



ASBESTOS ABATEMENT PROJECT DESIGN Specifications and General Conditions

**City of MYRTLE BEACH – ARTS & INNOVATION DISTRICT
509 - 513 9TH AVENUE NORTH
MYRTLE BEACH, SC**

10 April 2020

Set No. 1

OWNER:

**CITY OF MYRTLE BEACH
PO Box 2468
MYRTLE BEACH, SC 29578
CONTACT: JAY HOOD – DIRECTOR OF CAPITAL PROJECTS**

PREPARED BY:

**ENVIRONMENTAL SERVICE GROUP
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MYRTLE BEACH, SC 29578**

PROJECT MANAGER (MANAGER):

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**SCDHEC Licenses No. PD-00089, AS-00233, SA-01169, BI-01133
NIOSH 582 Certificate No. 073-ROC702-002**

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AS NOTED: _____
Owner/Owner Representative

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Contractor

SPECIFICATIONS: STATE OF SOUTH CAROLINA ASBESTOS ABATEMENT GUIDELINES

Location:

City of Myrtle Beach Arts & Innovation District
509-513 9th Avenue North
Myrtle Beach, SC

I. General Description: The abatement scope of work shall include the removal of Asbestos Containing Building Materials (ACBMs) from areas within the subject facilities. Verification, locations and quantities of asbestos contaminated items are the responsibility of the abatement contractor.

Removal of asbestos containing building materials shall be performed in accordance with all applicable federal and state regulations and per the conditions set forth within these asbestos removal guidelines. Information concerning material testing, material locations and general conditions is made available either as an attachment to the asbestos abatement specification package or, upon request, from Environmental Service Group (ESG). (**Richard Eason/ 843.902.4495**).

This document provides criteria regarding removal of asbestos contaminated items within the structure/facility located within the confines of the subject site. The abatement contractor shall follow the terms set forth in this model specification during all phases of abatement conducted on the subject site.

II. Project Meeting:

Pre-Work Walk-Through Meeting: A pre-work walk-through meeting shall be held prior to the start of abatement activities.

Periodic Project Meetings:

The project manager (manager) reserves the right to schedule meetings with a representative of the abatement contractor (contractor) and/or air monitor during the course of the project to discuss project activities, assist in staying on schedule, etc.

III. Air Quality Testing

Collection of all OSHA required air monitoring, i.e. Personnel Sampling, will be conducted as per applicable State and Federal regulations and shall be the responsibility of the contractor.

Area, i.e. background, daily & clearance, air sampling shall be provided by the City of Myrtle Beach (owner).

The laboratory to be used must be qualified to perform the NIOSH Method 7400, have an established quality control program, and, in all respects, conform to the requirements under the OSHA standard.

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Owner/Owner Representative

AS NOTED _____
Contractor

IV. Qualifications of Abatement Contractor and Contractor's Personnel

As required by governing regulations, the abatement contractor must be licensed by the State of South Carolina, as an asbestos abatement contractor. All workers on the project must be licensed asbestos abatement "workers". There must also be a licensed asbestos abatement "supervisor" on the job site during asbestos abatement related work activities.

V. Information to be submitted prior to start of work

Submit the following information to the owner/manager for review:

- a. An officer of the company must sign a statement containing the following information:
 1. Record of any citations issued by Federal, State or Local regulatory agencies relating to asbestos abatement activity. Projects, dates, and resolutions must be included.
 2. Situations in which an asbestos-related contract has been terminated including projects, dates, and reason(s) for termination.
 3. Listing of any asbestos-related legal proceeding/claims in which the abatement contractor (or employees scheduled to participate) are currently involved. Included descriptions of role, issue and resolution to date.
- b. The contractor must submit a summary of his training program and/or a list of EPA approved training certification courses that his employees have attended (include name of course and presenter of the course).
- c. The contractor must submit a summary of his written respiratory protection program which is in compliance with OSHA regulations. A copy of this program shall be made available to the owner and/or project manager upon request.
- d. The contractor must have an established medical surveillance program in compliance with 29 CFR 1926.1101. A statement must be submitted that all personnel participate in a medical surveillance program.
- e. Immediately upon award of the contract, and before any work has commenced, the abatement contractor shall submit for the information of the project manager (one copy each) of the data listed below.
 1. Name/location of the SCDHEC approved sanitary landfill used for disposal of asbestos contaminated materials.
 2. Manufacturer's technical data sheets on proposed surfactant, encapsulant, and mastic remover.

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3. Certificate of insurance (or a copy of policy) with notarized statement thereon shall be provided to the project manager prior to starting work - Supplement as follows:

a. The abatement contractor shall maintain workmen's compensation Insurance to provide benefits in accordance with South Carolina's Workmen's Compensation Act.

b. The abatement contractor's Public Liability and Property Damage insurance shall be written in amounts not less than the following:

1). Comprehensive general liability insurance including deletion of exclusion for hazardous materials/asbestos pollution (Pollution Liability) and escape release, the abatement contractor's liability coverage, contractual liability coverage, completed operations coverage, broad form property damage endorsement and the abatement contractor's protective liability coverage to afford protection with limits for each occurrence of not less than \$1,000,000 combined single limit and aggregate with respect to bodily injury or death, and property damage.

2). Comprehensive automobile liability insurance, including any owned, non-owned or hired vehicle, with limits for each occurrence of not less than \$ 1,000,000.

3). Workers compensation and employers' liability insurance with limits of \$500,000 for each accident, \$500,000 for disease policy limit, and \$500,000 for disease (each employee) limit, or statutory limits, whichever is greater.

4). Such other insurance as the owner may require, including but not limited to, insurance coverage for all phases of asbestos removal activities in a form acceptable to the owner.

c. The abatement contractor shall deliver to the owner/manager before work is started up-to-date insurance certificates indicating that general liability insurance, including automobiles and workmen's compensation coverage are in effect. In addition, an endorsement or rider naming the City of Myrtle Beach, SC as additional insured during the time of abatement is required. A thirty (30) day cancellation notice in favor of the owner/city is to be a part of the certificate.

f. The abatement contractor shall deliver to the manager a binder for all such insurance before work is started, and shall deliver the policy or policies prior to date of expiration of binder.

VI. PERMITS, FEES AND NOTICES - Supplement as follows:

a. The contractor shall act as an independent contractor of the owner in all matters regarding compliance with laws, ordinances, rules and regulations bearing on the conduct of the work.

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- b. The contractor shall obtain all required licenses and permits for the work. The contractor shall pay for such licenses and/or fees. The contractor shall be responsible for any damages to individuals or property.
- c. The contractor will pay for any additional fees to include transportation, tippage, etc.
- d. The contractor shall secure all certificates of inspection required by authorities having jurisdiction over work. He shall deliver same to the manager upon completion of work.

VII. SUBCONTRACTORS, VENDORS, ETC.

The contractor will provide, prior to commencement of activities, the manager with a listing of all external participating entities to include, but not all inclusive, trucking companies, rental companies, landfill, suppliers, etc.

VIII. CLEANING UP - Supplement as follows:

The contractor shall, at the completion of the abatement process, remove all materials from the job site and thoroughly clean all areas of debris.

IX. SEQUENCING AND PAYMENTS

SEQUENCING: Shall be in-accordance-with (IAW) a Form of Agreement between the owner and the abatement contractor for Asbestos Abatement Services

PAYMENTS: Shall be in-accordance-with (IAW) a Form of Agreement between the owner and the abatement contractor for Asbestos Abatement Services.

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SECTION 1300 - ASBESTOS CONTAMINATED MATERIALS REMOVAL

X. GENERAL CONSIDERATIONS

a. Scope of work:

The work covered by this specification consists of furnishing all labor, supplies, materials, and equipment to perform removal of Asbestos Containing Building Materials (ACBMs) from within the subject facilities.

The project involves the removal of ACBMs from areas of the structures as indicated in the removal drawings/removal notes, and in the scope of work section provided in this specification.

b. Project Description:

The following locations, types and quantities of asbestos-containing materials will be included in this Project:

NOTE: It is the Asbestos Abatement Contractor's responsibility to verify the quantities of ACBMs prior to submission of their bid Proposal.

MYRTLE BEACH ARTS & INNOVATION DISTRICT 509-513 9TH AVENUE NORTH MYRTLE BEACH, SC			
505 9TH AVENUE NORTH			
Room/Area	Component	Quantity	Process
See Report (See Survey)		*Sq Ft ±	Remove/dispose (3)
9 X 9 Floor Tiles Main Room	4% Chrysotile present in tiles, 5% Chrysotile present in Mastic	4,652	4,652 sf +/-
Kitchen – Wall Mastic	5% Chrysotile present in Mastic	515sf +/-	515sf +/-
Exterior Wall Covering	HAS BEEN REMOVED		
507 9TH AVENUE NORTH			
Room/Area	Component	Quantity	Process
9 X 9 Floor Tiles: Stairs, Hall 5, Rooms 204 & 205	3% Chrysotile in tiles NAD in Mastic	471sf +/-	471sf +/-
Interior Stucco Wall Covering	2% Chrysotile Present in Chalky Joint Compound – Like Material	2,480 sf +/-	471sf +/-
509 9TH AVENUE NORTH			
Room/Area	Component	Quantity	Process
9 X 9 Floor Tiles W/Mastic (Bottom Layer) Zone 1	5% Chrysotile In Tiles	4,850sf +/-	4,850sf +/-
9 X 9 Floor Tiles W/Mastic (middle Layer) Zone 1	5% Chrysotile Present in Tiles, 7% Chrysotile	4,250 sf +/-	4,250sf +/-

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12 X 12 Floor Tiles W/Mastic (Top Layer) Zone 1	Positive By Association with HA1 & HA2	2,150 sf +/-	2,150sf +/-
513 9th AVENUE NORTH			
Room/Area	Component	Quantity	Process
Double – Layered 12 X 12 Floor Tiles W/Mastic – Designated Areas	10% Chrysotile	775 sf +/-	775 sf +/-
*NOTE: ESTIMATED MUST BE VARIFIED BY THE ABATEMENT CONTRACTOR.			
(1) Positive By Association. (2) Category 1 Non-Friable (3) Friable (4) May be removed by Friable or Non-Friable methods (Contractors Choice). (5) Non-Asbestos Containing Material – Leave in place (6) Non-Asbestos Containing Material; Must be removed to gain access to (ACBMs) (7) Outdoor Project (8) Abate, Clean & Protect			

XI. GENERAL TERMS:

a. General Definitions

ACM: Asbestos-Containing Material(s).

AGGRESSIVE SAMPLING: High-activity level air sampling which results in settled asbestos remaining airborne and uniformly distributed with special entrainment and mixing techniques. This makes any settled asbestos fibers accessible to the sampling filters for subsequent detection.

AMENDED WATER: Water containing a wetting agent or surfactant.

ANSI: American National Standards Institute.

ASBESTOS: The term asbestos includes Chrysotile, Amosite, Crocidolite, Tremolite, and Actinolite.

AREA MONITORING: Sampling of asbestos fiber concentrations within the asbestos control area, which is representative of the airborne concentrations of asbestos fibers, which may reach the breathing zone.

CLEAN ROOM: An uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.

CONTRACTOR: Refers to the person, firm, or corporation providing the goods and services for this "Asbestos Removal Project Design."

COMPETENT PERSON: Contractor's full-time, onsite person meeting the requirements of OSHA 1926.1101 and EPA/AHERA contractor/Supervisor qualifications.

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DECONTAMINATED AREA: An enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and a clean room which is used for the decontamination of workers, materials and equipment contaminated with asbestos.

ENCAPSULATION: The coating of asbestos-containing materials with a bonding or sealing agent to prevent the release of airborne fibers.

EPA: United States Environmental Protection Agency

EQUIPMENT ROOM (CHANGE ROOM): A contaminated room located within the decontaminated area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

FRIABLE ASBESTOS MATERIAL: Material that contains more than 1% asbestos by weight and that can be crumbled, pulverized or reduced to powder by hand pressure when dry.

HEPA FILTER EQUIPMENT: High efficiency particulate air filtered vacuuming equipment and negative air machines with a filter system capable of collecting and retaining asbestos fibers. Filters shall be 99.97 percent efficient for retaining particles and fibers with a minimum dimension of 0.3 micrometers or larger.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: United States Occupational Safety and Health Administration.

OWNER: The agent with the authority to execute the contract for the abatement removal project.

PERMISSIBLE EXPOSURE LIMIT (PEL): An airborne concentration of asbestos in excess of 0.1 fibers per cubic centimeter of air as an eight (8) hour time-weighted average (TWA), using the OSHA mandatory analytical procedure specified in 29 CFR 1926.1101, Appendix A.

PROJECT MONITOR (Air Monitor): Means the individual(s) representing the "owner" to make inspections, conduct monitoring, observe progress, review schedules, and accept services under the terms of the contract.

XII. GENERAL REQUIREMENTS:

a. The abatement contractor shall furnish all labor, materials, supplies, and equipment necessary to remove and dispose of asbestos contaminated items.

b. All work shall be performed in full compliance with all applicable regulations and the specifications contained herein.

XIII. SPECIFIC REQUIREMENTS:

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a. Regulations

1. The abatement contractor shall comply with all EPA, OSHA, and State of South Carolina Regulations and will follow EPA and ANSI workplace guidelines. A partial list of pertinent OSHA standards includes the applicable sections of 29 CFR 1910 and 29 CFR 1926, including but not limited to 29 CFR 1910.1001, 1910.139, 1910.1200, and 1926.1101. Applicable EPA workplace guidelines include (but are not limited to) "Asbestos-Containing Materials in School Buildings", and 40 CFR Part 61, Subparts A and B, except where there are differing specifications. In all cases where federal, and/or state guidelines overlap, the most stringent requirements shall govern.

2. The abatement contractor shall remove, transport, and dispose of the asbestos contaminated materials from the job site in compliance with all EPA regulations, and in accordance with these specifications. The contractor shall be responsible for obtaining the approval of the waste disposal site, and for manifesting all waste disposed at this facility.

3. The abatement contractor shall have a copy of the pertinent OSHA standards, SCDHEC and EPA regulations, and CERCLA waste spill phone numbers at the job site and shall make them available upon request.

b. Permits and Notifications

The contractor will secure the necessary permits in conjunction with asbestos removal, hauling and disposal and provide timely notification of such actions as may be required by Federal, State, Regional and Local authorities. Notification will be sent to the South Carolina Department of Health and Environmental Control (SCDHEC) prior to commencement of work. Copies of all permits and notifications will be provided to the owner and project manager.

c. Water and Electricity

Water will not be provided for abatement use. The abatement contractor, at his own expense, should be prepared to re-connect to existing water meters and/or connect to city fire hydrants.

Electricity will not be made available for abatement use. Any temporary electrical connections shall be the responsibility of the abatement contractor and performed by a licensed electrician. All temporary electrical connections shall be pre-approved by the manager or other city-designated representative.

d. Sanitation Facilities.

On-site restroom facilities will not be available for worker use. Contractor will provide temporary restroom, i.e. portable toilets, etc.

e. Site Security.

The Owner/City of Myrtle Beach will be responsible for general site security. The abatement contractor is responsible for securing areas containing asbestos before and during abatement activities.

f. Removal of Non-Stationary Items from the Work Area.

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The owner will be responsible for the gross removal of non-stationary items, i.e. chattel, from the work areas. The contractor will be responsible for removal of non-asbestos containing materials, (carpets, walls, doors, etc.) associated with asbestos containing materials. The contractor will coordinate removal and the transporting of these materials with the manager.

XIV. Work Site Damages:

a. The owner shall hold the contractor responsible for any damage to adjacent public and/or private properties, resulting from any intentional or negligent acts or omissions.

b. The contractor shall be responsible for any asbestos fiber contamination of adjoining areas and/or properties which occur as a result of the asbestos cleaning/abatement activities. All equipment and/or materials within these areas and/or properties shall be totally decontaminated or disposed of and replaced by the contractor with equipment and/or materials of equal or better quality at the contractor's expense (pending approval of owner/project manager).

XV. General Cleaning:

a. The contractor shall keep the premises and buildings free from accumulations of waste materials or rubbish caused by the abatement contractor's employees or employees of the subcontractor. At the completion of the work, the contractor shall remove all rubbish, tools, scaffolding, and surplus materials from the work site. The work site shall be left clean and habitable.

XVI. Information to be Submitted Upon Acceptance/Completion of the Project:

a. The Air Monitor shall submit two copies (one to the owner/manager and one to the abatement contractor) of all air monitoring results from samples taken for this project shall be submitted. All results shall be presented as signed "Certificates of Analysis", and must include:

--Date sampled

--Volume sampled and/or flow rate/sample time

--Location (building, floor, room, area within room) for area air samples or name of individual for personal samples

--Activity occurring during sampling (removal, cleaning, etc.)

-- Concentration of fibers (reported as fibers/cc)

b. The abatement contractor must submit copies (one to the manager and one to SCDHEC) of the waste manifest at the completion of asbestos abatement. The manifest must be signed as accepted by the sanitary landfill and the manifest must also state the waste was generated by the facility.

XVII. Inspections:

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- a. The manager shall conduct inspections throughout the project. Each step of the abatement project will require his/her inspection/approval before proceeding to the next step.
- b. Environmental and clearance sampling will be conducted by a project monitoring firm retained by the owner.
- c. Materials and workmanship shall be subject to examination by the manager at all times during the construction and use of the asbestos containment. The manager shall have authority to reject defective material and workmanship and require its correction.
- d. The manager will immediately suspend any work which is being conducted in an unsafe manner, i.e., the potential for personal injury or property damage exists.
- e. The manager shall ensure that the abatement contractor and their employees are licensed by the State of South Carolina.

XVIII. Pre-Work Activities

- a. The abatement contractor shall post signs and ensure labels are affixed to all asbestos materials, scrap, waste, debris, etc. Signs shall be posted at all entrances to the work area.
- b. The signs and labeling shall be of sufficient size to be clearly legible, and display the following:

DANGER ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATOR AND PROTECTIVE CLOTHING REQUIRED IN AREA

3. Work Area Preparation

- a. Heating, Ventilation, and Air Conditioning (HVAC)
 - 1. The HVAC Systems will be isolated and "Tagged-Out".
- b. Electrical System Isolation:
 - 1. The abatement contractor shall notify the manager in advance of project commencement, that the electrical system within the asbestos removal project area has been properly isolated and "tagged".
 - 2. All temporary electrical connections will be at the expense of the abatement contractor and approved by the manager prior to energizing.
- c. Isolating Access Areas/Critical Barriers:

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1. All access areas (i.e., doors, halls, etc.) which are not part of the work area shall be sealed off from public access. All doors, halls, or other areas not directly needed for work place access, shall be sealed with a minimum of two layers of 6 mil fire retardant polyethylene.

2. The abatement contractor may choose to padlock boarded access doors in areas where security is a concern.

d. Sealing all Penetrable Areas. All penetrations of the floor, walls and ceilings shall be sealed with a minimum of two layers 6 mil fire retardant polyethylene and duct tape to prevent airborne asbestos from escaping into the area outside the work area or from lodging in cracks around the penetration.

XIX. Emergency and Fire Procedures:

a. The abatement contractor shall establish emergency and fire procedures for evacuation. Emergency and fire procedures shall have priority over decontamination procedures.

b. The abatement contractor shall have arrows marking the exits and fire extinguishers on site.

c. The abatement contractor shall post, as a minimum, signs at the entrance to the DECON, by the 24X24 Viewing window and other locations as required stating:

EMERGENCY NOTIFICATION
FIRE – MEDICAL - POLICE
TELEPHONE 911
LOCATION: CITY OF MYRTLE BEACH ARTS & INNOVATION
DISTRICT
509- 513 9TH AVENUE NORTH, MYRTLE BEACH, SC

XX. ASBESTOS CONTAMINATED MATERIALS REMOVAL.

a. Personal Protection

1. Usage of Powered Air Purifying Respirators (PAPRs) shall be used for the duration of the removal project unless a change has been approved by the project designer/manager. NOTE: If the selected contractor meets certain criterion, a Negative Exposure Assessment (NEA) will be prepared establishing the usage of half-mask air purifying respirators with HEPA Filters (P 100) a lower level for protection.

2. The respirator shall be properly fitted and provide an effective seal. Long side-burns, beards, etc, which interfere with proper fit are unacceptable.

3. Hoods, associated with disposable garments, shall be worn on the outside of the respirator-no clothing shall be permitted on the head and neck area beneath the respirator.

4. Workers shall wear properly fitted respirators in the work area. Long side-burns, beards, etc., which interfere with proper fit are unacceptable.

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5. Workers shall wear disposable, full body coveralls, gloves, disposable head covers, and disposable footwear in the work area.

6. Respirators shall be sanitized daily by the contractor or between shifts if employees share usage.

7. Eating, drinking, smoking, and chewing of gum or tobacco shall not be permitted in the work area, equipment room or shower area.

8. All individuals, without exception, shall wear an approved respirator, disposable coveralls, gloves, head cover, and footwear to enter the work area. Personal clothing worn into the containment area will not be transferred out until it is properly sealed within two separate six (6) mil asbestos disposal bags.

b. Establishing the Decontamination Unit (DECON).

1. The decontamination unit shall be designed to allow passage to and from the work area during removal operations allowing only minimal leakage of asbestos fibers to the outside. The decontamination unit shall consist of a clean room, a shower room, and equipment room separated from each other and from the work area by airlocks and accessible through doorways protected with two overlapping polyethylene sheets. The clean room should contain no asbestos-containing items.

2. The shower room shall be constructed in such a manner as to prevent asbestos track-out after worker showering. Each showerhead shall be equipped with hot and cold water adjustable at the tap. Contaminated water from the shower room shall be either drummed or drained to the sanitary sewer system after filtering. No contaminated water shall be allowed to leak or drain outside of the work area. Wastewater generated from this project will be filtered through a five micron diatomaceous earth filter and then directed to the sanitary sewer.

3. The unit chambers are to be cleaned daily.

4. Before starting asbestos removal, the manager and/or the air monitor must approve the containment.

5. Entrance/Exit Procedures: All workers and/or authorized visitors shall use the following procedures when entering and exiting the work area. Remove street clothes, optional, in the clean room and put on the coveralls and all other protective equipment before entering the work area. Before exiting the work area all coveralls, head covers, boots, etc., shall be cleaned with a HEPA vacuum.

After this process is completed, the worker/visitor shall enter the equipment room and disrobe with the exception of respirators. The workers shall then proceed to the shower room. Under the shower, respirators shall be rinsed thoroughly then removed and cleaned. Used filters shall be placed in suitable plastic bags on the contaminated side of the shower, sealed, and labeled for disposal. All boots, shoes, etc., will remain in the equipment room until the project is completed when they will be bagged and moved to the next asbestos removal project as contaminated equipment or disposed of as asbestos waste. At no time are they to be worn through the shower to the clean room or outside of the containment area.

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c. Establishing the Negative Pressure Enclosure.

1. The enclosure shall be constructed of materials such that when the enclosure is completed there is limited potential for impact damage to the enclosure and no potential for fiber release and as approved by the manager. Activities as a minimum should be:

a. Shut down, lock and tag out all HVAC equipment in or passing through the work area. Seal all intakes and exhaust openings and any seams in system components with two layers of 6-mil polyethylene sheeting and tape.

b. If present, detach and wet clean removable electrical, heating and ventilating equipment and other items which may be connected to asbestos surfaces.

c. If present, remove existing filters from the HVAC system and dispose of as asbestos-contaminated waste.

d. Seal each opening between the work area and uncontaminated areas including windows, doorways, elevator openings, corridor entrances, drains, ducts, electrical outlets, grills, grates, diffusers and skylights with a critical barrier consisting of at least one sheet of 6-mil or thicker polyethylene sheeting secured in place. These critical barriers must be maintained leak-tight for the duration of asbestos abatement.

E. Thoroughly clean and remove all movable objects from the work area.

F. Thoroughly clean, then cover and secure all non-movable objects in the work area with at least one sheet of 4-mil or thicker polyethylene sheeting.

G. Use polyethylene sheeting to isolate contaminated from uncontaminated areas, ensure that it is attached securely in place and properly maintained at all times.

H. If present, prevent contamination of carpet with asbestos-containing materials, or dispose of the carpet as asbestos-contaminated waste.

I. Cover floors not being abated with at least two layers of 6-mil or thicker polyethylene sheeting. Floor sheeting shall be installed first and shall extend up the walls at least 12 inches and be taped into place. No seams shall be located at wall/floor joints. Spray-applied polyethylene coating shall not be used.

J. Cover walls and ceilings not being abated with at least one sheet of 4-mil or thicker polyethylene sheeting. Wall sheeting shall be installed to minimize joints and shall extend beyond wall/floor joint at least six inches and be taped into place. Ceiling sheeting shall extend down the wall at least 12 inches and be sized and taped into place. No seams shall be located at wall/ceiling or wall/wall joints.

K. Construct a clear viewing port measuring at least 24 inches by 24 inches in an external wall of contained work area to allow unobstructed observation of abatement activities in the work area.

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L. Operate negative pressure differential equipment with HEPA filtration continuously from the time barrier construction is completed through the time acceptable final clearance air monitoring results are obtained.

2. Sufficient numbers of negative pressure ventilation units, (Negative Air Machines) equipped with HEPA filtration and operated in accordance with ANSI 19.1-79 (local exhaust ventilation requirements) and EPA guidance document EPA 560/5-83-002) Guidance for Controlling Friable Asbestos-Containing Materials in Buildings will be utilized to:

A. Maintain Negative Air Pressure within the enclosure, as verified by Manometer Reading, of -0.02 inches H₂O or greater.

B. Provide, as a minimum, one work place air change every 15 minutes (4 changes per hour).

3. Exhaust air will not be vented directly into the work area. Exhaust air can be vented to the outside environment, if applicable, or directly into a tub/drum containing water; regardless, the exhaust air must impact the water before exiting into the work area. To minimize the potential for public concern, exhaust air will not be vented towards adjacent public walkways, streets/alleys if in close proximity to the work area.

4. Locations of negative air machines will be at the discretion of the abatement contractor.

d. Removal Process:

1. The removal process shall begin once the work preparations have been finished, inspected, and approved.

2. The contractor shall have a licensed "supervisor" on the job at all times (during work hours) to ensure that the enclosure, engineering controls, work methods and personal protective equipment are in compliance with all governing regulations and these specifications.

3 The contractor will assign a "competent person" to ensure that unauthorized personnel do not enter the enclosure and that all personnel that do enter the enclosure observe proper protection and decontamination procedures. This competent person shall be able to verbally communicate with personnel within the regulated, i.e. negative pressure, work area.

4. Items not being removed from the work area (i.e., large machinery, water fountains, etc.) shall be HEPA vacuumed, wet-wiped and covered with one layer of 4 mil polyethylene.

5. All asbestos contaminated items, to be removed, shall be wetted with amended water to impede fiber release prior to executing removal. Wetting of the asbestos contaminated materials shall continue throughout the removal operations.

6. Asbestos waste shall be placed in 6 mil poly bags or "wrapped" in poly sheeting for movement to the load-out area. In stage one of the load-out-area (dirty room) the bags/poly wrapping

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will be wetted and placed in a second 6 min poly bag or wrapping. Upon completion of this process, the materials can be moved to the load-out containers.

e. Cleaning Operations: Once the bulk (gross) asbestos contaminated items have been removed, efforts can be directed toward cleaning of the interior items and fixtures. The following steps shall be performed in sequential order:

1. All surfaces shall be HEPA vacuumed, thoroughly wet-wiped, allowed to dry, and wet-wiped again until all visual evidence of residual asbestos-containing materials has been eliminated (fine cleaning process).

2. Rags and water used for wet-wiping shall be continually changed. Rags utilized in the wet-wiping process shall be disposed of as asbestos-contaminated waste. All asbestos-contaminated water shall be filtered (5.0 micron filtration) prior to being released in the sanitary sewer system.

3. Any visual debris shall be removed by HEPA vacuuming and/or wet-wiping.

4. Equipment will be HEPA vacuumed, wet-wiped and removed from the work area. Tools such as scrapers, utility knives, brushes, etc., will be sealed in plastic and transported to other jobs or disposed as asbestos contaminated waste.

5. Following completion of fine cleaning, at the abatement contractor's request, a thorough visual inspection shall be conducted by the abatement contractor, air monitor and project manager. Failure of the visual inspection shall require the abatement contractor to provide additional labor until the work area is deemed acceptable by the manager.

6. All critical barriers, decontamination unit, windows, HVAC system, electrical outlets, penetrations, air scrubber machines will be left in place until the project has been given final approval by the manager.

e. Encapsulation. After final clearance has been received, porous surfaces that have been stripped of asbestos containing materials shall receive a coating of encapsulating agent to securely seal any residual fibers that may be present.

1. The encapsulating agent will be chosen so as to be compatible with subsequent coverings. For this project, a white latex primer will be used.

2. This paint will be applied with an airless sprayer.

3. An approved encapsulant material (provide SDS) to manager for review prior to application) is to be applied to the substrate and all other surfaces throughout the work area.

XXI. TRANSPORTATION AND DISPOSAL:

a. All asbestos containing waste shall be thoroughly wetted with an amended water solution before being placed into containers for disposal.

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b. Asbestos waste shall be placed in impermeable containers for transport to the landfill. Metal or fiber drums with locking-ring tops shall be used when asbestos waste contains sharp edged components. Double polyethylene bags of at least 6-mil thickness and which can be securely sealed shall be used for waste. Large components or structural members will be removed intact and wrapped in two layers of 6-mil polyethylene sheeting secured with tape for disposal. Excess air shall be removed from bags prior to sealing. As stated previously, all waste will be doubled bagged. Containers shall be labeled with the building owners and abatement contractor's name and address.

c. All containers (bags, drums, wrapped components) shall be labeled so that labels have the appearance of or are constructed in accordance with OSHA 29 CFR 1910.1001 (g) of EPA 40 CFR 61.152.

d. Transport and disposal of asbestos waste shall occur in a manner that will not permit the release of asbestos fibers into the air.

e. Disposal shall occur at a location approved for handling asbestos waste by the South Carolina Department of Health and Environmental Control (SCDHEC).

f. The abatement contractor shall obtain trip tickets at the landfill to document disposal of all of the ACMs. A record keeping form utilizing a chain-of-custody format shall include the names of the building owner, the asbestos abatement contractor and disposal site, the estimated quantity of the asbestos containing waste, and the type and number of containers used. The form shall be signed by the contractor/contractor's representative, and the disposal site operator as the material changes custody. If a separate hauler is used, his name, address, telephone number, and signature shall also appear on the form.

g. Commercial rental vehicles shall not be used to transport any asbestos, asbestos-containing, or asbestos-contaminated waste. This prohibition does not apply to tractors but does apply to cargo compartment areas used to store and/or transport asbestos waste. Rental vehicles do not include commercial hauler vehicles.

h. Copies of trip tickets to account for all asbestos waste shall be submitted to the manager upon completion of the project.

i. Vehicles and containers used for storing and transporting ACMs will remain locked.

XXII. CLEAN UP:

a. Material from within the work area shall not be permitted outside of the work area except in sealed leak-tight containers. Equipment that is to be reused shall be thoroughly decontaminated so that no visible residue remains prior to removal from the work area. If it is not thoroughly decontaminated it shall be sealed in leak-tight containers so that no visible residue appears on the outside surfaces.

b. Following clean-up and/or removal of asbestos contaminated items, clean-up procedures using HEPA vacuuming and wet wiping (cleaning) techniques shall be performed. Initially, HEPA vacuuming followed by wet wiping, using an amended water solution, shall be performed. After surfaces have been allowed to dry, an additional HEPA vacuuming will be accomplished. The

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sequence of wet wiping and vacuuming shall be repeated until no visible residue is observed in the work area.

XXIII. AIR SAMPLING AND ANALYSIS: Area, i.e. background, daily & clearance, air sampling shall be provided by the owner. Personnel sampling will be the responsibility of the abatement contractor.

a. All PCM samples shall be collected using *NIOSH Method 7400 revision 3 with the "A" counting rules*. Personnel samples shall be collected at a flow rate between a minimum of 3, up to a maximum of 12 liters per minute (LPM). . Background, area & Clearance samples shall be collected at a flow rate between a minimum of 10, up to a maximum of 15 liters per minute (LPM). Samples shall be collected on mixed cellulose ester filters, 25 millimeters in diameter and 0.8 micrometer pore size. All samples shall be collected with a sufficient volume to measure less than 0.01 fibers per cubic centimeter (f/cc) as analyzed using phase contrast microscopy (PCM). A minimum representation of at least 2 ½ hours for each 4 hour portion of the work shift during removal and cleanup activities shall be performed. Sampling shall be performed throughout the duration of each shift.

Final Clearance: Transmission Electron Microscopy (TEM) Air sampling will be conducted using collection media, procedures, and analytical methods in accordance with *40 CFR Appendix A to Subpart E of Part 763 – Interim Transmission Electron Microscopy Analytical Methods – Mandatory and Non-Mandatory and Mandatory Section to Determine Completion of Response Actions*.

b. A sufficient number of background air samples will be collected prior to the start of this project in order to obtain an index of pre-removal airborne fiber concentrations. Samples will be taken both inside and outside the work area to establish existing levels under normal activity condition.

c. Once removal activities begin, daily sampling will be preformed in accordance with the following schedule. The following are minimums:

1. In the equipment room of the decontamination enclosure (DECON).
2. At the entrance to the clean room of the decontamination enclosure (DECON).
3. Outside the controlled work area in uncontaminated areas of the structure or facility.
4. At the exhaust of the pressure differential equipment (negative air machine) at a distance of no greater than 5-8 feet from the exhaust flow when feasible. When multiple pressure differential machines (negative air machines) are in operation, the air sampler can rotate the sampling, but all exhaust must be monitored daily.

e. If, at anytime concentrations exceed 0.01 f/cc using PCM analysis or 70 asbestos structures per square millimeter (70s/mm²) utilizing TEM analysis outside of the contamination area, removal will be suspended and immediate action will be taken by the *Contractor* to decontaminate the effected area.

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f. Aggressive air sampling will be utilized to obtain project clearance. Clearance sampling will not begin until cleaning has been completed and no visible pools of water or condensation remain. The sampling zone will be representative of the building occupants breathing zone.

g. Personnel sampling (T.W.A.) will be performed, by the abatement contractor, during each daily work cycle. If statistically reliable measurements indicate that employee exposures are above OSHA's action level of 0.1 f/cc then work will be suspended until proper work practices can be put-in-place to correct the problem. Personnel samples will also be utilized to determine protection factor requirements. Employees will be given a chance to observe monitoring and must be notified as soon as possible following the employer's receipt of the results.

h. The on-site air-sampling professional (air monitor) will monitor all activities involving the disturbance of asbestos-containing materials.

i. The on-site air monitor has the authority to interpret contract specifications and stop work if necessary.

j. The on-site air monitor does not have the authority to approve changes in work that results in extra cost for the building owner.

k. When the abatement contractor states that the work area is clean, the contractor, air monitor and project manager will perform a visual inspection of the work area. If the visual inspection passes, aggressive air monitoring will be initiated. If the visual inspection fails, recleaning will be required and a follow-up visual will not be performed for at least 8 hours.

l. Containment Breach: Upon discovery of any containment breach (i.e. – water leak, damaged physical barrier, ACM debris outside of the containment area, etc) the air monitor shall collect, at a minimum, two PCM air samples for each breach in the asbestos abatement contractor's containment.

A. Normal air sampling shall continue in the affected area, while the first sample is being analyzed by PCM. If the results of this sample are below 0.01 f/cc, the abatement contractor shall continue work. If the results of this first sample is above 0.01 f/cc the second sample shall be analyzed by Transmission Electron Microscopy TEM. The abatement contractor may not continue work while awaiting results of the TEM analysis unless approved, in writing, by both the air monitor and the manager.

B. If the results of the second sample, using TEM analysis is below 0.005 structures per cubic centimeter (s/cc), the abatement contractor shall continue work and normal air sampling will resume.

C. If the result of the second sample, using TEM analysis, is above 0.005 structures per cubic centimeter (s/cc), the abatement contractor shall install new critical barriers to isolate the affected area from the balance of the building and decontaminate the affected area using HEPA filter-equipped vacuum cleaners and wet-wiping methods under the direction of the project manager.

XXIV. WORK AREA CLEARANCE: Sampling, both air and dust, will be performed in-accordance-with (IAW) AHARA protocols requiring the analyses be performed using Transmission Electron Microscopy (TEM) methods.

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a. Clearance air monitoring shall be, by Transmission Electron Microscopy (TEM). The clearance standard is less than or equal to 70 s/mm² using the Mandatory TEM Method described in 40 CFR 763, Appendix A of Subpart E, as amended, and any subsequent amendments and editions. The Z test with a value of Z less than or equal to 1.65 for a Z test carried out as described in 40 CFR 763, Appendix A of Subpart E, as amended, and any subsequent amendments and editions, shall be allowed for clearance purposes only with prior SCDHEC approval.

b. The total volume of air collected for clearance air sampling shall be in accordance with 40 CFR Part 763 and/or NIOSH 7400 and any subsequent revisions for analytical methodology.

c. The air monitor shall conduct, at a minimum, PCM clearance air monitoring at the completion of each NESHAP project. Projects exceeding the project design threshold (3,000 sf, 1,500 Lf, and 656 cubic feet of RACM) will require TEM clearance air monitoring.

d. The total volume of air collected for clearance air sampling shall be in accordance with 40 CFR Part 763 and/or NIOSH 7400 and any subsequent revisions for analytical methodology.

e. When conducting air clearance monitoring, the air monitor shall follow the procedures specified in *Measuring Airborne Asbestos Following An Abatement Action*, EPA Report 600/4-85-049 (1985), which is hereby incorporated by reference. The *Air Monitor* shall report the clearance air monitoring sampling results to the *Manager* within twenty four (24) hours following the completion of the project.

f. Clearance air sampling will be collected in areas subject to normal air circulation away from room corner, obstructed locations, and sites near windows.

g. Negative air machines/air scrubbers will not be turned off during clearance air monitoring. Negative air machines/air scrubbers will remain in operations until clearance certification.

h. Sampling shall not begin until the project manager/air sampler has performed an inspection and authorizes final clearance air monitoring.

i. Sampling shall be conducted only after all interior wall, ceiling, and floor polyethylene sheeting has been removed. Critical barriers and the five-stage decontamination enclosure system shall remain in place until the work area has passed final clearance.

j. At least one licensed asbestos project supervisor shall remain at the asbestos project site for the duration of the final clearance visual inspection and clearance air sample collection process.

XXV. POST WORK AREA CLEARANCE: Following satisfactory clearance of the work area, remaining polyethylene critical barriers and decontamination enclosure systems shall be removed and disposed of as asbestos-contaminated waste.

Richard A. Eason

Richard A. Eason, CEI

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SCDHEC Licenses No. PD-00089, AS-00233, SA-01169, BI-01133
NIOSH 582 Certificate No. 073-ROC702-002

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Appendices A – Attachments Reports & Site Plans

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