

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

		TURN AROUND TIME					
ASBESTOS	METHOD	4 HR	8 HR	1 DAY	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600						
PLM POINT COUNT (400)	EPA 600						
PLM POINT COUNT (1000)	EPA 600						5.
PLM GRAV w POINT COUNT	EPA 600						
PLM BULK	CARB 435						
PCM AIR	NIOSH 7400						
TEM AIR	EPA AHERA						
TEM AIR	NIOSH 7402						
TEM AIR (PCME)	ISO 10312						
TEM AIR	ASTM 6281-15						
TEM BULK	CHATFIELD						
TEM DUST WIPE	ASTM D6480-05 (2010)						
TEM DUST MICROVAC	ASTM D5755-09 (2014)						
TEM SOIL	ASTM D7521-16						
TEM VERMICULITE	CINCINNATI METHOD						
TEM QUALITTATIVE	IN-HOUSE METHOD						
OTHER:							

REMARKS / SPECIAL	Accept Samples		
Relinquished By:	Date/Time	Received By:	Date/Time
Dato	08-21-2023 6:38	CM	\$122/23 9:30

Samples will be disposed of 30 days after analysis

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SAMPLING FORM

CEI

COMPANY CONTACT INFORMATION							
Company: Tioga Environmental	Job Contact: Joe Littlefield						
Project Name: MSCAA Grass # 4 Root	JLittlefield@TiogaENV.com						
Project ID #: 221425.00	Tel: 901-791-2432						

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/	Т	EST
CR4-01A	BUR Core		PLM 🗸	TEM
B	1		PLM	TEM
C			PLM	TEM
D.			PLM	TEM
E			PLM	TEM
F			PLM	TEM
V G			PLM	TEM
CR4-02 A	White Liquid Rout Partch Core		PLM	TEM
B			PLM	ТЕМ
VC			PLM	TEM
CR4-03 A	Gray Flashing		PLM	TEM
B			PLM	TEM
VC	V		PLM	ТЕМ
CR4.04 A	Expansion Joint		PLM	ТЕМ
B			PLM	ТЕМ
VC			PLM	ТЕМ
CR4-05 A	White Parapet Caulk		PLM	ТЕМ
B			PLM	ТЕМ
V C			PLM	ТЕМ
CR4-06 A	Black Light Flashing		PLM	TEM
B			PLM	TEM
VC			PLM	TEM
CR4-07 A	Gray Seam Calk		PLM	ТЕМ
B			PLM	ТЕМ
V C	V .		PLM	ТЕМ
CR4-08 A	Black Aenetroution Carlk		PLM	TEM
ß			PLM	TEM
VC			PLM	TEM

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SAMPLING FORM

CEI

COMPANY CONTACT INFORMATION	
Company: Tioga Environmental	Job Contact: Joe Littlefield
Project Name: MSCAA Curgo #4 Roof	JLittlefield@TiogaENV.com
Project ID #: 221425.00	Tel: 901-791-2432

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	Т	EST
CR4-09 A	Gray Rolled Rosting Gre		PLM	TEM
B			PLM 🖌	
V C			PLM 🗸	
END-	+		PLM	TEM ()
			PLM	
			PLM	TEM
			PLM	TEM
			PLM	TEM
			PLM	ТЕМ
and key states and the			PLM	ТЕМ
			PLM	ТЕМ
E.			PLM	ТЕМ
			PLM	TEM
			PLM	ТЕМ
			PLM	ТЕМ
			PLM	ТЕМ
			PLM	TEM
			PLM	ТЕМ
			PLM	ТЕМ
			PLM	ТЕМ
			PLM	TEM
			PLM	TEM
			PLM	TEM
			PLM	ТЕМ

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