FORT MONMOUTH

DISCOVER ▸ INNOVATE ▸ TRANSFORM

ADDENDUM #4
January 29, 2016

TO
REQUEST FOR OFFERS TO PURCHASE
FOR
THE SALE OF REAL PROPERTY
AND PERSONAL PROPERTY

Fort Monmouth
Suneagles Golf Course and Associated Facilities
Eatontown, New Jersey

Issued by the
FORT MONMOUTH ECONOMIC REVITALIZATION AUTHORITY

Date Issued: October 8, 2015

Responses due by 12:00 P.M. EST on February 5, 2016

This ADDENDUM is being issued to provide a No Further Action Letter regarding Area of Concern: Site FTMM-29 Gibbs Hall PCB Remediation and a report on asbestos in Gibbs Hall. Both documents are attached herein.

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Case Management
401 East State Street
P.O. Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028
Phone #: 609-633-1455
Fax #: 609-292-2117

BOB MARTIN
Commissioner

April 30, 2014

Wanda Green
BRAC Environmental Coordinator
OACSIM – U.S. Army Fort Monmouth
PO Box 148
Oceanport, NJ 07757

Approval

Re: Remedial Action Type: Unrestricted Use
Scope of Remediation: Area of Concern: Site FTMM-29 (CW-7) Gibbs Hall PCB Remediation and No Other Areas
Fort Monmouth
Monmouth County
Program Interest # G000000032

Dear Ms. Green:

The New Jersey Department of Environmental Protection (Department) has reviewed the April 21, 2014 letter report submitted by the Department of the Army pursuant to the Department of Defense State Memorandum of Agreement (DSMOA) executed on April 3, 1992 and the Technical Requirements for Site Remediation at N.J.A.C. 7:26E.

The Department concurs with the Department of the Army's request that all remedial activities are complete and no additional remedial action is necessary for FTMM-29 (CW-7). The determination that the remedial action is complete is based upon information in the Department's case file, the reports submitted by the Department of the Army, and the certified representations and information provided to the Department.

If you have any questions regarding this matter contact Linda Range at (609) 984-6606.

Sincerely,

Gwen B. Zervas, P.E., Section Chief
Bureau of Case Management

cc: Joe Pearson, Calibre Systems
Rich Harrison, FMERA
Julie Carver, Matrix

July 30, 2013

Mr. Charlie Goebel
Project Manager
Chenega Operation Services, LLC
P.O. Box 148
Oceanport, New Jersey 07757

BVNA Project No. 12012-000137.00
U.S. Army Fort Monmouth, Building 2000
Tinton Falls, New Jersey

Dear Mr. Goebel:

We are pleased to enclose Bureau Veritas North America, Inc.'s (BVNA) final report of the re-inspection of previously identified friable asbestos-containing materials (ACM) and the results of sampling of specific suspect at the U.S. Army Fort Monmouth Building 2000 in Tinton Falls, New Jersey.

It is a pleasure to provide our services to you. If you have any questions, please call me at 732.225.6040, or email me at ilya.gedrich@us.bureauveritas.com.

Sincerely,

Ilya Gedrich, CIH
Senior Consultant
Health, Safety, and Environmental Services

IG

Enclosures

Bureau Veritas North America, Inc.
Raritan Plaza I, 4th Floor, 110 Fieldcrest Avenue
Edison, NJ 08837

Main: (732) 225-6040
Fax: (732) 225-4577
www.us.bureauveritas.com

Re-Inspection and Sampling of Specific Suspect ACM

U.S. Army Fort Monmouth, Building 2000
Tinton Falls, New Jersey

Report Date: July 30, 2013
BVNA Project No. 12012-000137.00

FINAL REPORT

For the benefit of business and people

Bureau Veritas North America, Inc.
Raritan Plaza I, 4th Floor
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Edison, New Jersey 08837
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CONTENTS

1.0 INTRODUCTION

Chenega Operations Services, LLC (COS) retained Bureau Veritas North America, Inc. (BVNA) to conduct a re-inspection of previously identified friable ACM in Building 2000 at U.S. Army Fort Monmouth in Tinton Falls, New Jersey. This project was performed in accordance with the scope of work described in BVNA's Proposal No. 1209.13.362, dated May 22, 2013. While at the site, BVNA was requested by Fort Monmouth personnel to collect bulk samples of specific suspect ACMs in the building.

Mr. Ilya Gedrich, CIH, of BVNA, conducted the assessment on June 7, 2013. Mr. Gedrich is a United States Environmental Protection Agency (USEPA)-accredited Asbestos Building Inspector and Management Planner. Ms. Wanda Green, Environmental Coordinator of Fort Monmouth, provided access and information during the project.

Appendix A of this report contains tables presenting the sampling and analytical results for samples collected in the building. Appendix B presents a brief description of the sampling and analytical methods employed during this project. Appendix C contains copies of the laboratory documentation. Appendix D contains photo documentation for the sample collection. Appendix E depicts sample locations. Appendix F of this report presents existing survey records available to BVNA at the time of the re-inspection. Appendix G depicts locations of damaged friable ACM observed during the re-inspection. Appendix H contains photo documentation for the re-inspection. Appendix I of this report contains staff credentials.

2.0 RE-INSPECTION AND SAMPLE COLLECTION

2.1 DESCRIPTION OF RE-INSPECTION

On June 7, 2013, BVNA performed a re-inspection of previously identified friable ACM in Building 2000. Prior to the re-inspection BVNA reviewed existing asbestos survey records provided by Ms. Green. The reviewed documents included a copy of the asbestos survey report prepared by Weston Solutions and dated December 1990 and sampling records stored in the U.S. Army Fort Monmouth ACM database.

The purpose of the re-inspection was to review the physical condition of the previously identified friable ACM and to detect and document any changes that may have occurred since the original inspection. BVNA visually re-inspected and assessed the integrity of the readily accessible previously identified friable ACM. The table below presents a summary of friable ACM that appeared to be in a damaged condition. The remaining observed ACM was found to be in good condition.

Table 1

Location	ACM type	Quantity	Condition	Suggested response action
Mechanical Room (south)	Pipe fitting	1 LF	Damaged	Wrap
Room across gym	Pipe fitting	3 LF	Damaged	Wrap
Room across gym	Pipe insulation	2 LF	Damaged	Clean-up and Wrap
Room B15	Pipe insulation	2 LF	Damaged	Clean-up and Wrap
Room B13	Pipe insulation	2 LF	Damaged	Clean-up and Wrap
Room B12	Pipe insulation	10 LF	Damaged	Clean-up and Wrap
Room B12, above storage	Pipe insulation debris	40 SF	Damaged	Clean-up
Room B12A	Pipe insulation	10 LF	Damaged	Clean-up and Wrap

Location	ACM type	Quantity	Condition	Suggested response action
Room B12A, above storage	Pipe insulation debris	40 SF	Damaged	Clean-up
Room B9	Pipe insulation	3 LF	Damaged	Clean-up and Wrap
Room B11	Pipe insulation	11 LF	Damaged	Clean-up and Wrap
Corridor B	Pipe fitting	1 LF	Damaged	Wrap
Mechanical Room (north)	Pipe fitting	1 LF	Damaged	Wrap
Boiler Room B1	Tank insulation	300 SF	Damaged	Remove and replace
Crawl space (Boiler Room B1)	Pipe insulation debris	10 LF	Damaged	Clean-up and wrap, if feasible

2.2 DESCRIPTION OF THE SAMPLE COLLECTION

On June 7, 2013, BVNA collected bulk samples of select suspect asbestos containing materials in Building 2000. The samples were collected in the bar area of the building basement at the request of Ms. Wanda Green, BRAC Environmental Coordinator, with OACSIM – U. S. Army Fort Monmouth.

BVNA's Analytical Laboratory in Kennesaw, Georgia analyzed the samples collected during this assessment. The BVNA Kennesaw, Georgia Laboratory is accredited by the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program (NIST/NVLAP).

Bulk samples of friable materials and some non-friable materials were analyzed by BVNA using Polarized Light Microscopy (PLM) following the United States Environmental Protection Agency (USEPA) Method EPA-600/M4-82-020/EPA/600/R-93. Bulk samples of non-friable organically bound (NOB) materials were prepared using a gravimetric reduction and then analyzed using PLM with point counting following the above USEPA method. Where an NOB HA set was found to be negative by PLM NOB method, BVNA analyzed the samples from the HA set using Transmission Electron Microcopy (TEM).

A homogeneous area or HA, is an area of suspect ACM which is the same in appearance, use, color, and texture. Generally, HA samples are analyzed until a sample yields a positive result, after which analysis for that sample series stops. If no positive result for asbestos is reported, all samples in a series are analyzed. In some instances, however, the inspector may request additional analyses of samples in an HA series to better characterize materials at the site during this assessment.

3.0 DESCRIPTION OF FACILITY

Building 2000, located at U.S. Army Fort Monmouth in Tinton Falls, New Jersey, is a Sun Eagles' Golf Club House and Banquet/Restaurant facility also known as Gibbs Hall. The building is two-story, 37,125 square foot structure constructed in 1942. The building exterior is brick with slope roofing. Interior finishes are plaster and wood. Records of asbestos abatement activities at the site were not provided to BVNA at the time of re-inspection.

4.0 RESULTS AND DISCUSSION

BVNA collected a total of eleven (11) single and multi-layer samples from five (5) suspect HAs during the survey. The laboratory results include analysis of thirteen (13) sample layers by PLM, two (2) sample layers by PLM for NOB materials, and two (2) sample layers by TEM. A summary of the types of materials sampled follows.

SURFACING MATERIALS

- HA-1 Ceiling plaster, "white" coat
- HA-2 Ceiling plaster, "brown" coat

THERMAL SYSTEMS INSULATION

BVNA didn't collect samples of thermal systems insulation materials at the time of the re-inspection.

MISCELLANEOUS MATERIALS

- HA-1 12-inch X 12-inch ceiling tile
- HA-2 Floor debris
- HA-3 Ceiling tile glue

Tables presenting the materials sampled during this assessment and the analytical results of sample analysis are presented in Appendix A of this report.

5.0 RECOMMENDATIONS AND COMMENTS

Analytical sampling results indicate that asbestos was not detected in the collected samples. Therefore, these materials are, by definition, not asbestos-containing materials (ACM). The State of New Jersey and the USEPA define ACM as a material that contains greater than one (1) percent asbestos.

- HA-1 Ceiling plaster, "white" coat
- HA-2 Ceiling plaster, "brown" coat
- HA-1 12-inch X 12-inch ceiling tile
- HA-2 Floor debris
- HA-3 Ceiling tile glue

As indicated within the body of this report and its appendices, damaged friable ACM were identified in Building 2000 at U.S. Army Fort Monmouth, Tinton Falls, New Jersey. Based on the observations of the Building Inspector who performed the asbestos re-inspection, BVNA offers the following recommendations to COS.

- Remediate damaged friable ACM identified in Table 1 in accordance with the suggested response action. ACM that is in good condition should be maintained and prevented from becoming disturbed.

Note that the sample collection was performed for specific materials requested by Fort Monmouth personnel. The re-inspection was limited to those materials and areas visually apparent at the time of the assessment. The inspection was limited to accessible areas. The inspection did not include areas that required destructive means to gain access. Furthermore, the re-inspection reflects conditions at the time of the site visit. Proper management of ACM requires that planned alterations and changes impacting asbestos be tracked and thorough records maintained. Additionally, periodic review of ACM in the building is necessary to track the condition of materials and determine appropriate actions.

6.0 QUALITY ASSURANCE

As a world leader in providing services that our clients depend on, we continually strive to provide the highest quality. This report has been reviewed as a part of our quality process.

This report submitted by:

Ilya Gedrich, CIH
Senior Consultant
Health, Safety, and Environmental Services

This report reviewed by:

Patrick A. Hand, CIH
Senior Project Manager
Health, Safety, and Environmental Services

July 30, 2013

APPENDIX A

ANALYTICAL RESULTS OF BULK MATERIAL SAMPLING

Table 1
Analytical Results of Bulk Material Sampling for Asbestos
Polarized Light Microscopy
at
U.S. Army Fort Monmouth, Building 2000
Tinton Falls, New Jersey
for
Chenega Operations Services, LLC

BVNA Project No. 12023-000137.00

June 7, 2013

Sample Number	Sample Description/Location	Asbestos Content Percent and Type
FM-060713-2000-1A	Ceiling plaster, brown coat – Room B-15	NAD
FM-060713-2000-1A	Ceiling plaster, white coat – Room B-15	NAD
FM-060713-2000-1B	Ceiling plaster, white coat – Room B-15	NAD
FM-060713-2000-1C	Ceiling plaster, brown coat – Room B-15	NAD
FM-060713-2000-1C	Ceiling plaster, white coat – Room B-15	NAD
FM-060713-2000-2A	Ceiling plaster, gray – Room B-15	NAD
FM-060713-2000-2B	Ceiling plaster, gray – Room B-15	NAD
FM-060713-2000-2C	Ceiling plaster, gray – Room B-15	NAD
FM-060713-2000-3A	Ceiling tile mastic, brown – Bar area	NAD
FM-060713-2000-3A	Ceiling tile, white – Bar area	NAD
FM-060713-2000-3B	Ceiling tile mastic, brown – Bar area	NAD
FM-060713-2000-3B	Ceiling tile, white – Bar area	NAD
FM-060713-2000-4A	White debris – Bar area, floor	NAD

NAD: no asbestos detected

Analytical Method: USEPA 600/R-93/116 and/or USEPA 600/M-4-82-020

The samples in this table were analyzed by the BVNA laboratory in Kennesaw, Georgia which is accredited by the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program (NIST/NVLAP).

Table 2

Analytical Results of Bulk Material Sampling for Asbestos
Polarized Light Microscopy for Non-Friable Organically Bound Materials
at
U.S. Army Fort Monmouth, Building 2000
Tinton Falls, New Jersey
for
Chenega Operations Services, LLC

BVNA Project No. 12023-000137.00

June 7, 2013

Sample Number	Sample Description/Location	Asbestos Content Percent and Type
FM-060713-2000-5A	Ceiling tile mastic, brown – Bar area	NAD
FM-060713-2000-5B	Ceiling tile mastic, brown – Bar area	NAD

NAD: no asbestos detected

Analytical Method: PLM EPA NOB with 400 point count, NY ELAP 198.6

The samples in this table were analyzed by the BVNA laboratory in Kennesaw, Georgia which is accredited by the NIST/NVLAP.

Table 3

Analytical Results of Bulk Material Sampling for Asbestos
Transmission Electron Microscopy for Non-Friable Organically Bound Materials
at
U.S. Army Fort Monmouth, Building 2000
Tinton Falls, New Jersey
for
Chenega Operations Services, LLC

BVNA Project No. 12023-000137.00

June 7, 2013

Sample Number	Sample Description/Location	Asbestos Content Percent and Type
FM-060713-2000-5A	Ceiling tile mastic, brown – Bar area	NAD
FM-060713-2000-5B	Ceiling tile mastic, brown – Bar area	NAD

NAD: no asbestos detected

Analytical Methods: TEM Full-Quant Analysis EPA/600/R-93/116

The samples in this table were analyzed by the BVNA laboratory in Kennesaw, Georgia which is accredited by the NIST/NVLAP.

APPENDIX B

SAMPLING AND ANALYTICAL METHODS

Analytical Method for Asbestos in Bulk Samples Using Polarized Light Microscopy (PLM)

A representative portion of the bulk sample is transferred to a small dish. The sample is examined under a stereomicroscope at 10 to 40X magnification to determine if the material is fibrous and to note the physical characteristics of the sample. If fibers are present, fiber morphology is noted.

Forceps are used to extract fibers from the sample. At least one fiber representative of each type observed in the sample under the stereomicroscope is extracted and mounted on a microscope slide using a refractive index liquid (Cargille Series E: HO [high dispersion]).

After mounting, the fibers are analyzed and identified using polarized light microscopy (PLM) supplemented by dispersion staining. After fiber identification using PLM, a visual estimate is made of the percent composition by type of asbestos present and type of other fibrous materials identified. The visual estimate is based on volume and is accomplished using stereomicroscopic examination of the bulk sample.

References

McCrone, Walter C. 1980. *The Asbestos Particle Atlas*, Ann Arbor, MI; Ann Arbor Science Publishers, Inc.

United States Environmental Protection Agency. Environmental Monitoring Systems Laboratory. 1982. *Interim Method for the Determination of Asbestos in Bulk Insulation Samples*; EPA-600/M4-82-020. Washington: GPO, December.

United States Environmental Protection Agency. *Method for the Determination of Asbestos in Bulk Building Materials*, EPA-600/R-93/116, July 1993 (PLM).

QUANTITATIVE ANALYSIS OF NON-FRIABLE ORGANICALLY BOUND (NOB) BULK SAMPLES FOR ASBESTOS USING POLARIZED LIGHT MICROSCOPY & TRANSMISSION ELECTRON MICROSCOPY

Upon receipt in the laboratory, samples are ground until homogeneous. Each sample is weighed in a tared silica crucible. The sample is placed in a muffle furnace at a temperature of 480□C for 3 hours. The sample is allowed to cool to room temperature and immediately weighed to record ashed sample weight. (Layers within each sample are prepared, analyzed and billed as a single sample).

Approximately 2-5 ml of nondiluted HCL acid is slowly added to remove calcite and dolomite from the ashed sample. After 15 minutes, the sample is immediately diluted with ultra-pure water and filtered onto a pre-weighed 47 mm, 0.4 µm pore size, polycarbonate filter. The filter is dried on a slide warmer and weighed once again.

A 1 cm^2 portion of the filter is cut and placed in a clean silica crucible. Approximately 5 ml of ethanol are added and ultra-sonicated for 1 minute to remove the deposited sample into suspension. For, PLM analysis, the entire residue is analyzed either by stratified point count or a calibrated visual estimation.

Asbestos is identified using morphology, selected area electron diffraction, and energy-dispersive x-ray spectroscopy. Percent asbestos in the final residue is then extrapolated using gravimetric records to percent asbestos in the total sample.

References

EPA/600/R-93/116 Section 2.3 (PLM)

APPENDIX C

LABORATORY DOCUMENTATION

June 17, 2013

Ilya Gedrich
BUREAU VERITAS - EDISON
Raritan Plaza 1 - 4th Floor
110 Fieldcrest Avenue
Edison, NJ 08837

Bureau Veritas Work Order No. A1306110

Reference: FORT MONMOUTH

Dear Ilya Gedrich:

Bureau Veritas North America, Inc. received 11 samples on June 11, 2013 for the analyses presented in the following report.

The results apply only to the samples analyzed in this project. Please note that any unused portion of the samples will be discarded after a sixty-day holding period, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning the report, please contact the analyst whose name appears on the report or myself at (770) 499-7701.

Sincerely,

Kuntal Parikh

Kuntal Parikh
Senior Microscopist
Electronic signature authorized through password protection

Bureau Veritas North America, Inc.
Health, Safety, and Environmental Services
3380 Chastain Meadows Parkway, Suite 300
Kennesaw, GA 30144
Main: (770) 499-7701
Fax: (770) 499-7511
www.us.bureauveritas.com

CASE NARRATIVE

Date: *17-Jun-13*

CLIENT: BUREAU VERITAS - EDISON

Project: FORT MONMOUTH

Work Order No A1306110

ANALYTICAL METHOD FOR ASBESTOS IN BULK SAMPLES USING POLARIZED LIGHT MICROSCOPY (PLM)

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected unless otherwise noted.

Use of EPA/600/R-93/116 satisfies applicable requirements of the USEPA's "Interim Method for the Determination of Asbestos in Bulk Insulation Sample", EPA-600/M4-82-020, December 1982, published as Appendix E to Subpart E of 40CFR763. Bulk samples analyzed by New York State methods follow stratified point counting methods (198.1) or Method 198.6 for PLM non-friable organically bound materials (NYSDOH Lab Code –11645). Percentages are visual estimations of asbestos >10:1 aspect ratio. The reliable limit of quantitation of the method is 1%, although asbestos may be qualitatively detected at concentrations less than 1%. Samples for which asbestos is detected at <1% are reported as trace, "<1%". "None Detected" indicates that no asbestos fibers were observed. NESHAP requires point counting of a bulk sample when the result is <10% by a method other than point counting. EPA, however states that if 3 mounts of the sample are analyzed and the asbestos percentage is <10% by visual estimation, the client may elect to assume the amount to be greater than 1% or require verification by point counting. If the result by point counting is different than the result obtained by visual estimation, the point count result will be used. Sample friability or non-friability noted on the report is a requirement for the State of California and refers only to the condition of the sample under macroscopic examination. It does not imply friability or non-friability for the sample as collected or observed in the field as determined by the person collecting the sample. The Kennesaw, Georgia lab is accredited by NVLAP –Lab Code 101125-0.

(a)Polarized- light microscopy is not consistently reliable in detecting asbestos in floor coverings, similar non-friable organically bound materials, soil and vermiculite. Quantitative electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing. When analysis of such materials by PLM yields results negative for the presence of asbestos, Bureau Veritas recommends utilizing quantitative transmission electron microscopy (TEM). For more information, contact the laboratory.

References

McCrone, Walter C. 1980. The Asbestos Particle Atlas. Ann Arbor, MI: Ann Arbor Science Publishers, Inc.

United States Environmental Protection Agency. Environmental Monitoring Systems Laboratory. 1982. Interim Method for the Determination of Asbestos in Bulk Insulation Samples. EPA-600/M4-82-020. Washington: GPO, December.

United States Environmental Protection Agency. Method for the Determination of Asbestos in Bulk Building Materials. EPA-600/R-93/116, July 1993 (PLM)

Fed. Reg. Vol. 55, No.224, 11/20/90, p.48415 (NESHAP)
EPA Memorandum 5/8/1991 –NESHAP Clarifications

NYSDOH Methods 198.1/198.6

QUANTITATIVE ANALYSIS OF NON-FRIABLE ORGANICALLY BOUND BULK SAMPLES FOR ASBESTOS USING POLARIZED LIGHT MICROSCOPY (PLM EPA NOB with 400 point count) (NY ELAP 198.6)

Approximately 100-500 mg of sample is weighed in a tared silica crucible. The sample is placed in a muffle furnace at a temperature of 480C for at least 5 hours or until the weight has stabilized. The sample is allowed to cool to room temperature and immediately weighed to calculate percent organic loss.

The sample is placed in a tared crucible and ground to disaggregate the residue. Approximately 1 ml of non-dilute HCL acid is slowly added to remove calcite and dolomite from the remaining sample residue. After 15 minutes the sample is immediately diluted with ultra-pure water. The sample is then dispersed in 50 ml of ultra-pure water and filtered onto a pre-weighed 47 mm, 0.4um pore size, polycarbonate filter. The filter is dried on a slide warmer and weighed once again. If the residue mass is <1% of the subsample original mass, the analysis is terminated and the result is reported as non-ACM.

At least four subsamples from the filter are mounted and fibers (if present) are identified using a polarized light microscope and optical properties. The EPA point count method is used to quantitate asbestos fibers.

Results are reported as no asbestos detected, trace (<1%) or the percent asbestos and type if > 1%. Percent asbestos in the final residue is then extrapolated using gravimetric records to percent asbestos in the total sample.

CLIENT:	BUREAU VERITAS - EDISON
Project:	FORT MONMOUTH
Work Order No	A1306110

DISCLAIMER FOR NEGATIVE RESULTS –Polarized Light Microscopy is not consistently reliable in detecting asbestos in floor coverings and non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing. Further analysis by TEM is recommended using NYELAP Method 198.4 (NYSDOH Lab Code –11645).

References

New York ELAP Methods 198.6/198.4

United States Environmental Protection Agency. Method for the Determination of Asbestos in Bulk Building Materials. EPA-600/R-93/116, July 1993 (PLM)

NOTE: Some of the samples may have contained inseparable layers which were combined during preparation.

QUANTITATIVE ANALYSIS OF BULK SAMPLES FOR ASBESTOS USING TRANSMISSION ELECTRON MICROSCOPY (TEM)

Upon receipt in the laboratory, samples are ground until homogeneous. Each sample is weighed in a tared silica crucible. The sample is placed in a muffle furnace at a temperature of 480C for at least 3 hours or until the weight has stabilized. The sample is allowed to cool to room temperature and immediately weighed to calculate percent organic loss.

Approximately 1 ml of nondiluted HCL acid is slowly added to remove calcite and dolomite from the ashed sample. After evolution of CO2 gas has ceased, the sample is immediately diluted with ultra-pure water. The sample is then dispersed in 50 ml of ultra-pure water and filtered onto a pre-weighed 47 mm, 0.45 um pore size, MCE filter. The filter is dried on a slide warmer and weighed once again.

A 1 cm2 portion of the filter is cut and placed in a clean silica crucible. Approximately 250 ul of both 20 ppm methyl cellulose solution and isopropyl alcohol are added and ultra-sonicated for 1 minute to remove the deposited sample into suspension. Approximately 3 ul of the suspension is pipetted onto a carbon-coated copper TEM grid and allowed to dry.

Grids are examined in the TEM at 15,000X magnification. Asbestos is identified using morphology, selected area electron diffraction, and energy-dispersive x-ray spectroscopy. From TEM examination, a visual area estimation is made of asbestos in the final residue. Percent asbestos in the final residue is then

extrapolated using gravimetric records to percent asbestos in the total sample. Asbestos structures may be counted obtain fiber length and width information as well as mass values and are shown as a separate report. Structures meeting a 3:1 aspect ratio and greater than 0.5 microns are counted. When 10 grid openings or 100 structures are counted the analysis is terminated.

The Kennesaw, Georgia lab is accredited by NVLAP –Lab Code 101125-0.

References

Chatfield Method for Quantitative Analysis of Bulk Samples for Asbestos Using Transmission Electron Microscopy (unpublished).

United States Environmental Protection Agency. Method for the Determination of Asbestos in Bulk Building Materials. EPA-600/R-93/116, July 1993 (PLM)

NOTE: Some of the samples may have contained inseparable layers which were combined during preparation.

ANALYTICAL RESULTS

Date: *17-Jun-13*

CLIENT: BUREAU VERITAS - EDISON
Sample Type: Bulk
Work Order No.: A1306110
Date Received: 6/11/2013
Client Reference: FORT MONMOUTH
Report Date: 17-Jun-13
Method Reference: EPA-600/M4-82-020/EPA/600/R-93/116/NYELAP 198.1

Lab ID	Client Sample ID	Analyst	Date Sampled	Date Analyzed
001A	FM-060713-2000-1A	VK	06/07/2013	06/17/2013

Layer	POB	Sample Morphology	Asbestos	%	Other Fibers	%	Particulate
(1)	5	Homogeneous Brown Coating	None Detected		Non-Detected		Binder/Filler
(2)	95	Homogeneous White Ceiling Plaster	None Detected		Wood Fiber	< 1%	Binder/Filler
							Quartz

Lab ID	Client Sample ID	Analyst	Date Sampled	Date Analyzed
002A	FM-060713-2000-1B	VK	06/07/2013	06/17/2013

Layer	POB	Sample Morphology	Asbestos	%	Other Fibers	%	Particulate
(1)	100	Homogeneous White Ceiling Plaster	None Detected		Non-Detected		Binder/Filler

Lab ID	Client Sample ID	Analyst	Date Sampled	Date Analyzed
003A	FM-060713-2000-1C	VK	06/07/2013	06/17/2013

Layer	POB	Sample Morphology	Asbestos	%	Other Fibers	%	Particulate
(1)	5	Homogeneous Brown Coating	None Detected		Non-Detected		Binder/Filler
(2)	95	Homogeneous White Ceiling Plaster	None Detected		Non-Detected		Binder/Filler
							Quartz

Lab ID	Client Sample ID	Analyst	Date Sampled	Date Analyzed
004A	FM-060713-2000-2A	VK	06/07/2013	06/17/2013

Layer	POB	Sample Morphology	Asbestos	%	Other Fibers	%	Particulate
(1)	100	Homogeneous Gray Ceiling Plaster	None Detected		Wood Fiber	< 1%	Binder/Filler
							Mica
							Quartz

Lab ID	Client Sample ID	Analyst	Date Sampled	Date Analyzed
005A	FM-060713-2000-2B	VK	06/07/2013	06/17/2013

Layer	POB	Sample Morphology	Asbestos	%	Other Fibers	%	Particulate
(1)	100	Homogeneous Gray Ceiling Plaster	None Detected		Wood Fiber	< 1%	Binder/Filler
							Mica
							Quartz

The reliable limit of quantitation of the method is 1%, although asbestos may be qualitatively detected at concentrations less than 1%. Samples for which asbestos is detected at <1% are reported as trace, "<1%". "None Detected" indicates that no asbestos fibers were observed.

Analyst(s) Name/Date: _____ 6/17/2013

ANALYTICAL RESULTS

Date: *17-Jun-13*

CLIENT: BUREAU VERITAS - EDISON
Work Order No.: A1306110
Client Reference: FORT MONMOUTH
Method Reference: EPA-600/M4-82-020/EPA/600/R-93/116/NYELAP 198.1

Sample Type: Bulk
Date Received: 6/11/2013
Report Date: 17-Jun-13

Lab ID	Client Sample ID	Analyst	Date Sampled	Date Analyzed
006A	***FM-060713-2000-2C***	VK	06/07/2013	06/17/2013

Layer	POB	Sample Morphology		Asbestos	%	Other Fibers	%	Particulate
(1)	100	Homogeneous	Gray Ceiling Plaster	None Detected		Wood Fiber	< 1%	Binder/Filler Mica Quartz

Lab ID	Client Sample ID	Analyst	Date Sampled	Date Analyzed
007A	***FM-060713-2000-3A***	VK	06/07/2013	06/17/2013

Layer	POB	Sample Morphology		Asbestos	%	Other Fibers	%	Particulate
(1)	2	Homogeneous	Brown Mastic	None Detected		Non-Detected		Binder/Filler
(2)	98	Homogeneous	White Ceiling Tile	None Detected		Glass Wool	95%	Binder/Filler

Lab ID	Client Sample ID	Analyst	Date Sampled	Date Analyzed
008A	***FM-060713-2000-3B***	VK	06/07/2013	06/17/2013

Layer	POB	Sample Morphology		Asbestos	%	Other Fibers	%	Particulate
(1)	1	Homogeneous	Brown Mastic	None Detected		Non-Detected		Binder/Filler
(2)	99	Homogeneous	White Ceiling Tile	None Detected		Glass Wool	95%	Binder/Filler

Lab ID	Client Sample ID	Analyst	Date Sampled	Date Analyzed
009A	***FM-060713-2000-4A***	VK	06/07/2013	06/17/2013

Layer	POB	Sample Morphology		Asbestos	%	Other Fibers	%	Particulate
(1)	100	Homogeneous	White Debris	None Detected		Synthetic fiber	2%	Binder/Filler Styrofoam Wood Diatoms

The reliable limit of quantitation of the method is 1%, although asbestos may be qualitatively detected at concentrations less than 1%. Samples for which asbestos is detected at <1% are reported as trace, "<1%". "None Detected" indicates that no asbestos fibers were observed.

Analyst(s) Name/Date: _____ 6/17/2013

Laboratory Limits

Laboratory

Range	R Limit	Quartile Limit
0.1-1	100	+/- 1.482
10-100	100	+/- 22.23
1-10	100	+/- 7.41
Trace	100	+/- 1.482

Vera Khorosh (VK)

Range	R Limit	Quartile Limit
0.1-1	100	+/- 1.482
10-100	100	+/- 26.676
1-10	100	+/- 5.928
Trace	100	+/- 1.482

The reliable limit of quantitation of the method is 1%, although asbestos may be qualitatively detected at concentrations less than 1%. Samples for which asbestos is detected at <1% are reported as trace, "<1%". "None Detected" indicates that no asbestos fibers were observed.

Analyst(s) Name/Date: _____ 6/17/2013

ANALYTICAL RESULTS

Client: **BUREAU VERITAS - EDISON**

Client Reference No.: **FORT MONMOUTH**

Work Order No.: **A1306110** **Date:** *17-Jun-13*

Analytical Method: Asbestos Point Counting with Gravimetry
Sample Type: Bulk
Reporting Limit (% by Weight): 0.1

Date Received: 6/11/2013
Report Date: 6/17/2013 12:53:43 PM

Lab Sample No.	Client Sample Identification	Date Sampled	Analysis Date	Analyst	Sample Description (Morphology)	Asbestos Identification	(%)*	Total (%)**
A1306110-010A	FM-060713-2000-5A	06/07/13 @12:00 am	06/17/13 @9:15 am	VK	Cream/Brown Debris/Glue	None Detected	--	<0.1
A1306110-011A	FM-060713-2000-5B	06/07/13 @12:00 am	06/17/13 @9:15 am	VK	Cream/Brown Debris/Glue	None Detected	--	<0.1

Microscope Documentation

Instrument	Manufacturer	Model	Description
PLM 1	Olympus	BX 53	Olympus Polarizing Microscope

*: The visual area estimation of asbestos content in the final residue. --: Not Requested or Not Applicable.
**: The calculated total percent asbestos in the sample as received.
Note:

Analyst(s) Name/Date: _____ 6/17/2013

ANALYTICAL RESULTS

Client: **BUREAU VERITAS - EDISON**

Client Reference No.: **FORT MONMOUTH**

Work Order No.: **A1306110** **Date:** *17-Jun-13*

Analytical Method: TEM Full-Quant Analysis EPA/600/R-93/116
Sample Type: Bulk
Reporting Limit (% by Weight): 0.1

Date Received: 6/11/2013
Report Date: 6/17/2013 12:53:43 PM
Grid Box Identification: 06-17-13C-1

Lab Sample No.	Client Sample Identification	Date Sampled	Analysis Date	Analyst	Sample Description (Morphology)	Asbestos Identification	(%)*	Total Asbestos (%)**
A1306110-010A	FM-060713-2000-5A	06/07/13 @12:00 am	06/17/13 @12:10 pm	KRP	Dark Brown Glue	None Detected	--	< 0.1
A1306110-011A	FM-060713-2000-5B	06/07/13 @12:00 am	06/17/13 @12:10 pm	KRP	Dark Brown Glue	None Detected	--	< 0.1

TEM Microscope Documentation

Instrument	*Magnification	Accelerating Voltage	Calibration Date
TEM 1/D675	14484x	100 KeV	6/5/2013

*Magnification = Calibrated screen magnification at 15,000X. For ISO Method 10312 the calibrated screen magnification is at 20,000X

<: Result is less than the indicated limit of detection. --: Present but below the detection limit
*: The visual area estimation of asbestos content in the final residue.
**: The calculated total percent asbestos in the sample as received.

Analyst(s) Name/Date: Kunal Parikh 6/17/2013

A1306110

REQUEST FOR LABORATORY ANALYTICAL SERVICES

For Bureau Veritas Use Only
Bureau Veritas Lab Project No.

Bureau Veritas North America, Inc.

Detroit Lab
22345 Roethel Drive
Novi, MI 48375
(800) 806-5887
(248) 344-1770
FAX (248) 344-2655

Atlanta Lab
3380 Chastain Meadows Pky., Suite 300
Kennesaw, GA 30144
(800) 252-9919
(770) 499-7500
FAX (770) 499-7511

Chicago Lab
95 Oakwood Road
Lake Zurich, IL 60047
(888) 576-7522
(847) 726-3320
FAX (847) 726-3323

RUSH ANALYSIS
CONTACT LAB IN ADVANCE
Need Results by: ____/____/____
Charges Authorized? ☐ Yes ☐ No
(If yes, Initial here) ____
☐ Email Results ____ ☐ Fax

REPORT RESULTS TO
Name: IVYA GEDRICH
Company: BVNA
Mailing Address: 110 FIELDCREST AVE
City, State, Zip: EDISON, NJ 08837
Telephone No.: (732) 225 6040 FAX No.:
Client Job No.: Fort Monmouth
Dept.:

BILLING/INVOICE INFORMATION
☐ PO # ____ ☐ Call for Credit Card Information ☐ Direct Bill
Name:
Company:
Address:
City, State, Zip:

Special instructions and/or specific regulatory requirements:
(method, limit of detection, etc.)
72-hour TAT / NON-CSA PROJECT
Please stop at first positive

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request. Enter a 'P' if Preservative added.)

CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	MINUTES SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	PLM EPA	PLM EPA NOB (400)	TEM EPA	FOR LAB USE ONLY
FM-060713-2000-1A	6/7/13	ceiling plaster "white"			X			
1B					X			
1C					X			
FM-060713-2000-2A		ceiling plaster "brown"			X			
2B					X			
2C					X			
FM-060713-2000-3A		1x1 ceiling tile.			X			
3B					X			
FM-060713-2000-4A		debris			X			
FM-060713-2000-5A		~~dust~~ glue daft				X	X	
5B						X	X	

CHAIN OF CUSTODY

Collected by: IVYA GEDRICH (print) — Collector's Signature: IVYA GEDRICH
Relinquished by: [signature] Date/Time: 6/8/13 — Received by: Date/Time:
Relinquished by: Date/Time: — Received by: K. Smith Date/Time: 6/11/2013 330
Method of Shipment: — Received at Lab by: Date/Time:
Authorized by: [signature] Date: 6/8/13 — Sample Condition Upon Receipt: ☑ Acceptable ☐ Other (explain)

(Client Signature **MUST** Accompany Request)

Page 1 of 1

APPENDIX D

SAMPLE COLLECTION PHOTO DOCUMENTATION

1

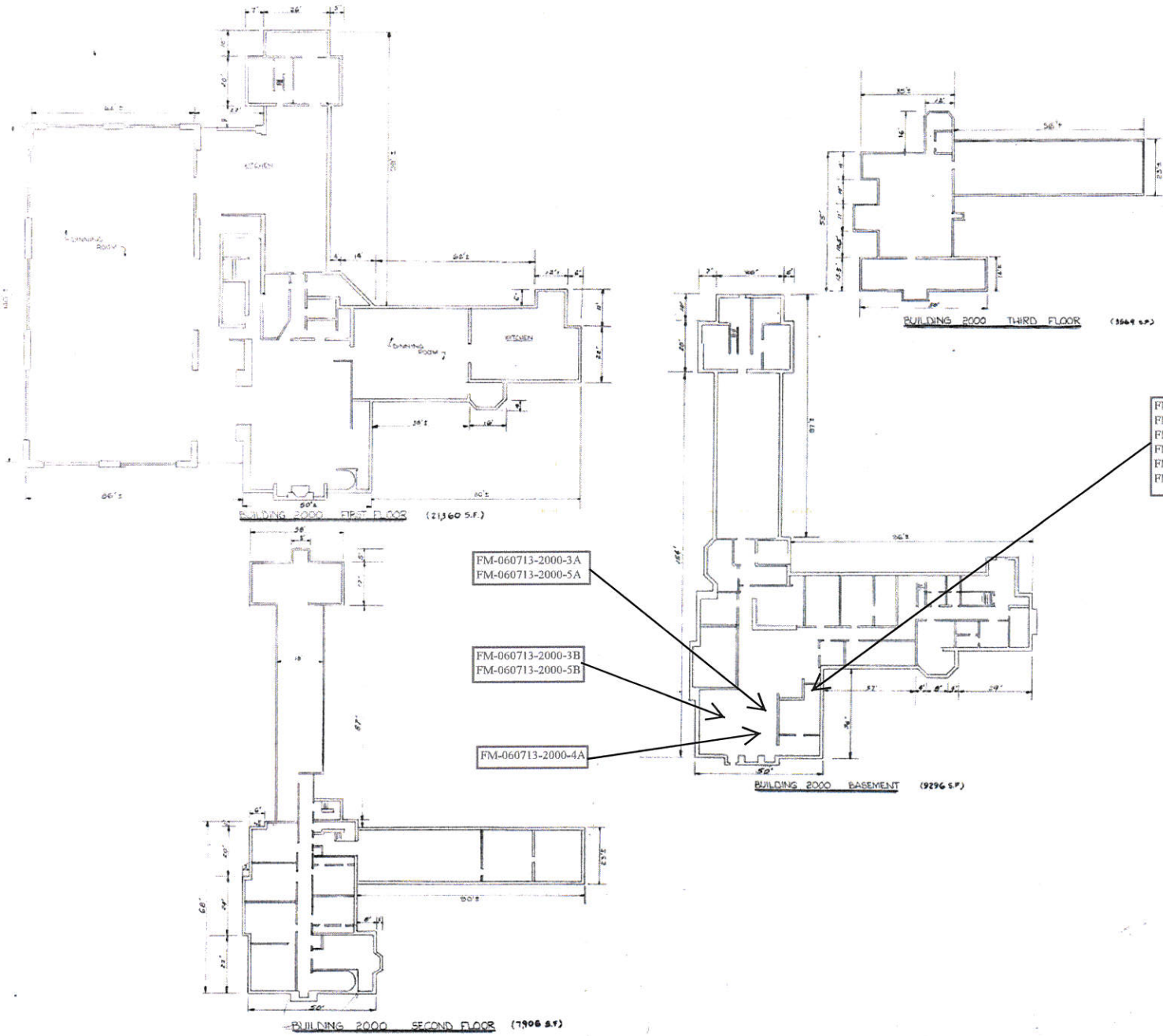
Building 2000, basement, bar area: Suspect ceiling tile glue.

2

Building 2000, basement, Room B-15: Ceiling plaster.

APPENDIX E

SAMPLE LOCATIONS



Asbestos Sampling of Specific Suspect ACM
Bureau Veritas North America, Inc.
Project No: 12012-000137.00
June 7, 2013

OFFICE OF THE FACILITIES ENGINEER
Fort Monmouth, New Jersey

MAINTENANCE & REPAIRS OF SPRINKLER SYSTEMS POST WIDE
BUILDING 2000

DRAWN: J. DUCKERS
DESIGNED: FANG
CHECKED: K. DOONEY
TYPED BY: ABBOTT
TRACED BY: ROBERTS
UTIL. BY: BELL
USING AGENCY:
RECOMMENDED: JAMES OTT, Chief Engineering, Plans & Services
APPROVED: PHILIP R. HARRIS, FACILITIES ENGINEER, LTC, C.E.
SCALE: 1/16" = 1'-0"
DATE: 2-10-81
PR. NO.: 79-80-3415
DRAWING NUMBER: 9756
SHEET 2 OF 11

APPENDIX F

EXISTING ASBESTOS SURVEY RECORDS

TABLE 2000.2

ASBESTOS-CONTAINING MATERIALS - BUILDING 2000, OFFICER'S CLUB

TYPE OCCUPANCY: ADULTS (GOVERNMENT)

AREA	PIPE FITTINGS (EA)				PIPE RUNS (LF)				SPRAY/TROWELED CEILINGS (MSF)	FLOOR TILE (MSF)	BOILERS/ TANKS (MSF)	AIR HANDLING EQUIPMENT (MSF)	OTHER
	<4"	4-8"	9-14"	>14"	<4"	4-8"	9-14"	>14"					
ATTIC AREA 3	-	-	-	-	-	-	-	-	-	-	-	-	*
BAR AREA	-	4	-	-	98	56	4	-	-	1.44	-	-	-
BAR AREA-VESTIBULE	-	19	-	-	-	-	-	-	-	-	-	-	-
BOILER RM B1	3	-	-	-	-	-	11	-	-	-	0.02	-	*
CORRIDOR B	2	-	-	-	10	-	-	-	-	-	-	-	-
ELECTRIC SERVICE RM	-	-	-	-	-	-	-	-	-	-	-	0.03	-
EMPLOYEE DINING	-	-	-	-	-	14	-	-	-	-	-	-	-
FIRE DEPT RM	-	12	-	-	10	42	-	-	-	-	-	-	-
KITCHEN	-	-	-	-	-	-	-	-	-	0.18	-	-	-
LIQUOR RM/MECH RM	41	40	23	-	100	230	80	-	-	-	-	-	-
LOCKER RM 1	-	72	-	-	150	670	-	-	-	-	-	-	-
LOCKER RM 2	-	45	-	-	110	280	-	-	-	-	-	-	-
MONMOUTH MECH RM	-	-	-	-	-	-	-	-	-	-	-	-	*
MONMOUTH STORAGE	-	-	-	-	-	-	-	-	-	0.78	-	-	*
REF STORAGE	-	-	-	-	-	20	-	-	-	-	-	-	-
RM B11	3	-	-	-	78	-	30	-	-	-	-	0.07	*
RM B12	-	4	6	-	15	12	35	-	-	-	-	-	-
RM B12A	-	4	6	-	15	12	35	-	-	-	-	-	-
RM B13	-	12	6	-	-	-	28	-	-	-	-	-	*
RM B14	-	12	-	-	16	48	-	-	-	-	-	-	-
RM B15	-	1	-	-	-	14	-	-	-	-	-	-	-
RM B16	6	2	-	-	16	8	-	-	-	-	-	-	-
RM B2 & B3	-	2	-	-	-	-	-	-	-	-	-	-	-
RM B8 & B7	4	-	-	-	12	-	-	-	-	-	-	-	-
RM B9 & B10	4	-	6	-	36	-	4	-	-	-	-	-	-
SNACK BAR	6	2	2	-	40	48	24	-	-	-	-	-	-
STEAM GENERATOR RM	-	1	2	-	1	12	10	-	-	-	-	-	-
VESTIBULE/STAIR	7	-	-	-	60	42	40	-	-	-	-	-	-
TOTALS	76	232	51	-	767	1508	301	-	-	2.40	0.02	0.10	*

* Other material present in various units of measure. See Table 2000.3 for material descriptions.

EA - Each
LF - Linear Feet
MSF - Thousand Square Feet

TABLE 2000.3

OTHER ASBESTOS-CONTAINING MATERIAL - BUILDING 2000, OFFICER'S CLUB

TYPE OCCUPANCY: ADULTS (GOVERNMENT)

AREA	MATERIAL TYPE	QUANTITY (UNIT)
ATTIC AREA 3	EXPANSION JOINT	1 (EA)
BOILER RM B1	DEBRIS	0.03 (MSF)
MONMOUTH MECH RM	EXPANSION JOINT	1 (EA)
MONMOUTH STORAGE	EXPANSION JOINT	1 (EA)
RM B11	EXPANSION JOINT	1 (EA)
RM B13	DEBRIS	0.01 (MSF)

EA - Each
LF - Linear Feet
MSF - Thousand Square Feet

B-2000

Sample Summary by Building for Positive Results

Building Number 2000

Floor Basement

SampleID *AZ878*

Asbestos Product	Location of Sample	Percent Asbestos	Category of Asbestos	Condition	Amount	Unit	GraphicID	Sample Date
Tank Insulation	Boiler Room B1	30%	RACM	Good	300	Surface Area	F2000-B	1/12/1990

SampleID *AZ882*

Asbestos Product	Location of Sample	Percent Asbestos	Category of Asbestos	Condition	Amount	Unit	GraphicID	Sample Date
Pipe Insulation	Boiler Room B1	55%	RACM	Good	5	Linear Feet	F2000-B	1/12/1990

SampleID *AZ886*

Asbestos Product	Location of Sample	Percent Asbestos	Category of Asbestos	Condition	Amount	Unit	GraphicID	Sample Date
Pipe Joint Insulation	Boiler Room B1	45%	RACM	Good	5	Linear Feet	F2000-B	1/20/1990

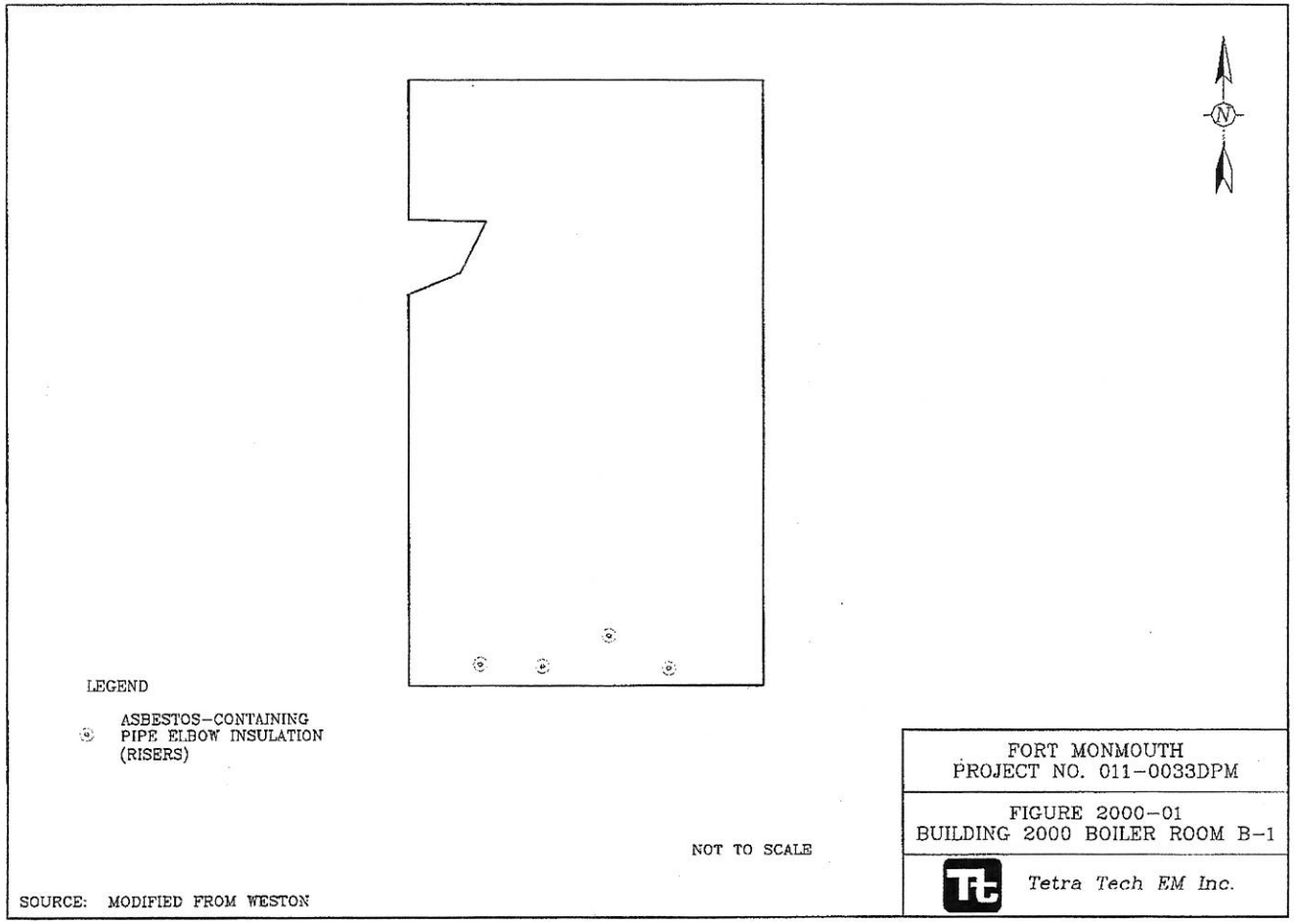
SampleID *AZ890*

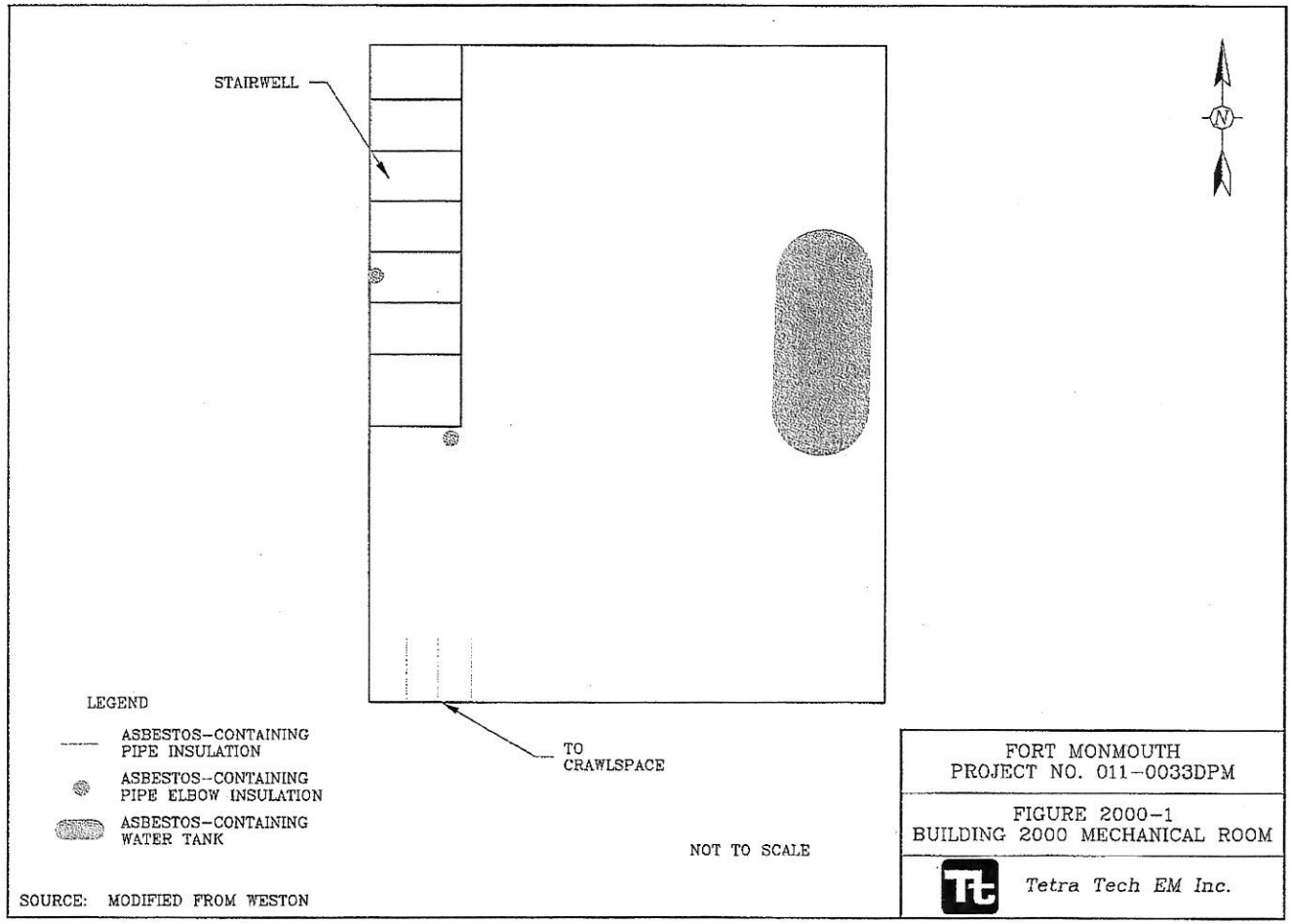
Asbestos Product	Location of Sample	Percent Asbestos	Category of Asbestos	Condition	Amount	Unit	GraphicID	Sample Date
Pipe Insulation	Mechanical / Steam Generator Room	40%	RACM	Good	50	Linear Feet	F2000-M	1/20/1990

SampleID *AZ892*

Asbestos Product	Location of Sample	Percent Asbestos	Category of Asbestos	Condition	Amount	Unit	GraphicID	Sample Date
Pipe Joint	Mechanical / Steam Generator room	55%	RACM	Good	5	Linear Feet	F2000-M	1/20/1990

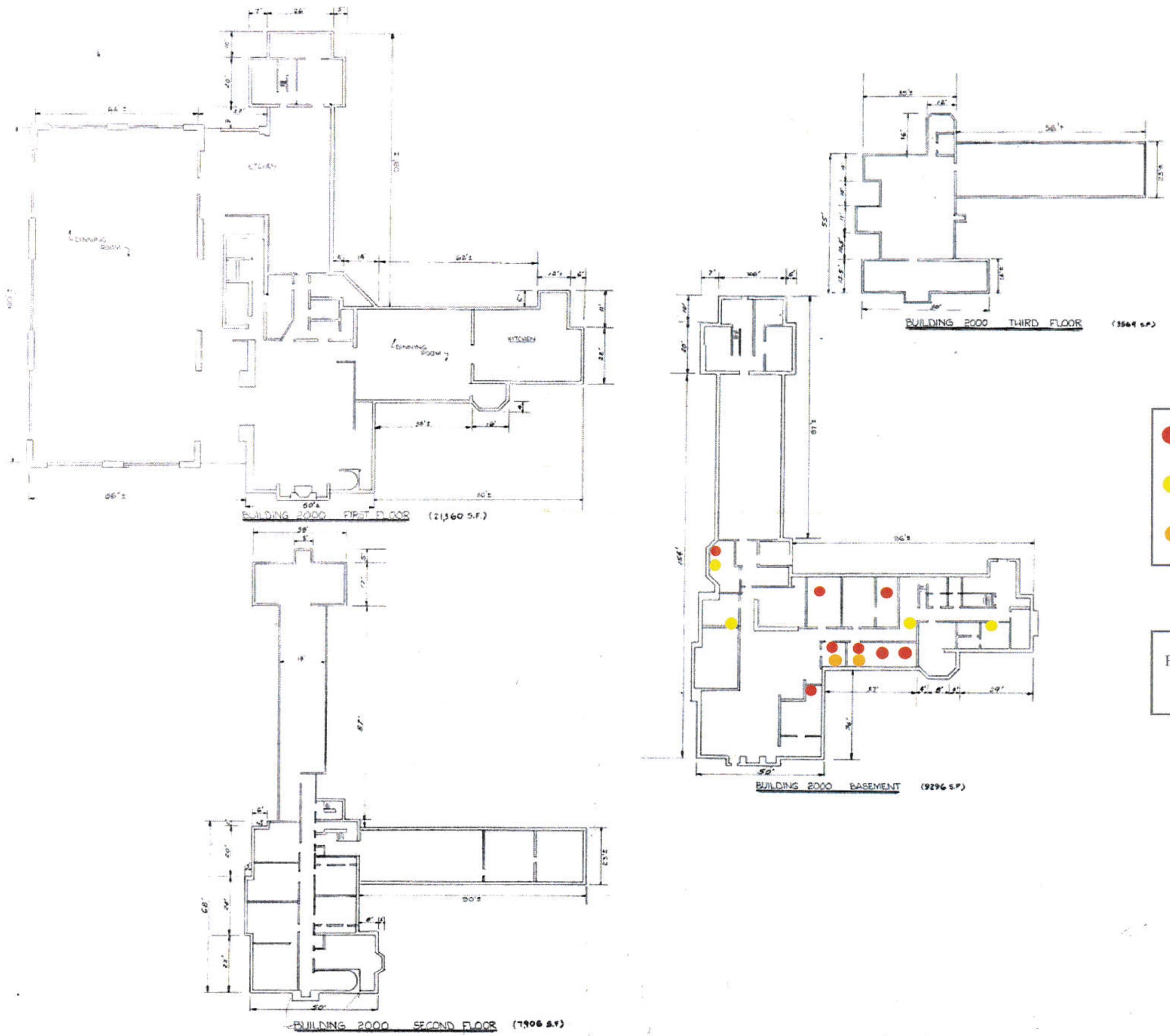
F2000-B


N
LEGEND
ASBESTOS-CONTAINING
PIPE ELBOW INSULATION
(RISERS)
NOT TO SCALE
SOURCE: MODIFIED FROM WESTON
FORT MONMOUTH
PROJECT NO. 011-0033DPM
FIGURE 2000-01
BUILDING 2000 BOILER ROOM B-1
Tetra Tech EM Inc.


STAIRWELL
TO
CRAWLSPACE
N
LEGEND
ASBESTOS-CONTAINING
PIPE INSULATION
ASBESTOS-CONTAINING
PIPE ELBOW INSULATION
ASBESTOS-CONTAINING
WATER TANK
NOT TO SCALE
SOURCE: MODIFIED FROM WESTON
FORT MONMOUTH
PROJECT NO. 011-0033DPM
FIGURE 2000-1
BUILDING 2000 MECHANICAL ROOM
Tetra Tech EM Inc.

APPENDIX G

LOCATIONS OF DAMAGED FRIABLE ACM



- Damaged asbestos pipe insulation (red)
- Damageed asbestos pipe fitting (yellow)
- ACM debris (orange)

Asbestos Re-Inspection
Bureau Veritas North America, Inc.
Project No: 12012-000137.00
June 7, 2013

SYMBOL	DESCRIPTION REVISIONS	DATE	APPROVED

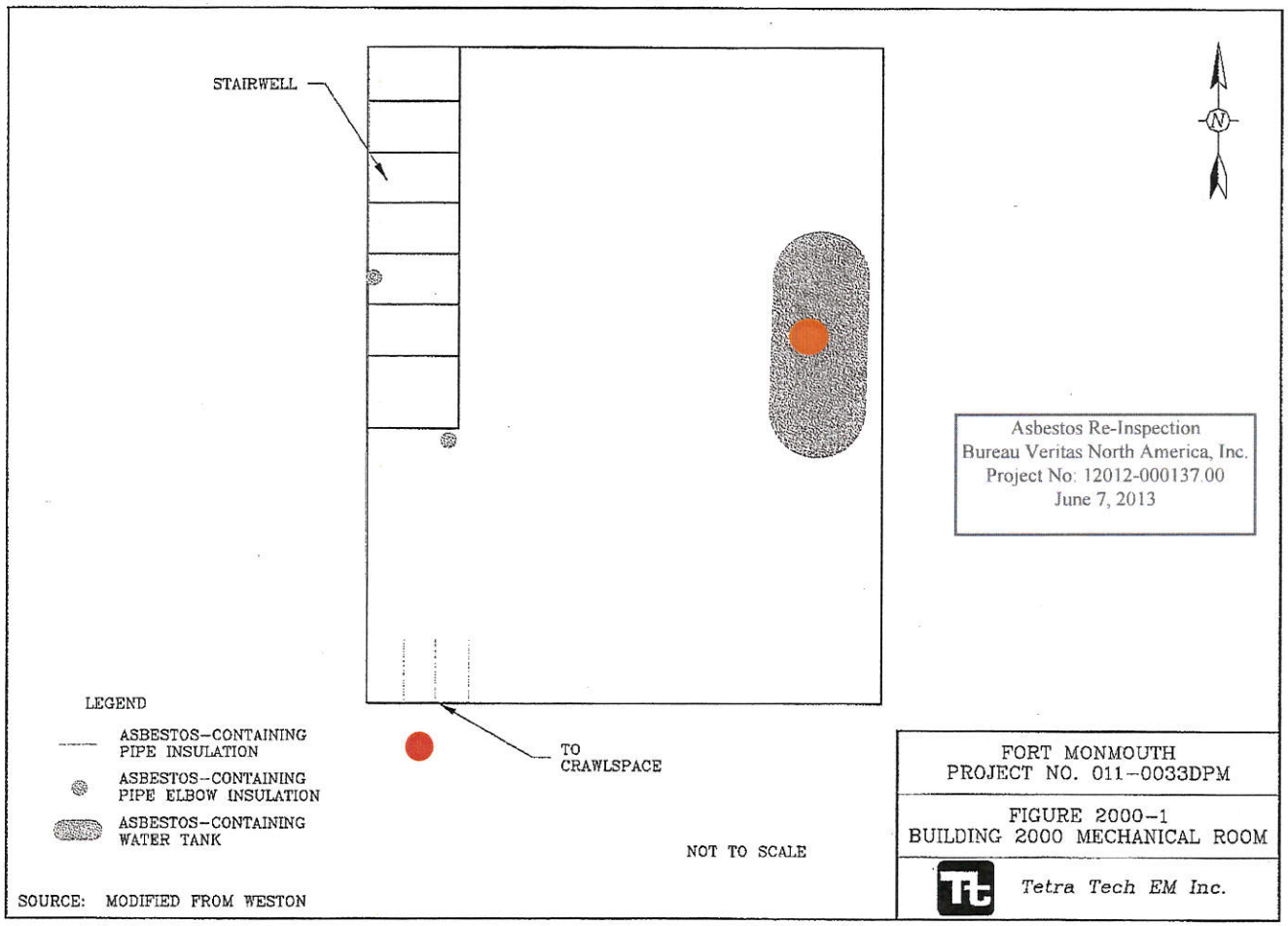
OFFICE OF THE FACILITIES ENGINEER
Fort Monmouth, New Jersey

DRAWN	G. DUCKERS
DESIGNED	FANG
CHECKED	K. DOONEY
PROP BR	ABBOTT
B&G BR	ROBERTS
UTL BR	BELL
USING AGENCY	

MAINTENANCE & REPAIRS OF SPRINKLER SYSTEMS POST WIDE BUILDING 2000

RECOMMENDED: JAMES OTT, Chief Engineering, Plans & Services	SCALE: 1/16" = 1'-0"
APPROVED: PHILIP R. HARRIS, LTC, CE, FACILITIES ENGINEER	DATE: 2-10-81
	PR. NO: 79-86-3415
DRAWING NUMBER: 9756	SHEET 2 OF 11

2000-M



Damaged Tank Insulation

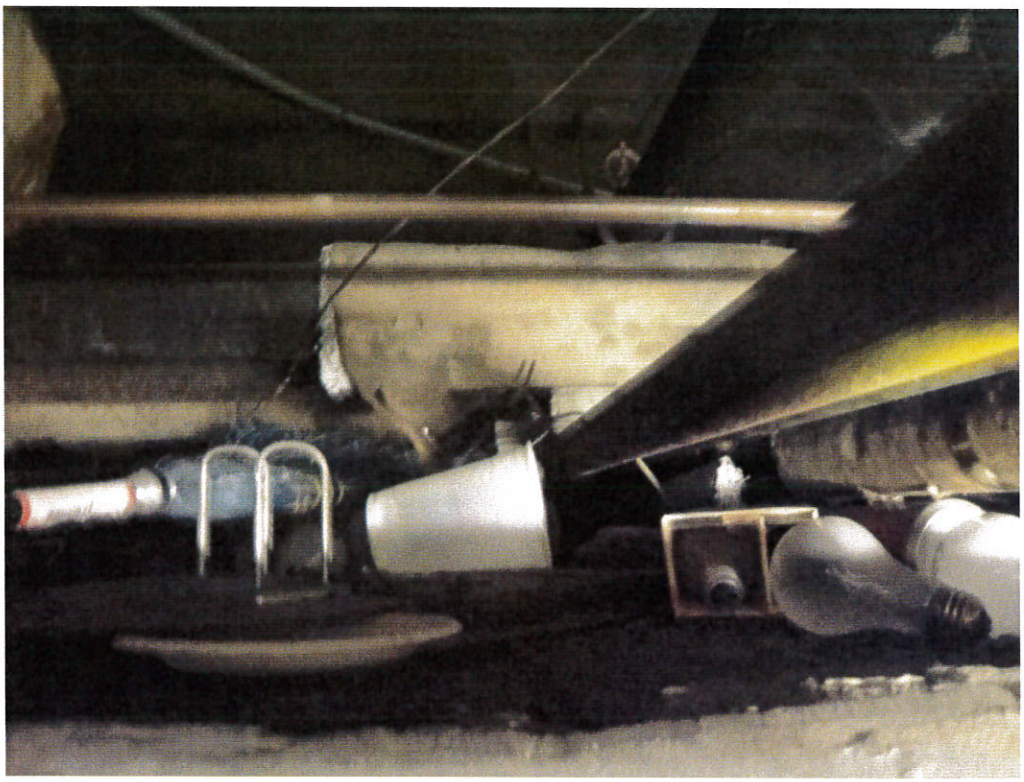
Damaged Pipe Insulation

APPENDIX H

RE-INSPECTION PHOTO DOCUMENTATION

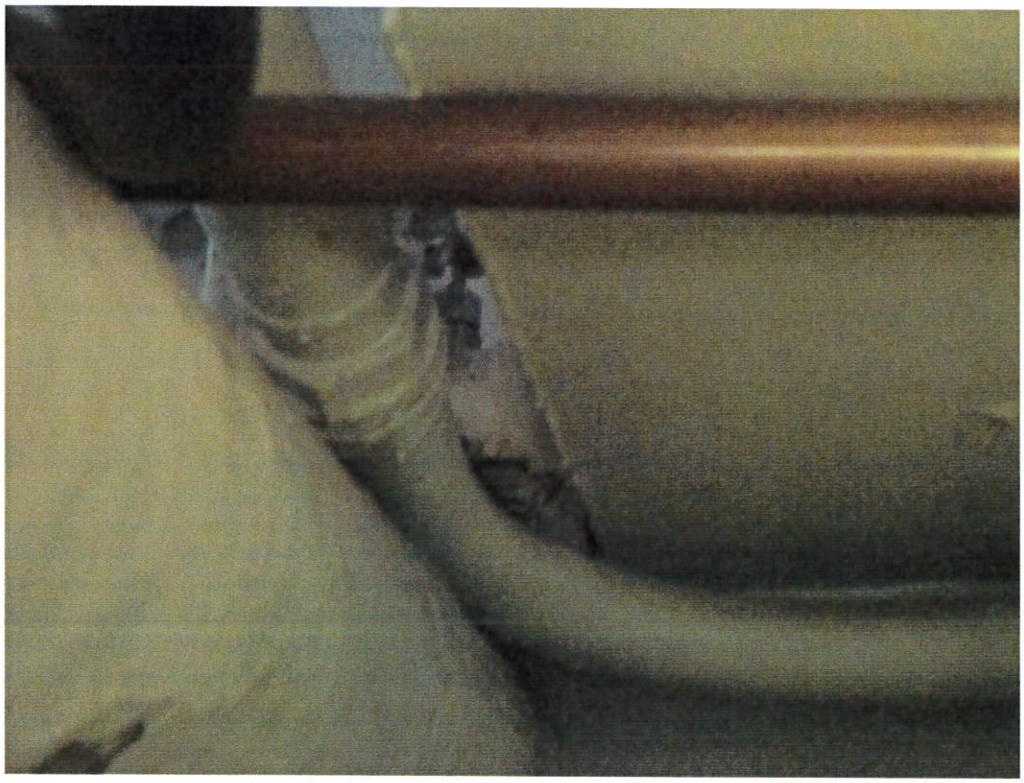
1

Basement, mechanical room (south): Damaged ACM pipe fitting.



2

Basement, Room B-12: Damaged pipe insulation and debris above storage.



#3

Basement, Room B-19: Damaged pipe insulation, above suspended ceiling.

4

Basement, Room B-12A: Damaged pipe insulation and debris above freezer.

5

Basement, Corridor B: Damaged pipe fitting.

6

Basement, mechanical room (north): Damaged pipe insulation.

7

Sub-basement, Boiler Room B-1: Damaged tank insulation.

8

Sub-basement, Boiler Room B-1, pipe tunnel: Damaged pipe insulation and debris.

APPENDIX I

STAFF CREDENTIALS

STATE OF NEW YORK - DEPARTMENT OF LABOR

ASBESTOS CERTIFICATE

ILYA GEDRICH
CLASS(EXPIRES)
C ATEC(04/14) D INSP(04/14)
E MGPL(04/14) H PM (04/14)
I PD (04/14)

CERT# 02-00370
DMV# 541302464

MUST BE CARRIED ON ASBESTOS PROJECTS