REPORT OF ADDITIONAL ASBESTOS ABATEMENT PROJECT MONITORING

Prince William County Department of Public Works
Bennett School
Manassas, Virginia

Prepared for:
Prince William County Department of Public Works
Facilities Construction Management
Prince William, Virginia

Prepared by:
MACTEC Engineering and Consulting, Inc.
22455 Davis Drive, Suite 100
Sterling, Virginia 20164

March 9, 2004

MACTEC Project 3553-04-0287

MACTEC

March 9, 2004

Mr. Dent West
Construction Manager
Facilities Construction Management
Prince William County Department of Public Works
4361 Ridgewood Center Drive
Prince William, Virginia 22192

Subject: Report of Additional Asbestos Abatement Project Monitoring
Bennett School
Manassas, Virginia
MACTEC Project 3553-04-0287

Dear Mr. West:

MACTEC Engineering and Consulting, Inc. (MACTEC) is pleased to present this report of asbestos abatement project monitoring during the removal of overlooked asbestos-containing materials (ACM) at Bennett School. Our services were provided at your request in accordance with MACTEC proposal PROP03WASH-424 and our existing contract with Prince William County Department of Public Works (PWCDPW), Contract 2125NA2, Modification #1,dated April 2, 2003 and Purchase Order DP042094. This report includes project information, our scope of services, project summary, and recommendations. Also included are Appendix A – Summary of Air Monitoring and Appendix B – Field Notes.

Project Information

The Bennett School is located at 9300 Lee Avenue in Manassas, Virginia. PWCDPW contracted Waco, Inc. (WACO) to remove asbestos-containing wallboard glue dots and pipe insulation from the school. MACTEC was requested by PWCDPW to conduct asbestos abatement project monitoring during the removal activities. The additional abatement monitoring was conducted due to the fact that some ACM black board glue dots were overlooked during previous ACM abatement efforts.

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Scope of Services

MACTEC provided on-site air sample collection and analysis, project observation, and reporting services for the asbestos abatement project. MACTEC representative, Mr. Kebret Andarge, Commonwealth of Virginia licensed project monitor, was onsite during the project to observe work practices, and to perform project monitoring duties. The abatement of asbestos-containing glue dots behind blackboards and pipe insulation was performed on March 3, 2004 in the following locations: southeast and southwest third floor rooms of the historic building that is to be preserved and remodeled by PWCDPW.

MACTEC observed the abatement contractor's operations to document that the abatement activities were conducted in compliance with applicable Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and Commonwealth of Virginia regulations.

Project Summary

Summary of Contractor Work Practices and Work Area Engineering Controls

Prior to abatement, regulated work areas were established around each project area. Engineering controls employed for the removal of asbestos-containing wallboard glue dots included critical barriers, negative pressure enclosures (NPE), air filtration units equipped with High Efficiency Particulate Air (HEPA) filters, and HEPA vacuums. Access to the work areas was restricted through the use of one-stage decontamination chambers. NPEs constructed around the project areas consisted of, single layer, six-mil polyethylene sheeting on the floors. Glove bags were utilized for removal of a five-foot section pipe insulation. Critical barriers consisting of two layers of six-mil polyethylene sheeting were installed over ceiling and wall vent openings, penetrations, entrances/exits, and windows.

Gross removal of the asbestos-containing wallboard glue dots, was performed through the use of hand scrapers. Gross removal of pipe insulation was conducted using manual tools inside polyethylene glove bags. As the asbestos-containing materials were removed from the substrate, they were promptly placed into six-mil polyethylene bags, properly labeled for asbestos waste. HEPA vacuums and dampened. cloths were employed for the fine cleaning phase of the abatement work.

Project Monitoring

Prior to commencement of abatement activities MACTEC performed a pre-abatement inspection to assure NPE integrity. Glove bags were smoke tested to assure proper isolation of the asbestos-containing pipe insulation.

During the course of abatement, ambient air samples were collected inside and outside the work areas to document the presence of airborne fibers within the work areas and the potential migration of airborne fibers from the work areas. The air samples collected inside and outside the work areas during the gross removal and fine cleaning phases of the abatement process measured airborne fiber concentrations less than or equal to the EPA post-abatement reoccupancy level of 0.01 fibers per cubic centimeter of air (f/cc). A summary of the Phase Contrast Microscopy (PCM) asbestos laboratory results are attached in Appendix A – Summary of Air Monitoring Results.

Ambient air monitoring conducted during the course of abatement was performed in accordance with OSHA Standard 29 CFR 1926.1101, using procedures outlined in the National Institute for Occupational Safety and Health (NIOSH) 7400 Method for asbestos air sample collection and analysis. This method involves the collection of airborne fibers on a 25mm diameter 0.8-micron pore size mixed cellulose ester filter using a pre-calibrated air-sampling pump. The air samples were analyzed on-site by MACTEC by Phase Contrast Microscopy (PCM) in accordance with the NIOSH 7400 Method. The MACTEC asbestos analytical laboratory successfully participates in the American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing program.

Following gross removal and fine cleaning for each work area, MACTEC conducted a final visual inspection for visible dust and debris. After a successful visual inspection, the abated areas were sprayed with an encapsulant.

MACTEC released the regulated areas for containment dismantlement based upon the ambient air samples collected inside the work areas throughout the abatement process measuring below the EPA recommended clearance level of each individual air sample measuring below 0.01 f/cc by PCM analysis. A summary of the PCM asbestos laboratory results are attached in Appendix A - Air Monitoring Results.

Waste Disposal

The asbestos-contaminated waste was double-bagged in six-mil thick polyethylene bags and transported into a locked storage dumpster during the abatement work for the shift. The asbestos waste bags were then transported from the job site at the completion of the abatement work for the day. MACTEC understands that appropriate waste manifests and receipt documents will be provided by WACO to the appropriate PWCDPW representative.

Recommendations

WACO performed the removal of the asbestos-containing materials in accordance with EPA, OSHA, and Commonwealth of Virginia regulations. MACTEC recommends that the removal of the above-mentioned asbestos containing materials be considered complete and the areas to be considered successfully abated and cleared for reoccupancy.

Closing

We appreciate the opportunity to provide service to PWCDPW on this project. Should you have any questions following your review of our report, or if we may be of further service, please do not hesitate to contact us.

Sincerely,

MACTEC ENGINEERING AND CONSULTING, INC.

Kebret Andarge

Kebret T. Andarge
Staff Environmental Scientist

Peter C. Frederick
Principal Scientist/Project Manager

Enclosures:
1. Appendix A – Air Monitoring and Laboratory Bulk Sample Results
2. Appendix B – Field Notes

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ABATEMENT MONITORING FINAL INSPECTION

Project Number: 3553-04-0287 Client: PWCPW Date: 03/03/04

Building/Location Name: Bennett School Project Address: 9300 Lee Avenue

Specific Work Area Location: 3rd floor of historic School building

Type/Quantity of Material Removed: Chalk Board glue dots.

FINAL VISUAL INSPECTION

Visible debris: ✓ Pass ____ Fail If No, describe why: ____

Settled dust: ✓ Pass ____ Fail If No, describe why: ____

Hand wipe: ✓ Pass ____ Fail If No, describe why: ____

Flashlight: ✓ Pass ____ Fail If No, describe why: ____

Corrective Actions Requested: ____

Work Area Final Visual Inspection: ✓ **Pass** ____ **Fail**

SEALANT

Is sealant a different color from substrate? (Yes) / No If No, describe why: ____

Are all exposed surfaces coated? (Yes) / No If No, describe why: ____

FINAL CLEARANCE

Asbestos

Clearance criteria: AHERA Maryland Washington, DC Virginia-PCU SPECIFICATIONS

Describe protocol: ____

Clearance level: (0.01 f/cc) 70 str/mm^2 Other: ____

Aggressive: Yes / (No) Boxfans: Yes / (No) Leafblower: Yes / (No)

Number of samples inside containment: 4 Number of samples outside containment: 2

Lead

Clearance criteria: EPA HUD SPECIFICATIONS

Wipe sample location(s): ____

Clearance level: Floors: 40µg/ft^2 W. Sills: 250 µg/ft^2 W. Troughs: 400 µg/ft^2 Other: ____

Additional Comments: ____

MACTEC IH Representative: Kebret Andarge MACTECT IH Rep Signature: Kebret Andarge

MACTEC QA/QC Review: ____

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OWA: Outside Work Area Ambient
IWA: Inside Work Area Ambient
P: Personal
F: Final Clearance
W: Wipe
FB: Field Blank

SAMPLE DATA SHEET

Reviewed by: JM

PROJECT: The Bennett School
PROJECT LOCATION: 9300 Lee Avenue.
MACTEC PROJECT NUMBER: 3553-04-0287
MACTEC PERSONNEL: Kebret Andarge
CLIENT: PWCPW
SAMPLE DATE: 03/03/04
PAGE: 1 of 1

Sample Number	Sample Type	Work Area (Room)	Sample Location	Pre-post Calibration	Flow Rate (L/min)	Time On/Off	Time (min)	Volume or Area	Fibers / Field	Result	Activity during sampling
KA030304 -01	IWA	2nd floor old Bldg.	Room to the east Center of Room	3.0 / 3.0	3.0	0800 / 1100	180	540	6/100	<0.01	Abatement
-02	IWA		Room to the west Center of Room	3.0 / 3.0		0800 / 1100			9/100	<0.01	
-03	OWA		~~[illegible]~~ hallway	3.0 / 3.0		0800 / 1100			2/100	<0.01	
-04	IWA		West Room Center of Room	3.0 / 3.0		1100 / 1400			7/100	<0.01	
-05	IWA		East Room. Center of Room	3.0 / 3.0		1100 / 1400			11/100	<0.01	
-06	OWA		hallway.	3.0 / 3.0		1100 / 1400			4/100	<0.01	
-07	FB	Field	Blank								
-08	FB	Field	Blank.								

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DAILY WORK PRACTICE OBSERVATIONS

Project Number: 3553-04-0287 Client: PWC PW Date: 03/03/04

Building/Location Name: Bennett School Project Address: 9300 Lee Avenue.

Specific Work Area Location: 3rd floor of historic School Building.

Type/Quantity of Material to be Removed: Chalk board glue dots

Initial Daily Inspection

NPE, Glovebags or Other Containment Intact (Yes) / No If No, describe: _____

NPE / Glovebag Smoke Tested: (Yes) / No If deficiency, describe corrective action: _____

AFUs functioning properly (Yes) / No If No, describe: _____

Appropriate Number of AFUs Functioning in Work Area: (Yes) / No Number of AFUs in Work Area: 1

Manometer Functioning Properly Yes / (No) If No, describe: N/A.

Other Deficiencies Noted none

Daily Observations

Wet Methods Used: (Yes) / No Amended Water Used: (Yes) / No HEPA Vacuums Used: (Yes) / No

Waste Bagged While Wet: (Yes) / No Bags Properly Labeled: (Yes) / No Bags Double Bagged: (Yes) / No

Waste Bags Stored at Work Area: (Yes) / No Storage Location of Waste Bags: Designated Dumpster.

Workers Using PPE at All Times: (Yes) / No If No, describe: _____

Smoking, Eating, Drinking, Chewing Tobacco, or Applying Cosmetics in Work Area: Yes / (No)

Workers Utilizing Hygiene Facilities: (Yes) / No If No, describe: _____

Negative Pressure Readings: _____ _____ _____ _____ _____ _____

Time: _____ _____ _____ _____ _____ _____

Describe any deficiencies observed during work shift: _____

Final Daily Observations

All ACM Removed as Part of the Scope of Work: (Yes) / No If No, why: _____

Any Remaining ACM Within the Work Area: Yes / (No) If Yes, describe: _____

Total Number of Bags/Drums of Waste Generated for the Shift _____

Work Area Sealed and Secured at End of Shift: (Yes) / No / (NA) AFUs Remaining Operational: (Yes) / No / (NA)

Hygiene Facilities and Areas Outside Work Area Clean and Free of Clutter: (Yes) / No

Other Notes _____

MACTEC IH Representative: Kebret Andarge MACTEC IH Rep Signature: Kebret Andarge

MACTEC QA/QC Review: JM

APPENDIX A
SUMMARY OF AIR MONITORING SAMPLE RESULTS

Air Sample Results Summary Table

SAMPLE DATE	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE LOCATION	FLOW RATE (L/min)	TIME (min)	TOTAL VOLUME (Liters)	FIBERS PER FIELDS	RESULT (f/cc)	ACTIVITY DURING SAMPLING
03/03/04	KA030304-01	IWA	Second Floor, Old Building, Center of Room to East	3.00	180	540	6/100	<0.01	ACM Remvoval
03/03/04	KA030304-02	IWA	Second Floor, Old Building, Center of Room to West	3.00	180	540	9/100	<0.01	ACM Remvoval
03/03/04	KA030304-03	OWA	Second Floor, Old Building, Hallway	3.00	180	540	2/100	<0.01	ACM Remvoval
03/03/04	KA030304-04	IWA	Second Floor, Old Building, Center of West Room	3.00	180	540	7/100	<0.01	ACM Remvoval
03/03/04	KA030304-05	IWA	Second Floor, Old Building, Center of East Room	3.00	180	540	11/100	<0.01	ACM Remvoval
03/03/04	KA030304-06	OWA	Second Floor, Old Building, Hallway	3.00	180	540	4/100	<0.01	ACM Remvoval
03/03/04	KA030304-07	FB	Field Blank	N/A	N/A	N/A	0/100	N/A	Field Blank
03/03/04	KA030304-08	FB	Field Blank	N/A	N/A	N/A	0/100	N/A	Field Blank

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Sample Types:
OWA: Outside of Work Area **IWA**: Inside of Work Area
P: Personal **F**: Final Clearance **FB**: Field Blank **W**: Lead Wipe

Prepared by: RL
Reviewed by: KT

Air samples were analyzed by the MACTEC Engineering & Consulting, Inc. (MACTEC) asbestos analytical laboratory by Phase Contrast Microscopy (PCM) in accordance with the NIOSH 7400 Method.
The MACTEC analytical laboratory successfully participates in the AIHA Proficiency Analytical Testing program.

APPENDIX B
FIELD NOTES

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ing, Virginia 20164

RECORD OF DAILY ACTIVITY

OJECT: The Bennett School

ACTEC PROJECT NUMBER: 3553-04-0287

IENT: PWCPW

MACTEC PERSONNEL: Kebret Andargie

TE: 03/03/04

WORK LOCATION: 9300 Lee Avenue.

ME LINE	
0700	Arrived at the Bennett School to perform project monitoring task during ACM removal process.
0710	Met with WACO and discussed today's scope of work. WACO will remove asbestos containing glue dots from two classrooms in addition to a five feet pipe ~~ac~~ KT chase insulation via glove bag.
0730	performed a visual inspection on a glove bag and smoke-tested it and granted WACO the permission to start removal.
0800	Set-up three low volume pumps that are calibrated at 3.0 liters ~~permi~~ KT per minute to collect the ambient PCM air samples.
0815	Glove bag removal is completed and WACO requested a final visual inspection.
0840	performed a final visual inspection on the 5-foot abated pipe.

PRELIMINARY SUBMITTAL SUBJECT TO FINAL REVIEW

Final Review pm

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RECORD OF DAILY ACTIVITY

OJECT: The Bennett School

ACTEC PROJECT NUMBER: 3553-04-0287

IENT: PWCPW

MACTEC PERSONNEL: Kebret Andarge

TE: 03/03/04

WORK LOCATION: 9300 Lee Avenue.

ME LINE	
0900	Waco started glue dot removal from the two class rooms.
1000	Work is still in progress.
1100	replaced the PCM cassettes.
1115	Started sample analysis.
1130	Waco workers started lunch.
1200	Waco workers are back from lunch.
1330	Waco completed glue dot removal and requested a final visual inspection.
1345	Performed a final visual inspection and granted waco the permission to encapsulate the abated walls.
1400	Collected the second batch of the samples for analysis.
1415	Started sample analysis.
1500	sample analysis is complete. ~~and~~ KT
1510	left the site for the day.

PRELIMINARY SUBMITTAL SUBJECT TO FINAL REVIEW

Final Review pm

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PRE – ABATEMENT WORK AREA CHECKLIST

Project Number: 3553-03-0287 Client: PWC PW Date: 03/03/04

Building/Location Name: Bennett School Project Address: 9300 Lee Avenue.

Specific Work Area Location: 3rd floor of historic Building.

Type/Quantity of Material to be Removed: Chalk Board glue dots.

WORK AREA ISOLATION:

Decontamination Chamber: ✓ 1-Stage ____ 2-Stage ____ 3-Stage Proper Airlocks: (Yes) / No

Utility Shutdown: ✓ HVAC System ✓ Electricity ✓ Gas Other: ____

Pre-cleaning of surfaces: (Yes) / No / NA If No or NA, describe why: ____

Barrier Tape Used to Designate Work Area: (Yes) / No OSHA and State Signage: (Yes) / No State: ____

Critical Barriers: (Yes) / No ✓ Doors/Windows ✓ Vents/HVAC ✓ Floor Drains Other: ____

Layers of Poly for Containment: 1 Walls 1 Floors ____ Ceilings 1 Unmovable Equipment

If no containment, describe isolation controls: ____

Negative Pressure Required: (Yes) / No Number of AFUs installed in work area: ____ Backup available: Yes / No

Calculation of Required # of AFUs: ____

Number of Air Changes per Hour: ____ Type of Manometer Used: ____

HYGIENE FACILITIES

Shower Functional: Yes / No / (NA) If No or NA, describe hygiene facilities: Bucket of water.

Hygiene Facilities Clean and Sanitary: (Yes) / No Adequate Amount of Towels, Soap, etc.: (Yes) / No

Shower Has Separate Hot and Cold Water: Yes / No Shower Drain Has Proper 5 µM Filter: Yes / No

Describe Hygiene Facilities Other Than Shower/Decontamination Chamber: ____

ABATEMENT PERSONNEL AND PERSONAL PROTECTIVE EQUIPMENT

Do workers have appropriate training, licenses, and medical records on-site (Yes) / No Records Reviewed (Yes) / No

NIOSH Approved Respirators: (Yes) / No If No, describe why: ____

Type of Respirators: HEPA / half face Dual Use Cartridges: Yes / (No) If Yes, type: ____

Type of Coveralls: (Disposable) or Launderable Head Covering and foot/shoe coverlets: (Yes) / No

Other Types of PPE Required: eye protection

MACTEC IH Representative: Kebret Andarge MACTEC IH Rep Signature: Kebret Andarge

MACTEC QA/QC Review: MR

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METHOD OF REMOVAL

Describe the method of removal, including specific tools used, special equipment such as glovebags, a Blastrac, Infra-red machines, bead blaster, Peel-A-Way, etc.

Removal of glue dots using hammer and short handle scrapers.

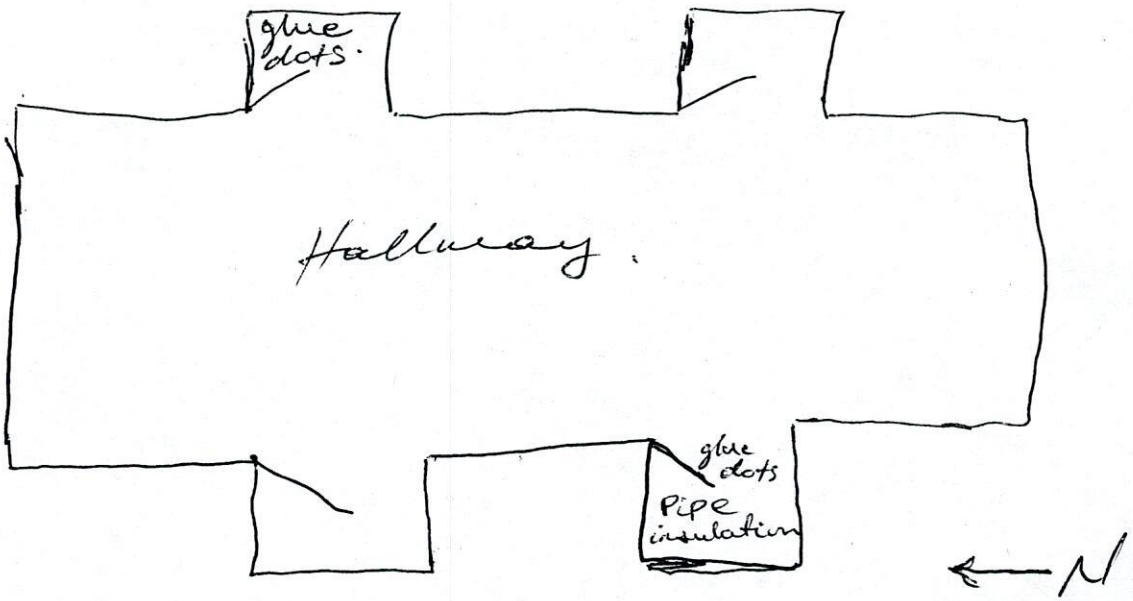
Describe worker engineering control practices that will be used during the removal process:
Work area was isolated using a poly on the entrance.

Glovebags Used for Project: (Yes) / No G-bags Negative Pressure Supplied by: ✓ HEPA Vacuum ___ HEPA AFU

Each G-bag Smoke Tested: (Yes) / No Drop Cloth Used: (Yes) / No 2 Workers per G-bag: (Yes) / No

More Than One G-bag Combined to Make a Larger G-bag: Yes / (No)

DRAWING OF ABATEMENT WORK AREA OR ADDITIONAL COMMENTS



PRE-ABATEMENT INSPECTION OF WORK AREA: (PASS) / FAIL

Corrective Actions Requested Prior to Approval: _____

MACTEC IH Representative: Kebret Andarge MACTEC IH Rep Signature: Kebret Andarge

MACTEC QA/QC Review: JM