LIMITED ASBESTOS SURVEY REPORT

Fort Lauderdale/Hollywood International Airport
Air Traffic Control Tower & Base Building
4150 Southwest 12th Terrace
Fort Lauderdale, Florida 33315

GLE Project No.: 18000-19284

Prepared for:

Federal Aviation Administration
1701 Columbia Avenue
College Park, Georgia 30337

April 2018

Prepared by:

1000 NW 65th Street, Suite 300-D
Ft. Lauderdale, Florida 33309
754-223-2697 • Fax 754-223-2937

ARCHITECTS | ENGINEERS | ENVIRONMENTAL CONSULTANTS

May 2, 2018

Ms. Sushma Patel
Federal Aviation Administration
1701 Columbia Avenue
College Park, Georgia 30337

RE: Limited Asbestos Survey Report
FLL Air Traffic Control Tower & Base Building
4150 Southwest 12th Terrace
Fort Lauderdale, Florida 33315

GLE Project No.: 18000-19284

Dear Ms. Patel:

GLE Associates, Inc. (GLE) performed a Limited survey for Asbestos-Containing Materials (ACMs) on April 17, 2018, at the FLL Air Traffic Control Tower & Base Building located at 4150 Southwest 12th Terrace, in Fort Lauderdale, Florida. The survey was performed by Mr. Brandon Christensen with GLE. This report outlines the sampling and testing procedures, and presents the results along with our conclusions and recommendations.

GLE appreciates the opportunity to serve as your consultant on this project. If you should have any questions, or if we can be of further service, please do not hesitate to call.

Sincerely,
GLE Associates, Inc.

Brandon Christensen
Project Manager

Robert B. Greene, PE, PG, CIH, LEED AP
President
Florida LAC # EA 0000009

BSC/MBC/RBG/el

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1.0 INTRODUCTION

1.1 INTRODUCTION

The purpose of this limited survey was to identify accessible ACMs and their general locations within the FLL Air Traffic Control Tower (ATCT) and base building, located at 4150 southwest 12th terrace, located in Fort Lauderdale, Florida. The survey was limited to the building materials that could be impacted during the ATCT roof and catwalk renovations. The survey was conducted pursuant to National Emission Standards for Hazardous Air Pollutants (NESHAP, 40 CFR 61) requirements, associated with the scheduled renovation plans. The survey was performed on April 17, 2017, by Mr. Brandon Christensen, an Environmental Protection Agency/Asbestos Hazard Emergency Response Act (EPA/AHERA) accredited inspector. The scope of this survey did not include demolition of any building components, evaluation of architectural plans, or the quantification of materials for abatement purposes, or removal cost estimating.

1.2 FACILITY DESCRIPTION

A summary of the facility investigated is outlined in the table below.

Facility Type:	Government
Construction Date:	Unknown
Number of Floors:	10
Structural	
Foundation:	Concrete Slab
Wall Support:	Concrete Masonry Unit
Exterior Finish:	Stucco, Paint
Roof Support:	Metal Truss,
Roof System Type:	Built up Roof, PVC, Rolled Asphalt Roof
Mechanical/Plumbing	**Not in Scope**
Interior	**Not in Scope**

2.0 RESULTS

2.1 ASBESTOS SURVEY PROCEDURES

The survey was performed by visually observing accessible areas of the subject area. EPA/AHERA accredited inspectors performed the visual observations (refer to Appendix B for personnel qualifications).

After the overall visual survey was completed, representative sampling areas were determined. The surveyors delineated homogeneous areas of suspect materials and samples of each material were obtained, in general accordance with regulations as established by the Occupational Safety and Health Administration (OSHA) and NESHAP. The field surveyors determined sample locations based on previous experience. Both friable and non-friable materials were sampled. A

friable material is one that can be crushed when dry by normal hand pressure. This survey did not include the demolition of building components to access suspect material.

After completion of the fieldwork, the samples were delivered to GLE's National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory for analysis. The samples were analyzed by Polarized Light Microscopy (PLM) coupled with dispersion staining, in general accordance with EPA-600/R-93/116. Utilizing this procedure, the various asbestos minerals (chrysotile, amosite, crocidolite, actinolite, tremolite, and anthophyllite) can be determined. The percentages of asbestos minerals in the samples were visually determined by the microscopist. Please note that the EPA designates all materials containing greater than 1% asbestos as an "asbestos-containing material" (ACM).

Regulated Asbestos-Containing Material (RACM) is defined as (a) Friable asbestos materials, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by this subpart.

Category I and Category II non-friable ACM, as defined by the EPA:

- Category I non-friable ACM means asbestos containing packings, gaskets, resilient floor covering, asphalt roofing products, and pliable sealants and mastics that are in good condition and not friable, containing more than 1% asbestos, as determined using the method specified in Appendix E, Subpart E, 40 CFR Part 763, Section 1, PLM.

- Category II non-friable ACM means any material, excluding Category I non-friable ACM, containing more than 1% asbestos as determined using the methods specified in Appendix E, Subpart E, 40 CFR Part 763 Section 1, PLM that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

2.2 IDENTIFIED SUSPECT ASBESTOS-CONTAINING MATERIALS

A total of thirty-three samples of suspect building materials were collected from the subject area during the survey, representing eleven different homogeneous areas. The results of the laboratory analyses are included in Appendix A.

A summary of the homogenous sampling areas of suspect ACM determined to be present is outlined in the following table.

TABLE 2.2-1: SUMMARY OF HOMOGENEOUS SAMPLING AREAS FLL ATCT AND BASE BUILDING 4150 SOUTHWEST 12TH TERRACE FORT LAUDERDALE, FLORIDA 33315							
HA #	**HOMOGENEOUS MATERIAL DESCRIPTION**	**HOMOGENEOUS MATERIAL LOCATION**	**FRIABILITY (F /NF)**	**% ASBESTOS***	**# OF SAMPLES COLLECTED**	**APPROXIMATE QUANTITY**	**ACM CATEGORY**
M-01	White Coating w/ Black Pitch Pan Flashing	ATCT Roof	NF	ND	3	NIS	NA
M-02	White Caulking at Antenna	ATCT Roof Parapet Wall	NF	ND	3	NIS	NA
M-03	White PVC Roof Membrane w/ Yellow Adhesive	ASDE Penthouse Roof	NF	ND	3	NIS	NA
M-04	White Roof Caulking	ASDE Penthouse Roof	NF	ND	3	NIS	NA
M-05	Black Caulking at Catwalk Parapet Wall	Catwalk Parapet Wall	NF	ND	3	NIS	NA
M-06	Gray w/ Black Pitch Pan Flashing	ATCT Roof	NF	ND	3	NIS	NA
R-01	Black Rolled Roof Curb	ATCT Roof	NF	ND	3	NIS	NA
R-02	Black Rolled Roof	Base Building Roof	NF	ND	3	NIS	NA
RBU-01	White Coating over Built Up Roof	ATCT Roof	NF	ND	3	NIS	NA
RF-01	Black Roof Edge Flashing	Base Building Roof	NF	ND	3	NIS	NA
RF-02	Black Roof Vent Flashing	Base Building Roof	NF	ND	3	NIS	NA

ASBESTOS CONTENT Expressed as percent	* = The facility owner has the option of point-counting by polarized light microscopy (PLM) those RACM whose asbestos content is less than 10% in order to more accurately determine the asbestos content therein.				
	PC = Results based on Point-Count analysis				
FRIABILITY	F = Friable Material	NF = Non-Friable Material			
ACM CATEGORY	RACM = Regulated ACM	CAT I = Category I non-friable ACM	CAT II = Category II non-friable ACM		
ABBREVIATIONS:	NA = Not Applicable	ND = None Detected	NIS = Not in Scope	C = Chrysotile	A = Amosite
	HA = Homogeneous Area	SF = Square Feet	LF = Linear Feet	CF = Cubic Feet	AP = Assumed Positive

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 GENERAL

No asbestos-containing materials were identified in the scope of this survey.

4.0 LIMITATIONS AND CONDITIONS

As a result of previous renovations, there may be hidden materials, such as floor tile, sheet vinyl flooring, insulation, etc. These materials may be found in various areas hidden under existing flooring materials or in wall cavities. Any materials found during construction activities, either not addressed in this survey report, or similar to the ACM identified in this survey report should be assumed to be ACM until sampling and analysis documents otherwise.

Because of the hidden nature of many building components (i.e. within mechanical chases), it may be impossible to determine if all of the suspect building materials have been located and subsequently tested. Destructive testing in some instances is not a viable option. We cannot, therefore, guarantee that all potential ACM has been located. For the same reasons, estimates of quantities and/or conditions are subject to readily apparent situations, and our findings reflect this condition. We do warrant, however, that the investigations and methodology reflect our best efforts based upon the prevailing standard of care in the environmental industry.

The information contained in this report was prepared based upon specific parameters and regulations in force at the time of this report. The information herein is only for the specific use of the client and GLE. GLE accepts no responsibility for the use, interpretation, or reliance by other parties on the information contained herein, unless prior written authorization has been obtained from GLE.

APPENDIX A
Analytical Results and Chain of Custody

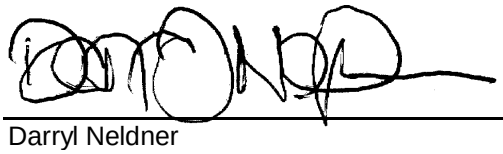
SUMMARY OF BULK SAMPLE ANALYSIS

FAA-Engineering Services; FLL ATCT & Base Building

18000-19284

Sample	Sample Type	Fiber Type	
M-01A	White Coating & Black Pitch Pan Flashing	100%	Polymer, Quartz, Calcite, Clay, Mica
M-01B	White Coating & Black Pitch Pan Flashing	100%	Polymer, Quartz, Calcite, Clay, Mica
M-01C-QC	White Coating & Black Pitch Pan Flashing	100%	Polymer, Quartz, Calcite, Clay, Mica
M-02A	White Caulk	100%	Polymer, Quartz, Calcite, Clay, Mica
M-02B	White Caulk	100%	Polymer, Quartz, Calcite, Clay, Mica
M-02C	White Caulk	100%	Polymer, Quartz, Calcite, Clay, Mica
M-03A	White PVC Roof Membrane & Yellow Adhesive	100%	Polymer, Quartz, Calcite, Clay, Mica
M-03B	White PVC Roof Membrane & Yellow Adhesive	100%	Polymer, Quartz, Calcite, Clay, Mica
M-03C	White PVC Roof Membrane & Yellow Adhesive	100%	Polymer, Quartz, Calcite, Clay, Mica
M-04A	White Roof Caulk	100%	Polymer, Quartz, Calcite, Clay, Mica
M-04B	White Roof Caulk	100%	Polymer, Quartz, Calcite, Clay, Mica
M-04C	White Roof Caulk	100%	Polymer, Quartz, Calcite, Clay, Mica

Analyst / Approved Signatory:



Darryl Neldner

* Polarized Light Microscopy coupled with dispersion is the technique used for identification in accordance with EPA 600/M4-82-020, EPA 600/R-93/116, and NIOSH Method 9002.

** The percentage of each component is visually estimated. The result of this analysis relate only to the material tested. The report shall not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. (>1% greater than one percent, <1% less than one percent) QC - Sample reanalyzed for QA/QC.

Analysis performed by GLE Associates, Inc. NVLAP Code 102003-0, CO AL-17485, TX 30-0337

Feedback regarding laboratory performance should be addressed to lab@gleassociates.com.

Report Date: 4/18/2018

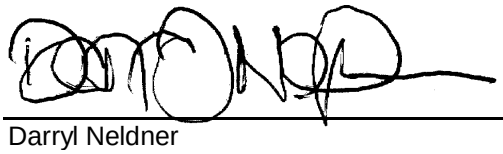
SUMMARY OF BULK SAMPLE ANALYSIS

FAA-Engineering Services; FLL ATCT & Base Building

18000-19284

Sample	Sample Type	Fiber Type	
M-05A-QC	Black Caulk	100%	Polymer, Quartz, Calcite, Clay, Mica
M-05B	Black Caulk	100%	Polymer, Quartz, Calcite, Clay, Mica
M-05C	Black Caulk	100%	Polymer, Quartz, Calcite, Clay, Mica
M-06A	Gray/Black Pitch Pan Flashing	100%	Bitumen, Quartz, Calcite, Mica
M-06B	Gray/Black Pitch Pan Flashing	100%	Bitumen, Quartz, Calcite, Mica
M-06C	Gray/Black Pitch Pan Flashing	100%	Bitumen, Quartz, Calcite, Mica
R-01A	Black Rolled Roof Curb	100%	Bitumen, Quartz, Calcite, Mica
R-01B	Black Rolled Roof Curb	100%	Bitumen, Quartz, Calcite, Mica
R-01C	Black Rolled Roof Curb	100%	Bitumen, Quartz, Calcite, Mica
R-02A	Black Rolled Roof	100%	Bitumen, Quartz, Calcite, Mica
R-02B-QC	Black Rolled Roof	100%	Bitumen, Quartz, Calcite, Mica
R-02C	Black Rolled Roof	100%	Bitumen, Quartz, Calcite, Mica
RBU-01A	White Coating	100%	Polymer, Quartz, Calcite, Clay, Mica
RBU-01B	White Coating	100%	Polymer, Quartz, Calcite, Clay, Mica
RBU-01C	White Coating	100%	Polymer, Quartz, Calcite, Clay, Mica

Analyst / Approved Signatory:



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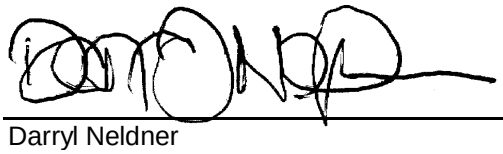
SUMMARY OF BULK SAMPLE ANALYSIS

FAA-Engineering Services; FLL ATCT & Base Building

18000-19284

Sample	Sample Type	Fiber Type	
RF-01A	Black Roof Edge Flashing	100%	Bitumen, Quartz, Calcite, Mica
RF-01B	Black Roof Edge Flashing	100%	Bitumen, Quartz, Calcite, Mica
RF-01C	Black Roof Edge Flashing	100%	Bitumen, Quartz, Calcite, Mica
RF-02A	Black Roof Vent Flashing	100%	Bitumen, Quartz, Calcite, Mica
RF-02B	Black Roof Vent Flashing	100%	Bitumen, Quartz, Calcite, Mica
RF-02C-QC	Black Roof Vent Flashing	100%	Bitumen, Quartz, Calcite, Mica

Analyst / Approved Signatory:



Darryl Neldner

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Analysis performed by GLE Associates, Inc. NVLAP Code 102003-0, CO AL-17485, TX 30-0337

Feedback regarding laboratory performance should be addressed to lab@gleassociates.com.

Report Date: 4/18/2018

CHAIN OF CUSTODY/SAMPLE TRANSMITTAL FORM

GLE Associates, Inc.
1000 NW 65th Street, Suite 300-D
Ft. Lauderdale, FL 33309
PHONE: (954) 968-6414 FAX: (954) 968-6090

CLIENT:	FAA – Engineering Services
PROJECT #:	18000-19284
PROJECT:	FLL ATCT and Base Building
LABORATORY SENT TO:	GLE
DATE:	4/17/2018

SAMPLE INFORMATION

SAMPLE #	DESCRIPTION	SAMPLE #	DESCRIPTION
M-01 ABC	White Coating w/ Black Pitch Pan Flashing	R-01 ABC	Black Rolled Roof Curb
M-02 ABC	White Caulk at Antenna	R-02 ABC	Black Rolled Roof
M-03 ABC	White PVC Roof Membrane w/ Yellow Adhesive	RBU-01 ABC	White Coating over Built Up Roof
M-04 ABC	White Roof Caulking	RF-01 ABC	Black Roof Edge Flashing
M-05 ABC	Black Caulking at Catwalk Parapet Wall	RF-02 ABC	Black Roof Vent Flashing
M-06 ABC	Gray w/ Black Pitch Pan Flashing		

IMPORTANT: TOTAL NUMBER OF SAMPLES SUBMITTED	**33**
IMPORTANT: POSITIVE STOP ANALYSIS	Yes
IMPORTANT: E-MAIL RESULTS TO	Jsimmons/elongo

NOTE:

Turnaround time starts at receipt by lab and does not include weekend or holidays.

Select Turnaround Time

☐ 3 hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☐ 3 Day ☒ 4 Day

REPORT RESULTS TO THE ADDRESS ABOVE

CHAIN OF CUSTODY: GLE ASSOCIATES, INC.	CHAIN OF CUSTODY: LABORATORY
PACKAGED BY: Brandon Christensen	SAMPLES RECEIVED BY:
DATE PACKAGED: 4/17/2018	DATE:
METHOD OF TRANSMITTAL: FEDEX	TIME:
TRANSMITTED BY: ELongo	CONDITION OF PACKAGED SAMPLES:

CHAIN OF CUSTODY: RETURNED TO GLE ASSOCIATES, INC.

RECEIVED BY:	DATE:
INVENTORIED BY:	DATE:
REPACKAGED AND SEALED BY:	DATE:

PAGE: OF

APPENDIX B
Personnel and Laboratory Certifications

RICK SCOTT, GOVERNOR

JONATHAN ZACHEM, SECRETARY

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

ASBESTOS LICENSING UNIT

THE ASBESTOS BUSINESS ORGANIZATION HEREIN IS LICENSED UNDER THE PROVISIONS OF CHAPTER 469, FLORIDA STATUTES

GLE ASSOCIATES INC

ROBERT BLAIR GREENE
5405 CYPRESS CENTER DRIVE
SUITE 110
TAMPA FL 33609

LICENSE NUMBER: ZA0000034

EXPIRATION DATE: NOVEMBER 30, 2019

Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

ASBESTOS LICENSING UNIT
2601 BLAIR STONE ROAD
TALLAHASSEE FL 32399-0783

(850) 487-1395

GREENE, ROBERT BLAIR
GLE ASSOCIATES INC
5405 CYPRESS CENTER DR
SUITE 110
TAMPA FL 33609

Congratulations! With this license you become one of the nearly one million Floridians licensed by the Department of Business and Professional Regulation. Our professionals and businesses range from architects to yacht brokers, from boxers to barbeque restaurants, and they keep Florida's economy strong.

Every day we work to improve the way we do business in order to serve you better. For information about our services, please log onto **www.myfloridalicense.com**. There you can find more information about our divisions and the regulations that impact you, subscribe to department newsletters and learn more about the Department's initiatives.

Our mission at the Department is: License Efficiently, Regulate Fairly. We constantly strive to serve you better so that you can serve your customers. Thank you for doing business in Florida, and congratulations on your new license!

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND
PROFESSIONAL REGULATION

EA0000009 ISSUED: 11/15/2016

ASBESTOS CONSULTANT - ENGINEER
GREENE, ROBERT BLAIR
GLE ASSOCIATES INC

IS LICENSED under the provisions of Ch.469 FS.
Expiration date : NOV 30, 2018 L1611150002176

DETACH HERE

RICK SCOTT, GOVERNOR KEN LAWSON, SECRETARY

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION
ASBESTOS LICENSING UNIT

LICENSE NUMBER
EA0000009

The ASBESTOS CONSULTANT - ENGINEER
Named below IS LICENSED
Under the provisions of Chapter 469 FS.
Expiration date: NOV 30, 2018

GREENE, ROBERT BLAIR
GLE ASSOCIATES INC
5405 CYPRESS CENTER DR
SUITE 110
TAMPA FL 33609

ISSUED: 11/15/2016 DISPLAY AS REQUIRED BY LAW SEQ # L1611150002176

Asbestos Consulting & Training Systems

41489.6125CERT/BIR

900 N.W. 5TH Avenue, Fort Lauderdale, Florida 33311 (954) 524-7208

This is to Certify that

Brandon Christensen

XXX-XX-4647

9110-D SW 20 ST, Davie, FL 33324

has successfully completed an English

Asbestos Building Inspection Refresher

28-Jul-17 TO 28-Jul-17

Meets state requirements of FL49-0001020/CN-0006273 and UT (6.0 core).

NDAAC Provider #451 Trainer(s): Mark Knick

TEST SCORE: 84 % Training Address: 900 NW 5th Ave, Fort Lauderdale, FL 33311

Successful course completion based on exam score on: 07/28/17

This Certificate Expires:

28-Jul-18 07/28/18

Processed By:

Seagull

To Authenticate Certificate
www.seagulltraining.com
1-800-966-9933

UNDER CIVIL AND CRIMINAL PENALTIES OF LAW FOR MAKING OR SUBMISSION OF FALSE OR FRAUDULENT STATEMENTS OR REPRESENTATIONS (18 U.S.C. 1001 AND 15 U.S.C. 2615), I CERTIFY THAT THIS TRAINING COMPLIES WITH ALL APPLICABLE REQUIREMENTS OF TITLE IV OF THE TOXIC SUBSTANCES CONTROL ACT AND 40 CFR PART 745 OR ANY OTHER APPLICABLE FEDERAL, STATE, OR LOCAL REQUIREMENTS.

James F. Stump, Course Sponsor

Certificate Number: 172856

Course Number: SE1730

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 102003-0

GLE Associates, Inc.

Tampa, FL

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2018-04-01 through 2019-03-31

Effective Dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

For the National Voluntary Laboratory Accreditation Program

NVLAP® National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

GLE Associates, Inc.
5405 Cypress Center Drive
Suite 110
Tampa, FL 33609
Mr. Darryl S. Neldner
Phone: 813-241-8350 x247 Fax: 813-241-8737
Email: dneldner@gleassociates.com
http://www.gleassociates.com

ASBESTOS FIBER ANALYSIS — NVLAP LAB CODE 102003-0

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

For the National Voluntary Laboratory Accreditation Program