US Army Corps
of Engineers
Savannah District

Fort Stewart
Georgia

Solicitation Number
W912HN-04-R-0034
Barracks Complex
FY-04/05, Line Item 51124/60408
Volume II of III – Asbestos Surveys
July 2004

PHASE TWO OF TWO PHASE DESIGN/BUILD

THIS SOLICITATION IS UNRESTRICTED PURSUANT TO THE "BUSINESS OPPORTUNITY DEVELOPMENT REFORM ACT OF 1988" (PUBLIC LAW 100-656)

U.S. ARMY ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
100 WEST OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3640

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6502 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6502 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6502 at Ft. Stewart; Georgia conducted on 13 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6502 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6502 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Apartment units 12 and 13 were inaccessible at time of inspection. Materials within these units are assumed similar to those in the inspected units. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2=second floor, E= exterior, R=roof) followed by the numerical sample number. An arbitrary example is 6504-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6502 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the

floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6502 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous

materials at Building No. 6502 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains or is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain positive amounts of

asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6502

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6502-16-1-1	**12” X 12” white/tan/brown floor tile**	**Kitchen, single layer over concrete**	**Tile 2% chrysotile, mastic 10% chrysotile**
6502-11-1-2	**Sheet vinyl flooring**	**Kitchen, center layer of 3**	**15% chrysotile**
6502-14-2-3	Felt paper	Bedroom, between hardwood flooring and sub-floor	None
6502-14-2-4	Felt paper	Second floor hallway, between hardwood flooring and sub-floor	None
6502-14-R-5	Flashing cement	Store room roof, under rolled roofing at brick wall	None
6502-14-R-6	Caulking compound	Store room roof, at top of metal flashing at brick wall	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6502

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-1, 1-2	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6502

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 2-15%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

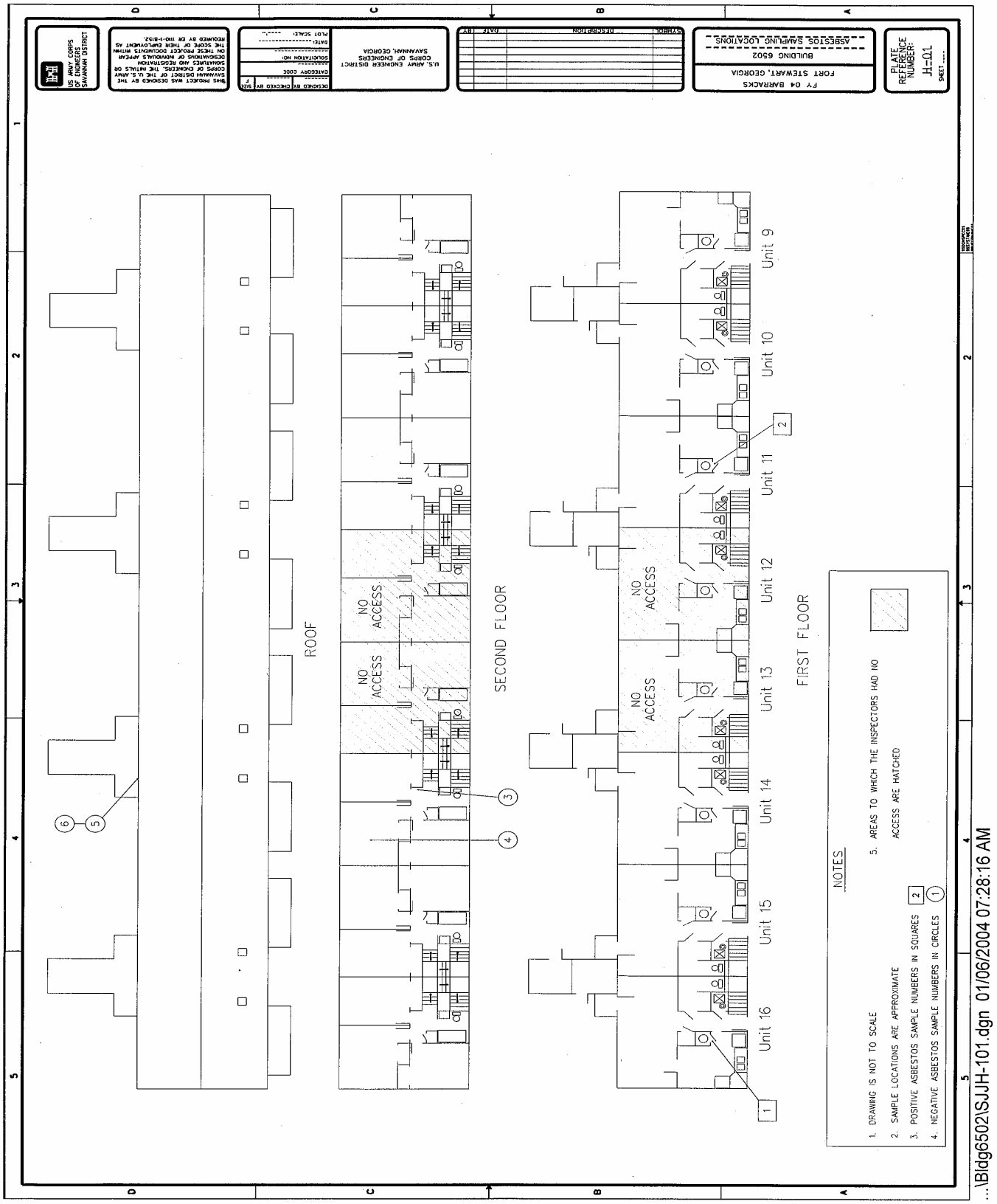
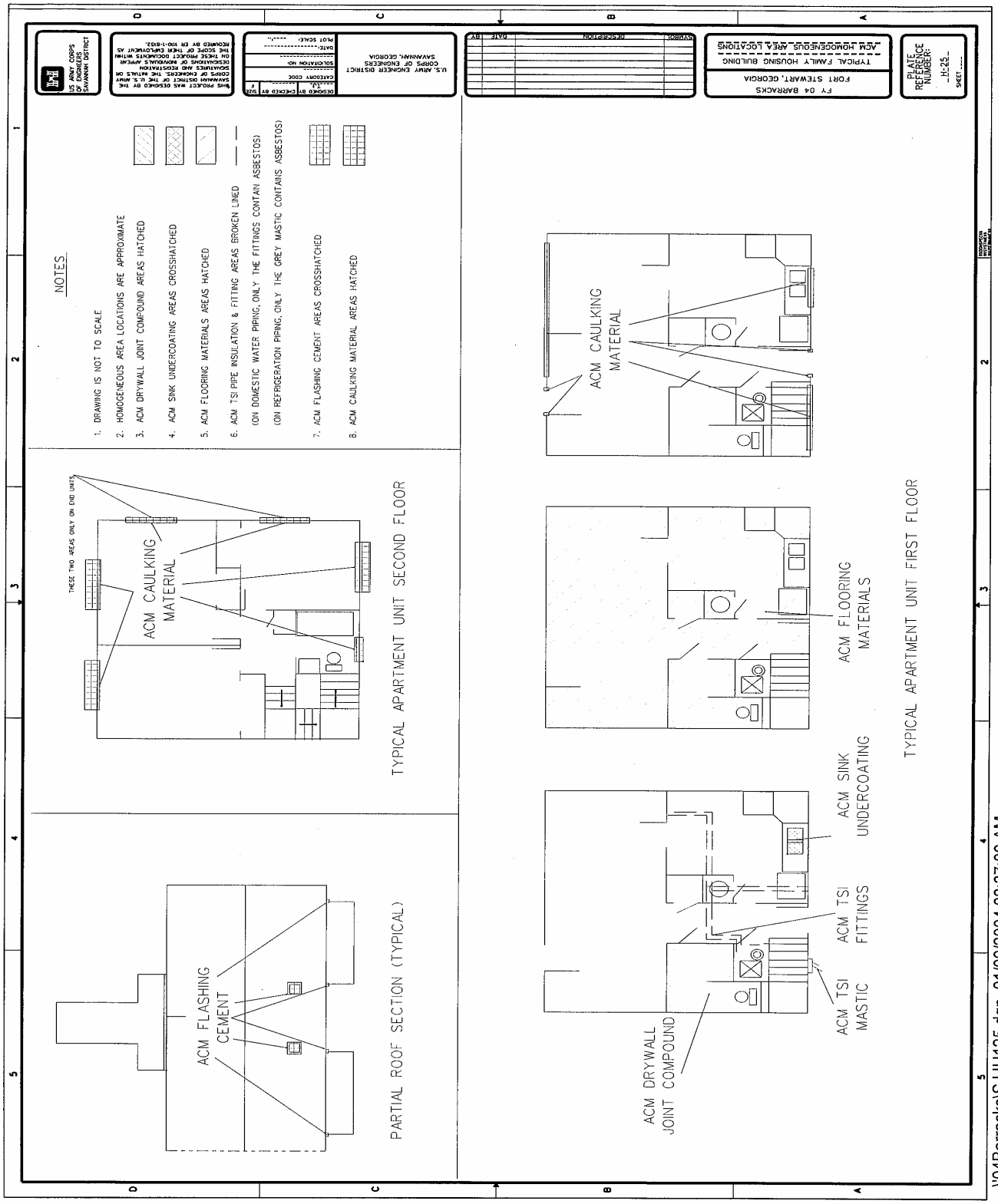

ROOF
SECOND FLOOR
FIRST FLOOR
NO ACCESS
NO ACCESS
NO ACCESS
NO ACCESS
Unit 9
Unit 10
Unit 11
Unit 12
Unit 13
Unit 14
Unit 15
Unit 16
1
2
3
4
5
6
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES 2
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES 1
5. AREAS TO WHICH THE INSPECTORS HAD NO ACCESS ARE HATCHED
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6502
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER:
H-01
...\Bldg6502\SJJH-101.dgn 01/06/2004 07:28:16 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE CORPS OF ENGINEERS, THE MAILS OR SAVANNAH DISTRICT OF THE U.S. ARMY DESIGNATIONS OF INDIVIDUAL APPLIAN SOURCES AND RESTRICTION THE SCOPE OF THEIR EMPLOYMENT AS ON THESE PROJECT DOCUMENTS WITHIN RECEIVED BY CR 310-1-6152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
DESIGNED BY CHECKED BY
CATEGORY CODE
SOLICITATION NO:
DATE:
PLOT SCALE:
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER:
H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:

Hygeia Project Number: A0311054
Client Project Number/Name: 7934 /Fort Stewart - Building 6502

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/14/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0311054
Client Project Number/Name: 7934 / Fort Stewart - Building 6502

Analyzed: 11/17/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6502-16-1-1	A0311054-01	Gray	Cons.	No	2%								98%	

Comment: **Tile: 2%; Mastic: 10% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6502-11-1-2	A0311054-02	Gray	Fibrous	Yes	15%					10%			75%	

Comment: **Not Enough Mastic to Analyze Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6502-14-2-3	A0311054-03	Black	Gummy	Yes						60%			40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6502-14-2-4	A0311054-04	Black	Gummy	Yes						60%			40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6502-14-R-5	A0311054-05	Black	Gummy	Yes						20%			80%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311054
Client Project Number/Name: 7934 / Fort Stewart - Building 6502

Analyzed: 11/17/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6502-14-R-6	A0311054-06	Gray	Rubbery	Yes									100%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6502**	Job No.:	**7934**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/13/2003	6502-16-1-1	47062	FLOOR TILE
11/13/2003	6502-11-1-2	47063	SHEET VINYL FLOORING
11/13/2003	6502-14-2-3	47064	FELT PAPER
11/13/2003	6502-14-2-4	47065	FELT PAPER
11/13/2003	6502-14-R-5	47066	FLASHING CEMENT
11/13/2003	6502-14-R-6	47067	CAULKING COMPOUND

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-14-03	1630	C. Cell	11/14/03	16:30

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6503 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

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Savannah District

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Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6503 at Ft. Stewart; Georgia conducted on 6-12 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6503 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6503 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Apartment units 42, 46 and 48 were inaccessible at time of inspection. Materials within these units are assumed similar to those in the inspected units. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2=second floor, E= exterior, R=roof) followed by the numerical sample number. An arbitrary example is 6504-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6503 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the

floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6503 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. Black sticky tape insulation on the refrigeration suction line at the air conditioning evaporator coil in Unit 50 contains asbestos. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to

increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6503 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains or is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. In all units inspected, plywood covered with carpet has been installed over the older flooring materials in the first floor hallway, storage closet and living room. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles contains asbestos. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs contains asbestos. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain positive amounts of

asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6503

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6503-50-1-1	**Yellow sheet vinyl flooring**	**Room 101, upper layer**	**10% chrysotile**
6503-50-1-2	Black mastic on concrete sub-floor	Room 101, lower layer	None
6503-50-1-3	**TSI-black sticky tape insulation**	**Mechanical Closet, On AC suction line at evaporator coil**	**7% chrysotile**
6503-50-1-4	Grey terrazzo pattern sheet vinyl flooring	First floor, Restroom, upper layer	None
6503-50-1-5	**Tan terrazzo pattern sheet vinyl flooring**	**First floor, Restroom, center flooring layer**	**20% chrysotile**
6503-50-1-6	**Brown 9” X 9” floor tile**	**First floor, Restroom, lower flooring layer**	**Tile 7% chrysotile, mastic 5% chrysotile**
6503-50-1-7	Drywall joint compound	First floor, Restroom, applied to joints in walls and ceiling	<1% chrysotile
6503-56-1-8	**Tan 9” X 9” floor tile**	**Kitchen**	**Tile 7% chrysotile, mastic 2% chrysotile**
6503-56-1-9	Black mastic	Stairwell, applied to underside of stair treads	None
6503-52-1-10	Grey terrazzo pattern sheet vinyl flooring	Kitchen, upper layer flooring	None
6503-52-1-11	**Yellow terrazzo pattern sheet vinyl flooring**	**Kitchen, center layer flooring**	**40% Chrysotile**
6503-54-1-12	Grey terrazzo pattern sheet vinyl flooring	Kitchen, upper layer flooring	None
6503-54-1-13	**Tan terrazzo pattern sheet vinyl flooring**	**Kitchen, center layer flooring**	**30% Chrysotile**
6503-56-R-14	Rolled roofing & joint sealer	Storage shed roof	None
6503-56-1-15	**Flashing cement**	**On electrical conduit at brick wall above storage shed roof**	**8% Chrysotile**
6503-54-R-16	Brown roof shingle	Main roof field	None
6503-54-R-17	Roofing felt	Main roof field, under shingles	None
6503-54-R-18	**Flashing cement**	**At furnace flue at roofline**	**20% Chrysotile**

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6503

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-1, 1-5 1-6, 1-8 1-11, 1-13	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	R-15, R-18						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, black sticky tape	L.F.	1-3					2			2
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6503

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 2-40%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Yes 8-20%	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Pipe Run Insulation, Black Sticky Tape	Yes 7%	2 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

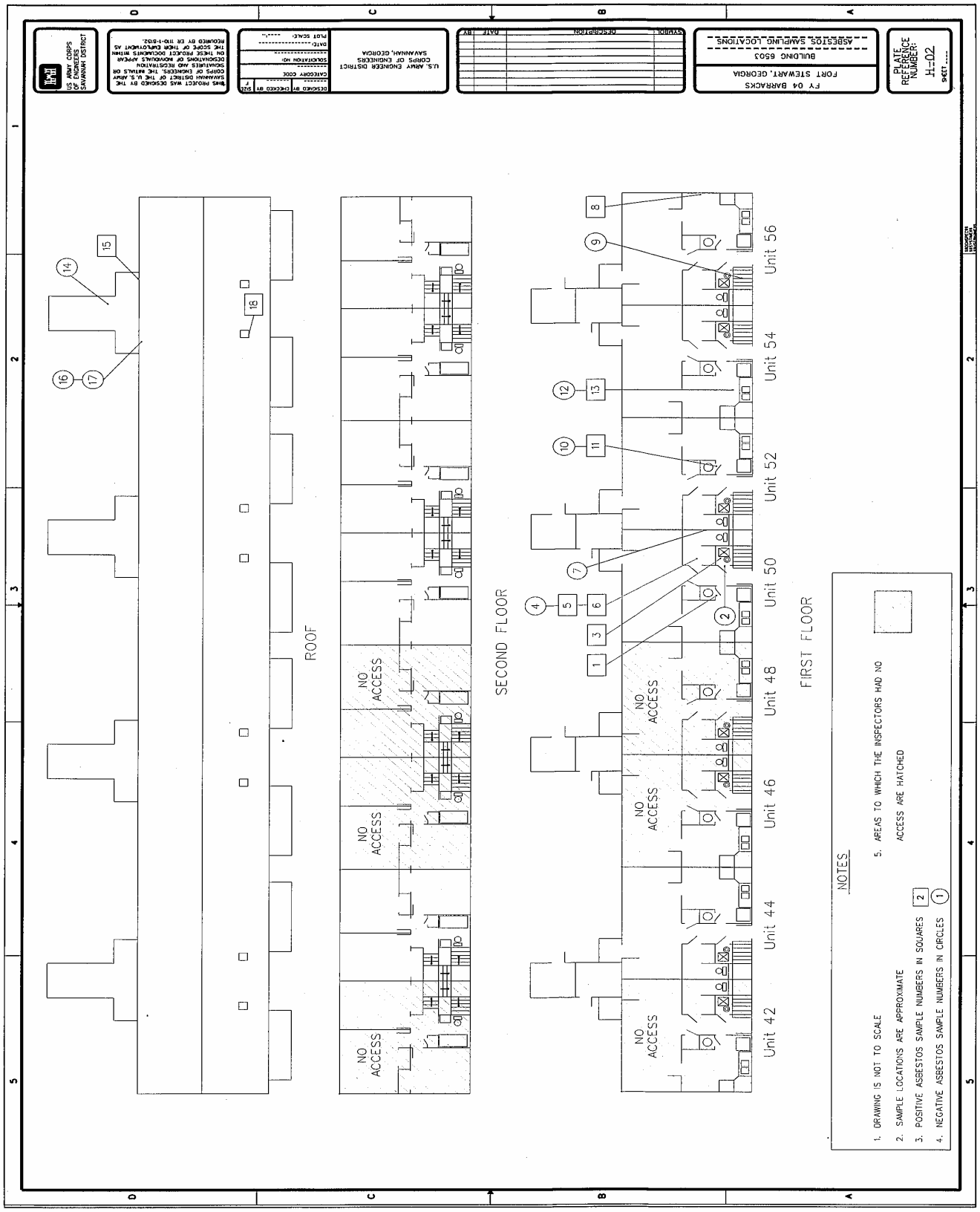
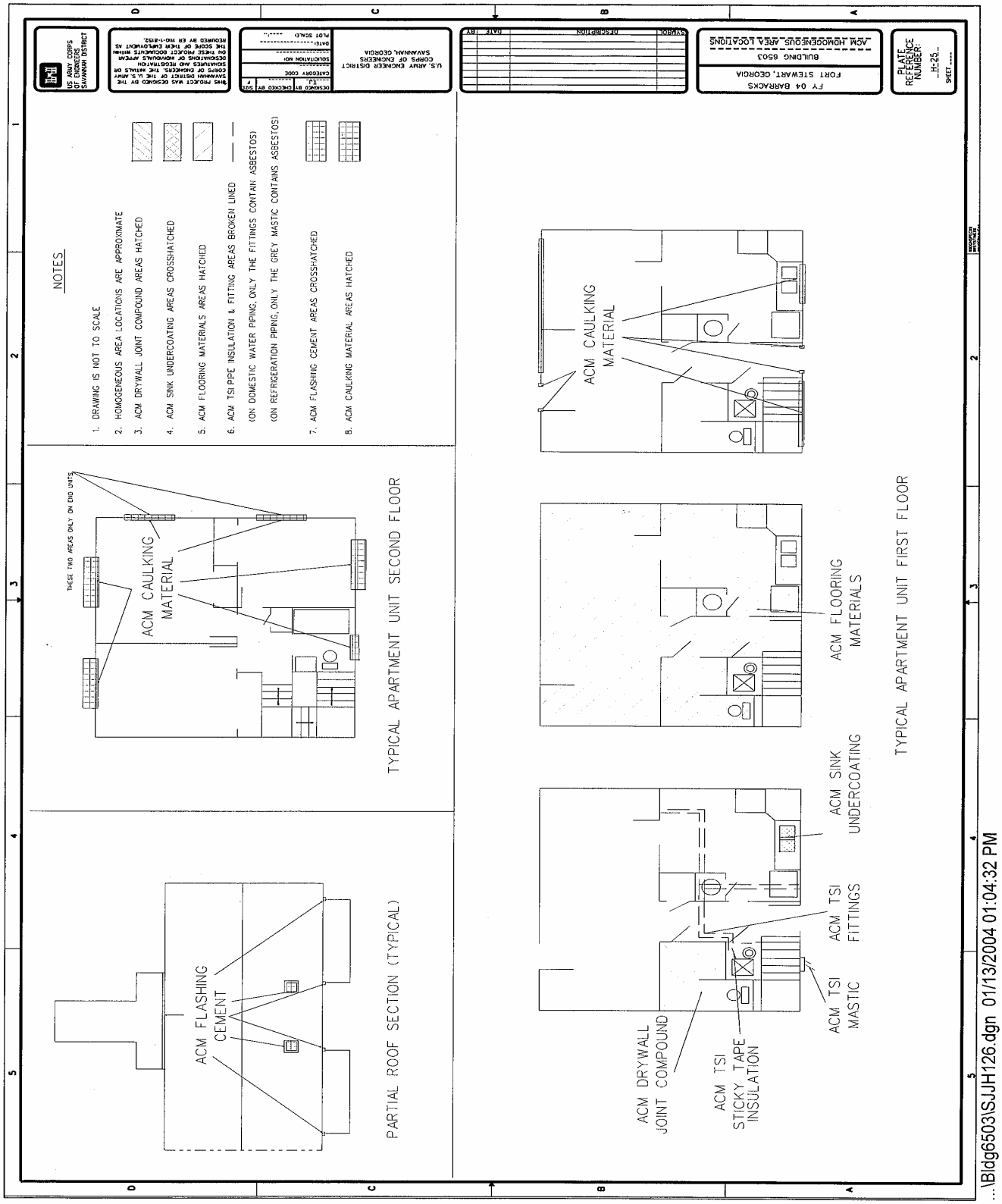

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6503
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER: H-02
ROOF
SECOND FLOOR
FIRST FLOOR
NO ACCESS
Unit 42
Unit 44
Unit 46
Unit 48
Unit 50
Unit 52
Unit 54
Unit 56
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
5. AREAS TO WHICH THE INSPECTORS HAD NO ACCESS ARE HATCHED
...\Bldg6503\SJJH-102.dgn 01/06/2004 07:29:05 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE U.S. ARMY SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 415-1-832.
DESIGNED BY
DRAWN BY
CATEGORY CODE
SOLICITATION NO.
DATE
PLOT SCALE
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA
SYMBOL
DESCRIPTION
DATE
BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6503
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER:
H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
ACM TSI STICKY TAPE INSULATION
TYPICAL APARTMENT UNIT FIRST FLOOR
...\Bldg6503\SJJH126.dgn 01/13/2004 01:04:32 PM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0311053
Client Project Number/Name: 7935 /Fort Stewart - Building 6503

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/14/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0311053
Client Project Number/Name: 7935 / Fort Stewart - Building 6503

Analyzed: 11/17/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-50-1-1	A0311053-01	Brown	Cons.	Yes	10%					30%			60%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-50-1-2	A0311053-02	Brown	Cons.	Yes						30%			70%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-50-1-3	A0311053-03	Brown	Cons.	Yes	7%								93%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-50-1-4	A0311053-04	Brown	Cons.	Yes						40%	20%		40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-50-1-5	A0311053-05	Brown	Cons.	Yes	20%					40%	20%		20%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311053 **Page:** 2 of 4
Client Project Number/Name: 7935 / Fort Stewart - Building 6503 **Analyzed:** 11/17/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-50-1-6	A0311053-06	Brown	Cons.	Yes	7%								93%	

Comment: **Tile: 7% Chrysotile; Mastic: 5% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-50-1-7	A0311053-07	Brown	Cons.	Yes	<1%					10%			90%	

Comment: **Joint Compound: <1% Chrysotile; Rest: NAD Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-56-1-8	A0311053-08	Brown	Cons.	Yes	7%								93%	

Comment: **Tile: 7% Chrysotile; Mastic: 2% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-56-1-9	A0311053-09	Brown	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-52-1-10	A0311053-10	Brown	Cons.	Yes						70%			30%	

Comment: **Linoleum & Mastic: NAD No Asbestos Detected.**

Hygeia Project Number: A0311053 **Page:** 3 of 4

Client Project Number/Name: 7935 / Fort Stewart - Building 6503 **Analyzed:** 11/17/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-52-1-11	A0311053-11	Brown	Cons.	Yes	40%								60%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-54-1-12	A0311053-12	Brown	Cons.	Yes						40%	20%		40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-54-1-13	A0311053-13	Brown	Cons.	Yes	30%					10%			60%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-56-R-14	A0311053-14	Black	Cons.	Yes						40%			60%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-56-R-15	A0311053-15	Black	Cons.	Yes	8%					12%			80%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311053
Client Project Number/Name: 7935 / Fort Stewart - Building 6503

Analyzed: 11/17/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-54-R-16	A0311053-16	Brown	Cons.	Yes						30%	10%		60%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-54-R-17	A0311053-17	Brown	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6503-54-R-18	A0311053-18	Brown	Cons.	Yes	20%					10%			70%	

Comment: **Did not analyze.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6503**	Job No.:	**7935**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/6/2003	6503-50-1-1	47068	SHEET VINYL FLOORING
11/6/2003	6503-50-1-2	47069	MASTIC
11/6/2003	6503-50-1-3	47070	TSI BLACK STICKY WRAP
11/6/2003	6503-50-1-4	47071	SHEET VINYL FLOORING
11/6/2003	6503-50-1-5	47072	SHEET VINYL FLOORING
11/6/2003	6503-50-1-6	47073	FLOOR TILE
11/6/2003	6503-50-1-7	47074	DRYWALL JOINT COMPOUND
11/6/2003	6503-56-1-8	47075	FLOOR TILE
11/6/2003	6503-56-1-9	47076	MASTIC
11/12/2003	6503-52-1-10	47077	SHEET VINYL FLOORING
11/12/2003	6503-52-1-11	47078	SHEET VINYL FLOORING
11/12/2003	6503-54-1-12	47079	SHEET VINYL FLOORING
11/12/2003	6503-54-1-13	47080	SHEET VINYL FLOORING
11/12/2003	6503-56-R-14	47081	ROLLED ROOFING & SEALER
11/12/2003	6503-56-R-15	47082	FLASHING CEMENT
11/12/2003	6503-54-R-16	47083	ROOF SHINGLE
11/12/2003	6503-54-R-17	47084	ROOF FELT
11/12/2003	6503-54-R-18	47085	FLASHING CEMENT

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11/24/03	16:00	C. Gee	11/24/03	

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003	7644
Course Date	Certificate Number
January 29, 2003	
Examination Date	
January 28, 2004	
Expiration Date	

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6504 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6504 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6504 at Ft. Stewart; Georgia conducted on 13-18 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6504 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6504 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2=second floor, E= exterior, R=roof) followed by the numerical sample number. An arbitrary example is 6504-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6504 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the

floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6504 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers contains asbestos. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 1, 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6504 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and

obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains or is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings Contains asbestos. - (Refer to Tables 1, 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain positive amounts of asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6504

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6504-CPR-1	Built-up roofing	Car port roof	None
6504-17-E-2	**Flashing cement**	**Exterior, applied to brick wall near vertical sides of front awning**	**15% chrysotile**
6504-17-E-3	**TSI, cloth & grey mastic**	**Exterior, applied to refrigeration and water piping at waste heat exchanger**	**25% chrysotile**
6504-17-E-4	TSI, white mastic	Exterior, applied to refrigeration and water piping at waste heat exchanger	None
6504-18-1-5	Mastic	Stairwell, between rubber stair tread and wood stair step	None
6504-17-1-6	**Tan/brown sheet vinyl flooring**	**First floor restroom**	**40% chrysotile**
6504-18-R-7	Flashing cement	Between brick wall and rolled roofing at store room roof	None
6504-17-R-8	Roof shingle	Main roof field	None
6504-17-R-9	Roofing felt	Main roof field	None
6504-17-R-10	Flashing cement	AT furnace flue junction with roof shingles	None
6504-17-R-11	Flashing cement	AT furnace flue junction with roof shingles, older layer	None
6504-21-1-12	**Tan floor tile**	**Kitchen, under sheet vinyl flooring**	**Tile 4% chrysotile, mastic 7% chrysotile**
6504-21-1-13	Mastic	Stairwell, between rubber stair tread and wood stair step	None
6504-20-1-14	Grey floor tile	First floor hallway, below carpet	None
6504-24-1-15	Caulking compound	First floor hallway, at base molding to wall joint	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6504

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-6, 1-12	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	E-2						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	E-3							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6504

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 4-40%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Yes 15%	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Yes 25%	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

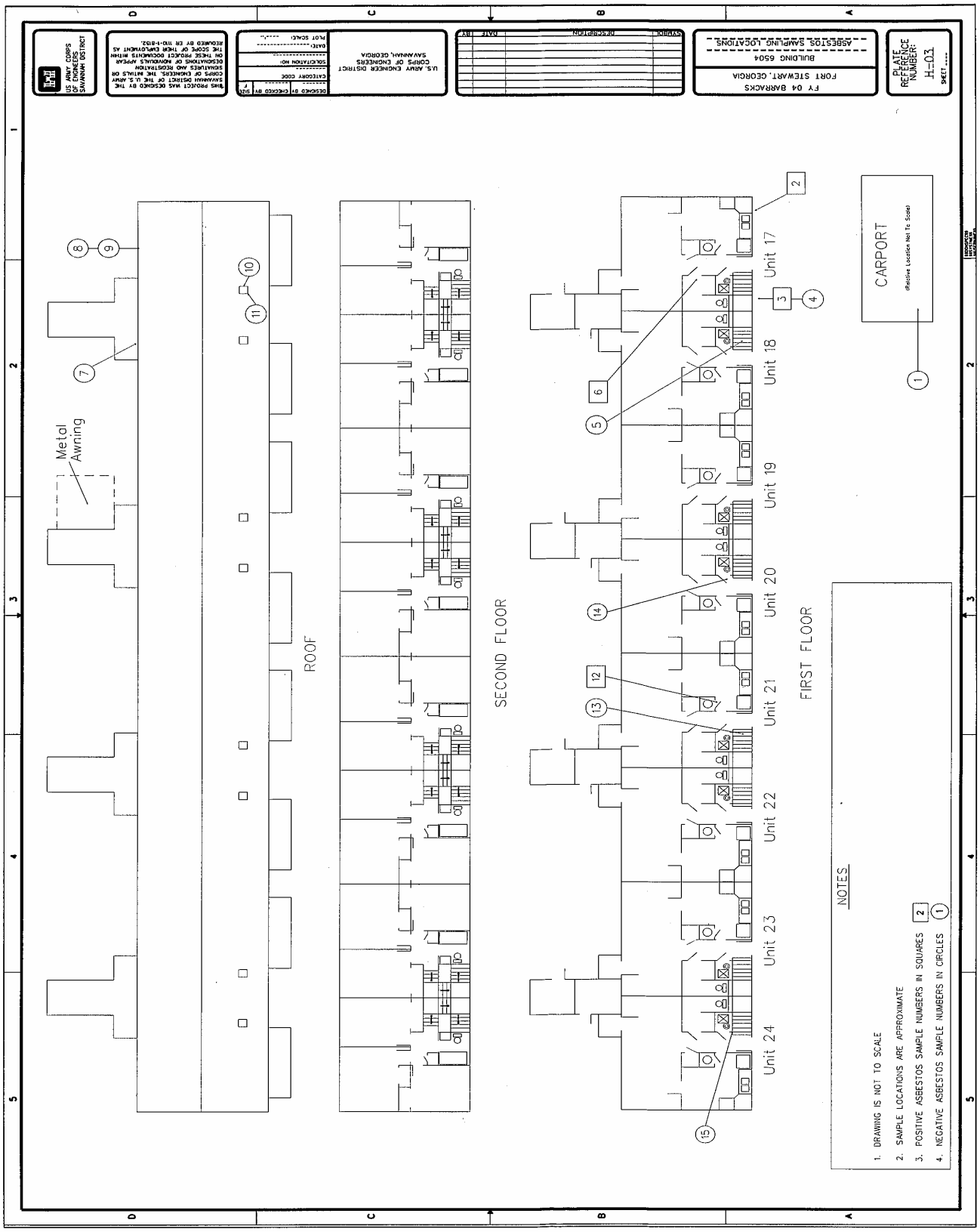
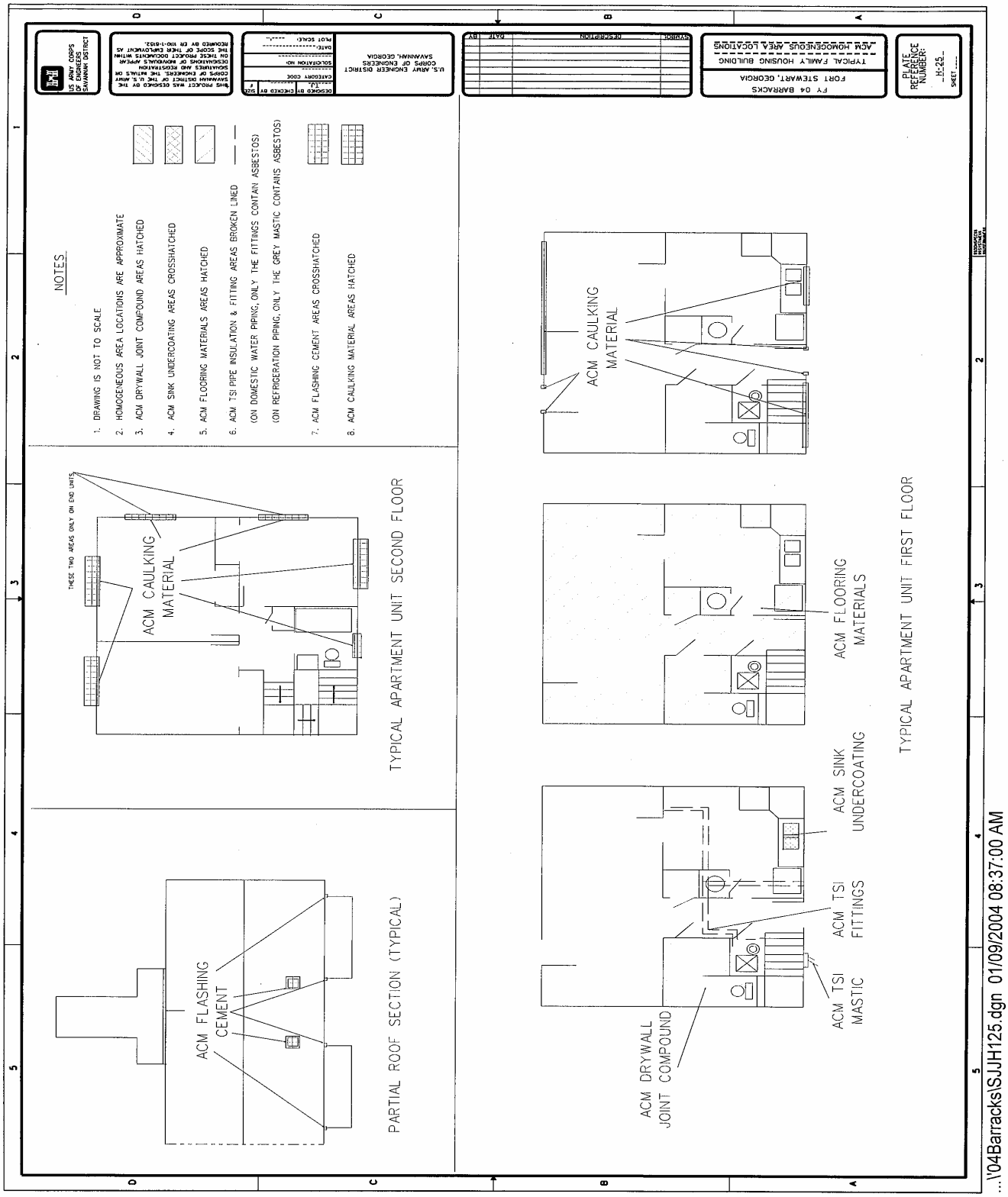

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6504
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER: H-03
Metal Awning
ROOF
SECOND FLOOR
FIRST FLOOR
Unit 17
Unit 18
Unit 19
Unit 20
Unit 21
Unit 22
Unit 23
Unit 24
CARPORT
(Relative Location Not To Scale)
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
...\Bldg6504\SJJH-103.dgn 01/06/2004 07:29:42 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE U.S. ARMY CORPS OF ENGINEERS, THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS NAMED ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY CR 110-1-8152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0312007
Client Project Number/Name: 7946 /Fort Stewart - Building 6504

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/24/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0312007
Client Project Number/Name: 7946 / Fort Stewart - Building 6504

Analyzed: 11/25/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-CPR-1	A0312007-01	Black	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-17-E-2	A0312007-02	Black	Cons.	Yes	15%								85%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-17-E-3	A0312007-03	Brown	Cons.	Yes	25%							30%	45%	

Comment: **Other Fibers: Synthetic Fibers Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-17-E-4	A0312007-04	Brown	Cons.	Yes								40%	60%	

Comment: **Other Fibers: Synthetic Fibers No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-18-1-5	A0312007-05	Brown	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0312007
Client Project Number/Name: 7946 / Fort Stewart - Building 6504

Analyzed: 11/25/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-17-1-6	A0312007-06	Brown	Cons.	Yes	40%					10%			50%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-18-R-7	A0312007-07	Brown	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-17-R-8	A0312007-08	Brown	Cons.	Yes						10%			90%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-17-R-9	A0312007-09	Brown	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-17-R-10	A0312007-10	Black	Cons.	Yes						30%			70%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0312007
Client Project Number/Name: 7946 / Fort Stewart - Building 6504

Analyzed: 11/25/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-17-R-11	A0312007-11	Brown	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-21-1-12	A0312007-12	Brown	Cons.	Yes	4%								96%	

Comment: **Tile: 4% Chrysotile. Mastic: 7% Chrysotile. Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-21-1-13	A0312007-13	Brown	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-20-1-14	A0312007-14	Brown	Cons.	Yes									100%	

Comment: **Tile: NAD; Mastic: Not Enough to Analyze No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6504-24-1-15	A0312007-15	Cream	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile	cell = cellulose	per = perlite	OF = Other Fibers
Am. = amosite	glass = fibrous glass	ver = vermiculite	ONF = Other Non-Fibers
Cro. = crocidolite	syn = synthetic	MF = Mineral filler	Cons = Consolidated
An. = anthophyllite	sty = styrene foam	B/F = Binder / filler	
T/A = tremolite/actinolite	det = detected	**NAD = No asbestos detected**	

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6504**	Job No.:	**7946**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/13/2003	6504-CPR-1	47198	BUILT-UP ROOFING
11/13/2003	6504-17-E-2	47199	FLASHING CEMENT
11/13/2003	6504-17-E-3	47200	TSI CLOTH & MASTIC
11/13/2003	6504-17-E-4	47201	TSI WHITE MASTIC
11/13/2003	6504-18-1-5	47202	MASTIC
11/13/2003	6504-17-1-6	47203	SHEET VINYL FLOORING
11/13/2003	6504-18-R-7	47204	FLASHING CEMENT
11/13/2003	6504-17-R-8	47205	ROOF SHINGLE
11/13/2003	6504-17-R-9	47206	ROOFING FELT
11/13/2003	6504-17-R-10	47207	FLASHING CEMENT
11/13/2003	6504-17-R-11	47208	FLASHING CEMENT
11/13/2003	6504-21-1-12	47209	FLASHING CEMENT
11/13/2003	6504-21-1-13	47210	MASTIC
11/13/2003	6504-20-1-14	47211	FLASHING CEMENT
11/13/2003	6504-24-1-15	47212	CAULKING COMPOUND

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-24-03	1600	[illegible]	11-24-03	

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6505 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6505 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6505 at Ft. Stewart; Georgia conducted on 5-12 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6505 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed between Units 30 & 32 has been removed. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6505 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Apartment units 32 and 36 were inaccessible at time of inspection. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2=second floor, E= exterior, R=roof) followed by the numerical sample number. An arbitrary example is 6504-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6505 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations

of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6505 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping contain asbestos. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 1, 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6505 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains or is assumed to contain asbestos. This mastic may also be found

adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain positive amounts of asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink contains asbestos. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 1, 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6505

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6505-26-1-1	**TSI, pipe elbow**	**Mechanical closet, domestic water piping**	**10% chrysotile**
6505-26-1-2	Sheet vinyl flooring	Kitchen, upper layer	**None**
6505-26-1-3	Sheet vinyl flooring	Kitchen, second layer	None
6505-26-1-4	**Sheet vinyl flooring**	**Kitchen, third layer**	**40% chrysotile**
6505-26-1-5	**Floor tile**	**Kitchen, fourth layer**	**7% chrysotile in tile, 4% chrysotile in mastic**
6505-26-1-6	**Sink under coating**	**Kitchen sink**	**7% chrysotile**
6505-26-2-7	Felt paper	Second floor, applied to wood wall studs behind tile and plaster in restroom	None
6505-26-1-8	Sheet vinyl flooring	First floor restroom, upper layer	None
6505-26-1-9	Sheet vinyl flooring	First floor restroom, second layer	None
6505-26-1-10	**Sheet vinyl flooring**	**First floor restroom, third layer**	**50% chrysotile**
6505-26-1-11	**Floor tile**	**First floor restroom, fourth layer**	**7% chrysotile**
6505-28-1-12	**Sheet vinyl flooring**	**First floor restroom, upper layer**	**30% chrysotile**
6505-28-1-13	Floor tile	First floor entry hall	None
6505-28-1-14	**Floor tile**	**Kitchen, upper layer**	**2% chrysotile in tile, 5% chrysotile in mastic**
6505-28-1-15	**Floor tile**	**Kitchen, lower layer**	**7% chrysotile in tile, 5% chrysotile in mastic**
6505-28-1-16	Floor tile	Kitchen, patch tile	None
6505-28-1-17	Wall plaster	Mechanical closet wall	None
6505-30-1-18	**Mastic**	**Entry hall, applied to concrete**	**5% chrysotile**
6505-30-1-19	**Sheet vinyl flooring**	**Kitchen, upper layer**	**30% chrysotile**
6505-CPR-20	Built-up roofing	Carport roof	None
6505-30-E-21	Flashing cement	Applied to brick wall where the one storage shed is missing	None
6505-28-R-22	Rolled roofing & sealer	Storage shed roof	None
6505-26-R-23	Roof shingle	Main roof field	None
6505-26-R-24	Roofing felt	Main roof field	None

6505-26-R-25	Flashing cement	Around furnace flue at roof shingles	None
6505-38-E-26	Caulking material	On storage shed, between fascia board and soffit	None
6505-40-1-27	Sheet vinyl flooring	Kitchen, upper layer	None
6505-38-1-28	Drywall joint compound	Kitchen wall, at washing machine service box	None
6505-38-1-29	**Sheet vinyl flooring**	**Kitchen, upper layer**	**40% chrysotile**

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6505

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-4, 1-5 1-10, 1-11, 1-12, 1-14, 1-15, 1-18, 1-19, 1-29	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	1-6	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	1-1	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6505

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 2-50%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Yes, 7%	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Yes, 10%	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

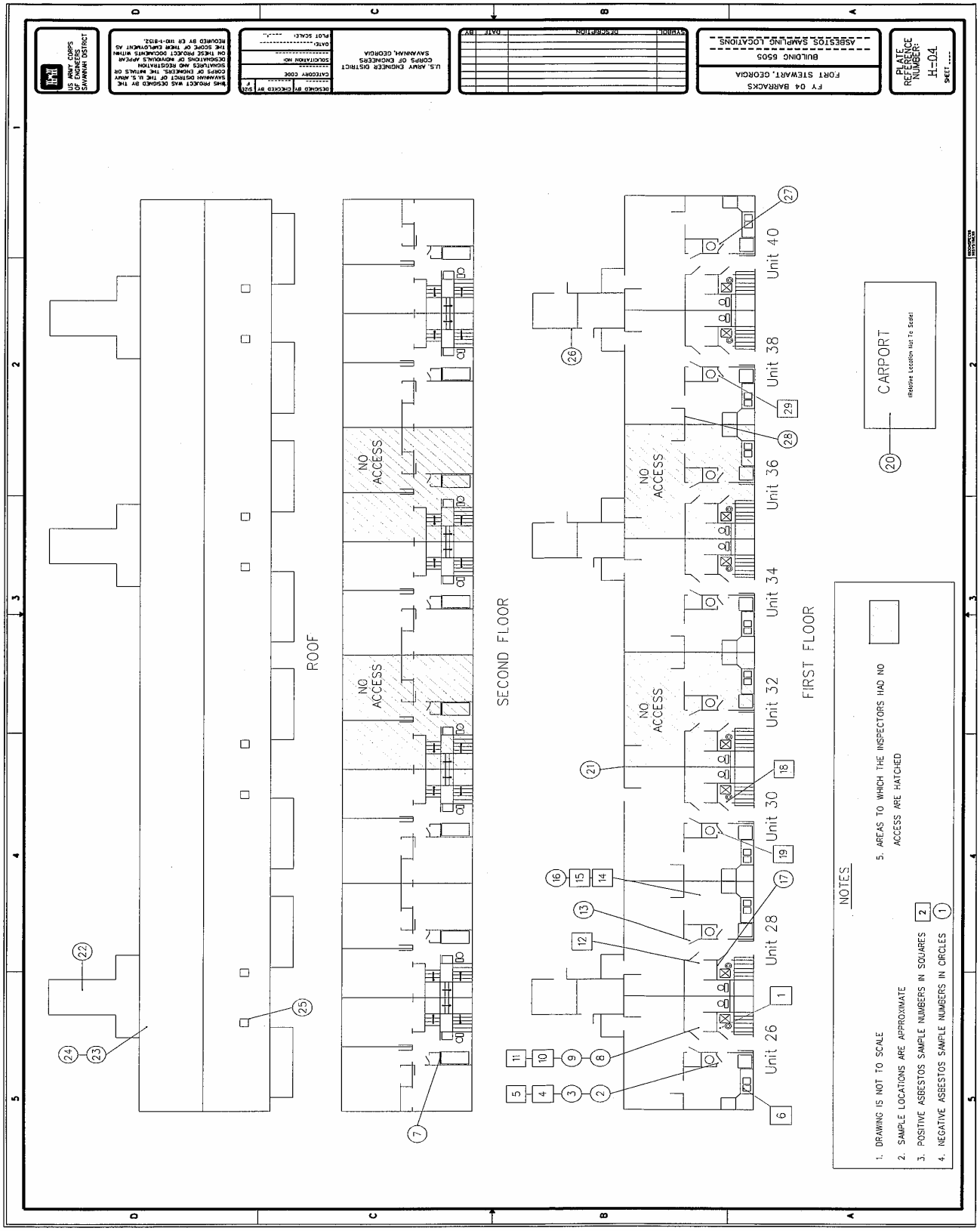
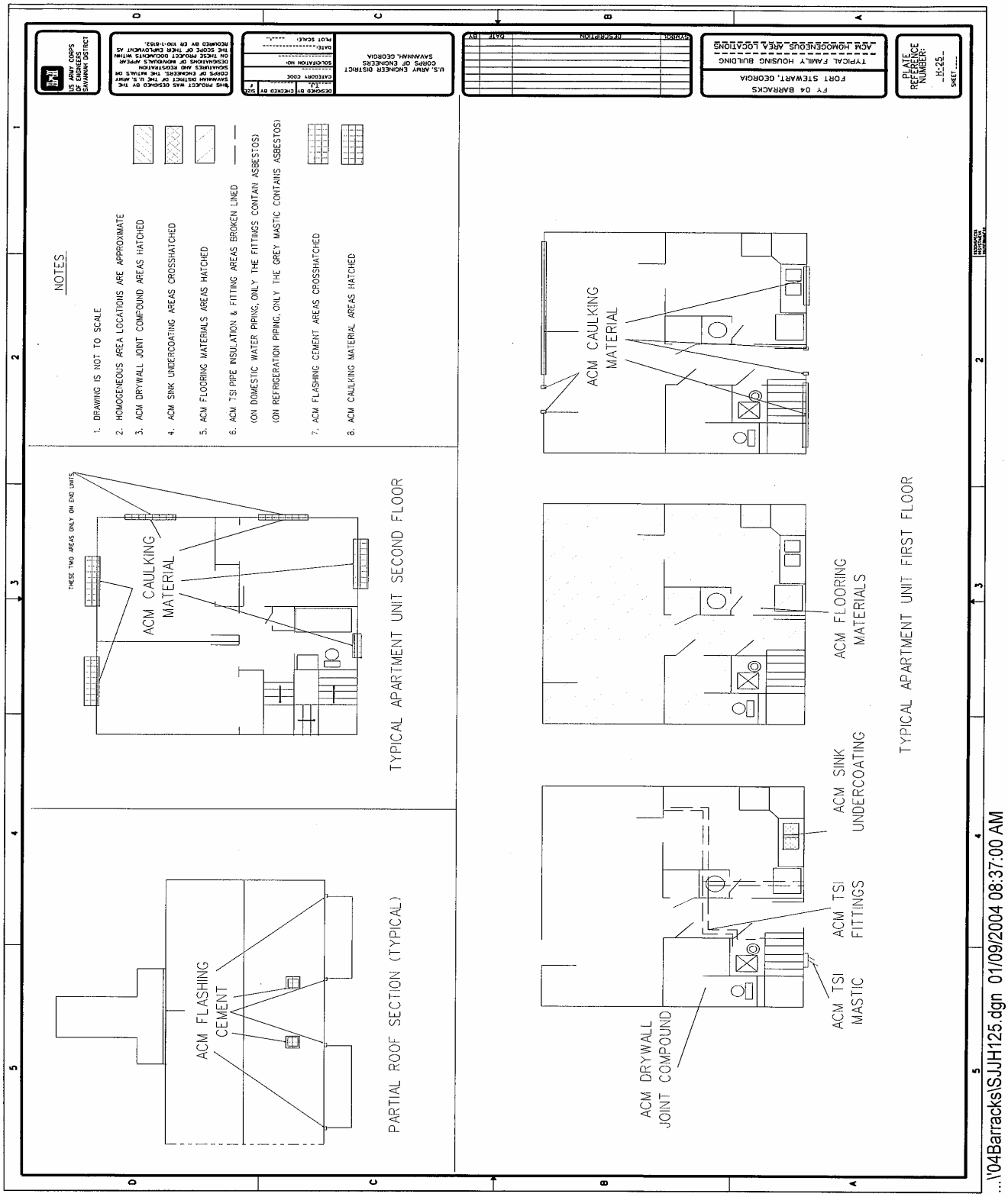

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6505
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER: H-04
ROOF
SECOND FLOOR
FIRST FLOOR
NO ACCESS
Unit 26
Unit 28
Unit 30
Unit 32
Unit 34
Unit 36
Unit 38
Unit 40
CARPORT
(Relative Location Not To Scale)
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
5. AREAS TO WHICH THE INSPECTORS HAD NO ACCESS ARE HATCHED
...\Bldg6505\SJJH-104.dgn 01/06/2004 07:30:34 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE U.S. ARMY CORPS OF ENGINEERS, THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS RECORDED BY CR 110-1-8152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:

Hygeia Project Number: A0311050
Client Project Number/Name: 7936 /Fort Stewart - Building 6505

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/14/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0311050

Client Project Number/Name: 7936 / Fort Stewart - Building 6505

Analyzed: 11/18/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-26-1-1	A0311050-01	Brown	Cons.	Yes	10%					5%	30%		55%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-26-1-2	A0311050-02	Brown	Cons.	Yes						40%	20%		40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-26-1-3	A0311050-03	Brown	Cons.	Yes						40%	20%		40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-26-1-4	A0311050-04	Brown	Cons.	Yes	40%								60%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-26-1-5	A0311050-05	Brown	Cons.	Yes	7%								93%	

Comment: **Tile: 7% Chrysotile; Mastic: 4% Chrysotile Asbestos Detected.**

Hygeia Project Number: A0311050 **Page:** 2 of 6
Client Project Number/Name: 7936 / Fort Stewart - Building 6505 **Analyzed:** 11/18/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-26-1-6	A0311050-06	Black	Powdery	Yes	7%								93%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-26-2-7	A0311050-07	Black	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-26-1-8	A0311050-08	Brown	Cons.	Yes						40%	20%		40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-26-1-9	A0311050-09	Brown	Cons.	Yes						40%	20%		40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-26-1-10	A0311050-10	Brown	Cons.	Yes	50%					10%			40%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311050 **Page:** 3 of 6
Client Project Number/Name: 7936 / Fort Stewart - Building 6505 **Analyzed:** 11/18/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-26-1-11	A0311050-11	Brown	Cons.	Yes	7%								93%	

Comment: **Tile: 7% Chrysotile; Mastic: Not Enough to Analyze Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-28-1-12	A0311050-12	Brown	Cons.	Yes	30%					10%			60%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-28-1-13	A0311050-13	White	Cons.	Yes									100%	

Comment: **Tile & Mastic: NAD No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-28-1-14	A0311050-14	White	Cons.	Yes	2%								98%	

Comment: **Tile: 2% Chrysotile; Mastic: 5% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-28-1-15	A0311050-15	White	Cons.	Yes	7%								93%	

Comment: **Tile: 7% Chrysotile; Mastic: 5% Chrysotile Asbestos Detected.**

Hygeia Project Number: A0311050
Client Project Number/Name: 7936 / Fort Stewart - Building 6505

Analyzed: 11/18/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-28-1-16	A0311050-16	White	Cons.	Yes									100%	

Comment: **Tile & Mastic: NAD No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-28-1-17	A0311050-17	White	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-30-1-18	A0311050-18	Black	Cons.	Yes	5%								95%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-30-1-19	A0311050-19	Brown	Cons.	Yes	30%					10%			60%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-CPR-20	A0311050-20	Brown	Cons.	Yes						10%			90%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311050 **Page:** 5 of 6
Client Project Number/Name: 7936 / Fort Stewart - Building 6505 **Analyzed:** 11/18/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-30-E-21	A0311050-21	Brown	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-28-R-22	A0311050-22	Brown	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-26-R-23	A0311050-23	Brown	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-26-R-24	A0311050-24	Brown	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-26-R-25	A0311050-25	Black	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311050 **Page:** 6 of 6
Client Project Number/Name: 7936 / Fort Stewart - Building 6505 **Analyzed:** 11/18/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-38-E-26	A0311050-26	Brown	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-40-1-27	A0311050-27	Brown	Cons.	Yes						40%	20%		40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-38-1-28	A0311050-28	Yellow	Cons.	Yes						40%			60%	

Comment: **Joint Compound: NAD; Rest: NAD No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6505-38-1-29	A0311050-29	Brown	Cons.	Yes	40%					10%			50%	

Comment: **Linoleum: 40% Chrysotile; Mastic: NAD Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6505**	Job No.:	**7936**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/5/2003	6505-26-1-1	47086	TSI PIPE ELBOW
11/5/2003	6505-26-1-2	47087	SHEET VINYL FLOORING
11/5/2003	6505-26-1-3	47088	SHEET VINYL FLOORING
11/5/2003	6505-26-1-4	47089	SHEET VINYL FLOORING
11/5/2003	6505-26-1-5	47090	FLOOR TILE
11/5/2003	6505-26-1-6	47091	SINK UNDERCOATING
11/5/2003	6505-26-2-7	47092	FELT PAPER
11/5/2003	6505-26-1-8	47093	SHEET VINYL FLOORING
11/5/2003	6505-26-1-9	47094	SHEET VINYL FLOORING
11/5/2003	6505-26-1-10	47095	SHEET VINYL FLOORING
11/5/2003	6505-26-1-11	47096	FLOOR TILE
11/5/2003	6505-28-1-12	47097	SHEET VINYL FLOORING
11/5/2003	6505-28-1-13	47098	FLOOR TILE
11/5/2003	6505-28-1-14	47099	FLOOR TILE
11/5/2003	6505-28-1-15	47100	FLOOR TILE
11/5/2003	6505-28-1-16	47101	FLOOR TILE
11/5/2003	6505-28-1-17	47102	PLASTER
11/5/2003	6505-30-1-18	47103	MASTIC
11/5/2003	6505-30-1-19	47104	SHEET VINYL FLOORING
11/12/2003	6505-CPR-20	47105	BUILT-UP ROOFING
11/12/2003	6505-30-E-21	47106	FLASHING CEMENT
11/12/2003	6505-28-R-22	47107	ROLLED ROOFING

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-14-03	1630	C Call	11/14/03	16:30

Comments: Fax results to Tim Jones @ 678-354-0330

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6505**	Job No.:	**7936**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/12/2003	6505-26-R-23	47108	ROOF SHINGLE
11/12/2003	6505-26-R-24	47109	ROOFING FELT
11/12/2003	6505-26-R-25	47110	FLASHING CEMENT
11/12/2003	6505-38-E-26	47111	CAULKING MATERIAL
11/12/2003	6505-40-1-27	47112	SHEET VINYL FLOORING
11/12/2003	6505-38-1-28	47113	DRYWALL JOINT COMPOUND
11/12/2003	6505-38-1-29	47114	SHEET VINYL FLOORING

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-14-03	1630	C. Cell	11/14/03	16:30

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003 Course Date	7644 Certificate Number
January 29, 2003 Examination Date	
January 28, 2004 Expiration Date	

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6506 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6506 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6506 at Ft. Stewart; Georgia conducted on 14 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6506 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed between Units 11 & 12 has been removed. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6506 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2=second floor, E= exterior, R=roof) followed by the numerical sample number. An arbitrary example is 6506-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6506 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the

floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6506 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6506 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains or is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain positive amounts of asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living

Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink contains asbestos. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 1, 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6506

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6506-13-1-1	**12” x 12” tan floor tile**	**First floor restroom, upper layer**	**2% chrysotile**
6506-12-R-2	Flashing cement	On brick wall where storage shed was removed	None
6506-12-E-3	Caulking compound	On brick wall where storage shed was removed	None
6506-10-R-4	Built-up roofing remnant	Unit 10, above ceiling in mechanical closet	None
6506-13-R-5	Flashing cement	Applied to furnace flue at joint with roof shingles	None
6506-10-E-6	Caulking compound	Between fascia board and soffit on storage shed	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6506

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-1	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6506

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 2%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

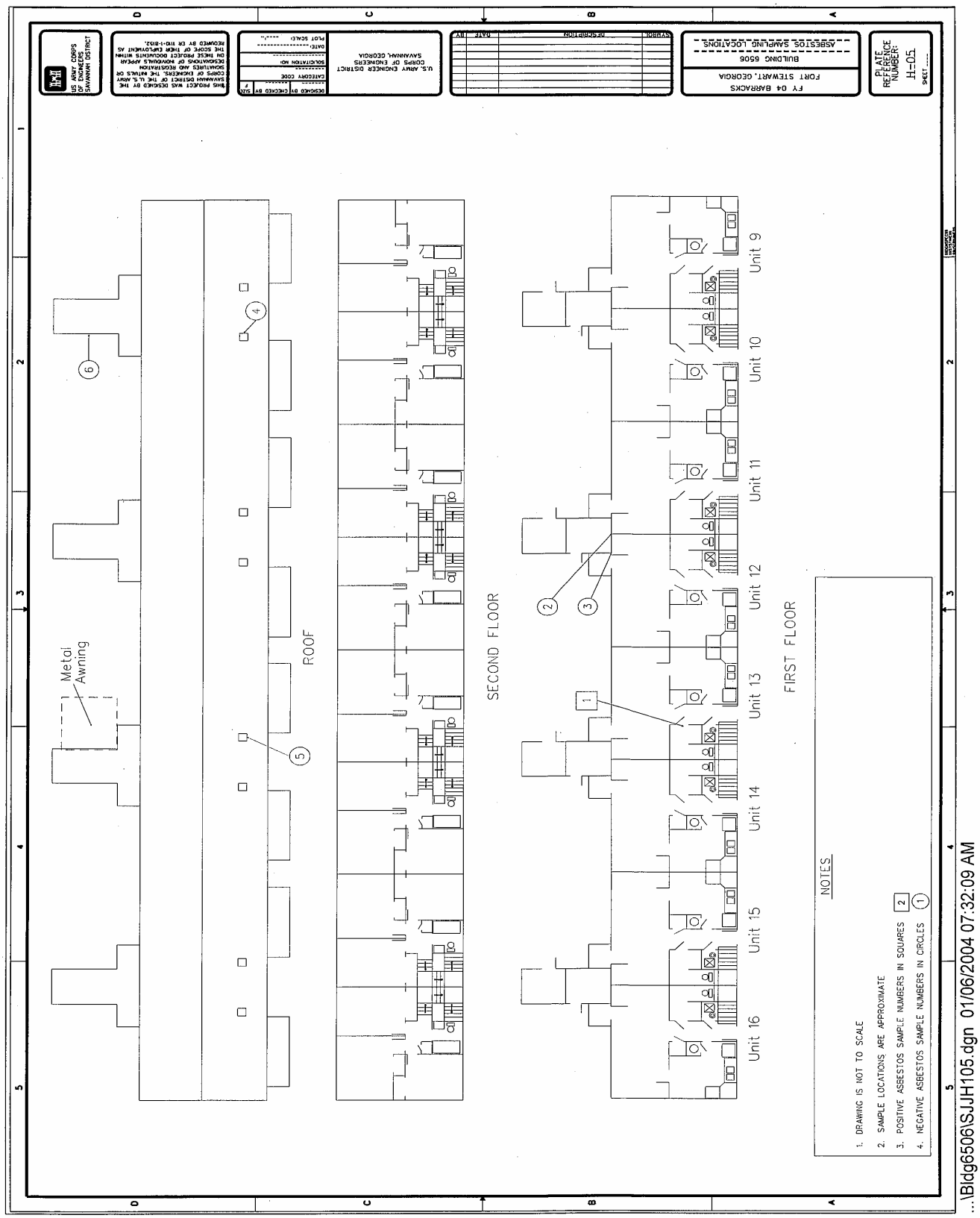
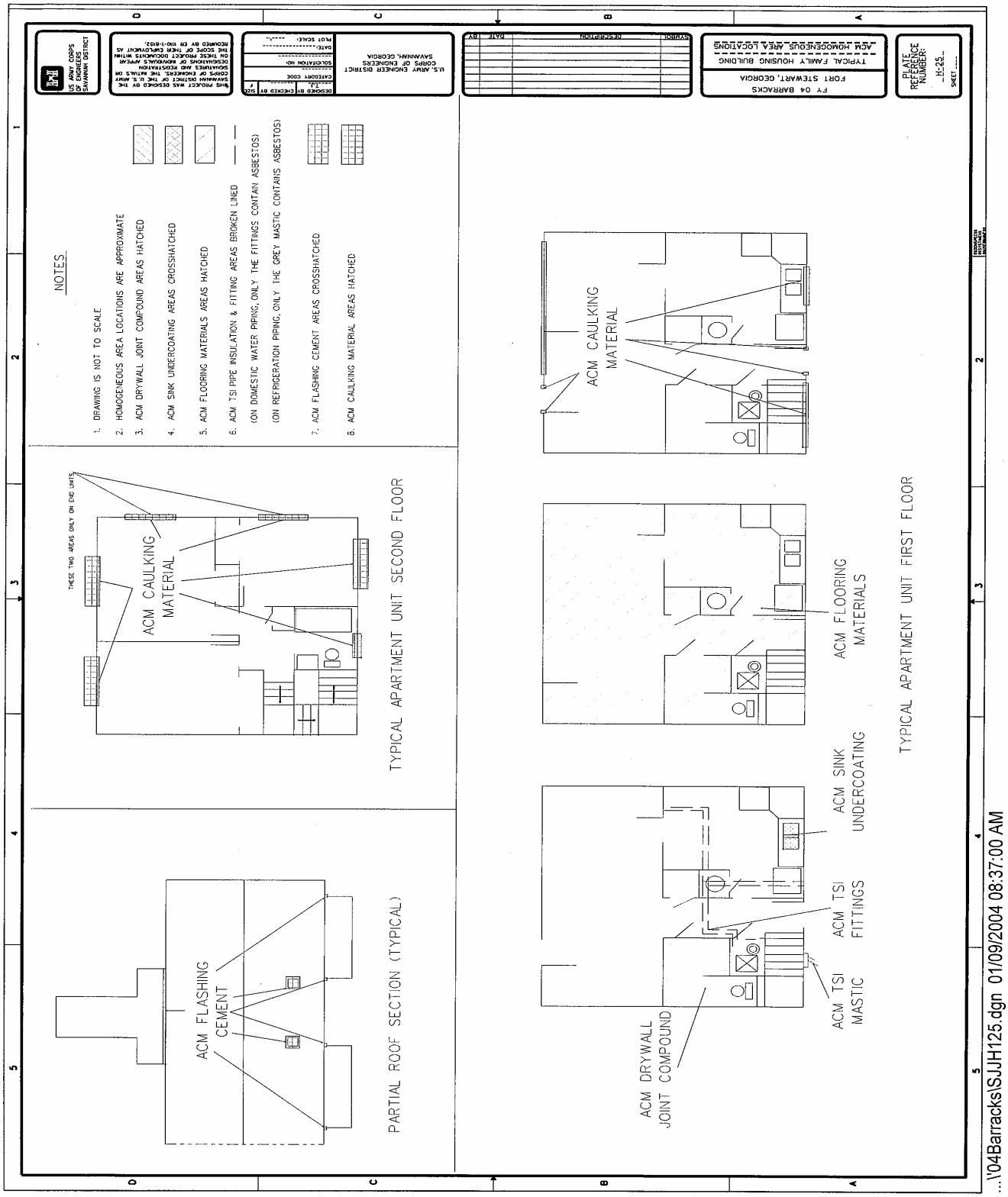

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6506
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER: H-05
Metal Awning
ROOF
SECOND FLOOR
FIRST FLOOR
Unit 9
Unit 10
Unit 11
Unit 12
Unit 13
Unit 14
Unit 15
Unit 16
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
...\Bldg6506\SJJH105.dgn 01/06/2004 07:32:09 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE U.S. ARMY CORPS OF ENGINEERS, THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS NAMED ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY CR 110-1-8152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:

Hygeia Project Number: A0311055
Client Project Number/Name: 7941 /Fort Stewart - Building 6506

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/14/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0311055
Client Project Number/Name: 7941 / Fort Stewart - Building 6506

Analyzed: 11/18/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6506-13-1-1	A0311055-01	Gray	Cons.	Yes	2%								98%	

Comment: **Tile: 2% Chrysotile; Not Mastic Present Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6506-12-R-2	A0311055-02	Black	Gummy	Yes						30%			70%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6506-12-E-3	A0311055-03	Gray	Rubbery	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6506-10-R-4	A0311055-04	Black	Gummy	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6506-13-R-5	A0311055-05	Black	Gummy	Yes						20%			80%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311055
Client Project Number/Name: 7941 / Fort Stewart - Building 6506

Analyzed: 11/18/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6506-10-E-6	A0311055-06	Gray	Rubbery	Yes									100%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6506**	Job No.:	**7941**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/14/2003	6506-13-1-1	47172	FLOOR TILE
11/14/2003	6506-12-R-2	47173	FLASHING CEMENT
11/14/2003	6506-12-E-3	47174	CAULKING COMPOUND
11/14/2003	6506-10-R-4	47175	ROOF TAR
11/14/2003	6506-13-R-5	47176	FLASHING CEMENT
11/14/2003	6506-10-E-6	47177	CAULKING COMPOUND

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-14-03	1630	C. Cell	11/14/03	16:30

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6507 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6507 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6507 at Ft. Stewart; Georgia conducted on 12 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6507 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6507 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Apartment Unit 2 was inaccessible at the time of inspection. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2=second floor, E= exterior, R=roof) followed by the numerical sample number. An arbitrary example is 6507-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6507 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations

of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6507 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous

materials at Building No. 6507 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains or is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom contains asbestos. The older hard plaster wall

within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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Appendices

Appendix A. Analytical Report – Hygeia Laboratories, Inc. 14-18

Appendix B. Sample Chain of Custody Forms 19-20

Appendix C. Accreditations 21-25

TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6507

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6507-4-1-1	**Green sheet vinyl flooring**	**First floor restroom, upper layer**	**10% chrysotile**
6507-6-1-2	**Light green sheet vinyl flooring**	**First floor restroom, upper layer**	**10% chrysotile**
6507-12-1-3	Ceiling insulation debris	Above mechanical closet ceiling	None
6507-12-1-4	Built-up roofing remnant	Above ceiling in mechanical closet	None
6507-12-1-5	Grey sheet vinyl flooring	First floor restroom, upper layer	None
6507-12-1-6	**Sheet vinyl flooring**	**First floor restroom, center layer**	**15% chrysotile**
6507-12-1-7	**Drywall joint compound**	**First floor restroom**	**4% chrysotile**
6507-12-1-8	**Green sheet vinyl flooring**	**Kitchen, upper layer**	**15% chrysotile**
6507-14-1-9	**Tan/light green sheet vinyl flooring**	**First floor restroom, upper layer**	**15% chrysotile**
6507-16-1-10	**Brown/tan sheet vinyl flooring**	**Kitchen, upper layer**	**10% chrysotile**
6507-16-1-11	**Tan/grey 12” X 12” floor tile**	**Kitchen, lower layer**	**Tile 2% chrysotile, mastic 10 % chrysotile**
6507-16-1-12	Mastic	Stairwell, between rubber stair tread and wood stair step	None
6507-16-2-13	Ceiling insulation	Above bedroom closet ceiling	None
6507-CPR-14	Built-up roofing	Carport roof	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6507

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-1, 1-2, 1-6, 1-8 1-9, 1-10 1-11	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	1-7				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6507

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 2-15%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Yes 4%	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

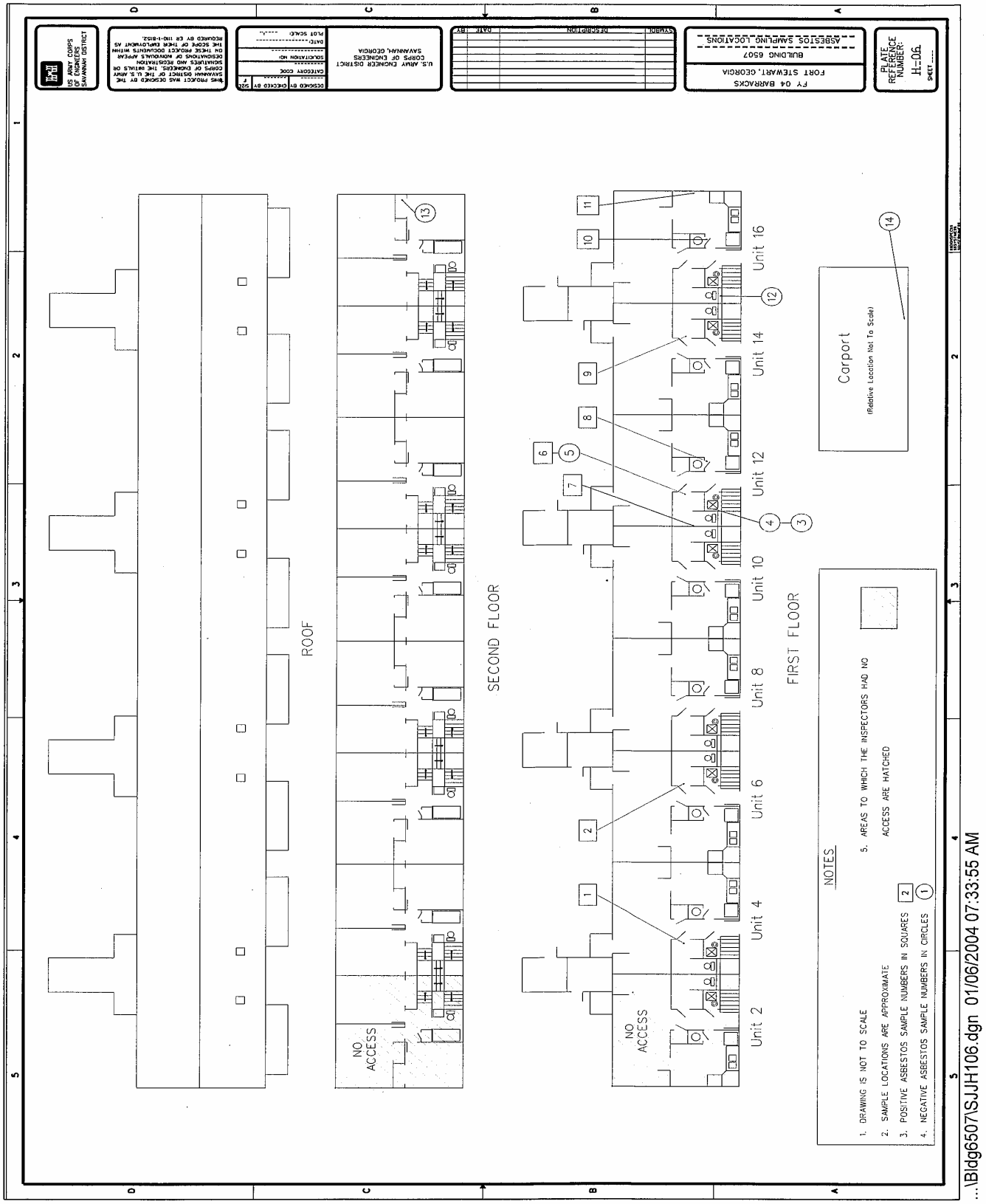
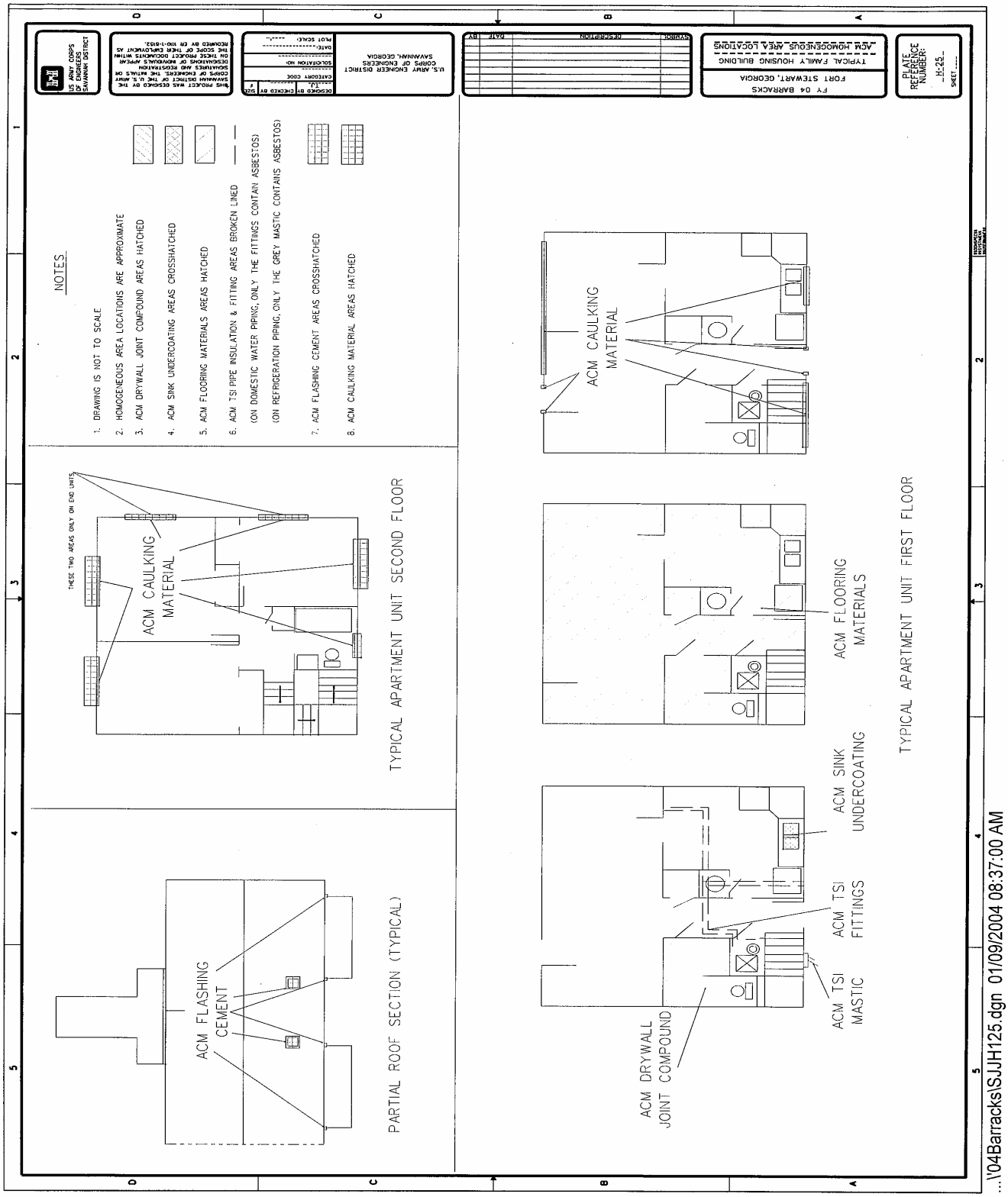

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6507
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER: H-06
ROOF
NO ACCESS
SECOND FLOOR
Unit 2
Unit 4
Unit 6
Unit 8
Unit 10
Unit 12
Unit 14
Unit 16
NO ACCESS
FIRST FLOOR
Carport
(Relative Location Not To Scale)
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
5. AREAS TO WHICH THE INSPECTORS HAD NO ACCESS ARE HATCHED
...\Bldg6507\SJJH106.dgn 01/06/2004 07:33:55 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE U.S. ARMY CORPS OF ENGINEERS, THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS NAMED ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY CR 110-1-8152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:

Hygeia Project Number: A0311056
Client Project Number/Name: 7937 /Fort Stewart - Building 6507

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/14/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0311056
Client Project Number/Name: 7937 / Fort Stewart - Building 6507

Analyzed: 11/18/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6507-4-1-1	A0311056-01	Gray	Fibrous	Yes	10%					10%			80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6507-6-1-2	A0311056-02	Gray	Fibrous	Yes	10%					10%			80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6507-12-1-3	A0311056-03	Brown	Fibrous	Yes							98%		2%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6507-12-1-4	A0311056-04	Black	Gummy	No						25%			75%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6507-12-1-5	A0311056-05	Gray	Fibrous	Yes						5%	5%	5%	85%	

Comment: **Other Fibers: Synthetic Fibers No Asbestos Detected.**

Hygeia Project Number: A0311056 **Page:** 2 of 3
Client Project Number/Name: 7937 / Fort Stewart - Building 6507 **Analyzed:** 11/18/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6507-12-1-6	A0311056-06	Gray	Fibrous	Yes	15%					5%			80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6507-12-1-7	A0311056-07	Gray	Powdery	Yes	4%								96%	

Comment: **No Drywall Present Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6507-12-1-8	A0311056-08	Gray	Fibrous	Yes	15%					5%			80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6507-14-1-9	A0311056-09	Gray	Fibrous	Yes	15%					5%			80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6507-16-1-10	A0311056-10	Gray	Fibrous	Yes	10%					10%			80%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311056 **Page:** 3 of 3
Client Project Number/Name: 7937 / Fort Stewart - Building 6507 **Analyzed:** 11/18/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6507-16-1-11	A0311056-11	Gray	Cons.	Yes	2%								98%	

Comment: **Tile: 2% Chrysotile; Mastic: 10% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6507-16-1-12	A0311056-12	Brown	Gummy	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6507-16-2-13	A0311056-13	Gray	Fibrous	Yes							90%		10%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6507-CPR-14	A0311056-14	Black	Gummy	No						30%			70%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6507**	Job No.:	**7937**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/12/2003	6507-4-1-1	47115	SHEET VINYL FLOORING
11/12/2003	6507-6-1-2	47116	SHEET VINYL FLOORING
11/12/2003	6507-12-1-3	47117	CEILING INSULATION
11/12/2003	6507-12-1-4	47118	BUILT-UP ROOFING DEBRIS
11/12/2003	6507-12-1-5	47119	SHEET VINYL FLOORING
11/12/2003	6507-12-1-6	47120	SHEET VINYL FLOORING
11/12/2003	6507-12-1-7	47121	DRYWALL JOINT COMPOUND
11/12/2003	6507-12-1-8	47122	SHEET VINYL FLOORING
11/12/2003	6507-14-1-9	47123	SHEET VINYL FLOORING
11/12/2003	6507-16-1-10	47124	SHEET VINYL FLOORING
11/12/2003	6507-16-1-11	47125	FLOOR TILE
11/12/2003	6507-16-1-12	47126	MASTIC
11/12/2003	6507-16-2-13	47127	CEILING INSULATION
11/12/2003	6507-CPR-14	47128	BUILT-UP ROOFING

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-14-03	1630	C. Cell	11/14/03	

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6508 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6508 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6508 at Ft. Stewart; Georgia conducted on 20 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6508 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6508 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Apartment Unit 1 was inaccessible at the time of inspection. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2=second floor, E= exterior, R=roof) followed by the numerical sample number. An arbitrary example is 6508-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6508 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations

of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6508 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous

materials at Building No. 6508 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains or is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on

analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6508

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6508-CPR-1	Built-up roofing	Carport roof	None
6508-13-1-2	Wall plaster	Mechanical closet	None
6508-13-1-3	Drywall joint compound	Kitchen, at wall patch around washing machine service box	None
6508-9-1-4	**12” X 12” tan/grey floor tile**	**Kitchen, upper layer**	**2% chrysotile**
6508-9-1-5	**Floor tile**	**Kitchen, second layer**	**Tile <1% chrysotile, mastic 10% chrysotile**
6508-9-1-6	**Floor tile**	**Kitchen, lower layer**	**Tile 3% chrysotile, mastic 10% chrysotile**

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6508

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-4, 1-5, 1-6	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6508

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes <1-10%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Yes 4%	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

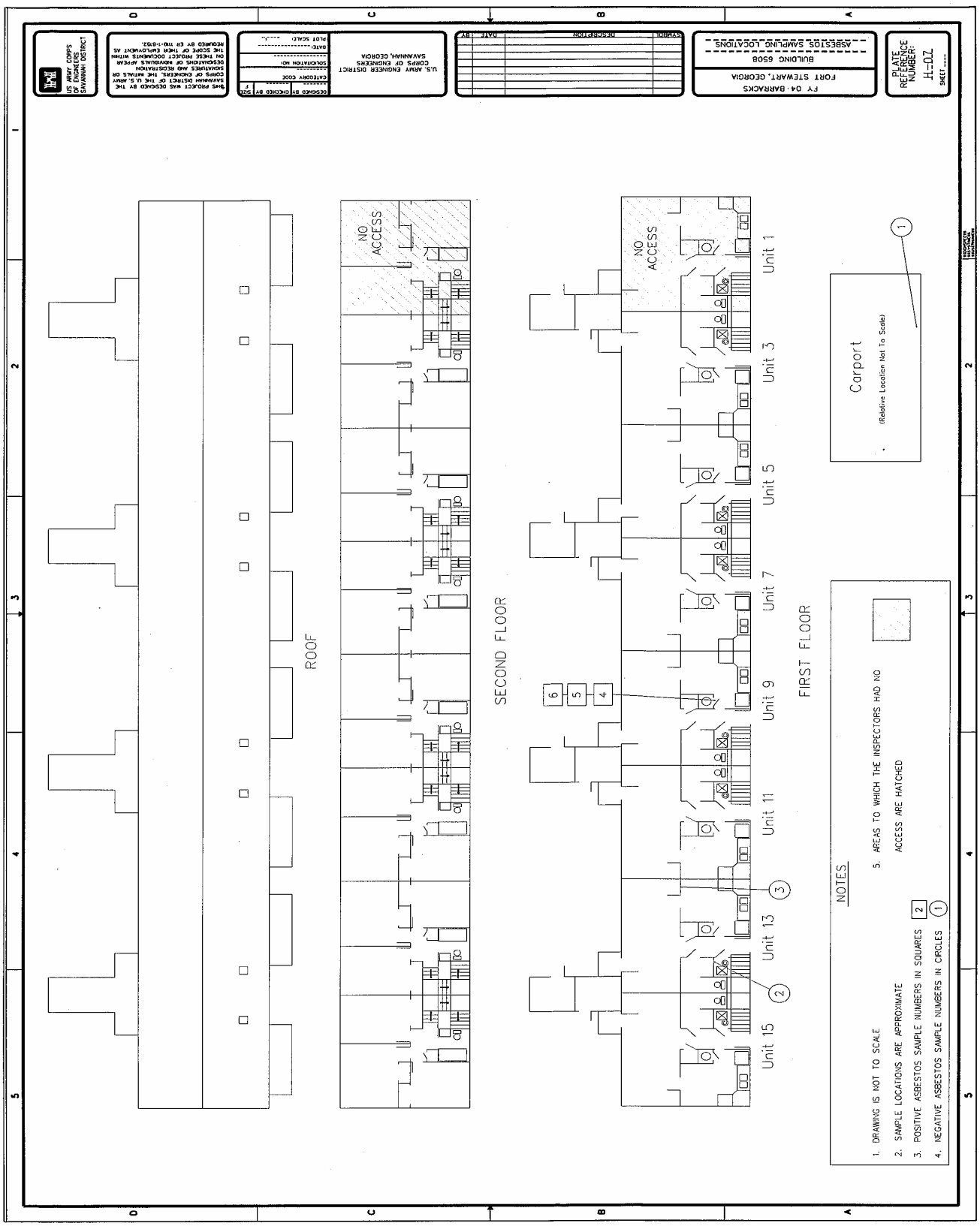
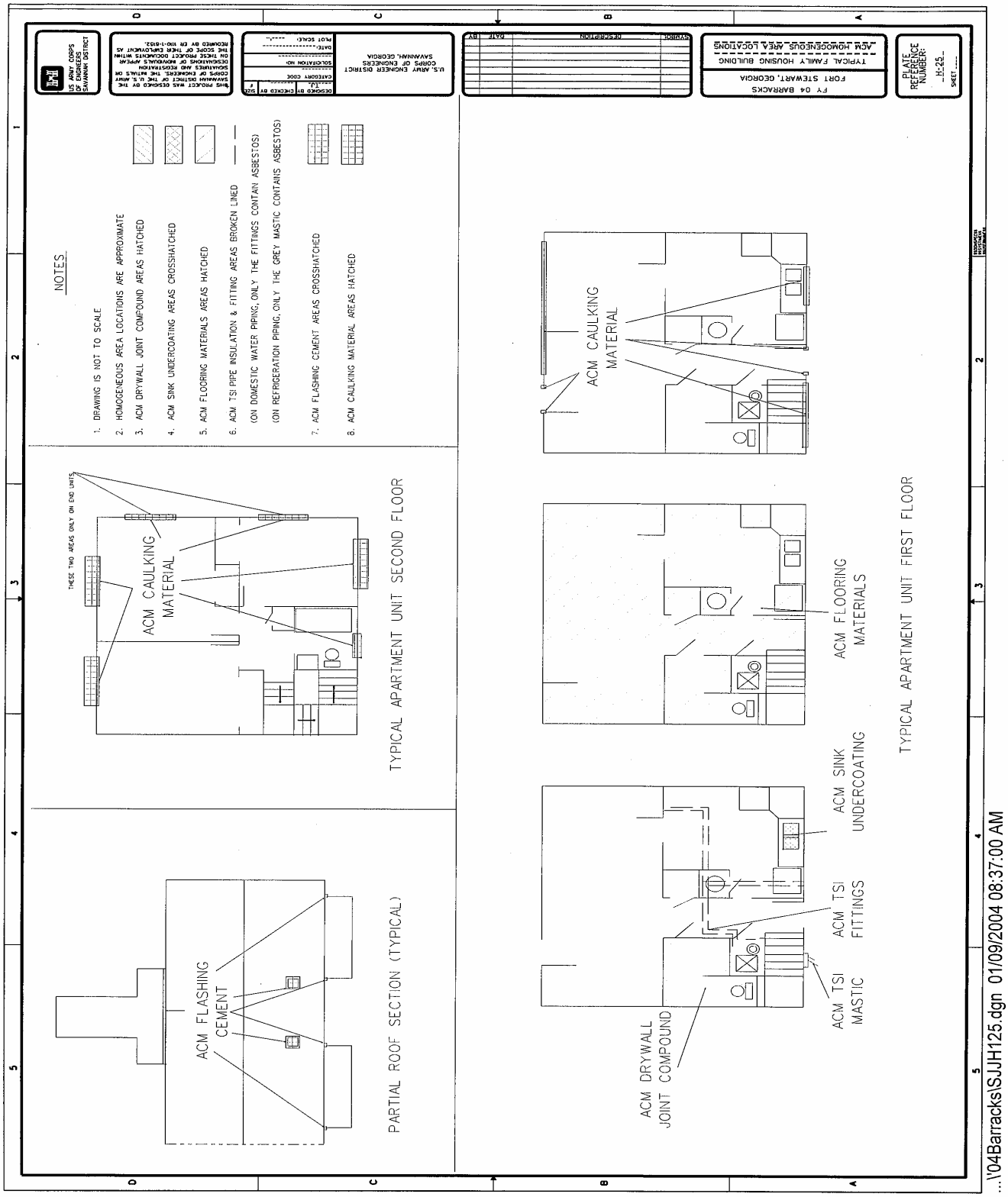

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6508
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER:
H-07
ROOF
NO ACCESS
SECOND FLOOR
NO ACCESS
Unit 1
Unit 3
Unit 5
Unit 7
Unit 9
Unit 11
Unit 13
Unit 15
FIRST FLOOR
Carport
(Relative Location Not To Scale)
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
5. AREAS TO WHICH THE INSPECTORS HAD NO ACCESS ARE HATCHED
...\Bldg6508\SJJH107.dgn 01/06/2004 07:35:20 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE U.S. ARMY CORPS OF ENGINEERS, THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS NAMED ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY CR 110-1-8152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0312006
Client Project Number/Name: 7950 /Fort Stewart - Building 6508

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/24/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0312006
Client Project Number/Name: 7950 / Fort Stewart - Building 6508

Analyzed: 11/25/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6508-CPR-1	A0312006-01	Black	Gummy	No						20%			80%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6508-13-1-2	A0312006-02	Gray	Plastery	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6508-13-1-3	A0312006-03	Gray	Powdery	Yes									100%	

Comment: **No Drywall Present No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6508-9-1-4	A0312006-04	Gray	Cons.	No	2%								98%	

Comment: **Tile: 2% Chyrsotile; Brown Mastic: NAD Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6508-9-1-5	A0312006-05	Gray	Cons.	No	<1%								100%	

Comment: **Tile: <1% Chyrsotile; Brown Mastic: 10% Chrysotile Asbestos Detected.**

Hygeia Project Number: A0312006
Client Project Number/Name: 7950 / Fort Stewart - Building 6508

Analyzed: 11/25/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6508-9-1-6	A0312006-06	Gray	Cons.	No	3%								97%	

Comment: **Tile: 3% Chrysotile; Black Mastic: 10% Chrysotile Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6508**	Job No.:	**7950**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/20/2003	6508-CPR-1	47220	BUILT-UP ROOFING
11/20/2003	6508-13-1-2	47221	WALL PLASTER
11/20/2003	6508-13-1-3	47222	DRYWALL JOINT COMPOUND
11/20/2003	6508-9-1-4	47223	FLOOR TILE
11/20/2003	6508-9-1-5	47224	FLOOR TILE
11/20/2003	6508-9-1-6	47225	FLOOR TILE

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-24-03	1600	C. Cell	11/24/03	16:00

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6509 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6509 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6509 at Ft. Stewart; Georgia conducted on 7 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6509 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6509 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6509-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6509 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the

floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6509 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers contains asbestos. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping contain asbestos. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6509 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and

obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains or is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings contains asbestos. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls contains asbestos. The caulking material within the brick control/expansion joints contains asbestos. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink contains asbestos. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6509

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6509-1-1-1	12” X 12” off white/tan floor tile	Entry hall	None
6509-1-1-2	**12” X 12” tan/brown floor tile**	**Kitchen, single layer**	**6% chrysotile in both tile and mastic**
6509-1-1-3	Grey terrazzo sheet vinyl flooring	Restroom, upper layer	None
6509-1-1-4	**Sheet vinyl flooring**	**Restroom, second layer**	**10% chrysotile**
6509-1-1-5	Drywall joint compound	Restroom wall	None
6509-2-1-6	**12” X 12” brown floor tile**	**Kitchen, lower layer under grey sheet vinyl**	**5% chrysotile**
6509-2-1-7	Textured (popcorn) ceiling surfacing	Entry hall	None
6509-2-1-8	Mastic	Stairwell, between rubber stair tread and wooden stair step	None
6509-3-1-9	**Green terrazzo sheet vinyl flooring**	**Kitchen, second layer**	**40% chrysotile**
6509-3-1-10	**Floor tile**	**Kitchen, lower layer**	**7% chrysotile**
6509-4-1-11	**12” X 12” white/grey floor tile**	**Entry hall**	**Tile NAD, mastic 2% chrysotile**
6509-4-1-12	Grey terrazzo sheet vinyl flooring	Kitchen, upper layer	None
6509-4-1-13	**Yellow terrazzo sheet vinyl flooring**	**Kitchen, second layer**	**10% chrysotile**
6509-4-1-14	**12” X 12” floor tile**	**Kitchen, lower layer**	**7% chrysotile in tile and mastic**
6509-4-1-15	**Sheet vinyl flooring**	**First floor restroom, second layer**	**40% chrysotile**
6509-5-1-16	Brown brick pattern sheet vinyl flooring (non-typical)	Kitchen, upper layer	None
6509-5-1-17	Textured wall surfacing	First floor restroom	None
6509-6-1-18	**TSI pipe elbow**	**Mechanical closet, domestic water piping**	**7% chrysotile**
6509-7-1-19	**Sink under coating**	**Underside of kitchen sink**	**5% chrysotile**
6509-8-E-20	**Tan caulking material**	**Between aluminum window frame and brick wall, older caulk beneath newer caulk**	**3% chrysotile**

6509-6-E-21	**Tan caulking material**	**Between wood door frame and brick wall, older caulk beneath newer caulk**	**4% chrysotile**
6509-5-E-22	**Caulking material**	**In brick control/expansion joint**	**4% chrysotile**
6509-3-E-23	**TSI, cloth & mastic**	**On refrigeration lines and small length of domestic water piping at waste heat recovery box**	**15% chrysotile mastic, cloth NAD**
6509-3-E-24	Flashing felt	Between front awning and brick wall	None
6509-3-E-25	**Flashing cement**	**At vertical edges of front awning at brick wall, from older awning**	**10% chrysotile**
6509-3-R-26	Brown roof shingle	On front awning	None
6509-3-R-27	Roof felt	On front awning, under shingle	None
6509-1-R-28	Rolled roofing & sealer	Storage shed roof	None
6509-1-R-29	Flashing cement	Furnace flue at junction with roof shingles	None
6509-CPR-30	Built-up roofing	Carport roof	None
6509-CPR-31	Built-up roofing	Carport roof	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6509

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	E-20, E-21							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	E-22							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-2, 1-4 1-6, 1-9 1-10, 1-11 1-13, 1-14 1-15	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	E-25						112		112
Sink Under coating	S.F.	1-19	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	1-18	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	E-23							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6509

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Yes 3-4%	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Yes 4%	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 2-40%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Yes 10%	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Yes 5%	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Yes 15%	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Yes 7%	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

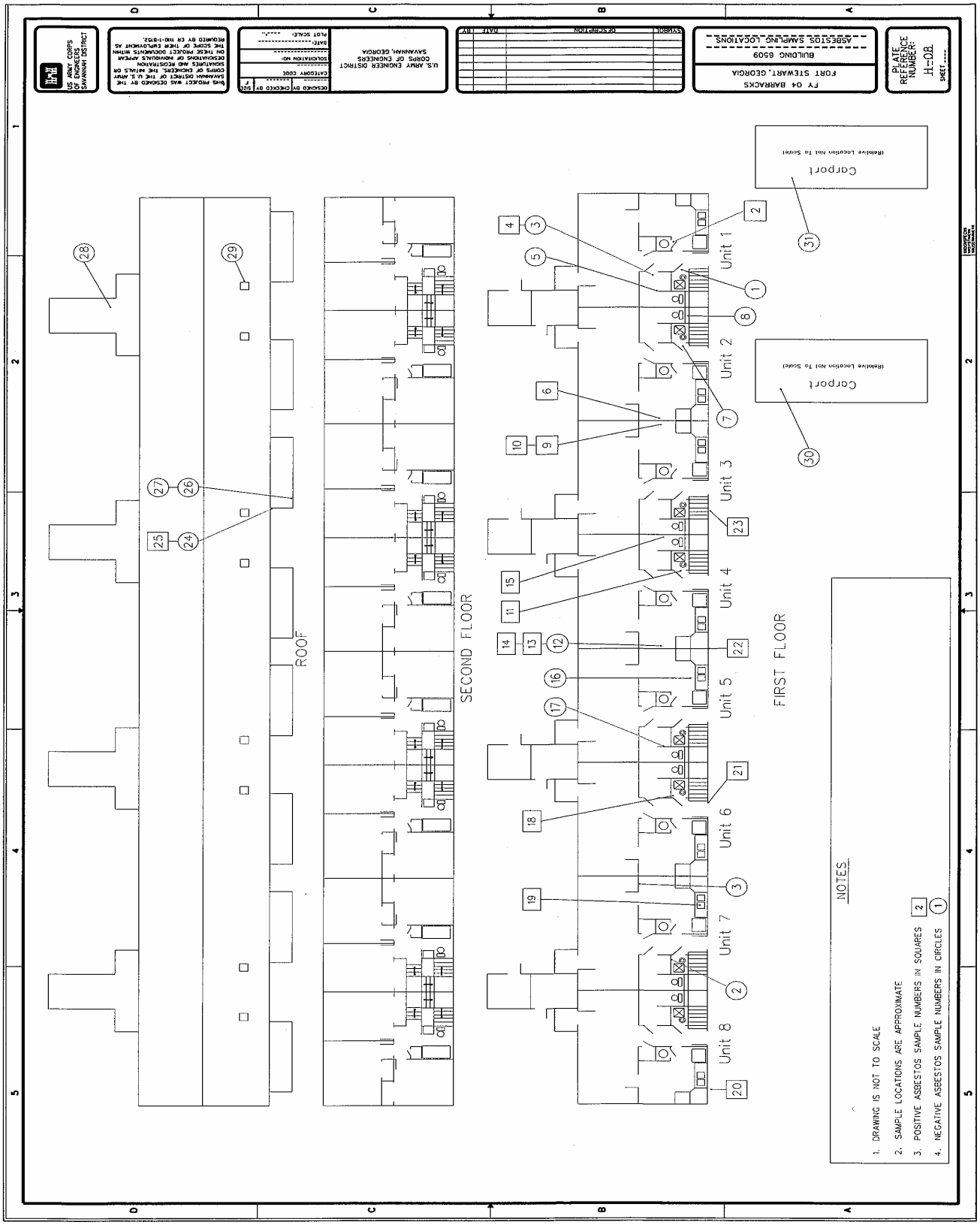
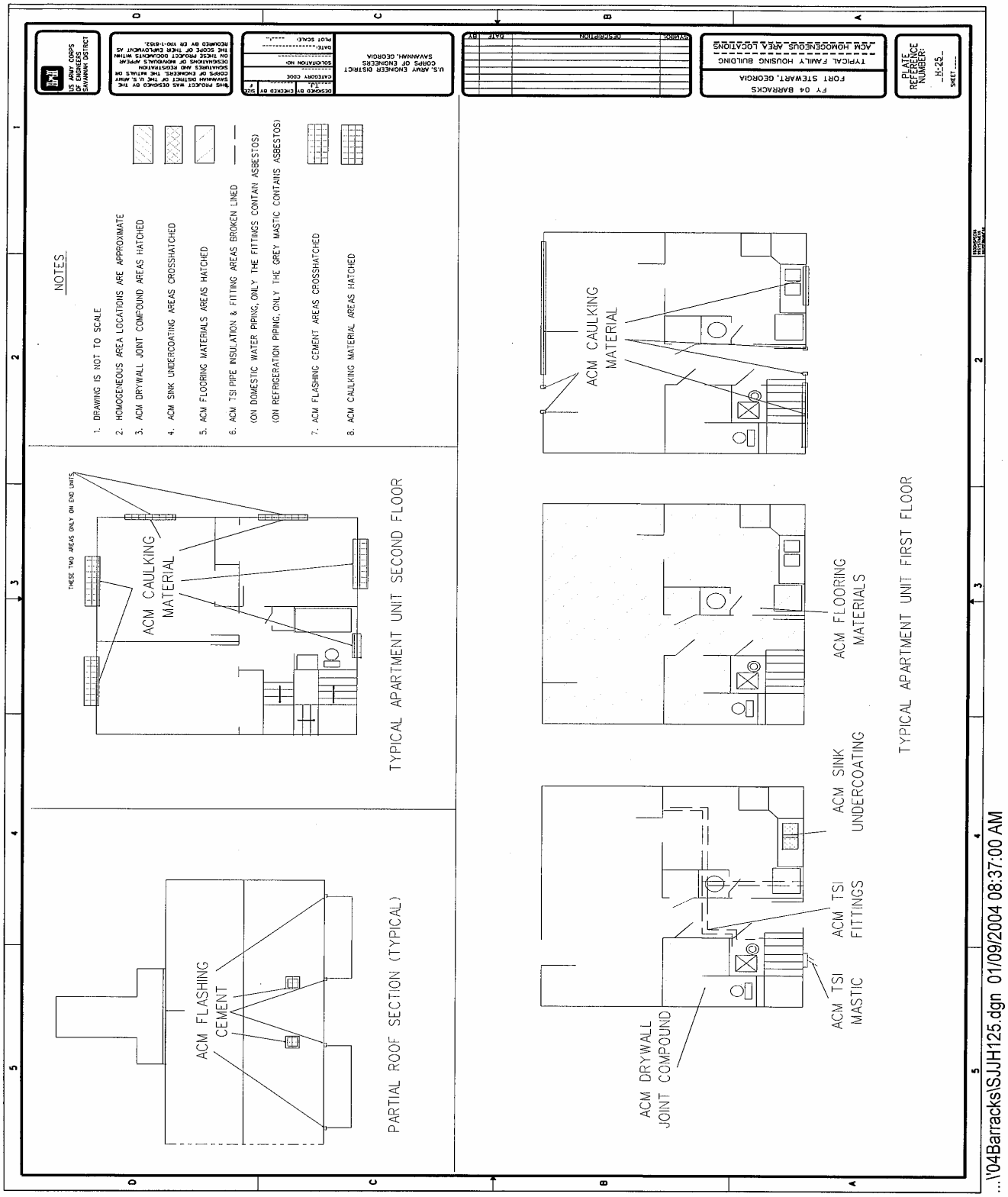

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL
DESCRIPTION
DATE
BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6509
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER:
H-08
ROOF
SECOND FLOOR
FIRST FLOOR
Unit 1
Unit 2
Unit 3
Unit 4
Unit 5
Unit 6
Unit 7
Unit 8
Carport
(Relative Location Not To Scale)
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
...\BLDG6509\SJJH-108.dgn 01/06/2004 07:36:14 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE U.S. ARMY CORPS OF ENGINEERS, THE INITIALS OR SIGNATURES AND REPRODUCTION OF REPRODUCTS WITHIN THE SCOPE OF THESE PROJECT DOCUMENTS WITHIN ON THESE DOCUMENTS, THE INITIALS OR SIGNATURES AND REPRODUCTION RECEIVED BY OR THEIR EMPLOYMENT AS
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
DESIGNED BY CHECKED BY SIZE
CATEGORY CODE
SOLICITATION NO.
DATE
PLOT SCALE
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0311042
Client Project Number/Name: 7931 /Fort Stewart - Building 6509

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/13/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0311042
Client Project Number/Name: 7931 / Fort Stewart - Building 6509

Analyzed: 11/13/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-1-1-1	A0311042-01	White	Cons.	Yes									100%	

Comment: **Tile: NAD; Mastic: Not Enough to Analyze No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-1-1-2	A0311042-02	White	Cons.	Yes	6%								94%	

Comment: **Tile & Mastic: 6% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-1-1-3	A0311042-03	Brown	Cons.	Yes						40%	20%		40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-1-1-4	A0311042-04	Brown	Cons.	Yes	10%								90%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-1-1-5	A0311042-05	Cream	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311042 **Page:** 2 of 7
Client Project Number/Name: 7931 / Fort Stewart - Building 6509 **Analyzed:** 11/13/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-2-1-6	A0311042-06	Brown	Cons.	Yes	5%								95%	

Comment: **Tile: NAD; Mastic: Not Enough to Analyze Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-2-1-7	A0311042-07	White	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-2-2-8	A0311042-08	Brown	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-3-1-9	A0311042-09	Green	Cons.	Yes	40%								60%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-3-1-10	A0311042-10	Brown	Cons.	Yes	7%								93%	

Comment: **Tile: 7% Chrysotile; Mastic: Not Enough to Analyze Asbestos Detected.**

Hygeia Project Number: A0311042 **Page:** 3 of 7

Client Project Number/Name: 7931 / Fort Stewart - Building 6509 **Analyzed:** 11/13/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-4-1-11	A0311042-11	Brown	Cons.	Yes	<1%								100%	

Comment: **Tile: NAD; Mastic: 2% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-4-1-12	A0311042-12	Brown	Cons.	Yes						40%	20%		40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-4-1-13	A0311042-13	Brown	Cons.	Yes	10%								90%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-4-1-14	A0311042-14	Brown	Cons.	Yes	7%								93%	

Comment: **Tile & Mastic: 7% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-4-1-15	A0311042-15	Brown	Cons.	Yes	40%								60%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311042 **Page:** 4 of 7

Client Project Number/Name: 7931 / Fort Stewart - Building 6509 **Analyzed:** 11/13/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-5-1-16	A0311042-16	Brown	Cons.	Yes						40%	20%		40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-5-1-17	A0311042-17	Blue	Powdery	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-6-1-18	A0311042-18	Gray	Powdery	Yes	7%						13%		80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-7-1-19	A0311042-19	Brown	Cons.	Yes	5%								95%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-8-E-20	A0311042-20	Brown	Cons.	Yes	3%								97%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311042 **Page:** 5 of 7

Client Project Number/Name: 7931 / Fort Stewart - Building 6509 **Analyzed:** 11/13/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-6-E-21	A0311042-21	Brown	Cons.	Yes	4%								96%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-5-E-22	A0311042-22	Brown	Cons.	Yes	4%								96%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-3-E-23	A0311042-23	Brown	Cons.	Yes	15%							30%	55%	

Comment: **Other Fibers: Synthetic Fibers Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-3-E-24	A0311042-24	Brown	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-3-E-25	A0311042-25	Black	Cons.	Yes	10%								90%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311042 **Page:** 6 of 7
Client Project Number/Name: 7931 / Fort Stewart - Building 6509 **Analyzed:** 11/13/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-3-R-26	A0311042-26	Brown	Cons.	Yes						30%	10%		60%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-3-R-27	A0311042-27	Brown	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-1-R-28	A0311042-28	Brown	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-1-R-29	A0311042-29	Brown	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-CPR-30	A0311042-30	Black	Cons.	Yes						60%			40%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311042 **Page:** 7 of 7

Client Project Number/Name: 7931 / Fort Stewart - Building 6509 **Analyzed:** 11/13/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6509-CPR-31	A0311042-31	Black	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile	cell	= cellulose	per	= perlite	OF	= Other Fibers
Am. = amosite	glass	= fibrous glass	ver	= vermiculite	ONF	= Other Non-Fibers
Cro. = crocidolite	syn	= synthetic	MF	= Mineral filler	Cons	= Consolidated
An. = anthophyllite	sty	= styrene foam	B/F	= Binder / filler		
T/A = tremolite/actinolite	det	= detected	**NAD**	**= No asbestos detected**		

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart BLDG 6509**	Job No.:	**7931**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/7/2003	6509-1-1-1	46978	FLOOR TILE
11/7/2003	6509-1-1-2	46979	FLOOR TILE
11/7/2003	6509-1-1-3	46980	SHEET VINYL FLOORING
11/7/2003	6509-1-1-4	46981	SHEET VINYL FLOORING
11/7/2003	6509-1-1-5	46982	DRYWALL JOINT COMPOUND
11/7/2003	6509-2-1-6	46983	FLOOR TILE
11/7/2003	6509-2-1-7	46984	CEILING TEXTURE MATERIAL
11/7/2003	6509-2-1-8	46985	MASTIC
11/7/2003	6509-3-1-9	46986	SHEET VINYL FLOORING
11/7/2003	6509-3-1-10	46987	FLOOR TILE
11/7/2003	6509-4-1-11	46988	FLOOR TILE
11/7/2003	6509-4-1-12	46989	SHEET VINYL FLOORING
11/7/2003	6509-4-1-13	46990	SHEET VINYL FLOORING
11/7/2003	6509-4-1-14	46991	FLOOR TILE
11/7/2003	6509-4-1-15	46992	SHEET VINYL FLOORING
11/7/2003	6509-5-1-16	46993	SHEET VINYL FLOORING
11/7/2003	6509-5-1-17	46994	TEXTURED WALL COVERING
11/7/2003	6509-6-1-18	46995	TSI PIPE ELBOW
11/7/2003	6509-7-1-19	46996	SINK UNDERCOATING
11/7/2003	6509-8-E-20	46997	CAULKING MATERIAL
11/7/2003	6509-6-E-21	46998	CAULKING MATERIAL
11/7/2003	6509-5-E-22	46999	CAULKING MATERIAL

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11/10-03	1100	C Call	11/10/03	11:00am

Comments: Fax results to Tim Jones @ 678-354-0330

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart BLDG 6509**	Job No.:	**7931**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/7/2003	6509-3-E-23	47000	TSI CLOTH & MASTIC
11/7/2003	6509-3-E-24	47001	FLASHING MATERIALS
11/7/2003	6509-3-E-25	47002	FLASHING CEMENT
11/7/2003	6509-3-R-26	47003	ROOF SHINGLE
11/7/2003	6509-3-R-27	47004	ROOF FELT
11/7/2003	6509-1-R-28	47005	ROLLED ROOFING & SEALER
11/7/2003	6509-1-R-29	47006	FLASHING CEMENT
11/7/2003	6509-CPR-30	47007	BUILT-UP ROOFING
11/7/2003	6509-CPR-31	47008	BUILT-UP ROOFING

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-10-03	1100	C. Cal	11/10/03	11:00am

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6510 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6510 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6510 at Ft. Stewart; Georgia conducted on 18 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6510 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6510 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6510-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6510 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the

floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6510 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6510 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains or is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint

compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6510

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6510-4-R-1	**Older black flashing cement**	**On metal furnace flue flashing, appears to be from previous roof**	**10% chrysotile**

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6510

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	Assumed	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	R-1						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6510

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Assumed	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Yes 10%	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

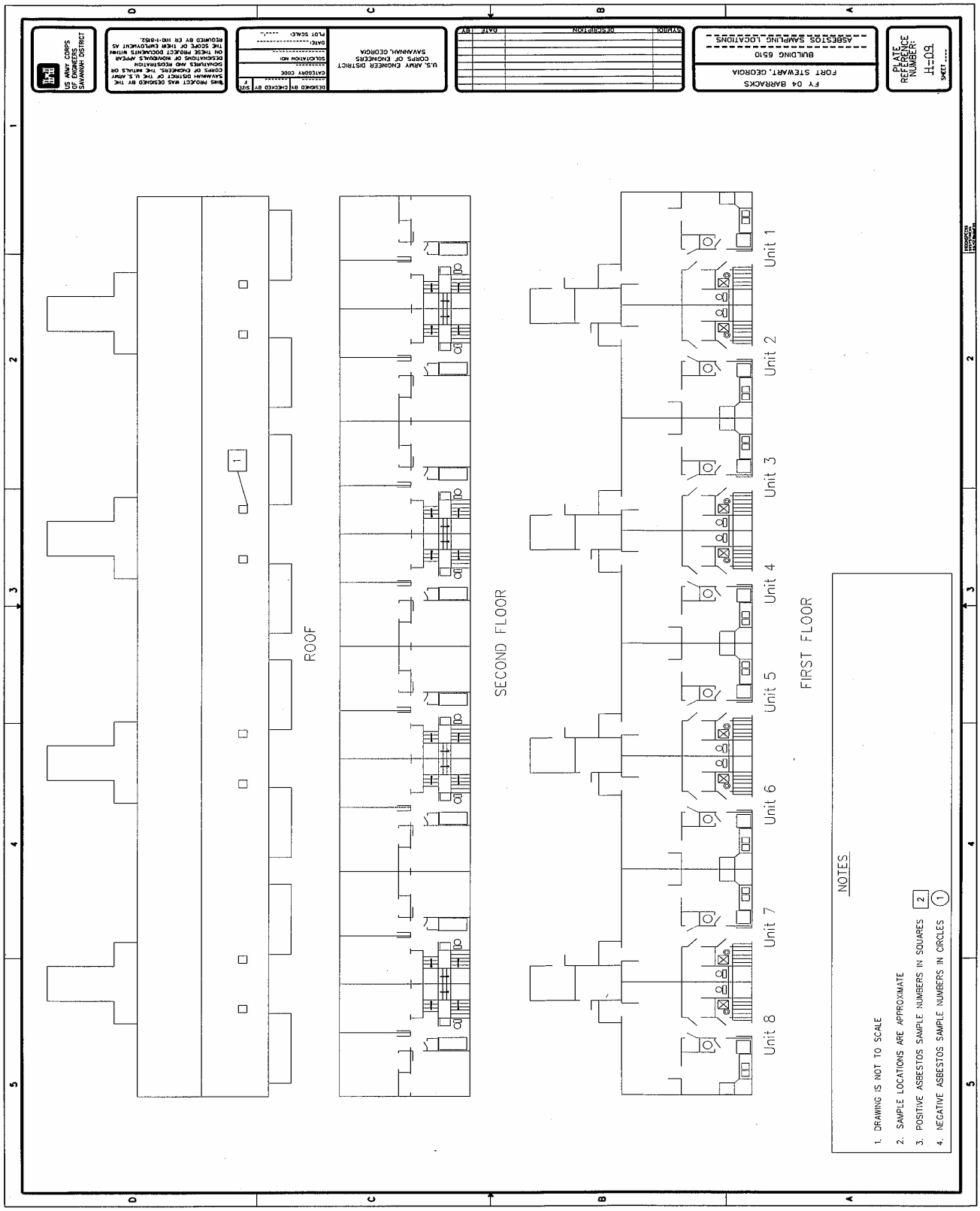
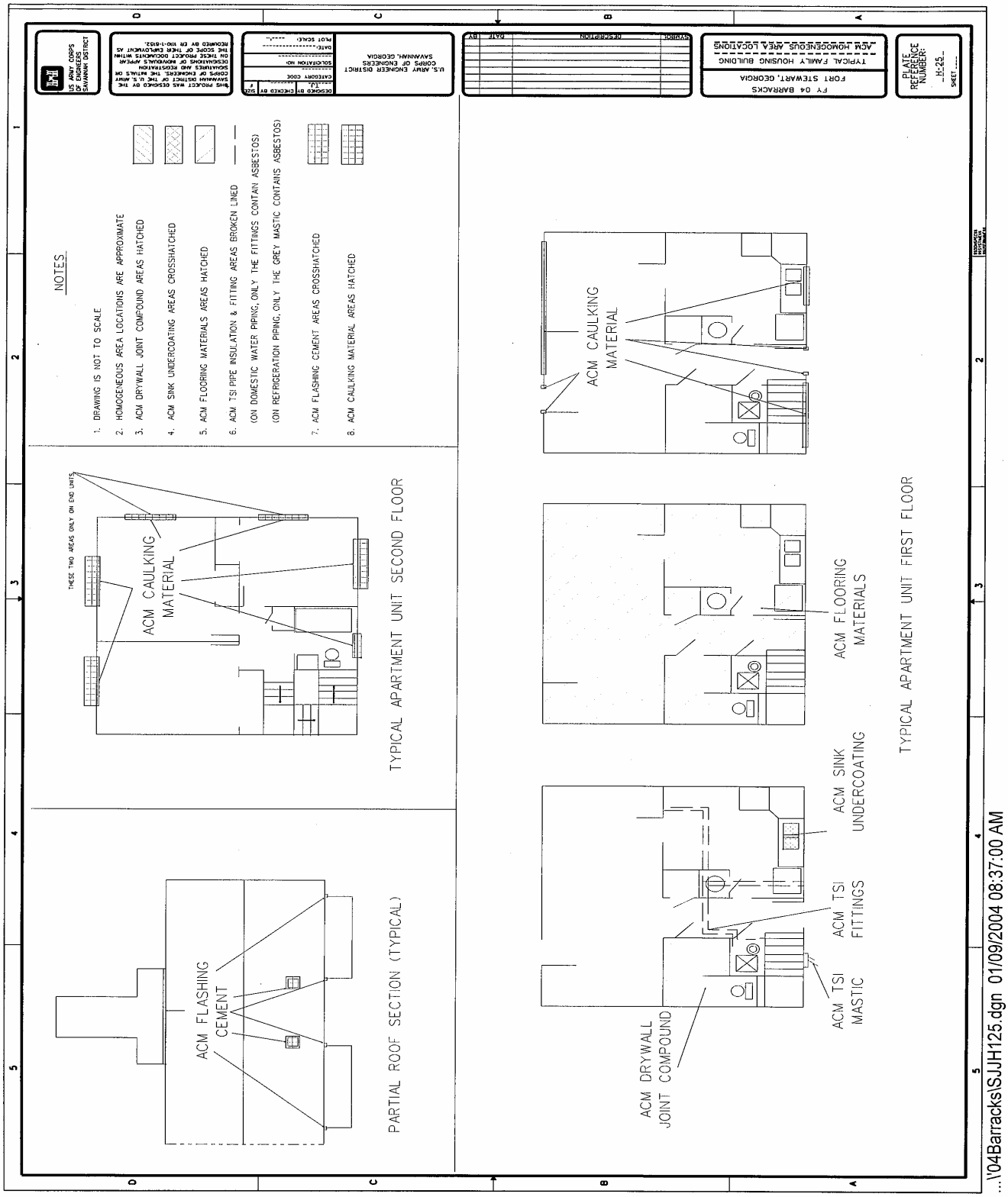

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6510
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER: H-09
ROOF
SECOND FLOOR
FIRST FLOOR
Unit 1
Unit 2
Unit 3
Unit 4
Unit 5
Unit 6
Unit 7
Unit 8
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
...\Bldg6510\SJJH-109.dgn 01/06/2004 07:37:30 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE U.S. ARMY CORPS OF ENGINEERS, THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS NAMED ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY CR 110-1-8152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0312008
Client Project Number/Name: 7952 /Fort Stewart - Building 6510

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/24/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0312008
Client Project Number/Name: 7952 / Fort Stewart - Building 6510

Analyzed: 11/25/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6510-4-R-1	A0312008-01	Black	Gummy	No	10%					10%			80%	

Comment: **Asbestos Detected.**

abbreviations:

Chr.	**= chrysotile**	cell	= cellulose	per	= perlite	OF	= Other Fibers
Am.	**= amosite**	glass	= fibrous glass	ver	= vermiculite	ONF	= Other Non-Fibers
Cro.	**= crocidolite**	syn	= synthetic	MF	= Mineral filler	Cons	= Consolidated
An.	**= anthophyllite**	sty	= styrene foam	B/F	= Binder / filler		
T/A	**= tremolite/actinolite**	det	= detected	**NAD**	**= No asbestos detected**		

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6510**	Job No.:	**7952**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/18/2003	6510-4-R-1	47233	FLASHING CEMENT

Relinquished By	Date	Time	Received By	Date	Time
~~11-24-03~~ Tim Jones	11-24-03	1600	C. Cole	11/24/03	16:00

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

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Certificate Number

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The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

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ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

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MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

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National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
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NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6511 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6511 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6511 at Ft. Stewart; Georgia conducted on 20 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6511 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6511 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. No samples were collected from this building.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6511 is included in this report where relevant. Estimated quantities of individual asbestos containing materials appear on Table 1. Material characterization of asbestos containing materials appears on Table 2.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6511 are assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18

inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6511 are assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1 and 2 and figure 1 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled

roofing and the brick walls at the storage sheds' roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors' awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1" wide on each the front and rear of the building at the building's center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1 and 2 for specific information and Figure 1 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 1 and 2 for specific information and figure 1 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

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TABLE 1
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6511

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around	S.F.	Assumed							8	8

piping										
Flooring materials	S.F.	Assumed	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 2
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6511

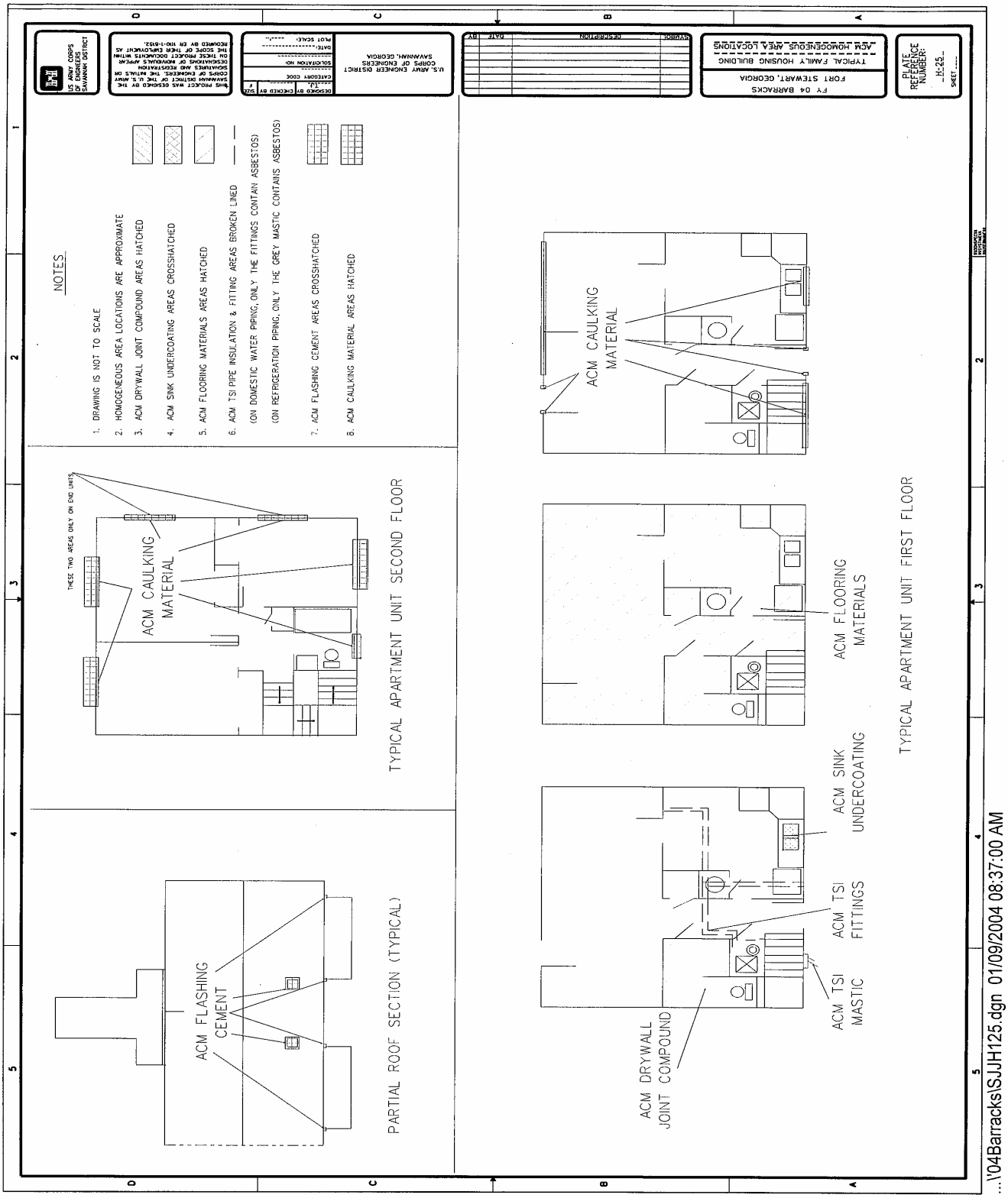
MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Assumed	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

* Drywall Joint Compound quantity based on ½ of the wall and ceiling area

Figure 1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CHECKED BY
SIZE
CATEGORY CODE
SOLICITATION NO.
DATE
PLOT SCALE
SYMBOL
DESCRIPTION
DATE
BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER:
H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

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The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
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Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

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MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

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NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

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ISO/IEC 17025:1999
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Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
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NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

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Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6512 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6512 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6512 at Ft. Stewart; Georgia conducted on 20 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6512 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6512 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Apartment Units 20, 21, 23 and 24 were inaccessible at the time of inspection; the materials within are assumed similar to those of the inspected Units. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6512-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6512 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the

floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6512 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous

materials at Building No. 6512 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 2 and 3 for specific information and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on

analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6512

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6512-CPR-1	Built-up roofing	Carport roof	None
6512-CPR-2	Built-up roofing	Carport roof	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6512

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	Assumed	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6512

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Assumed	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

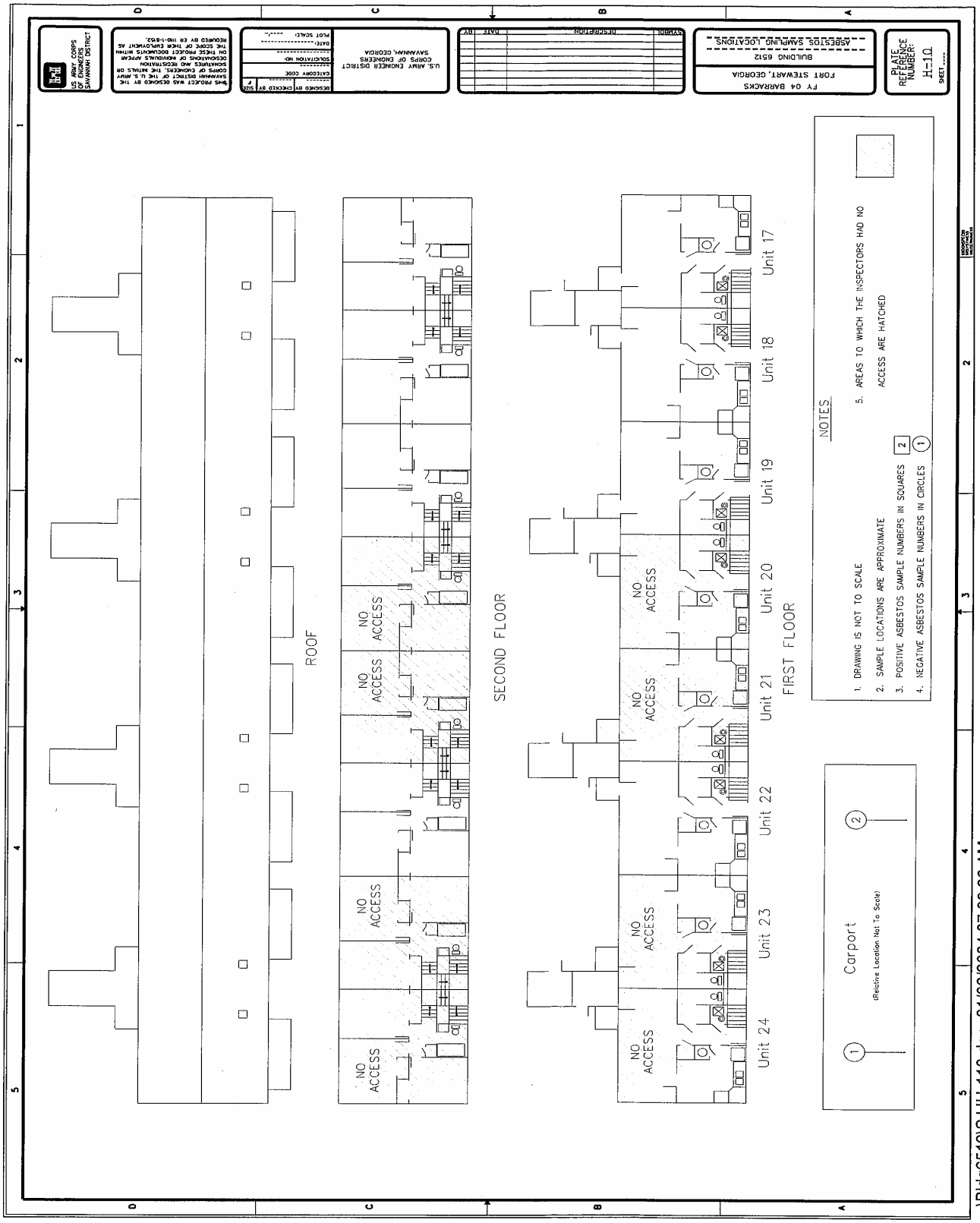
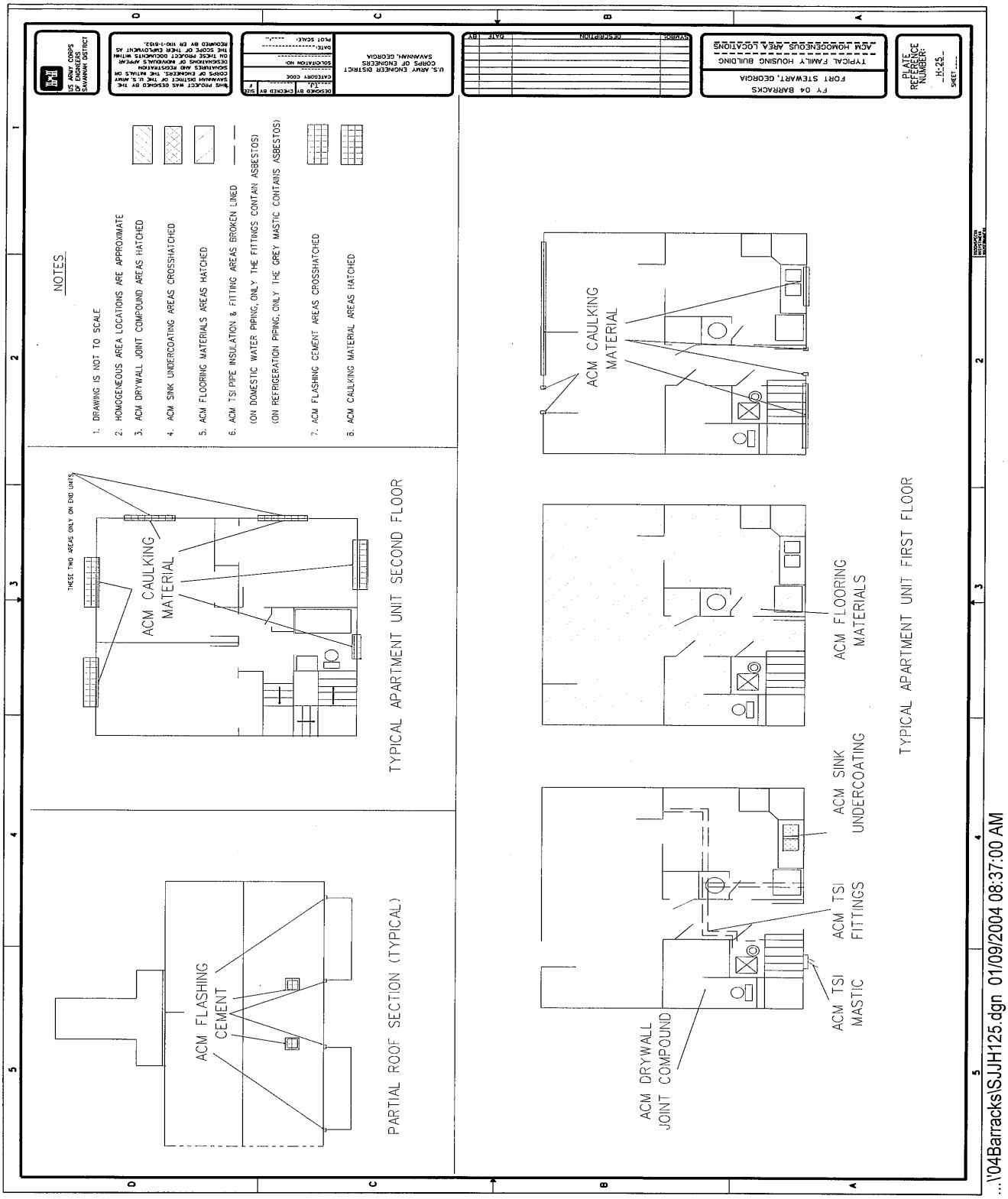

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6512
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER: H-1Q
ROOF
SECOND FLOOR
FIRST FLOOR
NO ACCESS
Unit 17
Unit 18
Unit 19
Unit 20
Unit 21
Unit 22
Unit 23
Unit 24
Carport
(Relative Location Not To Scale)
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
5. AREAS TO WHICH THE INSPECTORS HAD NO ACCESS ARE HATCHED
...\Bldg6512\SJJH-110.dgn 01/06/2004 07:39:26 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE MATRIALS OR DESIGNATIONS OF HOMOGENOUS AREAS SHOWN ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
DESIGNED BY
CHECKED BY
SIZE
CATEGORY CODE
SOLICITATION NO.
DATE
PLOT SCALE
SYMBOL
DESCRIPTION
DATE
BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
"ACM HOMOGENEOUS AREA LOCATIONS"
PLATE REFERENCE NUMBER: H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0312009
Client Project Number/Name: 7947 /Fort Stewart - Building 6512

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/24/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0312009
Client Project Number/Name: 7947 / Fort Stewart - Building 6512

Analyzed: 11/25/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6512-CPR-1	A0312009-01	Black	Gummy	No						20%			80%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6512-CPR-2	A0312009-02	Black	Gummy	No						20%			80%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6512**	Job No.:	**7947**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/20/2003	6512-CPR-1	47213	BUILT-UP ROOFING
11/20/2003	6512-CPR-2	47214	BUILT-UP ROOFING

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-24-03	1600	C. Cell	11/24/03	16:00

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6513 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6513 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6513 at Ft. Stewart; Georgia conducted on 19 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6513 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6513 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6513-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6513 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the

floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6513 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6513 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint

compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6513

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6513-29-1-1	12” X 12” floor tile	Entry hall	None
6513-25-1-2	12” X 12” grey floor tile	Entry hall	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6513

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	Assumed	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6513

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Assumed	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

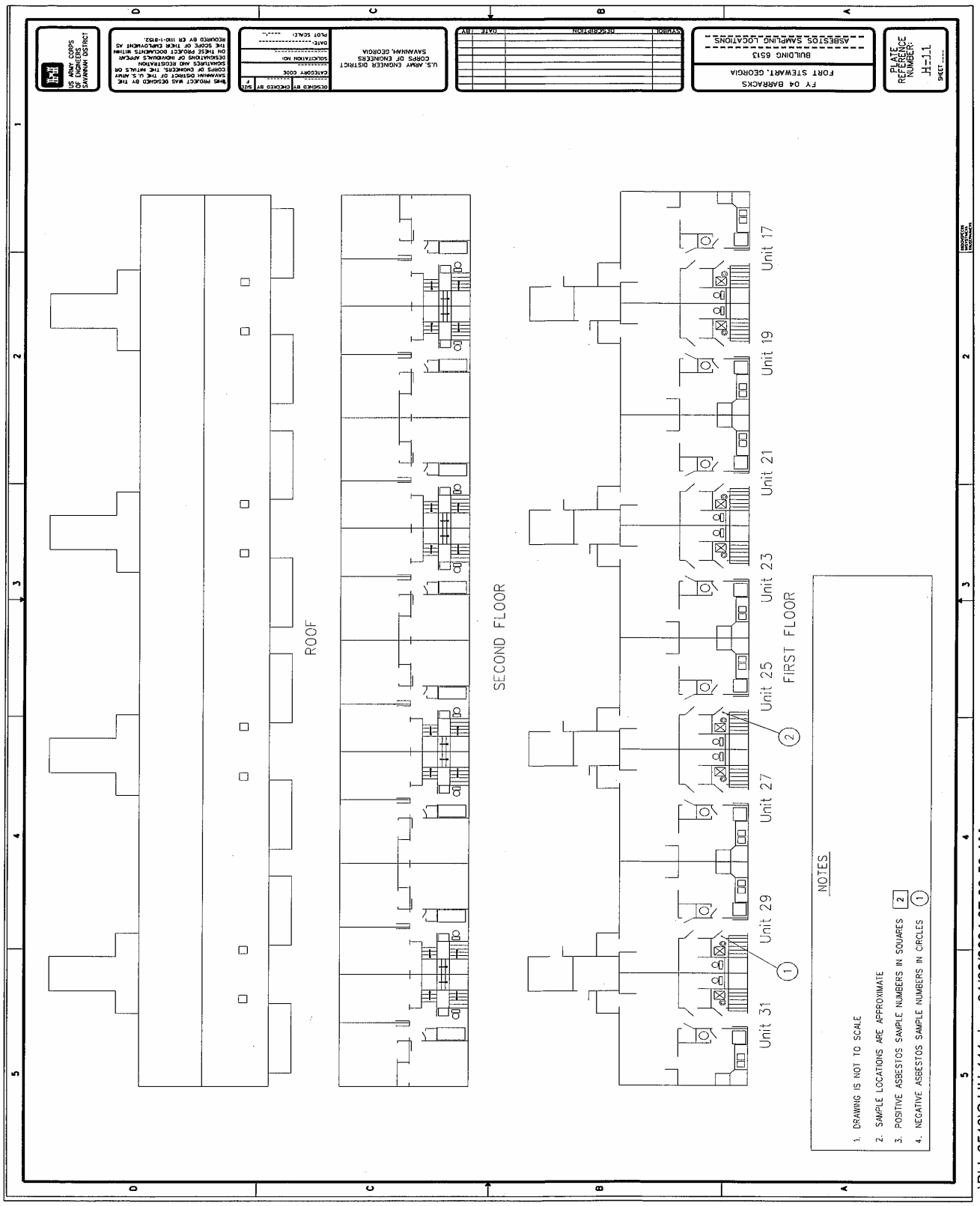
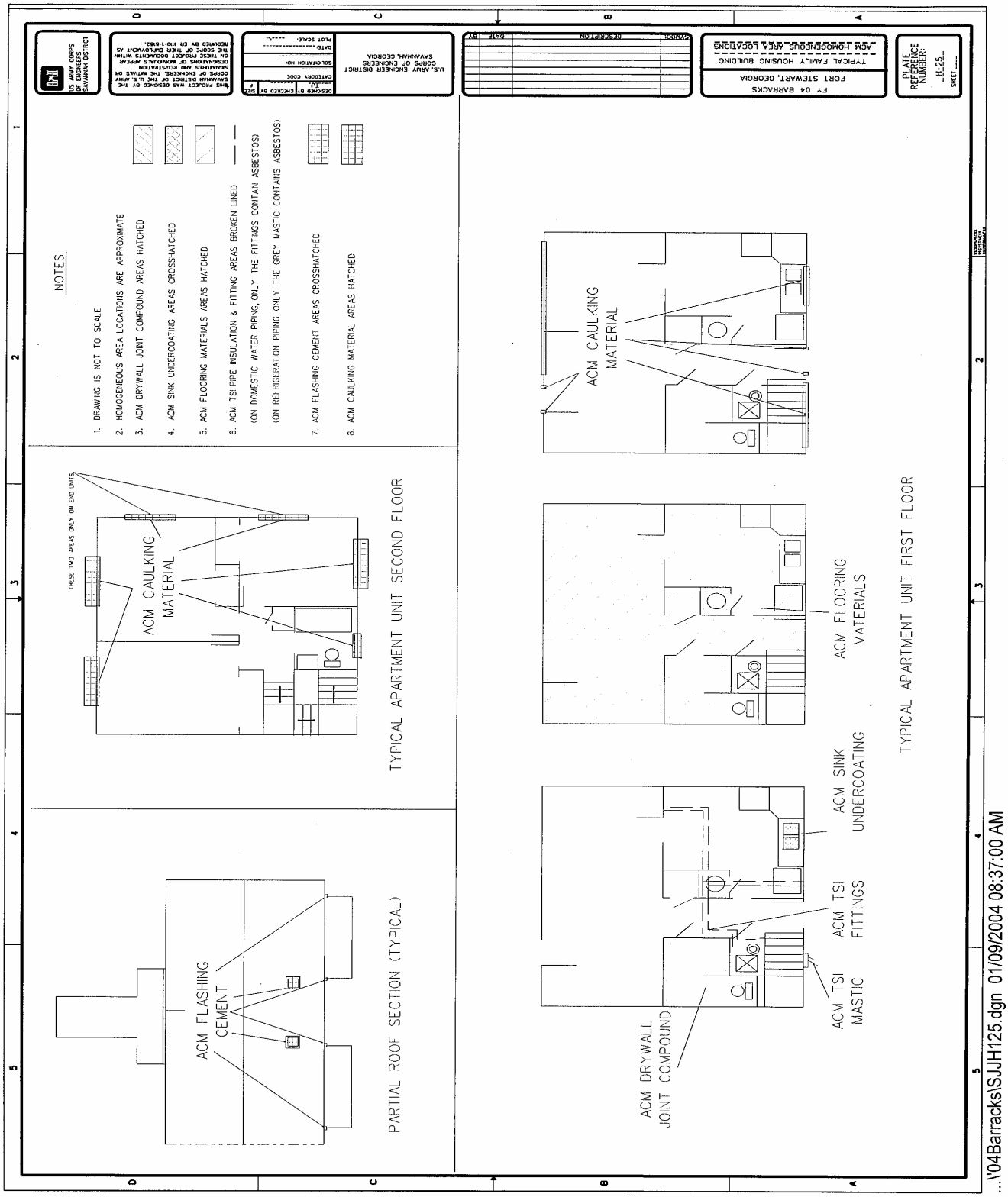

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6513
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER: JH-11
ROOF
SECOND FLOOR
FIRST FLOOR
Unit 17
Unit 19
Unit 21
Unit 23
Unit 25
Unit 27
Unit 29
Unit 31
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
...\Bldg6513\SJJH-111.dgn 01/06/2004 07:39:59 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE U.S. ARMY CORPS OF ENGINEERS, THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS NAMED ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY CR 110-1-8152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0312003
Client Project Number/Name: 7954 /Fort Stewart - Building 6513

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/24/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0312003

Page: 1 of 1

Client Project Number/Name: 7954 / Fort Stewart - Building 6513

Analyzed: 11/25/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6513-29-1-1	A0312003-01	Brown	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6513-25-1-2	A0312003-02	Brown	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6513**	Job No.:	**7954**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/19/2003	6513-29-1-1	47238	FLOOR TILE
11/19/2003	6513-25-1-2	47239	FLOOR TILE

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-24-03	1600	C. Cell	11/24/03	16:00

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6514 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6514 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6514 at Ft. Stewart; Georgia conducted on 17 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6514 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6514 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6514-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6514 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the

floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6514 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6514 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on

analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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Appendices

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6514

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6514-39-1-1	Drywall joint compound	Restroom wall	None
6514-31-1-2	**12” X 12” tan floor tile**	**Kitchen**	**Tile and mastic 4% chrysotile**
6514-31-2-3	Felt paper	Between hardwood flooring and wood sub-floor, second floor	None
6514-31-2-4	Built-up roofing debris	Above bedroom ceiling	None
6514-31-2-5	Ceiling insulation	Above bedroom ceiling	None
6514-31-2-6	Felt paper	Between hardwood flooring and wood sub-floor, second floor	None
6514-31-1-7	Caulking material	First floor entry hall, at top of base molding	None
6514-31-R-8	Flashing cement	Furnace flue, at junction with roof shingles	None
6514-CPR-9	Built-up roofing	Carport roof	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6514

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-2	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6514

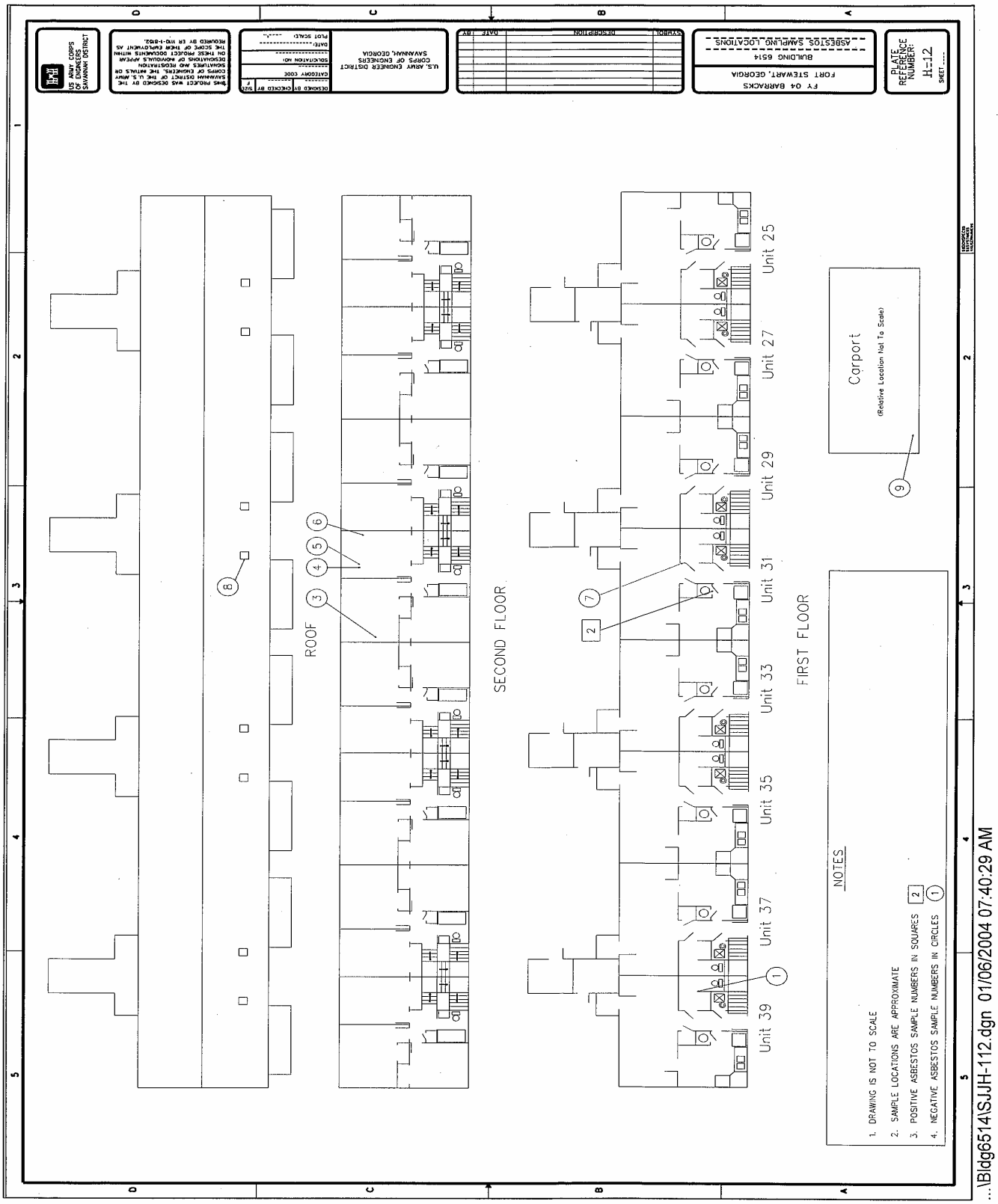
MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 4%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL
DESCRIPTION
DATE
BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6514
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER:
H-12
ROOF
SECOND FLOOR
FIRST FLOOR
Unit 39
Unit 37
Unit 35
Unit 33
Unit 31
Unit 29
Unit 27
Unit 25
Carport
(Relative Location Not To Scale)
NOTES
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2. SAMPLE LOCATIONS ARE APPROXIMATE
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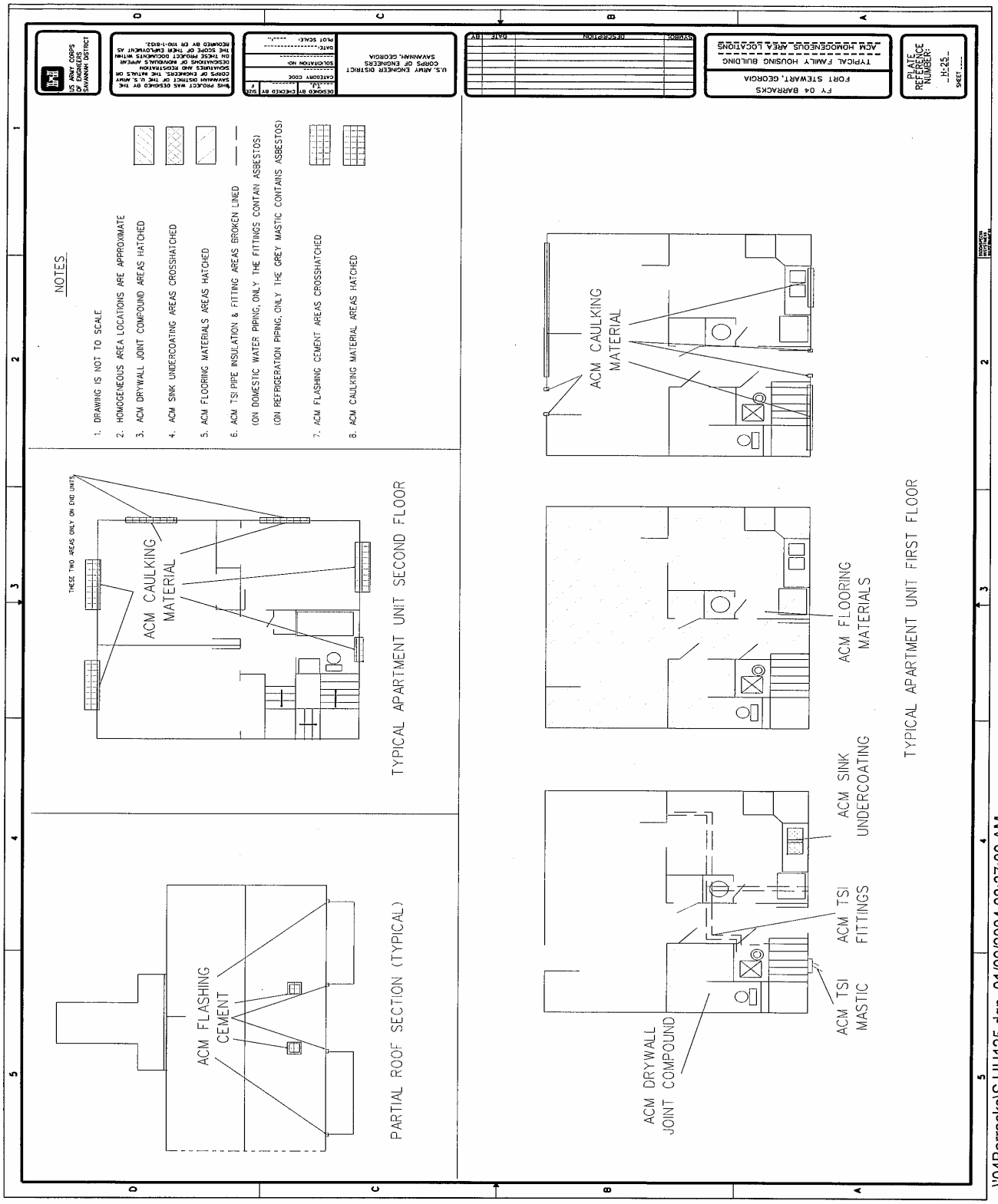
...\Bldg6514\SJJH-112.dgn 01/06/2004 07:40:29 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE MATERIALS OR DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY CR 310-1-6132.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
DESIGNED BY
CHECKED BY
CATEGORY CODE
SOLICITATION NO.
DATE
PLOT SCALE
SYMBOL
DESCRIPTION
DATE
BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
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ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:

Hygeia Project Number: A0312010
Client Project Number/Name: 7945 /Fort Stewart - Building 6514

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/24/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0312010
Client Project Number/Name: 7945 / Fort Stewart - Building 6514

Analyzed: 11/26/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6514-39-1-1	A0312010-01	White	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6514-31-1-2	A0312010-02	Brown	Cons.	Yes	4%								96%	

Comment: **Tile & Mastic: 4% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6514-31-2-3	A0312010-03	Brown	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6514-31-2-4	A0312010-04	Brown	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6514-31-2-5	A0312010-05	Brown	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0312010 **Page:** 2 of 2
Client Project Number/Name: 7945 / Fort Stewart - Building 6514 **Analyzed:** 11/26/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6514-31-2-6	A0312010-06	Brown	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6514-31-1-7	A0312010-07	Yellow	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6514-31-R-8	A0312010-08	Black	Cons.	Yes						30%			70%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6514-CPR-9	A0312010-09	Black	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6514**	Job No.:	**7945**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/17/2003	6514-39-1-1	47189	DRYWALL JOINT COMPOUND
11/17/2003	6514-31-1-2	47190	FLOOR TILE
11/17/2003	6514-31-2-3	47191	FELT PAPER
11/17/2003	6514-31-2-4	47192	BUILT-UP ROOFING DEBRIS
11/17/2003	6514-31-2-5	47193	CEILING INSULATION
11/17/2003	6514-31-2-6	47194	FELT PAPER
11/17/2003	6514-31-1-7	47195	CAULKING MATERIAL
11/17/2003	6514-31-R-8	47196	FLASHING CEMENT
11/17/2003	6514-CPR-9	47197	BUILT-UP ROOFING

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-24-03	1600	N Bakers	11-24-03	

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6517 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6517 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6517 at Ft. Stewart; Georgia conducted on 17 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6517 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6517 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6517-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6517 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the

floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6517 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6517 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 2 and 3 for specific information and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles contains asbestos. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint

compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6517

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6517-CPR-1	Built-up roofing	Carport roof	None
6517-3-R-2	Roof shingle	Main roof field	None
6517-3-R-3	Roofing felt	Main roof field, under shingles	None
6517-5-R-4	**Flashing cement**	**Furnace flue flashing**	**5% chrysotile**

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6517

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	Assumed	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	R-4						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6517

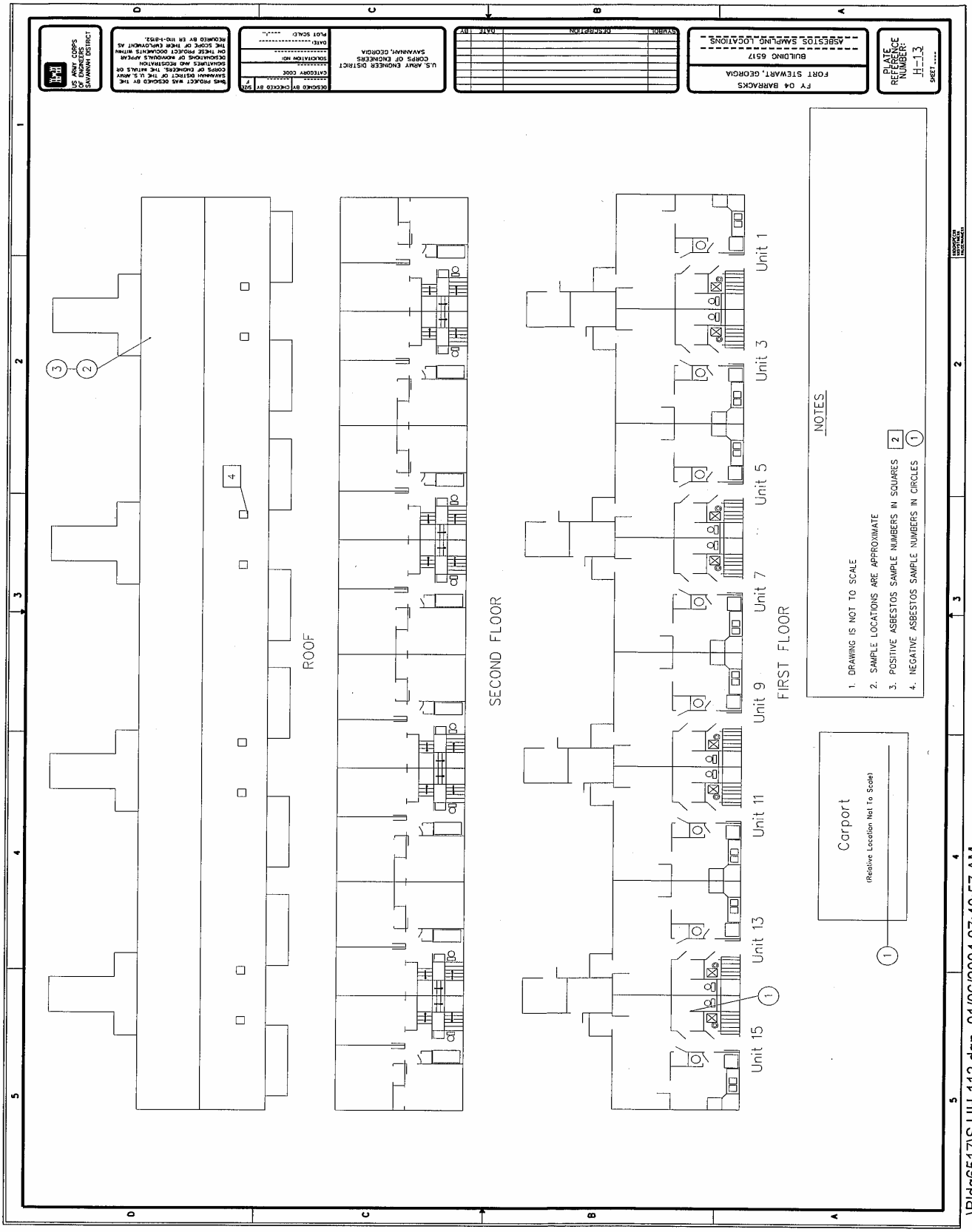
MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Assumed	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Yes 5%	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

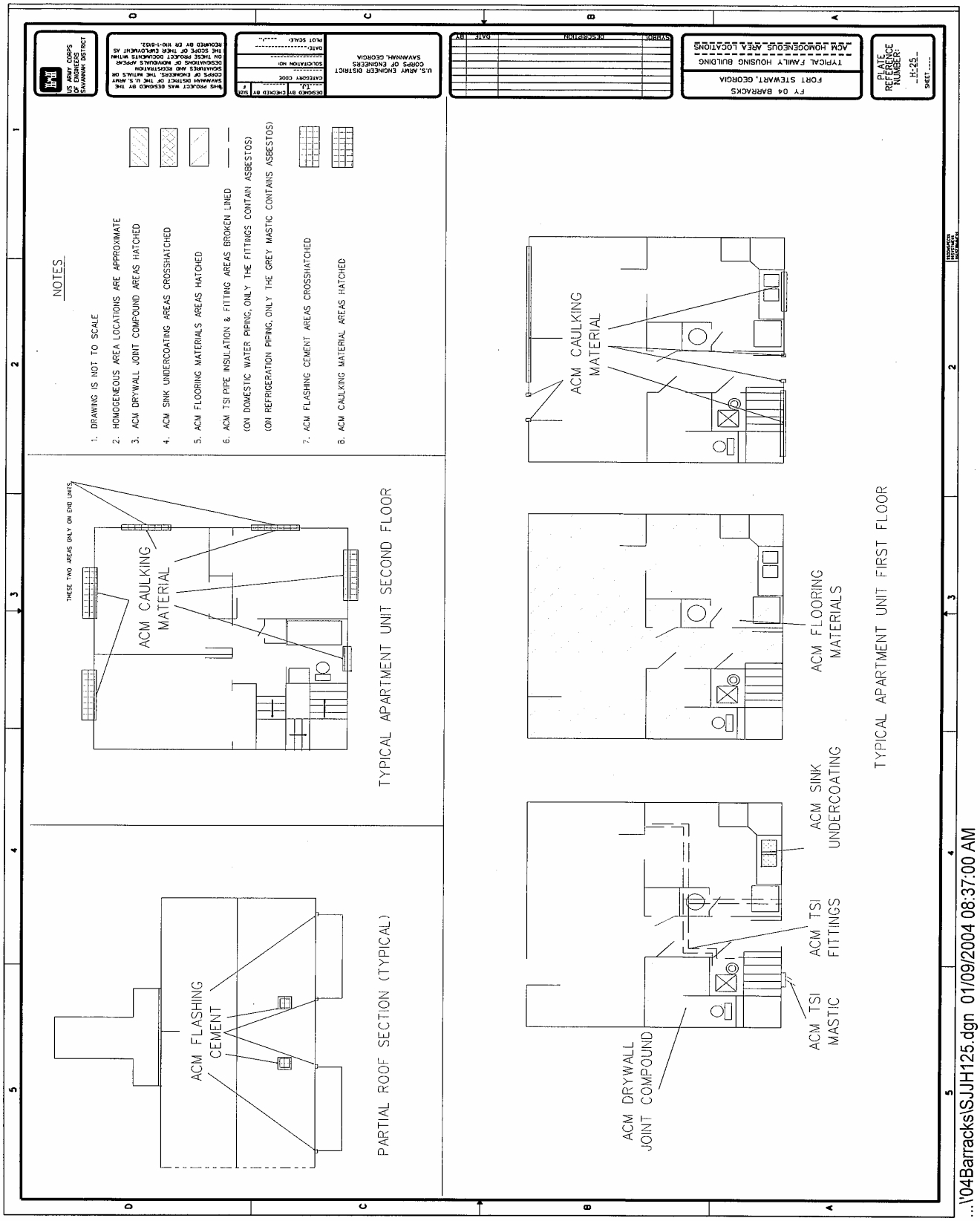
*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1



...\Bldg517\SJJH-113.dgn 01/06/2004 07:40:57 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE U.S. ARMY SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE MATERIALS OR DESIGNATIONS OF REMOVABLE MATERIALS AND SQUANTITIES AND REPRESENTATION ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 110-1-8152.
DESIGNED BY CHECKED BY SIZE
CATEGORY CODE
SOLICITATION NO:
DATE:
PLOT SCALE:
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0312011
Client Project Number/Name: 7953 /Fort Stewart - Building 6517

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/24/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

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For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0312011
Client Project Number/Name: 7953 / Fort Stewart - Building 6517

Analyzed: 11/26/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6517-CPR-1	A0312011-01	Black	Gummy	No						20%			80%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6517-3-R-2	A0312011-02	Black	Gummy	Yes							10%		90%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6517-3-R-3	A0312011-03	Black	Gummy	Yes						40%			60%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6517-5-R-4	A0312011-04	Black	Gummy	No	5%					10%			85%	

Comment: **Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6517**	Job No.:	**7953**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/17/2003	6517-CPR-1	47234	BUILT-UP ROOFING
11/17/2003	6517-3-R-2	47235	ROOF SHINGLE
11/17/2003	6517-3-R-3	47236	ROOF FELT
11/17/2003	6517-5-R-4	47237	FLASHING CEMENT

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-24-03	1600	C. Cell	11/24/03	16:00

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6518 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6518 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6518 at Ft. Stewart; Georgia conducted on 13 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6518 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6518 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Apartment Units 24 and 28 were inaccessible at the time of inspection; the materials within are assumed similar to those of the inspected Units. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6518-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6518 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the

floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6518 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous

materials at Building No. 6518 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 2 and 3 for specific information and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on

analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6518

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6518-30-1-1	**Light green sheet vinyl flooring**	**Kitchen, upper layer**	**10% chrysotile**
6518-18-1-2	Drywall joint compound	Kitchen, at patch around washing machine service box	None
6518-22-1-3	Tan sheet vinyl flooring	Kitchen, upper layer	None
6518-CPR-4	Built-up roofing	Carport roof	None
6518-26-R-5	Flashing cement	Furnace flue, older black material from previous roof	None
6518-26-R-6	Flashing cement	Furnace flue, at junction with roof shingles	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6518

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-1	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6518

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 10%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

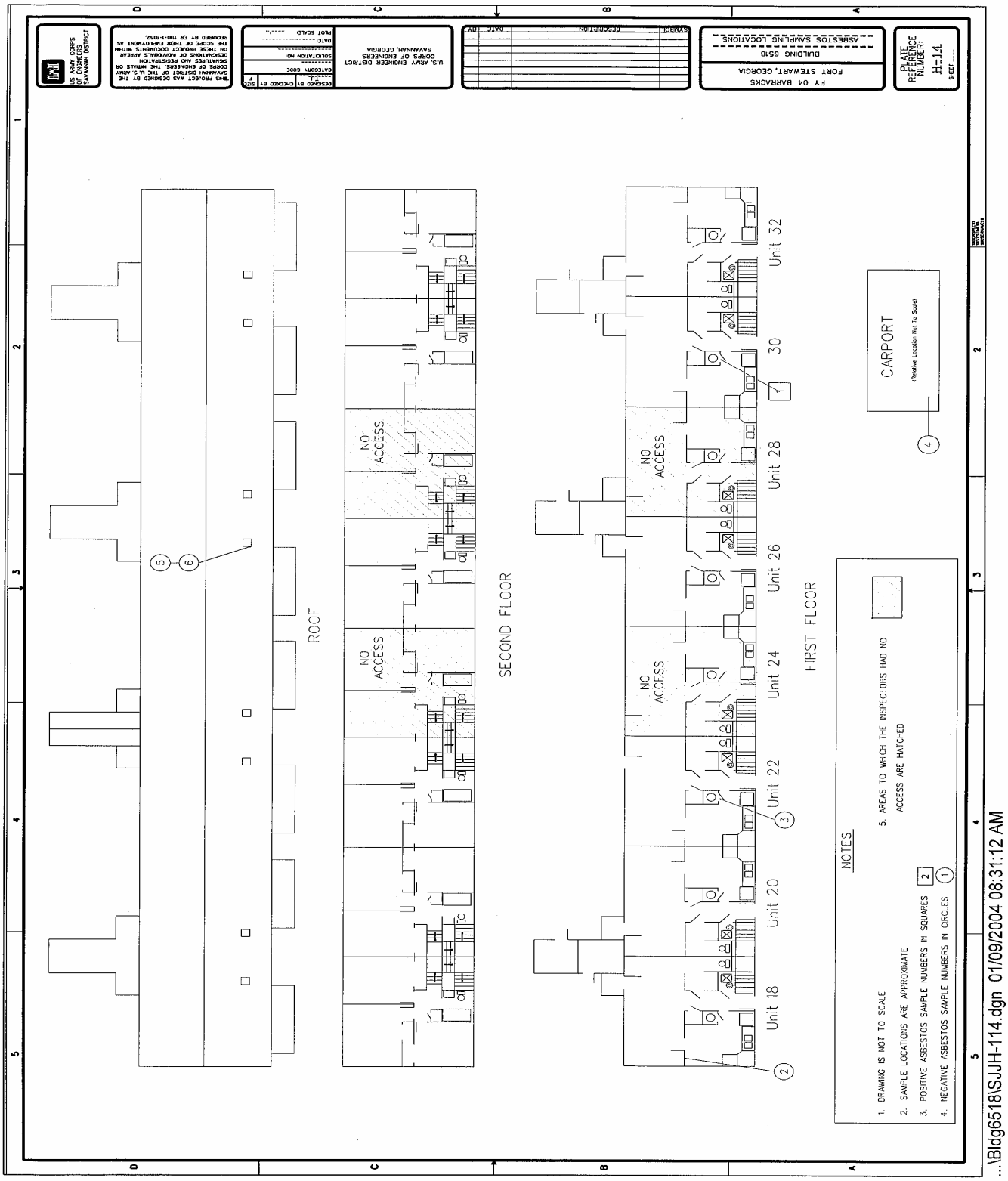
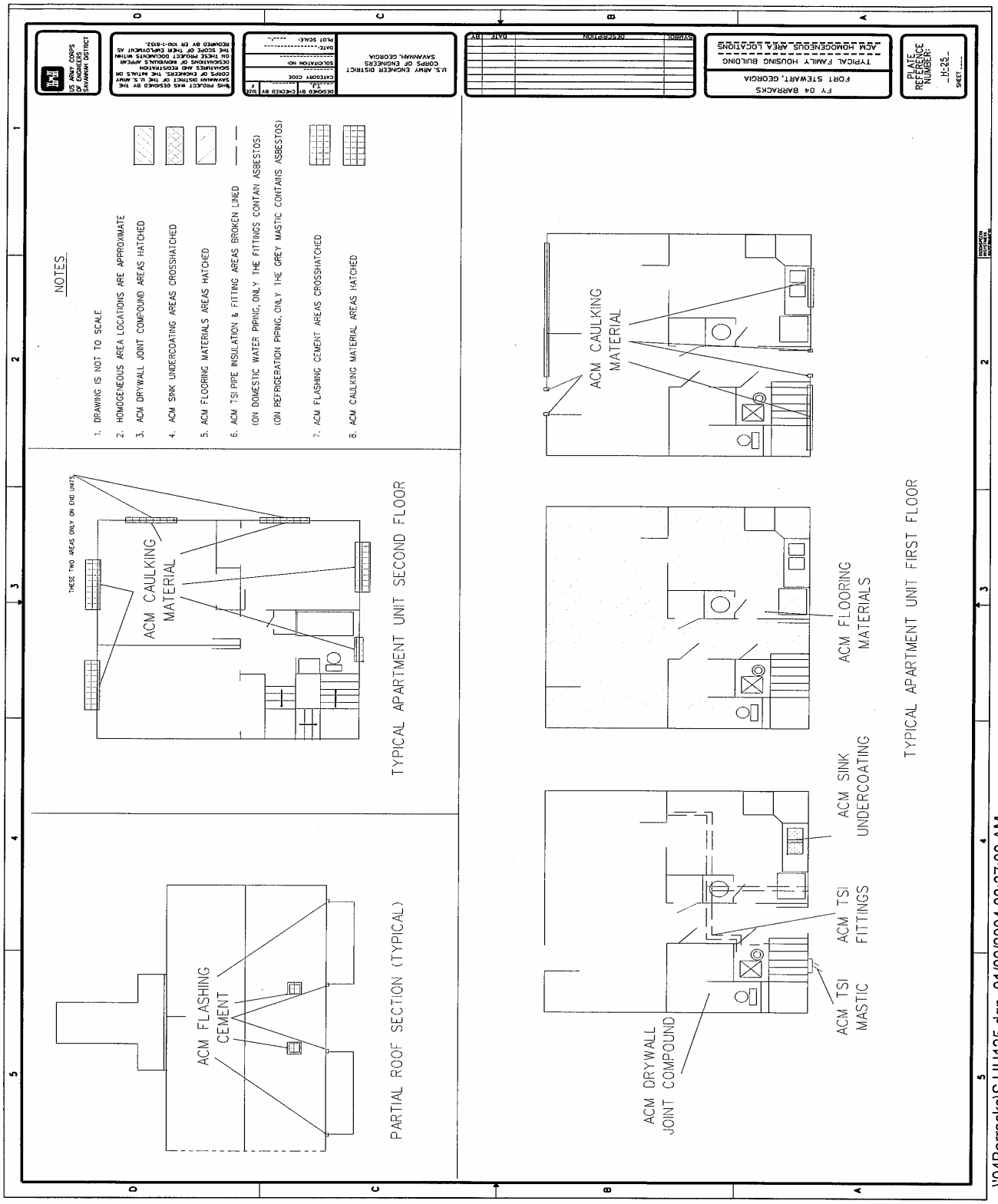

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
DESIGNED BY
CHECKED BY
SIZE
CATEGORY CODE
SOLICITATION NO.
DATE
PLOT SCALE
DATE
BY
DESCRIPTION
SYMBOL
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6518
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER:
H-14
SHEET
ROOF
SECOND FLOOR
FIRST FLOOR
NO ACCESS
NO ACCESS
NO ACCESS
NO ACCESS
Unit 18
Unit 20
Unit 22
Unit 24
Unit 26
Unit 28
Unit 30
Unit 32
CARPORT
(Relative Location Not To Scale)
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
5. AREAS TO WHICH THE INSPECTORS HAD NO ACCESS ARE HATCHED
...\Bldg6518\SJJH-114.dgn 01/09/2004 08:31:12 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE MATERIALS OR DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
DESIGNED BY CHECKED BY
CATEGORY CODE
SOLICITATION NO:
DATE:
PLOT SCALE:
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER:
H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0311051
Client Project Number/Name: 7938 /Fort Stewart - Building 6518

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/14/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0311051
Client Project Number/Name: 7938 / Fort Stewart - Building 6518

Analyzed: 11/18/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6518-30-1-1	A0311051-01	Gray	Fibrous	Yes	10%					10%			80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6518-18-1-2	A0311051-02	Gray	Powdery	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6518-22-1-3	A0311051-03	Gray	Fibrous	Yes						10%	10%		80%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6518-CPR-4	A0311051-04	Black	Gummy	No						20%			80%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6518-26-R-5	A0311051-05	Black	Gummy	No						25%			75%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311051
Client Project Number/Name: 7938 / Fort Stewart - Building 6518

Analyzed: 11/18/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6518-26-R-6	A0311051-06	Black	Gummy	Yes						25%			75%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile	cell = cellulose	per = perlite	OF = Other Fibers
Am. = amosite	glass = fibrous glass	ver = vermiculite	ONF = Other Non-Fibers
Cro. = crocidolite	syn = synthetic	MF = Mineral filler	Cons = Consolidated
An. = anthophyllite	sty = styrene foam	B/F = Binder / filler	
T/A = tremolite/actinolite	det = detected	**NAD = No asbestos detected**	

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6518**	Job No.:	**7938**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/13/2003	6518-30-1-1	47129	Sheet vinyl flooring
11/13/2003	6518-18-1-2	47130	Drywall Joint Compound
11/13/2003	6518-22-1-3	47131	Sheet vinyl flooring
11/13/2003	6518-CPR-4	47132	Built-up roofing
11/13/2003	6518-26-R-5	47133	Flashing cement
11/13/2003	6518-26-R-6	47134	Flashing cement

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-14-03	1630	C. Cole	11/14/03	

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6519 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6519 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6519 at Ft. Stewart; Georgia conducted on 19 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6519 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6519 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6519-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6519 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the

floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6519 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6519 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 2 and 3 for specific information and figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint

compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6519

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6519-1-1-1	Wall plaster	Mechanical closet	None
6519-6-1-2	Caulking material	Entry hall, at top of base molding	None
6519-CPR-3	Built-up roofing	Carport roof	None
6519-CPR-4	Built-up roofing	Carport roof	None
6519-3-R-5	Rolled roofing & sealer	Storage shed roof	None
6519-3-R-6	Roof shingle	Main roof field	None
6519-3-R-7	Roof felt	Main roof field, under shingles	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6519

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	Assumed	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6519

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Assumed	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

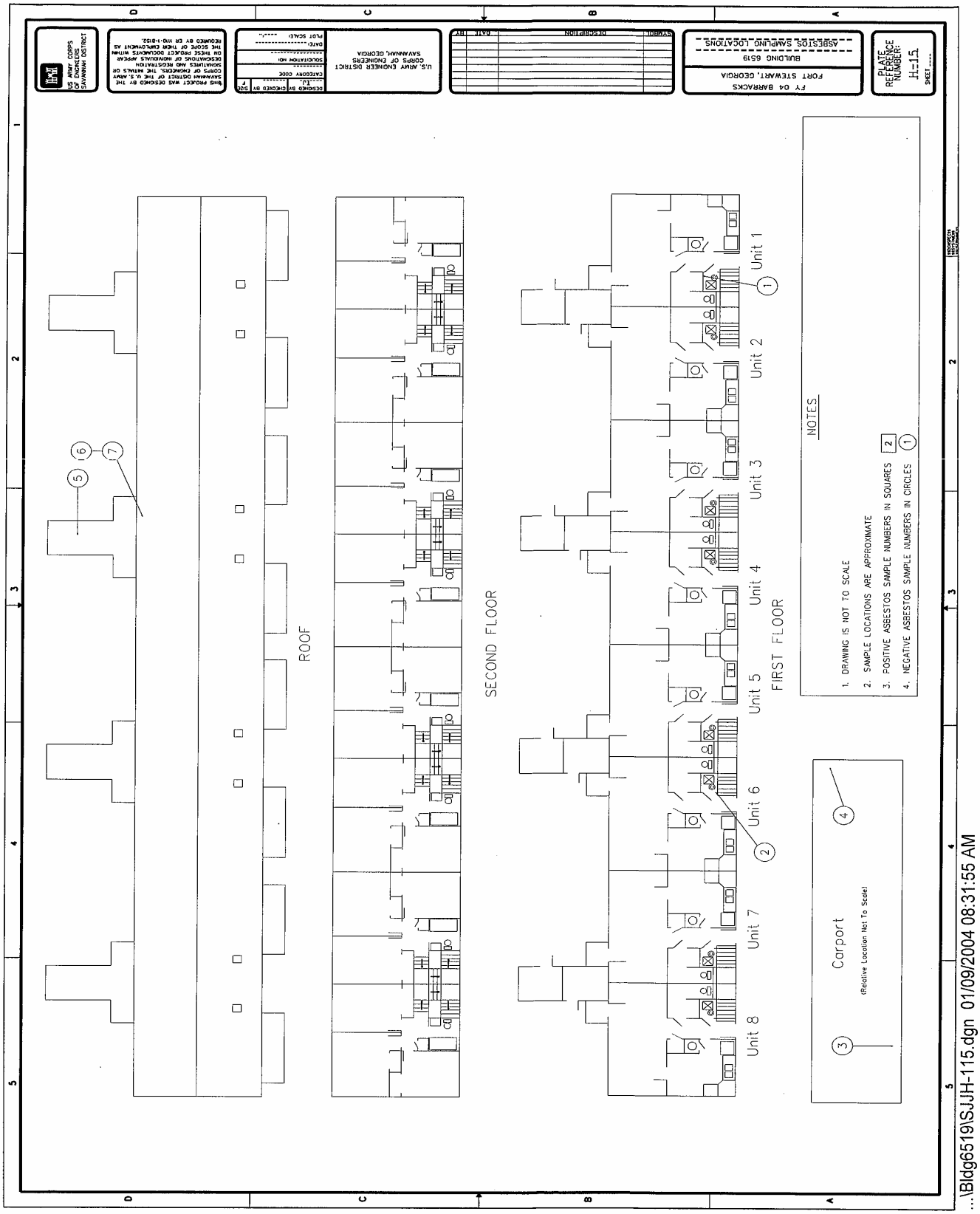
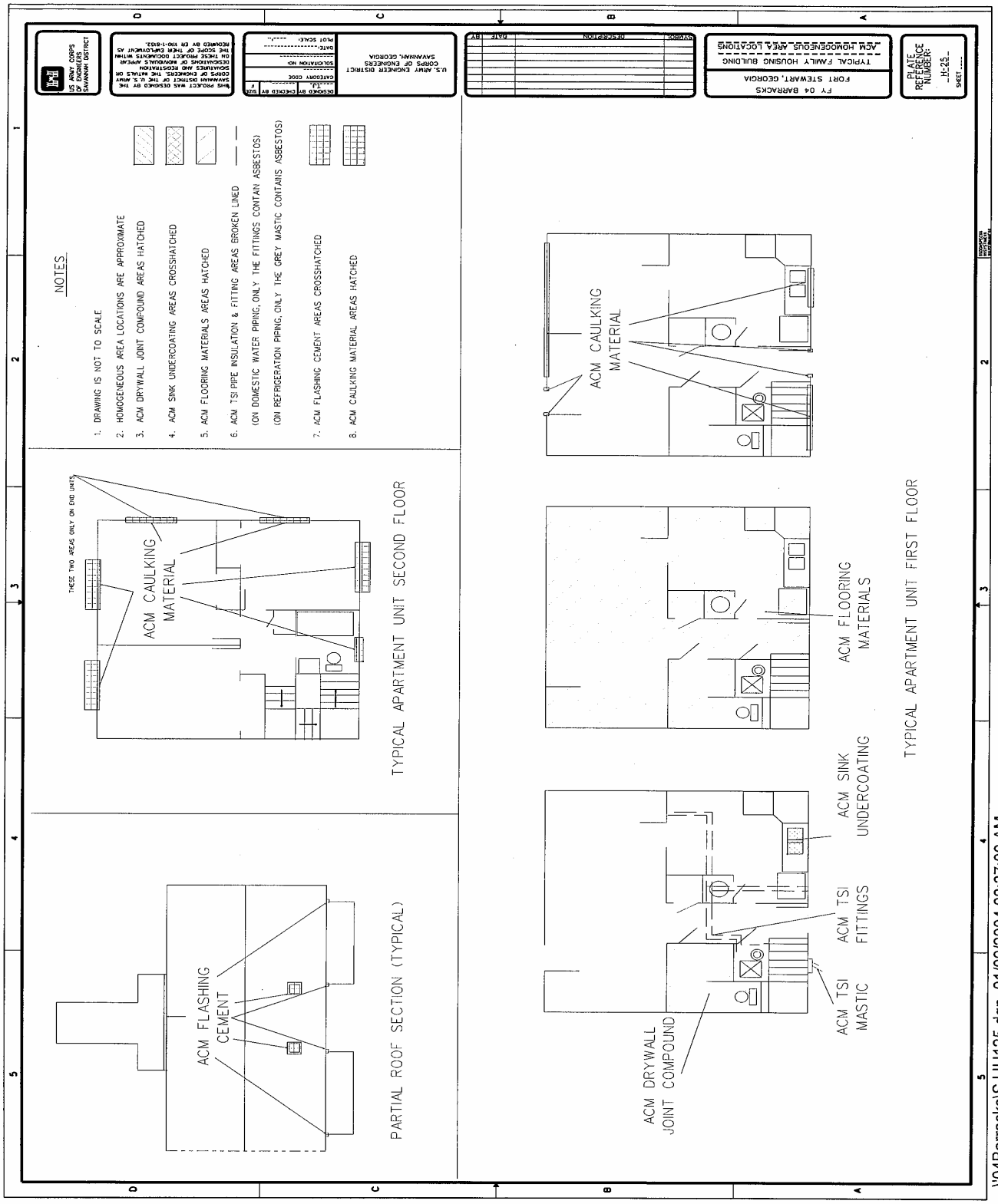

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6519
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER: H-15
ROOF
SECOND FLOOR
FIRST FLOOR
Unit 1
Unit 2
Unit 3
Unit 4
Unit 5
Unit 6
Unit 7
Unit 8
Carport
(Relative Location Not To Scale)
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
...\Bldg6519\SJJH-115.dgn 01/09/2004 08:31:55 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE CORPS OF ENGINEERS, THE WITMS ON SAVANNAH DISTRICT OF THE U.S. ARMY DESIGNATIONS AND RESTRITION SOLUTIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY CR 110-1-6152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
DESIGNED BY CHECKED BY
CATEGORY CODE
SOLICITATION NO:
DATE:
PLOT SCALE:
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER:
H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0312002
Client Project Number/Name: 7951 /Fort Stewart - Building 6519

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/24/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0312002
Client Project Number/Name: 7951 / Fort Stewart - Building 6519

Analyzed: 11/25/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6519-1-1-1	A0312002-01	Gray	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6519-6-1-2	A0312002-02	Gray	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6519-CPR-3	A0312002-03	Black	Gummy	No						15%			85%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6519-CPR-4	A0312002-04	Black	Gummy	No						20%			80%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6519-3-R-5	A0312002-05	Black	Gummy	No						5%		5%	90%	

Comment: **Other Fibers: Synthetic Fibers No Asbestos Detected.**

Hygeia Project Number: A0312002 **Page:** 2 of 2
Client Project Number/Name: 7951 / Fort Stewart - Building 6519 **Analyzed:** 11/25/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6519-3-R-6	A0312002-06	Black	Gummy	No							10%		90%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6519-3-R-7	A0312002-07	Black	Gummy	No						30%			70%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6519**	Job No.:	**7951**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/19/2003	6519-1-1-1	47226	WALL PLASTER
11/19/2003	6519-6-1-2	47227	CAULKING MATERIAL
11/19/2003	6519-CPR-3	47228	BUILT-UP ROOFING
11/19/2003	6519-CPR-4	47229	BUILT-UP ROOFING
11/19/2003	6519-3-R-5	47230	ROLLED ROOFING AND SEALER
11/19/2003	6519-3-R-6	47231	ROOF SHINGLE
11/19/2003	6519-3-R-7	47232	ROOFING FELT

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-24-03	1600	C. Cell	11/24/03	16:00

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

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Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

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United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

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NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6520 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6520 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6520 at Ft. Stewart; Georgia conducted on 18 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6520 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6520 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. No bulk samples of suspect ACM's were collected for analysis.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6520 is included in this report where relevant. Estimated quantities of individual asbestos containing materials appear on Table 1. Material characterization of asbestos containing materials appears on Table 2.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6520 are assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 1 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 1 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6520 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 2 and 3 for specific information and figure 1 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. -

(Refer to Tables 2 and 3 for specific information and figure 1 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1" wide on each the front and rear of the building at the building's center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 1 for homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 1 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 1 for homogeneous area locations).

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TABLE 1
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6520

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30

Caulking around piping	S.F.	Assumed							8	8
Flooring materials	S.F.	Assumed	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 2
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6520

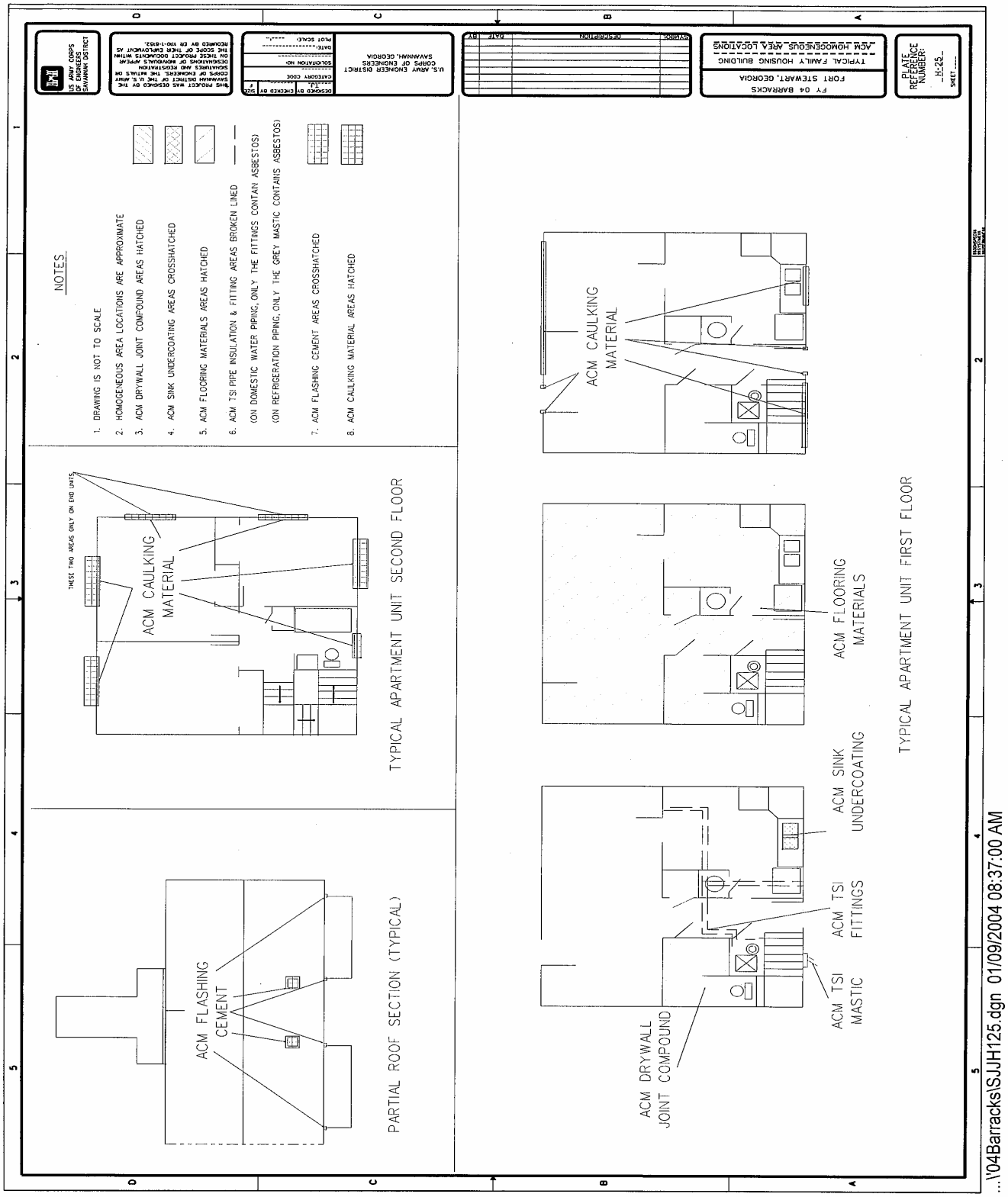
MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Assumed	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1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U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

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Asbestos in Buildings: Inspector Refresher

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United States Department of Commerce
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DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

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is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

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National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
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E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

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NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6521 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

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Asbestos Survey **December 2003**

Building No. 6521 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6521 at Ft. Stewart; Georgia conducted on 13 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6521 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6521 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Apartment Units 17, 18, 19 and 20 were inaccessible at the time of inspection. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6521-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6521 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations

of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6521 were found to contain or were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous

materials at Building No. 6521 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The

older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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Appendix C. Accreditations 19-23

TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6521

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6521-22-1-1	**Sheet vinyl flooring**	**Kitchen, center layer**	**10% chrysotile**
6521-22-2-2	Felt paper	Second floor, between hardwood flooring and sub-floor	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6521

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-1	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6521

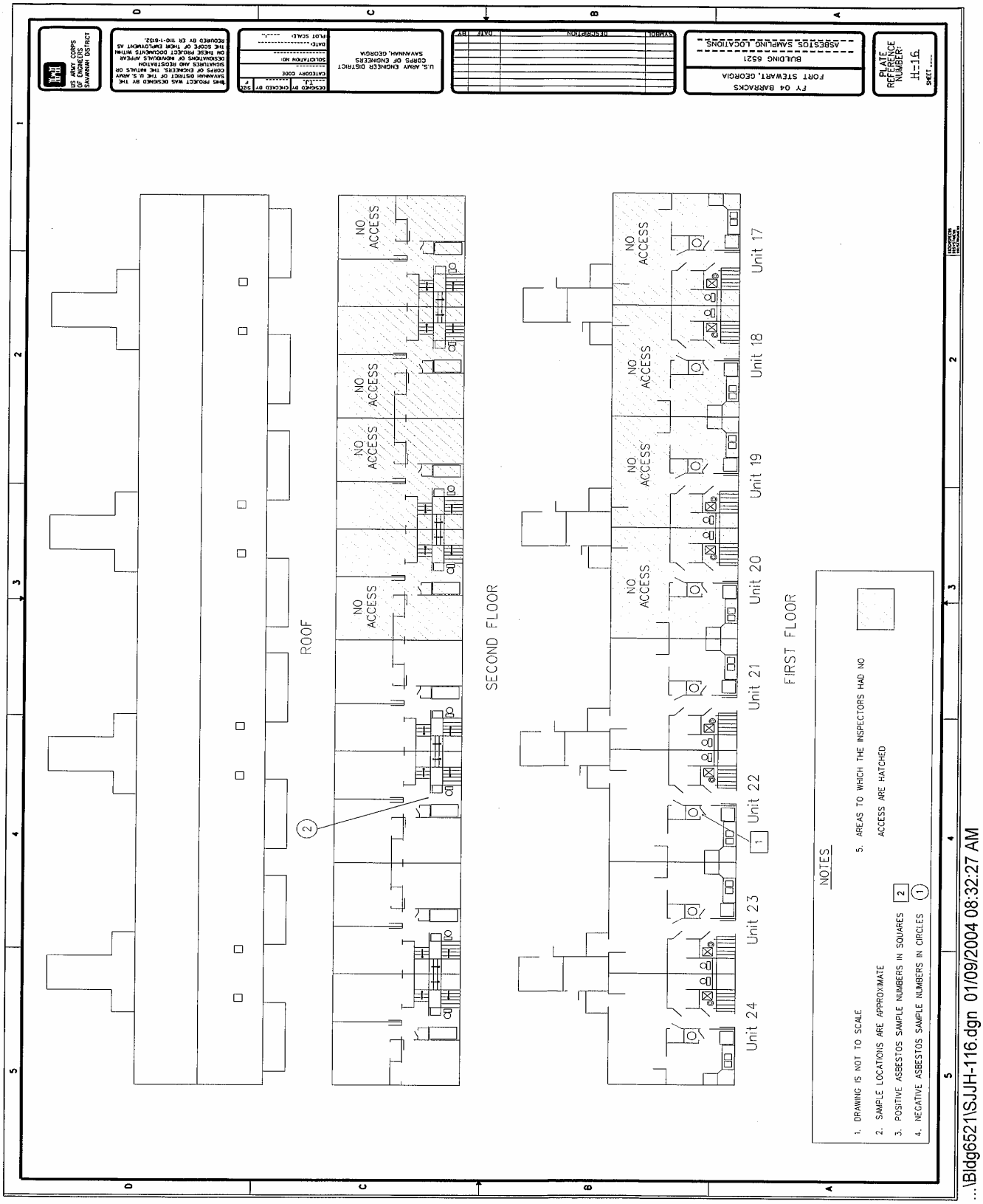
MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 10%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
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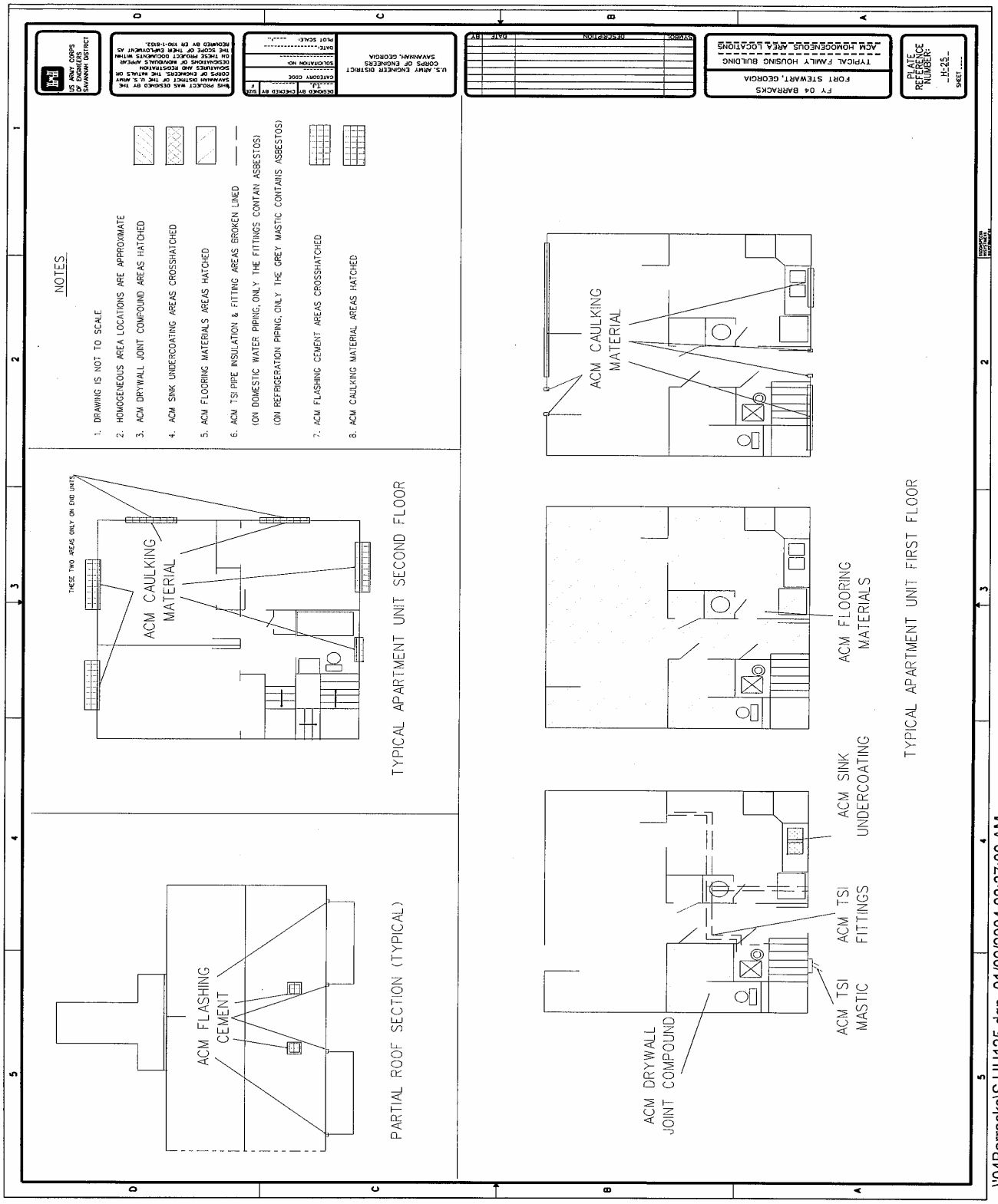
DESIGNED BY
CHECKED BY
SIZE
CATEGORY CODE
SOLICITATION NO:
DATE:
PLOT SCALE:
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL
DESCRIPTION
DATE
BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6521
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER:
H-16
SHEET
ROOF
SECOND FLOOR
FIRST FLOOR
NO ACCESS
Unit 17
Unit 18
Unit 19
Unit 20
Unit 21
Unit 22
Unit 23
Unit 24
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
5. AREAS TO WHICH THE INSPECTORS HAD NO ACCESS ARE HATCHED
...\Bldg6521\SJJH-116.dgn 01/09/2004 08:32:27 AM

Figure 2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THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE MATERIALS OR DESIGNATIONS OF INDIVIDUAL APPLIAN SOLUTIONS AND RESTRICTION ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY CR 310-1-6132.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
DESIGNED BY CHECKED BY
CATEGORY CODE
SOLICITATION NO:
DATE:
PLOT SCALE:
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:

Hygeia Project Number: A0312004
Client Project Number/Name: 7956 /Fort Stewart - Building 6521

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/24/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0312004
Client Project Number/Name: 7956 / Fort Stewart - Building 6521

Analyzed: 11/25/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6521-22-1-1	A0312004-01	Gray	Fibrous	Yes	10%					10%			80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6521-22-2-2	A0312004-02	Black	Gummy	No						20%			80%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6521**	Job No.:	**7956**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/13/2003	6521-22-1-1	47251	SHEET VINYL FLOORING
11/13/2003	6521-22-2-2	47252	FELT PAPER

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-24-03	1600	C. Gell	11/24/03	1600

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

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National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6522 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6522 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6522 at Ft. Stewart; Georgia conducted on 18 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6522 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6522 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Apartment Units 39and 41 were inaccessible at the time of inspection. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6522-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6522 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations

of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6522 were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous

materials at Building No. 6522 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The

older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6522

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6522-CPR-1	Built-up roofing	Carport roof	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6522

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	Assumed	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6522

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Assumed	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

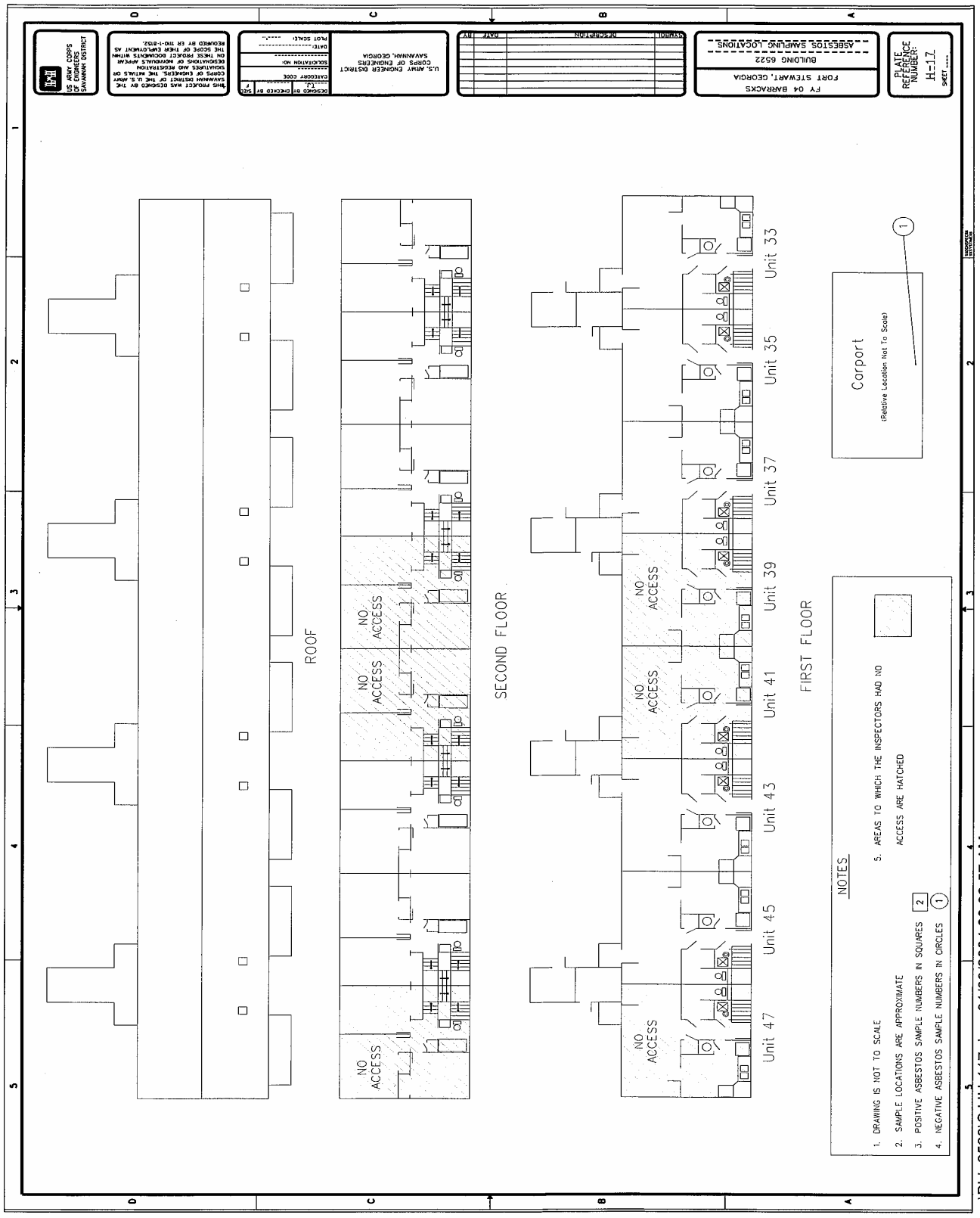
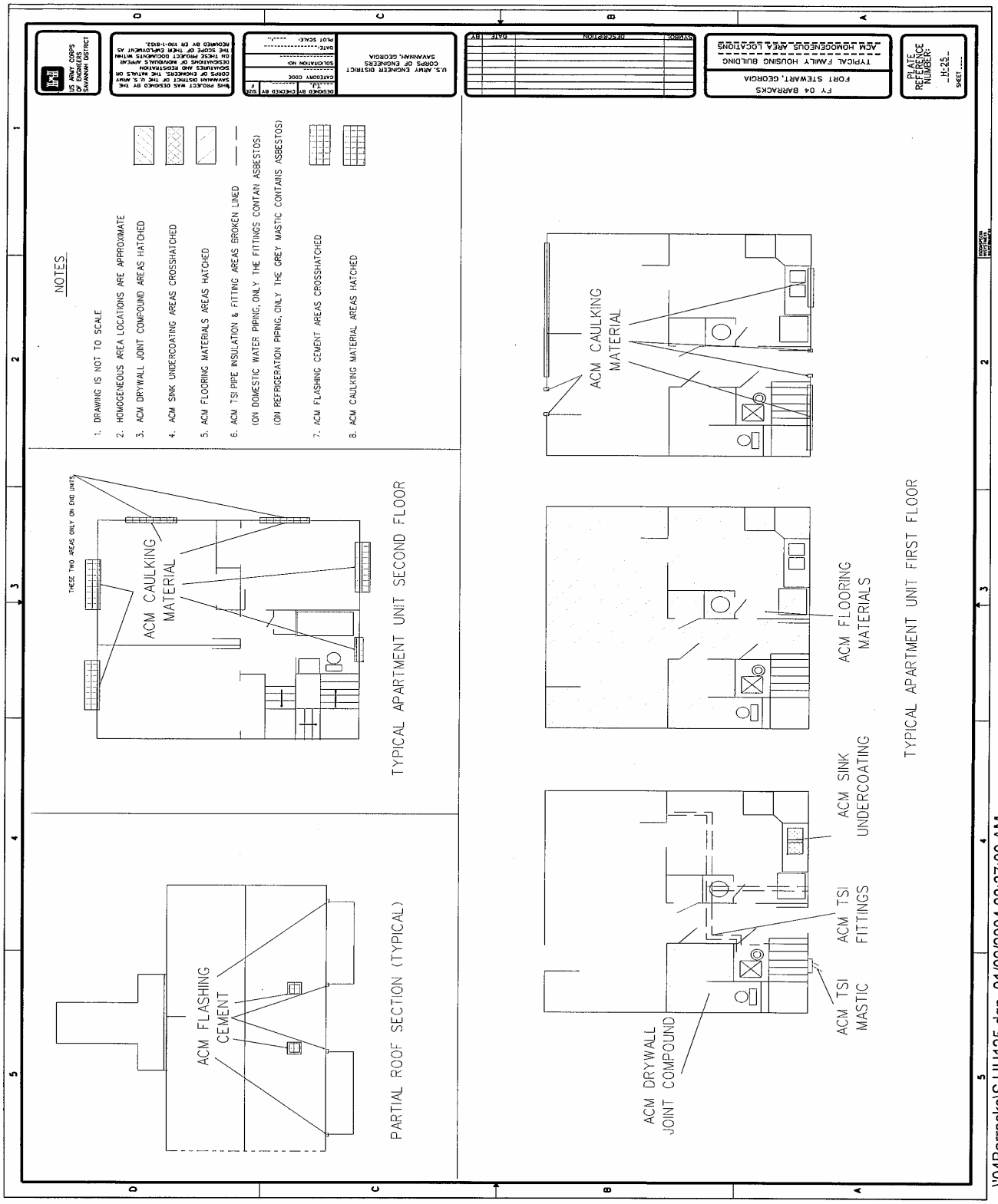

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6522
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER:
H-17
ROOF
NO ACCESS
SECOND FLOOR
Unit 33
Unit 35
Unit 37
Unit 39
Unit 41
Unit 43
Unit 45
Unit 47
FIRST FLOOR
Carport
(Relative Location Not To Scale)
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
5. AREAS TO WHICH THE INSPECTORS HAD NO ACCESS ARE HATCHED
...\Bldg6522\SJJH-117.dgn 01/09/2004 08:32:57 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE MATERIALS OR DESIGNATIONS OF INDIVIDUAL APPLIAN SOLUTIONS AND RESTRICTION ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY CR 310-1-6132.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
DESIGNED BY CHECKED BY
CATEGORY CODE
SOLICITATION NO:
DATE:
PLOT SCALE:
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0312012
Client Project Number/Name: 7948 /Fort Stewart - Building 6522

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/16/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0312012
Client Project Number/Name: 7948 / Fort Stewart - Building 6522

Analyzed: 11/26/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6522-CPR-1	A0312012-01	Black	Gummy	No						30%			70%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6522**	Job No.:	**7948**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/18/2003	6522-CPR-1	47215	BUILT-UP ROOFING

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-16-03	1600	Clayton Cell	11/16/03	16:00

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6523 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6523 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6523 at Ft. Stewart; Georgia conducted on 5 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6523 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6523 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6523-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6523 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the

floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6523 were found to contain or are assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers contains asbestos. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping contain asbestos. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6523 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls contains asbestos. The caulking material within the brick control/expansion joints contains. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations contains asbestos. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom contains asbestos. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink contains asbestos. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6523

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6523-36-1-1	**12” x 12” white/grey floor tile**	**Entry hall**	**Tile NAD, mastic 5% chrysotile**
6523-36-1-2	**Green sheet vinyl flooring**	**Kitchen, upper layer**	**10% chrysotile**
6523-36-1-3	**Tan floor tile**	**Kitchen, lower layer**	**Tile 3% chrysotile, mastic 10% chrysotile**
6523-36-1-4	Drywall joint compound	Kitchen, patch area around washing machine service box	None
6523-36-1-5	Ceiling plaster	Kitchen pantry/water heater closet	None
6523-36-1-6	**TSI pipe elbow**	**Mechanical closet, domestic water piping**	**5% chrysotile**
6523-36-1-7	**Yellow sheet vinyl flooring**	**First floor restroom, upper layer**	**10% chrysotile**
6523-36-1-8	**Sheet vinyl flooring**	**First floor restroom, second layer**	**10% chrysotile**
6523-36-1-9	**Brown 9” X 9” floor tile**	**First floor restroom, lower layer**	**3% chrysotile**
6523-36-1-10	**Black Mastic**	**Entry hall closet, under parquet wood flooring on concrete (typical throughout first floor)**	**8% chrysotile**
6523-36-1-11	**Black Mastic**	**Living room, under parquet wood flooring on concrete (typical throughout first floor)**	**5% chrysotile**
6523-36-1-12	**Drywall joint compound**	**First floor restroom walls**	**5% chrysotile**
6523-36-2-13	Caulking material	Second floor restroom, around bathtub	None
6523-36-2-14	Caulking material	Second floor restroom, around lavatory	None
6523-38-1-15	12” x 12” white/grey floor tile & yellow mastic	Entry hall	None
6523-38-1-16	**Black Mastic**	**Entry hall, below sample 1-15**	**5% chrysotile**
6523-38-1-17	**Black Mastic**	**Living room, under parquet wood flooring on concrete (typical throughout first floor)**	**7% chrysotile**

6523-38-1-18	**12” X 12” tan/brown floor tile**	**Kitchen, single layer**	**Tile 7% chrysotile, mastic 3% chrysotile**
6523-38-1-19	**TSI pipe elbow**	**Mechanical closet, domestic water piping**	**10% chrysotile**
6523-38-2-20	Felt paper	Second floor restroom, between wall framing and plaster behind bathtub	None
6523-38-1-21	TSI pipe jacket	Mechanical closet, paper over fiberglass pipe run	None
6523-38-1-22	**Sink undercoating**	**Kitchen, underside of stainless steel sink**	**2% chrysotile**
6523-40-1-23	**Black mastic**	**Entry hall, under wood parquet flooring**	**10% chrysotile**
6523-40-1-24	Tan sheet vinyl flooring	First floor restroom, upper layer	None
6523-40-1-25	**Brown floor tile**	**First floor restroom, lower layer**	**Tile 5% chrysotile, mastic 10% chrysotile**
6523-40-1-26	Tan sheet vinyl flooring	Kitchen, upper layer	None
6523-40-1-27	**Floor tile**	**Kitchen, lower layer**	**7% chrysotile**
6523-40-1-28	Drywall joint compound	Kitchen, patch area around washing machine service box	None
6523-42-1-29	**Brown/tan sheet vinyl flooring**	**Kitchen, upper layer**	**35% chrysotile**
6523-42-1-30	**Drywall joint compound**	**First floor restroom, walls**	**6% chrysotile**
6523-42-2-31	Ceiling plaster	Bedroom ceiling	None
6523-42-1-32	Drywall joint compound	Entry hall ceiling	None
6523-46-1-33	**12” X 12” brown floor tile**	**Kitchen**	**7% chrysotile**
6523-36-E-34	Caulking material	Between wooden door frame and brick wall	None
6523-36-E-35	**Caulking material**	**Between stairwell window frame and brick wall**	**5% chrysotile**
6523-36-E-36	**Caulking material**	**Between metal louver and brick wall**	**3% chrysotile**
6523-36-E-37	**Caulking material**	**Between refrigeration piping and brick wall**	**8% chrysotile**
6523-36-E-38	**TSI cloth & grey mastic**	**On refrigeration piping where it exits the waste heat exchanger**	**Cloth NAD, mastic 10% chrysotile**
6523-38-E-39	**Caulking material**	**Between wooden door frame and brick wall**	**2% chrysotile**
6523-34-R-40	Rolled roofing & sealer	Storage shed roof, at edge	None

6523-34-R-41	Rolled roofing & sealer	Storage shed roof, center	None
6523-34-R-42	Flashing cement	Above storage shed, behind rolled roofing at brick wall	None
6523-34-R-43	Flashing cement	Above storage shed, on electrical conduit at brick wall penetration	None
6523-34-R-44	Flashing cement	Furnace flue at intersection with roof shingles	None
6523-34-R-45	Roof shingle	Front awning roof field	None
6523-34-R-46	Roof felt	Front awning roof field, below shingles	None
6523-CPR-47	Built-up roofing	Carport roof	None
6523-40-E-48	**Caulking material**	**In brick wall control/expansion joint**	**2% chrysotile**

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6523

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	E-35, E-36 E-39							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	E-48							30	30
Caulking around piping	S.F.	E-37							8	8

Flooring materials	S.F.	1-1, 1-2 1-3, 1-7 1-8, 1-9 1-10, 1-11 1-16, 1-17 1-18, 1-23 1-25, 1-27 1-29, 1-33	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	1-22	48							48
Drywall Joint Compound	S.F. *	1-12, 1-30				1000				1000
TSI 2” OD Fittings	Ea.	1-6, 1-19	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	E-38							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6523

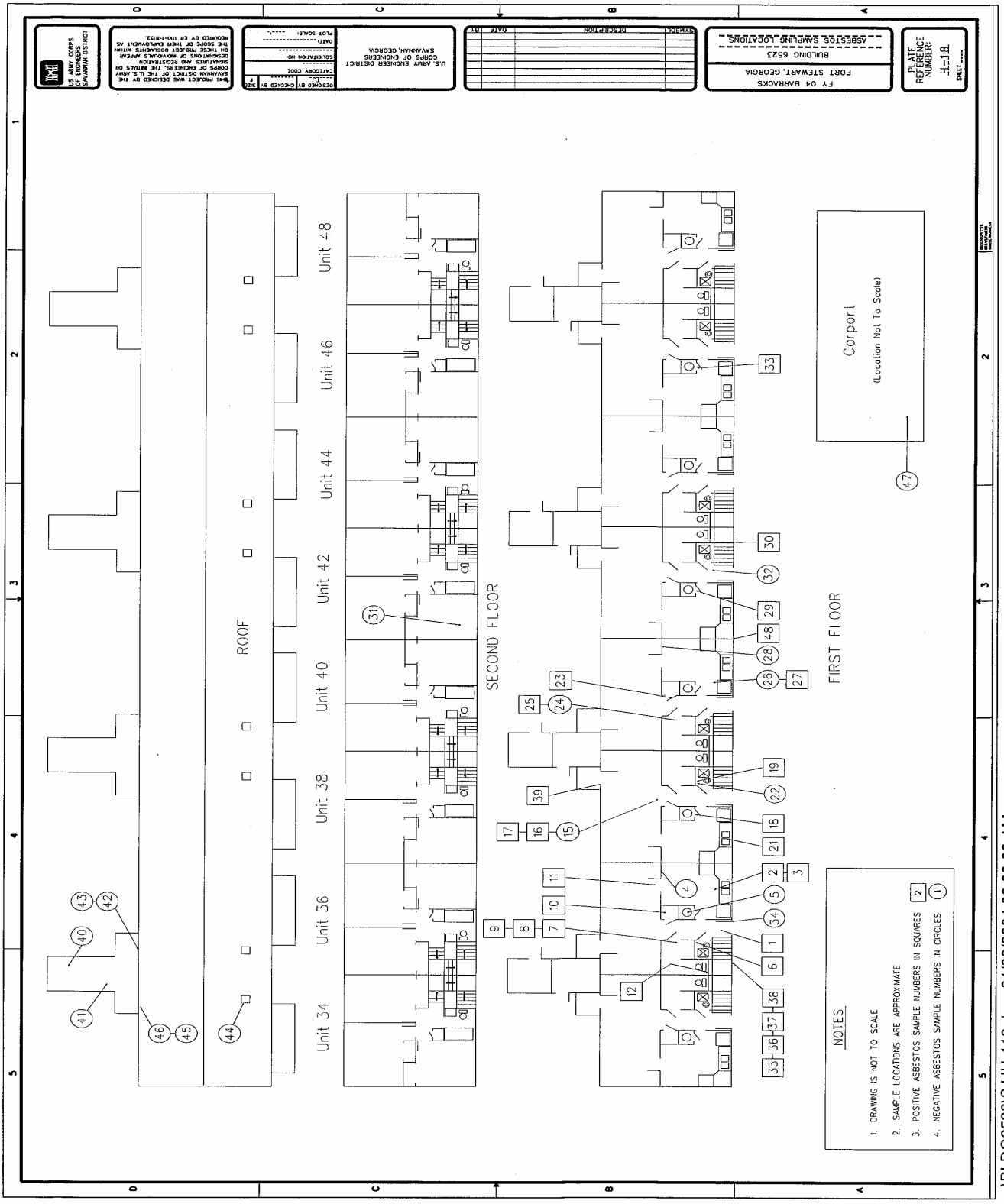
MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Yes 2-5%	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Yes 2%	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Yes 8%	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 3-35%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Yes 2%	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Yes 5-6%	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Yes10%	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Yes 5-10%	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

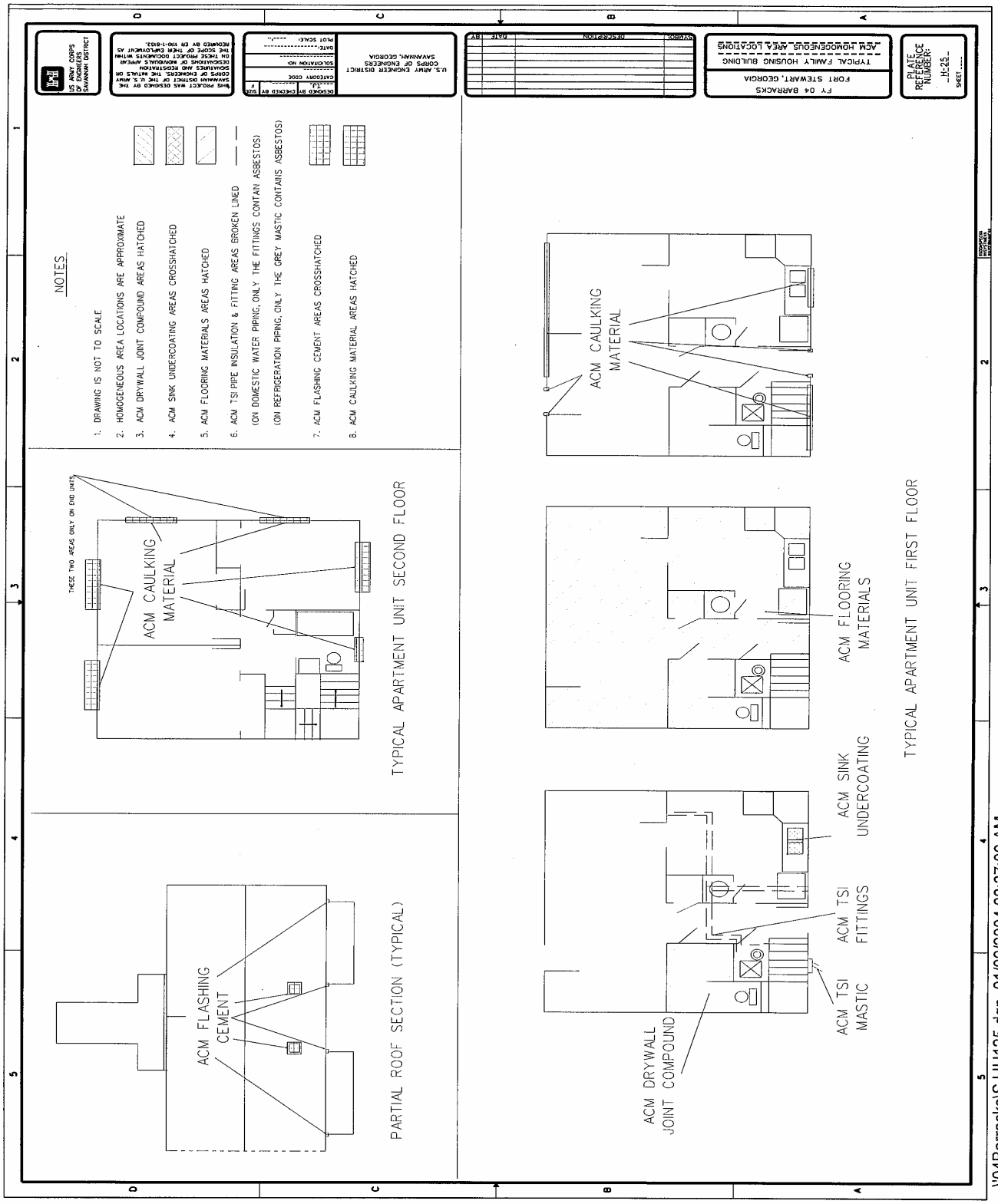
*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1



...\BLDG6523\SJJH-118.dgn 01/09/2004 08:33:32 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE MATERIALS OR DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY CR 1110-1-8152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
DESIGNED BY
CHECKED BY
SIZE
CATEGORY CODE
SOLICITATION NO.
DATE
PLOT SCALE
SYMBOL
DESCRIPTION
DATE
BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER:
H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0311022
Client Project Number/Name: 7932 /Fort Stewart - Building 6523

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/10/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0311022
Client Project Number/Name: 7932 / Fort Stewart - Building 6523

Analyzed: 11/10/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-1-1	A0311022-01	Gray	Cons.	No	<1%								100%	

Comment: **Tile: NAD; Black Mastic: 5% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-1-2	A0311022-02	Gray	Fibrous	Yes	10%					10%			80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-1-3	A0311022-03	Gray	Cons.	No	3%								97%	

Comment: **Tile: 3% Chrysotile; Black Mastic: 10% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-1-4	A0311022-04	Gray	Powdery	No						20%			80%	

Comment: **Drywall: NAD; Joint Mud: NAD No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-1-5	A0311022-05	Gray	Plastery	Yes									100%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311022
Client Project Number/Name: 7932 / Fort Stewart - Building 6523

Analyzed: 11/10/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-1-6	A0311022-06	Gray	Fibrous	Yes	5%					5%	25%		65%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-1-7	A0311022-07	Gray	Fibrous	No	10%					10%			80%	

Comment: **Not Enough Brown Mastic to Analyze Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-1-8	A0311022-08	Gray	Fibrous	No	10%					10%			80%	

Comment: **Not Enough Brown Mastic to Analyze Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-1-9	A0311022-09	Red	Cons.	Yes	3%								97%	

Comment: **Tile: 3% Chrysotile; Not Enough Brown Mastic to Analyze Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-1-10	A0311022-10	Black	Gummy	Yes	8%								92%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311022 **Page:** 3 of 10
Client Project Number/Name: 7932 / Fort Stewart - Building 6523 **Analyzed:** 11/10/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-1-11	A0311022-11	Brown	Cons.	Yes	5%								95%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-1-12	A0311022-12	White	Cons.	Yes	5%								95%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-2-13	A0311022-13	Brown	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-2-14	A0311022-14	Brown	Cons.	Yes						5%			95%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-38-1-15	A0311022-15	Brown	Cons.	Yes									100%	

Comment: **Tile & Mastic: NAD No Asbestos Detected.**

Hygeia Project Number: A0311022 **Page:** 4 of 10
Client Project Number/Name: 7932 / Fort Stewart - Building 6523 **Analyzed:** 11/10/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-38-1-16	A0311022-16	Black	Gummy	Yes	5%								95%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-38-1-17	A0311022-17	Black	Cons.	Yes	7%					13%			80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-38-1-18	A0311022-18	Brown	Cons.	Yes	7%								93%	

Comment: **Tile: 7% Chrysotile; Mastic: 3% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-38-1-19	A0311022-19	Brown	Powdery	Yes	10%						40%		50%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-38-2-20	A0311022-20	Brown	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311022 **Page:** 5 of 10
Client Project Number/Name: 7932 / Fort Stewart - Building 6523 **Analyzed:** 11/10/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-38-1-21	A0311022-21	Black	Gummy	Yes	2%								98%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-38-1-22	A0311022-22	Silver	Layered	Yes						30%			70%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-40-1-23	A0311022-23	Black	Gummy	Yes	10%					5%			85%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-40-1-24	A0311022-24	Gray	Fibrous	Yes						20%	5%	5%	70%	

Comment: **Lineoleum & Brown Mastic: NAD; Other Fibers: Synthetic Fibers No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-40-1-25	A0311022-25	Red	Cons.	No	5%								95%	

Comment: **Tile: 5% Chrysotile; Mastic: 10% Chrysotile Asbestos Detected.**

Hygeia Project Number: A0311022 **Page:** 6 of 10
Client Project Number/Name: 7932 / Fort Stewart - Building 6523 **Analyzed:** 11/10/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-40-1-26	A0311022-26	Brown	Cons.	Yes						40%	20%		40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-40-1-27	A0311022-27	Brown	Cons.	Yes	7%								93%	

Comment: **Tile and Mastic 7% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-40-1-28	A0311022-28	White	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-42-1-29	A0311022-29	Brown	Cons.	Yes	35%					10%			55%	

Comment: **Lineoleum: 35% Chrysotile; Mastic: NAD Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-42-1-30	A0311022-30	White	Cons.	Yes	6%								94%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311022 **Page:** 7 of 10
Client Project Number/Name: 7932 / Fort Stewart - Building 6523 **Analyzed:** 11/10/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-42-2-31	A0311022-31	White	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-42-1-32	A0311022-32	White	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-46-1-33	A0311022-33	Brown	Cons.	Yes	7%								93%	

Comment: **Tile & Mastic: 7% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-E-34	A0311022-34	Brown	Cons.	Yes						10%			90%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-E-35	A0311022-35	Gray	Gummy	Yes	5%								95%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311022 **Page:** 8 of 10
Client Project Number/Name: 7932 / Fort Stewart - Building 6523 **Analyzed:** 11/10/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-E-36	A0311022-36	Silver	Cons.	Yes	3%								97%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-E-37	A0311022-37	Gray	Rubbery	Yes	8%								92%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-36-E-38	A0311022-38	Gray	Fibrous	No	2%						73%		25%	

Comment: **Thin Grey Outer Gummy Layer: 10% Chrysotile; Rest: NAD Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-38-E-39	A0311022-39	Brown	Cons.	Yes	2%								98%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-34-R-40	A0311022-40	Black	Gummy	Yes						10%			90%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311022 **Page:** 9 of 10
Client Project Number/Name: 7932 / Fort Stewart - Building 6523 **Analyzed:** 11/10/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-34-R-41	A0311022-41	Brown	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-34-R-42	A0311022-42	Brown	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-34-R-43	A0311022-43	Brown	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-34-R-44	A0311022-44	Brown	Cons.	Yes						20%			80%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-34-R-45	A0311022-45	Black	Gummy	Yes							10%		90%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311022
Client Project Number/Name: 7932 / Fort Stewart - Building 6523

Analyzed: 11/10/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-34-R-46	A0311022-46	Black	Gummy	Yes						40%			60%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-CPR-47	A0311022-47	Black	Gummy	No						10%			90%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6523-40-E-48	A0311022-48	Gray	Cons.	Yes	2%								98%	

Comment: **Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg. 6523**	Job No.:	**7932**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/5/2003	6523-36-1-1	47009	FLOOR TILE
11/5/2003	6523-36-1-2	47010	SHEET VINYL FLOORING
11/5/2003	6523-36-1-3	47011	FLOOR TILE
11/5/2003	6523-36-1-4	47012	DRYWALL JOINT COMPOUND
11/5/2003	6523-36-1-5	47013	CEILING PLASTER
11/5/2003	6523-36-1-6	47014	TSI PIPE ELBOW
11/5/2003	6523-36-1-7	47015	SHEET VINYL FLOORING
11/5/2003	6523-36-1-8	47016	SHEET VINYL FLOORING
11/5/2003	6523-36-1-9	47017	FLOOR TILE
11/5/2003	6523-36-1-10	47018	MASTIC
11/5/2003	6523-36-1-11	47019	MASTIC
11/5/2003	6523-36-1-12	47020	DRYWALL JOINT COMPOUND
11/5/2003	6523-36-2-13	47021	CAULKING MATERIAL
11/5/2003	6523-36-2-14	47022	CAULKING MATERIAL
11/5/2003	6523-38-1-15	47023	FLOOR TILE
11/5/2003	6523-38-1-16	47024	MASTIC
11/5/2003	6523-38-1-17	47025	MASTIC
11/5/2003	6523-38-1-18	47026	FLOOR TILE
11/5/2003	6523-38-1-19	47027	TSI PIPE ELBOW
11/5/2003	6523-38-2-20	47028	FELT PAPER
11/5/2003	6523-38-1-21	47029	SINK UNDERCOATING
11/5/2003	6523-38-1-22	47030	TSI PIPE JACKET

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-10-03	1100	C. Cell	11/10/03	11 noon

Comments: Fax results to Tim Jones @ 678-354-0330

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg. 6523**	Job No.:	**7932**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/5/2003	6523-40-1-23	47031	MASTIC
11/5/2003	6523-40-1-24	47032	SHEET VINYL FLOORING
11/5/2003	6523-40-1-25	47033	FLOOR TILE
11/5/2003	6523-40-1-26	47034	SHEET VINYL FLOORING
11/5/2003	6523-40-1-27	47035	FLOOR TILE
11/5/2003	6523-40-1-28	47036	DRYWALL JOINT COMPOUND
11/5/2003	6523-42-1-29	47037	SHEET VINYL FLOORING
11/5/2003	6523-42-1-30	47038	DRYWALL JOINT COMPOUND
11/5/2003	6523-42-2-31	47039	CEILING PLASTER
11/5/2003	6523-42-1-32	47040	DRYWALL JOINT COMPOUND
11/5/2003	6523-46-1-33	47041	FLOOR TILE
11/5/2003	6523-36-E-34	47042	CAULKING MATERIAL
11/5/2003	6523-36-E-35	47043	CAULKING MATERIAL
11/5/2003	6523-36-E-36	47044	CAULKING MATERIAL
11/5/2003	6523-36-E-37	47045	CAULKING MATERIAL
11/5/2003	6523-36-E-38	47046	TSI CLOTH & MASTIC
11/5/2003	6523-38-E-39	47047	CAULKING MATERIAL
11/5/2003	6523-34-R-40	47048	ROLLED ROOFING & SEALER
11/5/2003	6523-34-R-41	47049	ROLLED ROOFING & SEALER
11/5/2003	6523-34-R-42	47050	FLASHING CEMENT
11/5/2003	6523-34-R-43	47051	FLASHING CEMENT
11/5/2003	6523-34-R-44	47052	FLASHING CEMENT

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-10-03	1100	C Call	11/10/03	

Comments: Fax results to Tim Jones @ 678-354-0330

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg. 6523**	Job No.:	**7932**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/5/2003	6523-34-R-45	47053	ROOF SHINGLE
11/5/2003	6523-34-R-46	47054	ROOF FELT
11/5/2003	6523-CPR-47	47055	BUILT-UP ROOFING
11/5/2003	6523-40-E-48	47056	CAULKING MATERIAL

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-10-03	1100	C Cell	11/10/03	1100

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6524 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6524 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6524 at Ft. Stewart; Georgia conducted on 18 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6524 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6524 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6524-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6524 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the

floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6524 were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6524 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain or are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint

compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6524

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6524-CPR-1	Built-up roofing	Carport roof	None
6524-17-R-2	Flashing cement	Furnace flue at intersection with roof shingles	None
6524-17-R-3	Roof shingle	Main roof field	None
6524-17-R-4	Roof felt	Main roof field, under shingles	None
6524-19-1-5	12” X 12” white/grey floor tile	Entry hall	None
6524-21-1-6	**Floor tile**	**Kitchen, below sheet vinyl**	**Tile NAD, mastic 3% chrysotile**
6524-23-1-7	Sheet vinyl flooring	First floor restroom, second layer	40% chrysotile
6524-23-1-8	Wall plaster	Mechanical closet	None
6524-27-1-9	**Brown sheet vinyl flooring**	**Kitchen, upper layer**	**30% chrysotile**
6524-27-1-10	**Sheet vinyl flooring**	**Kitchen, second layer**	**25% chrysotile**
6524-31-1-11	Caulking material	Entry hall, at top edge of base molding	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6524

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-6, 1-9 1-10	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6524

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 2-40%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

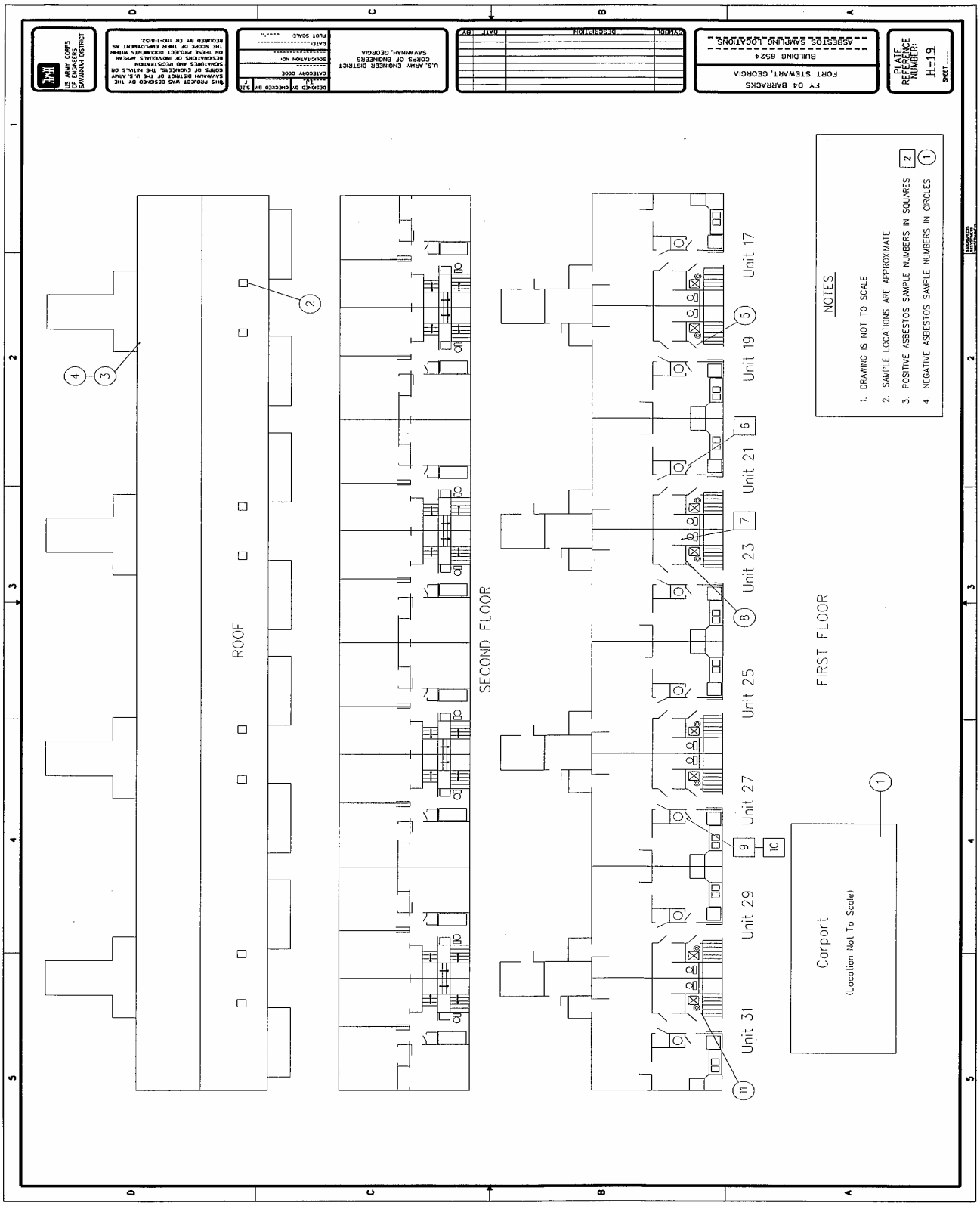
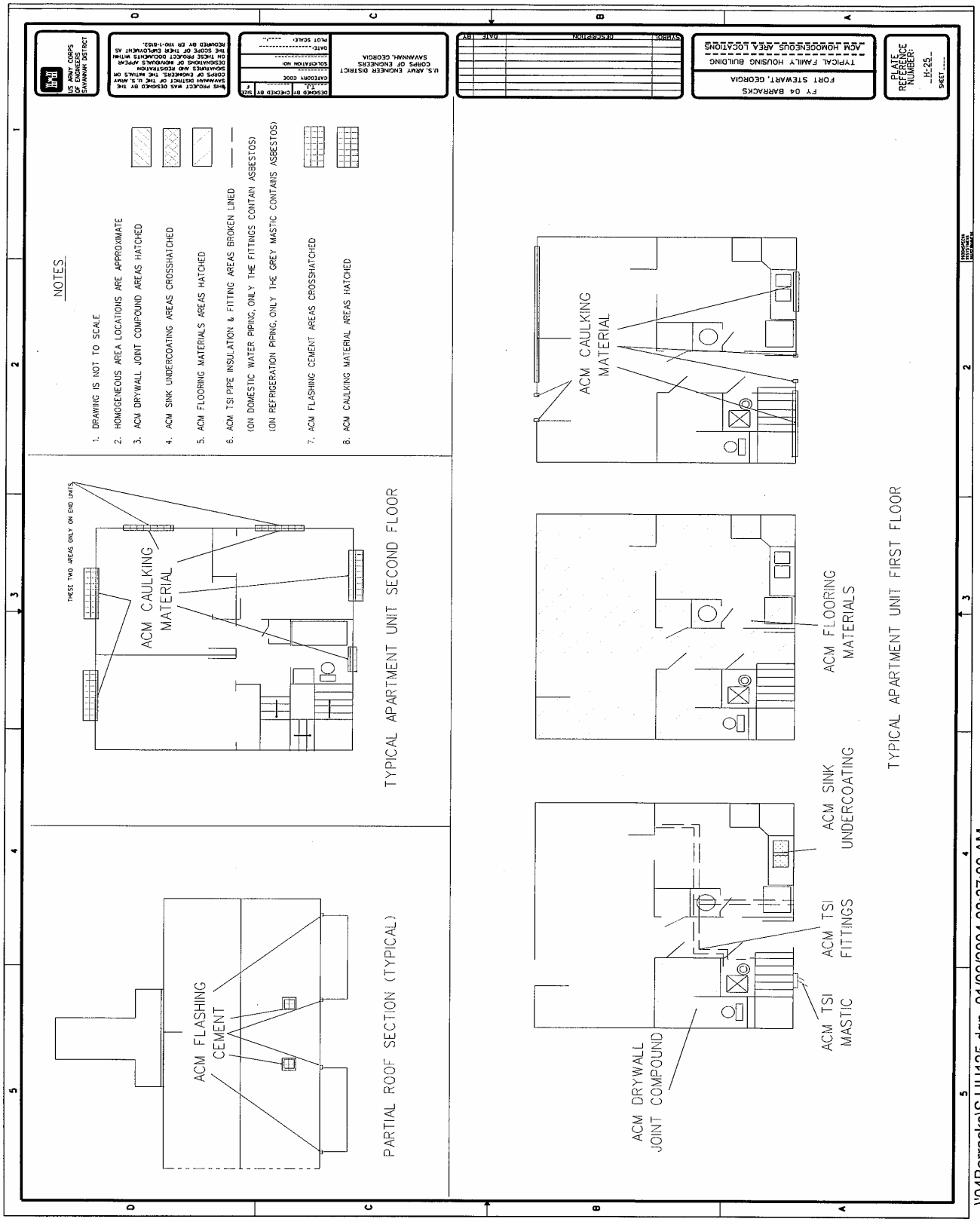

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND RECOMMENDATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 110-1-8152.
DESIGNED BY CHECKED BY
CATEGORY CODE
SOLICITATION NO.
DATE
PLOT SCALE:
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS FORT STEWART, GEORGIA
BUILDING 6524 ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER: H-19
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
ROOF
SECOND FLOOR
FIRST FLOOR
Unit 17
Unit 19
Unit 21
Unit 23
Unit 25
Unit 27
Unit 29
Unit 31
Carport
(Location Not To Scale)
...\Bldg6524\SJJH-119.dgn 01/09/2004 08:34:02 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE MATERIALS OR DESIGNATIONS AND RESTRICTION SOLUTIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 110-1-8152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
DESIGNED BY
CHECKED BY
SIZE
CATEGORY CODE
SOLICITATION NO.
DATE
PLOT SCALE
SYMBOL
DESCRIPTION
DATE
BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER:
H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0312022
Client Project Number/Name: 7955 /Fort Stewart - Building 6524

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/24/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0312022
Client Project Number/Name: 7955 / Fort Stewart - Building 6524

Analyzed: 11/26/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6524-CPR-1	A0312022-01	Black	Gummy	No						20%			80%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6524-17-R-2	A0312022-02	Silver	Gummy	Yes						10%			90%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6524-17-R-3	A0312022-03	Black	Gummy	Yes							10%		90%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6524-17-R-4	A0312022-04	Black	Gummy	Yes						60%			40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6524-19-1-5	A0312022-05	Gray	Cons.	Yes									100%	

Comment: **Not Enough Mastic to Analyze No Asbestos Detected.**

Hygeia Project Number: A0312022 **Page:** 2 of 3
Client Project Number/Name: 7955 / Fort Stewart - Building 6524 **Analyzed:** 11/26/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6524-21-1-6	A0312022-06	Brown	Cons.	Yes	<1%					5%			95%	

Comment: **Tile: NAD; Black Mastic: 3% Chrysotile; Brown Mastic: NAD Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6524-23-1-7	A0312022-07	Brown	Cons.	Yes	40%								60%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6524-23-1-8	A0312022-08	Brown	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6524-27-1-9	A0312022-09	Brown	Cons.	Yes	30%								70%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6524-27-1-10	A0312022-10	Brown	Cons.	Yes	25%								75%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0312022
Client Project Number/Name: 7955 / Fort Stewart - Building 6524

Analyzed: 11/26/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6524-31-1-11	A0312022-11	White	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile	cell = cellulose	per = perlite	OF = Other Fibers
Am. = amosite	glass = fibrous glass	ver = vermiculite	ONF = Other Non-Fibers
Cro. = crocidolite	syn = synthetic	MF = Mineral filler	Cons = Consolidated
An. = anthophyllite	sty = styrene foam	B/F = Binder / filler	
T/A = tremolite/actinolite	det = detected	**NAD = No asbestos detected**	

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6524**	Job No.:	**7955**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/18/2003	6524-CPR-1	47240	BUILT-UP ROOFING
11/18/2003	6524-17-R-2	47241	FLASHING CEMENT
11/18/2003	6524-17-R-3	47242	ROOF SHINGLE
11/18/2003	6524-17-R-4	47243	ROOF FELT
11/18/2003	6524-19-1-5	47244	FLOOR TILE
11/18/2003	6524-21-1-6	47245	FLOOR TILE
11/18/2003	6524-23-1-7	47246	SHEET VINYL FLOORING
11/18/2003	6524-23-1-8	47247	WALL PLASTER
11/18/2003	6524-27-1-9	47248	SHEET VINYL FLOORING
11/18/2003	6524-27-1-10	47249	SHEET VINYL FLOORING
11/18/2003	6524-31-1-11	47250	CAULKING COMPOUND

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-24-03	1600	C. Cell	11/24/03	16:00

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6529 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6529 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6529 at Ft. Stewart; Georgia conducted on 10 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6529 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6529 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Apartment Unit 34 was inaccessible at the time of inspection. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6529-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6529 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations

of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6529 were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous

materials at Building No. 6529 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain or are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls contains asbestos. The caulking material within the brick control/expansion joints contains asbestos. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom contains asbestos. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 1, 2 and 3 for specific

information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6529

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6529-40-1-1	**Green sheet vinyl flooring**	**Kitchen, upper layer**	**10% chrysotile**
6529-40-1-2	**Floor tile**	**Kitchen, lower layer**	**Tile 3% chrysotile, mastic 10% chrysotile**
6529-36-1-3	**Green sheet vinyl flooring**	**First floor restroom, center layer**	**10% chrysotile**
6529-36-1-4	**Drywall joint compound**	**First floor restroom walls**	**3% chrysotile**
6529-36-1-5	**Black mastic**	**Living room, under wood parquet flooring applied to concrete**	**5% chrysotile**
6529-32-2-6	Wall plaster	Second floor restroom, on walls behind ceramic tile	None
6529-28-2-7	Gypsum wall board	Second floor hallway, on walls between wood framing and wall plaster	None
6529-28-2-8	Felt paper	Second floor restroom, applied to wood wall framing before gypsum board and plaster, used as a vapor barrier	None
6529-26-1-9	**12” X 12” floor tile**	**Kitchen, lower layer**	**Tile 3% chrysotile, mastic 8% chrysotile**
6529-26-E-10	**Caulking material**	**Between wood door frame and brick wall**	**2% chrysotile**
6529-32-E-11	**Caulking material**	**In brick wall control/expansion joint**	**3% chrysotile**
6529-36-E-12	**Caulking material**	**Between metal window frame and brick wall**	**2% chrysotile**
6529-36-R-13	Rolled roofing & sealer	Storage shed roof	None
6529-34-R-14	Flashing cement	Above storage shed roof, applied to electric conduit at brick wall penetration	None
6529-34-R-15	Roof shingle	Main roof field	None
6529-34-R-16	Roof felt	Main roof field, under shingles	None
6529-34-R-17	Flashing cement	Furnace flue at junction with roof shingles	None
6529-CPR-18	Built-up roofing	Carport roof	None

6529-32-2-19	Felt paper	Second floor bedroom, between hardwood flooring and wood sub-flooring	None
6529-26-2-20	Felt paper	Second floor hallway, between hardwood flooring and wood sub-flooring	

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6529

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	1-10, 1-12							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	1-11							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-1, 1-2 1-3, 1-5 1-9	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	1-4				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6529

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Yes 2%	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Yes 3%	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 3-10%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Yes 3%	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

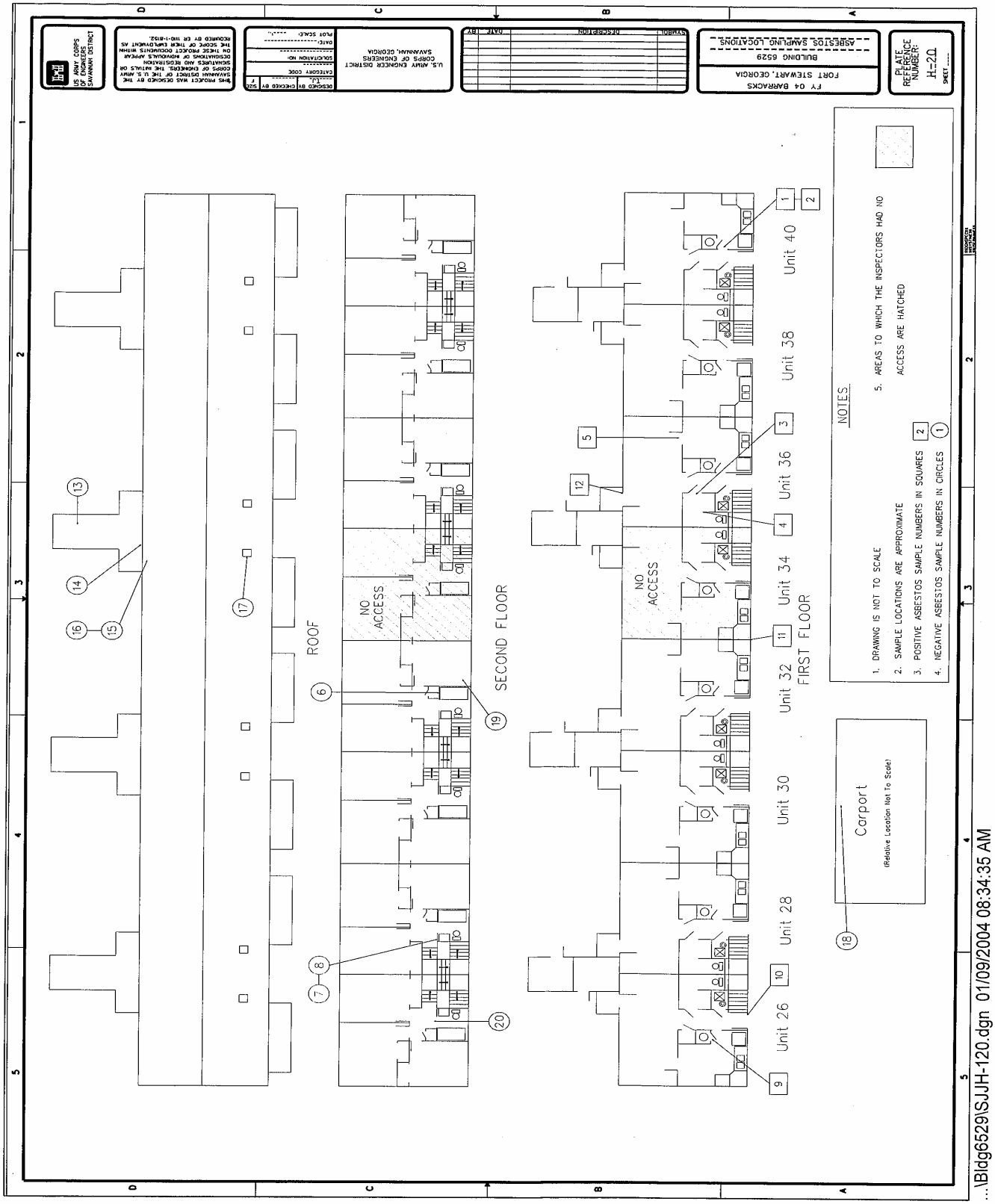
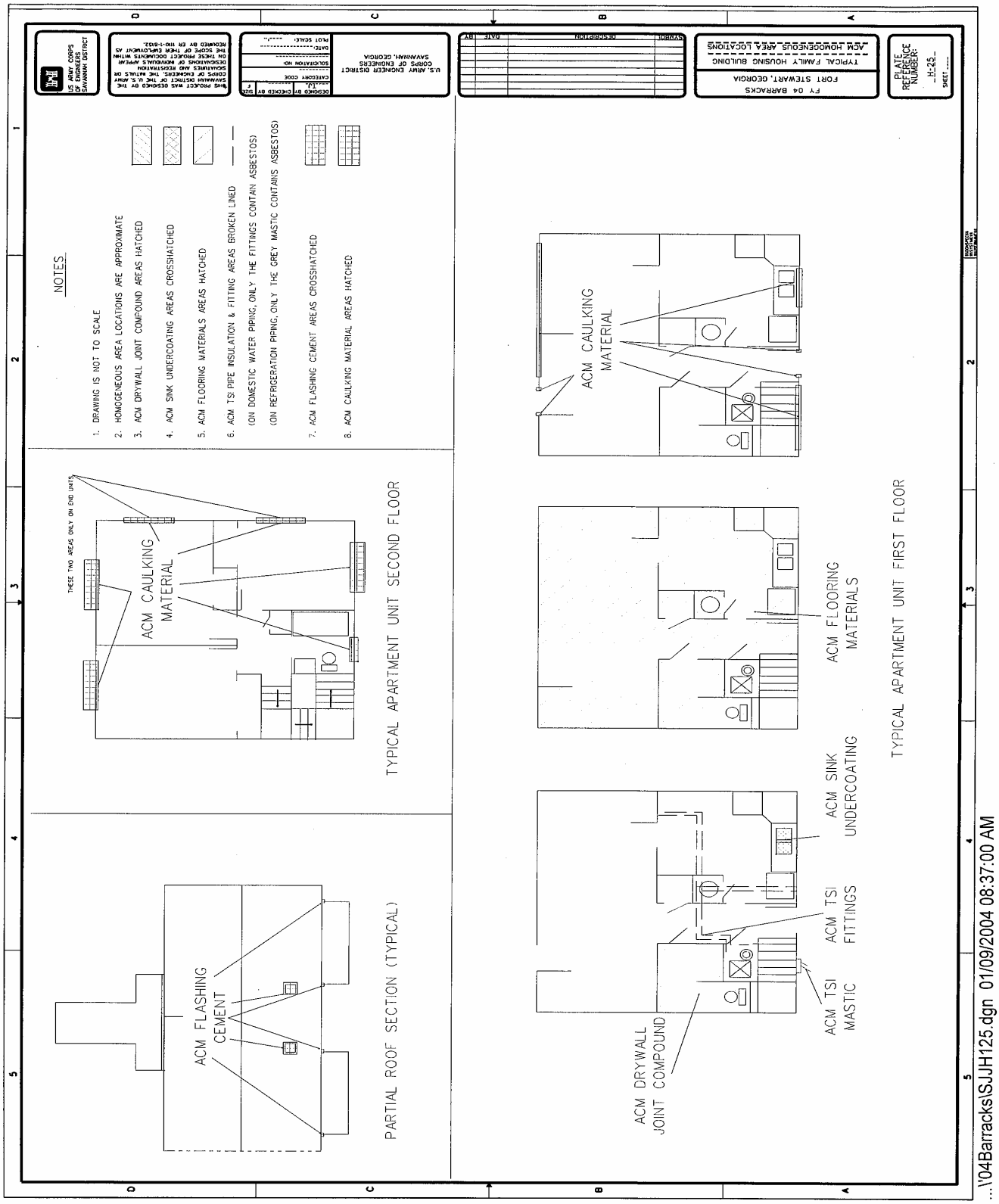

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6529
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER: H-20
ROOF
NO ACCESS
SECOND FLOOR
FIRST FLOOR
Unit 26
Unit 28
Unit 30
Unit 32
Unit 34
Unit 36
Unit 38
Unit 40
Carport
(Relative Location Not To Scale)
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
5. AREAS TO WHICH THE INSPECTORS HAD NO ACCESS ARE HATCHED
...\Bldg6529\SJJH-120.dgn 01/09/2004 08:34:35 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE RATIOS OR DESIGNATIONS OF INDIVIDUALS APPEAR IN THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 110-1-8152.
DESIGNED BY
CHECKED BY
SIZE
CATEGORY CODE
SOLICITATION NO:
DATE:
PLOT SCALE:
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA
SYMBOL
DESCRIPTION
DATE
BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER:
H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0311058
Client Project Number/Name: 7939 /Fort Stewart - Building 6529

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/14/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP# 102087-0
Texas Dept. of Health # 30-0232

Commonwealth of Virginia # 3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0311058
Client Project Number/Name: 7939 / Fort Stewart - Building 6529

Analyzed: 11/20/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-40-1-1	A0311058-01	Gray	Fibrous	Yes	10%					10%			80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-40-1-2	A0311058-02	Gray	Cons.	No	3%								97%	

Comment: **Tile: 3% Chrysotile; Mastic: 10% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-36-1-3	A0311058-03	Gray	Fibrous	Yes	10%					10%			80%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-36-1-4	A0311058-04	Gray	Powdery	Yes	3%								97%	

Comment: **No Drywall Present Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-36-1-5	A0311058-05	Black	Gummy	Yes	5%								95%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311058
Client Project Number/Name: 7939 / Fort Stewart - Building 6529

Analyzed: 11/20/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-32-2-6	A0311058-06	Gray	Plastery	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-28-2-7	A0311058-07	Gray	Powdery	Yes						20%			80%	

Comment: **Not Enough Joint Mud to Analyze No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-28-2-8	A0311058-08	Black	Gummy	Yes						40%			60%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-26-1-9	A0311058-09	Brown	Cons.	No	3%								97%	

Comment: **Tile: 3% Chrysotile; Mastic: 8% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-26-E-10	A0311058-10	Brown	Cons.	Yes	2%								98%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311058
Client Project Number/Name: 7939 / Fort Stewart - Building 6529

Analyzed: 11/20/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-32-E-11	A0311058-11	Brown	Cons.	Yes	3%								97%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-36-E-12	A0311058-12	Gray	Cons.	Yes	2%								98%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-36-R-13	A0311058-13	Black	Gummy	No							10%		90%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-34-R-14	A0311058-14	Black	Gummy	Yes						20%			80%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-34-R-15	A0311058-15	Black	Gummy	Yes							10%		90%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311058
Client Project Number/Name: 7939 / Fort Stewart - Building 6529

Analyzed: 11/20/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-34-R-16	A0311058-16	Black	Gummy	Yes						50%			50%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-34-R-17	A0311058-17	Black	Gummy	Yes						20%			80%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-CPR-18	A0311058-18	Black	Gummy	No						30%			70%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-32-2-19	A0311058-19	Black	Gummy	Yes						30%			70%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6529-26-2-20	A0311058-20	Black	Gummy	Yes						30%			70%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile	cell = cellulose	per = perlite	OF = Other Fibers
Am. = amosite	glass = fibrous glass	ver = vermiculite	ONF = Other Non-Fibers
Cro. = crocidolite	syn = synthetic	MF = Mineral filler	Cons = Consolidated
An. = anthophyllite	sty = styrene foam	B/F = Binder / filler	
T/A = tremolite/actinolite	det = detected	**NAD = No asbestos detected**	

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg. 6529**	Job No.:	**7939**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/10/2003	6529-40-1-1	47135	SHEET VINYL FLOORING
11/10/2003	6529-40-1-2	47136	FLOOR TILE
11/10/2003	6529-36-1-3	47137	SHEET VINYL FLOORING
11/10/2003	6529-36-1-4	47138	DRYWALL JOINT COMPOUND
11/10/2003	6529-36-1-5	47139	MASTIC
11/10/2003	6529-32-2-6	47140	PLASTER?
11/10/2003	6529-28-2-7	47141	GYPSUM WALL BOARD
11/10/2003	6529-28-2-8	47142	FELT PAPER
11/10/2003	6529-26-1-9	47143	FLOOR TILE
11/10/2003	6529-26-E-10	47144	CAULKING MATERIAL
11/10/2003	6529-32-E-11	47145	CAULKING MATERIAL
11/10/2003	6529-36-E-12	47146	CAULKING MATERIAL
11/10/2003	6529-36-R-13	47147	ROLLED ROOFING & SEALER
11/10/2003	6529-34-R-14	47148	FLASHING CEMENT
11/10/2003	6529-34-R-15	47149	ROOF SHINGLE
11/10/2003	6529-34-R-16	47150	FELT PAPER
11/10/2003	6529-34-R-17	47151	FLASHING CEMENT
11/10/2003	6529-CPR-18	47152	BUILT-UP ROOFING
11/10/2003	6529-32-2-19		FELT PAPER
11/10/2003	6529-26-2-20		FELT PAPER

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11/14/03	1630	C. Gel	11/14/03	16:30

Comments: Fax results to Tim Jones @ 678-354-0330
CORRECTED COC, ADDED 2 SAMPLES 11/24/03 TJ

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003	7644
Course Date	Certificate Number
January 29, 2003	
Examination Date	
January 28, 2004	
Expiration Date	

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

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DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

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MARIETTA, GA

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BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

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National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6530 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6530 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6530 at Ft. Stewart; Georgia conducted on 20 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6530 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6530 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Apartment Unit 3 was inaccessible at the time of inspection. No samples were collected from this building.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6530 is included in this report where relevant. Estimated quantities of individual asbestos containing materials appear on Table 1. Material characterization of asbestos containing materials appears on Table 2.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6530 are assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18

inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6530 are assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1 and 2 and figure 1 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled

roofing and the brick walls at the storage sheds' roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors' awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1" wide on each the front and rear of the building at the building's center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1 and 2 for specific information and Figure 1 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 1 and 2 for specific information and figure 12 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

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Appendices

Appendix A. Accreditations. 11-15

TABLE 1
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6530

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around	S.F.	Assumed							8	8

piping										
Flooring materials	S.F.	Assumed	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 2
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6530

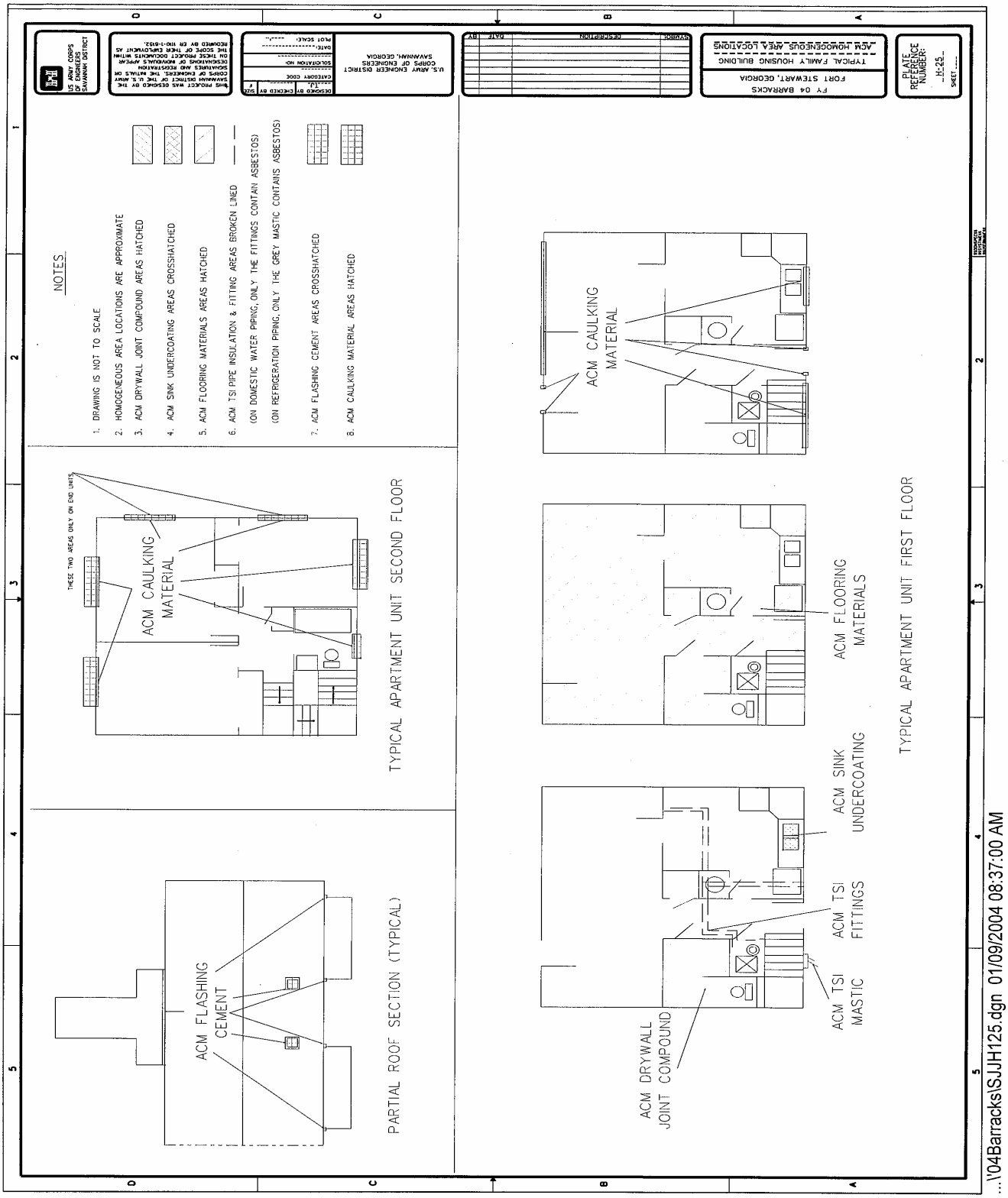
MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Assumed	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

* Drywall Joint Compound quantity based on ½ of the wall and ceiling area

Figure 1


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE MATERIALS ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS DESCRIBED BY ER 1110-1-8152.
DESIGNED BY
CHECKED BY
SIZE
CATEGORY CODE
SOLICITATION NO.
DATE
MAP SCALE
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL
DESCRIPTION
DATE
BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
"ACM HOMOGENEOUS AREA LOCATIONS"
PLATE REFERENCE NUMBER:
H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
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William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

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Social Security Number - 411-04-8826
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Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
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BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

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NVLAP Lab Code: 102087-0

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ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

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NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6531 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6531 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6531 at Ft. Stewart; Georgia conducted on 13-21 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6531 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6531 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Apartment Units 15 and 16 were inaccessible at the time of inspection. No samples were collected from this building.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6531 is included in this report where relevant. Estimated quantities of individual asbestos containing materials appear on Table 1. Material characterization of asbestos containing materials appears on Table 2.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6531 are assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat

exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6531 are assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1 and 2 and figure 1 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from

other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds' roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors' awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1" wide on each the front and rear of the building at the building's center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1 and 2 for specific information and Figure 1 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 1 and 2 for specific information and figure 1 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

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TABLE 1
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6531

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around	S.F.	Assumed							8	8

piping										
Flooring materials	S.F.	Assumed	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 2
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6531

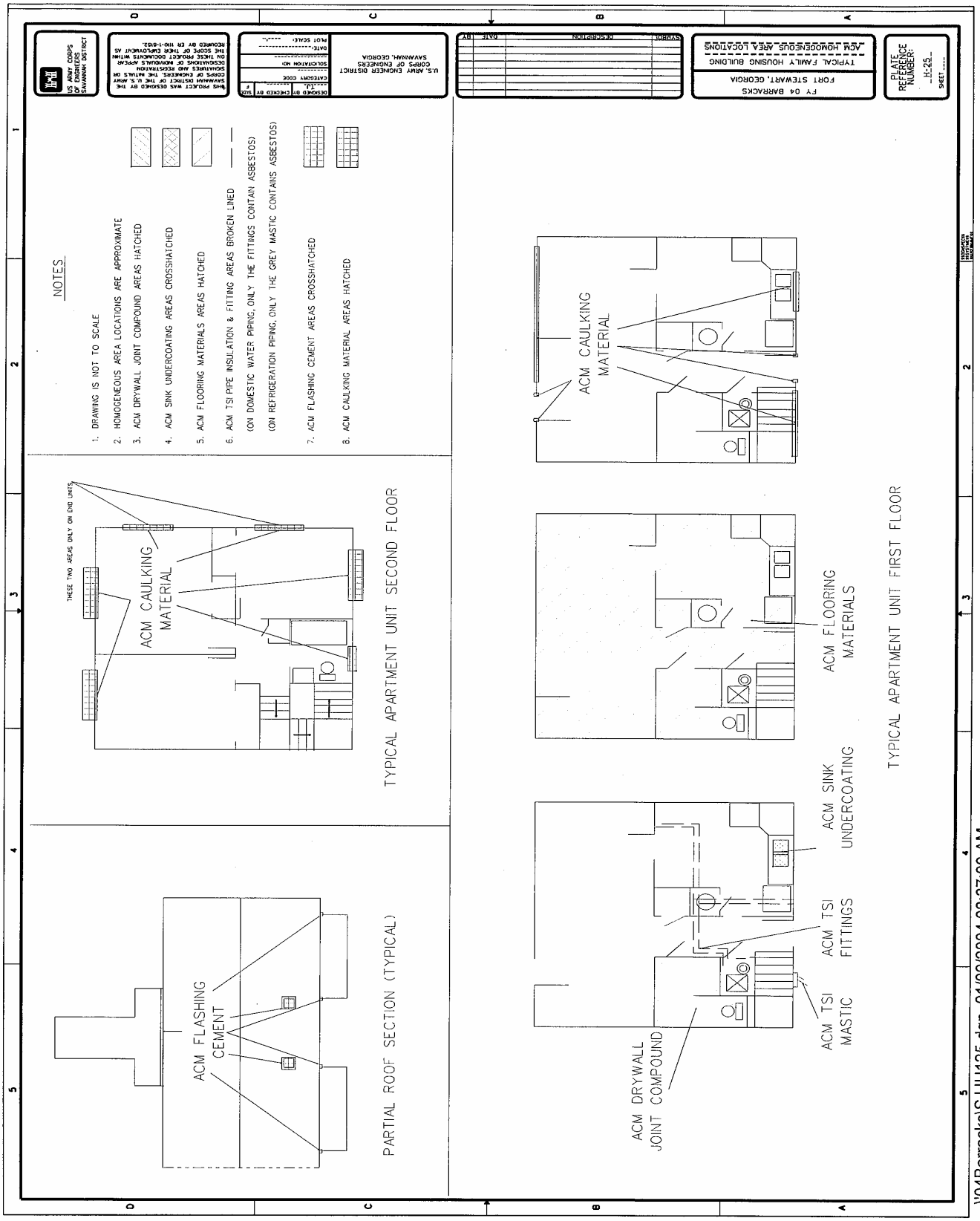
MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Assumed	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

* Drywall Joint Compound quantity based on ½ of the wall and ceiling area

Figure 1



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Appendix A

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

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Savannah District
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Asbestos Survey

Building No. 6532 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

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Asbestos Survey **December 2003**

Building No. 6532 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6532 at Ft. Stewart; Georgia conducted on 20 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6532 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6532 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6532-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6532 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the

floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6532 were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6532 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain or are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint

compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6532

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6532-22-1-1	**12” X 12” grey/tan floor tile**	**Kitchen, single layer**	**Tile 2% chrysotile, mastic 8% chrysotile**
6532-24-1-2	Tan/peach/white sheet vinyl flooring	Kitchen, upper layer over floor tile	None
6532-CPR-3	Built-up roofing	Carport roof	None
6532-CPR-4	Built-up roofing	Carport roof	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6532

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-1	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6532

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 2-8%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

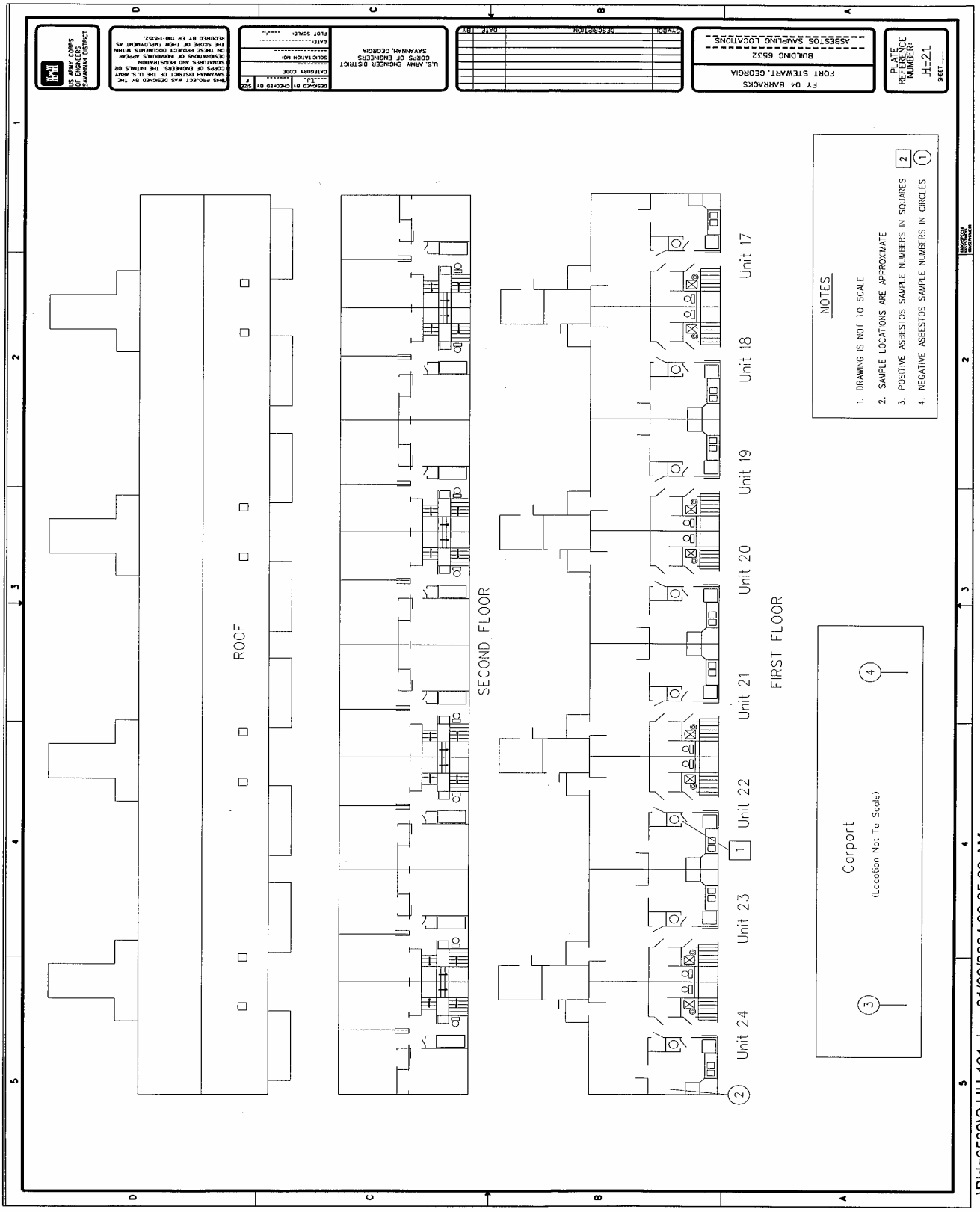
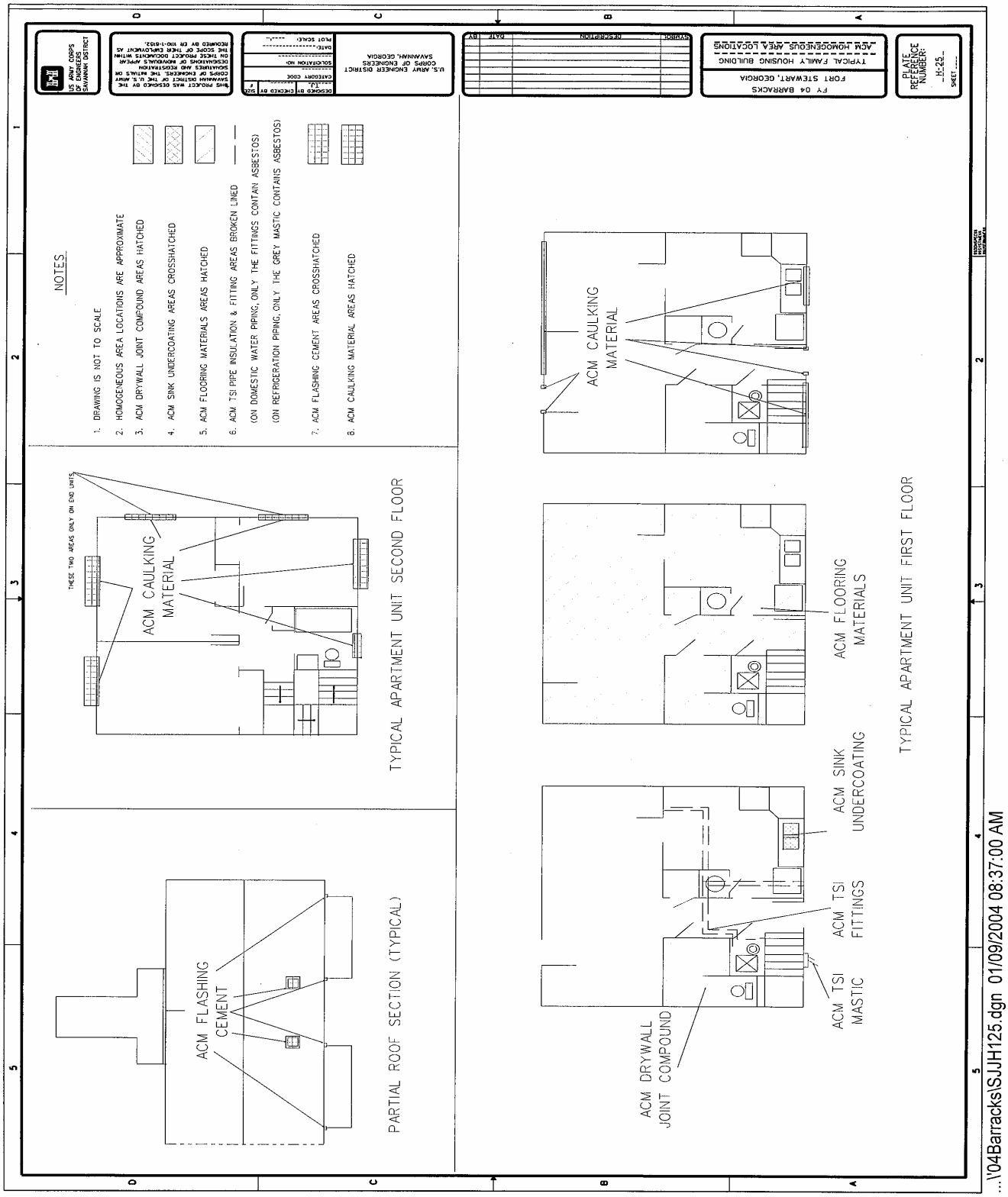

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 110-1-8152.
DESIGNED BY
CHECKED BY
SIZE
F
CATEGORY CODE
SOLICITATION NO:
DATE:
PLOT SCALE:
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA
SYMBOL
DESCRIPTION
DATE
BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6532
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER:
H-21
SHEET
ROOF
SECOND FLOOR
FIRST FLOOR
Unit 17
Unit 18
Unit 19
Unit 20
Unit 21
Unit 22
Unit 23
Unit 24
Carport
(Location Not To Scale)
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
...\Bldg6532\SJJH-121.dgn 01/09/2004 08:35:03 AM

Figure 2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U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
DESIGNED BY CHECKED BY SIZE
CATEGORY CODE
SOLICITATION NO.
DATE:
PLOT SCALE:
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:

Hygeia Project Number: A0312005
Client Project Number/Name: 7949 /Fort Stewart - Building 6532

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/24/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0312005
Client Project Number/Name: 7949 / Fort Stewart - Building 6532

Analyzed: 11/25/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6532-22-1-1	A0312005-01	Gray	Cons.	No	2%								98%	

Comment: **Tile: 2% Chrysotile; Black Mastic: 8% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6532-24-1-2	A0312005-02	Gray	Fibrous	Yes						10%	5%	5%	80%	

Comment: **Other Fibers: Synthetic Fibers No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6532-CPR-3	A0312005-03	Black	Gummy	No						20%			80%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6532-CPR-4	A0312005-04	Black	Gummy	No						20%			80%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6532**	Job No.:	**7949**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/20/2003	6532-22-1-1	47216	FLOOR TILE
11/20/2003	6532-24-1-2	47217	SHEET VINYL FLOORING
11/20/2003	6532-CPR-3	47218	BUILT-UP ROOFING
11/20/2003	6532-CPR-4	47219	BUILT-UP ROOFING

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-24-03	1600	C. Cell	11/24/03	1600

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6533 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6533 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6533 at Ft. Stewart; Georgia conducted on 6 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6533 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6533 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Apartment Unit 34 was inaccessible at the time of inspection. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6533-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6533 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations

of positive ACM are identified. Samples testing negative for asbestos are indicated on the floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6533 were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers contains asbestos. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6533 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain or are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs contains asbestos. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Caulking material applied to the exterior of the window and doorframes and the louvered vents at the interface with the brick walls contains asbestos. The caulking material within the brick control/expansion joints contains asbestos. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom contains asbestos. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6533

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6533-39-1-1	**Yellow sheet vinyl flooring**	**Kitchen, upper layer over tile**	**20% chrysotile**
6533-39-1-2	12” X 12” white/grey floor tile	Living room	None
6533-39-1-3	**Green sheet vinyl flooring**	**First floor restroom, single layer**	**Sheet vinyl NAD, mastic 2% chrysotile**
6533-39-1-4	Mastic	First floor restroom, applied to base molding	None
6533-39-1-5	**Drywall joint compound**	**First floor restroom, wall joint at ceiling above toilet**	**4% chrysotile**
6533-37-1-6	Green sheet vinyl flooring	First floor restroom, upper layer over vinyl tile	None
6533-37-1-7	**Green sheet vinyl flooring**	**Kitchen, upper layer over vinyl floor tile**	**15% chrysotile**
6533-35-1-8	Green sheet vinyl flooring	Kitchen, single layer	None
6533-35-1-9	**Black mastic**	**Kitchen, applied to concrete floor**	**10% chrysotile**
6533-33-1-10	**Brown sheet vinyl flooring**	**Kitchen, center layer**	**20% chrysotile**
6533-33-1-11	**Brown floor tile**	**Kitchen, lower layer**	**Tile 3% chrysotile, mastic 8% chrysotile**
6533-31-1-12	**Grey sheet vinyl flooring**	**First floor restroom, center layer**	**12% chrysotile**
6533-31-1-13	**9” X 9” floor tile**	**First floor restroom, lower layer**	**Tile 2% chrysotile, mastic 5% chrysotile**
6533-31-1-14	**12” X 12” white/grey floor tile**	**Entry hall, under carpet**	**Tile NAD, mastic 10% chrysotile**
6533-31-1-15	**Drywall joint compound**	**First floor restroom, wall joint at ceiling above toilet**	**2% chrysotile**
6533-29-1-16	Grey sheet vinyl flooring	First floor restroom, upper layer over vinyl floor tile	None
6533-27-1-17	**Green sheet vinyl flooring**	**First floor restroom, upper layer over vinyl floor tile**	**20% chrysotile**
6533-39-E-18	**Caulking material**	**Between metal window frame and brick wall, older tan caulk under newer looking material**	**2% chrysotile**

6533-37-E-19	**TSI cloth & mastic**	**Refrigeration piping at waste heat exchanger**	**10% chrysotile in mastic, cloth NAD**
6533-33-E-20	**Caulking material**	**Between wooden door frame and brick wall, upper layer, painted brown**	**2% chrysotile**
6533-33-E-21	**Caulking material**	**In brick wall control/expansion joint**	**3% chrysotile**
6533-27-R-22	Rolled roofing & sealer	Storage shed roof	None
6533-25-R-23	**Flashing cement**	**Between rolled roofing and brick wall at storage shed roof**	**6% chrysotile**
6533-27-R-24	Roof shingle	Main roof field	None
6533-27-R-25	Roof felt	Main roof field, under shingles	None
6533-27-R-26	Flashing cement	Furnace flue, at junction with roof shingles	None
6533-CPR-27	Built-up roofing	Carport roof	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6533

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	E-18, E-20							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	E-21							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-1, 1-3 1-7, 1-9 1-10, 1-11 1-12, 1-13 1-14, 1-17	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	R-23						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	1-5, 1-15				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	E-19							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6533

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Yes 2%	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Yes 3%	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 2-20%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Yes 6%	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Yes 2-4%	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Yes 10%	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

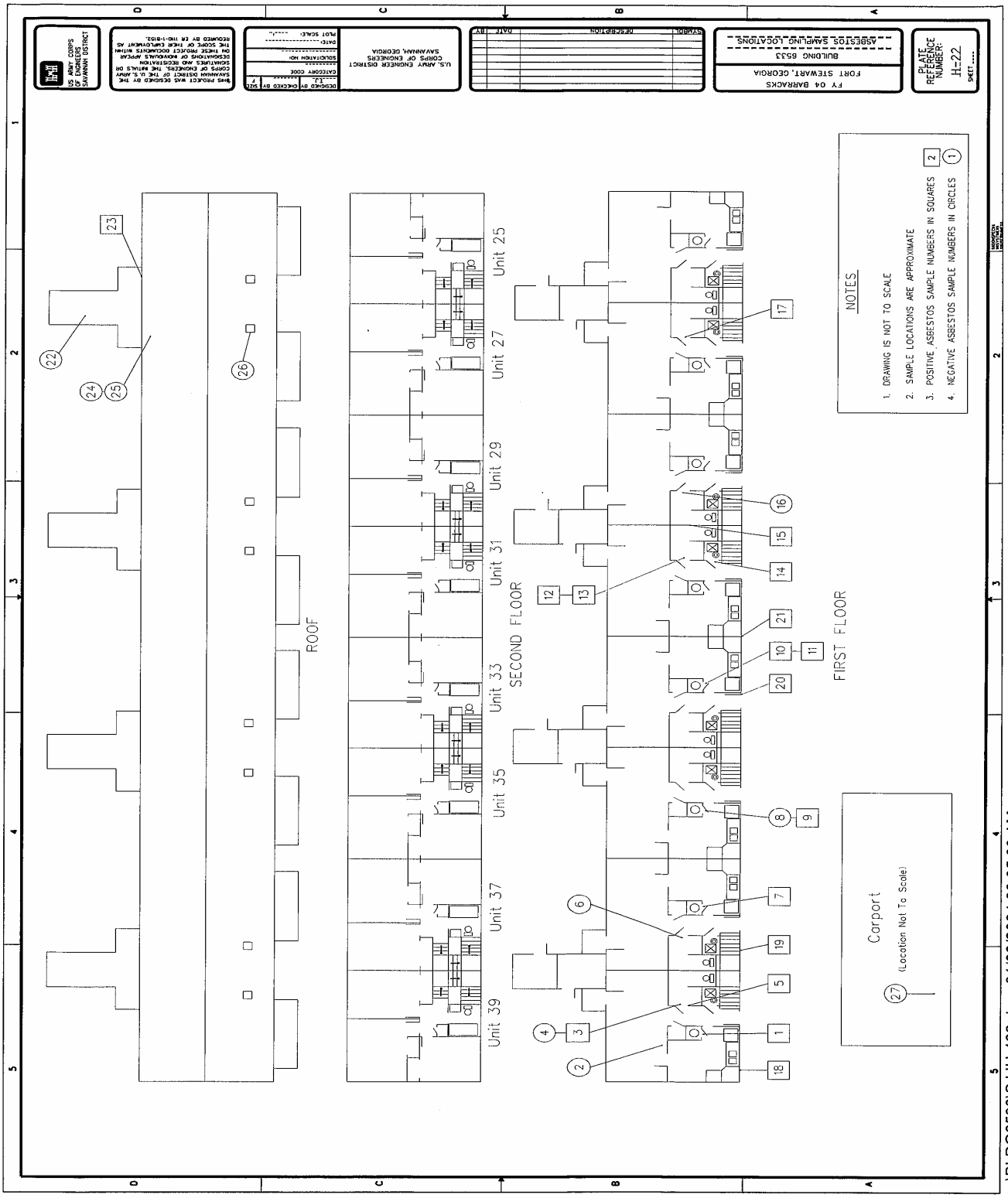
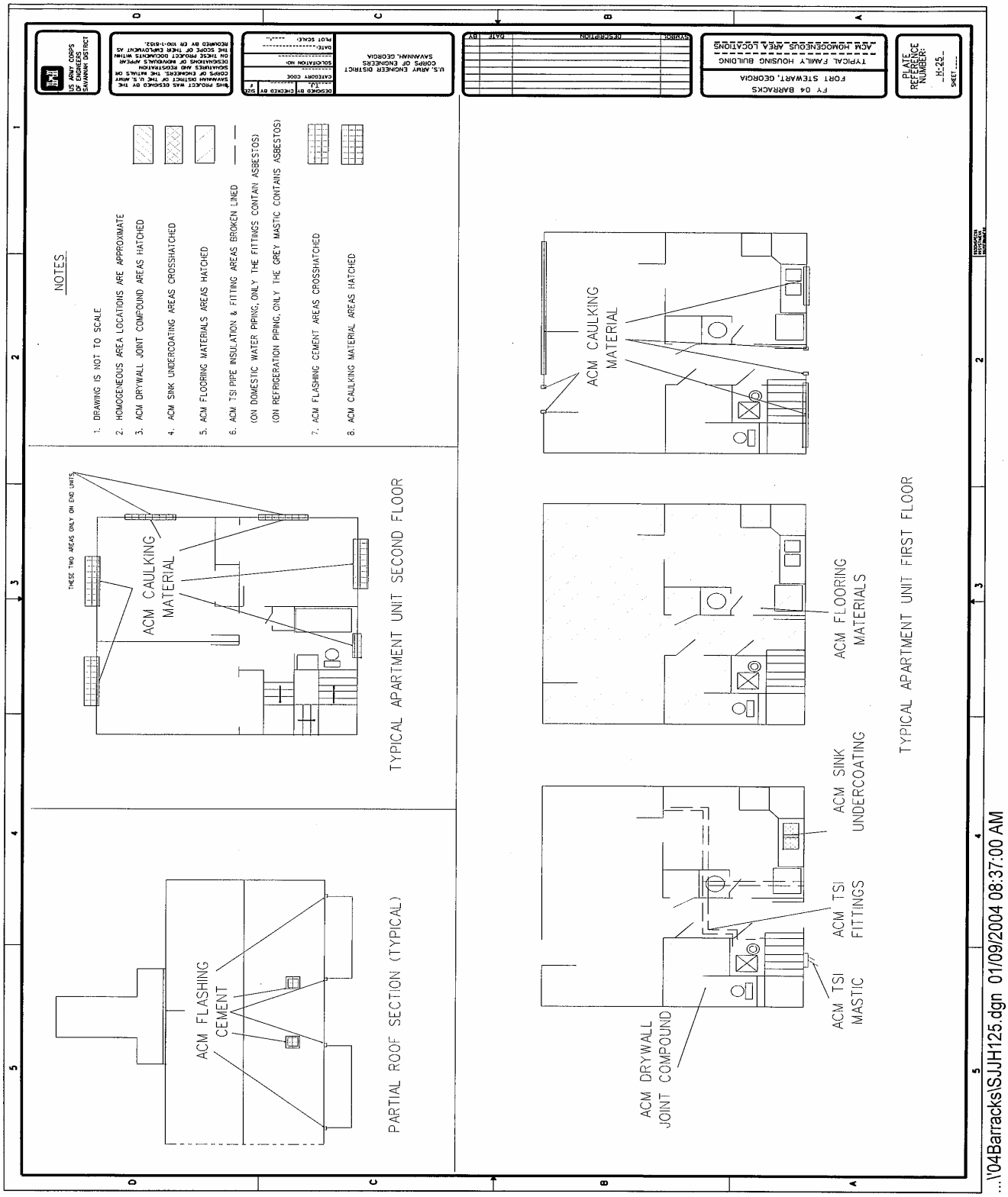

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6533
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER:
H-22
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
ROOF
Unit 25
Unit 27
Unit 29
Unit 31
Unit 33
Unit 35
Unit 37
Unit 39
SECOND FLOOR
FIRST FLOOR
Carport
(Location Not To Scale)
...\BLDG6533\SJJH-122.dgn 01/09/2004 08:35:33 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS WHOSE ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY CR 110-1-8152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:

Hygeia Project Number: A0311037
Client Project Number/Name: 7930 /Fort Stewart - Building 6533

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/10/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0311037
Client Project Number/Name: 7930 / Fort Stewart - Building 6533

Analyzed: 11/12/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-39-1-1	A0311037-01	Gray	Fibrous	Yes	20%					5%			75%	

Comment: **Not Enough Mastic to Analyze Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-39-1-2	A0311037-02	Gray	Cons.	No									100%	

Comment: **Tile and Brown Mastic: NAD No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-39-1-3	A0311037-03	Gray	Fibrous	No	<1%						10%		90%	

Comment: **Lineoluem: NAD; Brown/Black Mastic: 2% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-39-1-4	A0311037-04	Brown	Gummy	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-39-1-5	A0311037-05	Gray	Powdery	Yes	4%								96%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311037 **Page:** 2 of 6
Client Project Number/Name: 7930 / Fort Stewart - Building 6533 **Analyzed:** 11/12/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-37-1-6	A0311037-06	Gray	Fibrous	Yes							5%	5%	90%	

Comment: **Lineoleum: NAD; Brown Mastic: NAD; No Black Mastic: Other Fibers: Synthetic Fibers No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-37-1-7	A0311037-07	Gray	Fibrous	Yes	15%					5%			80%	

Comment: **Not Enough Brown Mastic to Analyze Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-35-1-8	A0311037-08	Gray	Fibrous	No						5%	5%	5%	85%	

Comment: **Lineoleum: NAD; Brown Mastic: NAD; Not Enough Black Mastic to Analyze; Other Fibers: Synthetic Fibers No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-35-1-9	A0311037-09	Black	Gummy	Yes	10%								90%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-33-1-10	A0311037-10	Brown	Fibrous	Yes	20%					10%			70%	

Comment: **Not Enough Mastic to Analyze Asbestos Detected.**

Hygeia Project Number: A0311037
Client Project Number/Name: 7930 / Fort Stewart - Building 6533

Analyzed: 11/12/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-33-1-11	A0311037-11	Gray	Cons.	No	3%								97%	

Comment: **Tile: 3% Chrysotile; Black Mastic: 8% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-31-1-12	A0311037-12	Gray	Fibrous	Yes	12%					8%			80%	

Comment: **Not Enough Brown Mastic to Analyze Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-31-1-13	A0311037-13	Red	Cons.	No	2%								98%	

Comment: **Tile: 2% Chrysotile; Black Mastic: 5% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-31-1-14	A0311037-14	Gray	Cons.	No	<1%								100%	

Comment: **Tile: NAD; Black Mastic: 10% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-31-1-15	A0311037-15	Gray	Powdery	No	<1%					40%			60%	

Comment: **Joint Mud: 2% Chrysotile; Rest: NAD Asbestos Detected.**

Hygeia Project Number: A0311037
Client Project Number/Name: 7930 / Fort Stewart - Building 6533

Analyzed: 11/12/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-29-1-16	A0311037-16	Gray	Fibrous	No						30%			70%	

Comment: **Lineoleum and Brown Mastic: NAD No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-27-1-17	A0311037-17	Gray	Fibrous	No	20%					5%			75%	

Comment: **Not Enough Brown Mastic to Analyze Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-39-E-18	A0311037-18	Tan	Cons.	Yes	2%								98%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-37-E-19	A0311037-19	Gray	Fibrous	No	2%						28%		70%	

Comment: **Outer Gummy Gray Layer: 10% Chrysotile; Rest: NAD Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-33-E-20	A0311037-20	Brown	Cons.	Yes	2%								98%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311037
Client Project Number/Name: 7930 / Fort Stewart - Building 6533

Analyzed: 11/12/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-33-E-21	A0311037-21	Gray	Cons.	Yes	3%								97%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-27-R-22	A0311037-22	Black	Gummy	No							10%		90%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-25-R-23	A0311037-23	Black	Gummy	No	6%								94%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-27-R-24	A0311037-24	Black	Gummy	No							10%		90%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-27-R-25	A0311037-25	Black	Gummy	No						30%			70%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311037
Client Project Number/Name: 7930 / Fort Stewart - Building 6533

Analyzed: 11/12/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-27-R-26	A0311037-26	Black	Gummy	No						10%			90%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6533-CPR-27	A0311037-27	Black	Gummy	No						10%	5%		85%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart BLDG 6533**	Job No.:	**7930**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/6/2003	6533-39-1-1	46951	SHEET VINYL FLOORING
11/6/2003	6533-39-1-2	46952	FLOOR TILE
11/6/2003	6533-39-1-3	46953	SHEET VINYL FLOORING
11/6/2003	6533-39-1-4	46954	MASTIC
11/6/2003	6533-39-1-5	46955	DRYWALL JOINT COMPOUND
11/6/2003	6533-37-1-6	46956	SHEET VINYL FLOORING
11/6/2003	6533-37-1-7	46957	SHEET VINYL FLOORING
11/6/2003	6533-35-1-8	46958	SHEET VINYL FLOORING
11/6/2003	6533-35-1-9	46959	MASTIC
11/6/2003	6533-33-1-10	46960	SHEET VINYL FLOORING
11/6/2003	6533-33-1-11	46961	FLOOR TILE
11/6/2003	6533-31-1-12	46962	SHEET VINYL FLOORING
11/6/2003	6533-31-1-13	46963	FLOOR TILE
11/6/2003	6533-31-1-14	46964	FLOOR TILE
11/6/2003	6533-31-1-15	46965	DRYWALL JOINT COMPOUND
11/6/2003	6533-29-1-16	46966	SHEET VINYL FLOORING
11/6/2003	6533-27-1-17	46967	SHEET VINYL FLOORING
11/6/2003	6533-39-E-18	46968	CAULKING COMPOUND
11/6/2003	6533-37-E-19	46969	TSI CLOTH & MASTIC
11/6/2003	6533-33-E-20	46970	CAULKING COMPOUND
11/6/2003	6533-33-E-21	46971	CAULKING COMPOUND
11/6/2003	6533-27-R-22	46972	ROLLED ROOFING & SEALER

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-10-03	1100	C. Cell	11/10/03	1100 am

Comments: Fax results to Tim Jones @ 678-354-0330

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart BLDG 6533**	Job No.:	**7930**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/6/2003	6533-25-R-23	46973	FLASHING CEMENT
11/6/2003	6533-27-R-24	46974	ROOF SHINGLE
11/6/2003	6533-27-R-25	46975	ROOF FELT
11/6/2003	6533-27-R-26	46976	FLASHING CEMENT
11/6/2003	6533-CPR-27	46977	BUILT-UP ROOFING

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-10-03	1100	C. Cell	11/10/03	11:00am

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

David W. Hogue - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6538 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.

The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6538 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6538 at Ft. Stewart; Georgia conducted on 5-12 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6538 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6538 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6538-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6538 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the

floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6538 were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6538 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain or are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles contains asbestos. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Caulking material applied to the exterior of the window and doorframes and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint

compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6538

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6538-33-1-1	**12” x 12” BROWN FLOOR TILE**	**Kitchen, single layer**	**Tile, 6% chrysotile, mastic 5% chrysotile**
6538-33-1-2	Grey sheet vinyl flooring	First floor restroom, single layer	None
6538-33-1-3	Ceiling plaster	Living room	None
6538-33-2-4	Felt paper	Second floor restroom, between wood wall framing and plaster, vapor barrier	None
6538-35-1-5	**Brown sheet vinyl flooring**	**Kitchen, upper layer**	**30% chrysotile**
6538-35-1-6	**12” X 12” brown floor tile**	**Kitchen, lower layer**	**Tile, 6% chrysotile, mastic 5% chrysotile**
6538-35-1-7	**9” X 9” floor tile**	**Kitchen pantry/water heater closet**	**Tile & mastic 6% chrysotile**
6538-35-1-8	**Tan/light green sheet vinyl flooring**	**First floor restroom, upper layer**	**30% chrysotile**
6538-35-1-9	**Brown floor tile**	**First floor restroom, lower layer**	**Tile & mastic 5% chrysotile**
6538-37-1-10	**Yellow sheet vinyl flooring**	**Kitchen, upper layer**	**40% chrysotile**
6538-39-1-11	**9” X 9” grey/brown floor tile**	**Kitchen, lower layer**	**Tile & mastic 5% chrysotile**
6538-39-1-12	White/grey sheet vinyl flooring	Kitchen, upper layer	None
6538-39-1-13	**Sheet vinyl flooring**	**Kitchen, lower layer**	**Vinyl NAD, mastic 3% chrysotile**
6538-47-1-14	12” X 12” white/grey floor tile	Entry hall	None
6538-47-1-15	**Yellow sheet vinyl flooring**	**First floor restroom, center layer**	**30% chrysotile**
6538-47-E-16	TSI rubber insulation & white mastic	Refrigerant piping at waste heat exchanger	None
6538-47-E-17	TSI rubber insulation & white mastic	Refrigerant piping at condensing unit	None
6538-CPR-18	Built-up roofing	Carport	None
6538-41-R-19	**Flashing cement**	**Furnace flue at roof shingles**	**15% chrysotile**

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6538

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-1, 1-5 1-6, 1-7 1-8, 1-9 1-10, 1-11 1-13, 1-15	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	R-19						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6538

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 3-40%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Yes 15%	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

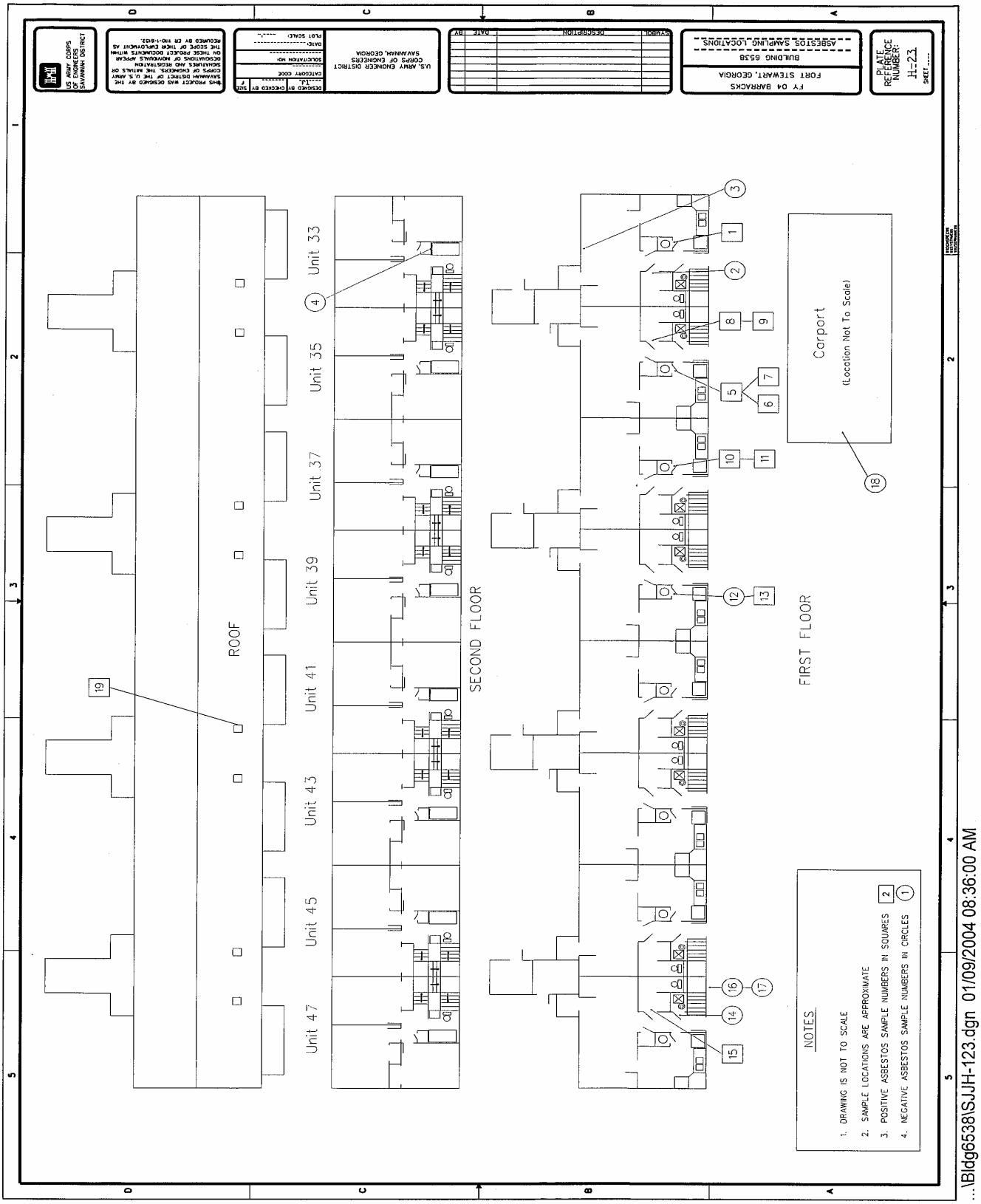
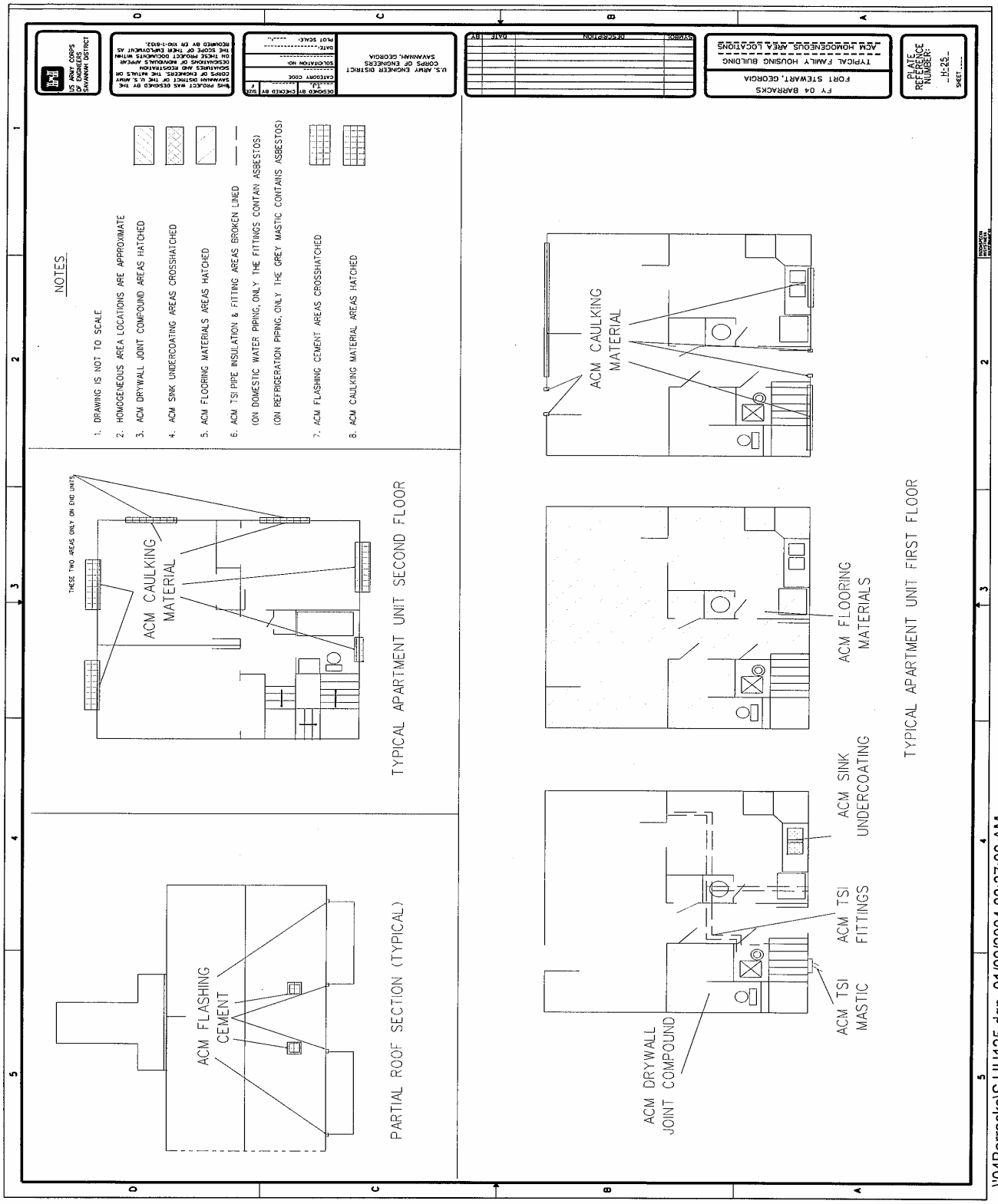

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BULDING 6538
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER: H-23
ROOF
Unit 33
Unit 35
Unit 37
Unit 39
Unit 41
Unit 43
Unit 45
Unit 47
SECOND FLOOR
FIRST FLOOR
Carport
(Location Not To Scale)
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
...\Bldg6538\SJJH-123.dgn 01/09/2004 08:36:00 AM

Figure 2


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE MATERIALS OR DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
DESIGNED BY CHECKED BY
CATEGORY CODE
SOLICITATION NO:
DATE:
PLOT SCALE:
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS
FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER:
H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:
Hygeia Project Number: A0311057
Client Project Number/Name: 7940 /Fort Stewart - Building 6538

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/14/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0311057
Client Project Number/Name: 7940 / Fort Stewart - Building 6538

Analyzed: 11/20/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-33-1-1	A0311057-01	Brown	Cons.	Yes	6%								94%	

Comment: **Tile: 6% Chrysotile; Mastic: 5% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-33-1-2	A0311057-02	Brown	Cons.	Yes						40%	20%		40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-33-1-3	A0311057-03	White	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-33-2-4	A0311057-04	Brown	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-35-1-5	A0311057-05	Brown	Cons.	Yes	30%					10%			60%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311057 **Page:** 2 of 4
Client Project Number/Name: 7940 / Fort Stewart - Building 6538 **Analyzed:** 11/20/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-35-1-6	A0311057-06	Brown	Cons.	Yes	6%								94%	

Comment: **Tile: 6% Chrysotile; Mastic: 5% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-35-1-7	A0311057-07	Brown	Cons.	Yes	6%								94%	

Comment: **Tile & Mastic: 6% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-35-1-8	A0311057-08	Brown	Cons.	Yes	30%					10%			60%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-35-1-9	A0311057-09	Brown	Cons.	Yes	5%								95%	

Comment: **Tile & Chrysotile: 5% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-37-1-10	A0311057-10	Brown	Cons.	Yes	40%					10%			50%	

Comment: **Asbestos Detected.**

Hygeia Project Number: A0311057
Client Project Number/Name: 7940 / Fort Stewart - Building 6538

Analyzed: 11/20/2003 **by** CC

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-39-1-11	A0311057-11	Brown	Cons.	Yes	5%								95%	

Comment: **Tile and Mastic 5% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-39-1-12	A0311057-12	Brown	Cons.	Yes						40%	20%		40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-39-1-13	A0311057-13	Brown	Cons.	Yes	<1%					40%			60%	

Comment: **Linoleum: NAD; Mastic: 3% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-47-1-14	A0311057-14	Brown	Cons.	Yes									100%	

Comment: **Tile: NAD; Mastic: Not enough to Analyze No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-47-1-15	A0311057-15	Brown	Cons.	Yes	30%					10%			60%	

Comment: **Linoleum: 30% Chrysotile; Mastic: NAD Asbestos Detected.**

Hygeia Project Number: A0311057 **Page:** 4 of 4
Client Project Number/Name: 7940 / Fort Stewart - Building 6538 **Analyzed:** 11/20/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-47-E-16	A0311057-16	Brown	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-47-E-17	A0311057-17	Brown	Cons.	Yes									100%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-CPR-18	A0311057-18	Brown	Cons.	Yes						30%			70%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6538-41-R-19	A0311057-19	Brown	Cons.	Yes	15%								85%	

Comment: **Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Bldg 6538**	Job No.:	**7940**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/5/2003	6538-33-1-1	47153	FLOOR TILE
11/5/2003	6538-33-1-2	47154	SHEET VINYL FLOORING
11/5/2003	6538-33-1-3	47155	PLASTER
11/5/2003	6538-33-2-4	47156	FELT PAPER
11/5/2003	6538-35-1-5	47157	SHEET VINYL FLOORING
11/5/2003	6538-35-1-6	47158	FLOOR TILE
11/5/2003	6538-35-1-7	47159	FLOOR TILE
11/5/2003	6538-35-1-8	47160	SHEET VINYL FLOORING
11/5/2003	6538-35-1-9	47161	FLOOR TILE
11/5/2003	6538-37-1-10	47162	SHEET VINYL FLOORING
11/5/2003	6538-39-1-11	47163	FLOOR TILE
11/5/2003	6538-39-1-12	47164	SHEET VINYL FLOORING
11/5/2003	6538-39-1-13	47165	SHEET VINYL FLOORING
11/12/2003	6538-47-1-14	47166	FLOOR TILE
11/12/2003	6538-47-1-15	47167	SHEET VINYL FLOORING
11/12/2003	6538-47-E-16	47168	TSI RUBBER & MASTIC
11/12/2003	6538-47-E-17	47169	TSI RUBBER INSULATION
11/12/2003	6538-CPR-18	47170	BUILT-UP ROOFING
11/12/2003	6538-41-R-19	47171	FLASHING CEMENT

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-14-03	1630	Clayton Cell	11/14/03	16:30

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

Asbestos in Buildings: Inspection and Assessment

February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

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Has completed coursework and satisfactorily passed an examination that meets all criteria required for EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation and NESHAP Regulations Training

Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
Examination Date

January 28, 2004
Expiration Date

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United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
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Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

HYGEIA LABORATORIES, INC.

MARIETTA, GA

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BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

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National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
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NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6539 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6539 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6539 at Ft. Stewart; Georgia conducted on 6 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6539 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6539 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Bulk samples of all suspect ACM's were collected for analysis.

Asbestos sample numbers are such that they indicate the building number followed by the apartment unit number followed by an area indicator (1 = first floor, 2 = second floor, E = exterior, R = roof) followed by the numerical sample number. An arbitrary example is 6539-36-1-14. The exception is where the letters CPR (Car Port Roof) replace the unit number and area indicator number.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

The bulk samples were analyzed by Hygeia Laboratories, Inc. Hygeia is accredited by the National Voluntary Laboratory Accredited Program (NVLAP Accreditation sponsored by the National Institute of Standards and Technology (NIST)). Copies of their accreditation certificates are included in Appendix C. The samples were analyzed by the accepted method of polarized light microscopy (PLM) using EPA's "Method For the Determination of Asbestos In Bulk Building Materials", EPA/600/R-93/116. Hygeia's analytical report is included in Appendix A.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains <u>greater than</u> one percent asbestos. Likewise, in this report, any material containing concentrations <u>greater than</u> one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6539 is included in this report where relevant. Bulk sample information appears on Table 1. Estimated quantities of individual asbestos containing materials appear on Table 2. Material characterization of asbestos containing materials appears on Table 3. The approximate location where each bulk sample was obtained is shown on the building floor plans, which appear as Figures. Positive ACM samples are indicated on the floor plan Figures with their numbers enclosed in squares and, where possible, locations of positive ACM are identified. Samples testing negative for asbestos are indicated on the

floor plan Figures with their numbers enclosed in circles. It is reasonable to assume that all materials similar to those testing positive also contain positive amounts of asbestos and should be treated as such.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6539 were assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping contain asbestos. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6539 were found to contain or were assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls contain or are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor contains asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors’ awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

c. *Caulking Material:* Caulking material applied to the exterior of the window and doorframes and the louvered vents at the interface with the brick walls contains asbestos. The caulking material within the brick control/expansion joints contains asbestos. There is one control joint approximately 1” wide on each the front and rear of the building at the building’s center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1, 2 and 3 for specific information, Figure 1 for sample locations and Figure 2 for homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 2 and 3 for specific information and Figure 2 for homogeneous area locations).

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TABLE 1
SUSPECT ACM SAMPLES
HUNTER AAF, BUILDING 6539

FIELD ID	DESCRIPTION	LOCATION	ASBESTOS TYPE & %
6539-9-1-1	**Green sheet vinyl flooring**	**First floor restroom, upper layer**	**40% chrysotile**
6539-10-1-2	**TSI pipe elbow**	**Entry hall, above ceiling, domestic water piping**	**7% chrysotile**
6539-10-1-3	Gypsum board	Entry hall ceiling, attached to wood ceiling framing, covered with plaster	None
6539-10-1-4	**12" X 12" brown floor tile**	**Kitchen, single layer**	**Tile 7% chrysotile, mastic 4% chrysotile**
6539-14-1-5	**Brown sheet vinyl flooring**	**Kitchen, upper layer**	None
6539-16-1-6	**Light green sheet vinyl flooring**	**First floor restroom, center layer**	**40% chrysotile**
6539-15-E-7	**Caulking compound (tan)**	**Between window frame and brick wall, below newer white caulking**	**6% chrysotile**
6539-12-E-8	**Caulking material**	**In brick wall control/expansion joint**	**3% chrysotile**
6539-10-E-9	**Caulking material**	**Between wood door frame and brick wall, painted brown**	**3% chrysotile**
6539-9-R-10	Roof shingle	Front awning roof	None
6539-9-R-11	Roof felt	Front awning roof, under shingles	None
6539-9-R-12	Flashing cement	Above storage shed, behind rolled roofing flashing at brick wall	None
6539-9-R-13	Rolled roofing & sealer	Storage shed roof, where roofing rolls up against brick wall	None
6539-9-R-14	Flashing cement	Furnace flue, at intersection with roof shingles	None
6539-CPR-15	Built-up roofing	Carport roof	None
6539-CPR-16	Built-up roofing	Carport roof	None

Samples testing positive for asbestos indicated in **BOLD** type

TABLE 2
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6539

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	E-7, E-9							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	E-8							30	30
Caulking around piping	S.F.	Assumed							8	8

Flooring materials	S.F.	1-1, 1-4 1-5, 1-6	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	1-2	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 3
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6539

MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Yes 3-6%	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Yes 3%	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Yes 4-40%	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Yes 7%	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

Figure 1

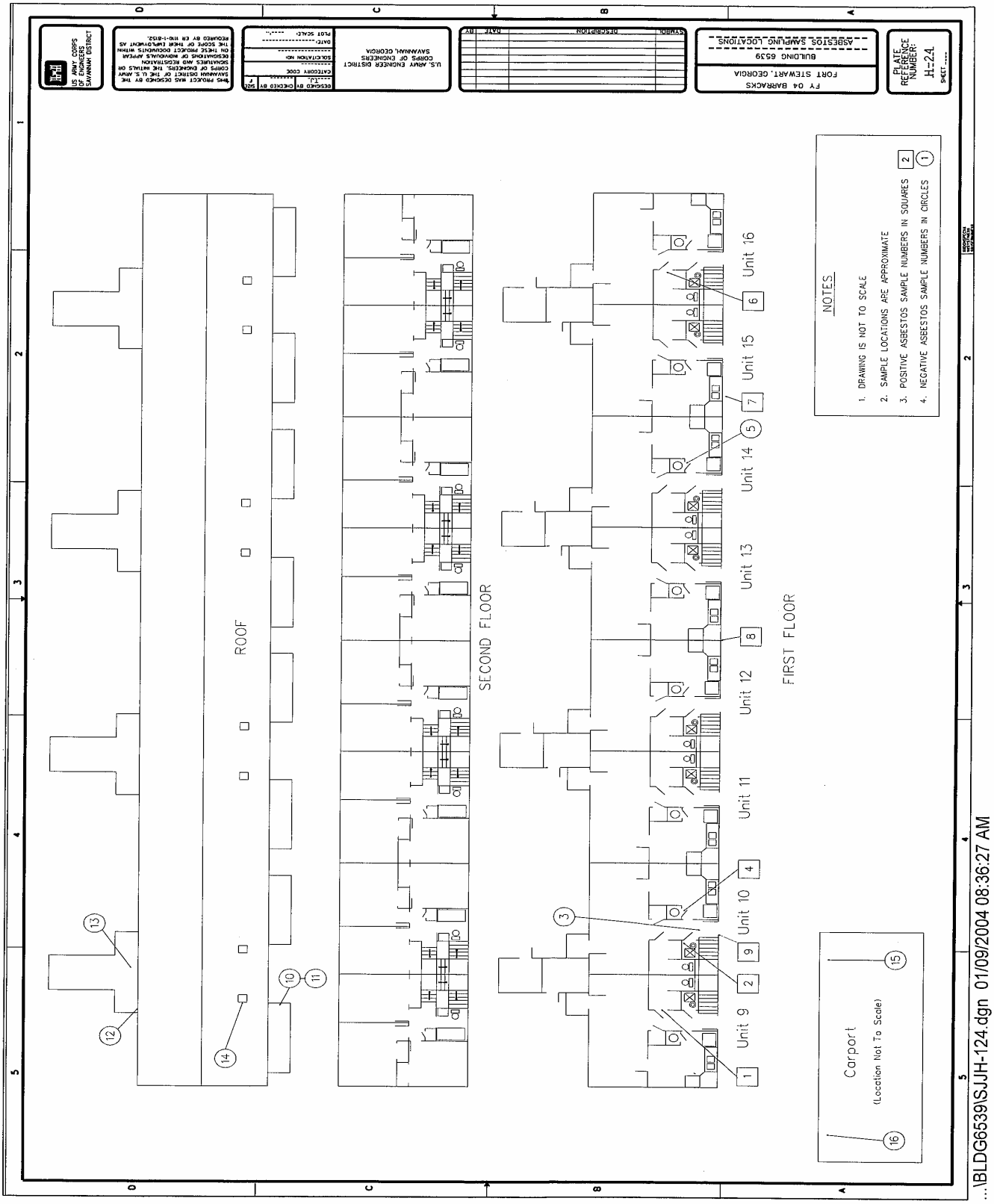
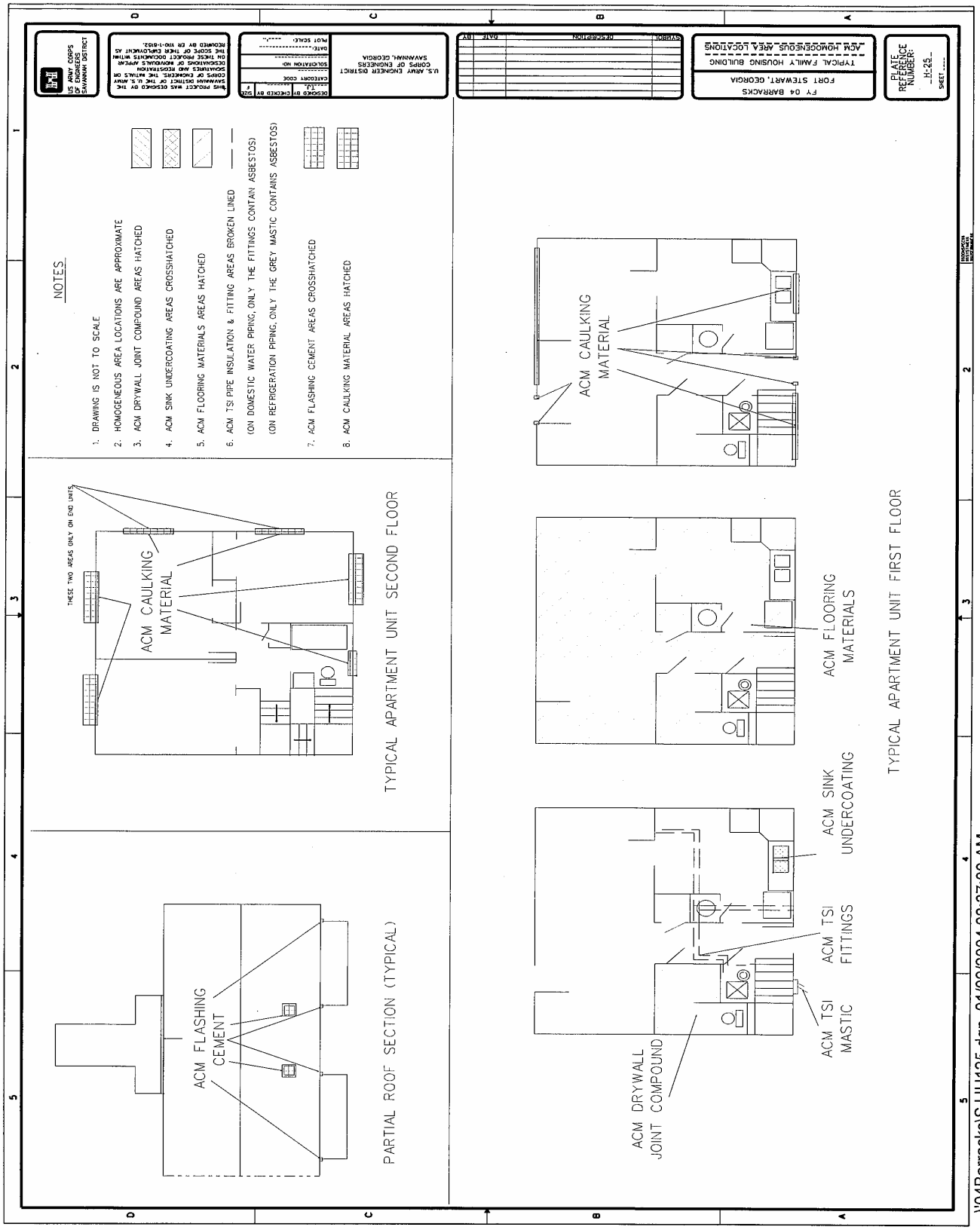

US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
FY 04 BARRACKS
FORT STEWART, GEORGIA
BUILDING 6539
ASBESTOS SAMPLING LOCATIONS
PLATE REFERENCE NUMBER: H-24
ROOF
SECOND FLOOR
FIRST FLOOR
Unit 9
Unit 10
Unit 11
Unit 12
Unit 13
Unit 14
Unit 15
Unit 16
NOTES
1. DRAWING IS NOT TO SCALE
2. SAMPLE LOCATIONS ARE APPROXIMATE
3. POSITIVE ASBESTOS SAMPLE NUMBERS IN SQUARES
4. NEGATIVE ASBESTOS SAMPLE NUMBERS IN CIRCLES
Carport
(Location Not To Scale)
...\BLDG6539\SJJH-124.dgn 01/09/2004 08:36:27 AM

Figure 2


NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
FY 04 BARRACKS
FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING
ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER:
H-25
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA
DESIGNED BY CHECKED BY
CATEGORY CODE
SOLICITATION NO.
DATE:
PLOT SCALE:
THIS PROJECT WAS DESIGNED BY THE U.S. ARMY CORPS OF ENGINEERS. THE MATRIALS OR DESIGNATIONS OF WORKUALS APPEAR ON THESE DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152.
U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Analytical Report - Hygeia Laboratories, Inc.

HYGEIA LABORATORIES, INC.

1300 Williams Drive, Suite A - Marietta, Georgia 30066-6299 - (770) 514-6933, FAX (770) 514-6966

US Army Corps of Engineers
Environmental & Materials Unit
200 North Cobb Parkway
Bldg. 400, Ste. 404
Marietta, GA 30062

12/4/2003

Subject:

Hygeia Project Number: A0311025
Client Project Number/Name: 7929 /Fort Stewart - Building 6539

Dear Mr. Tim Jones:

Enclosed are the analytical results of bulk samples submitted by you to this laboratory on 11/10/2003. All analyses were performed by polarized light microscopy (PLM) in accordance with the EPA method as defined in Perkins and Harvey, July 1993, "Methods for the Determination of Asbestos in Bulk Materials" 61pp. (EPA/600/R-93/116). The reported percentages are volume estimates obtained by calibrated visual estimation. The results in this report apply only to the items tested.

The EPA defines an asbestos containing material (ACM) as a material that is reported to contain greater than one percent asbestos. HYGEIA is only responsible for the accuracy of the analytical results provided in this report and cannot be held responsible for the errors resulting from improper sample collection techniques. This report may not be used to claim product endorsement by NVLAP or any other U.S. Government agency.

For nonhomogeneous samples, each layer was analyzed separately and the results combined to form the reported value except where otherwise noted. Vinyl floor tile samples with negative results by PLM should be submitted for confirmation by transmission electron microscopy (TEM). Friable samples containing less than 10% asbestos as determined by PLM may be resubmitted for point counting at your discretion.

Thank you for using our analytical services. HYGEIA Laboratories has been NVLAP accredited since 1988. Our current NVLAP code is 102087-0. We will keep a copy of this report on file for three years. We will dispose of your samples in 60 days unless you request that we return them. This report my be reproduced only in its entirety with the consent of Hygeia Laboratories, Inc. If you have any questions, please call us at (770) - 514-6933.

Sincerely,

Clayton Call
Asbestos Laboratory Manager

NVLAP#	102087-0
Texas Dept. of Health #	30-0232
Commonwealth of Virginia #	3333-000210

Hygeia Laboratories Inc.
1300 Williams Drive, Suite A
Marietta, GA 30066
(770) 514-6933

PLM Analysis Summary

Hygeia Project Number: A0311025
Client Project Number/Name: 7929 / Fort Stewart - Building 6539

Analyzed: 11/11/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-9-1-1	A0311025-01	Brown	Cons.	Yes	40%					10%			50%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-10-1-2	A0311025-02	Brown	Cons.	Yes	7%						33%		60%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-10-1-3	A0311025-03	Brown	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-10-1-4	A0311025-04	Brown	Cons.	Yes	7%								93%	

Comment: **Tile: 7% Chrysotile; Mastic: 4% Chrysotile Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-14-1-5	A0311025-05	Brown	Cons.	Yes						40%	20%		40%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311025
Client Project Number/Name: 7929 / Fort Stewart - Building 6539

Analyzed: 11/11/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-16-1-6	A0311025-06	Brown	Cons.	Yes	40%					10%			50%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-15-E-7	A0311025-07	Brown	Cons.	Yes	6%								94%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-12-E-8	A0311025-08	Brown	Cons.	Yes	3%								97%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-10-E-9	A0311025-09	Brown	Cons.	Yes	3%								97%	

Comment: **Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-9-R-10	A0311025-10	Brown	Cons.	Yes						30%	10%		60%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311025
Client Project Number/Name: 7929 / Fort Stewart - Building 6539

Analyzed: 11/11/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-9-R-11	A0311025-11	Brown	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-9-R-12	A0311025-12	Multi	Cons.	Yes						60%			40%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-9-R-13	A0311025-13	Black	Cons.	Yes						70%			30%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-9-R-14	A0311025-14	Black	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-CPR-R-15	A0311025-15	Black	Cons.	Yes						80%			20%	

Comment: **No Asbestos Detected.**

Hygeia Project Number: A0311025
Client Project Number/Name: 7929 / Fort Stewart - Building 6539

Analyzed: 11/11/2003 **by** WAS

Sample ID		Sample Description			Asbestos Percent					Other Fibers			Non - Fibers	
Client #	Hygeia #	Color	Texture	Homog.	Chr.	Am.	Cro.	An.	T/A	Cell.	Glass	OF	B/F	ONF
6539-CPR-R-16	A0311025-16	Brown	Cons.	Yes						40%			60%	

Comment: **No Asbestos Detected.**

abbreviations:

Chr. = chrysotile
Am. = amosite
Cro. = crocidolite
An. = anthophyllite
T/A = tremolite/actinolite

cell = cellulose
glass = fibrous glass
syn = synthetic
sty = styrene foam
det = detected

per = perlite
ver = vermiculite
MF = Mineral filler
B/F = Binder / filler
NAD = No asbestos detected

OF = Other Fibers
ONF = Other Non-Fibers
Cons = Consolidated

Appendix B

Sample Chain of Custody Forms

ASBESTOS CHAIN OF CUSTODY - US ARMY CORPS OF ENGINEERS

Project:	**Ft. Stewart Buil;ding 6539**	Job No.:	**7929**
Sampler:	Tim Jones	Analysis:	PLM

DATE	FIELD ID	EMU ID	COMPONENTS/NOTES
11/6/2003	6539-9-1-1	46935	SHEET VINYL FLOORING
11/6/2003	6539-10-1-2	46936	TSI PIPE ELBOW
11/6/2003	6539-10-1-3	46937	GYPSUM BOARD
11/6/2003	6539-10-1-4	46938	FLOOR TILE
11/6/2003	6539-14-1-5	46939	SHEET VINYL FLOORING
11/6/2003	6539-16-1-6	46940	SHEET VINYL FLOORING
11/6/2003	6539-15-E-7	46941	CAULKING COMPOUND
11/6/2003	6539-12-E-8	46942	CAULKING COMPOUND
11/6/2003	6539-10-E-9	46943	CAULKING COMPOUND
11/6/2003	6539-9-R-10	46944	ROOF SHINGLE
11/6/2003	6539-9-R-11	46945	ROOF FELT
11/6/2003	6539-9-R-12	46946	FLASHING CEMENT
11/6/2003	6539-9-R-13	46947	ROLLED ROOFING & SEALER
11/6/2003	6539-9-R-14	46948	FLASHING CEMENT
11/6/2003	6539-CPR-R-15	46949	BUILT-UP ROOFING
11/6/2003	6539-CPR-R-16	46950	ROOF TAR

Relinquished By	Date	Time	Received By	Date	Time
Tim Jones	11-10-03	1100			

Comments: Fax results to Tim Jones @ 678-354-0330

Appendix C

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

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February 10-12, 1997
Course Date

2360
Certificate Number

February 12, 1997
Examination Date

February 11, 1998
Expiration Date

William H. Spain - Course Director

Rachel G. McCain - Exam Administrator

TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The Environmental Institute

Timothy A. Jones

Social Security Number - 411-04-8826
200 N. Cobb Parkway, Bldg. 400, Suite 404 - Marietta, GA 30062

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Asbestos in Buildings: Inspector Refresher

January 29, 2003
Course Date

7644
Certificate Number

January 29, 2003
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January 28, 2004
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David W. Hogue - Course Director

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BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102087-0

NVLAP-01C (06-01)

National Institute of Standards and Technology

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National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

HYGEIA LABORATORIES, INC.
1300 Williams Drive, Suite A
Marietta, GA 30066-6299
Mr. Clayton Call
Phone: 770-514-6933 Fax: 770-514-6966
E-Mail: call67@atc-enviro.com

NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

March 31, 2004

Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

Savannah District
Environmental and Materials Unit

US Army Corps of Engineers®

Asbestos Survey

Building No. 6540 Ft. Stewart, Georgia

Prepared by Timothy A. Jones

Approved for public release, distribution is unlimited

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The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Asbestos Survey **December 2003**

Building No. 6540 Ft. Stewart, Georgia

by Timothy A. Jones

Final report

Approved for public release; distribution is unlimited

Prepared for **US Army Corps of Engineers**
Savannah District

Asbestos Inspection Report

Introduction

Scope of the Investigation

This report documents the asbestos inspection and survey of Building No. 6540 at Ft. Stewart; Georgia conducted on 18 November 2003 by Savannah District US Army Corps of Engineers employees Tim Jones and Mike Wielputz. The survey was conducted in general accordance with the regulatory guidelines in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763 Subpart E Sections 763.80-763.88) and "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Purple Book) (EPA publication number 560/5-85-024). Although not required by the AHERA guidelines, roof and other exterior miscellaneous materials were also inspected and sampled.

Background

Building No. 6540 is a two-story wood frame structure with brick exterior. It is divided into eight identical three-bedroom apartment units. The first floor of each apartment unit consists of a kitchen with pantry/water heater closet, living room, half bathroom (added later), entry hall, storage closet and mechanical closet. The second floor of each unit consists of three bedrooms with closets, a full bathroom, a hallway and a linen closet. Original interior walls and ceilings are constructed of wood framing covered with gypsum board that is in turn covered by approximately ¾ inch of hard plaster. Walls separating individual apartment units are constructed of masonry covered with plaster. A half bathroom has been added on the first floor of each apartment unit at some later time the new walls of which are wood frame covered by gypsum board. The first floor is poured concrete slab on grade topped with a combination of wood parquet, sheet vinyl flooring and floor tile. Floors on the second floor are finished hardwood planking over wood sub-flooring in the hallway and bedrooms and ceramic tile in the bathroom. There is no attic space above the second floor; ceilings are attached to the roof joists. Attached wooden storage sheds on the rear of the building are each shared by two apartment units. The storage shed's roofs are constructed of rolled roofing over plywood. All remaining roof structures are asphalt shingles over felt over wood decking. Second story exterior soffits are covered with vinyl siding material over older plywood. Windows have aluminum frames.

Mechanical systems consist of a natural gas fired forced air furnace coupled with a conventional split system refrigerated air conditioner. An electric water heater is located in the pantry of the kitchen. Waste heat recovery water heating systems once operating off of the air conditioner condensing units exist but have been abandoned. Stainless-steel

kitchen exhaust hoods remain in the kitchens, though the stove/ranges have been removed. Dishwashers have also been removed.

Apartment units are numbered on the floor plan as they are found on the building front. Individual rooms within each apartment unit are named based on functional space.

Description of study

Investigation

All accessible areas of Building No. 6540 were visually inspected for suspected asbestos containing materials (ACM) by an accredited inspector. Apartment Units 1, 5, 6, 7, and 8 were inaccessible at the time of inspection. No samples were collected from this building.

This report details ACM as identified at the time of inspection only. Whether other asbestos inspection reports are available or not, the material quantities quoted in this report are assumed complete and are the quantities to be used for abatement/demolition project purposes.

In compliance with the AHERA regulations, material is considered an Asbestos Containing Material (ACM) when it contains greater than one percent asbestos. Likewise, in this report, any material containing concentrations greater than one percent asbestos will be considered "positive". Occasionally, materials containing less than one percent asbestos, or not sampled, are assumed to be a "positive" asbestos containing material at the discretion of the inspector. A narrative discussion of the AHERA ACM types (i.e., thermal systems insulation, miscellaneous and surfacing materials) found in Building No. 6540 is included in this report where relevant. Estimated quantities of individual asbestos containing materials appear on Table 1. Material characterization of asbestos containing materials appears on Table 2.

Analysis

Thermal Systems Insulation (TSI)

TSI is insulation material applied to pipes, fittings, tanks, ducts, or on other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes. The following suspect TSI materials at Building No. 6540 are assumed to contain asbestos:

a. *TSI Pipe Run Insulation*: Grey mastic applied over woven glass insulation on the remnants of refrigeration piping and short sections of domestic water piping at the waste heat exchangers is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The waste heat

exchangers can be identified as silver/grey aluminum boxes approximately 18 inches in height mounted on the exterior brick wall behind and above the air conditioning condensing units at the front of each apartment unit. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

b. *TSI Molded Fittings:* Molded fittings on domestic water piping are assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. These fittings are located within the mechanical closet and above the first floor hallway ceiling. Commonly, one fitting is located partially within the wall above the door of the mechanical closet opposite from the vertical water main. Fittings may exist on the domestic water piping within the exterior walls at the drops for the kitchen plumbing and the rear hose faucet, however none were noted during inspection of selected units. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

Miscellaneous Materials

Miscellaneous materials include building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and do not include surfacing or TSI. In the past, there were a great number of miscellaneous building materials that had asbestos fibers added to them during the manufacturing process to increase durability and fireproofing qualities. The following suspect miscellaneous materials at Building No. 6540 are assumed to contain asbestos:

a. *Flooring Materials:* All layers of vinyl flooring and tiles on the first floor with the exception of the upper layer gray terrazzo style sheet vinyl flooring and obviously newer white with grey pattern 12” X 12” floor tile in the entry halls are assumed to contain asbestos. Black mastic on the concrete sub-floor throughout the first floor is assumed to contain asbestos. This mastic may also be found adhering to any flooring material applied directly to the concrete sub-floor including vinyl materials or wood parquet. Typically, 2 to 3 layers of vinyl flooring materials are found in the half bathroom and kitchen. Due to the difficulty of separating layers, all should be assumed to contain or be contaminated with asbestos. A single layer of 9” X 9” floor tiles is generally found in the kitchen pantry/water heater closet. Typically, carpet over plywood is found on top of older flooring materials in the entry hall, living room and hall closet. - (Refer to Tables 1 and 2 and figure 1 for homogeneous area locations).

b. *Roofing Materials:* Flashing cement applied to the furnace flue stacks at the junction with the roof shingles is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement applied to the conduits where they enter the brick wall above the storage sheds’ roofs is assumed to contain asbestos based on analysis of similar samples from

other buildings inspected in this project. Flashing cement between the rolled roofing and the brick walls at the storage sheds' roofs is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. Flashing cement on the brick wall at each vertical edge of the front doors' awnings is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

c. *Caulking Material:* Older tan caulking material beneath a newer layer of white caulking applied to the exterior of the window and door frames and the louvered vents at the interface with the brick walls is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The caulking material within the brick control/expansion joints is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. There is one control joint approximately 1" wide on each the front and rear of the building at the building's center running vertically the entire height of the wall. Caulking material around refrigeration piping penetrations is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. - (Refer to Tables 1 and 2 for specific information and Figure 1 for Homogeneous area locations).

d. *Drywall Joint Compound:* Drywall joint compound applied to the walls and ceiling in the first floor Restroom is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. The older hard plaster wall within the Restroom facing the Living Room has joint compound at the junctions with the drywall ceiling and walls. - (Refer to Tables 1 and 2 for specific information and figure 12 for homogeneous area locations).

Surfacing

Surfacing material is friable material that is sprayed on, troweled on, or otherwise applied to surfaces for decorative or other purposes.

a. *Sink Under Coating:* Black under coating material on the stainless steel kitchen sink is assumed to contain asbestos based on analysis of similar samples from other buildings inspected in this project. This material is tightly bonded to the underside of the sink, but when removed by scraping becomes friable. - (Refer to Tables 1 and 2 for specific information and Figure 1 for homogeneous area locations).

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Appendices

Appendix A. Accreditations. 11-15

TABLE 1
ACM QUANTITY SUMMARY
FT. SEWART, BUILDING 6540

Material Description	UNITS	Area Descriptions								
		APPLICIPAL SAMPLE NUMBERS	KITCHEN & PANTRY	LIVING ROOM	1st. FLOOR HALLWAY & STORAGE CLOSET	1st. FLOOR RESTROOM	MECHANICAL CLOSET	ROOFS	EXTERIOR	TOTALS
Caulking Material, Exterior window & door frames & louvered vents	L.F. ½" wide	Assumed							1530	1530
Caulking Material, brick control joints	L.F. 1" wide	Assumed							30	30
Caulking around	S.F.	Assumed							8	8

piping										
Flooring materials	S.F.	Assumed	1056	2240	520	272				4088
Roofing Materials, Flashing Cement	S.F	Assumed						112		112
Sink Under coating	S.F.	Assumed	48							48
Drywall Joint Compound	S.F. *	Assumed				1000				1000
TSI 2” OD Fittings	Ea.	Assumed	16	16	48		24			104
TSI 2” OD Pipe Run Insulation, grey mastic over woven glass	L.F.	Assumed							16	16

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

*** Drywall Joint Compound quantity based on ½ of the wall and ceiling area**

TABLE 2
MATERIAL CHARACTERIZATION AND ASSESSMENT
HUNTER AAF, BUILDING 6540

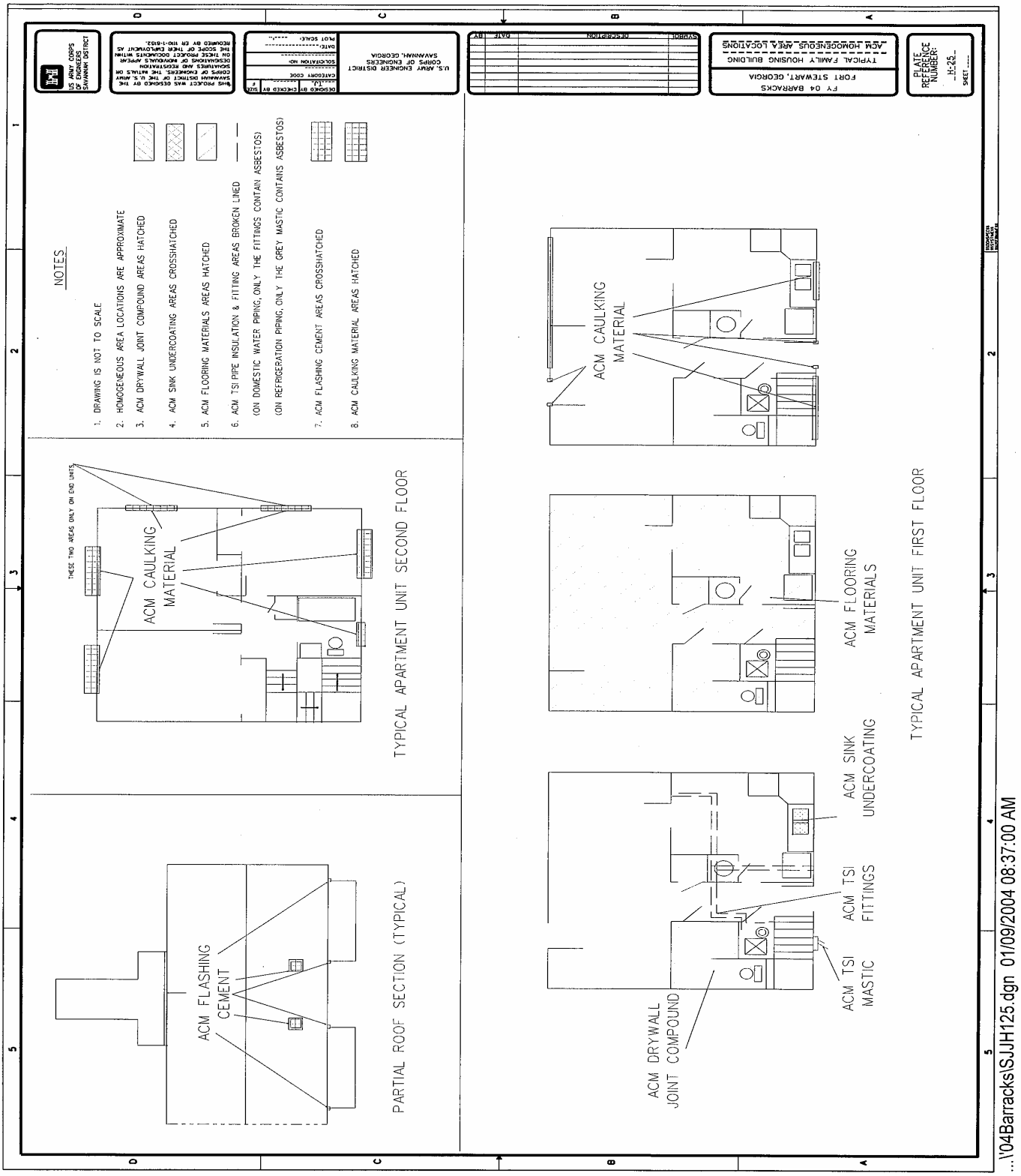
MATERIAL		CHARACTERISTICS			ASSESSMENT	
Type	**Description**	**Asbestos Yes/No/Assumed**	**Quantity (If ACM)**	**Friable / Non-friable**	**Condition**	**Disturbance Potential**
Miscellaneous	Caulking Material, Around Windows, Doors and Vents	Assumed	1530 L.F.	Non-friable	Damaged	Low
Miscellaneous	Caulking Material, In Brick Control Joint	Assumed	30 L.F.	Friable	Significantly Damaged	Moderate
Miscellaneous	Caulking Material, Around Refrigerant Piping	Assumed	8 S.F.	Non-friable	Good	Low
Miscellaneous	Flooring Materials, Tile, Mastic & Wood Parquet	Assumed	4088 S.F.	Non-friable	Good-Significantly Damaged	Low
Miscellaneous	Roofing Materials, Flashing Cement	Assumed	112 S.F.	Non-friable	Good	Low

Miscellaneous	Sink Under Coating	Assumed	48 S.F.	Non-Friable	Good	Low
Miscellaneous	Drywall Joint Compound *	Assumed	1000 S.F.	Friable	Good	Low
TSI	2” Pipe Run Insulation, Grey Mastic	Assumed	16 L.F.	Non-Friable	Good	Low
TSI	2” Molded Pipe Fittings	Assumed	104 Ea.	Friable	Damaged - Significantly Damaged	High

S.F. = Square Foot, L.F. = Linear Foot, C.F. = Cubic Foot

* Drywall Joint Compound quantity based on ½ of the wall and ceiling area

Figure 1


US ARMY CORPS OF ENGINEERS SAVANNAH DISTRICT
THIS PROJECT WAS DESIGNED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE MATERIALS OR SQUARIES AND REPOSITARION DESIGNATIONS OF DOCUMENTS MENTIONED IN THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS RECOMMED BY EM 110-1-6312.
DESIGNED BY CHECKED BY SIZE
CATEGORY CODE
SOLICITATION NO.
DATE
PLOT SCALE
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA
SYMBOL DESCRIPTION DATE BY
FY 04 BARRACKS FORT STEWART, GEORGIA
TYPICAL FAMILY HOUSING BUILDING ACM HOMOGENEOUS AREA LOCATIONS
PLATE REFERENCE NUMBER: H-25
SHEET
NOTES
1. DRAWING IS NOT TO SCALE
2. HOMOGENEOUS AREA LOCATIONS ARE APPROXIMATE
3. ACM DRYWALL JOINT COMPOUND AREAS HATCHED
4. ACM SINK UNDERCOATING AREAS CROSSHATCHED
5. ACM FLOORING MATERIALS AREAS HATCHED
6. ACM TSI PIPE INSULATION & FITTING AREAS BROKEN LINED
(ON DOMESTIC WATER PIPING, ONLY THE FITTINGS CONTAIN ASBESTOS)
(ON REFRIGERATION PIPING, ONLY THE GREY MASTIC CONTAINS ASBESTOS)
7. ACM FLASHING CEMENT AREAS CROSSHATCHED
8. ACM CAULKING MATERIAL AREAS HATCHED
THESE TWO AREAS ONLY ON END UNITS
ACM CAULKING MATERIAL
TYPICAL APARTMENT UNIT SECOND FLOOR
ACM FLASHING CEMENT
PARTIAL ROOF SECTION (TYPICAL)
ACM CAULKING MATERIAL
ACM FLOORING MATERIALS
ACM SINK UNDERCOATING
ACM TSI FITTINGS
ACM TSI MASTIC
ACM DRYWALL JOINT COMPOUND
TYPICAL APARTMENT UNIT FIRST FLOOR
...\04Barracks\SJJH125.dgn 01/09/2004 08:37:00 AM

Appendix A

Accreditations

The Environmental Institute

Tim Jones

Has completed coursework and satisfactorily passed

an examination that meets all criteria required for

EPA / AHERA (TSCA Title II) Approved Accreditation

and NESHAP Regulations Training

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BULK ASBESTOS FIBER ANALYSIS

March 31, 2004

Effective through

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BULK ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 102087-0**

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18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

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