

JMAC Environmental, LLC

PROJECT DESIGN SPECIFICATION FOR REMEDICATION OF ASBESTOS CONTAINING/CONTAMINATED MATERIALS

at

**Daniel Morgan Technology Center
201 Zion Hill Road
Spartanburg, SC 29307
864-279-6900**

CONTACT:

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BY

JMAC Environmental, LLC
234 Pine Forest Rd Ext
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(864) 680-3907
JMAC Project #24-656

Project Designer:
Pamela A. Smith
Designer #ASB-20413



**Project Design Specifications for Remediation
of Asbestos Containing/Contamination Material
Floor Tile and Mastic**

at

**Daniel Morgan Technology Center
201 Zion Hill Road
Spartanburg, SC 29307
864-279-6900**

JMAC Project Number: 24-656

April 29, 2024

**Project Design Completed by
Pamela A. Smith, SC-DHEC License #ASB-20413**

1.1. PREFACE AND DISCLAIMER

- A. Air monitoring and Project Oversight will be performed by a third-party SC-DHEC qualified and licensed environmental firm that has been hired by the Building Owner or Building Owner Representative. The Building Owner, Building Owner representative, Consulting Firm, or General Contractor shall not be held liable for negligence, whether intentional or unintentional, on the part of the Abatement Contractor. The asbestos abatement activities are being performed to prepare the facility for renovation.
- B. JMAC Environmental, LLC, 234 Pine Forest Road Ext., Spartanburg, SC 29303, performed a visual inspection and review of the previous asbestos inspections. In addition, samples were obtained of the concrete masonry unit block coating and was reported as non-asbestos containing material. The inspection reports were relied upon for Project Design. If conditions have changed since the inspections were completed, the remediation contractor or the air monitor is responsible for bringing that change of condition to the Project Designer, the Building Owner, or Building Owner Representative. The Abatement Contractor is responsible for verifying the information provided in the inspection report. If material is discovered during the process of remediation or renovation that was not identified in the survey, the Contractor should contact the Project Designer or the building owner representative to have the material sampled or assume that the material contains asbestos. The contractor must follow all applicable regulations (see 1.1, F.)
- C. The Bidder is aware that the Owner reserves the right to reject any or all bids without explanation and to waive any and all informalities in connection with Bid opening and

April 29, 2024

that Bids submitted by a Bidder as a result of this invitation to submit a Bid shall not obligate Owner in any way.

1.2 DESCRIPTION OF THE BUILDINGS

- A. Daniel Morgan Technology Center provides students with the academic, technical, and decision making skills need to compete successfully at the post-secondary level for Spartanburg County School District #3 and Spartanburg County School District #7. The original school facility was built in 1968, with additions or renovations occurring in 1976.

The structure consist of one-story facilities. The buildings consist of concrete masonry unit (CMU) walls and limited drywall, tape, and spackle system walls. The building is concrete on slab with the floors adhered with various colors of carpets, floor tiles, and various mastics. The ceilings consist of a ceiling tile grid system that appears the same within each facility.

The Project Design Specification covers the removal of specific (but not the total) identified asbestos containing materials within the structures at each building perspective location. The purpose of the remediation is to complete a limited building renovation. The asbestos containing material sampling and Project Design Specification were conducted following the South Carolina Department of Health and Environmental Control (SC-DHEC) 61-86.1 Standards for performance for Asbestos Regulations, EPAs National Emissions Standards for Hazardous Air Pollutants (NESHAP), and Asbestos Hazard Emergency Response Act (AHERA) regulations.

1.3 SCOPE OF WORK-SUMMARY

- A. The scope of work includes the friable remediation of asbestos-containing and contaminated material: floor tile and carpet, nonfriable mastic, and non-asbestos cove base in the designated areas.
- B. The purpose of the remediation is to ready the building for renovations.
- C. Coordination with the Building Owner Representative will be critical to prevent delays in installing new materials after the remediation is completed. Although the phasing is necessary, nothing will prevent the contractor from completing more than one work area at a time, and multiple containments would be preferred.
- D. The following is a list of the material identified as asbestos containing or contaminated materials and the quantity included in the remediation:

April 29, 2024

**Base Bid for Asbestos Remediation of 9” Floor Tile, Contaminated Carpet,
Adhered Mastic and Non-asbestos Cove Base.**

<u>Location</u>	<u>APPROXIMATE QUANTITY</u>
Guidance Hallway	138 sq ft
Cosmetology (under carpet)	360 sq ft
Health Science	2,082 sq ft
Intro to Teaching (under carpet)	820 sq ft

BASE BID TOTAL 3,400 SQ FT

- E. The quantities and location of asbestos-containing materials (ACM) or asbestos-contaminated materials (ACM) identified, and the extent of work included in this specification are estimates based on the information available at the time of specification preparation may have been limited by the physical constraints of the building.
- F. Due to scheduling issues, addition or removal of quantities may occur once the project is awarded. The bid form will reference the cost of adding or subtracting quantities to the contract. The contractor is held responsible for PHYSICAL VERIFICATION of amounts of ACM to be removed or subtracted and verified with the Project Designer.
- G. The remediation work will be in compliance with the following regulations:
- EPA AHERA 49 CFR 763, Subpart E
 - ASHARA 49 CFR Chapter 1 Subpart 763, Appendix C to Subpart E of part 763,
 - SC-DHEC Regulations 61-86.1,
 - NESHAP Title 40, Part 61, Subpart M, and
 - OSHA 29 CFR 1926.1101
 - and others that are applicable.

1.4 CONTRACTOR INFORMATION

- A. The Abatement/Demolition Contractor must submit documentation, including copies of the South Carolina Department of Health and Environmental Control (SC-DHEC) Asbestos Abatement Contractor's License, personnel accreditation, and SC-DHEC licenses to the building owner's representative. Waste shipment records must be submitted to the building owner representative and SC-DHEC within 45 days of completion of the project. Close-out documents should be sent to the Building Owner's or the Building Owner's designated representatives.
- B. Notifications/Licenses

April 29, 2024

1. Notification to SC-DHEC must be made before project start-up. The removal permit for the friable materials requires a ten (10) working day notification is required. If the quantities change more than 10% after the start of the project, work practices change, or the condition of the material changes, then a revision must be sent to SC-DHEC immediately. The contractor must have the SC-DHEC work permit (or other variance, if applicable) onsite during the entire remediation process regardless of the removal work practice.
2. Clearance Sampling will be completed using Transmission Electron Microscopy (TEM) air clearances. The remediation contractor should schedule two-three days for clearances. Air Monitor will request a 24-hour turnaround (from the time the samples reach the laboratory) for the TEM sample results.
3. The Contractor is responsible for obtaining any Local Business License or other licenses that may be required.

C. OSHA

1. The abatement contractor's responsibility is to fulfill all Occupational Safety and Health Administration (OSHA) requirements under CFR 1926.1101 and other safety requirements that the work site may require. Including site safety assessments, safety plans, negative exposure assessments (NEA), and personal air monitoring. Along with fall protection that meets roofing criteria.

D. BUILDING OWNER AND BUILDING OWNER REPRESENTATIVE INFORMATION:

1. Project Number:
JMAC 24-656, APRIL 29, 2024
2. Owner:
Daniel Morgan Technology Center
201 Zion Hill Road
Spartanburg, Sc 29307
864-279-6900
3. Contact:
Spartanburg County School District #3 (SCSD3)
3535 Clifton Glendale Road
Spartanburg, SC 29307
Contact: Mr. Eddie Wyatt,
Director of Buildings and Grounds
864-491-8013
ewyatt@spartanburg3.org

April 29, 2024

4. Project Designer and Project Oversight:

JMAC Environmental, LLC

234 Pine Forest Rd Ext.

Spartanburg, SC 29303

Contact:

Mr. John N. McNamara and

Ms. Pamela Smith

864-680-3907 (M) John

864-680-5539 (M) (Pam)

john@jmacenviro.com

5. Air Monitoring Firm:

Not Awarded yet

1.5 **INSURANCE REQUIREMENTS -**

A. The contractor must be able to supply an original Certificate of Insurance before beginning showing evidence of coverage in effect for **General Liability, Automobile Liability, and Worker's Compensation with no less coverage than \$1 Million (\$1,000,000) in each category in accordance with the outlined specification and shall state that Sunset Clause or similar clause or clauses of intent are not included in the coverage.**

1. Contractor shall provide "occurrence" insurance, and an "A+" rated insurance carrier shall be provided. If the insurer has less than an "A+" rating, the Contractor shall obtain approval for the insurance carrier from the Building Owner before the commencement of the project.

2. The Contractor shall purchase and maintain in a company or companies acceptable to the Building Owner such insurance as will protect him from claims set forth below which may arise out of or result from the Contractor's operations under the contract, whether such operations be by himself or by any Subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable:

(a) Claims under workers' compensation, disability benefits, and other similar employee benefit acts;

(b) Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;

(c) Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;

April 29, 2024

- (d) Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor or by any other person;
 - (e) Claims for damages other than to work itself because of injury to or destruction of tangible property, including loss of use resulting from there; and
 - (f) Claims for damages because of bodily injury or death of any person or property damage arising out of any motor vehicle's ownership, maintenance, or use.
3. The insurance shall be written for not less than any limits of liability specified in the Contract Documents or required by law, whichever is greater.

- (a) Minimum limits of liability for the following types of insurance are required as follows:

All Limits in Thousands

- 1. Comprehensive General Liability, including:
 - a. General Aggregate \$1,000
 - b. Products-Comp/Ops Aggregate \$1,000
 - c. Personal & Advertising Injury \$1,000
 - d. Fire Damage \$ 50
 - e. Medical Expense (Any one person) \$ 5
- 2. Worker's Compensation, including:
 - a. Worker's Compensation Insurance \$1,000
 - b. Employer's Liability \$1,000
- 3. Comprehensive Automobile Liability,
- 4. Combined single limit, including:
 - a. All owned Automobiles \$1,000
 - b. Non-owned Automobiles \$1,000
 - c. Hired Car Coverage \$1,000

- (b) In addition to Contractual Liability including indemnification provision Bodily Injury and Property Damage coverage under both Comprehensive General and Comprehensive Automobile forms shall include 'occurrence' basis working, which means an event, or continuous or repeated exposure to conditions which unexpectedly causes injury or damage during policy period.
- (c) Contractor shall either (1) require each of his Subcontractors to procure and maintain during the life of his subcontract,

April 29, 2024

Subcontractors Comprehensive General Liability, Automobile Liability, and Property Liability Insurance of the type and in the identical amounts as specified in the above, or (2) insure the activities of his Subcontractors in his own policy.

4. The insurance shall include contractual liability insurance applicable to the Contractor's obligations under the indemnification provision.
 - (a) To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Building Owner and their agents and employees from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of or resulting from the performance of the work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) including the loss of use resulting therefrom and (2) is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligations shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Paragraph.
 - (b) A certificate of Insurance must be filed by an insurer authorized to do business in South Carolina by the South Carolina State Insurance Commission. All blanks and questions on the Certificate must be filled out completely. Incomplete or inadequate Certificates will be returned to the Contractor as unsatisfactory, and commencement of his work will be delayed until a satisfactory Certificate is submitted. Such delay will not warrant an extension of contract time.
 - (c) The Certificate of Insurance must list the Building Owner and the Consultant, JMAC Environmental, LLC, as the additional insured.

1.6 ABATEMENT PERSONNEL

A. Asbestos Supervisor(s):

Provide a full-time Supervisor(s) for inside the asbestos work area with experience in asbestos abatement projects, including work practices, protective measures for building and personnel, disposal procedures, etc. The inside Supervisor must be able to communicate in the workers' language and be able to communicate in English to the Building Owner or Building Owner Representative's Representative, Air Monitor, or state regulatory personnel. The inside Supervisor (s) are responsible for compliance

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April 29, 2024

with the applicable federal, state, and local regulations, particularly those relating to asbestos-containing materials outlined in OSHA 29 CFR 1926.1101, including 1926.20 through 1926.32. The Supervisor(s) need to be knowledgeable of the South Carolina Department of Health and Environmental Control Asbestos Regulation 61 61-86.1, Standards of Performance for Asbestos Projects, Effective June 28, 2008, and EPA NESHAP 61.140 Subpart M-National Emission Standard for Hazardous Air Pollutants (Asbestos), and EPA AHERA 40 CFR Part 763-Asbestos Hazard Emergency Response Act.

Training: The Asbestos Supervisor(s) (competent person) must be accredited as an Asbestos Abatement Supervisor per the AHERA regulation 40 CFR Part 763, Subpart E, Appendix C and as amended February 3, 1994 (ASHARA) and be licensed as SC-DHEC Asbestos Supervisor.

- B. Non-Supervisory (Worker) Personnel:
Provide an adequate number of licensed and qualified worker personnel to meet the project's schedule requirements.

Training: All workers employed for abatement throughout the project shall be accredited as an Asbestos Abatement Worker per the AHERA regulation 40 CFR Part 763, Subpart E, Appendix C and as amended February 3, 1994 (ASHARA) and be licensed as SC-DHEC Asbestos Workers.

- C. Every individual performing work within the asbestos remediation area must have on the job site their license card, a copy of their most current training certificate, a fit test certification, and applicable medical records (as required by OSHA). The license requirement includes a machine operator that performs work within the regulated area. If requested, an individual must have a state identification card to verify their identity.

1.7 SUMMARY OF TASKS:

- A. The contractor shall remove by remediation (friable and nonfriable practices) and dispose of all asbestos-containing or asbestos-contaminated material as outlined in these project design specifications for remediation.

B. Contract work includes:

1. Abatement activities include preparation of work site, removal and disposal of asbestos containing or contaminated waste, recordkeeping, security of job site, pre-work and post-work inspections, and OSHA compliance air monitoring.
2. Cleaning, Decontaminating, and Clearance activities, including final inspection, certification of decontamination, and all post-work submittals.
3. The contractor will be responsible for the security of their equipment, tools, and vehicles.

April 29, 2024

4. Phasing of the project that the Project Designer and General Contractor have communicated or Building Owner Representative.

1.8 STOP WORK:

- A. If the Building Owner or Building Owner Representative verbally issues a stop-work order, the abatement contractor shall immediately and automatically stop all work and initiate fiber reduction activities. Do not resume asbestos removal until authorized by the representative, and do not recommence work until authorized by the Building Owner or Building Owner Representative's Representative. The standby time and cost required for corrective action will be at the remediation contractor's expense. The occurrence of the following events shall be reported in writing to the Building Owner or Building Owner's Representative, and it shall require the contractor to immediately stop asbestos removal and initiate fiber reduction and other appropriate activities:
 1. Excessive airborne fibers outside the containment area (>0.01 f/cc or established background levels, whichever is greater) in the occupied space of the building.
 2. Break-in either the primary or critical containment barriers.
 3. Serious injury to a worker within the contained area necessitates interruption of standard decontamination procedures.
 4. Presence of a fire or safety emergency.
 5. Personnel Protection Equipment failure.
 6. Power failure.
 7. The threat of a storm could provide a worksite hazard.

1.9 WORKER PROTECTION

Before beginning work on this section, provide workers with the required protective equipment. Appropriate protective equipment must be used and provided by the employer to the worker.

- A. Personal Protective Equipment:
 1. Coveralls: Provide a minimum of four disposable full-body coveralls and disposable head covers (per day) and require workers to wear them in the Work/Isolation Area. Provide enough for each entry and exit of workers in the Work/Isolation Area.
 2. Boots: Provide work boots with non-skid soles at no cost to workers. Do not allow boots to be removed from the Work/Isolation Area after contaminated with asbestos-containing material. Thoroughly clean, decontaminate, and bag boots before removing them from the Work/Isolation Area at the end of the work. Package and label boots as asbestos-contaminated waste at the end of the work.

April 29, 2024

3. Hard Hats: Provide head protection (hard hats) as required by OSHA or Employers Safety Program for each worker. Require hard hats to be always worn when work is in progress that may potentially cause a head injury. Provide hard hats with plastic strap-type suspension. If hard hats are utilized in the Work/Isolation Area, thoroughly clean, decontaminate, and bag hats before removing them from the Work/Isolation Area at the end of the project. Package and label hats as asbestos-contaminated waste at the end of the work.
4. Goggles or Safety Glasses: Provide eye protection as required by OSHA or the Employers Safety Program for each worker involved in scraping, spraying, or any other activity that may potentially cause eye injury. Thoroughly clean, decontaminate and bag goggles/safety glasses before removing them from the Work/Isolation Area at the end of the project. Package and label goggles/safety glasses as asbestos-contaminated waste at the end of the work.
5. Fall Protection: Provide fall protection as required by OSHA or the Employers Safety Program for each worker involved with work from 6 feet or above heights.

1.10 RESPIRATORY PROTECTION:

- A. The employer must instruct and train each worker involved in asbestos abatement, maintenance, or repair of Class I, II, and III asbestos-containing materials in proper respirator use and require that each worker wear a respirator properly fitted on the face in the Work/Isolation Area from the start of any operation which may cause airborne asbestos fibers until the Work/Isolation Area is thoroughly decontaminated. Use respiratory protection appropriate for the fiber level encountered in the workplace or as required for other toxic or oxygen-deficient situations encountered.
- B. Comply with ANSI Z88.2 - 1992 "Practices for Respiratory Protection," OSHA 29 CFR 1910.134, and 29 CFR 1926.1101. Require respiratory protection when there is any possibility of disturbance of asbestos-containing materials, whether intentional or accidental. Require that a respirator be worn by each person who enters a Work/Isolation Area, regardless of activity, during a period that starts with any operation that could cause airborne fibers until a negative exposure assessment has been completed.
- C. The employer shall provide respirators and ensure that they are used where required. Respirators shall be used in the following circumstances:
 - During all Class I asbestos jobs.
 - During all Class II work where the ACM is not removed in a substantially intact state.
 - During all Class II and III asbestos jobs where the employer does not produce a "negative exposure assessment."

April 29, 2024

- During all Class III jobs where TSI or surfacing ACM or PACM is being disturbed.
 - During work where employees are exposed above the Permissible Exposure Limit (PEL) based on the TWA (0.1 f/cc) or excursion limit (1.0 f/cc).
- D. The contractor will provide a negative exposure assessment (NEA) under OSHA 29 CFR 1926.1101 Asbestos in Construction Regulation for the appropriate work Class. If the contractor does not begin the project in a properly fit-tested Powered Air Purifying Respirators (PAPRs).

1.11 REGULATED AREA DEMARCATION

- A. The Regulated area is designated as the location where environmental remediation work occurs. All class I, II, and III asbestos work defined in OSHA CFR 1926.1101 (b) shall be conducted within regulated areas.
- B. All work areas where asbestos work or other contaminants are being removed must be demarcated with asbestos red barrier tape and asbestos signs. Waterproof signage must be utilized during all outdoor removal.
- C. Access to the regulated area shall be limited to persons authorized per OSHA, SC-DHEC, and EPA regulations.
- D. Prohibited activities within the regulated area include but are not limited to no eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics. The competent person shall ensure that all asbestos work performed within a regulated area is supervised by a competent person, defined in SCDHEC as a licensed Supervisor.
- E. Provide a means of security when the abatement contractor is not onsite. The facility's security falls onto the General Contractor unless otherwise decided and documented in writing.

1.12 WORK/ISOLATION AREA:

- A. The Work/Isolation area located within the regulated area is a variable of the extent of work of the contract. It may be a portion of a room, a single room, a complex of rooms, or an outside area. A "Work/Isolation Area" is considered contaminated during the work and must be separated from the balance of the building and adequately decontaminated at the completion of the asbestos-control work.
- B. Separate the Work/Isolation Area from other parts of the building to prevent asbestos-containing dust or debris from passing beyond the work/isolated area. Should the area beyond the Work/Isolation Area(s) become contaminated with asbestos-containing dust or debris because of the work, clean those areas per the specifications. Perform required

April 29, 2024

- cleaning or decontamination at no additional cost to Building Owner or Building Owner Representative or Owner.
- C. Place all tools, scaffolding, staging, equipment, etc., necessary for the work in the area to be separated before completing Work/Isolation Area separation.
 - D. Lockout power to Work/Isolation Area by switching off all breakers serving power or lighting circuits in the work area. Label breakers with tape over breaker with the notation "DANGER circuit being worked on." Lock panel and have all keys under control of Contractor's Superintendent or Building Owner or Building Owner Representative's designated Representative. Place sign over breaker box stating, "asbestos removal activity taking place, Please See Building Owner or Building Owner Representative's designated person before attempting to reactivate." **(Lockout Tag out needs to be coordinated with the General Contractor to prevent others' work disruption.)**
 - E. Lockout the power circuits running through the work area, wherever possible, by switching off the breakers or removing fuses serving these circuits. Label breakers with tape over breaker with the notation "DANGER circuit being worked on." Lock panel and have all keys under control of Contractor's Superintendent or Building Owner or Building Owner Representative's designated lockout/tag-out representative. If circuits cannot be shut down for any reason, label at intervals 4'-0" on the center with tags reading, "DANGER live electric circuit. Electrocutation hazard." Label circuits in hidden locations but which may be affected by the work in a similar manner.
 - F. The Building Owner will be responsible for removing uncontaminated materials from the work area before the remediation contractor begins work.
 - G. Carpets that are adhered to the flooring throughout the contractor's designed work areas are considered contaminated with asbestos containing material due to being adhered with positive asbestos mastics or asbestos mastic residue.

1.13 CONTROL ACCESS:

- A. Provide Asbestos Warning Signs at each access to a regulated area, and signage must be placed on doors and critical barriers. Post an approximately 20 inch by 14 inch manufactured caution sign displaying the following legend with letter sizes and styles of visibility required by OSHA 29 CFR 1926.1101--**LEGEND:**

**DANGER
ASBESTOS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
RESPIRATORS PROTECTION
AND PROTECTIVE CLOTHING**

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IN THIS AREA

Provide spacing between respective lines at least equal to the height of the respective upper line.

1.14 **CRITICAL BARRIERS AND PRIMARY BARRIERS:**

- A. The following requirements are to build containments for each work area of friable removal areas. (Estimated three (3) containments)
1. Completely Separate the Work/Isolation Area from other portions of the building and the outside by closing all openings with sheet plastic barriers at least two (2) layers of 6 mils in thickness leading out of the Work Area; these areas are called critical barriers. Also, individually seal all critical barriers such as ventilation openings, doorways, windows, drains, and other openings into the Regulated and Work/Isolation Area with duct tape and a minimum of two (2) independent layers of polyethylene sheeting at least 6 mils in thickness taped securely in place from the interior/exterior of the building.
 2. Seal all stationary equipment with a minimum of one (1) layer of polyethylene sheeting at least 4 mils in thickness. Maintain seal until all work, including Project Decontamination, is completed.
 3. Primary Sheet Barriers must be installed in addition to Critical Barriers as specified in the preceding paragraphs. The poly sheeting protects the building and other surfaces in the Work/Isolation Area from damage from water, high humidity, or contamination from asbestos-containing debris, slurry, or high airborne fiber levels by covering a primary barrier as described below.
 4. Work Area-Cover walls where work does not include the walls. Cover the walls in the Work Area with a minimum of one (1) layers of clear polyethylene sheeting at least 4 mils in thickness, extending beyond wall/wall joints at least 6 inches, mechanically supported and sealed with duct tape or **(NO SPRAY ADHESIVE MAY BE USED)** in the same manner as "Critical Barrier" sheet plastic barriers. Tape all joints. The contractor shall take the means necessary to protect the painted walls and may be held responsible for repairing the damage.
 5. Cover ceiling(s) with one (1) layer of clear polyethylene sheeting, each at least 4 mils in thickness, extending beyond wall/ceiling joints at least 12 inches, mechanically supported and sealed with duct tape or spray-adhesive in the same manner as "Critical Barrier" sheet plastic barriers. Tape all joints.
 6. Install a viewing port measuring at least 24 inches by 24 inches in an external wall to allow unobstructed observation of abatement activities in each work area. (If unable to install viewing ports, a variance must be obtained from SC-DHEC.)

April 29, 2024

7. Continuously maintain relative pressure in the Work Area at an air pressure lower than that in any surrounding space in the building or at any location in the immediate proximity outside the building envelope. When measured across any physical or critical barrier, the pressure differential must equal or exceed a static pressure of -0.02 inches of water. Monitor the pressure differential at a location approved by the Building Owner or Building Owner Representative's representative with a differential pressure meter. A continuous recorder can be attached to the meter, or manual readings must be taken no less than four times per shift as outlined in SCDHEC Asbestos Regulations by the onsite air monitor.
- B. Where work is completed following nonfriable/intact practices:
1. Completely Separate the Work/Isolation Area from other portions of the building by closing openings with flapped doors of sheet plastic barriers at least three (3) layers of 6 mils in thickness leading out of the Work Area. Separate the work/isolation Area from other portions of the building and the outside by closing all openings with sheet plastic barriers at least 6 mils in thickness leading out of the Work Area.

1.15 DECONTAMINATION UNIT:

- A. For friable removal areas, provide an attached Personnel Decontamination facility. Require that the Personnel Decontamination Unit be the only means of entrance and exit for the Work/Isolation Area.
- B. Construct the decontamination facility in compliance with OSHA 29 CFR 1926.1101 and SC-DHEC Asbestos Regulations. SCDHEC or OSHA requires that the decontamination enclosure (decon) include a clean room, airlock, shower with controllable hot and cold water, airlock, and equipment room. The steps required to exit the work area through the decon are as follows:
1. Remove gross contamination and debris from protective clothing before entering the equipment room.
 2. Enter the equipment room and remove and dispose of the suit.
 3. Enter shower with a respirator on, pass filters into equipment room for disposal.
 4. After showering, enter the cleanroom to put on street clothes.
- C. For Nonfriable/Intact removal areas, construct the decontamination facility in compliance with OSHA 29 CFR 1926.1101 as follows:
1. Construct a dry-step-off or one-stage decontamination area located in the doorway of the work area.
 2. Only persons wearing appropriate protective clothing, eye protection, gloves, and respiratory protection (and proper protection for any wetting agents or disinfectants) are permitted to enter the contaminated area.
 3. At the end of work, workers must:

April 29, 2024

- i. Remove gross visible contamination from their protective clothing and respiratory protection in the work area.
 - ii. Enter the dry step off or one stage decontamination room of the worker decontamination unit and remove debris from their respiratory protection equipment with the use of a vacuum cleaner equipped with a HEPA filter and
 - iii. Remove clothing, bag it in plastic bags and dispose of it as waste; and
 - iv. Where PPE will be reused, remove debris with the use of a vacuum cleaner equipped with a HEPA filter and wet wipe the PPE, then
 - v. Pass into the clean area, remove and thoroughly clean the respiratory protection equipment, and store it appropriately.
 - vi. Washing facilities or cleaning for hands and face must be made available to workers.
4. Require that waste materials exit the Work/Isolation Area through a waste removal area.

1.16 LOAD-OUT:

- A. Provide a decontamination area to remove bagged waste from the work area. Where feasible, this load-out area should be separate from the personnel decon. The load-out is to be constructed with a minimum of two stages of 6 mil poly sheeting.
- B. If a separate load-out cannot be provided. The waste materials can be removed from the Work/Isolation Area through the Personnel Decontamination Unit at the end of the shift.

1.17 HEPA FILTERED FAN UNITS:

- A. Use units in the work areas that meet the following requirements.
- B. Cabinets must be durable materials to withstand damage from rough handling and transportation. The width of the cabinet should be less than 30 inches to fit through standard-sized doorways. Provide units whose cabinets are:
 1. Factory-sealed to prevent asbestos-containing dust from being released during use, transport, or maintenance.
 2. Arranged to provide access to and replacement of all air filters from the intake end.
 3. Mounted on casters or wheels.
 4. The fan's rated capacity according to usable air movement capacity under actual operating conditions.
 5. Sufficient pre-filters and secondary filters to change several times throughout the day.
 6. The units must be clean and have new HEPA filters installed prior to placement on the project site.

1.18 REMOVAL OF FLOOR TILE and FLOOR TILE UNDER CARPET USING FRIABLE WORK PROCEDURES (CLASS I):

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864-680-3907

April 29, 2024

- A. Follow 1.14 Critical Barriers and Primary Barriers. While prepping the work area and before using wet methods to remove resilient flooring, seal openings and penetrations in the floors to prevent water leakage. Protection of the floors not being removed can be completed by utilizing corrugated cardboard of a minimum thickness of 1/4" between the layers of polyethylene sheeting near openings to adjacent areas outside the work/isolation area. Use caution to prevent water leakage into openings or penetration. Cover sealed openings with sheet plastic. Remove binding strips or other restrictive moldings from doorways, walls, etc.; clean and dispose of as non-asbestos waste. Dispose of any materials with glue or floor mastic on them as asbestos-containing waste.
- B. Mist the floor with amended water to wet the entire removal surface. Do not allow puddles or run off to other areas. Allow time for humidity and moisture to loosen tiles prior to removal. Keep the floor continuously wet throughout removal operation. Remove tiles using a manual or powered spade or stripping machine. Continuously mist floor in the area where removal is being performed with amended water. Wet debris generated as necessary to keep continuously wet. Keep the floor where the tile has been removed constantly wet until heavy adhesive residue removal is completed. Pick up whole tiles, stack, place in boxes or wrapped in felt, and place in labeled disposal bags.
- C. At the Contractor's option, tiles may be placed directly into durable leak-tight containers. Shovel broken tiles and debris into cardboard boxes placed in a disposal bag. Place bagged waste in a second disposal bag during decontamination and dispose of waste as required by the Disposal of Asbestos-Containing Waste Material Section.

1.19 REMOVAL OF MASTIC USING NONFRIABLE METHODS (CLASS II)
AFTER THE REMOVAL OF FRIABLE FLOOR TILE & CARPET

- A. Remove floor tile or carpet to expose the mastic. Removal solvents will complete the removal of the mastic or residual adhesives. Provide a slow-drying solvent intended to remove tile adhesive. Provide material that is not flammable, does not create combustible vapors, and has no significant inhalation hazard. Provide materials with no volatile organic solvents (VOCs) unless previously approved in writing by the Building Owner's Representative. Use solvents per manufacturers' instructions. Saturate adhesive with removal solvent and allow the adhesive to soften. Remove by scraping, wet wiping, or other manual means. **No mechanical buffers, etc., may be utilized without prior approval of the Project Designer.** Keep floor damp throughout removal operation. Scrape with a stiff-bladed wall or floor scraper, removing ridges and loose adhesives until only a thin, smooth film remains. Where mastic deposits are heavy or difficult to scrape from the floor, heat the mastic with a hot-air blower before scraping.
- B. Deposit mastic and adhesive scrapings into a disposal bag or closed, impermeable container and dispose of as required by the Disposal of Asbestos-Containing Waste Material.

April 29, 2024

- C. Wet vacuum the standing water with HEPA wet/dry vacuum. Mop floor with amended water, removal encapsulant, or liquid detergent solution to remove the debris and residue. Mop floor with removal solvent as required by manufacturer's directions to completely remove all adhesive residue.
- D. Provide worker protection as required by the material safety data sheet (MSDS) for any material used

1.20 REMOVAL OF FLOOR TILE AND MASTICS USING NONFRIABLE REMOVAL METHODS (CLASS II):

- A. The work areas include critical barriers and flapped doors, negative pressure differential (as a scrubber), and dry-step-off decon. Continuously mist the work areas and floor tiles as necessary during the removal process, unless using heat machines. Remove binding strips or other restrictive moldings from doorways, walls, etc. Clean and dispose of as non-asbestos waste. Dispose of any floor tile and carpet with positive adhesive or positive floor mastic as asbestos-containing waste. Removal of the floor tiles should include the combination of the **infrared heat machines (propane torches cannot be utilized on this project)** with flat shovels. Remove the tiles with minimal breakage and maintain the flooring material in a nonfriable condition. (If excessive floor tile breakage occurs, the contractor must stop and reassess work practices or resubmit to SCDHEC for friable removal.) Pick up whole tiles, stack, place in boxes, wrap the floor tiles in 6 mils poly sheeting, and place in labeled disposal bags. Floor tiles may be placed directly into durable leak-tight containers at the Contractor's option. Shovel broken tiles and debris into cardboard boxes placed in a disposal bag. Place bagged waste in a second disposal bag during decontamination and properly dispose of waste.

Please note if the floor tiles become friable during the removal process, the work will be stopped, and all regulatory requirements concerning the removal of friable ACM will apply

1.21 CLEAN UP

- A. Clean floor after completion of removal of environmental contaminated waste materials by wet mopping with amended water. Mop at least three times or until all residue is no longer present, allowing a drying time between each mop. Clean floor after completion of removal of environmental contaminated waste materials by wet mopping with amended water. Mop at least three times or until all residue is no longer present, allowing a drying time between each mop.
- B. Dispose of all rags, plastic sheets, etc., per requirements of Section 1.20, "Disposal Procedures."
- C. Decontaminate Equipment: After completing the remediation work, decontaminate the equipment and machinery used for the work of this section.

- D. Compatibility: After the work is complete, leave substrates in a state to comply with all requirements and recommendations of the manufacturer for replacement materials.

1.22 DISPOSAL PROCEDURES

- A. The waste is expected to be disposed of in a closed-top trailer/dumpster, lined with 6 mil poly sheeting per SCDHEC.
- B. Labeling Of Disposal Container(s):
On the outside of the chosen disposal container, the following three labels must be placed and visible:
1. **First Label**: Provide per 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard:
 2. **Second Label**: Until October 1, 1993, provide per U. S. Department of Transportation regulation on hazardous waste marking. 49 CFR Parts 171 and 172. Hazardous Substances: Final Rule. Published November 21, 1986, and revised February 17, 1987:
 3. **Third Label**: Provide per 40 CFR Part 61 (AMENDED), subpart M, section 61.150(a)(1)(v) of EPA's National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Provision. Published November 20, 1990.
- C. A waste hauler must haul all waste with the required licenses from the state and local authorities with jurisdiction. The cargo area of the transport vehicle shall be free of debris and be lined with at least one layer of 6-mil polyethylene sheeting. Floor sheeting shall be installed first, extended up the side walls at least 12 inches, and taped securely. Wall sheeting shall overlap by at least six inches and be taped into place. Ceiling sheeting shall extend down the sides of the walls at least six inches and be taped into place. Take containers from the Work Area directly to a sealed truck or dumpster. Do not transport disposal bagged materials on open trucks. Comply with any local or state regulations for prior notice and delivery and comply with any special landfill requirements.
- D. At a disposal site, vehicles shall approach the dump location as closely as possible to unload the asbestos waste. Bags, drums, and wrapped components shall be inspected when unloaded at the disposal site. The material in damaged containers shall be re-wrapped or re-packed in empty bags or drums. If more than 25% of the bags are broken or damaged, return to the work site for re-bagging. Waste containers shall be placed on the ground at the disposal site, not pushed or thrown out. After removing all containerized waste, polyethylene sheeting shall be discarded in bags or drums, contaminated cleaning materials, and protective clothing. Clean the cargo area of the truck or dumpster by wet wiping with amended water or using a HEPA vacuum cleaner.

April 29, 2024

- E. Retain Waste Shipment Records (WSRs) from landfills or processors for disposal materials. At the completion of the project, submit a copy of each load's hauling and disposal, waste manifest, and landfill receipts to the Building Owner or Building Owner Representative's Representative to comply with local and state regulations for disposal documentation.
- F. As per NESHAPS 61.150, vii (3) (4), waste shipment records shall be obtained from the landfill/or hauler within 35 days; if not received within 45 days, EPA shall be notified by the contractor of unresponsive records.

1.23 AIR MONITORING

- A. The building owner's representative has hired a third-party qualified, and SC-DHEC licensed air-monitoring firm as required by the work practices. The abatement firm, per SC-DHEC regulation, cannot hire the air-monitoring firm. In addition, the air-monitoring firm is to have no affiliation with the abatement firm.
- B. The air-monitoring firm will provide all background, daily, and clearance samples. The background and daily monitoring can utilize Phase Contrast Microscopy (PCM) analysis. The clearance samples for friable will be completed by TEM analysis. Air Monitor will perform all visual inspections and clearances. No lockdown will be applied until the area has passed a visual by the air monitor. The visuals will not be completed until the Contractor's Supervisor has requested the visual.
- C. Background and daily area air monitoring: The background and daily area air monitoring aim to evaluate quality, resolve problems, and minimize the potential for the spread of contamination beyond the work area. In addition, the work of the air monitoring firm includes the performance of the final visual inspection and testing to determine whether a space or a building has been adequately decontaminated. All daily air monitoring is to be done utilizing Phase Contrast Microscopy (PCM) except for Final Clearance Monitoring, as specified in the following paragraphs. The Air Monitor will perform the following tasks:
 - 1. Perform continuous air monitoring, inspection, and testing inside and outside the work area during actual abatement work to detect any faults in the work area isolation and any adverse impact on surrounding areas from work area activities.
 - 2. Perform final inspection and testing of decontaminated areas or buildings at the conclusion of the remediation and clean-up work to certify compliance with the decontamination standard.
 - 3. All data, inspection results, and testing results generated by the Air Monitor will be available to the contractor for information and consideration. The contractor shall provide cooperation and support to the Air Monitor for efficient and smooth performance of their work.

4. Air Monitor will have daily logs onsite, calibration records for the manometer, and a minimum of 4 working air pumps.
- D. Monitoring and inspection results of the building owner's representative may be used to issue any stop removal orders to the contractor during abatement work and to accept or reject an area or a building as decontaminated.
- E. This section also sets forth airborne fiber levels both inside and outside the work area as action levels and describes the action required by the Contractor if an action level is met or exceeded.
- F. Stop action levels:

1. Inside Work Area: Maintain an average airborne count in the work area of less than .05 f/cc. If the fiber counts rise above this figure for any sample taken, revise work procedures to lower fiber counts. If the Time Weighted Average (TWA) fiber count for any work shift or 8-hour period exceeds the Stop Action Level, stop all work except corrective action, leave pressure differential and air circulation system in operation and notify Air Monitor. After correcting the cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by Air Monitor.

If airborne fiber counts exceed 0.1 f/cc, cease all work except corrective action. Notify Air Monitor. Do not recommence work other than corrective action for 24 hours unless otherwise authorized, in writing, by Air Monitor.

2. Outside Work Area: If any air sample taken outside of the Work Area exceeds 0.01 f/cc or the baseline established by background air monitoring, immediately and automatically stop all work except corrective action. The Air Monitor will determine the source of the high reading and notify the Contractor in writing.

If the high reading was the result of a failure of Work Area isolation measures, initiate the following actions:

- a. Immediately erect new critical barriers to isolate the affected area from the balance of the building. Erect Critical Barriers at the next existing structural isolation of the involved space (e.g., wall, ceiling, and floor).
- b. Decontaminate the affected area per the Project Decontamination Procedures.

April 29, 2024

- c. Require that respiratory protection as outlined in Respiratory Protection be worn in the affected area until the area is cleared for re-occupancy, according to Final Clearance Monitoring.
 - d. Leave Critical Barriers in place until completion of work and ensure that the operation of the pressure differential system in the Work Area results in a flow of air from the affected area into the existing Work Area.
 - e. If the exit from the cleanroom of the personnel decontamination unit enters the affected area, establish a separate decontamination facility consisting of a Shower Room and Changing Room.
 - f. After Certification of Visual Inspection in the Work Area, remove critical barriers separating the work area from the affected area. Final air samples will be taken within the entire area as outlined in Final Clearance Monitoring.
3. If the high fiber reading results from other causes initiate the corrective action as determined by the Air Monitor.

1.24 CONTRACTOR RELEASE CRITERIA FOR FINAL WORK AREA CLEARANCE:

- A. Visual inspection: The Final Clearance Monitoring will not begin until the Asbestos Remediation Work Area airborne asbestos structure concentrations have been reduced to 0.01 f/cc per PCM analysis. The work area also has to pass a thorough visual inspection completed by the Air Monitor or the Project Manager.
- B. It is suggested that the Abatement Contractor run 96 air changes in the work area prior to running the clearance samples.

1.25 METHOD OF FINAL AIR CLEARANCE ANALYSIS:

- A. **Transmission Electron Microscopy (TEM) clearance is required for friable removal in schools when the project exceeds 160 square feet, 260 linear feet, or 35 cubic feet.**
 1. To determine if the elevated airborne asbestos structure concentration encountered during abatement operations has been reduced to the specified level, the Air Monitor will secure samples and analyze them according to the following procedures per designated areas.
 2. Analytical Sensitivity for TEM analysis as outlined in the analytical method used and the AHERA regulation.
 3. TEM samples will be secured as indicated below:

JMAC Environmental, LLC
234 Pine Forest Rd. Ext
Spartanburg, SC 29303
john@jmacenviro.com
864-680-3907

B. Transmission Electron Microscopy: FRIABLE REMOVAL WORK

The analysis will be performed using the analysis method set forth in the AHERA regulation 40 CFR Part 763 Appendix A. Samples will be sent by overnight courier for analysis by Transmission Electron Microscopy. Samples will not be carried out on weekends unless Building Owner or Building Owner Representative has approved the additional cost; if samples are shipped on Friday, they will arrive on Monday. Faxed and Verbal results will generally be available during the next working day after receipt of samples by the laboratory.

In each homogeneous work area, after completion of the cleaning work, a minimum of 5 samples will be collected and analyzed as follows:

Location Sampled	Number of Samples	Analysis Method	Analytical Sensitivity (fibers/cc)	Recommended Volume (liters)	Rate in Liters per Minute (LPM)
Work Area	5	TEM	0.005	1,200-1,800	1-10
Work Area Blank	2	TEM	0.005	0	Open for 30 Seconds
Laboratory Blank	1	TEM	0.005	0	Do Not Open

1. The analysis will be performed using the analysis method set forth in the AHERA Regulation 40 CFR Part 763 Appendix A.
2. Asbestos Structures in this Section include asbestos fibers, bundles, clusters, or matrices, as defined by the analysis method.
3. Release Criteria: Decontamination of the worksite is complete if:
 The arithmetic mean (average) asbestos concentration is less than 70 structures per square millimeter of filter area.

C. Sample volumes: The number and volume of air samples taken by the Building Owner or Building Owner Representative's IH will be per the regulations and standards governing air monitoring. Additional samples may be taken at Building Owner or Building Owner Representative's or Air Monitor's discretion. If airborne fiber counts

April 29, 2024

- exceed allowed limits, additional samples will be taken as necessary to monitor fiber levels.
- D. Sample cassettes:
PCM: Samples will be collected on 25 mm cassettes with a 0.80 micrometer mixed cellulose ester filters.
- TEM: Samples will be collected on 25 mm cassettes with 0.45 micrometer mixed cellulose ester filters and a 5.0 micron mixed cellulose ester backing filter.
- E. Written reports will be posted at the job site daily. The location will be determined by Air Monitor and the contractor's general superintendent.
- F. Additional testing: The contractor may conduct their own air monitoring and laboratory testing. If the contractor elects to conduct their own air monitoring. In that case, the cost of such air monitoring and laboratory testing shall be at no additional cost to the Building Owner or Building Owner Representative or Owner.
- G. Personal monitoring: The contractor is responsible for performing air monitoring to meet the Contractor's OSHA requirements for personnel sampling or any other purpose. The personnel air monitoring data must be on the Jobsite; if there is no negative exposure assessment, an initial exposure assessment should be generated by conducting personnel sampling.

1.26 SUBMITTALS

The attached sheet includes the submittal requirements prior to the start of work and before project closeout. Submittal for the section At Project Closeout must be submitted to the Building Owner or Building Owner Representative's Representative with the Final Payment Request.

April 29, 2024

RECOMMENDED SUBMITTAL CHECKLIST

Submittal for section Before Start of Work must be turned in to the Building Owner or Building Owner Representative's Representative at the Pre-Construction Meeting and no later than 48 hours before the start of work. The Building Owner or Building Owner Representative's Representative will then give the contractor written permission to begin work, and the Abatement Contractor will not start work without written permission.

Before Start of Work:

- ___ 1 Copy of completed SC-DHEC Asbestos Removal Notification Form filled out by Contractor.
- ___ 2 Copy of SC-DHEC authorization to proceed with the project ID number, fee information, and disposal site authorization for asbestos abatement.
- ___ 3 Copy of SC-DHEC Abatement Contractor's License, if applicable
- ___ 4 Copy of SC-DHEC License Cards for each individual working on the job site. Individuals must have originals onsite.
- ___ 5 Completed Notification Log Form with information for contingency plans and notification of local emergency personnel.
- ___ 6 Safety data sheets for any chemicals (i.e., surfactants, etc.) that will be utilized during the remediation.

Submittal for the section Periodically during Work or before Project Closeout must be submitted to the Building Owner or Building Owner Representative's Representative with the Progressive Payment Request. If Progressive Payments are not indicated, the submittals must be turned into the Building Owner or Building Owner Representative's Office before the Project Closeout. The abatement Contractor must have written permission from the Building Owner or Building Owner Representative's Representative before beginning Project Closeout.

PERIODICALLY DURING WORK OR BEFORE PROJECT CLOSEOUT

- ___ 7 Copy of containment checklist filled out by Contractor and approved by the Consultant including smoke test documentation.
- ___ 8 Daily Logs filled out and signed by the Project Supervisor
- ___ 9 Daily Sign In\Sign Out Sheets
- ___ 10 Contractor's copy of Negative Exposure Assessment
- ___ 11 Contractor's copy of Initial Exposure Assessment
- ___ 12 Contractor's copy of Background and Daily Air Monitoring Results
- ___ 13 Accident and Incident Investigation Report
- ___ 14 Visitor Log and signed Visitor's Authorization Form
- ___ 15 Documentation of Manometer Readings and Asbestos Filtration (AFD) and Water Filtration (WFD) Device Inspections
- ___ 16 Application for Final Visual Inspection(s)

Submittal for the section At Project Closeout must be submitted to the Building Owner or Building Owner Representative's Representative with the Final Payment Request.

April 29, 2024

AT PROJECT CLOSEOUT*

- ___ 17 Certification of Removal
- ___ 18 Asbestos Chain-of-Custody Form (Trip Ticket) completed by and signed by the Contractor Representative, Transporter, and Disposal Site Representative within 35 days as required by NESHAPS 61.150 vii(3)(4)
- ___ 19 Contractor Application for Payment (Invoice)

NOTE: PROJECT CLOSEOUT CAN NOT BEGIN UNTIL AIR CLEARANCE RESULTS ARE OBTAINED

Copies of the submittals for Items to be Submitted by the Air Monitoring Firm must be obtained by the Contractor and included in the Contractor Submittals as indicated above.

ITEMS TO BE SUBMITTED BY THE AIR MONITORING FIRM(S)

- ___ 20 Background and Area Air monitoring reports
- ___ 21 Final Clearance Air Monitoring Reports (This must be completed before Project Closeout begins.)
- ___ 22 Personnel Air monitoring reports