FINAL
ASBESTOS SURVEY REPORT AND ABATEMENT PLAN
NATIONAL RAILROAD PASSENGER CORPORATION'S UNION STATION
HV/AC RELOCATION PROJECT
WASHINGTON, DISTRICT OF COLUMBIA

Submitted to:

National Railroad Passenger Corporation
6301 Quad Avenue
Baltimore, Maryland 21205

Prepared by:
Amec Foster Wheeler Environment & Infrastructure, Inc.
751 Arbor Way, Suite 180
Blue Bell, Pennsylvania 19422

Amec Foster Wheeler Project Number 27771-0620
5 February 2016

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1.0 INTRODUCTION

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) conducted an asbestos survey for the proposed HV/AC Relocation Project at Amtrak's Union Station in Washington, DC. A site location map is provided as **Figure 1**.

Amtrak is currently planning to move the HV/AC system at Union Station in Washington, D.C. This project will require the demolition of certain existing building components to facilitate the moving and construction of the HVAC system The objective of this project was to perform a focused asbestos survey of the subject proposed project area and developed an asbestos abatement plan for the asbestos-containing materials identified.

2.0 ASBESTOS INSPECTION PROCEDURES AND RESULTS

Amec Foster Wheeler conducted the asbestos inspection on 23 December 2015. The asbestos inspection was performed in accordance with EPA/AHERA asbestos inspection protocol. The inspection was performed by an EPA/AHERA accredited building Inspector. The general procedures performed during the asbestos inspection were as follows:

1. Inspected area to identify suspected asbestos-containing materials.
2. Segregated each suspected ACM into homogenous areas.
3. Identified sample locations and collected samples. Each sample was sealed in a plastic bag and labeled.
4. Sample IDs were assigned accordingly:
5. HA1 (Homogeneous Area Number); and Sample Number (-1)
6. General photographs of the area and sample locations were taken. The photographic log is included as **Appendix A**.
7. Data from each sample was recorded on a Chain-of-Custody (COC) form.
8. Samples were sent to EMSL Laboratory in Plymouth Meeting, PA for bulk asbestos analysis by USEPA Method 600/R-93/116 and/or USEPA 600/M4-82-020 using polarized light microscopy (PLM) and USEPA Method 600/R-93/116 Section 2.5.5.1 for transmission electron microscopy (TEM). The laboratory analytical report including COC is included as **Appendix B**.

2.1 Asbestos Inspection Results

Amec Foster Wheeler identified three (3) homogeneous areas (HA) in the project area; one (1) HA is surfacing material (spray-on fireproofing), 1 HA is miscellaneous materials (vinyl floor tile with mastic), and 1 presumed miscellaneous material (black HV/AC duct vibration dampener). A schematic of the project area and sampling locations with analysis results is provided as **Figure 2**.

Table 1 below provides a summary of the asbestos inspection results associated with the project area. The laboratory report is included in **Appendix B**.

Table 1. Summary of Asbestos-Sampling Union Station – HV/AC Relocation Project							
Homogeneous Area	**Material Description**	**Locations**	**Condition**	**Quantity***	**Friable (Y/N)**	**Sample ID**	**Asbestos Content**
HA1	Gray Spray-on Fireproofing – Surfacing Material	West Link Mechanical/Electrical Room – Ceiling and Upper Walls	Good	3,500 ft^2	Y	HA1-1	None Detected
						HA1-2	
						HA1-3	
HA2	12”x12” Grayish Floor Tile with Mastic – Miscellaneous Materials	West Link Mechanical/Electrical Room – Floor in Front of Second HV/AC Unit	Good	170 ft^2	N	HA2-1 Tile	**14.6% CH**
						HA2-1 Mastic	**3.8% CH**
						HA2-2 Tile	PS
						HA2-2 Mastic	PS
						HA2-3 Tile	PS
						HA2-3 Mastic	PS
PRESUMED MATERIAL							
HA3	Duct Work Vibration Dampener – Black	East and West Link Mechanical/Electrical Rooms – HV/AC Duct Work	Good	15 ft^2	N	NS	Presumed ACM

Notes:
* Quantities are Approximate
CH. = Chrysotile Asbestos; PS = Positive Stop; NS = Not Sampled

3.0 ASBESTOS ABATEMENT PLAN

Asbestos abatement projects in Washington D.C. are to be conducted in accordance with the Federal Standard for asbestos removal as outlined in the National Emission Standards for Hazardous Air Pollutants (NESHAPS) as codified in 40 CFR Part 61, Subpart M, and the Department of Energy and Environment, District of Columbia Municipal Regulation, Title 20, Chapter 800 – Asbestos Control. The District of Columbia Municipal Regulation is provided as **Appendix C**. Because the material is non-friable floor tile and mastic, and asbestos abatement permit or license is not required for removal. However, OSHA Asbestos Standards for worker protection as codified in 29 CFR 1910.120 and 29 CFR 1926.1101 are applicable and would qualify as a Class II asbestos project work.

3.1 License and Certification Requirements

All companies performing asbestos abatement activities must have an Asbestos Contractor’s License. All asbestos abatement work shall be performed by asbestos workers who maintain a

current and valid Asbestos Hazard Emergency Response Act (AHERA) Worker's License. All asbestos abatement work shall be performed under the oversight of an Asbestos Project Supervisor who maintains a current and valid AHERA Asbestos Project Supervisor License. All Asbestos Workers and the Asbestos Project Supervisor shall wear their certification identification in a visible fashion while engaged in asbestos project activity.

In addition, all asbestos workers and on-site personnel shall have attended and maintain current Amtrak Contractor Safety Training.

3.2 Permit and Notification Requirements

Removal of the 170 square feet (ft^2) of asbestos-containing 12”x12”grayish vinyl floor tiling with mastic from the Amtrak Union Station West Link Mechanical/Electrical room project area is not subject to any permitting or notification requirements under NESHAPS due to the non-friable nature of the material to be removed. However, the District of Columbia does require notification as stated in District of Columbia Municipal Regulation Title 20 Chapter 8, Section 800.4(b)(3), “for removals involving more than eighteen square feet (18 ft^2) of resilient floor covering material, notify the Mayor in writing at least ten (10) days prior to the removal of the time, place, and entity performing the removal and certify that asbestos accreditation is not required under subparagraph (b)(2) of this section.” The Government of District of Columbia, Department of Energy and Environment, Notification of Demolition and Renovation form is provided as **Appendix D**

3.3 Notification of Occupants

As stated in District of Columbia Municipal Regulation Title 20 Chapter 8, Section 800.9, Amtrak shall provide at least 30 calendar days advance notice of intended asbestos abatement activity to all occupants within each work area and areas immediately adjacent to the asbestos project. 3 days prior to engaging in an asbestos abatement project, caution signs measuring twenty (20) inches by fourteen (14) inches will be posted immediately outside all entrances and exits to the project area to inform the public that asbestos abatement will be done.

3.4 Work Area Preparation

The Asbestos-Containing Materials (ACMs) subject to this Asbestos Abatement Plan includes approximately 170 ft^2 of 12”x12”grayish vinyl floor tiling with mastic, located Union Station West Link Mechanical/Electrical room, in front of the HV/AC unit. No other types of thermal system insulation, surfacing material, or miscellaneous ACMs are addressed in this Asbestos Abatement Plan.

This Asbestos Abatement Plan also provides recommended procedures to be implemented by the asbestos abatement subcontractor in order to provide the proper health and safety precautions for the workers involved in the asbestos abatement project.

3.4.1 Work Area Signage

Caution signs meeting the specifications of OSHA 29 CFR 1926.1101 (k)(7) shall be posted at all entrances to a location where airborne concentrations of asbestos may exceed ambient background levels. The caution signs shall be posted in English and in other appropriate languages. The caution sign shall read:

DANGER
ASBESTOS

MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS

AUTHORIZED PERSONNEL ONLY

WEAR RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING IN THIS AREA

This signage will remain in place until the Administrator receives notice of final air monitoring results.

3.4.2 Removal of Occupants and Moveable Objects

All moveable objects within the proposed work area shall be pre-cleaned using HEPA-filtered vacuum equipment and, where feasible, wet cleaning methods, and such objects shall be removed from the work area. Items that are considered asbestos-contaminated do not need to be removed at this stage, but will be disposed of as asbestos waste during the abatement process. Items that cannot be removed shall be pre-cleaned and covered with 6-mil thick plastic sheeting. All floor and wall surfaces shall be HEPA vacuumed prior to the construction of the isolation barrier.

3.4.3 Isolation and Preparation of Work Area

The abatement project work area will be enclosed with air tight six (6) mil thick plastic sheeting using waterproof duct tape.

3.5 Asbestos Removal Procedures

3.5.1 General Procedures

The Resilient Floor Covering Institute issued updated “Recommended Work Practice for Removal of Resilient Floor Coverings” in October 2011. These 2011 recommended practices supersede work practices issued in August of 2004. The 2011 Recommended Work Practices

are provided as **Appendix E**. The following are general requirements that are applicable to this Project:

- No person shall enter the work area during an asbestos project without the proper equipment, clothing, training, and certifications/licenses.
- The asbestos removal contracting company and its supervisor shall ensure that all individuals refrain from eating, drinking, and smoking in the work area.
- Asbestos workers shall wear Tyvek™ suits inside the asbestos work area enclosure, and proceed through the decontamination system to complete the decontamination procedure.
- All workers and authorized visitors shall enter the work area through the worker decontamination enclosure system.
- All individuals who enter the work area shall sign an entry log located at the entrance of the clean room. This log must be signed upon each entry and exit. The entry log shall be a permanently bound notebook and shall identify the facility, work area, owner, agents, contractor(s), project identification, worker respiratory protection being used, and date and time of entry/exit. The postings and log headings shall be in English and in other appropriate languages.
- Enclose the project work area with air tight six (6) mil thick plastic sheeting using waterproof tape.
- HV/AC units shall be turned off and de-energized prior to the commencement of removal activities.
- Flooring and backing may not be sanded.
- Use a non-volatile biodegradable solvent to loosen the mastic. Dry scraping is prohibited.
- Using hand-held scrapers, scrape the loosened mastic from the floor surface,
- Use negative pressure systems inside enclosures that exhaust air through a high-efficiency particulate air (HEPA) filter at a flow rate that changes the air in the work area at least once every fifteen (15) minutes.
- Deposit all asbestos-containing materials into polyethylene bags appropriately labeled according to 29 CFR 1926.1101, 6 mil thick and seal the bags using duct tape.
- Wet wipe all surfaces of the work area.
- Asbestos-containing waste materials should be separated from other wastes and kept in a secure area until removal from the site. Removal shall take place within seven (7) days of completion of the asbestos abatement. Disposal of waste will be in accordance with the provisions of 40 CFR 61.150.

3.5.2 Work Area Cleanup Procedures

The following are general work area cleanup procedures applicable for this project:

- Surfaces in the work area will be cleaned until no residue is visible and the measured air born concentration of asbestos fibers longer than five (5) microns is less than one hundredth (0.01) fiber per cubic centimeter. Asbestos fiber measurements will be in accordance with the provisions of 40 CFR 61.50.

3.6 Air Monitoring Requirements

Two types of air monitoring shall be required for asbestos abatement projects addressed in this Asbestos Abatement Plan: (1) Asbestos Project Air Sampling and (2) Asbestos Worker Air Sampling.

An independent, certified laboratory shall analyze air samples using Phase Contrast Microscopy (PCM). The analytical results of all air sampling shall be posted outside the work area in an area that is readily accessible to asbestos workers and other authorized persons.

The API shall be responsible for performing the required Asbestos Project Air Sampling, which shall consist of the following:

- **Pre-Test Samples** to establish the baseline level of airborne asbestos fibers in those areas where asbestos abatement work is to be conducted and in those areas immediately adjacent to the asbestos abatement work areas. A minimum of three (3) pre-test air samples shall be collected from the proposed work area prior to the abatement. The pre-test samples shall be collected prior to commencement of any asbestos abatement work and under routine conditions of normal occupancy wherever possible. The pre-test samples shall be analyzed by PCM.
- **Project Samples** shall be collected during the asbestos abatement activities to: (1) determine airborne concentrations of asbestos fibers inside of the asbestos abatement work area in order to evaluate the work practices, the level of necessary respiratory protection, and the risk of contamination posed to adjacent non-asbestos work areas; and (2) to evaluate the effectiveness of the isolation barrier and to ensure than no asbestos fibers are being released into “clean” areas as a result of asbestos abatement activities. The project samples shall be collected from both inside and outside the asbestos abatement work area on a daily basis throughout the course of the asbestos abatement activities. The project samples shall be collected at representative places throughout the work area and analyzed by PCM on a 24-hour, turn-around time basis.
- **Clearance Samples** shall be collected to determine if the asbestos abatement project was conducted in a proper manner and to identify whether or not the area is safe for re-occupancy. PCM shall be used on all clearance samples for this project. The clearance samples shall be collected after the asbestos abatement contractor has completed all abatement and cleanup activities, and after the work area has passed visual inspection. A minimum of 2 clearance samples will be collected from within the work area, along with 2 “ambient” air samples collected outside of the asbestos abatement work area. The clearance samples shall be collected using aggressive sampling methods.

3.7 Project Completion

The asbestos abatement shall be considered complete at the point where each work area has passed final inspection by meeting the following conditions:

- Via visual inspection, the area contains no visible dust or debris, and

- That the airborne asbestos level in the work area does not exceed the re-occupancy standard of 0.01 f/cc.

3.8 Disposal of Asbestos Waste

All contaminated debris, personal protective equipment, decontamination water, containment structure polyethylene, and other disposable and/or asbestos-contaminated items shall be disposed of as asbestos waste at a landfill approved to accept asbestos waste in accordance with applicable USEPA regulations. All asbestos waste shall be placed into the appropriate polyethylene asbestos disposal bags and/or leak-tight drums with the required warning label printed on each bag. The following lists additional asbestos waste disposal procedures:

- As asbestos-contaminated materials are removed, they shall be thoroughly wetted and placed into 6-mil plastic disposal bags.
- Asbestos-contaminated materials, such as plastic sheeting, clothing, and other items, shall be placed into 6-mil plastic disposal bags.
- No emissions of asbestos dust shall be visible during the transport of asbestos or asbestos-contaminated waste.
- Amtrak, and/or its designated representative, shall be provided copies of all disposal manifests which have been signed by the disposal facility.

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FIGURES

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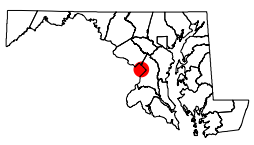
SOURCE:
AERIAL IMAGE FROM earthexplorer.usgs.gov,
WASHINGTON, D.C., OCTOBER, 2013.



SITE VICINITY

Amec Foster Wheeler
Environment & Infrastructure, Inc.
751 Arbor Way, Suite 180
Blue Bell, PA 19422
Tel. 610-828-8100
www.amecfw.com

CLIENT
Amtrak®
NATIONAL RAILROAD PASSENGER CORP.
PHILADELPHIA, PA 19104

PROJECT
AMTRAK UNION STATION HVAC PROJECT ASBESTOS SURVEY
40 MASSACHUSETTS AVENUE NE
WASHINGTON, D.C. 20002

PROJECT NO.: 277710620
REVISION NO.: 0
DATE: JANUARY 2016

PROJECTION / DATUM: MD83F
0 150' 300'
SCALE: 1" = 300'

PREPARED BY: PJC
CHECKED BY: JRS
REVIEWED BY: JRS

TITLE
SITE LOCATION MAP

FIGURE NO.: 1

H:\Amtrak\2012 Environmental Services Contract Projects\27771-0620 - Union Station HVAC Project Asbestos Survey\Figures\Union Station HVAC Survey.dwg Wed, 06 Jan 2016 - 11:21am philip.carney Layout: Fig 1 Site Location Map

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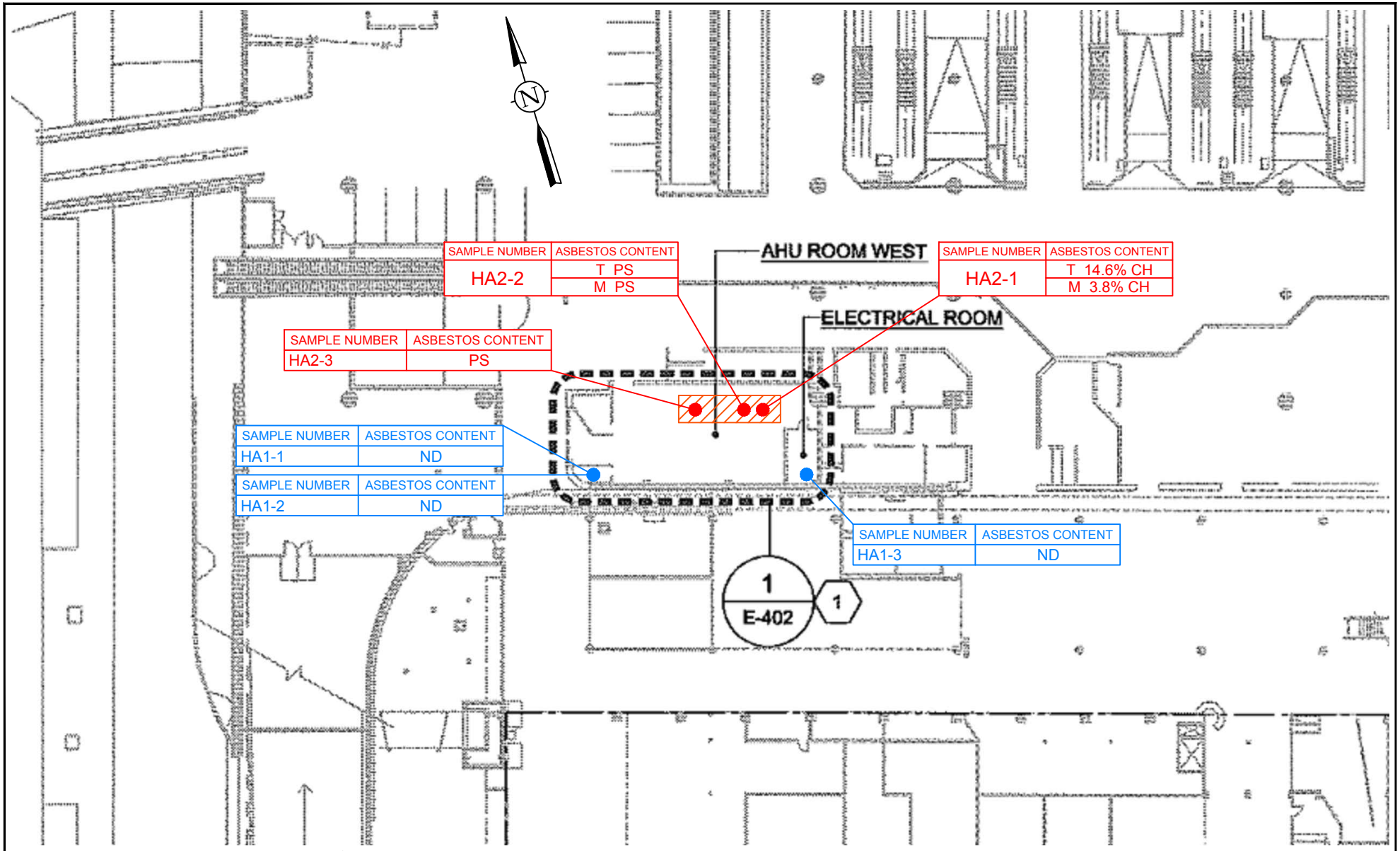

SOURCE:
PLAN ENTITLED "CONCOURSE LEVEL OVERALL PLAN", PREPARED BY SYSTRA, LITTLE FALLS, NJ, DATED JUNE 7, 2015.

HA2 - 12" x 12" GRAYISH FLOOR TILE WITH MASTIC

CH	CHRYSOTILE	PS	POSITIVE STOP
T	FLOOR TILE	ND	NOT DETECTED
M	MASTIC		

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PROJECT
AMTRAK UNION STATION HVAC PROJECT ASBESTOS SURVEY
40 MASSACHUSETTS AVENUE NE
WASHINGTON, D.C. 20002

PROJECT NO.: 277710620
REVISION NO.: 0
DATE: JANUARY 2016

PROJECTION / DATUM: NONE
NO SCALE

PREPARED BY: PJC
CHECKED BY: JRS
REVIEWED BY: JRS

TITLE
ASBESTOS SAMPLE LOCATIONS WITH RESULTS
WEST LINK MECHANICAL ROOM

FIGURE NO.: 2

H:\Amtrak\2012 Environmental Services Contract Projects\27771-0620 - Union Station HVAC Project Asbestos Survey\Figures\Union Station HVAC Survey.dwg Tue, 02 Feb 2016 - 3:37pm philip.carney Layout: Fig 2 Asbestos Sample Locations

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APPENDIX A

PHOTOGRAPHIC LOG

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Photo 1. Homogeneous Area 1 (HA1), spray-on fireproofing. Asbestos not detected.

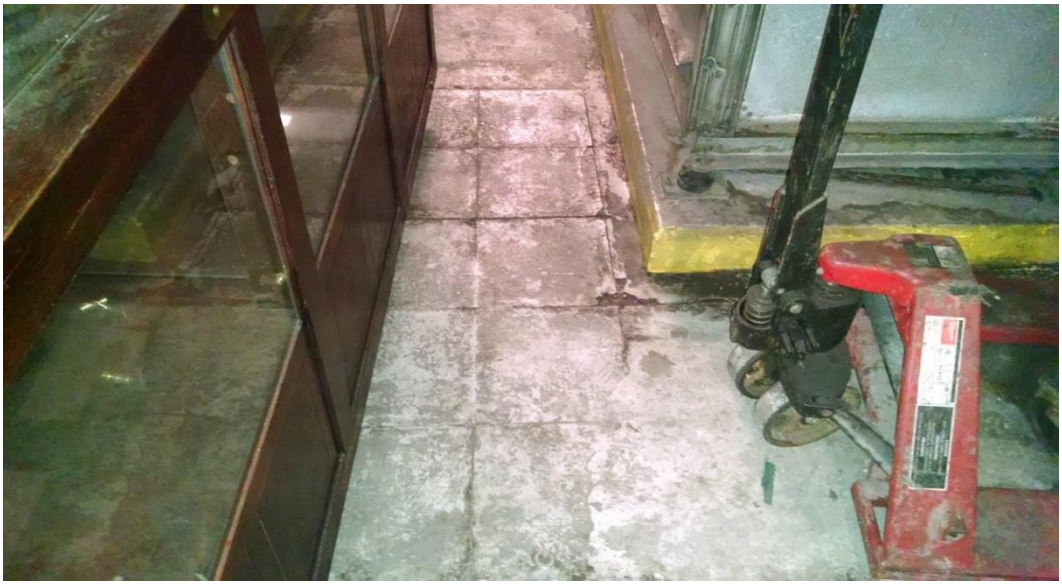

Photo 2. Homogeneous area HA2, grayish 12”x12” floor tile with mastic. **14.6% Chrysotile – Floor Tile; 3.8% Chrysotile - Mastic**.

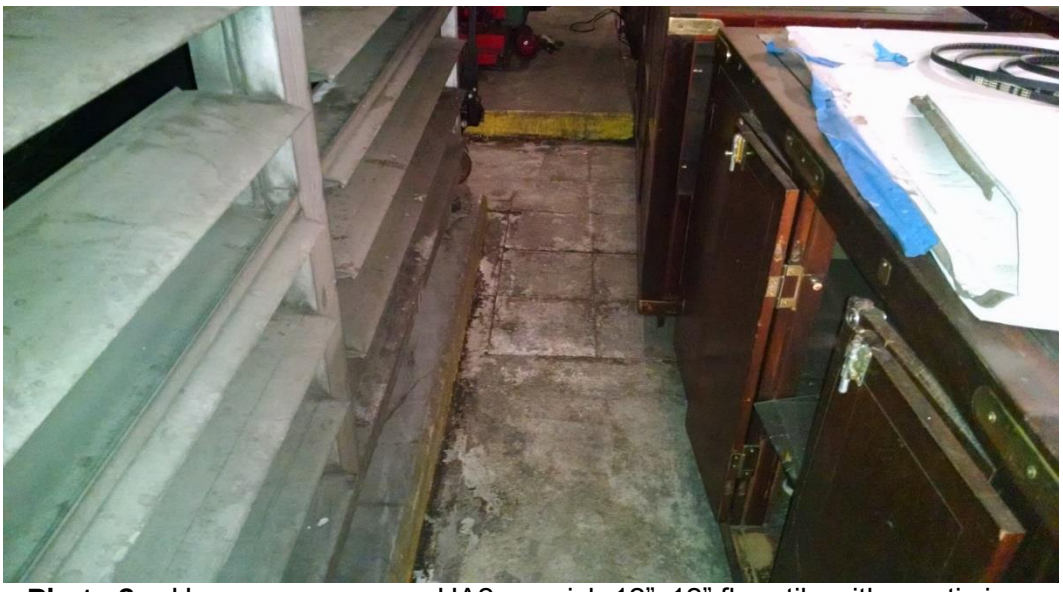

Photo 3. Homogeneous area HA2, grayish 12”x12” floor tile with mastic in front HV/AC unit.

Photo 4. Homogeneous area HA3, black HV/AC vibration dampener. Presumed asbestos containing material.

APPENDIX B

EMSL ANALYTICAL, INC. ASBESTOS REPORT

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EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041537590
Customer ID:	AMECKK25
Customer PO:	CO12309970
Project ID:	

Attn:	Jason Straut	Phone:	(610) 828-8100
	AMEC Foster Wheeler E & I	Fax:	(610) 941-9707
	751 Arbor Way	Collected:	12/23/2015
	Suite 180	Received:	12/28/2015
	Blue Bell, PA 19422	Analyzed:	12/30/2015
Proj:	27771-0620 / HVAC		

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116 Method via Polarized Light Microscopy

Client Sample ID: HA1-1 ***Lab Sample ID:*** **041537590-0001**

Sample Description: Corner storage room (Light bulb rm)/Spray on fireproofing/sound damper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	12/30/2015	Gray	35%	65%	None Detected	

Client Sample ID: HA1-2 ***Lab Sample ID:*** **041537590-0002**

Sample Description: Corner storage room (Light bulb rm)/Spray on fireproofing/sound damper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	12/30/2015	Gray	40%	60%	None Detected	

Client Sample ID: HA1-3 ***Lab Sample ID:*** **041537590-0003**

Sample Description: Electrical panel closet room/Spray on fireproofing/sound damper

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	12/30/2015	Gray	50%	50%	None Detected	

Client Sample ID: HA2-1-Floor Tile ***Lab Sample ID:*** **041537590-0004**

Sample Description: W link mech room floor front of large blower unit/12x12 grayish vinyl floor tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
TEM Grav. Reduction	12/29/2015	Gray	0.0%	85.4%	**14.6% Chrysotile**	

Client Sample ID: HA2-1-Mastic ***Lab Sample ID:*** **041537590-0004A**

Sample Description: W link mech room floor front of large blower unit/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
TEM Grav. Reduction	12/29/2015	Black	0.0%	96.2%	**3.8% Chrysotile**	

Client Sample ID: HA2-2-Floor Tile ***Lab Sample ID:*** **041537590-0005**

Sample Description: W link mech room floor front of large blower unit/12x12 grayish vinyl floor tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
TEM Grav. Reduction	12/29/2015				Positive Stop (Not Analyzed)	

Client Sample ID: HA2-2-Mastic ***Lab Sample ID:*** **041537590-0005A**

Sample Description: W link mech room floor front of large blower unit/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
TEM Grav. Reduction	12/29/2015				Positive Stop (Not Analyzed)	

EMSL Analytical, Inc.

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Phone/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order ID:	041537590
Customer ID:	AMECKK25
Customer PO:	CO12309970
Project ID:	

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116 Method via Polarized Light Microscopy

Client Sample ID: HA2-3-Floor Tile ***Lab Sample ID:*** **041537590-0006**

Sample Description: Side of flooring area closest to HVAC unit/12x12 grayish vinyl floor tile

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
TEM Grav. Reduction	12/29/2015				Positive Stop (Not Analyzed)	

Client Sample ID: HA2-3-Mastic ***Lab Sample ID:*** **041537590-0006A**

Sample Description: Side of flooring area closest to HVAC unit/Mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
TEM Grav. Reduction	12/29/2015				Positive Stop (Not Analyzed)	

EMSL Analytical, Inc.

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Phone/Fax: (800) 220-3675 / (856) 786-5974
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EMSL Order ID:	041537590
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Attn:	Jason Straut	Phone:	(610) 828-8100
	AMEC Foster Wheeler E & I	Fax:	(610) 941-9707
	751 Arbor Way	Collected:	12/23/2015
	Suite 180	Received:	12/28/2015
	Blue Bell, PA 19422	Analyzed:	12/30/2015
Proj:	27771-0620 / HVAC		

The samples in this report were submitted for asbestos bulk analysis. The reference number for these samples is the Order ID above. Please use this reference number when calling about these samples.

Sample Receipt Date:	12/28/2015	Sample Receipt Time:	10:45 am
Analysis Completed Date:	12/30/2015	Analysis Completed Time:	7:43 am

Analyst(s):

Frank Dicrescenzo PLM (1)

Jillian Yurick PLM (2)

Wayne Froehlich TEM Grav. Reduction (2)

Reviewed and approved by:

Benjamin Ellis, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. This test report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. EMSL bears no responsibility for sample collection activities or analytical method limitations. The laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. PLM alone is not consistently reliable in detecting asbestos in floor coverings and similar NOBs

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036

OrderID: 041537590

EMSL Analytical, Inc.
521 Plymouth Road, Suite 10

Plymouth Meeting, PA 19462
PHONE: (610) 828-3102
FAX: (610) 828-3122

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 041537590

Company : Amec Foster Wheeler	**EMSL-Bill to:** ☑ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: Hillcrest I 751 Arbor Way; Suite 180	
City: Blue Bell **State/Province:** PA	**Zip/Postal Code:** 19422 **Country:** United States
Report To (Name): Jason Straut	**Telephone #:** 610-877-6005
Email Address: jason.straut@amecfw.com	**Fax #:** 610-828-6700 **Purchase Order:** CO12309970
Project Name/Number: 27771-0620/HVAC	**Please Provide Results:** ☐ Fax ☑ Email ☐ Mail
U.S. State Samples Taken: Washington D.C.	**CT Samples:** ☐ Commercial/Taxable ☐ Residential/Tax Exempt

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ■ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

**For TEM Air 3 hr through 6 hr, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.*

PLM - Bulk (reporting limit)	TEM – Bulk
■ PLM EPA 600/R-93/116 (<1%)	■ TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1
☐ PLM EPA NOB (<1%)	☐ NY ELAP Method 198.4 (TEM)
Point Count ☐ 400 (<0.25%) ☐ 1000 (<0.1%)	☐ Chatfield Protocol (semi-quantitative)
Point Count w/Gravimetric ☐ 400 (<0.25%) ☐ 1000 (<0.1%)	☐ TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2
☐ NIOSH 9002 (<1%)	☐ TEM Qualitative via Filtration Prep Technique
☐ NY ELAP Method 198.1 (friable in NY)	☐ TEM Qualitative via Drop Mount Prep Technique
☐ NY ELAP Method 198.6 NOB (non-friable-NY)	**Other**
☐ OSHA ID-191 Modified	☐
☐ Standard Addition Method	

RECEIVED
EMSL
CINNAMINSON, NJ
15 DEC 28 AM 9:08

■ **Check For Positive Stop – Clearly Identify Homogenous Group** **Date Sampled:** 12/23/2015

Samplers Name: Jason Straut **Samplers Signature:** Jason R. Straut

Sample #	HA #	Sample Location	Material Description
HA1-1	HA1	Corner Storage Room (Light Bulb Rm.)	Spray on fire proofing/sound damper
HA1-2	HA1	Corner Storage Room (Light Bulb Rm.)	Spray on fire proofing/sound damper
HA1-3	HA1	Electrical Panel Closet Room	Spray on fire proofing/sound damper
HA2-1	HA2	W. Link Mech. Room floor in front of large blower unit	12"x12" grayish vinyl fl. Tile with mastic
HA2-2	HA2	W. Link Mech. Room floor in front of large blower unit	12"x12" grayish vinyl fl. Tile with mastic
HA2-3	HA2	Side of flooring area closest to HV/AC unit	12"x12" grayish vinyl fl. Tile with mastic

TEM

Client Sample # (s): **Total # of Samples:** 6

Relinquished (Client): Jason R. Straut **Date:** 12/24/2015 **Time:** 1047

Received (Lab): **Date:** 12/24/15 **Time:** 1045

Comments/Special Instructions:
48 Hour TAT; Also email results to brian.sariano@amecfw.com; HA is TEM analysis

Drop Box

Recd KD Fx 9:00 AM 12.28.2015

Page 1 of ____ pages

Per Jason HA2 directly to TEM 12.28.15 10:45 AM

APPENDIX C

DEPARTMENT OF ENERGY AND ENVIRONMENT, DISTRICT OF COLUMBIA MUNICIPAL REGULATION, TITLE 20, CHAPTER 8 – ASBESTOS CONTROL

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800 CONTROL OF ASBESTOS

800.1 The requirements of 40 CFR 61.141, 61.145, 61.146, 61.150, 61.152, and 61.154 (July 1, 1994 Edition), are hereby adopted by reference, with the terms used and defined, except that:

(a) The word "Administrator" as used in the CFR sections shall be taken to mean "Director of the District Department of the Environment";

(b) Planned renovation operations subject to § 800 shall not be started prior to receipt of written approval therefor from the Administrator; and

(c) Demolition operations subject to § 800, except for those subject to 40 CFR § 61.145(a)(3), shall not be started prior to receipt of written approval therefor from the Administrator.

800.2 For the convenience of persons subject to the requirements of § 800.1, Appendix No. 4 to this Subtitle contains pertinent parts of 40 CFR 61, Subpart M (July 1, 1994 Edition) which includes the sections cited in § 800.1. Appendix No. 4 was published in the D.C. Register on June 21, 1996 at 43 DCR 3305.

800.3 To qualify for an asbestos abatement permit or license, a business entity or person shall:

(a) Comply with the requirements of the Asbestos Licensing and Control Act of 1990, effective May 1, 1990 (D.C. Law 8-116; D.C. Code § 6-991 et seq.), as amended by the Asbestos Licensing and Control Act of 1990 Amendment Act of 1993, effective October 15, 1993 (D.C. Law 10-37; D.C. Code § 6-991 et seq.) and the requirements set forth in these rules; and

(b) Show evidence of having completed a course of instruction on asbestos abatement accredited by EPA under the Asbestos Hazard and Emergency Response Act, or at least as stringent as the requirements of 40 CFR 763, Subpart E, Appendix C (July 1, 1994 Edition); and

(c) Be considered to be qualified for a license by endorsement if the business entity or person is licensed in a state whose requirements are judged by the Administrator to be at least as stringent as those of the District of Columbia.

800.4 The following exemptions apply:

(a) An asbestos abatement permit or license is not required for the removal of nonfriable asbestos containing material; and

(b) An asbestos abatement permit, business entity or asbestos worker licenses and recordkeeping requirements of the Act and its amendments are not required for the removal of, or other activity involving, resilient floor covering materials, including sheet vinyl, resilient tile, and associated adhesives, provided that the business entity persons performing the removal:

(1) follow the resilient floor covering manufacturers' recommended work practices for removal;

(2) are not required to obtain asbestos accreditation under applicable federal asbestos requirements and regulations promulgated by the United States Environmental Protection Agency (EPA); and

(3) for removals involving more than 18 square feet of resilient floor covering material, notify the Mayor in writing at least 10 days prior to the removal of the time, place and entity performing the removal and certify that asbestos accreditation is not required under subparagraph (2) of this paragraph.

(c) The requirements of Section 800 apply to removals and other activity involving resilient floor covering materials only to the extent they are required under applicable federal asbestos requirements, including the Occupational Safety and Health Act (OSHA) asbestos standards and the EPA asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP).

800.5 To apply for or to renew a permit or license, a business entity or person shall submit a completed application and pay the fee listed below, by certified check made payable to the D.C. Treasurer:

(a) License Fee Schedule

TYPE OF LICENSE	FEE
Asbestos Worker	$ 60/2 years
Business Entity	$ 600/2 years

(b) Permit Fee Schedule

AMOUNT OF RACM REMOVED	FEE
261 - 2,600 linear feet or 161 - 1,600 square feet	$ 520
Greater than 2,600 linear feet or Greater than 1,600 square feet	$ 910

(c) A blanket permit, valid for one year, may be granted to a business entity that has entered into a contract for asbestos abatement at a specific site. The fee will be seven hundred dollars ($ 700).

(d) The license shall expire two (2) years from the date of issuance.

(e) The renewal fee shall be the same as the current license fee.

(f) Fees will be adjusted annually based on the Washington, D.C. All Items Consumer Price Index for All Urban Consumers for March of the preceding fiscal year.

800.6 To provide asbestos worker protection, a business entity or person shall:

(a) In accordance with 29 CFR 1926.58, designate a "Competent Person" who will have the authority to suspend and start up operations when deviations from regulations occur;

(b) Submit to the Administrator a written respiratory protection program as defined in OSHA regulations 29 CFR 1910.134 and 29 CFR 1926.58;

(c) Provide disposable protective clothing, including gloves, hair covers, and respirators approved by the National Institute of Occupational Safety and Health and capable of being qualitatively fit tested using positive and negative methods;

(d) Ensure that each asbestos worker has been examined by a physician within the preceding year and has been declared capable of working while wearing a respirator;

(e) Ensure that each asbestos worker receives an annual safety training review course in accordance with 29 CFR 1926.58(k)(3)(4); and

(f) Ensure that there is no smoking, eating, or drinking in the work area.

800.7 To control emissions from an asbestos abatement subject to the requirements of § 800.1, a business entity or person shall:

(a) Display caution signs, measuring at least twenty (20) inches by fourteen (14) inches, wherever airborne asbestos fibers may be present, in accordance with the provisions of 29 CFR 1926.58 (k)(1); and

(b) Except in emergency situations and except as provided in (c) of this subsection, at least three (3) days before engaging in an asbestos abatement, post these signs immediately outside all entrances to and exits from the work site or asbestos abatement to inform the public in the immediate vicinity that asbestos abatement will be done and keep the signs posted until the Administrator receives notice of final air monitoring results as provided in (j) of this subsection.

(c) Utility companies are not required to post signs three (3) days before an asbestos abatement, but shall comply with any federal regulations regarding the posting of signs.

(d) Enclose work areas with airtight six (6) millimeter thick plastic sheeting using water-proof duct tape;

(e) Wet regulated asbestos-containing material to be removed with a solution containing one (1) fluid ounce of surfactant mixed with five (5) gallons of water to minimize dust;

(f) Deposit all asbestos-containing waste materials in plastic bags of at least six (6) millimeters thickness and seal the bags;

(g) Label the bags as asbestos waste in accordance with the provisions of 29 CFR 1926.58(k)(2) and specify the date that the bag was sealed and the license number of the business entity;

(h) Separate asbestos-containing waste materials from other waste and keep in a secure area until removal, within seven (7) days of completion of the asbestos abatement, and disposal, in accordance with the provisions of 40 CFR 61.150;

(i) Clean all surfaces in the work area until no residue is visible and the measured airborne concentration of asbestos fibers longer than five (5) microns is less than one hundredth (0.01) fiber per cubic centimeter using the methods specified in 40 CFR 763, Subpart E, Appendix A (July 1, 1994 Edition);

(j) Within twenty four (24) hours after receiving final written monitoring results of at least two (2) samples per two thousand five hundred (2,500) square feet of floor area, submit to the Administrator the data indicating asbestos concentration in the work area after cleaning and before barriers are removed;

(k) Use negative pressure systems inside enclosures that exhaust air through a high-efficiency particulate air (HEPA) filter at a flow rate that changes the air at least once every fifteen (15) minutes and where practical, are vented to outside air; and

(l) Comply with the provisions of 40 CFR 763 Subpart E, Appendix A (July 1, 1994 Edition) when using the glovebag method.

800.8 The Administrator may, on a case-by-case basis, approve an alternative procedure for control of emissions from an asbestos abatement provided that the business entity submits a written description of the alternative procedure to the Administrator and demonstrates to the satisfaction of the Administrator that compliance with the prescribed procedures is not practical or not feasible, or that the proposed alternative provides equivalent control of asbestos.

800.9 To notify occupants of sites of impending asbestos abatement, a building owner or designated representative shall inform occupants, not less than thirty (30) days prior to commencement of the asbestos abatement, of the health or safety factors that necessitate the asbestos abatement and the procedures that will be taken to protect the health, safety, and possessions of the occupants. The business entity shall inform the building owner or designated representative of this notification requirement. The Administrator may waive this notification requirement in the case of an emergency renovation operation.

AUTHORITY: Unless otherwise noted, the authority for this chapter is § 412 of the District of Columbia Self- Government and Governmental Reorganization Act, as amended, 87 Stat. 790, Pub. L. No. 93-198, D.C. Code § I - 227(a); and § 3 of the District of Columbia Air Pollution Control Act of 1984, D.C. Law 5-165, D.C. Code § 6-906 (1995 Repl. Vol.), Mayor's Order 93-12 dated February 16, 1993.

SOURCE: Final Rulemaking published at 36 DCR 2554, 2555 (April 14, 1989); as amended by final rulemaking published at 45 DCR 7037(October 2, 1998); as amended by final rulemaking published at 47 DCR 9692 (December 8, 2000); as amended pursuant to the authority granted by Title XII of the “Fiscal Year 2003 Budget Support Amendment Act of 2002,” “Other-Type Funds and Adjustment to Other Fess and Charges” (D.C. Act 14-543), published at 49 DCR 11562 (December 20, 2002).

APPENDIX D

DEPARTMENT OF ENERGY AND ENVIRONMENT, NOTIFICATION OF DEMOLITION AND RENOVATION FORM

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GOVERNMENT OF THE DISTRICT OF COLUMBIA
Department of Energy and Environment

Print Form

Save As

Air Quality Division

NOTIFICATION OF DEMOLITION AND RENOVATION

To be filled out by DDOE

Operator Project #: | Postmark Date: | Date Received: | Notification #:

Section I: Title of Notification

Notification Type: ☐ Original ☐ Revised* ☐ Cancelled ☐ Courtesy

** Highlight changes on Revised Notification*

Date of Notification:

Permit No.:

Section II: Facility Information *(Identify owner, removal contractor, and other operators)*

Owner Name:

Address:

City: State: Zip Code:

Contact:

Phone #:

Email:

Removal Contractor:

Address:

City: State: Zip Code:

Contractor License #: Expiration Date:

Contact #1:

Phone #:

Email:

Other Operator:

Address:

City: State: Zip Code:

Contact:

Phone #:

Email:

Section III: Type of Operation

☐ Ordered Demo ☐ Demo ☐ Renovation ☐ Emergency Renovation

☐ NESHAP

☐ Non-NESHAP

Is Asbestos Present?

☐ **Yes** ☐ **No**

Section IV: Facility Description *(Including building name, number and floor or room numbers)*

Building Description:

Address: Zip Code: Building Type:

Asbestos Removal Location (e.g., 1st floor, etc.):

Building Size: # of Floors: Building Age (Years):

Present Use: Prior Use:

Comments:

Section V: Procedure, Including Analytical Method if Appropriate, used to Detect the Presence of Asbestos Material

Section VI: Description of Asbestos to be Removed

ACM to be Removed (e.g., floor tile, mastic, pipe insulation, etc.)	Amount to be Removed	Unit of Measure

Section VII: Project Dates

	Start Date	End Date		Start Date	End Date
Schedule of Demo/Renovation:			Scheduled of Asbestos Removal:		

Hours of Operation for Asbestos Removal:

Mon		Tue		Wed		Thu	
Fri		Sat		Sun			

Section VIII: Description of Work and Controls

Describe the abatement method used for each type of material listed in Section VI:

Section IX: Waste Transportation Information

Waste Transporter #1: | Contact:

Address: | Phone #:

City: | State: | Zip Code: | Email:

Waste Transporter #2: | Contact:

Address: | Phone #:

City: | State: | Zip Code: | Email:

Section X: Waste Disposal Information

Waste Disposal Site: | Contact:

Address: | Phone #:

City: | State: | Zip Code: | Email:

If Abatement or Disposal Ordered by a Government Agency, Please Identify the Agency:

Name: | Title:

Authority:

Date of Order: | Date Ordered to Begin:

Section XI: Emergency Renovation/Demolition Information

Date of Emergency: | Hour of Emergency:

Description of the sudden or unexpected event:

Explanation of how the event caused unsafe conditions, or would cause equipment damage or unreasonable financial burden:

Section XII: Unexpected Asbestos

Description of procedures to be followed in the event that unexpected asbestos is found or previously nonfriable asbestos material becomes crumbled, pulverized, or reduced to powder.

Section XIII: Certification

I certify that an individual trained in the provisions of this regulation (40 CFR, Part 61, Subpart M) will be on-site during the demolition or renovation and evidence that the required training has been accomplished by this person will be available for inspection during normal business hours. *(Required 1 year after promulgation)*

Date | ***Signature of Owner/Operator***

I certify that the above information is correct.

Date | ***Signature of Owner/Operator***

INSTRUCTIONS

Section I: Title of Notification

- Select the notification type: Original notification: Revised notification, Cancel a previously submitted notification, or a Courtesy notification (no requirements to submit a courtesy notification under federal or DC regulations).
- Enter the date that the notification is submitted, and a permit number if an existing permit exists.

Section II: Facility Information

- Enter a contact name, address, phone number and email for the building owner, removal contractor and other operator that may be relevant. For the removal contractor include a license number and a date of expiration for their license.

Section III: Type of Operation

- Indicate whether the job is an Ordered Demo, a Demo, a Renovation, or an Emergency Renovation
- Indicate if the job is a NESHAP or Non-NESHAP job, and if there is asbestos present.

Section IV: Facility Description

- Enter the address of the building(s) where the job will take place, and indicate what type of building it is (i.e., Commercial, Government, Hospital, Residential, School, or Other).
- Provided details on the facility description including the age, present and prior use of the building, the number of floors in which the project will take place, and any other comments needed to provide sufficient detail of the work area.

Section V: Procedure, Including Analytical Method, if Appropriate, used to Detect the Presence of Asbestos Material

- Indicate details on how the ACM will be detected and removed.

Section VI: Description of Asbestos to be Removed

- Indicate on each line a description of the types of ACM to be removed, and the quantities (in units of linear feet, square feet or cubic feet) to be removed.

Section VII: Project Dates

- Indicate the dates of the project and asbestos removal (start and end), as well as the normal times of operation for the project.

Section VIII: Description of Work and Controls

- Enter as much detail as possible on the project itself, and the methods to prevent the release of asbestos fibers.

Section IX: Waste Transportation Information

- Provide the name, address and contact information for the waste transportation contractors used for this project.

Section X: Waste Disposal Information

- Provide the name, address and contact information for the waste disposal facility used for this project. If the disposal was ordered by a Government agency, provide the name of the agency and contact information for the agency.

Section XI: Emergency Renovation/Demolition Information

- Provide the date, time and description of the emergency situation, and provide an explanation of how this situation will cause unsafe conditions, or would cause equipment damage or unreasonable financial burden.

Section XII: Unexpected Asbestos

- Describe procedures to be followed in the event that unexpected asbestos is found, or previously nonfriable ACM becomes crumbled, pulverized, or reduced to powder.

Revised Notifications

- Include the Permit Number, and highlight the changes on the Notification form to expedite the review process.
- If there is an increase in the quantity of material abated, include the additional fee with the submission of the revised notification.

APPENDIX E

RECOMMENDED WORK PRACTICE FOR REMOVAL OF RESILIENT FLOOR COVERINGS – OCTOBER 2011

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Recommended Work Practices for Removal of Resilient Floor Coverings

Supersedes Recommended Work Practices Published in August 2004

OCTOBER 2011

RFCi

Resilient Floor Covering Institute

115 Broad Street, Suite 201, LaGrange, GA 30240 | phone: 706.882.3833
fax: 706.882.3880 | www.rfci.com

RFCI
Resilient Floor Covering Institute

Recommended Work Practices for Removal of Resilient Floor Coverings

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive.

These products may contain asbestos fibers and/or crystalline silica.

Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm.

Unless positively certain that the product is a non-asbestos-containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content.

RFCI's Recommended Work Practices for Removal of Resilient Floor Coverings are a defined set of instructions addressed to the task of removing all resilient floor covering structures.

MAY 2011

IN CANADA

The Recommended Work Practices for the Removal of Resilient Floor Covering Materials are intended for use in the United States. The work practices for the removal of in-place resilient floor coverings and associated adhesives described in this publication have not been reviewed with either National or Provincial officials in Canada to determine their applicability when asbestos-containing or assumed to be asbestos-containing resilient floor covering materials are encountered. These work practices are recommended when removing resilient floor covering and its associated adhesives that have been determined not to be asbestos-containing.

To determine what are acceptable work practices and the associated requirements for the removal of resilient floor covering that is assumed to contain asbestos or has been determined to contain asbestos, you should contact your local or provincial officials.

As an alternative to the removal of any in-place resilient floor covering materials, refer to page 9 (Alternative to Removal of Existing Resilient Floor Coverings).

TABLE OF CONTENTS

NOTICE

Various Federal, State and local government agencies have regulations governing the removal of in-place asbestos-containing material. If you contemplate the removal of a resilient floor covering structure that contains (or is presumed to contain) asbestos, you must review and comply with all applicable regulations.

This booklet replaces all prior editions of the RFCI and Armstrong Recommended Work Practices Publications. Please note that these recommended work practices are subject to change as new practices are incorporated. It is your responsibility to determine that the recommended work practices you use are those in effect.

Important Information for Installers of Resilient Floor Coverings Concerning Existing Resilient Floor Covering Structures

• Vinyl asbestos tile and asphalt tile contain asbestos fibers, as did some asphaltic "cutback" adhesives and the backings of many sheet vinyl floorings and lining felts. The presence of the asbestos in these products is not readily identifiable.

• While resilient floor covering products manufactured today do not contain asbestos, the asbestos used in the older products was encapsulated in the matrix of the product. The Environmental Protection Agency (EPA) recognizes that those products are non-friable (i.e. when dry cannot be crumbled, pulverized or reduced to powder by hand pressure) unless certain activities prohibited by the removal practices in this booklet occur.

• Unless positively certain that the product you intend to remove is a non-asbestos-containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content.

• RFCI's Recommended Work Practices are a defined set of instructions addressed to the task of removing all resilient floor covering structures whether or not they contain asbestos. When RFCI's Recommended Work Practices are followed, resilient floor covering structures that contain (or are presumed to contain) asbestos can be removed in a manner that will comply with the current Occupational Exposure to Asbestos Standard's Permissible Exposure Limits (PEL) issued by the Occupational Safety and Health Administration (OSHA).

• Numerous products, devices and techniques have been recently introduced and/or recommended for the removal of resilient floor covering structures. Before you use any practices other than those identified in this booklet for the removal of an in-place resilient floor-covering product that contains (or is presumed to contain) asbestos, you must determine that the practice meets all applicable regulations or standards including the OSHA standards for occupational exposure to asbestos and the EPA asbestos regulations. You must also determine that any materials used during the removal practice will be compatible with the new floor covering to be installed.

Mold and Mildew

Prior to removing an existing resilient floor following the **RFCI Recommended Work Practices for Removal of Resilient Floor Coverings** (unless state or local law requires other measures) or installing a new floor, if there are visible indications of mold or mildew or the presence of a strong musty odor in the area where resilient flooring is to be removed or installed, the source of the problem should be identified and corrected before proceeding with the flooring work. In virtually all situations, if there is a mold issue, there is or has been an excessive moisture issue. Visible signs of mold or mildew (such as discoloration) can indicate the presence of mold or mildew on the subfloor, on the underlayment, on the back of the flooring, and sometimes even on the floor surface. If mold or mildew is discovered during the removal or installation of resilient flooring, all flooring work should stop until the mold/mildew problem (and any related moisture problem) has been addressed. Before installing the new resilient flooring, make sure the underlayment and/or subfloor is allowed to thoroughly dry and that any residual effect of excessive moisture, mold, or structural damage has been corrected.

To deal with mold and mildew issues, you should refer to the U.S. Environmental Protection Agency (EPA) guidelines that address mold and mildew. Depending on the mold or mildew condition present, those remediation options range from cleanup measures using gloves and biocide to hiring a professional mold and mildew remediation contractor to address the condition. Remediation measures may require structural repairs such as replacing the underlayment and/or subfloor contaminated with mold and mildew as a result of prolonged exposure to moisture.

The EPA mold guidelines are contained in two publications "A Brief Guide to Mold, Moisture and Your Home" (EPA 402-K-02-003) and "Mold Remediation in Schools and Commercial Buildings" (EPA 402-K-01-001). Appendix B of the "Mold Remediation in Schools and Commercial Buildings" publication describes potential health effects from exposure to mold, such as allergic and asthma reactions and irritation to eyes, skin, nose and throat. These publications can be located on EPA's website at www.epa.gov/iaq/molds

OSHA REQUIREMENTS

In August 1994, OSHA published revised asbestos standards which affect some of the operations described in this booklet. OSHA has determined that intact resilient floor covering materials can be removed under a "negative exposure assessment" in compliance with the revised standards by appropriately trained workers using the Recommended Work Practices.

• "Intact" is defined to mean that the asbestos-containing material has not crumbled, been pulverized, or otherwise deteriorated so that it is no longer likely to be bound with its matrix. The incidental breakage of flooring materials, or slicing of sheet vinyl floor covering with a sharp-edged instrument, during removal operations conducted in accordance with the Recommended Work Practices does not mean that the materials are not removed in an "intact" condition. OSHA has recognized that resilient floor covering materials are considered nonfriable if intact and generally do not emit airborne fibers unless subjected to sanding, sawing or other aggressive operations.

• Installers of resilient floor covering materials that plan to use the Recommended Work Practices outlined in this book to remove intact and nonfriable asbestos-containing flooring materials are required to complete an 8-hour training program.

• Employers must designate a "competent person" with 4 hours of additional training to be responsible for the health and safety of the workers at the floor removal job site.

• OSHA has determined that the competent person can make a "negative exposure assessment" based upon data in the OSHA asbestos rulemaking record (including data from the Environ Reports) showing that use of the Recommended Work Practices during removal of intact flooring material consistently results in worker exposures below the levels permitted in the OSHA standards.

• Where other workers or persons may have access to the flooring removal worksite, the employer must establish a demarcated "regulated area" (e.g. using barrier tape or closing room doors to enclose a work area) and post warning signs.

• Workers who engage in the removal of asbestos-containing flooring materials for more than 30 days per year (one hour or more per day) must receive medical surveillance.

• Employers are required to maintain certain training and workplace and medical records.

EPA LEAD-BASED PAINT REQUIREMENTS

Effective July 6, 2010, EPA has established training, certification, and work practice requirements for paid renovation, repair, or remodeling work that disturbs more than 6 square feet of lead-based paint per room within a 30 day period in a home (e.g. single-family, apartments) or a facility occupied by children under age of 6 (e.g., daycare center, preschool) built prior to 1978. 40 C.F.R. § 745.80 et seq. In these pre-1978 facilities, it is assumed that any painted surfaces contain lead paint, unless EPA-approved testing is performed to show that the disturbed surfaces are lead-free.

The removal or installation of resilient flooring in these pre-1978 buildings may involve disturbing or removing molding, baseboards, or floors (e.g., wood) that have been painted with lead-based paint or cutting off the bottom of painted doors or molding to allow the new floors to fit. To determine whether more than 6 square feet in a room is disturbed, multiply the total length of the disturbed painted material by its height (both numbers in feet). For example, if a 4 inch high baseboard (1/3 foot) is being removed as part of an installation or removal, over 18 linear feet of this baseboard would have to be removed to trigger the rule (1/3 foot x 18 feet = 6 square feet). For more examples, see http://www.epa.gov/lead/pubs/rrp-faq.pdf.

If the rule is triggered the following training, certification, and work practices are required:

• Employees performing the work must have completed a lead-safe work practices training course of 8 hours in length approved by EPA, which training is valid for 5 years. See http://cfpub.epa.gov/flpp/searchrrp_training.htm for approved courses in each state.

• The firm performing the work must be lead-safe certified by EPA, which requires the submission of an application and fee to EPA. The application fee is typically $300 for a five year certification and it may take up to 90 days to process the application. The application procedures for each state can be found at the link in the paragraph above.

• Before beginning work, your firm must: (1) notify the residents of the affected homes or the parents of the affected children by providing the EPA Renovate Right pamphlet (http://www.epa.gov/lead/pubs/renovaterightbrochure.pdf); and (2) must maintain its notification records for 3 years.

• Your firm and employees must use lead-safe work practices, including posting warning signs; isolating the work area with plastic sheeting or other materials; removing or covering furniture; cleaning and inspecting the worksite when the work is finished; and disposing of any waste in a safe manner.

Some states operate their own lead-based paint programs and may have more stringent requirements than the EPA rule. See http://www.epa.gov/lead/pubs/renovation.htm#states for a list of states with their own rules.

GENERAL RULES FOR REMOVAL OF RESILIENT FLOOR COVERING

When following the Recommended Work Practices there are several general rules to follow:

Never sand, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize any resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive to remove them from the floor. See "Warning Statement" on page one.

• Unless positively certain the product you intend to remove is a non-asbestos-containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content.

• Removal of existing floor covering should be considered the last alternative.

• Use a vacuum equipped with HEPA filter, disposable dust bag, and metal floor attachment (no brush).

• All sheet floor removals must be done using detergent solution.

• All felt scraping must be done wet.

• Prior to removal, all tile must be wetted (except in cases where heat will be applied).

• Do not dry sweep.

• Material removed must be placed in heavy-duty impermeable bags at least 6 mils thick or in a leak-tight container, properly labeled and disposed of in an authorized landfill.

ALTERNATIVES TO REMOVAL OF EXISTING RESILENT FLOOR COVERINGS

Removal of the in-place resilient floor should be considered the final alternative. It is preferred you leave the existing resilient floor covering in place and go over the top (single flooring layer only) with the new floor.

Alternatives to the removal of an existing resilient floor over approved subfloors are:

• Installing directly over a single layer of approved existing resilient flooring.

• Filling the embossing of the in-place resilient flooring with embossing leveler before installation (residential use only).

• Covering existing resilient flooring on an approved suspended wood subfloor with a recommended wood underlayment.

When you plan to install a new resilient sheet or tile floor covering over an existing resilient floor covering, follow the installation instructions published by the manufacturer. Those instructions will tell you what must be done to the existing surface before the new resilient floor covering can be installed. Remove wax and other finishes by wet stripping only.

Contact a local established floorcovering dealer for additional information.

REMOVAL OF RESILIENT SHEET FLOORING

Supplies and Tools

• Safety glasses and gloves

• Stiff-bladed wall or floor scraper

• Utility or hook knife

• Tank-type High Efficiency Particulate Air (HEPA) wet/dry vacuum cleaner with disposable dust bag and metal floor attachment (no brush)

• Hand-held tank sprayer

• Large-size heavy-duty impermeable trash bags (at least 6 mils thick) or closed leak-tight containers with ties, tape, or string to tie the bags shut, and appropriate labels stating, for example "Caution— Contains Asbestos. Avoid Opening or Breaking Bag or Container. Breathing Asbestos is Hazardous to Your Health"

• A liquid dishwashing detergent which is stated to contain anionic, nonionic and amphoteric surfactants. Mix this specified liquid dishwashing detergent with water to make a dilute solution (16 oz. specified liquid dishwashing detergent in one gallon of water)

• Ground fault circuit interrupter for electrical connection of the HEPA vacuum and any other electrical connections required

REMOVAL OF FULLY-ADHERED RESILIENT SHEET FLOORING

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, beadblast or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

- Remove all furniture and appliances from the work area.

- Remove any binding strips or other restrictive moldings from doorways, walls, etc.

- Prepare the specified liquid dishwashing detergent solution (16 oz. of specified liquid dishwashing detergent to one gallon of water) and pour into a hand sprayer.

- Before removal begins, vacuum the entire floor using a HEPA vacuum with a metal floor attachment.

WARNING

Electrical shock hazard exists. Use a ground fault interrupter for any electrical connections of equipment used in a wet environment

- Make a series of parallel slices 4" to 8" apart through the top layer of the flooring and about halfway through the backing, parallel to the wall, for the entire floor.

WARNING

Resilient flooring becomes slippery when wet with the specified liquid dishwashing detergent solution. Use caution to contain the solution in the immediate work area.

- Wear layer removal: One worker starts at the end of the room farthest from the entrance door and pries up the corner of the strip, separating the backing from the wear layer. As the strip is being removed, another worker sprays a constant mist of the specified liquid dishwashing detergent solution into the delamination nip point to minimize any airborne dust particles. When done properly, the felt remaining on the floor and on the back of the strip will be thoroughly wet. Do only one three-strip area at a time. Stand on the remaining floor covering or clean floor (to the extent feasible, minimize standing on the felt). The sliced strips should be peeled from the backing by pulling or rolling around a core which will control the stripping angle to create a uniform tension (some resilient flooring wear layers may not be readily strippable and may require wet-scraping). Tie or tape the removed material securely and place in the heavy-duty impermeable trash bag or closed leak-tight containerfor disposal.

• Remove and dispose of each succeeding strip in the above manner. Minimize walking on the exposed felt to the extent feasible. Worker footwear must be cleaned or removed before leaving work area. Close full bags tightly, and seal securely for disposal. Identify with an appropriate label stating, for example "Caution—Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." Dispose in an approved landfill only.

• Occasionally, parts of the top or inner layer will stick to the backing. This can often be eliminated by peeling in the opposite direction. The stiff-bladed scraper may aid in the removal or peeling of these layers.

• Wet-scraping residual felt:

(1) After three strips of flooring material are removed, any residual felt must be wet scraped. Thoroughly wet the residual felt with the specified liquid dishwashing detergent solution. Wait a few minutes to allow the specified liquid dishwashing detergent solution to soak into the felt.

(2) Stand on the remaining floor covering to the extent feasible (not the felt) and use the stiff bladed scraper to scrape up the wet felt.

(3) Rewet the felt if the specified liquid dishwashing detergent solution has not completely penetrated, if drying occurs, or if dry felt is exposed during scraping. Pick up the scrapings while still wet as they are removed from the floor and place in a heavy-duty impermeable trash bag or leak-tight container. Wet-scrape all felt from this floor area before proceeding further.

PRECAUTION:
Excessive moisture can cause permanent damage to wood underlayments. It is the installer's responsibility to use the correct amount of specified liquid dishwashing detergent solution to prevent underlayment damage. A floor that has been wet-scraped must be allowed to dry before installing any new resilient flooring.

(4) When this floor area has been cleaned free of felt, vacuum with HEPA vacuum cleaner with the metal floor attachment. Position the vacuum cleaner so that the discharge air does not blow on the area being cleaned.

(5) Repeat the above on the next series of strips.

(6) Repeat this operation until the felt has been removed from the whole floor. Close full bags tightly and seal securely for disposal. Identify with an appropriate label stating, for example "Caution—Contains Asbestos. Avoid Opening or Breaking Bag or Container. Breathing Asbestos is Hazardous to Your Health." Dispose in an approved landfill only.

(7) When the entire floor has been removed, let it dry and vacuum with HEPA vacuum cleaner with the metal floor attachment. Position the vacuum cleaner so that the dischargeair does not blow on the area being cleaned.

(8) After vacuuming, used HEPA filters and cleaner bags should be removed according to the manufacturer's instructions and placed in a heavy-duty impermeable trash bag or leaktight container with an appropriate label stating, for example "Caution—Contains Asbestos. Avoid Opening or Breaking Bag or Container. Breathing Asbestos is Hazardous to Your Health." Close and seal the trash bag securely for disposal. Dispose in an approved landfill only.

(9) The floor is now ready to have a new resilient floor covering installed. Follow the manufacturer's installation instructions.

REMOVAL OF UNADHERED (LOOSE-LAY) OR PERIPHERALLY-ADHERED RESILIENT SHEET FLOORING

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

- Remove all furniture and appliances from the work area.

- Remove any binding strips or other restrictive moldings from doorways, walls, etc.

- Prepare the specified liquid dishwashing detergent solution (16 oz. of specified liquid dishwashing detergent to one gallon of water) and pour into a hand sprayer.

- Before removal begins, vacuum the entire floor using a HEPA vacuum with a metal floor attachment.

WARNING

Electrical shock hazard exists. Use a ground fault interrupter for any electrical connections of equipment used in a wet environment

- If flooring is unadhered, start at the end of the room farthest from the entrance doorway and slice a strip 18" wide in the unadhered flooring. One worker removes the sliced strip while another worker sprays the specified liquid dishwashing detergent solution directly into the separation nip point. Minimize standing on the exposed subfloor during the removal process to the extent feasible.

CAUTION

Resilient flooring becomes slippery when wet with specified liquid dishwashing detergent solution. Use caution to contain the solution in the immediate work area. Standing on a new sheet of plywood or non-slip surface while working is recommended.

• Roll the wet strip tightly and tie or tape securely so it will not unroll. Place it in a heavy-duty, impermeable trash bag or closed leak-tight container big enough to accommodate several rolls for disposal.

Use this method for nonbonded areas of peripherally-adhered floors. To remove bonded areas, follow instructions under "Removal of Fully-Adhered Resilient Sheet Flooring."

• Clean the exposed floor with a HEPA vacuum cleaner with the metal floor attachment. Position the vacuum cleaner so that the discharge air does not blow on the area being cleaned.

• Repeat the above, slicing, rolling and disposing of one strip at a time and cleaning the newly exposed area immediately until the entire floor covering has been removed. Let the floor dry, then vacuum with a HEPA vacuum cleaner using metal floor attachment.

• After vacuuming, used HEPA filters and cleaner bags should be removed according to manufacturer's instructions and placed in a heavy-duty impermeable trash bag or leak-tight container with an appropriate label stating, for example "Caution—Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." Close and seal the trash bags or leak-tight container securely for disposal. Dispose in an approved landfill only.

• The floor is now ready for installation of new floor covering using the manufacturer's installation instructions.

REMOVAL OF RESILIENT TILE

Supplies and Tools

• Safety glasses and gloves

• Short or long-handled scraper (DO NOT USE SPUD BAR OR MECHANICAL CHIPPER)

• Hammer

• Commercial-type hand-held hot-air gun or a radiant heat source such as an infrared machine

• Large size, heavy-duty labeled, impermeable trash bags with minimum 6 mil thickness (or closed leak-tight containers), with ties, tape or string to tie shut, and tags for labeling

• Tank-type High Efficiency Particulate Air (HEPA) wet/dry vacuum cleaner with disposable dust bag and metal floor attachment (no brush)

• Hand-held tank sprayer

• Ground fault circuit interrupter for electrical connection of the HEPA vacuum and any other electrical connections required

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient fooring, backing lining felt, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

• Remove all furniture and appliances from the work area. Remove any binding strips or other restrictive moldings from doorways, walls, etc.

• Before removal begins, vacuum the entire floor using a HEPA vacuum with a metal floor attachment.

• Floor tiles must be wetted (misted with hand sprayer) before actual removal begins (unless heat will be used to remove tiles).

WARNING

Electrical shock hazard exists. Use a ground fault interrupter for any electrical connections of equipment used in a wet environment.

• Those areas normally exposed to heavy foot traffic patterns usually have tiles adhered the tightest. In starting the tile removal process, select those areas which receive the least traffic. Try to remove individual tiles in one piece although some breakage of tiles is unavoidable.

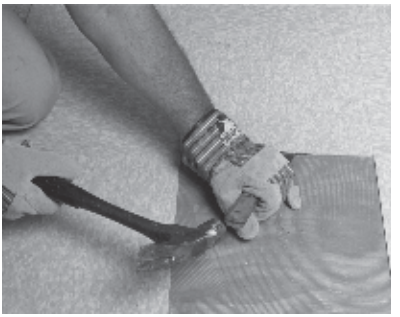
• Start the removal by carefully wedging a short or long handled scraper in the seam of two adjoining tiles and gradually forcing the edge of one of the tiles up and away from the floor. Continue to force the balance of the tile up by working the scraper beneath the tile and exerting both a forward pressure and a twisting action on the blade to promote release of the tile from the adhesive and the floor.

• After the tiles are removed, place them, without further breakage, in a heavy-duty impermeable trash bag or closed leak-tight container which will be used for disposal. Removed tiles can be placed in empty tile cartons first and then placed in the heavy-duty impermeable trash bag. To prevent tearing of the heavy-duty impermeable trash bag, place only one full carton of removed tile in a bag.

• With the removal of the first tile, accessibility of other tiles is improved. Force the scraper under the exposed edge of another tile, and continue to exert a prying, twisting force to the scraper as it is moved under the tile until the tile releases from the floor. Remove and dispose of each tile in the manner described above.

• Minimize walking on the exposed adhesive to the extent feasible. Worker footwear must be cleaned or removed before leaving work area. Close full bags tightly and seal securely for disposal. Identify with an appropriate label stating, for example "Caution—Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." Dispose in an approved landfill only.

• Some tiles will release quite easily while others require varying degrees of force. Where the adhesive is spread heavily or the tile is bonded tightly, it may prove easier to force the scraper under the tightly adhered areas by striking the scraper handle with a hammer, using blows of moderate force while maintaining the scraper at a 25° to 30° angle to the floor.



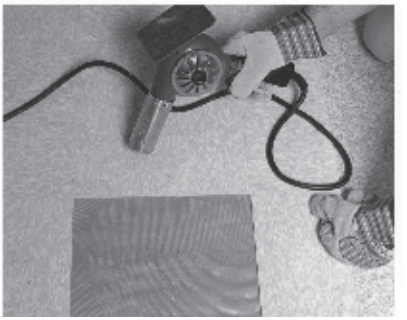
CAUTION

Wear safety glasses when using this procedure.

• If you encounter areas where even the above methods will not remove the tiles, the removal procedure can be simplified by thoroughly heating the tiles

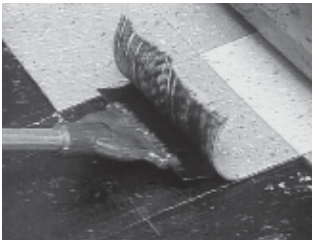
with a hot air gun or a radiant heat source until the heat penetrates through the tile and softens the adhesive.

• Alternatively, without first prying up floor tiles using a scraper, a heat source like a hot air gun or infrared heat machine can be used to apply heat to the floor tiles and then the tiles may be removed by hand or by using a scraper. (Wetting the tiles is not required for this alternative removal method). When using this procedure, walking on exposed adhesive may be unavoidable. Worker footwear must be cleaned or removed before leaving the work area.



CAUTION

Handle the hot-air gun or radiant heat source carefully to avoid burn injury. Do not handle the heated tiles or adhesive without suitable glove protection. Do not use a blowtorch or open flame. Use caution not to burn or char tiles. Work area must be adequately ventilated.



• When using an infrared heat machine, follow manufacturer's instructions.

• After tiles are removed, place them in a heavy-duty impermeable trash bag or other closed leak-tight container without further breakage. Removed tiles can be placed in empty tile cartons first and then placed in the heavy duty impermeable trash bags. To prevent tearing of the heavy-duty impermeable trash bag, place only one full carton of removed tile in a bag.

• Close the full bags of removed tile tightly and seal securely for disposal. Identify with an appropriate label stating, for example "Caution— Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." Dispose in an approved landfill only.

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

• See Section 5, "Removal of Residual Adhesives" for proper treatment of remaining adhesive.

REMOVAL OF RESIDUAL ADHESIVE

The removal of latex based adhesives commonly used with vinyl sheet floors and some tiles can be accomplished by wetting the adhesive residue (which will soften the adhesive) and scraping. Do not use an excessive amount of water which can damage wood subfloors.

The treatment of residual asphaltic "cutback" adhesive, which is covered in this section, is dependent upon the type of new resilient floor covering material to be installed and the type of subfloor. Recommendations for the treatment of residual asphaltic "cutback" adhesive are shown on pages 21 through 26.

NOTE

There are commercial adhesive removal products containing solvents that are effective in removing cutback or emulsion adhesives and comply with OSHA requirements (e.g. flashpoint greater than 140° F). These products may be used for adhesive removal; however, they may leave a solvent residue within the subfloor that can adversely affect the new adhesive or floor covering. Thus, the warranties provided by the manufacturers of new floor covering materials will not cover instances where subfloor conditions damage their products or affect their installation.

The use of asbestos encapsulants or bridging materials over asphaltic adhesive is not recommended as those products may affect the bonding properties of the new adhesive. The application of asphaltic "cutback" adhesives, if recommended by the replacement flooring manufacture, has been demonstrated to be a suitable adhesive when applied over existing cutback adhesive. The use of any new adhesive must be consistent with the installation recommendations of the replacement-flooring manufacturer.

Supplies and Tools

• Safety glasses and gloves

• Stiff-bladed wall or floor scraper

• Tank-type High Efficiency Particulate Air (HEPA) wet/dry vacuum cleaner with disposable dust bag and metal floor attachment (no brush)

• Large-size, heavy-duty, impermeable trash bags (or closed leak-tight containers) with ties, tape, or string to tie the bags shut, and tags for labeling.

• Slip-resistant shoes or rubber boots

• Ground fault circuit interrupter for electrical connection of the HEPA vacuum and any other electrical connections required

• Hand-held sprayer

• A liquid dishwashing detergent which is stated to contain anionic, nonionic and amphoteric surfactants. Mix this specified liquid dishwashing detergent with water to make a dilute solution (1 oz. of the specified liquid dishwashing detergent to one gallon of water)

• Floor machine fitted with 3M black floor pad (or equivalent)

• Removal solution—e.g. “mop on, mop off, no machine scrub," tripping solution
See note on page 21 regarding use of other solutions

• Water-absorbent material

RESIDUAL ASPHALTIC "CUTBACK" ADHESIVE

CONCRETE SUBFLOOR			WOOD UNDERLAYMENT SUBFLOOR	
New Material to Be Installed	Removal of Residual Adhesive	Alternative to Removal	Removal of Residual Adhesive	Alternative to Removal
Resilient floor tile to be installed using cutback adhesive.	Residual adhesive must be wet-scraped so that no ridges or puddles are evident and what remains is a thin, smooth film. See wet-scraping of residual adhesive.	Application of a cementitious underlayment that is approved by the underlayment manufacturer for use over residual asphaltic "cutback" adhesive.[2]	The use of a cutback adhesive over wood underlayment subfloor is not recommended.	The use of a cutback adhesive over wood underlayment subfloor is not recommended
Resilient floor tile to be installed using an adhesive other than cutback adhesive.	Residual adhesive must be wet-scraped so that no ridges or puddles are evident and what remains is a thin, smooth film. See wet-scraping of residual adhesive.	Application of a cementitious underlayment that is approved by the underlayment manufacturer for use over residual asphaltic "cutback" adhesive.[2]	Complete removal of Wood Underlayment. See Complete Removal of Wood Underlayment Under Existing Tile.	Covering residual asphaltic "cutback" adhesive on an approved wood subfloor with a recommended wood underlayment.[2] When installing this new wood underlayment, felt or polyethylene sheeting may be placed over the residual adhesive to prevent a cracking or tacky sound when walking on the floor.
Any vinyl-backed sheet flooring	100% of the residual adhesive must be removed from the area to be covered. See removal of residual adhesive.	Application of a cementitious underlayment that is approved by the underlayment manufacturer for use over residual asphaltic "cutback" adhesive.[2]	Complete removal of Wood Underlayment. See Complete Removal of Wood Underlayment Under Existing Tile	Covering residual asphaltic "cutback" adhesive on an approved wood subfloor with a recommended wood underlayment.[2] When installing this new wood underlayment, felt or polyethylene sheeting may be placed over the residual adhesive to prevent a cracking or tacky sound when walking on the floor.
Felt-backed sheet flooring.	Enough of the residual adhesive must be removed so that 80% to 100% of the original substrate of the overall area is exposed.[1] See removal of residual adhesive.	Application of a cementitious underlayment that is approved by the underlayment manufacturer for use over residual asphaltic "cutback" adhesive.[2]	Complete removal of Wood Underlayment. See Complete Removal of Wood Underlayment Under Existing Tile	Covering residual asphaltic "cutback" adhesive on an approved wood subfloor with a recommended wood underlayment.[2] When installing this new wood underlayment, felt or polyethylene sheeting may be placed over the residual adhesive to prevent a cracking or tacky sound when walking on the floor.

[1] Amount of adhesive which must be removed varies. Check with manufacturer of replacement felt-backed sheet flooring for requirements.

[2] All warranties and/or guarantees concerning underlayment's performance rest with the underlayment manufacturer and not with the resilient floor covering manufacturer.

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphalic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

If new resilient floor tile is to be installed over a concrete subfloor using an asphaltic adhesive, the residual asphaltic "cutback" adhesive must be left so that no ridges or puddles are evident and what remains is a thin, smooth film. This can be accomplished by wet-scraping the residual adhesive.

Wet-Scraping residual asphaltic "cutback" adhesive:

• Moisten an area with water mixed with the specified liquid dishwashing detergent (1 oz. specified liquid dishwashing detergent to one gallon of water) to aid in wetting the adhesive. Make sure that the area stays moist. Wet-scrape with a stiff-bladed wall or floor scraper removing ridges and any loose adhesive. Make sure the adhesive is kept wet.

• Place loosened adhesive residue into a heavy-duty impermeable trash bag or leak-tight container with an appropriate label stating, for example: "Caution —Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." Close and seal the trash bag securely for disposal. Dispose in an approved landfill only.

• Wet vacuum standing water with the HEPA vacuum cleaner.
• Continue above steps until what remains of the residual asphaltic "cutback" adhesive is a thin, smooth film.
• Clean the entire floor with the HEPA vacuum cleaner using the metal floor attachment.
• After vacuuming, used HEPA filters and cleaner bags should be removed according to manufacturer's instructions and placed in a heavy-duty, impermeable trash bag or leak tight container with an appropriate label stating, for example: "Caution—Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." Close and seal the trash bags or containers securely for disposal. Dispose in an approved landfill only.

COMPLETE REMOVAL OF ASPHALTIC "CUTBACK" ADHESIVE

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, beadblast or mechanically chip or pulverize existing resilient flooring, backing, lining fell, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

REMOVAL METHOD

• Start in corner of the room farthest from the entrance door. Apply the removal solution (e.g. "mop on, mop off, no machine scrub," stripping solution) by using a hand sprayer or mop over an area of residual adhesive so that the adhesive in this area always remains wet during its removal. Allow the area to soak for 5-10 minutes. Remove the adhesive using a floor machine equipped with a 3M black floor pad (or equivalent), ensuring that the floor is kept wet in the area where the machine is operating.

WARNING

Electrical shock hazard exists. Use a ground fault circuit interrupter for any electrical connections of equipment used in a wet environment.

• Occasionally push away the adhesive slurry from the subfloor with a wall or floor scraper or squeegee to check for complete removal. Continue to use the floor machine, equipped with black pad, in the same area until the concrete subfloor is cleaned to the degree necessary for the new floor installation.

• Adhesive around the edge of the room and in areas that were missed or difficult to reach with the machine can be removed with a hand-held piece of the black floor pad using the above procedures.

WARNING

Electrical shock hazard exists. Use a ground fault interrupter for any electrical connections of equipment used in a wet environment.

• Wet HEPA vacuum the adhesive slurry. When the HEPA vacuum is full, place commercially suitable water absorbent into the HEPA container until the adhesive slurry is absorbed. An absorbent material may be used on the slurry to absorb the adhesive residue. Place the adhesive waste from the HEPA vacuum or floor into heavy-duty, impermeable bags or leak-tight containers with an appropriate label stating, for example "Caution—Contains Asbestos". Avoid Creating Dust. Breathing Asbestos May Cause Bodily Harm." Close and seal the trash bag securely for disposal. Dispose in an approved landfill only.

• Rinse floor area with clean water using a hand sprayer or mop. Worker footwear should also be cleaned and rinsed.

• Wet-vacuum standing water with HEPA vacuum cleaner.

• Continue above steps until the entire room is complete.

• Allow subfloor to dry and vacuum with a HEPA vacuum with metal floor attachment.

• Minimize walking on the wet adhesive to the extent feasible. Worker footwear must be cleaned or removed before leaving the work area.

Supplies and Tools

• Safety glasses and gloves

• Chisel

• Hammer or mallet

• Short and long-handled pry bars

• Utility or hook knife

• Stiff-bladed wall or floor scraper

• Large-size, heavy-duty, impermeable trash bags (or leak-tight container) with ties, tape, or string to tie the bag shut and tag for labeling

• Tank-type High Efficiency Particulate Air (HEPA) wet/dry vacuum cleaner with disposable dust bags and metal floor attachment (no brush)

• Hand sprayer

• A liquid dishwashing detergent which is stated to contain anionic, nonionic and amphoteric surfactants

• 6-mil polyethylene sheeting

• Duct tape

• Ground fault circuit interrupter for electrical connection of the HEPA vacuum and any other electrical connections required

• For tile removal only—Commercial-type, handheld, hot-air gun or a radiant heat source such as infrared machine

COMPLETE REMOVAL OF WOOD UNDERLAYMENT (SUBFLOOR) UNDER EXISTING SHEET FLOORING

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

• Remove all furniture and appliances from the work area.

• Remove any binding strips or other restrictive moldings from doorways, walls, etc.

• Prepare the specified liquid dishwashing detergent solution (16 oz. of specified liquid dishwashing detergent to one gallon of water) and pour into a hand sprayer.

• Before removal begins, vacuum the entire floor using a HEPA vacuum with a metal floor attachment

WARNING

Electrical shock hazard exists. Use a ground fault interrupter for any electrical connections of equipment used in a wet environment.

• Starting at the doorway or a floor ventilation vent, locate a joint in an underlayment board.

• Slice a strip of flooring 4 to 8 inches wide centered over the underlayment joint in the panel to be removed. Slice through the top and inner layers of flooring and about halfway through the backing. Continue this procedure for all underlayment joints over the entire floor.

CAUTION

Resilient flooring becomes slippery when wet with specified liquid dishwashing detergent solution. Use caution to contain the solution in the immediate work area.

• One worker pries up the corner of a strip, separating the backing from the wear layer. As the strip is being removed, another worker sprays a constant mist of the specified liquid dishwashing detergent solution into the delamination nip point to minimize any airborne dust particles. When done properly, the felt remaining on the floor and on the back of the strip will be thoroughly wet. Stand on the remaining floor covering or clean floor (do not stand on the felt).

The sliced strips should be peeled from the backing by pulling or rolling around a core which will control the stripping angle to create a uniform tension (some resilient flooring wear layers may not be readily strippable and may require wet-scraping). Tie or tape the removed material securely and place in a heavy-duty, impermeable, trash bag or closed leak tight container for disposal.

• Remove and dispose of each succeeding strip in the above manner. Minimize walking on the exposed felt to the extent feasible. Worker footwear must be cleaned or removed before leaving work area. Close full bags tightly, and seal securely for disposal. Identify with an appropriate label stating, for example "Caution—Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." Dispose in an approved landfill only.

• Occasionally, parts of the top or inner layer will stick to the backing. This can often be eliminated by peeling in the opposite direction. The stiff bladed scraper may aid in the removal or peeling of these layers.

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

• Remove all furniture and appliances from the work area.

• Remove any binding strips or other restrictive moldings from doorways, walls, etc.

• Prepare the specified liquid dishwashing detergent solution (16 oz. of specified liquid dishwashing detergent to one gallon of water) and pour into a hand sprayer.

• Before removal begins, vacuum the entire floor using a HEPA vacuum with a metal floor attachment

• Wet-scraping residual felt—follow instructions for wet-scraping residual felt on Page 12.

• For procedures for removing wood underlayment boards see Page 32.

COMPLETE REMOVAL OF WOOD UNDERLAYMENT (SUBFLOOR) UNDER EXISTING TILE FLOORING

• Before removal begins, the entire floor is vacuumed using a HEPA vacuum with a metal floor attachment.

WARNING

Electrical shock hazard exists. Use a ground fault interrupter for any electrical connections of equipment used in a wet environment.

• Floor tiles must be wetted (misted with hand sprayer) before actual removal begins (unless heat will be used to remove tiles).

WARNING

Resilient flooring becomes slippery when wet with the specified liquid dishwashing detergent solution. Use caution to contain the solution in the immediate work area.

• Starting at the doorway or a floor ventilation vent, locate a joint in an underlayment board.
• Start the removal of the tile at the underlayment joint by carefully wedging the scraper in the seam of two adjoining tiles and gradually forcing the edge of one of the tiles up and away from the floor. Do not intentionally break off pieces of the tile, but continue to force the balance of the tile up by working the scraper beneath the tile and exerting both a forward pressure and a twisting action of the blade to promote release of the tile from the adhesive and the floor. Continue to remove tiles in this manner at all underlayment joints until all board joints are exposed.
• After the tiles are removed place them, without further breakage into smaller pieces, in a heavy-duty impermeable trash bag or closed leak-tight container which will be used for disposal. Removed tiles can be placed in empty tile cartons first and then placed in heavy-duty, impermeable, trash bags. To prevent tearing of the heavy-duty, impermeable, trash bag, place only one full carton of removed tile in a bag.
• With the removal of the first tile, accessibility of the other tiles is improved. Force the scraper under the exposed edge of another tile, and continue to exert a prying, twisting force to the scraper as it is moved under the tile until the tile releases from the underlayment. Remove and dispose of each tile in the manner above. Minimize walking on the exposed adhesive to the extent feasible. Worker footwear must be cleaned or removed before leaving area. Close full bags or leak-tight container tightly and seal securely for disposal. Identify with an appropriate label stating, for example "Caution—Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." Dispose in an approved landfill only.

• Some tiles will release quite easily while others require varying degrees of force. Where the adhesive is spread heavily or the tile is bonded tightly, it may prove easier to force the scraper through the tightly adhered areas by striking the scraper handle with a hammer, using blows of moderate force while maintaining the scraper at a 25° to 30° angle to the floor.

• If you encounter areas where even the above methods will not remove the tiles, the removal procedure can be simplified by thoroughly heating the tiles with a hot-air gun or a radiant heat source until the heat penetrates through the tile and softens the adhesive.

• When using automated infrared heating machines, follow the manufacturer's instructions.

WARNING

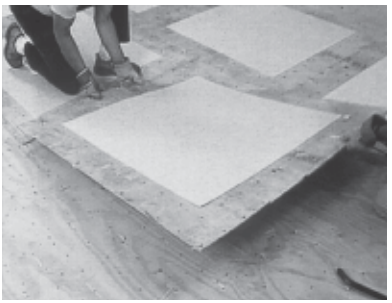
Handle the hot-air gun or radiant heat source carefully to avoid burn injury. Do not handle the heated tiles or adhesive without suitable glove protection. Do not use a blowtorch or open flame. Use caution not to burn or char tiles. Work area must be adequately ventilated.

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, beadblast or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

• After all felt from sheet flooring has been wetscraped or tiles removed from the underlayment joints, drive a chisel, using a hammer or mallet, between the underlayment board and the subfloor. Use the chisel to pry up the underlayment enough to insert a pry bar and remove the chisel. Slowly and carefully use pry bars to pry up the underlayment board a little at a time until the board is completely loose and can be removed.

• Caution must be used to avoid breaking the underlayment board. The underlayment board should be removed in one piece. If the underlayment board breaks, slice through the sheet resilient flooring at the break and spray any exposed felt with the specified liquid dishwashing detergent solution. Allow the specified liquid dishwashing detergent solution to penetrate for a few minutes, then continue lifting the broken underlayment. In the case of a broken underlayment board with tile adhered, wet (mist) the broken tile and carefully remove any loose pieces.



• Wear heavy gloves and be careful of wood splinters and fasteners sticking out of the back of the underlayment. Each underlayment board (or piece of board) should be removed from the work area as soon as it has been pried up to avoid injuries (such as stepping on a nail). Fasteners protruding from removed board should be flattened with a hammer. Place removed underlayment boards on skids with the nails pointing downward. Wrap skid with 6-mil polyethylene plastic sheeting and secure with duct tape. Identify with an appropriate label stating, for example "Caution—Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." Dispose in an approved landfill only.

• If the underlayment panel extends under cabinets or wall partitions, it will be necessary to slice through the flooring with a knife as close to the vertical surface as possible. Deeply score the panel. This should allow for removal.

• After each panel has been removed, pull out any nails or fasteners still in the subfloor.

• A chisel is not needed to start the removal of boards after the first board has been removed. Simply work the pry bar under the exposed edge of the next board.

• When removal of the underlayment under the existing floor is complete, thoroughly check the exposed subfloor. Renail loose areas and reset any "popped" nails or fasteners.

• Vacuum up any residue using the HEPA vacuum cleaner with the metal floor attachment.

• After vacuuming, used HEPA filters and cleaner bags should be removed according to the manufacturer's instructions and placed in a heavy-duty, impermeable, trash bag or leak-tight container with an appropriate label stating, for example "Caution—Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." Close and seal the trash bag or container securely for disposal. Dispose in an approved landfill only.

• Prepare the subfloor by installing new underlayment and or floor covering according to the manufacturer's installation instructions.

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This book replaces all prior editions of the RFCI and Armstrong Recommended Work Practices publications. Future editions of these work practices may be issued to replace this publication.

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