

**DRAFT**

**SITE INVESTIGATION REPORT  
FOR MULTIPLE BUILDINGS  
SOUTHWEST REGION  
PINE BLUFF ARSENAL  
PINE BLUFF, ARKANSAS**

CONTRACT NO. W912DY-05-D-0010  
DELIVERY ORDER NO. 05  
BHATE PROJECT NO. 9060216

*Prepared For:*

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Huntsville District  
Huntsville, Alabama

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February 2007

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**SITE INVESTIGATION REPORT**  
**FOR MULTIPLE BUILDINGS**  
**PINE BLUFF ARSENAL**  
**PINE BLUFF, ARKANSAS**  
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## **LIST OF ACRONYMS**

ACM	Asbestos-containing material
AHA	Activity Hazard Analysis
ANSI	American National Standards Institute
CPR	Cardio-pulmonary Resuscitation
CQC	Contractor Quality Control
EPA	Environmental Protection Agency
GFCI	Ground Fault Circuit Interrupters
HSM	Health and Safety Manager
MC	Munitions Constituents
ODS	Ozone Depleting Substances
OSHA	Occupational Safety and Health Administration
PCBs	Polychlorinated biphenyls
PLM	Polarized Light Microscopy
PPE	Personnel protective equipment
ppm	Parts per million
SF	Square feet
SIR	Site Investigation Report
SOW	Scope of Work
SSHP	Site Safety and Health Plan
TCLP	Toxicity Characteristic Leaching Procedure

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# **1 INTRODUCTION**

Bhate conducted a site visit on November 14, 2006, at Pine Bluff Arsenal located in Pine Bluff, Arkansas. The purpose of the site visit was to document, characterize, and quantify the presence of asbestos and gather additional data for building demolition purposes. The following sections in this document summarize our findings with regard to the demolition of the following buildings:

- 15-103
- 16-150
- 51-650
- 60-100
- 34-133
- 33-150
- 55-040
- 55-320

## **2 SITE DESCRIPTIONS AND IDENTIFIED HAZARDS**

### **2.1 Site Descriptions**

The buildings will be described in the following sections. Photographs are included in Appendix 2. Table 2-1 includes general building data for all of the buildings.

Table 2-1. Building Data

Building Number	Footprint Square Footage*	Building Type	Asbestos Quantity**	Equipment Left in Building/Additional structures	Site Contact/Phone
15-103	198	<u>Storage</u> Building Type: Wood Foundation: Dirt	Not Applicable	Not Applicable	Ms. Libby Madar 870-540-3336
16-150	2,000	<u>Storage</u> Building Type: Wood Siding: Masonite Foundation: Concrete slab	Not Applicable	Not Applicable	Ms. Libby Madar 870-540-3336
51-650	100	<u>Storage</u> Building Type: Wood Siding: Transite Foundation: Concrete slab	Transite: 900 SF Roof Shingles: 125 SF	Not Applicable	Ms. Libby Madar 870-540-3336
60-100	1,000	<u>Flammable Materials</u> Building Type: Wood Siding: Wood Foundation: Concrete slab	Not Applicable	Not Applicable	Ms. Libby Madar 870-540-3336
34-133	144	<u>Casefil Plant</u> Building Type: Wood Siding: Transite Interior Walls: Drywall Floor: Wood Foundation: Skids	Transite: 650 SF	Office Furniture, stacked paper, rolled wire  Approx. 50 concrete storage tanks	Ms. Libby Madar 870-540-3336
33-150	1,600	<u>Administrative Building</u> Building Type: Block Siding: Wood Interior Walls: Drywall Foundation: Concrete slab	Exterior Steam Pipe Insulation: 100 LF Debris (attic): 150 SF Asphalt Shingle: 1,850 SF Roof Flashing/Mastic: 1 SF Black tar pipe joints: 10 LF	Not Applicable	Ms. Libby Madar 870-540-3336

**Table 2-1. Building Data (continued)**

<b>Building Number</b>	<b>Footprint Square Footage*</b>	<b>Building Type</b>	<b>Asbestos Quantity**</b>	<b>Equipment Left in Building/Additional structures</b>	<b>Site Contact/Phone</b>
55-040	960	<u>Storage</u> Building Type: Wood Siding: Wood, Transite Foundation: Concrete slab	Transite Siding: 1,300 SF	Not Applicable	Ms. Libby Madar 870-540-3336
55-320	3,977	<u>Case ohaul</u> Building Type: Wood, Metal Siding: Wood, Transite Interior Walls: Drywall, Particle board, Transite Foundation: Concrete slab	Transite Siding: 4,000 SF Pipe Insulation: 60 LF Transite Interior walls: 1,000 SF Interior Transite Panel Felt Backing: 1,000 SF	Not Applicable	Ms. Libby Madar 870-540-3336
<p><b>NOTES:</b>            * Buildings are one story unless otherwise noted.            ** See Section 8 for asbestos sampling data.            LF = Linear Feet, SF = Square Feet</p>					

## **2.2 Safety and Health Hazards**

After the asbestos-containing materials are removed, the buildings can be easily demolished. Munitions constituents (MC) are not expected to be a concern at any of the structures slated for demolition. See Section 3, Hazard and Risk Investigation for further information regarding safety and health hazards.

# **3 HAZARD AND RISK INVESTIGATION**

## **3.1 Asbestos/Lead Abatement Hazard Analysis**

Asbestos and lead are known human carcinogens and exposure to dust and/or fibers should be avoided. Protective outerwear and a respirator should be worn at all times while in the work area.

The field activities proposed at the project sites and associated hazards include, but are not limited to:

**Table 3-1. Asbestos/Lead Activity Hazard Analysis**

<b>Activity</b>	<b>Potential Hazards</b>	<b>Recommended Controls</b>
Mobilization/Demobilization	Slips, trips, or falls on walking and working surfaces	<ul style="list-style-type: none"> <li>- Maintain clean work areas by following good housekeeping procedures</li> <li>- Be alert for uneven and variable terrain</li> <li>- Wear slip resistant footwear when walking/working on slippery surfaces or slopes</li> <li>- Keep work area free of slippery materials, debris, and tools</li> <li>- Provide adequate lighting in all work areas</li> </ul>
	Eye injury	<ul style="list-style-type: none"> <li>- Use approved safety glasses with rigid side shields</li> </ul>

**Table 3-1. Asbestos/Lead Activity Hazard Analysis (continued)**

Activity	Potential Hazards	Recommended Controls
Mobilization/Demobilization (continued)	Overhead hazards	- Personnel will be required to wear hard hats that meet American National Standards Institute (ANSI) Standard Z89.1 in all areas with overhead hazards
	Dropped objects	- Steel toe boots meeting ANSI Standard Z41 will be worn in all work areas
	Back injury from lifting heavy loads	<ul style="list-style-type: none"> <li>- Site personnel will be instructed on proper lifting techniques</li> <li>- Mechanical devices should be used to reduce manual handling of materials</li> <li>- Team lifting should be utilized if mechanical devices are not available</li> <li>- Avoid torso twisting motions while handling or moving loads</li> </ul>
Abatement Activities <ul style="list-style-type: none"> <li>• Site Preparation</li> <li>• Asbestos Removal</li> <li>• Waste Load-out</li> <li>• Site Cleanup/ Demobilization</li> </ul>	Cut Hazards (work area prep)	- Wear adequate hand protection and use care when handling cutting device
	Electrical Hazards	<ul style="list-style-type: none"> <li>-All portable electric equipment must be grounded or double insulated</li> <li>- Flexible cords shall be used only in continuous lengths without splice or tape</li> <li>- Patched, worn, or frayed electrical cords or cables shall not be used</li> <li>- Extension cords or cables shall not be secured with staples, nails, or suspended by wire</li> <li>- Extension cords shall have portable Ground Fault Circuit Interrupters (GFCI) located at the closest point to a supply outlet</li> <li>- Ensure all electrical systems are shut off before disassembling any electrical system or component</li> </ul>

**Table 3-1. Asbestos/Lead Activity Hazard Analysis (continued)**

Activity	Potential Hazards	Recommended Controls
Abatement Activities (continued) <ul style="list-style-type: none"> <li>• Site Preparation</li> <li>• Asbestos Removal</li> <li>• Waste Load-out</li> <li>• Site Cleanup/ Demobilization</li> </ul>	Dust emissions	- Lightly spray the area with amended water to keep the fiber release to a minimum  - Wear appropriate Personal Protective Equipment (PPE) including respiratory protection to minimize potential exposure to asbestos dust
	Hand tool hazards	- Keep hand tools in like new condition - Take tools with mushroomed heads, split handles, or any defect out of service  - Do not strike two hardened surfaces together (e.g. two hammers or a hammer on a hardened rivet)  - Do not use any tool as a pry bar or “cheater” bar  - Use tools with insulated handles on or around electrical equipment and circuits
Equipment Used	Inspection Requirements	Training Requirements
Level D and C PPE  First Aid Kits  Fire Extinguishers	Weekly inspections will be performed on fire extinguishers  Weekly inspections will be performed on first aid kits	- Personnel have read and understand the work plan and activity hazard analysis  - Site specific briefing  - At least two individuals on-site will have current Cardio-pulmonary Resuscitation (CPR) and First aid training

### 3.2 Demolition Hazard Analysis

The potential health and safety hazards of this project are summarized below in Table 3-2. The potential for encountering these hazards is ranked (high, moderate, or low) based on the work to be performed and the hazard control measures to be used.

**Table 3-2. Demolition Activity Hazard Analysis**

Summary	Hazard Potential [High, Moderate, or Low]	Description of Potential Hazards
<p>√ <b>Safety</b>                      (i.e. Walking and working surfaces, heavy equipment, traffic, falls, excavations, power and hand tools, materials handling, hoisting and rigging, electrical safety, etc.)</p>	<ul style="list-style-type: none"> <li>• Moderate</li> </ul>	<ul style="list-style-type: none"> <li>• Uneven walking and working surfaces</li> <li>• Slips, trips, and falls</li> <li>• Materials handling</li> <li>• Heavy equipment operation</li> </ul>
<p>√ <b>Utilities</b></p>	<ul style="list-style-type: none"> <li>• Moderate</li> </ul>	<ul style="list-style-type: none"> <li>• Underground and overhead utilities may be present.</li> <li>• All utilities shall be disconnected by qualified technicians prior to the initiation of demolition activities.</li> <li>• Locations of any proposed excavation activities shall be subjected to a utility locate. Any soil disturbance within a 4 foot buffer zone of marked utilities shall be conducted with non-aggressive methods. Be aware of potential overhead utilities and maintain at least 15 feet clearance.</li> </ul>
<p>√ <b>Chemical</b></p>	<ul style="list-style-type: none"> <li>• Moderate</li> </ul>	<ul style="list-style-type: none"> <li>• Asbestos</li> <li>• Lead</li> <li>• Polychlorinated biphenyls (PCBs)</li> <li>• Mercury</li> <li>• Ozone Depleting Substances (ODS)</li> </ul>
<p>√ <b>Physical</b>                      (i.e. Heat, cold, noise)</p>	<ul style="list-style-type: none"> <li>• Moderate</li> </ul>	<ul style="list-style-type: none"> <li>• Thermal stressors (variable weather anticipated)</li> </ul>
<p>√ <b>Biological</b>                      (i.e. Plants, animals, insects, spiders)</p>	<ul style="list-style-type: none"> <li>• Moderate</li> </ul>	<ul style="list-style-type: none"> <li>• Insect stings and bites</li> <li>• Poisonous animals and plants</li> </ul>

The activity hazard analysis (AHA), located in the Accident Prevention Plan for this project, for this scope of work identifies potential safety, health, and environmental hazards; and provides for the protection of personnel, the community, and the environment. Because conditions may be constantly changing during the course of a demolition project, supervisors must be aware of conditions that may harm site personnel, the community, or the environment.

If needed, the Health and Safety Manager (HSM) will write or approve addenda to modify the AHA.

### **3.3 Munitions Constituents**

Due to the historical uses of the structures to be demolished, no munitions testing was performed. MC are not expected to be a concern at any of the structures slated for demolition.

### **3.4 Natural Environmental Hazards**

Depending on the time of year the buildings are demolished, precautions should be taken to mitigate heat injuries, ticks, and other biting insects or reptiles. These items will be addressed in the Site Safety and Health Plan (SSHP).

## **4 SITE CONTROL**

### **4.1 Site Map**

A site map is included in Appendix 3.

### **4.2 Description of Work**

The work includes the abatement of asbestos-containing materials and the demolition of buildings as listed in Table 2-1.

All materials will be removed from the sites. The sites will be left graded for positive drainage.

### **4.3 On/Off Site Communication Systems**

Communications throughout the site will be verbal and hand signals will be used as necessary in the immediate work area. Cell phones will be used to communicate to crews throughout the installation. Random checks made during the site visit indicated that there is good cell phone reception throughout the entire project site.

### **4.4 Site Access Controls**

Construction fencing will be installed around the work sites as necessary to delineate the work area(s).

## **4.5 Security Procedures**

All personnel will be cleared for entrance to the facility. All personnel will stay within the immediate vicinity of the structures to be demolished. No personnel will be allowed outside of the immediate work area. All vehicles will follow the established routes for access to the site and removal of the debris.

# **5 SITE INFORMATION**

## **5.1 People Contacted During the Survey**

Ms. Libby Madar, Pine Bluff Arsenal, 870-540-3336

## **5.2 Relevant Information Obtained**

Ms. Madar accompanied our party when we located the buildings. No other observations were noted.

# **6 POTENTIAL PROBLEM AREAS**

There is office equipment and rolled wire on the premises at Building 34-133 (see Table 2-1). Pricing does not include the removal and disposal of furniture/equipment.

# **7 DISRUPTION IDENTIFICATION**

The buildings are generally located away from the production area(s). The truck route for the removal of debris is shown in Appendix 4. This route was selected by Ms. Libby Madar, Pine Bluff Arsenal. There are no anticipated interruptions to plant operations by the demolition and removal of the buildings.

# **8 ASBESTOS AND/OR LEAD-BASED PAINT ABATEMENT IDENTIFICATION**

## **8.1 Asbestos**

A visual inspection was performed at each of the buildings on November 14, 2006, to identify the presence of suspect asbestos-containing materials.

### **8.1.1 Limited Asbestos Sampling Event**

Bulk samples were obtained by placing the suspect asbestos-containing materials into individual sample containers for transport to a qualified laboratory for analysis. All samples were individually identified by a sample number that directly corresponds to the sample

numbers listed in the Polarized Light Microscopy (PLM) Analysis Summary located in Appendix 5. PLM and dispersion staining techniques were performed according to the Environmental Protection Agency's (EPA's) Bulk Analysis Method EPA 600/M4-82-020 in an attempt to ascertain asbestos content in those samples analyzed. The results are summarized in Table 8-1. Sample numbers correspond to building numbers followed by the sequential number of the samples collected.

**Table 8-1. Asbestos Sampling Results**

Sample No.	Location of Material	Type of Material	Asbestos Content	Friable (yes/no)*	Quantity
33-150-1	Interior	Drywall	None Detected	N/A	N/A
33-150-2	Interior	Pipe Wrap	None Detected	N/A	N/A
33-150-3	Exterior	Window Caulk	None Detected	N/A	N/A
33-150-4	Roof	Roofing Shingle	None Detected	N/A	N/A
<b>33-150-5</b>	<b>Exterior</b>	<b>Steam Pipe Insulation</b>	<b>29% Chrysotile</b>	<b>Yes</b>	<b>100 LF</b>
<b>33-150-6</b>	<b>Exterior</b>	<b>Black Tar on Steam Pipe Joint</b>	<b>39% Chrysotile</b>	<b>No</b>	<b>10 LF</b>
<b>33-150 N/A**</b>	<b>Roof</b>	<b>Asphalt Shingle</b>	<b>10 % Chrysotile</b>	<b>No</b>	<b>1,850</b>
<b>33-150 N/A**</b>	<b>Roof</b>	<b>Roof flashing/mastic</b>	<b>10% Chrysotile</b>	<b>No</b>	<b>1 SF</b>
<b>33-150 N/A**</b>	<b>Ridge of attic</b>	<b>Debris</b>	<b>15% Chrysotile</b>	<b>Yes</b>	<b>150 SF</b>
34-133-1	Exterior	Window Caulk	None Detected	N/A	N/A
34-133-2	Roof	Tar Paper and Shingle	None Detected	N/A	N/A
34-133-3	Interior	Drywall	None Detected	N/A	N/A
<b>34-133-4</b>	<b>Exterior</b>	<b>Exterior Transite Siding</b>	<b>19 % Chrysotile</b>	<b>No</b>	<b>650 SF</b>
<b>51650 N/A**</b>	<b>Exterior</b>	<b>Transite</b>	<b>19% Chrysotile</b>	<b>No</b>	<b>900 SF</b>
<b>51650 N/A**</b>	<b>Roof</b>	<b>Roof Shingles</b>	<b>5% Chrysotile</b>	<b>No</b>	<b>125 SF</b>
<b>55-320-1</b>	<b>Exterior</b>	<b>Transite Siding</b>	<b>19 % Chrysotile</b>	<b>No</b>	<b>1,000 SF</b>
55-320-2	Roof	Roofing Shingle	None Detected	N/A	N/A
<b>55-320-3</b>	<b>Interior</b>	<b>Pipe Wrap</b>	<b>65% Chrysotile</b>	<b>Yes</b>	<b>60 LF</b>

**Table 8-2. Asbestos Sampling Results (continued)**

Sample No.	Location of Material	Type of Material	Asbestos Content	Friable (yes/no)*	Quantity
55-320-4	Interior	Transite Panel Walls	<b>19 % Chrysotile</b>	No	4,000 SF
55-320-5	Interior	Transite Panel Backing	<b>29 % Chrysotile</b>	Yes	1,000 SF
55-320-6	Interior	Drywall	None Detected	N/A	N/A
55-040-1	Roof	Roofing Shingle	None Detected	N/A	N/A
<b>55-040-2</b>	<b>Exterior</b>	<b>Transite Panel</b>	<b>19% Chrysotile</b>	<b>No</b>	<b>1,300 SF</b>
60-100-1	Roof	Asphalt Roofing Shingle	None Detected	N/A	N/A

**Notes:**  
LF - Linear feet, SF - Square feet  
Quantities are only reported for positive samples.  
Bold type indicates positive asbestos sample (i.e., greater than 1% asbestos content).  
\* Friability was determined according to a material's current condition.  
\*\* N/A = Not Applicable. No sample number was provided for these samples that were conducted by others. The data for these samples was obtained from survey reports provided by Pine Bluff Arsenal personnel.

It should be noted that EPA and Occupational Safety and Health Administration (OSHA) Regulations define asbestos-containing materials as any material having greater than 1% asbestos content.

Even though effort and care was employed during this sampling event, other materials which may have been hidden were not sampled. Bhate recommends that if hidden suspect-materials are revealed during demolition activities, that those materials be tested for asbestos content.

### 8.1.2 Asbestos Abatement

Transite & associated felt backing, pipe insulation, and roofing materials will be removed as asbestos-containing material (ACM). A regulated area will be established using red asbestos warning tape and warning signs will be displayed from the tape as necessary. ACM will be removed using wet methods. All ACM removed will be placed in appropriate containers and labeled. Waste will then be placed in the waste dumpster. After removal of material, work areas will be visually inspected by the Contractor Quality Control (CQC) System Manager for waste or residue. If the results are satisfactory, the equipment and regulated area will be removed and the waste will be transported to the approved landfill for disposal.

## **8.2 Lead-based Paint**

Composite building debris samples will be obtained during demolition activities for disposal characterization as necessary. Samples will be analyzed by the Toxicity Characteristic Leaching Procedure (TCLP), using EPA protocol 1311. If the results of sampling indicate that the demolition debris is below the 5 parts-per-million (ppm) regulatory level; it can be disposed of as non-hazardous demolition debris at the approved landfill.

# **9 SCOPE OF WORK VALIDATION**

## **9.1 Changes to the Scope of Work**

Five of the buildings contain asbestos-containing materials (see Table 2-1). The scope of work does not currently include asbestos abatement. Asbestos will need to be removed from the buildings prior to demolition.

Office equipment and stacked paper remains in Building 34-133 as well as rolls of wire outside the structure.

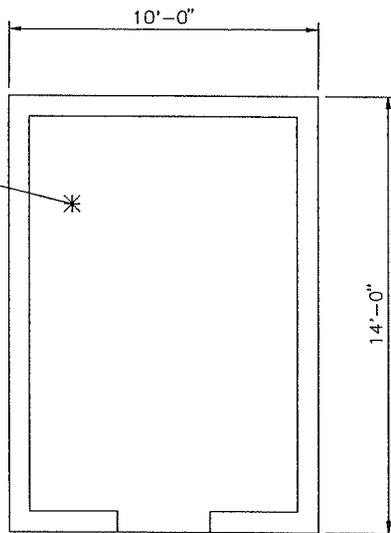
## **10 BUDGETARY COST ESTIMATE**

The budgetary cost estimate to complete the scope of work will be submitted under separate cover.

# **Appendix 1**

## **Plan View Drawings**

15-103-1,2  
3 TAR PAPER  
RS  
NEGATIVE



BUILDING # 15-103

SCALE: 0 4'



LEGEND

SYMBOL	DESCRIPTION
*	SAMPLE LOCATION
%	PERCENT OF ASBESTOS
00000-0	SAMPLE NO. (BUILDING NO.-X)
NEG.	NEGATIVE FOR ASBESTOS
CHRY	CHRYSTOLITE
AMO	AMOSITE
CROC	CROCIDOLITE
BI	BATT INSULATION
CF	CONDUCTIVE FLOOR
CORR	CORRUGATED
CT	CEILING TILE
DI	DUCTWORK INSULATION
EI	EQUIPMENT INSULATION
EJ	EXPANSION JOINT
FC	FLEX CONNECTORS
FP	FIREPROOFING
FT	FLOOR TILE
MAS	MASTIC
MJF	MUDDED JOINT FITTINGS
PI	PIPE INSULATION (RUNS)
PLAS	PLASTER
RS	ROOFING SHINGLES (ASPHALT)
SM	SURFACING MATERIAL
SV	SHEET VINYL
TI	TANK INSULATION
TR	TRANSITE
WS	WEATHERSTRIP



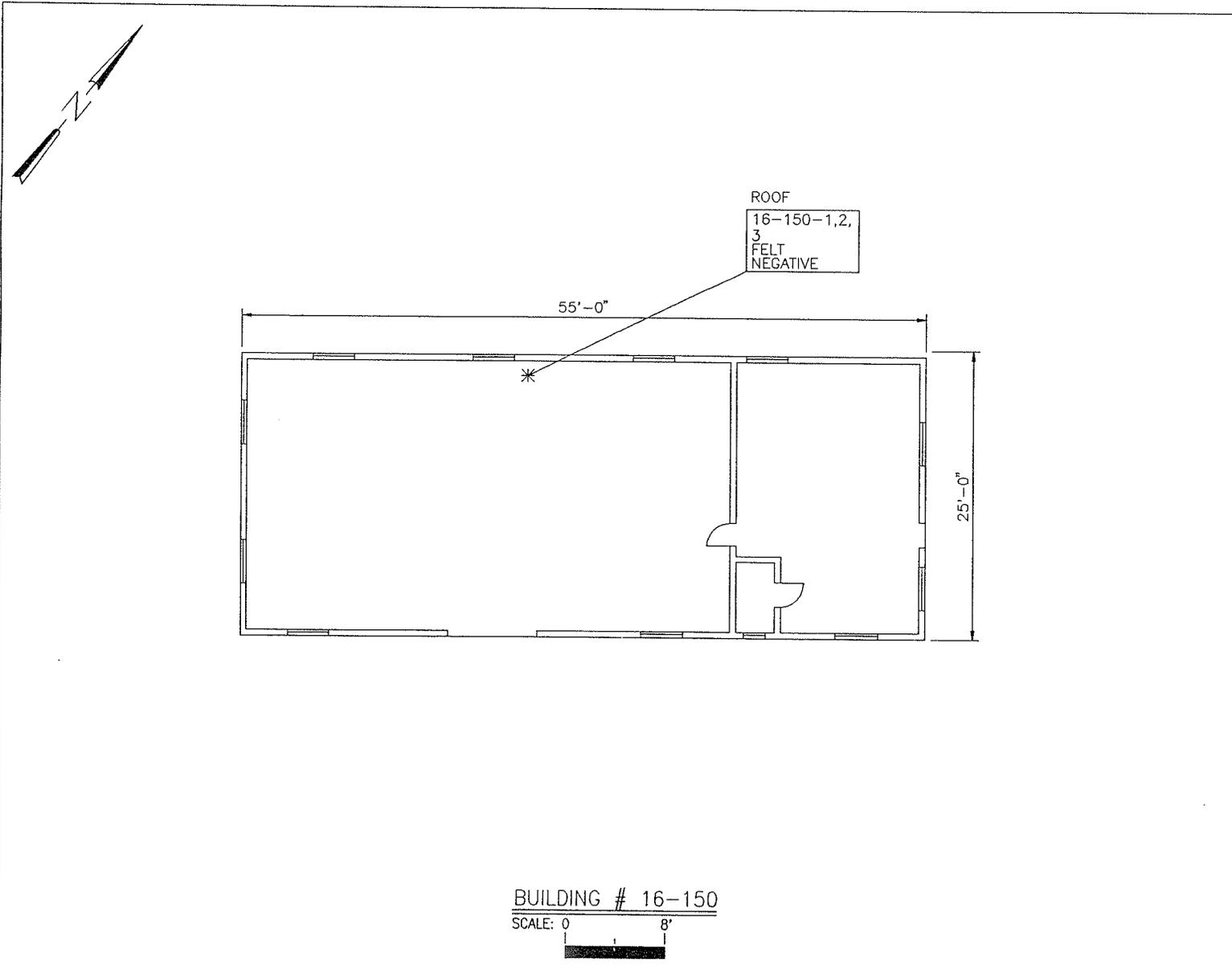
ENGINEERING MANAGEMENT CORPORATION

1209 WEST 3rd LITTLE ROCK AR 72201

DACA03-92-C-0002  
ARSENAL WIDE ASBESTOS SURVEY  
PINE BLUFF ARSENAL, ARKANSAS

15-103

REVISIONS			
INSPECTION DATE:	02/20/92	CAD FILE NO.	
INSPECTOR	NK	15-103	SHEET NO. 1 of 1
DRAWN BY:	MEM		

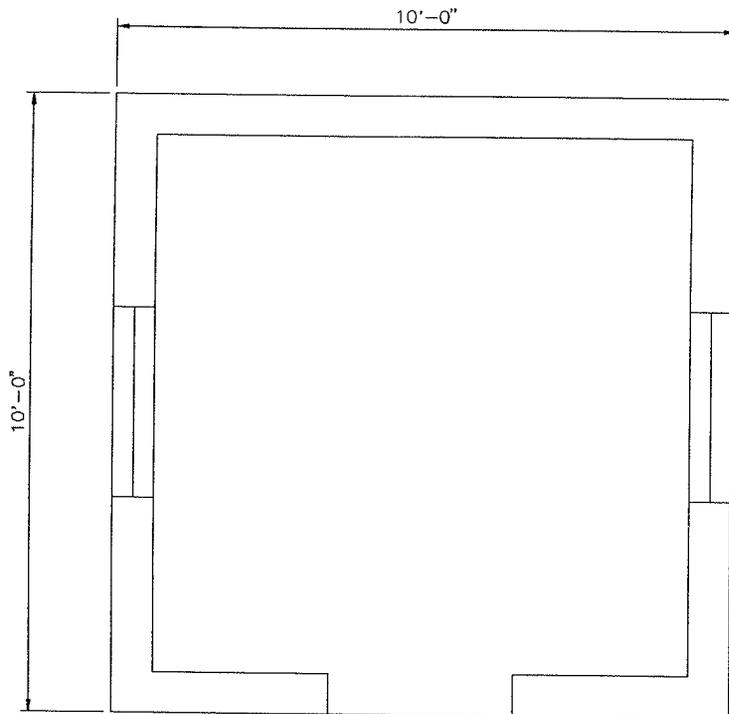


LEGEND			
SYMBOL	DESCRIPTION		
*	SAMPLE LOCATION		
%	PERCENT OF ASBESTOS		
00000-0	SAMPLE NO. (BUILDING NO.-X)		
NEG.	NEGATIVE FOR ASBESTOS		
CHRY	CHRYSOTILE		
AMO	AMOSITE		
CROC	CROCIDOLITE		
BI	BATT INSULATION		
CF	CONDUCTIVE FLOOR		
CORR	CORRUGATED		
CT	CEILING TILE		
DI	DUCTWORK INSULATION		
EI	EQUIPMENT INSULATION		
EJ	EXPANSION JOINT		
FC	FLEX CONNECTORS		
FP	FIREPROOFING		
FT	FLOOR TILE		
MAS	MASTIC		
MJF	MUDDED JOINT FITTINGS		
PI	PIPE INSULATION (RUNS)		
PLAS	PLASTER		
RS	ROOFING SHINGLES (ASPHALT)		
SM	SURFACING MATERIAL		
SV	SHEET VINYL		
TI	TANK INSULATION		
TR	TRANSITE		
WS	WEATHERSTRIP		
 <b>ENGINEERING MANAGEMENT CORPORATION</b> 1209 WEST 3rd LITTLE ROCK AR 72201			
DACA03-92-C-0002 <b>ARSENAL WIDE ASBESTOS SURVEY</b> PINE BLUFF ARSENAL, ARKANSAS			
16-150			
REVISIONS			
INSPECTION DATE:	02/13/92	CAD FILE NO.	SHEET NO.
INSPECTOR	CH	16-150	1 of 1
DRAWN BY:	CMG		

BUILDING # 16-150  
 SCALE: 0 8"



SIDING, WALL PANELS, AND CEILING ARE TRANSITE.



51-650, 1, 2, 3  
RS  
5% CHRY

LEGEND

SYMBOL	DESCRIPTION
*	SAMPLE LOCATION
%	PERCENT OF ASBESTOS
00000-0	SAMPLE NO. (BUILDING NO.-X)
NEG.	NEGATIVE FOR ASBESTOS
CHRY	CHRYSTOTILE
AMO	AMOSITE
CROC	CROCIDOLITE
BI	BATT INSULATION
CF	CONDUCTIVE FLOOR
CORR	CORRUGATED
CT	CEILING TILE
DI	DUCTWORK INSULATION
EI	EQUIPMENT INSULATION
EJ	EXPANSION JOINT
FC	FLEX CONNECTORS
FP	FIREPROOFING
FT	FLOOR TILE
MAS	MASTIC
MJF	MUDDER JOINT FITTINGS
PI	PIPE INSULATION (RUNS)
PLAS	PLASTER
RS	ROOFING SHINGLES (ASPHALT)
SM	SURFACING MATERIAL
SV	SHEET VINYL
TI	TANK INSULATION
TR	TRANSITE
WS	WEATHERSTRIP



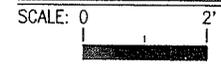
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1209 WEST 3rd LITTLE ROCK AR 72201

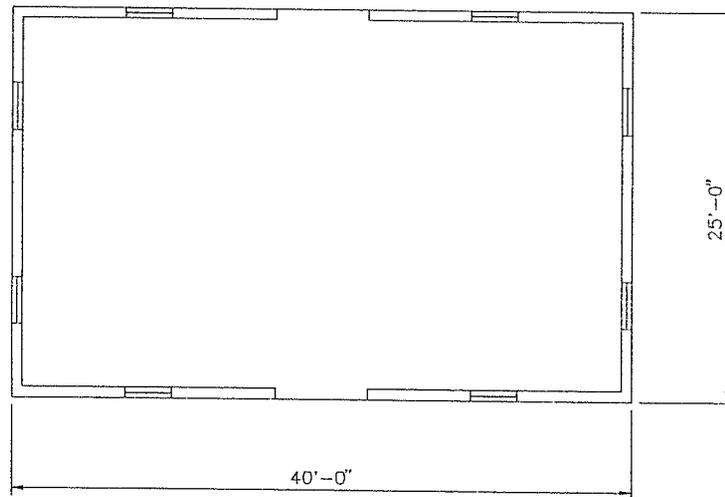
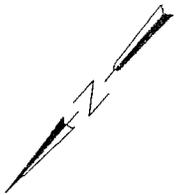
DACA03-92-C-0002  
ARSENAL WIDE ASBESTOS SURVEY  
PINE BLUFF ARSENAL, ARKANSAS

51-650

REVISIONS			
INSPECTION DATE:	03/17/92	CAD FILE NO.	SHEET NO.
INSPECTOR	MG	51-650	1 of 1
DRAWN BY:	SWS		

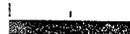
BUILDING # 51-650





BUILDING # 60-100

SCALE: 0 8'



LEGEND

SYMBOL	DESCRIPTION
*	SAMPLE LOCATION
%	PERCENT OF ASBESTOS
00000-0	SAMPLE NO. (BUILDING NO.-X)
NEG.	NEGATIVE FOR ASBESTOS
CHRY	CHRYSOCTILE
AMO	AMOSITE
CROC	CROCIDOLITE
BI	BATT INSULATION
CF	CONDUCTIVE FLOOR
CORR	CORRUGATED
CT	CEILING TILE
DI	DUCTWORK INSULATION
EI	EQUIPMENT INSULATION
EJ	EXPANSION JOINT
FC	FLEX CONNECTORS
FP	FIREPROOFING
FT	FLOOR TILE
MAS	MASTIC
MJF	MUDDED JOINT FITTINGS
PI	PIPE INSULATION (RUNS)
PLAS	PLASTER
RS	ROOFING SHINGLES (ASPHALT)
SM	SURFACING MATERIAL
SV	SHEET VINYL
TI	TANK INSULATION
TR	TRANSITE
WS	WEATHERSTRIP



ENGINEERING MANAGEMENT CORPORATION

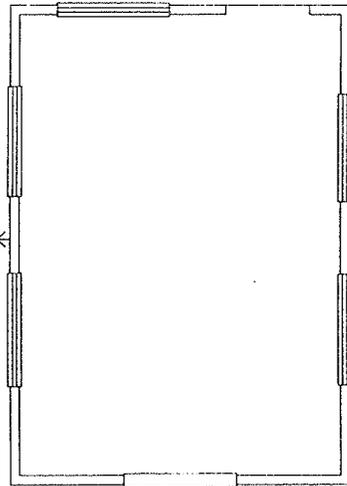
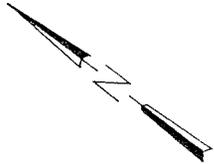
1209 WEST 3rd LITTLE ROCK AR 72201

DACA03-92-C-0002

ARSENAL WIDE ASBESTOS SURVEY  
PINE BLUFF ARSENAL, ARKANSAS

60-100

REVISIONS			
INSPECTION DATE:	03/04/92	CAD FILE NO.	SHEET NO.
INSPECTOR	RJ/MG	60-100	1 of 1
DRAWN BY:	SWS		



34-133-1,2,3  
RS  
NEG

TRANSITE SIDING \*



LEGEND

SYMBOL	DESCRIPTION
*	SAMPLE LOCATION
%	PERCENT OF ASBESTOS
00000-0	SAMPLE NO. (BUILDING NO.-X)
NEG.	NEGATIVE FOR ASBESTOS
CHRY	CHRYSTOLE
AMO	AMOSITE
CROC	CROCIDOLITE
BI	BATT INSULATION
CF	CONDUCTIVE FLOOR
CORR	CORRUGATED
CT	CEILING TILE
DI	DUCTWORK INSULATION
EI	EQUIPMENT INSULATION
EJ	EXPANSION JOINT
FC	FLEX CONNECTORS
FP	FIREPROOFING
FT	FLOOR TILE
MAS	MASTIC
MJF	MUDDED JOINT FITTINGS
PI	PIPE INSULATION (RUNS)
PLAS	PLASTER
RS	ROOFING SHINGLES (ASPHALT)
SM	SURFACING MATERIAL
SV	SHEET VINYL
TI	TANK INSULATION
TR	TRANSITE
WS	WEATHERSTRIP



ENGINEERING MANAGEMENT CORPORATION

1209 WEST 3rd LITTLE ROCK AR 72201

DACA03-92-C-0002  
ARSENAL WIDE ASBESTOS SURVEY  
PINE BLUFF ARSENAL, ARKANSAS

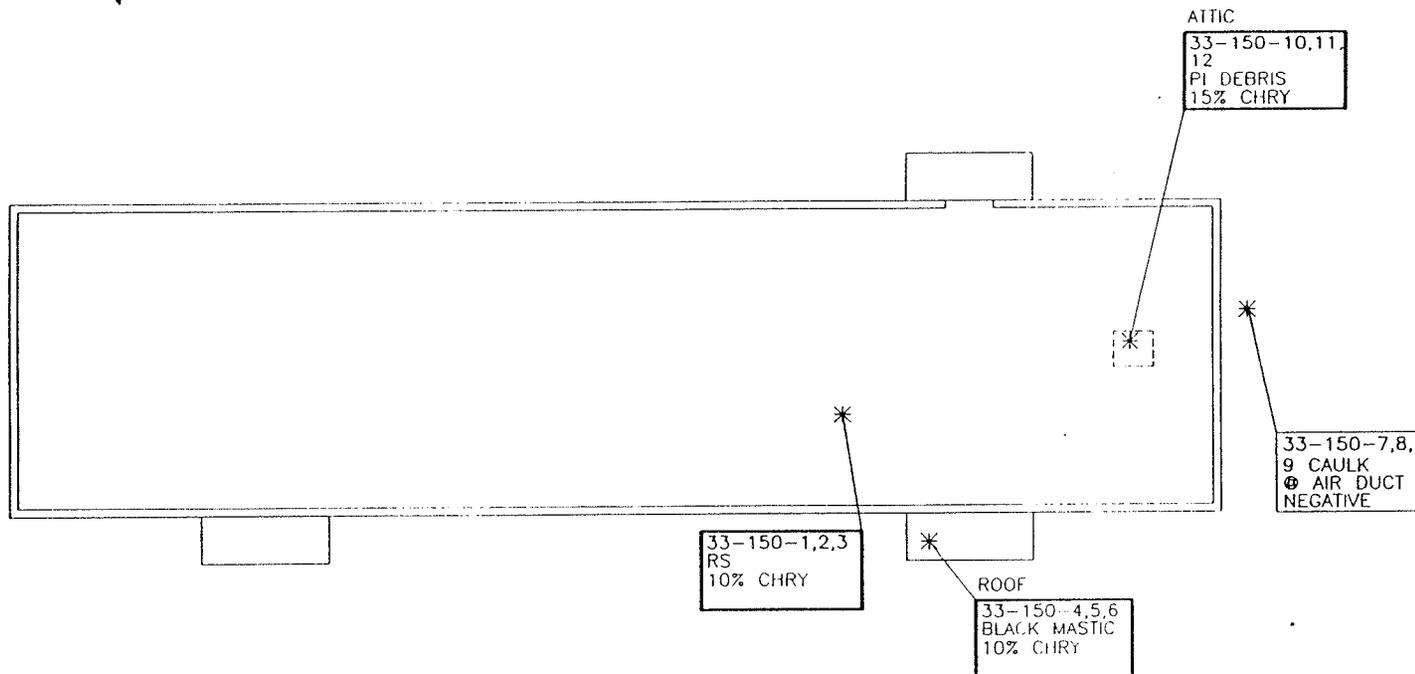
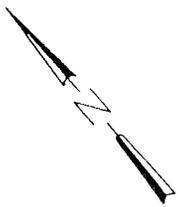
34-133

BUILDING # 34-133

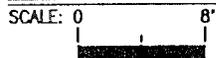
SCALE: 0 4'-0"



REVISIONS			
INSPECTION DATE:	02/11/90	CAD FILE NO.	SHEET NO.
INSPECTOR	RJ	34-133	1 of 1
DRAWN BY:	MEM		



BUILDING # 33-150



LEGEND

SYMBOL	DESCRIPTION
*	SAMPLE LOCATION
%	PERCENT OF ASBESTOS
00000-0	SAMPLE NO. (BUILDING NO. - X)
NEG.	NEGATIVE FOR ASBESTOS
CHRY	CHRYSOTILE
AMO	AMOSITE
CROC	CROCIDOLITE
BI	BATT INSULATION
CF	CONDUCTIVE FLOOR
CORR	CORRUGATED
CT	CEILING TILE
DI	DUCTWORK INSULATION
EI	EQUIPMENT INSULATION
EJ	EXPANSION JOINT
FC	FLEX CONNECTORS
FP	FIREPROOFING
FT	FLOOR TILE
MAS	MASTIC
MJF	MUDDED JOINT FITTINGS
PI	PIPE INSULATION (RUNS)
PLAS	PLASTER
RS	ROOFING SHINGLES (ASPHALT)
SM	SURFACING MATERIAL
SV	SHEET VINYL
TI	TANK INSULATION
TR	TRANSITE
WS	WEATHERSTRIP



ENGINEERING MANAGEMENT CORPORATION

1209 WEST 3rd LITTLE ROCK AR 72201

DACA03-92-C-0002  
 ARSENAL WIDE ASBESTOS SURVEY  
 PINE BLUFF ARSENAL, ARKANSAS

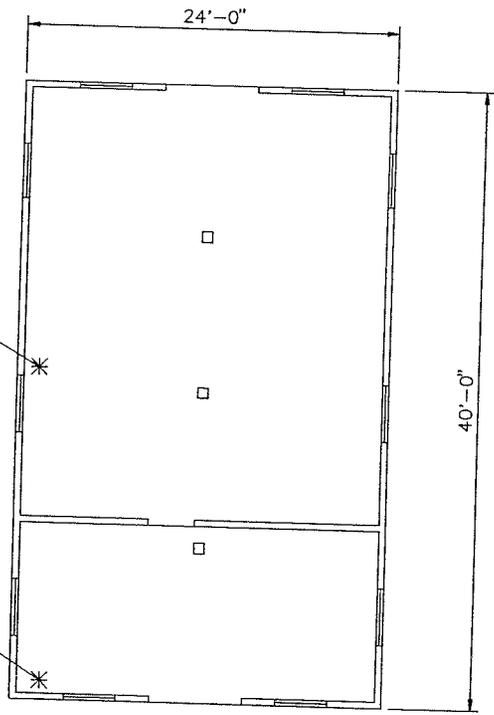
33-150

REVISIONS			
INSPECTION DATE:	01/22/92	CAD FILE NO.	SHEET NO.
INSPECTOR	CH/NK	33-150	1 of 1
DRAWN BY:	GMG		

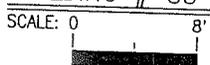


55-040-1  
RS  
NEGATIVE

55-040-2  
TR SIDING  
25% CHRY



BUILDING # 55-040



LEGEND

SYMBOL	DESCRIPTION
*	SAMPLE LOCATION
%	PERCENT OF ASBESTOS
00000-0	SAMPLE NO. (BUILDING NO.-X)
NEG.	NEGATIVE FOR ASBESTOS
CHRY	CHRYSOTILE
AMO	AMOSITE
CROC	CROCIDOLITE
BI	BATT INSULATION
CF	CONDUCTIVE FLOOR
CORR	CORRUGATED
CT	CEILING TILE
DI	DUCTWORK INSULATION
EI	EQUIPMENT INSULATION
EJ	EXPANSION JOINT
FC	FLEX CONNECTORS
FP	FIREPROOFING
FT	FLOOR TILE
MAS	MASTIC
MJF	MUDDED JOINT FITTINGS
PI	PIPE INSULATION (RUNS)
PLAS	PLASTER
RS	ROOFING SHINGLES (ASPHALT)
SM	SURFACING MATERIAL
SV	SHEET VINYL
TI	TANK INSULATION
TR	TRANSITE
WS	WEATHERSTRIP



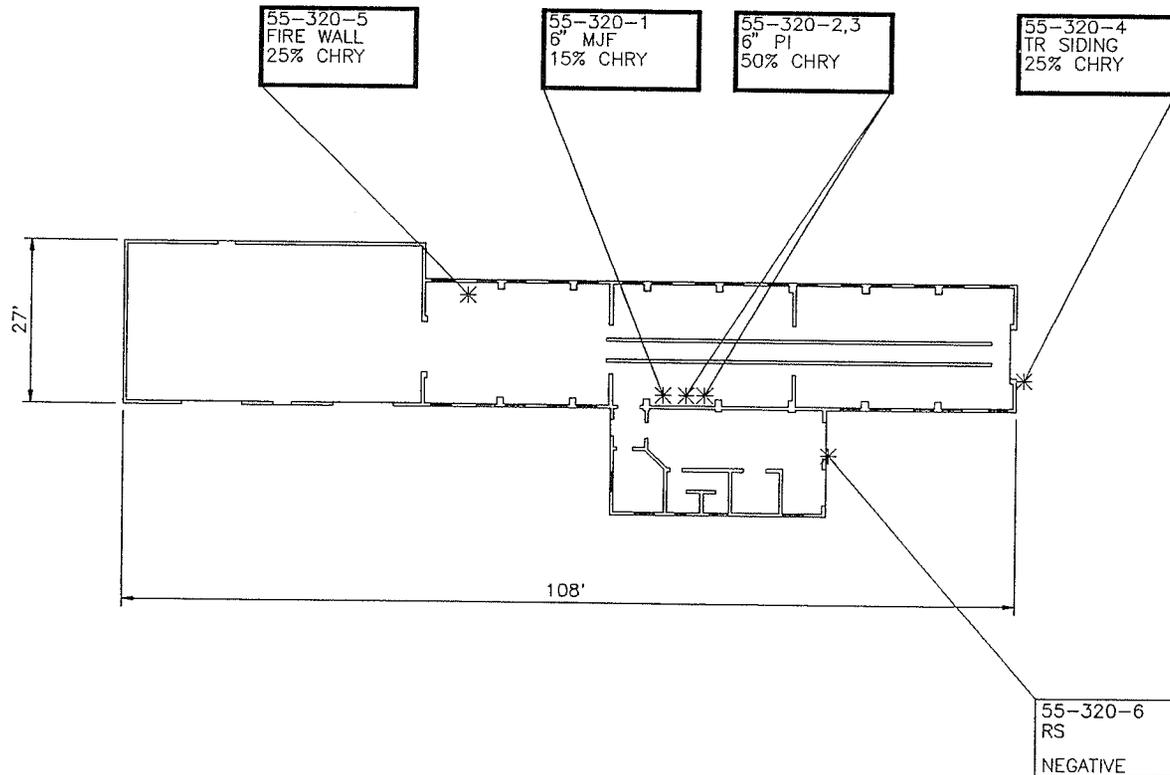
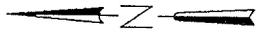
ENGINEERING MANAGEMENT CORPORATION  
1209 WEST 3rd LITTLE ROCK AR 72201

DACA03-92-C-0002  
ARSENAL WIDE ASBESTOS SURVEY  
PINE BLUFF ARSENAL, ARKANSAS

55-040

REVISIONS			
INSPECTION DATE:	04/07/92	CAD FILE NO.	SHEET NO.
INSPECTOR	CH/JP	55-040	1 of 1
DRAWN BY:	SWS		

SIDING SHINGLES CONTAIN ASBESTOS (TRANSITE).



LEGEND	
SYMBOL	DESCRIPTION
*	SAMPLE LOCATION
%	PERCENT OF ASBESTOS
DO000-0	SAMPLE NO. (BUILDING NO.-X)
NEG.	NEGATIVE FOR ASBESTOS
CHRY	CHRYSOTILE
AMO	AMOSITE
CROC	CROCIDOLITE
BI	BATT INSULATION
CF	CONDUCTIVE FLOOR
CORR	CORRUGATED
CT	CEILING TILE
DI	DUCTWORK INSULATION
EI	EQUIPMENT INSULATION
EJ	EXPANSION JOINT
FC	FLEX CONNECTORS
FP	FIREPROOFING
FT	FLOOR TILE
MAS	MASTIC
MJF	MUDDED JOINT FITTINGS
PI	PIPE INSULATION (RUNS)
PLAS	PLASTER
RS	ROOFING SHINGLES (ASPHALT)
SM	SURFACING MATERIAL
SV	SHEET VINYL
TI	TANK INSULATION
TR	TRANSITE
WS	WEATHERSTRIP
 <b>ENGINEERING MANAGEMENT CORPORATION</b> 1209 WEST 3rd LITTLE ROCK AR 72201	
DACA03-92-C-0002 <b>ARSENAL WIDE ASBESTOS SURVEY</b> PINE BLUFF ARSENAL, ARKANSAS	
55-320	
REVISIONS	
INSPECTION DATE:	04/07/92
INSPECTOR	CH/JP
DRAWN BY:	SWS
CAD FILE NO.	55-320
SHEET NO.	1 of 1

**BUILDING # 55-320**  
 SCALE: 0 20'

## **Appendix 2 Site Photographs**



**Building 15-103**



**Building 16-150**

## Site Photographs (continued)



**Building 51-650**



**Building 60-100**

## Site Photographs (continued)



**Building 34-133**



**Building 55-040**

## Site Photographs (continued)



**Building 55-320**



**Building 33-150**

**Appendix 3**

**Site Maps**

***Not Available***

**Appendix 4**  
**Truck/Access Routes**  
***Not Available***

# **Appendix 5**

## **Asbestos Sampling Laboratory Results**



**EMSL Analytical, Inc.**

11040A Lin-Valle Drive, Saint Louis, MO 63123

Phone: (314) 845-8910 Fax: (314) 845-6459 Email: [saintlouislab@emsl.com](mailto:saintlouislab@emsl.com)

Attn: **Casey Groce**  
**Bhate Environmental Associates, Inc.**  
**1608 13th Avenue South, Suite 300**  
**Birmingham, AL 35205**

Customer ID: BHAT62  
Customer PO: 06-0387  
Received: 11/17/06 9:15 AM  
EMSL Order: 390603312

Fax: (205) 918-4050 Phone: (205) 918-4000  
Project: **Pine Bluff Arsenal - Pine Bluff, AR 9060217**

EMSL Proj:  
Analysis Date: 11/20/2006  
Report Date: 2/28/2007

**Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy**

Sample	Location	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
33-150-1 390603312-0001		Various Non-Fibrous Heterogeneous	22% Cellulose no JC	78% Non-fibrous (other)	None Detected
33-150-2 390603312-0002		Various Fibrous Heterogeneous	38% Cellulose 19% Glass 4% Min. Wool	39% Non-fibrous (other)	None Detected
33-150-3 390603312-0003		Various Non-Fibrous Heterogeneous	4% Fibrous (other)	96% Non-fibrous (other)	None Detected
33-150-4 390603312-0004		Various Non-Fibrous Heterogeneous	19% Glass	79% Non-fibrous (other) 2% Quartz	None Detected
33-150-5 390603312-0005		Cream Fibrous Homogeneous		71% Non-fibrous (other)	29% Chrysotile
33-150-6 390603312-0006		Various Non-Fibrous Heterogeneous		61% Non-fibrous (other)	39% Chrysotile
34-133-1 390603312-0007		Cream Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
34-133-2 390603312-0008		Various Non-Fibrous Heterogeneous	36% Cellulose	2% Mica 62% Non-fibrous (other)	None Detected

Analyst(s) \_\_\_\_\_

Sue Ferrario (19)

or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted.

Analysis performed by EMSL St. Louis (AIHA #102636, NVLAP # 200742-0)



**EMSL Analytical, Inc.**

11040A Lin-Valle Drive, Saint Louis, MO 63123

Phone: (314) 845-8910 Fax: (314) 845-6459 Email: [saintlouislab@emsl.com](mailto:saintlouislab@emsl.com)

Attn: **Casey Groce**  
**Bhate Environmental Associates, Inc.**  
**1608 13th Avenue South, Suite 300**  
**Birmingham, AL 35205**

Customer ID: BHAT62  
Customer PO: 06-0387  
Received: 11/17/06 9:15 AM  
EMSL Order: 390603312

Fax: (205) 918-4050 Phone: (205) 918-4000  
Project: **Pine Bluff Arsenal - Pine Bluff, AR 9060217**

EMSL Proj:  
Analysis Date: 11/20/2006  
Report Date: 2/28/2007

**Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy**

Sample	Location	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
34-133-3 390603312-0009		Cream Non-Fibrous Heterogeneous	4% Cellulose	96% Non-fibrous (other)	None Detected
			no JC/DW		
34-133-4 390603312-0010		Various Non-Fibrous Heterogeneous		81% Non-fibrous (other)	19% Chrysotile
55-320-1 390603312-0011		Various Non-Fibrous Heterogeneous		81% Non-fibrous (other)	19% Chrysotile
55-320-2 390603312-0012		Various Non-Fibrous Heterogeneous	19% Cellulose	81% Non-fibrous (other)	None Detected
55-320-3 390603312-0013		Various Fibrous Heterogeneous	18% Cellulose 4% Fibrous (other)	13% Non-fibrous (other)	65% Chrysotile
55-320-4 390603312-0014		Various Non-Fibrous Heterogeneous		81% Non-fibrous (other)	19% Chrysotile
55-320-5 390603312-0015		White Fibrous Homogeneous		71% Non-fibrous (other)	29% Chrysotile
55-320-6 390603312-0016		Various Non-Fibrous Heterogeneous	21% Cellulose	79% Non-fibrous (other)	None Detected

Analyst(s) \_\_\_\_\_

Sue Ferrario (19)

or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted.

Analysis performed by EMSL St. Louis (AIHA #102636, NVLAP # 200742-0)



**EMSL Analytical, Inc.**

11040A Lin-Valle Drive, Saint Louis, MO 63123

Phone: (314) 845-8910 Fax: (314) 845-6459 Email: [saintlouislab@emsl.com](mailto:saintlouislab@emsl.com)

Attn: **Casey Groce**  
**Bhate Environmental Associates, Inc.**  
**1608 13th Avenue South, Suite 300**  
**Birmingham, AL 35205**

Customer ID: BHAT62  
Customer PO: 06-0387  
Received: 11/17/06 9:15 AM  
EMSL Order: 390603312

Fax: (205) 918-4050 Phone: (205) 918-4000  
Project: **Pine Bluff Arsenal - Pine Bluff, AR 9060217**

EMSL Proj:  
Analysis Date: 11/20/2006  
Report Date: 2/28/2007

**Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy**

Sample	Location	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
55-040-1 390603312-0017		Various Non-Fibrous Heterogeneous	19% Cellulose	79% Non-fibrous (other) 2% Quartz	<b>None Detected</b>
55-040-2 390603312-0018		Various Non-Fibrous Heterogeneous		81% Non-fibrous (other)	<b>19% Chrysotile</b>
60-100-1 390603312-0019		Various Non-Fibrous Heterogeneous	19% Cellulose	79% Non-fibrous (other) 2% Quartz	<b>None Detected</b>

Analyst(s) \_\_\_\_\_

Sue Ferrario (19)

or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted.  
Analysis performed by EMSL St. Louis (AIHA #102636, NVLAP # 200742-0)



1608 13<sup>th</sup> Avenue South, Suite 300  
Birmingham, Alabama 35205  
Phone: 205.918.4000 Fax: 205.918.4050

### CHAIN OF CUSTODY ANALYTICAL REQUEST

SEND REPORT TO:

Bhate Environmental Associates

Attn: Jim Torcivia

LAB: EMSL

PO #: 06-0387

Job No: 9060217

Sheet: 1 of 4

390603312

CLIENT:	PROJECT:	SITE LOCATION: (Address)	SAMPLER:
	<b>Pine Bluff Arsenal</b>	<b>Pine Bluff, AR</b>	<b>Casey Groce/Morgan Cross</b>

Method of Delivery: FedEx			Sample Description and Location (Color, Matrix, Location in Home)	Analysis Requested		Number of Sample Containers
LAB ID	Field ID	Date / Time Collected		PLM asbestos	Turn Around	
	33-150-1	14-Nov	White Drywall	X	24-hour	1
	33-150-2	14-Nov	Interior Pipe Wrap	X	24-hour	1
	33-150-3	14-Nov	Ext window Caulk	X	24-hour	1
	33-150-4	14-Nov	Roof Shingle	X	24-hour	1
	33-150-5	14-Nov	Ext Steam Pipe Insulation	X	24-hour	1
	33-150-6	14-Nov	Black tar at Pipe Joint	X	24-hour	1
	34-133-1	14-Nov	Ext window Caulk	X	24-hour	1
	34-133-2	14-Nov	Ext tar paper and Shingle	X	24-hour	1
	34-133-3	14-Nov	White Drywall	X	24-hour	1
	34-133-4	14-Nov	Ext. Transite	X	24-hour	1
	55-320-1	14-Nov	Ext. Transite	X	24-hour	1
	55-320-2	14-Nov	Roof Shingle	X	24-hour	1
	55-320-3	14-Nov	Interior Pipe Wrap	X	24-hour	1
	55-320-4	14-Nov	interior Transite Panel	X	24-hour	1
	55-320-5	14-Nov	Interior Transite Panel Backing	X	24-hour	1
	55-320-6	14-Nov	white Drywall	X	24-hour	1
	55-040-1	14-Nov	Asphalt Roof Shingle	X	24-hour	1
	55-040-2	14-Nov	Ext Transite Panel	X	24-hour	1
	60-100-1	14-Nov	Asphalt Roof Shingle	X	24-hour	1

Signed: <u>Morgan Cross</u>	Date: <u>11/16/06</u>	Signed: <u>JSIRIA</u>	Date: <u>11-17-06</u>
Print: <u>MORGAN CROSS</u>	Time: <u>5:00pm</u>	Print: <u>JSIRIA</u>	Time: <u>9:15 AM</u>

FedEx



1608 13<sup>th</sup> Avenue South, Suite 300  
Birmingham, Alabama 35205  
Phone: 205.918.4000 Fax: 205.918.4050

## CHAIN OF CUSTODY ANALYTICAL REQUEST

SEND REPORT TO:

Bhate Environmental Associates

Attn: Jim Torcivia

LAB: EMSL

PO #: 06-0387

Job No: 9060217

Sheet: 3 of 4

CLIENT:	PROJECT: <u>Pine Bluff Arsenal</u> <del>Iowa Army Ammunition</del>	SITE LOCATION: (Address) <u>Middletown, IA - Pine Bluff, AR</u>	SAMPLER: <u>Casey Groce/Morgan Cross</u>
---------	-----------------------------------------------------------------------	-----------------------------------------------------------------	------------------------------------------

Method of Delivery: FedEx		Date / Time Collected	Sample Description and Location (Color, Matrix, Location in Home)	Analysis Requested		Number of Sample Containers
LAB ID	Field ID			PLM asbestos	Turn Around	
	500-128-1	<del>14</del> Nov	white drywall	X	24-hour	1
	500-128-2	<del>15</del> Nov	exterior window caulk	X	24-hour	1
	500-197-1	<del>15</del> Nov	white exterior pipe insulation	X	24-hour	1
	500-197-2	<del>15</del> Nov	exterior black pipe flashing	X	24-hour	1
	500-197-3	<del>16</del> Nov	ceiling material (on floor)	X	24-hour	1
	500-197-4	<del>16</del> Nov	main level drywall	X	24-hour	1
	500-197-5	<del>16</del> Nov	black flooring material	X	24-hour	1
	500-197-6	<del>16</del> Nov	outhouse asphalt shingle	X	24-hour	1
	500-197-7	<del>16</del> Nov	exterior white window caulk	X	24-hour	1

Signed: <u>Morgan Cross</u>	Date: <u>11/16/06</u>	Signed: <u>J Sierra</u>	Date: <u>11-17-06</u>
Print: <u>MORGAN Cross</u>	Time: <u>6:00 p.m.</u>	Print: <u>J Sierra</u>	Time: <u>9:15 AM</u>

*FedEx*